

17<sup>th</sup> IPHS Conference ▪ Delft 2016

# HISTORY URBANISM RESILIENCE

VOLUME 03

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## Change and Responsive Planning

International Planning History Society Proceedings



17<sup>th</sup> IPHS Conference, Delft 2016 | **HISTORY ■ URBANISM ■ RESILIENCE**  
VOLUME 03 Change and Responsive Planning

The International Planning History Society (IPHS) is dedicated to the enhancement of interdisciplinary studies in urban and regional planning history worldwide.

The 17<sup>th</sup> IPHS Conference was held in Delft, The Netherlands, from July 17 to 21, 2016.

The conference theme 'History – Urbanism – Resilience' inspired contributions investigating a broad range of topics in planning history: modernisation, cross-cultural exchange, and colonisation; urban morphology, comprehensive planning, and adaptive design; the modern history of urban, regional and environmental planning more generally; destruction, rebuilding, demographics, and policymaking as related to danger; and the challenges facing cities around the world in the modern era.

*Convenor*

Carola Hein, Chair, History of Architecture and Urban Planning, TU Delft

This series consists of seven volumes and one Book of Abstracts. The seven volumes follow the organisation of the conference in seven themes, each theme consisting of two tracks and each track consisting of eight panels of four or five presentations. Each presentation comprises an abstract and a peer-reviewed full paper, traceable online with a DOI number.

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# PREFACE

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Conferences are unique moments of academic exchange; international gatherings allow people from around the world to interact with a scholarly audience and to learn about diverse theories, academic approaches, and findings. Proceedings capture these emerging ideas, investigations, and new case studies. Both the conference of the International Planning History Society (IPHS) and its proceedings place presentations from different continents and on varied topics side by side, providing insight into state-of-the-art research in the field of planning history and offering a glimpse of new approaches, themes, papers and books to come.

As a collection of hundreds of contributions, proceedings are a unique form of publication, different from both peer-reviewed journals or monographs. They are also an important stepping stone for the authors; along with the conversations held at a conference, they are opportunities for refining arguments, rounding out research, or building research groups and the presentations they are often stepping stones towards peer-reviewed articles or monographs. Having a written track record of the presentations and emerging research provides allows conference participants to identify and connect with scholars with similar interests, to build new networks.

Many conferences in the history of architecture, urbanism, and urban planning don't leave an immediate trace other than the list of speakers and the titles of their talks; the International Planning History Society (IPHS) has long been different. The first meeting in 1977 has only left us a 4-page list of attendees, but many of the other conferences have resulted in extensive proceedings. Some of them, such as the conferences in Thessaloniki and Sydney have resulted in printed proceedings, while others are collected online (Barcelona, Chicago, Istanbul, Sao Paolo, or St. Augustine). These proceedings form an exceptional track record of planning history and of the emergence of topics and themes in the field, and they guarantee that the scholarship will be available for the long term.

The conference call for the 17th IPHS conference in Delft on the topic of History – Urbanism – Resilience received broad interest; 571 scholars submitted abstracts. Of those proposals, we accepted 439, many after revisions. 210 authors went through double-blind peer review of the full paper, of which 135 were ultimately accepted. The proceedings now contain either long abstracts or fully peer-reviewed contributions. We are currently establishing an IPHS proceedings series, digitizing earlier paper versions, and bringing electronic ones into one location. We hope that the IPHS Delft proceedings and the whole series will be both an instrument of scholarly output and a source for research and that they will contribute to further establish research on planning history throughout the world.



Carola Hein, Convener  
Professor and Head, Chair History of Architecture and Urban Planning, TU Delft



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# Keynote





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# MAKING URBANIZING DELTAS MORE RESILIENT BY DESIGN

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TU Delft

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## INTRODUCTION

Talking about ‘resilience’ and ‘adaptability’ seems to be a new fashion in the world of architecture and urbanism. Many people use these terms without explaining what they mean. Both terms are often used in combination with, and even as synonym of, terms like ‘incremental’ and ‘bottom-up’ and as an alternative of large scale ‘top-down’ interventions by the state.

But it is far more than a new fashion; the use of these terms indicates a process of fundamental transition of paradigms in planning and design. This paradigm-change is related to a farewell of modernist and reductionist ideas and approaches in science, engineering and design. For a long time these modernist ideas were dominating, suggesting that it is possible to *know and understand* the world (the social world as well as the physical world) completely, and that, based on this knowledge, it is possible to *plan and control* the development of the world completely.

A large range of events contributed to the rising idea that it is impossible to know, predict and control the world completely: the social revolts of the 1960s, the messages of the Club of Rome in the 1970s, the concerns with climate change since the 1990s and many more. They contributed to an increasing awareness that systems in nature as well in society are *complex*, and that the developments of these complex systems are non-linear, with a basically *uncertain future* (Scheffer 2009; Mitchell 2009). This uncertain future means that we have to take into account that disturbances can happen suddenly, unexpected, and also that external conditions can change substantially. Moreover, the size and scale of these disturbances and changes are unknown.

The situation and the challenges in urbanizing deltas are interesting examples in the current discussion. In a recent report, composed by TU Delft and the Delta Alliance, commissioned by the Dutch Ministry of Foreign Affairs for the preparation of the UN-Habitat-III conference, the authors argue that delta regions are the most promising regions of the world, but in the same time these regions are the most vulnerable zones, were floods, draught, salinization and pollution result in major risks for millions of people, for economic development and for the environment (Meyer, Peters 2016).

Deltas function as magnets for economic development and urbanization already during many centuries. Their position at the crossroads of navigation routes created many transshipment points of international trade; the fertility of alluvial plains and the estuarine and coastal waters, make deltas attractive for agriculture and fishing.

At present, deltas are magnets for urbanization and economic development more than ever. In 2050, ca 650 million people will live in delta and coastal urban regions. In many nations, delta- and coastal regions are the engines of the national economies with the highest contributions to national GDPs.

However, these same conditions for economic growth, urbanization and prosperity generate also a growing risk for flooding, resulting in increasing numbers of victims, severe economic damage and ecological downgrading. The concentration and densification of urban and industrial land use has resulted in the disappearance of the natural formative power of deltas. Increasing flood risk is a consequence of this disappearance of delta territories' natural resilience capacity and is reinforced by sea level rise caused by climate change.

Land subsidence as a result of intense drainage and groundwater extraction increases the vulnerability of urbanized as well as rural areas, often dropping below mean sea level. Between 1980 and 2013, the global direct economic losses due to floods exceeded \$1 trillion (2013 values), and more than 220,000 people lost their lives (Winsemius et al. 2015). It is expected that populations vulnerable to flooding by storm surges will multiply tenfold or more over the 21<sup>st</sup> century and this will affect an estimated 100 million people each year (Nicholls et al. 2007). Floods in urbanizing deltas have disastrous impacts on the economy as well as on the ecology of entire countries. As a consequence of flooding, local and national economic activities are disrupted for a long time, leading to a substantial decrease in GDP. The 2015 World Economic Forum (WEF) Risks Report has put the impact of Water Crises as the number one global risk (WEF 2015).

The high risk for flooding, heat stress, water shortages and poor air quality, resulting in increasing amounts of socio-economic impacts; huge economic losses, increasing amounts of lives at risk and severe ecological downgrading or impacts on natural capital. Worldwide the impact of climate change, if adaptation is not taken place, is expected to grow to 500 billion or 1 trillion US Dollars a year by 2050 (World Bank, 2013).

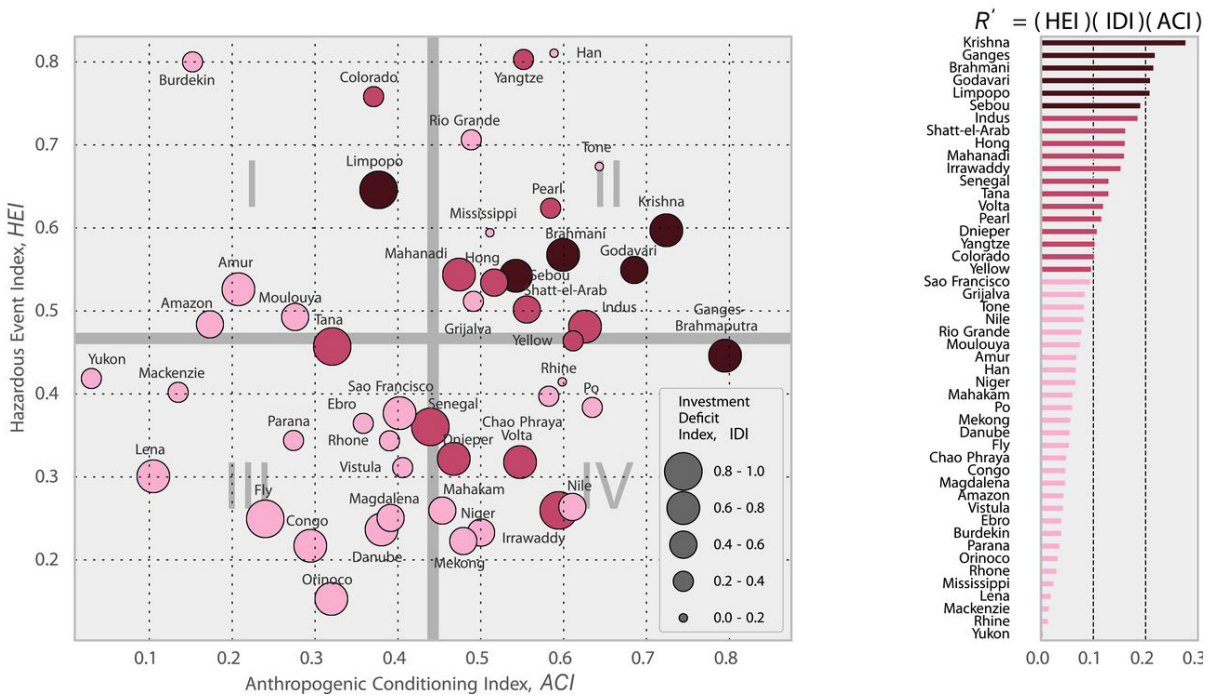
Because of increasing flood risk and flood hazards, mass migration to deltas and coastal areas can quickly turn into the reverse – which is already the case in some areas. Floods in New Orleans (2005) and east Japan (2011) resulted in the departure of many people who never returned.

A fundamentally new approach is necessary, creating more room for natural and social processes, which can contribute to an increasing resilience of these urbanizing deltas.

The next paragraphs will address (1) the essence of an approach which lead to an increasing resilience; (2) what is the difference with the approach of modern engineering and planning in leading benchmarks like The Netherlands and the USA, (3) the central role of design in the search of a new approach in two recent projects in The Netherlands and the USA.



A Map showing the 48 deltas included in a study by Tessler et al., 2015.



B Phase diagram of contemporary risk assessment results, showing the three component proxy indices used to estimate per-capita  $R'$ . Color density represents a delta's overall risk trend. Quadrant III deltas have predominantly low  $R'$ , whereas quadrant II deltas have high  $R'$ .

C Estimates of the relative rate of change in risk, or risk trend, for each delta due to increasing exposure associated with RSLR.

FIGURE 1 Risk trends for deltas worldwide

The Krishna and Ganges-Brahmaputra deltas, despite being only moderately susceptible to short-term hazardous events, are increasingly at risk because of high rates of RSLR and high socioeconomic vulnerability. Ganges-Brahmaputra is abbreviated to “Ganges” in some panels for brevity. Source: Tessler et al. 2015.

## RESTORING THE NATURAL AND SOCIAL RESILIENCE AND ADAPTABILITY OF THE DELTAS

### NATURAL RESILIENCE

A widespread misunderstanding is that delta areas are problematic because of the fickleness of rivers, seas and because of the changing climate. However, deltas are the products of the convergence of rivers and the seas. This convergence produced the alluvial plains, as the result of the processes of sediment transports and deposits. Dependent on the formative power of sediments transported by river, tidal currents or waves, we can distinguish river-dominated deltas, wave-dominated deltas and tide-dominated deltas (Bradshaw, Weaver 1995). All these different deltas have in common the fact that they contain the richest ecosystems of the world, with the largest amount of ecosystem services (Costanza et al. 1997). The gradual transitions between land and water and between salt and fresh water are the biotopes and nurseries of many species that are crucial for the ecological balance of the world's rivers and oceans. Next to the ecological value in terms of biological productivity and diversity, the ecosystems have significant economic value via ecosystem services such as: coastal protection, maintenance of fisheries and wildlife, erosion control, water catchment and purification, carbon sequestration, nutrient cycling, tourism, recreation, education and research (Barbier et al., 2011; de Groot et al. 2012).

Urbanization, industrialization and modern agriculture has led to a serious depletion of the natural system of deltas, with three characteristics:

- A Decrease of the formative power of the deltas through dramatic losses of the ecosystem services. Intense urban and industrial land use, drainage, dredging, reclaiming and damming have deprived the land-water ecosystems of their capacity to absorb the impact of extreme events and their resilience to restore balance after disturbances. Moreover, because of upstream damming and reservoirs, the sediment resources in rivers have been substantially depleted, causing serious erosion of delta and coastal landscapes (Mulder et al. 2010; Campanella 2014). In their research on 40 deltas around the world, Ericson et al. show that sediment trapping is the main cause of erosion in 27 of these 40 deltas (Ericson et al. 2006).
- B Land subsidence, caused by intense drainage and (industrial use of) groundwater extraction. As an outcome, urban and agricultural territories in many deltas (including the Nile delta, Rhine-Meuse delta, Mississippi River delta, Jakarta, etc.) have dropped substantially below sea-level, making these territories more vulnerable to flooding. This process is still going on in many urbanizing deltas, leading to uncontrollable flood risk.
- C Increase of salinization, caused by the combination of intense dredging, land subsidence and sea level rise, and resulting in a shortage of freshwater supply. Many urbanizing deltas find themselves in a paradoxical situation: surrounded by water, but lacking *fresh* water, leading to problems including a lack of drinking water and water for irrigation.

It is necessary to revitalize the capacity of deltas after disturbances. This revitalization must occur by protections and enhancement of the natural land-water transitions: beach and dune systems, salt marsh systems, coastal coral reefs and mangrove forest systems. In the long term, 'building with nature' delivers the conditions for delta regions to adapt to climate change continuously, by using the formative power of nature as the strategy's foundation. Next to it, the introduction of 'green-blue infrastructures' is necessary to create continuous and sustainable groundwater levels, which will provide storage-capacity during rainstorms and stop the process of land-subsidence (Bacchin 2015).

Many urbanizing deltas are not only victims of climate change but also contribute to climate change through their functions as important centers and transportation hubs of fossil fuel-based economies with large greenhouse gas emissions. The world's largest centers of trans-shipping, storage and fossil fuel processing are situated in deltas; the economy of these delta regions is thus largely based on transshipping, storage, processing, financing, accountancy and insurance of fossil fuels.

The transition to more sustainable energy sources will greatly impact urbanizing deltas. A major challenge is the reorganization of ports and industrial plants, combining adaptation (new types of land use with attention to ecology and flood defense), mitigation (substantial reduction of greenhouse emissions) and developing new initiatives for a circular economy and energy transition. The role of urbanizing deltas in the world's economy and ecology can change in a radical way: from being the crucial hubs of the old fossil fuel-based economy, urbanizing deltas can become the engines of a new, clean energy-based and circular economy.

The development of ports and navigation channels are a critical factor in urbanizing deltas. Dredging in estuaries and rivers has a high impact on upstream areas, leading to higher tidal fluctuations, salinization and flood-risk in these areas. The development of ports and navigation channels can be considered a critical factor in a strategy to enhance the resilience of the deltas. New concepts and policies for the location and lay-out of ports and cargo transport to upriver destinations are a major priority. As an example, the Port of Rotterdam, in collaboration with the World Wildlife Fund and Deltares, developed a new concept of *The Port of the Future*. This concept will be implemented with local stakeholders and citizens, in order to contribute to the environmental and social resilience of the urbanizing delta. The concept is also being explored in Ghana (Schipper 2015).

## SOCIAL RESILIENCE

The improvement of the natural resilience of deltas is linked directly to the improvement of the social resilience. The speed and scale of the current human migration to coastal and delta areas is unprecedented and creates high risk for extreme social inequality. The consequences of increasing flood-risk especially affect the population with the lowest income, often recently arrived in the city and living in areas that were not previously urbanized – often because they are the most vulnerable areas of the deltas. The informal spatial organization of these neighborhoods and weak building construction are often reasons behind the relatively large amount of urban poor victims.

Next to the danger of drowning, floods result in mass health and scarcity problems, disproportionately affecting the urban poor (Wisner et al. 1994).

What makes the problem of the urban poor in delta areas special, is the lack of risk-awareness. Social inclusiveness should start with a strong policy to inform and communicate with the population concerning the increasing risks of the area.

Building sustainable and resilient urbanizing deltas means that strategies for flood prevention and ecological repair should be based on involvement of people living in the most vulnerable areas and lead to a higher quality of life for all social groups.

The inclusion of civil society and the private sector in the implementation of activities means that there is likely to be greater 'ownership' of these interventions, and that they will be maintained and protected more effectively, in part because the capacity of various actors will be strengthened to take proactive measures. If citizens perceive interventions as contributions to their wellbeing they may be more likely to be directly involved in the implementation and maintenance of ecological and resilient projects, potentially generating cost savings.

## A SHORT HISTORY OF INCREASING RESISTANCE OF URBANIZING DELTAS

The development of this new approach stands in screaming contrast with the dominating strategies on water management and spatial planning in the 20<sup>th</sup> century. The two countries who spent the largest part of their national budgets to water- and delta management worldwide during the 20<sup>th</sup> century, are the Netherlands and the USA (O'Neill 2006). The approach of both countries show exactly the opposite of what is necessary as described above.

Especially The Netherlands developed a reputation as the world's leading benchmark in flood control and spatial planning. Especially the large scale works of the Zuiderzee works and the Delta works are considered the icons of a 'battle against the water'.

It is true that these works contributed to an enormous progress of welfare in The Netherlands. They were part of a program which transformed The Netherlands from a retarded and vulnerable delta into a rationalized industrial landscape, creating the condition for the rise of a prosperous welfare-state (Meyer 2012; 2016).

However, a lot of the natural and social resilience capacity of the Dutch delta was lost.

The basic aim of the approach of the Dutch state during the 19<sup>th</sup> and 20<sup>th</sup> century was to increase the resistance of delta territory. The river-system, the drainage systems in the polders and the coastline were considered as parts of a machine, which could be controlled, regulated in order to improve the conditions for economic exploitation and to decrease the flood risk substantially. In this strategy, the national state was in charge, especially the state-organization Rijkswaterstaat, founded in 1798 when The Netherlands were under control of Napoleonic France (Bosch, van de Ham 1998).

Together with the new canals Nieuwe Waterweg en Noordzeekanaal, Serious floods in the regions of the Zuiderzee (1916) and the South-west delta (1953) accelerated the drive to construct the Zuiderzee works and Delta works during the 20<sup>th</sup> century. These works resulted in a shortening of the coastline and a transformation of the Zuiderzee and South-west delta into sharp divisions of fresh and salt water. Both Zuiderzee works and Delta works did not only deliver more safety, but also transformed the estuaries in fresh water basins, which support the extension of agricultural land and the agricultural productivity. Also the petrochemical industry in the Rotterdam port-area would take advantage of the large scale availability of fresh water (de Vries et al. 2010). The choice of petrochemical industrial companies for settlement in the Rotterdam port was based largely on this fresh water availability and resulted in the development of the Rotterdam port to the second largest petrochemical complex of the world.

The territory of the delta was reduced from a complex, rich and sometimes dangerous natural environment into a limited amount of water-basins which were organized and controlled in an ordered way, each with their own role and quality.

The goals of the policy concerning flood protection were combined with goals to build a modern, industrial society, and to avoid metropolitan development by building an equally distributed pattern of small and medium-size urban communities. Metropolitan areas were considered uncontrollable, delivering conditions for congestion, diseases, criminality and boring environments. By taking the lead in large scale production of social housing, the national government was able to implement the aims concerning equal spatial distribution of urban growth.

The transformation of the Netherlands into a rationalized delta was a *modern project par excellence*.



The development of the Netherlands in the 20<sup>th</sup> century was an extreme example of the implementation of the idea that the nation-state can be considered and treated as a rationalized construction, as a *machine*. based upon 100% planning, engineering and control of the natural territory as well of the society. ‘Dredge, Drain, Reclaim – The Art of a Nation’ was the title of a book, written by the godfather of the Delta works, Johan van Veen (van Veen 1950).

More than 60 years after this publication, we can say that this ‘art of a nation’ resulted in a large success, from a point of view of water safety and economic development. However from a long-term perspective on maintenance, supported by the population, the flood risk system is less promising.

As a consequence of ‘dredge, drain and reclaim’, the land in the western part of The Netherlands is subsiding, the coast is eroding as a result of a lack of natural sediment deposits, dredging resulted in increasing salinization and the reclamation of floodplains in the river area resulted in a decrease of the discharge capacity of the riverbeds. Moreover, many projects suffered a lack of local support.

The big water works of Rijkswaterstaat were not discussed with local people or organizations. That was not so strange in the case of the Zuiderzee works – these works concerned the building of new land, where nobody was living. But in the case of the Delta works, economic and environmental organizations in the Southwest delta plead to get involved in the planning process of these works. The Dutch government rejected these pleas, with the argument that the Delta works were part of a national interest (Meyer 2016).

With this lack of involvement of local people and organizations in the planning process, the approach of the large water works dug its own downfall. The increasing discontent of people with the serious consequences for the local economy (especially fish- and shellfish industries) and the increasing awareness of the value of environmental and spatial qualities, led to a series of protests against the completion of the large water works. The result was the cancelling of the reclamation of the Markerwaard (the last part of the Zuiderzee works), the construction of a storm-surge barrier instead of a closing dam in the East Scheldt, and the need to change the original dike-enforcements in the central river area into more carefully designed projects, which were adjusted to the spatial character of the landscape.

The development of flood control in relation to spatial planning in the USA is comparable with the Dutch approach in many respects. In the 19<sup>th</sup> century, flood control was regarded as a responsibility of the federal state; the US Army Corps of Engineers became in charge of this task. Even more than the Dutch Rijkswaterstaat, the Army Corps focused on the organization of the North-American river system as a controllable machine, and didn’t tolerate any local meddling (Barry 1997).

The central focus of the Army Corps was on the streamlining of the Mississippi river as the main artery of the US economy (O’Neill 2006). The construction of a dike system along the borders of this river in the Mississippi river delta led to the end of the process of sediment disposal in the delta, and, consequently, to a process of serious erosion of the delta. Louisiana lost nearly 5,000 square kilometers of coastal wetlands – about one-third of the Mississippi delta – since the 1930s (Campanella 2014). The loss of wetlands and the lack of new sediment disposal led to a decrease of the role of the wetlands as a buffer between the sea and the City of New Orleans, and to a total disappearance of the possibility to recover after hurricanes. In order to protect New Orleans against the increasing flood risk, the Army Corps provided the city with a ‘system of rigidity’ (Campanella 2014), which failed dramatically during hurricane Katrina in 2005.

## TOWARDS A FUTURE OF INCREASING RESILIENCE OF URBANIZING DELTAS

The good news is that new experiments have started in both countries, which can be considered the start of a new approach to flood risk in combination with spatial planning and design.

In the Netherlands, the central river area came in serious trouble during two extreme river discharge events in the 1990s. They were the first signs that the process of climate change developed in another direction than was foreseen.

In the United States, the hurricanes Katrina (2005), Ike (2008) and Sandy (2012) led to huge damage and many deadly victims in New Orleans, Houston and the East Coast.

These events speeded up the awareness that the water safety system should be improved. In the same time, it was clear that the conventional centralistic approach of the state wouldn't work anymore. In both countries the social and economic pressure to combine flood defense strategies with local interests in economic development, spatial environmental quality, was increased strongly.

In the Netherlands, a new program for the central river area ('Room for the River') was implemented in 2005-2015, while a national Delta program started in 2009.

In the US, especially the 'Dutch Dialogues' program in New Orleans (2007 – 2011) and the 'Rebuild-by-Design' program in New York (2013-2015) can be regarded important attempts to develop a new approach.

In both programs, design played a crucial role as a tool of exploration of new perspectives, combining different interests and different scales.

The Dutch program 'Ruimte voor de Rivier' (Room for the River) showed an important innovation in the national policy. The program concerns the total Dutch part of the river basins of Rhine and Meuse, and aims to increase the capacity of the river basins for extreme discharges from 12.000 to 16.000 m<sup>3</sup>/sec (Rhine). The program can be considered a breaking event because of two reasons.

First, instead of a focus on enhancing and raising the existing dikes, the program emphasized the need to widen the riverbed, in order to provide more room for the river, creating a condition of 'building with nature' and improving environmental qualities and ecological conditions of the river beds. Second, the program was not developed completely by a central state organization. A central program-bureau defined a series of general rules concerning the needed capacity of the riverbed. At a local project-scale, these rules were combined with the desires and ambitions of local administrations, civic organizations and business institutions. Interdisciplinary teams of engineers, scientists and urban and landscape designers played a central role in bringing these general rules and local preferences together, in an interactive process of research-by-design and collective workshops. As a result, as well the central program bureau as the local stakeholders agreed that this approach resulted in a substantial improvement of the flood defense system and of the spatial and environmental quality (Klijn et al. 2013). The approach resulted in a strong involvement of local people, sometimes with their own design proposals. In two polders (Overdiepse Polder and Noordwaard) which are determined to be flooded during high water events, farmers succeeded to convince the planners and engineers that it is possible to combine the goal of temporary water retention with their wish to stay with their farms in the polders. Special mounds have been constructed for the new farms, which will stay dry during the high water events.

These initiatives are examples of an increasing involvement of local citizens in the national flood risk program.



FIGURE 2 Overview of projects of the program Room for the River. Source program bureau Room for the River



FIGURE 3 Aerial view of polder Noordwaard during reconstruction, 2015. Aerophoto Schiphol



FIGURE 4 Birds eye perspective of the Greater New Orleans Urban Water Plan 2013. Drawing by Sabien Thomaesz, Palmbout Urban Landscapes



In the US comparable developments are taking place. In 2007, Dutch designers, scientists and engineers were invited to participate in a collective design process in New Orleans, together with American colleagues, and presented as the 'Dutch Dialogues'. Interesting is that the initiative was taken by local citizens, led by the New Orleans based architect David Waggonner. As a final result, the American-Dutch consortium produced the 'Greater New Orleans Urban Water Plan' (Waggonner et al. 2014). The plan proposes a system which is different from the pre-Katrina system in two ways. First, instead of a continuing soil subsidence by intensive drainage, the new water system will result in a stabilization of soil- and groundwater levels by creating more space for retention and storage of storm water. Second, instead of separating urban districts and downgrading public spaces, the new water system will contribute to new spatial quality and coherence of the urban fabric. The plan shows that innovative water management strategies not only improve protection against flooding, but also create new perspectives for the economic and social future of the delta city. The most innovative aspect of the plan is the way in which hydraulic engineering, spatial design and governance are related to each other from the regional to the neighbourhood scale and the scale of the private parcel. This means that the plan only can be successful if it can count on the a wide support and involvement of local people.

## CONCLUSION ■ INTEGRATING SCIENCE, DESIGN AND ENGINEERING

Ongoing densification and transformation of urbanizing deltas is possible but requires clear regulations and needs explorations by design. 'Building with nature', stopping the processes of land-subsidence and salinization, and the possibility to combine these ambitions with new economic developments and social inclusion, requires a well-organized balance among science, planning, design and engineering.

It is important to be aware that different scales are strongly linked with each other:

The scale of the *drainage basin* of the river(s), the scale of the *delta* and the scale of *local interventions*. Deltas are dependent on the water and sediment supply from the rivers, which can be trapped by upstream interventions (like hydropower dams, freshwater reservoirs, canalization and deforestation). In return, interventions in the deltas like dredging and damming can lead to ecological downturn in upstream areas and salinization. Communication and negotiation between planning authorities in the drainage basins and delta regions is essential to ensure a delta's sustainable future.

Working on the sustainable future of urbanizing deltas requires an approach that combines long term and large-scale planning with small-scale projects that can be implemented on the short term. Plans and Projects should be considered as two linked and parallel pathways of a sustainable, 'learning-by-doing' planning approach. Projects need to be evaluated and monitored so the results can be continuously used to specify or modify overall plans.

Green-blue infrastructures can play a central role as frameworks which can be adapted to changing conditions in the course of time, delivering space for combinations of long term water- and nature-sensitive urban environments with economic and social initiatives. Open spaces in urban areas (wet, dry and vegetated), provide alternative design possibilities for synergies among nature, infrastructure and users. They provide a new balance among the maintenance, storage and discharge of storm water, resulting in a stabilization of groundwater levels and stopping the process of land subsidence. Moreover, these infrastructures and the process of their design have been proved to play a key role in urban revitalization, economic development and community-building. The Room for the River project and the GNO Urban Water Plan are examples of this approach.

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# Ports, Industry and Infrastructure





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# Perspectives on Industry-led Urban Planning and Development

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*Chair: Victor Muñoz Sanz and Marta Relats Torante*



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# BEYOND THE COMPANY: INTENDED AND UNINTENDED LEGACIES OF MODERN INDUSTRIAL URBAN PLANNING AND DESIGN - THE CASE OF THE BATA SHOE COMPANY SATELLITE TOWNS (1929-2015)

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Between 1929 and 1945, the architects of the Bata Shoe Company in Zlín (Czech Republic), planned, and built, partially or in full, more than twenty modern industrial cities in Europe, Asia, and America. These towns were part of a corporate strategy of decentralization targeted at coping with the turbulences preceding World War II. The planning of those communities both reflected the company's managerial system and welfare capitalism and mirrored contemporary debates in town planning—Garden City, modernism, and Soviet linear planning. After World War II, the network of cities was separated by the Iron Curtain. From 1945 onwards, and beyond the company's influence, these towns have been exposed to a multitude of realities that have altered their planned lives. However, a comparative assessment of their post-war development has not been made. This paper looks at the resiliency of Bata's modern physical and community planning model to diverse social, economic, and political changes, in three continents. Based on extended fieldwork, it presents three case studies of Bata towns in transformation today—Batanagar, India; Batawa, Canada; and Borovina, Czech Republic. The study shows a series of intended and unintended legacies of their original planning that still determine the current development of those communities.

#### Keywords

industrial urbanism, corporate urbanism, multinational planning, visionary planning, working environments, Bata Shoe Company, company towns

#### How to Cite

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## INTRODUCTION

From being a small workshop in 1874, the Bata Shoe Company became a gigantic industrial concern in the 1920s, built on principles of scientific management and welfare capitalism under the leadership of its founder, Tomáš Baťa. Its growth engulfed Zlín (Czech Republic), its hometown, and transformed it into a modern industrial garden city satisfying the needs of both its industrial population and those of the company<sup>2</sup>. After the crisis of 1929, the enterprise expanded internationally, exporting capital and investing it in the construction of a series of industrial towns around the globe.

Between 1929 and 1945, the building department of Bata planned and built, partially or in full, more than twenty modern industrial satellite cities in Europe, Asia, and America. On the one hand, the architecture and urbanism of those settlements aimed at satisfying the requirements of the company in terms of industrial organization and living standards—shoemaking is a labour-intensive industry, so workers were the great assets of the company. On the other, the endorsement of the visionary planning paradigms guiding the company architects and planners—namely Garden City, modernist functional zoning, and, at a later stage, soviet linear planning—showed also an aim of using physical planning and design for representing and legitimating Bata’s transformative modernity.

After World War II, the network of cities was split up. As Communists nationalized Bata and subdivided it into several national enterprises<sup>3</sup>, Bata managers rebuilt the company from Canada, keeping in operation the remaining company towns until their profitability was questioned, and manufacturing moved offshore. From 1945 until today, these towns, mirrors of modern planning debates, have been exposed to diverse realities altering their planned lives.

Some authors have looked at the post-war history of the towns in a comparative manner. Horňáková<sup>4</sup> delineated a brief timeline of the milestones of the European towns. In 2006, a conference convened by Šlachta and Silvan brought together the mayors of the Central European Bata towns to discuss the challenges for Bata’s heritage after the fall of communism<sup>5</sup>. Then, Ševeček and Jemelka’s editorial project specifically focused on the development of the towns between 1930 and 1950<sup>6</sup>. However, what it is missing is an assessment on the intended and unintended legacies of the planning and social ideas of the Bata satellites. With that, what is being missed is the opportunity to offer a new view and judgment on the results of modernity and modernism in urban planning and design in the period of the industrial economy, and to evaluate the contemporary relevance of the questions of modernism.

This paper is based on a survey of these cities in their post-industrial condition. It is a comparative work that has used field trips, photography, interviews, and archival material to evaluate of the urban legacy of Bata by looking at its towns in transformation. To illustrate this, after a brief account of the pre-1945 planning history of Bata, the cases of Třebíč-Borovina (Czech Republic), Batawa (Canada), and Batanagar (India) will be presented and discussed. With that, this paper aims to find some lessons, good practices, and inspiration for re-imagination of both future industrial and post-industrial cities and communities

## PLANNING THE BAT’A TOWNS

The planning of satellites did not only deal with architectural typologies or zoning regulations, but also with the natural, social, and infrastructural conditions of the sites. Ideally, the towns were to be situated in areas hit by unemployment, with plenty of semi-skilled labour, and isolated from the influence of big cities. Bata would own a large territory around the town, to avoid land speculation and usury. Finally, the settlements were remote yet well connected to roads, railroads, and waterways—sometimes airfields too—forming a network of communities that exchanged goods, capital, technology and know-how<sup>7</sup>.

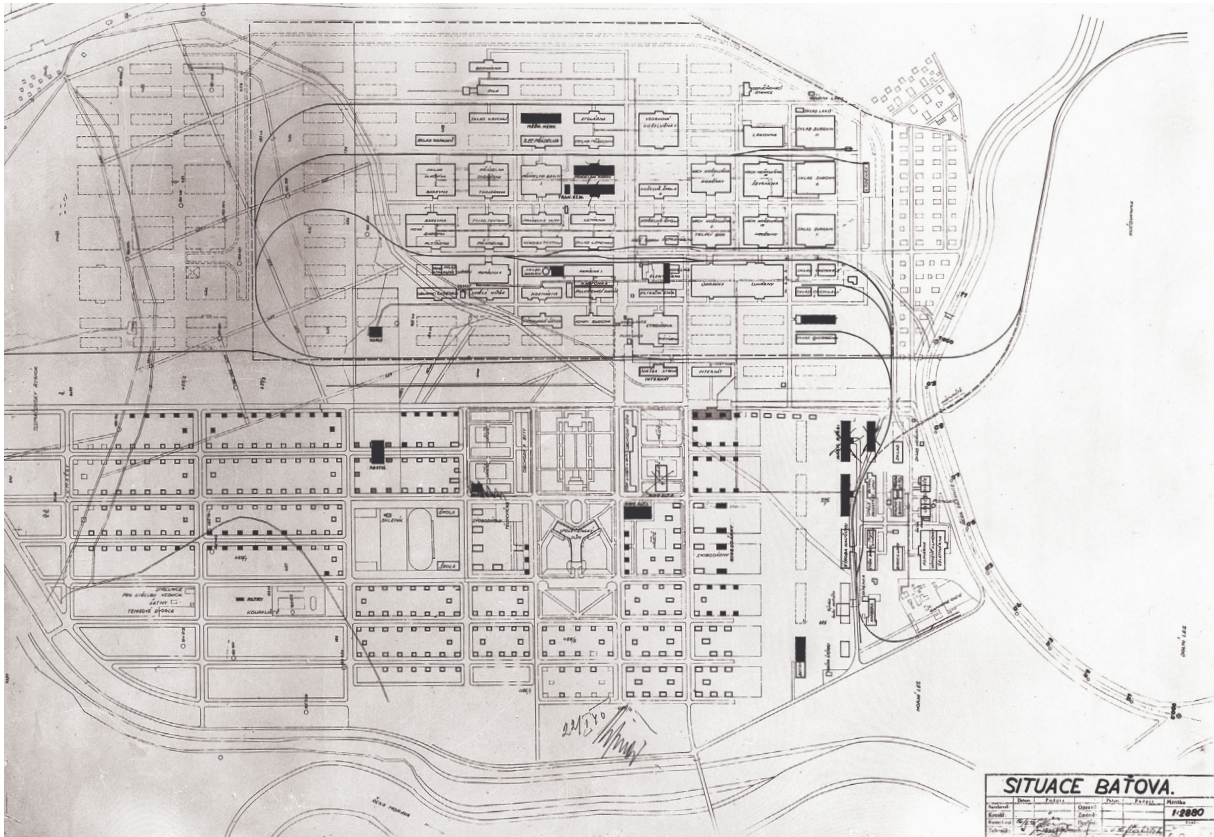


FIGURE 1 Plan of Otrokovice / Bařov, F.L. Gahura 1934-1938.

The building department at Bata became a laboratory for the development of industrial towns. Its architects would converge the company requirements with models as disparate as the Garden City or Miliutin's Sotsgorod<sup>8</sup>. František Lydie Gahura, a disciple of Jan Kotěra, was the architect in charge of the design of the first satellite cities. Their most defining element was the application of functional zoning in a non-hierarchical orthogonal grid that extended all over the site irrespective of its topographical conditions; the grid was used to organize the building program (Figure 1). Among these zones, the factory complex was in the most prominent location, with residential and recreational areas around it. Just like in Zlín, the typo-morphology of the housing blocks in Gahura's regulatory plans was that of cubical semi-detached units forming a checkerboard pattern on a landscaped field, with densities ranging from twenty to twelve dwellings per acre. Italian historian Mario Labò praised the modernity of Bata's urbanism abroad<sup>9</sup>. In particular, he applauded the fact that the company architects were not dissuaded by the specific circumstances of the new sites; what is more, the projects revealed a strong conviction for transforming the ground and subjugating nature in a high modernist fashion<sup>10</sup>, implementing the urban principles of Zlín even more firmly in "virgin territory"<sup>11</sup> than in the original.

In 1935, two reasons provoked a shift in the planning paradigm used in the subsequent Bata towns. First, the construction of the first plans suffered many setbacks, mainly due the fact that building a *tabula rasa* in inconvenient sites caused excessive costs. Second, the company had to face the pressures of local planning authorities and their requests for the use 'traditional' plans instead of modernist ones. Drawing from previous experiences, Josef Gočár and Robert Podzemný developed studies of ideal industrial towns for up to 10,000 people between 1937 and 1939, now under a heavier influence of the Garden City movement. Developing ideal models aimed at making the production of cities fully systematized to avoid unnecessary losses for the company. In their plans, these cities followed an organic leaf structure in which roads in the residential quarters diagonally converged into a green axis leading first to the social and commercial centre, and then to the factory grounds,



which were also in close proximity to the sports and recreation facilities (Figure 2). Contrary to being just a diagram, as Howard's Garden City, Bata's standardized city had a specific formal outcome. These series of towns were, in the end, modernist in disguise, universal products with a strong formal identity, still with little consideration to the natural features of the site.

Le Corbusier's projects for Bata<sup>12</sup> and Soviet planning heavily influenced the next planning model. Architect Jiří Voženílek developed in 1940 a distinct version based on the idea of assembly-line urbanism. A green buffer separated the factory from a series of parallel programmatic bands accommodating civic infrastructure, dormitories, apartments, schools, family housing, and recreational facilities. In contrast to Gahura's plans, here the belt city is understood as a self-contained unit. With the advent of the War, Voženílek ideas radicalized leaning towards 'disurbanization', proposing a precise articulation of relationships among industry, transportation networks, high and low-density settlement units, agriculture, and regional landscape. Voženílek's ideal town served just as an inspirational diagram, and the finished plan adapted to the actual landscape conditions, dissolving the urban figure in nature (Figure 3). These units were self-sufficient and after reaching their maximum population it was better to create a new, parallel town, creating regional patterns that bring to mind some of Hilberseimer's explorations in suburban decentralization.

Over the course of the 1930's and 1940's, planning ideas and debates overlapped, and sometimes there was a succession of alternative plans for the same town, even when construction had already begun. At the same time that the satellites were fulfilling the pressing and practical needs of the company, for their designers, the fast pace of their construction and immediate tangible results became an unusual opportunity to experiment and test in real time with urban and architectural prototypes.

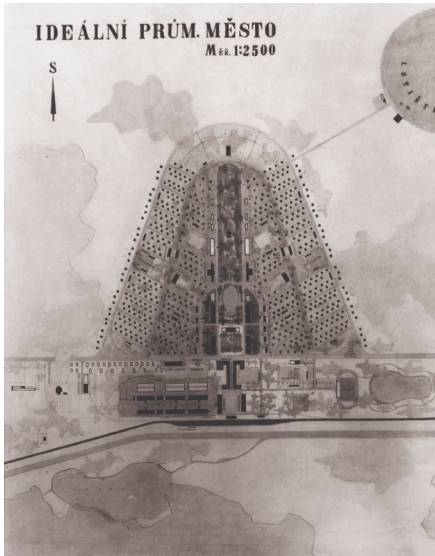


FIGURE 2 Ideal industrial city for 10.000 people, R. Podzemný 1939

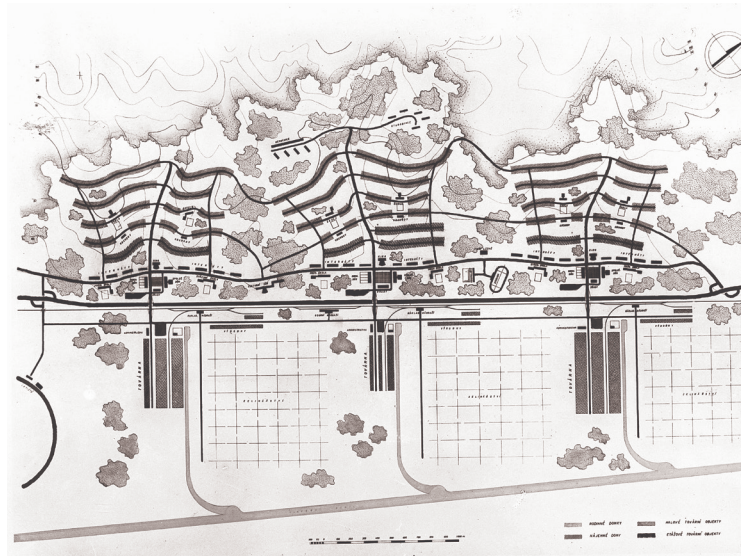


FIGURE 3 Plan of an industrial town in the Moravian River valley, J. Voženílek 1942.

## BAT'A TOWNS IN THE POST-WAR

The events in the Second World War would change the course of Bata's business, including the lives of its urban offspring. With the threat of the war, the planning of foreign units continued, to both secure surplus capital, and to anticipate an eventual transfer of control of the entire concern to a new Zlín in the case of its occupation. With an unclear leadership in Zlín, the work of the architects, and the planning and construction of new settlements continued at a slower pace, while some of the existing ones were trapped amidst warfare and violent occupation. The liberation of the occupied towns was an ephemeral relief for the directors in exile, as the ascension to power of Communist governments would bring the nationalization and loss of ownership and control of many of its factories and towns, including Zlín.

The biggest obstacle for the self-sustained continuity of the Bata towns laid at the core of what defines a company town: the dependency of jobs and economic activity on a single industry. In the towns in the western block, the restructuring of the company hampered post-war development. As Crawford<sup>13</sup> well noted, the consolidation of the welfare states made accessible public social infrastructure that relieved companies of such responsibilities. Instead of that, wages raised and workers incorporated into the consumer market. The subsequent access to car and home ownership changed also the mentality of the company regarding housing provision, and it got rid of its real estate stock by selling land or homes to workers or other entities. When manufacturing shifted to cheaper countries, competitiveness was lost, and factories ended up closing. With no other economic engine and in a relative isolation, the settlements became dormitory towns or suburban enclaves.

In the Communist block, the centralized control of production as well as the existence of safe markets for their products, mainly the USSR, made the towns thrive. The existing housing stock became cooperative or public property. Socialist programs put into service the existing Bata social infrastructure and promoted the construction of new buildings. The need for more housing caused the introduction of new typologies, mainly prefabricated housing blocks. Progress and population growth—beyond the numbers they had been planned for—affected greatly the urban landscape and suburban feeling of the towns. After the fall of the iron curtain, the companies manufacturing shoes barely managed to survive the fierce competition in the capitalist global markets. This has forced the municipal and regional governments to employ active policies to bring back economic development by attracting new employers.

## TŘEBÍČ-BOROVINA: BROWNFIELD REGENERATION

After decades of uninterrupted manufacturing, in the year 2002, the industrial site of Borovina entered in a process of property liquidation. The ruined firm, named BOPO, had been formed in 1991 from the assets of the national company formed after Bata's nationalization in 1945. BOPO struggled to sustain a firm employing 5,000 employees after the fall of communism. After its bankruptcy, Borovina became an “investment opportunity”<sup>14</sup>, an industrial brownfield available to the highest bidder.

It was not until the second half of 2006 that the buildings and the land in the BOPO passed to a handful of new owners, all local entrepreneurs. Under the leadership of Richard Horky, founder and CEO of TTS, four companies commissioned a project for the revitalization of the site and submitted it to the municipal planning office with the aim of forcing a change of land-use for the area in the new zoning plan of Třebíč<sup>15</sup>.

In the following months, the project was developed in collaboration with the municipality. To begin with, the BOPO area was renamed as SOHO Třebíč. SOHO Třebíč was set out as a mixed-use campus that would keep the industrial character of the architecture of the site. The plan basically contemplated the reuse of existing structures for construction of almost four hundred apartments, a shoe museum tannery, and an entertainment and shopping center, while preserving some light manufacturing<sup>16</sup>.



FIGURE 4 Rendering of the revitalization of Borovina, Ateliér M&P Architekti, 2011.

Ultimately, the city would embrace the project of revitalization of the SOHO Třebíč. On the one hand, it would acknowledge the need for a zoning change as the necessary condition for successful revitalization. On the other, it also urged for the improvement of physical infrastructure in the site. In the mind of the city officials, the investment was worth, hoping that introducing new functions in the city would create new employment opportunities.

As construction on SOHO Třebíč was underway, the site developers decided to fully rebrand it. The project was re-launched with improved three-dimensional visualizations and the new name of Borovina in February 2011<sup>17</sup> (Figure 4). On the one hand, the change was explained under the argument that recovering the name of Borovina was more appropriate. On the other, abandoning SOHO and rooting the new Borovina in Třebíč was a sign that TTS would scale down its ambitions. In fact, Borovina had to adapt to the conditions of the real estate market after the crisis and rethink its building program. For example, the plans for the two standard Bata buildings changed; instead of housing, they will be used for light manufacturing, office space, and an educational institution. Regardless of the slow-down in the redevelopment plans, TTS, and its partners have shown a strong determination in developing public engagement with the project. Starting 2011, a yearly festival has been organized in the summer months. Further, in summer 2015, an interactive eco-technical museum opened in an old boiler. In parallel, the city government also continued its commitment to the project. To begin with, the municipality invested further in the improvement of the public spaces, lighting, and landscaping. In addition, the city moved there the so-called House of the Children and Youth<sup>18</sup>.

All in all, it could be said that rebooting Borovina as a more realistic, context-based, and low profile project may have ended up benefiting all the parts. To begin with, the effort in connecting to the identity of the site, by preserving the architecture, giving value to its history as a Bata site, and organizing free activities on the former industrial grounds, increased the public acceptance of the project. Finally, bringing in public facilities, and quickly adapting to the post-financial crisis market prevented that Borovina became a ghost district full of empty housing. Extending the spirit of regeneration to the neighbouring former Bata colony would guarantee greater success, however, the current mix of residential, light manufacturing, offices, public and educational facilities make of Borovina a promising case to look at in its future development.





FIGURE 5 Batawa Homecoming Plan, 2007. (source: BCD)

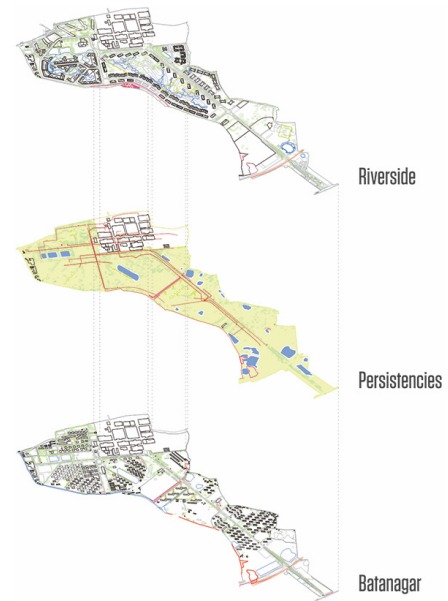


FIGURE 6 Continuities and emerging types on the site of Batanagar.

## BATAWA: NEW URBANISM

The decline of Batawa was caused by the accumulation of a series of corporate decisions and economic shifts. First of all, in the early 1960s, the Bata Shoe Organization began plans to move the post-Zlin London headquarters to Toronto<sup>19</sup>. Secondly, back in the Batawa factory, labour relations became difficult in the late 1970s<sup>20</sup>. Furthermore, in the 1980s, Bata changed its view on vertical integration and quit non-shoe manufacturing activities<sup>21</sup>. Finally, increasing competition from emerging markets would lead to a downsizing of operations and eventual closure of the factory that gave a meaning to Batawa<sup>22</sup>. The town never became being the new Zlín in the years after the war. However, it became a definitive home for a small and tight community of Canadians, Czechs, and other Europeans.

In 2005, the properties of Bata Limited in Batawa changed ownership and, subsequently, new plans to revamp the former company town emerged. Sonja Bata, the wife of Tomas Bata Jr., purchased the land from the Canadian company as a personal investment and formed the Batawa Development Corporation (BDC) to manage and develop the properties<sup>23</sup>. Although Mrs. Bata agreed with the decision of closing the factory, she had been worried for the community since then: Batawa was for her husband and her more than just and buildings, it had been their home.

Instead of a sprawling development of individual homesteads, future Batawa would be based—in Mrs. Bata’s words— “on the old values and systems” of a community<sup>24</sup> and sustainability. Those ecological and community ideals would be translated into physical form by following the guidelines of the Leadership in Energy & Environmental Design for Neighbourhood Development (LEED-ND) certification<sup>25</sup>; LEED-ND has at its core the ideas of New Urbanism and Smart Growth for sustainable community development. Thus, in late summer 2007, after intense consultation with the community, the BDC submitted a proposal (Figure 5) based on these principles and eventually a Special Policy Area for Batawa was created<sup>26</sup>.

However, if the first objective, getting the municipality on board, was eventually a somewhat easy process, finding actual business partners and investors proved to be much more challenging. With the real estate market hit by the recession, and very strict regulations concerning sustainability and design, developers “shied away”<sup>27</sup> from Batawa.

Despite the obstacles, the BDC and Sonja Bata have shown an unyielding tenacity in keeping alive and reactivating the project after the financial crisis. To begin with, by investing on the ski hill, one of the main community assets in its property<sup>28</sup>, supporting grassroots initiatives, and programming numerous family oriented activities, Batawa has positioned itself as a local family destination.

Nonetheless, the strongest evidence of the BSC and Sonja Bata's commitment to the town was the impulse given in the recent years to the restoration of the factory building and its transformation into an apartment building. The Bata factory was alike other Bata factories in Europe, although its looks were altered in the 1970s when its facade was covered by insulating aluminium panels<sup>29</sup>. Initially, the plan was to tear down the old plant since it was a symbol of the company's control over the town. Nonetheless, Mrs. Bata retracted after the local community cried for the conservation of an "iconic"<sup>30</sup> and meaningful place for them during a town meeting. Subsequently, the BDC changed its proposal and embraced the factory building as one of the icons of the new development<sup>31</sup>. The 1939 structure is on its way to being transformed into a mixed-use condominium building. Reportedly, the "adaptive reuse" of the buildings would "reconfigure" the interior while "restoring" the exterior it to its original architecture<sup>32</sup>.

## BATANAGAR: NEW TOWN

In spite of the new socio-political scene brought by independence and partition, economic ups and downs, ever-increasing trouble with worker's unions, long lockouts and strikes, the Batanagar factory managed to remain in operation with relative success. Nonetheless, economic liberalization in the 1990s and a failed marketing strategy put the company in red for the first time. The Bata Shoe Organization took control of its Indian branch and began the radical financial turnaround of Bata India<sup>33</sup>. After a long negotiation with the union, the Bata management decided in 2000 that the operating expenses of Batanagar were unacceptable for the company. New austerity measures included the phasing out of management subsidies, canteen facilities, electricity, health care, and township maintenance<sup>34</sup>.

In 2005, Bata India Limited formed a joint venture with Calcutta Metropolitan Group to redevelop the site as an integrated new town named Calcutta Riverside. As Gavin Shatkin has noted<sup>35</sup>, Riverside is an instructive model illustrating the planning of "urban integrated mega-projects" in Asia. In fact, when it was announced, Riverside had the typical elements of an upscale new town development in Asia, all for a population of 30,000. In the project website, Riverside is defined as "a city in itself, a self-sufficient development that offers quality life with all the modern comforts and amenities, with utmost priority being given to convenience and safety." Besides housing developments of high-rise condominiums and villas, the new town will have numerous amenities. These include an international school, a shopping mall, a sports club, a golf course, a "world-class" hospital, a riverfront promenade, a multipurpose maidan, and even a film studio.

The entire building program in Riverside was designed by some big names of Indian architecture and landscape design<sup>36</sup>. Its build form was organized along the structuring axes of old Batanagar, since still operational electrical, water, and sanitation infrastructure run below those roads<sup>37</sup>. Furthermore, its design was heavily determined by the existing 'nature', when in fact topography and landscape were totally altered during the construction of the town by the Bata architects. As Nouman Malik, an architect working for Hiland Group, detailed during an interview on February 21, 2012, environmental laws in Kolkata enforce the conservation or transplantation of trees on the site, as well as the preservation of the current water bodies.

However, the project presented differences with other developments of new towns in India. On the one hand, as Bata India owned all of the land, there was no need of contested legal mechanisms as eminent domain to build the new development. On the other, the project deliberately sought the consent of the existing and surrounding

population by the relocation of street vendors in a transportation hub by the rail station, the provision and access to some public spaces for community use and festivals, and the preservation of the Bata schools and temples. In sum, whereas the old housing stock is being slowly demolished, part of the and environmental legacy of the modern town will be preserved (Figure 6).

What is more, Riverside does not mean the total disappearance of working-class Batanagar, or at least, it presents a new version of it. That is, since the Bata factory is still in operation, housing for the workers is part of the program of the town. More specifically, Bata employees were rehoused free of cost in a more compact medium and high-rise development on the site.

## CONCLUSIONS

The legacy of Bata is uneven and somewhat problematic. The contemplation of its transformation inevitably causes nostalgia. However, this destiny is consistent with Bata's modernism. Modernist architecture's functional specificity, standardized methods, and materiality were thought for quick construction, not for lasting. However, the work of the architects and planners of Bata left several intended or unintended legacies that still are still shaping the contemporary form and future development of the towns.

The most obvious one is the inherent flexibility of the industrial structures, and also their iconicity. As it was shown, production in Batanagar continues in the factories built in the 1940s. Besides, both the redevelopment projects of Borovina and Batawa have found alternative functions that, while keeping their identity, will allow the manufacturing halls to be part of a post-industrial economy.

However, the scope of Bata's project and its intended legacy was not really based on the permanence of architecture. Mostly, it entailed the construction of a vision through tangible and intangible infrastructures that considered people and community making as the main asset of the company. Those communities are probably the greatest legacy of Bata, and, to the extent of their capabilities, the safeguards of both its heritage and future life.

On top of all that, in its extreme nature, the case of Batanagar adds to the discussion the idea of planning future legacies and expands the notion of what legacy means. As it was shown, a speculative large-scale project was in the end conditioned by some of the pre-existences of the Bata project, in particular, social and physical infrastructure, landform, and landscape. Whereas the old housing estate is being demolished, the high-modern transformation of the land and water bodies, its vegetation, and the social networks and programs will remain in some form.

In "Preservation is overtaking us," Rem Koolhaas<sup>38</sup> argued for considering preservation as a prospective activity, one that must anticipate what will be built for posterity or not—as Bata proposed. If that is the way to follow, in the context of rapid change and continuous transformation of an urbanizing world, could all this mean that our work as planners of urban environments is condemned to fast consumption, replacement, and oblivion? The Bata case shows that there is room for agency. Shifting from the univocal understanding of heritage as preserved physical remains to a more fertile discussion about the multiplicity of forms—community, landscape, or infrastructure—in which planning legacies can prevail, and coexist with alternative futures in a successive palimpsest, is a lesson that opens a new field of action and relevance for designers and policy makers.

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No potential conflict of interest was reported by the author.

## Notes on contributor

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## Endnotes

- 1 This paper is based on the author's Ph.D. dissertation (defended in February 2016 and still unpublished): Víctor Muñoz Sanz, "Utopía En Red: Arquitectura Y Urbanismo de Las Ciudades Satélite de La Bata Shoe Company, 1930 Al Presente" (Universidad Politécnica de Madrid, 2016).
- 2 For a general overview on the urban history of Zlín and also of the company's history, see: Architekturmuseum der Technischen Universität München in der Pinakothek der Moderne., Zlín: Modellstadt Der Moderne (Berlin: Jovis, 2009); Katrin Klingan and Kerstin Gust, eds., A Utopia of Modernity: Zlín: Revisiting Bata's Functional City (Berlin: Jovis, 2009).
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- 6 Ondřej Ševeček and Martin Jemelka, Company Towns of the Baťa Concern: History, Cases, Architecture, Economic History (Stuttgart: Franz Steiner Verlag, 2013).
- 7 The creation on satellites adds a new layer to the resemblance of Baťa's project with Toni Garnier's Cité Industrielle, since as Dora Wiebenson has stated 'the Cité was to represent one of a federation of cities, among which a bond would be created through emphasis on communication and the exchange of goods' (1969, p.18).
- 8 Gahura's references were compiled in: Gahura, F.L. (1937). "Literature and articles", in Plan for an ideal industrial town, Moravský zemský archiv v Brně, Státní okresní archiv Zlín, fond Baťa, a.s., Zlín, sign XV, inv. c. 126, fol. 124; Gahura, F.L. (1937). "Overview of the Development of the Industrial Garden City", in Plan for an ideal industrial town, Moravský zemský archiv v Brně, Státní okresní archiv Zlín, fond Baťa, a.s., Zlín, sign XV, inv. c. 126, fol. 126-128.
- 9 Mario Labò, "Colonie Baťa All'estero," Casabella, no. 9 (1936): 28-47.
- 10 Examples of this attitude toward the natural conditions of the site can be seen in the depictions of the construction process of Baťov in Czechoslovakia, and Batanagar in India. In both sites, heavy ground works and water engineering projects had to be made to get the site ready for the modernist plan.
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- 18 Hana Jakubcová, “Žádné Referendum Nebude. Třebíč Postaví Nový Dům Děti ve Staré Továrně [There Will Be No Referendum. Třebíč Build a New House for Children in Old Factory],” *iDNES.cz*, March 25, 2014, [http://jihlava.idnes.cz/trebic-vybuduje-novy-dum-deti-ve-stare-tovarne-na-obuv-referendum-nebude-14i-/jihlava-zpravy.aspx?c=A140322\\_2048395\\_jihlava\\_zpravy\\_mkk](http://jihlava.idnes.cz/trebic-vybuduje-novy-dum-deti-ve-stare-tovarne-na-obuv-referendum-nebude-14i-/jihlava-zpravy.aspx?c=A140322_2048395_jihlava_zpravy_mkk).
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- 20 *Ibid.*; Ashley Barrons and Nancy File, “A History of Batawa,” Coursework for Business Administration Program (Belleville, ON: Loyalist College, April 21, 2006).
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- 22 “Bata Closing Factory in Batawa,” *CBC News Canada*, October 19, 1999, <http://www.cbc.ca/news/canada/bata-closing-factory-in-batawa-1.174256>; “Bata Announces Reorganization of North American Operations: Batawa, Ontario Plant to Be Consolidated with Belcamp, Maryland Facility,” *PR Newswire*, October 18, 1999, <http://www.prnewswire.com/news-releases/bata-announces-reorganization-of-north-american-operations-batawa-ontario-plant-to-be-consolidated-with-belcamp-maryland-facility-76695197.html>.
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- Figure 1: Moravský zemský archiv v Brně, Státní okresní archiv Zlín, fond Baťa, a.s., Zlín, sign XV, img. 228a.
- Figure 2: Moravský zemský archiv v Brně, Státní okresní archiv Zlín, fond Baťa, a.s., Zlín, sign XV, kart 1672, inv. č. 19, fol. 1.
- Figure 3: Moravský zemský archiv v Brně, Státní okresní archiv Zlín, fond Baťa, a.s., Zlín, sign XV, img. 1139b.
- Figure 4: TTS Development. "Borovina ...živá dodnes!, 2015." <http://festival.borovinazivadodnes.cz/5-fotogalerie.html>
- Figure 5: Courtesy of Batawa Development Corporation.
- Figure 6: Víctor Muñoz Sanz, based on digital files provided by Hiland Ltd.

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# REINDUSTRIALISATION DESIGN: BARCELONA METROPOLITAN REGION - AS CASE STUDY FOR EXPLORING THE ROLE OF SPATIAL PLANNING AND DESIGN IN REINDUSTRIALISATION FOR THE GOOD (WORK) LIFE

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Over the past three decades there has been a gradual process of overall deindustrialisation in western developed countries (western Europe, USA and Japan). This fact is perceived as a risk by those countries, which want to reverse this trend to remain economically competitive and avoid having their working middle class disappear. In this context, reindustrialisation is an emerging trend in Europe and increasingly seen as an economic growth opportunity by both companies and governments. It is part of a wider renewed interest in advanced manufacturing in both politics and society. It has been widely researched both in terms of concept and implications, but its relation to spatial design is underdeveloped, as the focus is mostly on the economic potential of reindustrialisation. This study argues: that previous phases of industrialisation and deindustrialisation have had direct and intrinsic links to spatial design; that spatial design is relevant when considering reindustrialisation for a number of social, environmental and economic reasons; and that reindustrialisation can contribute to fulfil broader societal goals through design. As a case study, the Barcelona Metropolitan Region in Catalonia, Spain is explored as one of the main industrial regions of Europe. The region's industrial location patterns of the past, and its future advanced manufacturing strategies are studied at a multi-scalar level, presenting the need for coordinated action through design thinking. This study positions design at the core of said coordinated action and explores its potential operative force.

## **Keywords**

reshoring, industrial landscape, reindustrialization, third industrial revolution, welfare paternalistic industrialist models, industrial philanthropy, industrial and scientific parks, factory architecture, urban design, spatial planning, role of design





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# LEARNING FROM GARDEN CITIES: INTERNATIONAL NETWORKS TO ADDRESS CLIMATE CHANGE

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In the past, several urban visions were proposed by historians, academic and practicing planners, geographers, environmentalists, preservationists, public policy makers, communities and other stakeholders interested in urban processes, and some of these visions were planned, built and can be experienced today as best practice examples of resilient urbanism. For example, Ebenezer Howard's 'garden' cities, i.e. a network of urban settlements combining city and country characteristics in order to manage social and economic change, has proven to be one of the most enduring and transferable of these visions, influencing urban planning in Europe and worldwide (Ward 2016; TCPA 2015, 2014, 2011; Dunn, Cureton and Pollastri 2014; Stern, Fishman and Tilove 2013; Ross and Cabannes 2012; Hall and Ward 1998; Hall 1988; Howard 1898).

Nowadays, the world's population is projected to reach 8.5 billion by 2030, and up to 9.7 billion people by the year 2050, of whom 70% will be living in cities (UN 2015; WHO 2010). This pervasive densification of urban populations will increase strains on the built environment, public and green infrastructures, and other urban and natural systems of the planet. On the other hand, static and mobile computing technologies are embedded in all aspects of our daily life, and particularly in today's cities. Moreover, information and communication technologies (ICT) are currently being developed worldwide by major transnational corporations, in order to envision, plan, monitor, and manage 'smart' cities from a top-down perspective (Kitchin 2015, 2014; Boulos and Al-Shorbaji 2014; Henriques 2014; Manville et al. 2014). It could be argued that the association of both trends, i.e. urbanisation and digitisation, which has been leading to the production of previously unimaginable quantities of data (Dragland 2013), has the potential to inform urban processes and places, but there is a need for evidence that it can also support civic and social networks for resilient local communities.

Could the worldwide proliferation of corporate ICT infrastructures in smart cities be seen as a new form of extraction urbanism? Could successful lessons from the garden cities movement be transferable to contemporary civic and social movements in smart cities? In this paper, recent developments in European smart cities are identified, and comparisons are drawn between these and the established planning history and legacy of the garden cities' vision, around the world.

If data is acknowledged as the new gold, oil or soil, the global development of tangible and intangible ICT infrastructures in smart cities could be regarded as a potential new form of extraction urbanism. Within European smart cities, opportunistic and participatory data mining conducted by corporations and local communities (e.g. responding to recent extreme weather events) is compared with the planning history and legacy of the garden city movement. The usability of transferable lessons between 'smart' and 'garden' visions in Europe is discussed, in order to support new bottom-up perspectives on civic and social international networks to address climate change.

## **Keywords**

data mining, extraction urbanism, garden cities, resilient local communities, smart cities



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# REVITALISATION OF A HISTORICAL INDUSTRIAL PORT DISTRICT - THE GOODS STATION DISTRICT IN ANTWERP

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Built after the city expansion in the 1860s-70s, the former goods station district in the north of Antwerp, near the historic port, was once dominated by nations and warehouses. At the end of the 20th century, the harbour activities moved further northwards. As a consequence, building promoters got interested in the vacant warehouses because of their valuable, large plots near the centre of the city. Their safeguarding is endangered by the speed and intensity by which the urban space is being redeveloped. However, the warehouses are a key element for the revival of the neighbourhood. This paper aims to provide a scientific base to support their preservation and adaptive reuse. It analyses the planning history of the district over the past 150 years, defines the historical importance of the warehouses and assesses reconversions of warehouses and their changing integration in the urban fabric. The study aims to support qualitative redevelopment projects and therefore it is essential to revalue historic industrial buildings in the evolving city centres and to investigate how this valuable heritage can be preserved for further generations.

## **Keywords**

historical industrial port district, Industrial heritage, warehouse, redevelopment, Antwerp

## **How to Cite**

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## INTRODUCTION

Leveraging industrial heritage contributes to the success of re-purposed industrial areas. This is also the case for the former Antwerp goods station district located in the north of the city, nearby the historic port. This district was developed as from the 1870s, when new urban space became available after the demolition of the 16<sup>th</sup>-century city walls in the 1860s. This new industrial zone was, and still is, characterised by many impressive warehouses. In the course of the 20<sup>th</sup> century, multiple economical activities were relocated, following the development of the port towards the North. After a period of degeneration, the goods station district became a residential district. In 2012, the *Ruimtelijk Uitvoeringsplan 2060 (RUP)*<sup>1</sup> was published to guide future developments in the northern urban district of the city.

This paper analyses the planning history over the past 150 years of this specific district and is based on a literature study and archival research as well as in situ research. Cadastral information, urban cartography and historic address books allow to define and to understand the development and functioning of the district. Of particular interest is the *Inventaris Onroerend Erfgoed*, which is a digital inventory of immovable heritage (started in print in 1992, but digitally updated since 2007).<sup>2</sup> Besides, relevant research on Antwerps' warehouses was undertaken by historian Alfons Thijs and engineer Albert Himler in the 1970s and 1980s.<sup>3</sup> Though, the studied district stayed out of focus in the past. Henceforth, additional archival research (urban building and environmental permits) was necessary to understand the historic significance of the warehouses. On-site investigations provided insight into the recent developments of the district. They enabled to evaluate the reconversion projects of the warehouses and the changing integration of the latter in the urban fabric. This critical assessment aids to support the preservation and adaptive reuse of the remaining warehouses, taking into account the expected impact of the RUP 2060.

## CHANGING URBAN CONTEXT OF THE ANTWERP GOODS STATION DISTRICT

In the 19<sup>th</sup> century, the city of Antwerp underwent many changes. The industrial port activities flourished and the old city walls were demolished. The harbour evolved into a transshipment port, with the construction of many warehouses in the goods station district as a consequence.

## PRE 1860: EXPANSION OF THE CITY OF ANTWERP IN THE 19TH CENTURY

The investments of Napoleon to expand the port of Antwerp during the French period (1792-1815) revived the harbour activities in the 19<sup>th</sup> century. From the 1850s onwards, Antwerp became an important commercial port.<sup>4</sup> The city quickly faced two major problems: a shortage of space for port activities and a shortage of accommodation for the influx of related workers and their families. The existing infrastructure could not cope with the increased flow of goods. There were only five docks for loading and unloading, the storage capacity was far too low and the rail transport to the hinterland was inadequate.<sup>5</sup> Moreover, many people migrated to the city because of the declining agricultural activities at the countryside and searched for new (financial) perspectives in the city. Simultaneously, the available living area intra-muros became insufficient, which led to a strong plea for the demolition of the historic city walls<sup>6</sup> and to the further construction of illegal houses in the military perimeter extra-muros.<sup>7</sup>



FIGURE 1 The new building blocks are indicated in dark brown and follow the traces of the 16th-century city walls. The new goods station (1874) is not yet drawn on the map.

Between 1859 and 1864 a new polygonal fortification system, the so-called Brialmont fortification, was built at a distance of 2 to 2.5 km from the 16<sup>th</sup>-century city walls.<sup>8</sup> The old fortifications were demolished shortly afterwards. The former military engineer Théodore Van Bever (1821-1875) created a master plan for the newly achieved urban space. The attached *mémoires* states that “the development of the port activities is the main goal”, thus to compete with other harbours like Amsterdam and Hamburg. The plan also included a semi-circular boulevard around the city, the so-called “leien”, based on the traces of the former city walls. The urban area along the boulevard was divided in building blocks by a grid of straight streets and sold to the *Société Immobilière d’Anvers*, which divided them into parcels to sell. Additional streets and buildings quickly filled the remaining area up to the Brialmont fortifications.<sup>9</sup> (fig. 1)

During the French-German war of 1870-71, ships avoided French and German harbours and came to Antwerp. The harbour traffic of goods increased substantially and the harbour infrastructure, the railway network and the overall storage capacity proved again to be insufficient.<sup>10</sup> Henceforth, the three docks were enlarged and five new docks were constructed. The goods station (1843) lacked space to expand because of its position between the old harbour and the city centre. Therefore, it was decided to construct a new goods station in 1874, located between the newly constructed docks and the new district designed by Van Bever on the old city walls. Warehouses established themselves in this district, which became the new goods station district. The goods that arrived by ship were stored in these warehouses before further transportation by train, or vice versa.



## 1874 - 1930: ANALYSIS OF THE GOODS STATION DISTRICT AND ITS WAREHOUSES

From the 1870s onwards, new warehouses and temporary timber sheds were erected in the port area and in the goods station district. The continuing economic expansion of the port and the shortage of accommodation in the city left their mark on the goods station district. Although the first houses in the district were built in 1869-70, the construction of buildings sped up only 20 years later.<sup>11</sup> Thanks to the almanacs it is possible to locate the already constructed buildings in 1888 and 1900 and to analyse the evolution and the character of the district.<sup>12</sup> (fig. 2) An additional study of the almanacs until 1960<sup>13</sup>, with a ten years interval, proves that the overall character remains unchanged. The shape of the parcels is derived from a cadastral map that dates between 1903 and 1911.

The two maps show clearly how the building activity progressed from the surrounding streets towards the centre, as can be seen on figure 2. Also, the building activity moved from the street corners, usually occupied by pubs, towards the middle of the streets. The port and the goods station were situated at the northern border of the district. Logically, there was a concentration of warehouses and pubs for the dockers in the Ellermanstraat, in front of the goods station. In the East, an already existing residential neighbourhood stimulated the implantation of taverns, shops, residences and working-class houses in the Lange Dijkstraat. This was also the case for the southern border, which is situated next to a square. The port's proximity was not only reflected by the warehouses at the northern area, but equally by the constructions of nations<sup>14</sup> and by the population of the district, such as dockers, warehouse workers, commercial representatives, captains and sailors. From 1900 onwards the almanacs also mention the presence of many brothels.

The construction of houses in the southern area progressed at a much lower pace than in the other areas, though the parcels in the neighbourhood of the Leien were overall very attractive for the upper classes.<sup>15</sup> The slower pace was also noticeable inside the district where since the 1870s almost exclusively large scale warehouses and nations were erected. It was commonly known that warehouse owners neglected legal and administrative directives, as well as regulations on hazardous and polluting industries.<sup>16</sup> Because of fire hazard, noise and odour nuisance, urban nuisance and littering, new residents established themselves at the borders of the district. Only dockers' taverns located themselves inside the district on the street corners. Once the parcels at the edge were saturated, the ever-increasing population moved to the available space inside the district. Eventually by 1910, most of the parcels in the district were occupied. The presence of the port and the goods station, and consequently of warehouses and nations, completely determined the structure and the social fabric of the district.

## HISTORICAL DEVELOPMENT OF WAREHOUSES IN THE GOODS STATION DISTRICT

Between 1870 and 1930, at least 32 warehouses were built in the goods station district, of which five were demolished. This paper analyses 17 still existing warehouses that are located at the street side. (fig. 3) Further research will have to deal with the remaining ten smaller warehouses, all built between 1900 and 1930 and located inside building blocks behind the owners' house or office.<sup>17</sup>

The new district near the port and near the new goods station was very attractive for nations and traders who constructed large scale warehouses in the area. *Katoen Natie* was the first nation that expanded beyond the old city area. In 1869 the company bought a piece of land right in the centre of the goods station district.<sup>18</sup> Afterwards more nations settled down in the district.<sup>19</sup> Also traders moved to the new district, like *Osterrieth & C°*, a German business family who built a large one-storey warehouse at the Ellermanstraat (1870s, demolished in 1910s) and three large warehouses Alfred (1881), Catharina (later Paolo, 1881) and Ernest (1881).





FIGURE 2 The goods station district has a mixed residential and industrial character: 1888, below: 1900.

Many nations and traders divided their warehouses in smaller entities to be rented to different tenants. The stored goods in the station district were divers. Many warehouses stored flammable goods such as coal, leather, animal skins, horns, wool, copal, rubber, gum and naphtha, as well as straw and hay. Some also stored grains, seeds and legumes. Brussels' warehouses built in the 19th and 20th century often had specific characteristics depending on the materials that needed to be stored.<sup>20</sup> This has not yet been observed in this Antwerp's district. The handling companies did specialise in specific goods<sup>21</sup> and rented to tenants of the same sector, although they also rented their warehouses for the storage of other kind of goods. As opposed to the Brussels' warehouses, Antwerp's warehouses had multifunctional constructions suitable for a wide range of goods.

Because of the abundant availability of building surface in this district, not only big, multi-level warehouses were built, but also lower premises that could be upscaled afterwards. The most impressive example of this is the Magasins Argentins<sup>22</sup> at the Ellermanstraat, a one level building that covers an entire parcel of 9000 m<sup>2</sup>. (fig. 4) It was possibly built during the French-German war of 1870-71 and rebuilt in 1946 after being bombed during the Second World War. For nine of the 16 warehouses, the goods were lifted inside the building by a pulley on the façade, sometimes with a protective hood. The pulleys of three of these warehouses have been preserved.<sup>23</sup> The other warehouses had a hoisting shaft behind their façade through which the goods were moved.



1 1869 Headquarters Katoen Natie 31, Van de Wervestraat



2 1870s Magasins Argentins, Société Anonyme des Magasins Argentins



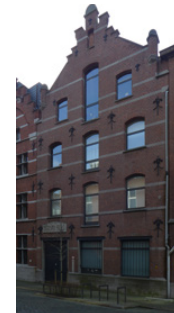
3 1870 Magazijn Elsen AJA Elsen, 5, De Pretstraat



4 1873 Headquarters Tabaknatie 66, Van de Wervestraat



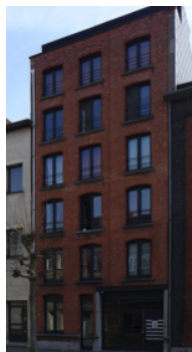
5 1881 Magazijn Alfred Osterrieth & C° 50, Duboisstraat



6 1881 Magazijn Paolo Osterrieth & C° 46, Duboisstraat



7 1881 Magazijn Ernest Osterrieth & C° 11, De Pretstraat



8 1885 Graanmagazijn Private trader 51, Van de Wervestraat



9/10 1893 Magazijn La Nationale and other, Katoen Natie 36, De Waghemaekerstraat



11 1894 Headquarters Oude Buildragersnatie 8, De Waghemaekerstraat



12/13 1898 and 1908 Warehouses Private traders 4-6, Van de Wervestraat



14 1902 Headquarters Kraannatie 57-67, Van de Wervestraat 20-24



14 1903 Warehouse Private trader 22, Van Aerdstraat



16 1906 Headquarters Valkeniersnatie



17 1929 Boerenbond Between 34 and 36, De Pretstraat

FIGURE 3 Overview of the seventeen most significant warehouses and nations in the goods station district

Warehouses often have a simple facade in red brick with large gates and a strict rhythm of windows, only being interrupted by goods doors if the goods were brought in through the façade. The ratio windows-wall is very low to protect the goods and since light wasn't necessary to store them. By the end of the 19th century, as for civil architecture<sup>24</sup>, the latest architectural styles were often applied for the facades of the warehouses to increase their prestige. This was also the case in this district. There are warehouses<sup>25</sup> in eclectic style and neo-classical style, and in the traditional neo Flemish Renaissance style with alternating layers of brick and sandstone with decorative wall anchors. It were mostly nations that opted to do so, but also Osterrieth & C<sup>o</sup> carried out two of its warehouses facades in the latest styles. Finally, the Boerenbond warehouse has a sober art deco facade. The construction of the warehouses changed significantly during the second half of the 19<sup>th</sup> and the beginning of the 20<sup>th</sup> century. Also here, we trace back the general evolution from timber frames over iron and steel towards reinforced concrete frames. The Mariano & C<sup>o</sup> warehouse (1872) is for example built up with cast iron columns. The last timber-framed warehouse, in the Kraannatie, dates from 1903.<sup>26</sup> Although two early building permits (1900) were found in the archives for the construction of coal warehouses in reinforced concrete, situated between the Dubois- and Ellermanstraat, it is unclear whether these warehouses were actually built.<sup>27</sup> The oldest still existing reinforced concrete warehouse, for the Boerenbond, dates back from a later period, namely 1929. It is also the last large warehouse that was built in the district.<sup>28</sup> During the twentieth century fire destroyed two warehouses and the Magasins Argentins were destroyed by V1 flying bombs in 1944.<sup>29</sup> All three were rebuilt with reinforced concrete structures.

In a report from 1874 on the fire safety of industrial buildings, Magasins Argentines is praised for the fact that it was completely isolated in relation to the surrounding buildings.<sup>30</sup> Also the one-storey warehouse of Osterrieth & C° (demolished) was separated from the building block by a street. Osterrieth did the same for Magazijn Alfred and Paolo, separated from the surrounding buildings by a covered passageway for loading and unloading.<sup>31</sup> Many warehouses that stored flammable and/or hazardous goods had to implement specific regulations.<sup>32</sup> Besides fire hazard, there could also be noise and odour nuisance.<sup>33</sup>

At the end of the 20th century, the character of the district changed dramatically. The port had moved again northwards as a consequence of the increase of production and the technical developments in the shipping industry. The majority of the nations and traders left the district, other reorganised their activities and concentrated their offices in the district.<sup>34</sup> The district was hit by social unrest and deprivation as a consequence of the lack of socioeconomic opportunities. Still, already in the 1990s some warehouses as Magazijn Elsen, Alfred and Paolo were re-purposed by forward-thinking entrepreneurs.

## CURRENT AND FUTURE REVALUATION OF URBAN ANTWERP WAREHOUSES

In the 1970s and 80s, almost every European city had to deal with the effects of urban flight and the upscaling of economy.<sup>35</sup> The European Union began to pay attention to the problems in the cities and the Belgian and Flemish government quickly followed and invest in urban development programs. Many plans and projects were elaborated and integrated into the Strategisch Ruimtelijk Structuurplan Antwerpen (strategic master plan Antwerp) in 2006. The government focused on the redevelopment of five areas, of which two are relevant for this paper: 't Eilandje, the neighbourhood of the oldest docks, consisted of abandoned warehouses in poor condition. In 2002 a new master plan was developed and today it is an attractive area with the museum MAS (2010, Neutelings Riedijk), restaurants, apartment buildings and expensive warehouse lofts. The second redevelopment project Park Spoor Noord (finalized in 2009) foresaw a park with space for community and city events on the grounds of the former goods station, which was closed in 2000 and demolished. Today the Artesis Plantijn University College, Customs and Excise of Antwerp and some apartment buildings occupy parts of the site. Both 't Eilandje and Park Spoor Noord have been important first stimuli for the redevelopment of the former goods station district, leading to the improvement of the socioeconomic situation.

In 2012, the City of Antwerp published the Ruimtelijk Uitvoeringsplan 2060 for Antwerp-North. This plan identifies the needs and shortcomings of the area. The RUP specifically mentions that the warehouses, which are concentrated near the former goods station, are part of the identity of Antwerp-North, colouring the urban fabric of this unique part of the city.<sup>36</sup> However, since this area came under the attention of project developers, the larger buildings and the buildings in the inner blocks are at risk to be torn down or irreversibly changed. Nevertheless the report offers a legal basis for the government to prevent building promoters from demolishing warehouses with heritage value (inside the building blocks).<sup>37</sup> The question rises whether all valuable warehouses in this district are listed. This research shows that at least two warehouses with heritage value in the goods station district are wrongly not on the list: the Magasins Argentins (1870s) and the Oude Buildragersnatie (1894). The importance of the first can be found back throughout this paper. The second one is a small warehouse and although the nation never expanded, it still survived the 21th century. Its façade with pulley has been left untouched, as has been its interior with all the original equipment. Until today it houses the administrative headquarters of the nation.





FIGURE 4 The RUP 2060 sets strong guidelines for the further development of the district

The impact of the RUP 2060 on the still existing warehouses is analysed to foresee which problems can occur with respect to the safeguarding of the warehouses and their specific characteristics. RUP 2060 focuses on five main principles: stressing the residential character of Antwerp-North and the necessity of a variety of housing typologies, defining strategic commercial axes, taking measures to increase green space, stimulating entrepreneurship and pinpointing project areas for strategic impulses.

The residential function of the neighbourhood, the first main principle, is not necessarily a problem for the warehouses, as long as their characteristics are respected and their new function is not dominant. Magazijn Elsen and Paolo are successfully reconverted into lofts and offices. The open floor plans of the warehouses are largely preserved and the structure is left uncovered. However the program of small apartments and an aparthotel does not enable to maintenance of the warehouse characteristics. The warehouses contribute to the creation of a variety of housing typologies but cannot house all typologies successfully.

The second principle is the limitation of trade and catering to some commercial axes and to corners of the building blocks, thus supporting the local economy without putting pressure on the residential character of the area.<sup>38</sup> Restoring the public functions, mostly taverns, in the buildings on the street corners would partly bring back the historical atmosphere of the old goods district. The Italiëlei will become a main commercial axis, the Sint-Jansplein a secondary axis and the Van de Wervestraat –with many warehouses– and the Lange Dijkstraat tertiary axes. This will put the warehouses back into the spotlights, but also bring them under the attention of project developers. Although most warehouses have already been given new, mostly fitting functions, this does not ensure their safeguarding. An exemplary reconversion by architects Robbrecht and Daem in 1991-2001 concerns all the buildings of Katoen Natie in the Van de Wervestraat: the Valkeniersnatie, Katoen Natie, De National, Boerenbond warehouse and the warehouse next to it. The intention was to boost the neighbourhood and also to stress the importance of Katoen Natie. With respect for the industrial character, but without being afraid to make drastic changes like breaking down walls and floors, they included restaurants, shops, offices, conference rooms, apartments and a museum for textile in the different buildings.<sup>39</sup> The already existing internal street in the Valkeniersnatie not only provides daylight, but is also a public area as can be seen on figure 5.



FIGURE 5 Inner street of the Valkeniersnatie was made public by architects Robbrecht and Daem. Spaces for restaurants and shops are foreseen on ground level.

This last example illustrates how public space can be created and refers to the third principle: how to decrease the density of built space and to increase green space in the public areas and in the building blocks.<sup>40</sup> The RUP points its finger to the many extensions, storage places and warehouses that were built inside the building blocks. It proposes to buy and to demolish some problematic buildings and to divide the ground into private gardens. Whether or not to demolish a warehouse depends on the living quality of the surrounding houses and the heritage value of the warehouse. This creates a legal basis to prevent real estate developers from demolishing valuable warehouses.

In the fourth principle, the RUP states the importance of entrepreneurship for Antwerp-North: “it is useful that shops, warehouses and ateliers may still exist. [...] They provide jobs, generate a lively neighbourhood during the day and ensure that 2060 does not become a sleeping district”. In the past decades, young and creative entrepreneurs did find their way to the district. In 1989 a warehouse became an art studio with storage space for electronic devices. The reconversion needed minimal interventions, proving the warehouse to be a perfect venue. Other warehouses were converted into offices. In Magazijn Alfred, patios were inserted on the upper level. In order to bring daylight into the offices, a floor segment parallel to the façade was removed on all levels. An exceptional situation is that of the Oude Buildragersnatie and the Tabaksnatie, which still have their original function.

Finally, the RUP states that a new project for Magasins Argentins can be an impulse for the neighbourhood. The government has accepted none of the proposed projects so far. The importance of this warehouse must be stressed. A public, social and cultural function, which are still very much missing in this area, may put this warehouse back in the spotlights.

Indeed, although it was not included in the principles, RUP 2060 mentions that community facilities are missing. The warehouses with their open spaces are ideal venues for amongst others community houses, cultural or youth centres. Like the initial warehouses, the converted buildings offer the opportunity to be the centre of all activities in the neighbourhood.

## CONCLUSION

The goods station district was once dominated by warehouses that were built by nations and private traders after the city expansion in the 1860s-70s. The evolution of the urban fabric was influenced by the predominant presence of the warehouses that were a constant burden for the surrounding houses, although they also filled the streets with their lively activity. At the end of the 20<sup>th</sup> century, the warehouses and nations moved further northwards, though some are still present in the district today. The residential function of the district became predominant. Recently, the district comes slowly back to life thanks to new redevelopment projects in its neighbourhood and the strong guidelines of the RUP 2060. The large open spaces of the warehouses are ideal to house missing community functions and also for new creative entrepreneurship. Although *Monumenten & Landschappen* must approve redevelopment projects of listed warehouses, additional research is necessary to identify the influence of the reconversion on the warehouse’s heritage value.

The revitalisation of the goods station district in Antwerp is not an isolated case. In the past decades, port cities around the world had to adopt waterfront revitalisation projects to deal with similar problems. As Hein states, all port cities had to fulfil the same functions to be part of the global network of port cities and international trade. In different port cities, many of these requirements are expressed in the realisation of similar districts and buildings (e.g. warehouses), though all were also influenced and shaped by their local context.<sup>41</sup> The case of the goods station district offers an additional interesting perspective on districts that were not solely port districts, but at the same time an intermediate zone between the port and the station, entangled in the urban fabric of the city. The methodological and historiographical approach used in this case study may be an example of how to deal with once prosperous districts that were neglected at the end of the twentieth century.



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No potential conflict of interest was reported by the author.

## Notes on contributor

Marianne De Fossé graduated in 2014 as MSc in Architectural Engineering (Vrije Universiteit Brussel). Her master thesis focused on the revitalisation of historic beer warehouses in the Brussels Capital Region. In 2014 she started a PhD at the Department of Architectural Engineering of the Vrije Universiteit Brussel within the context of a four years FWO research project 'Preserving historical urban warehouses by understanding their architecture and technology' under the supervision of Ine Wouters (VUB), Inge Bertels (VUB) and Linda Van Santvoort (UGent). Since the end of 2015 she is member of BruxellesFabriques, working on social and industrial heritage in Brussels.

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# Consumption and Flows as Urban Shapers

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Chair: *Cristiana Mazzoni*



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# FOOD PUBLIC MARKETS AS CULTURAL CAPITAL: GIRONA PROVINCE

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The role of public market halls in European cities has been analysed from several perspectives: as specific places for feeding the city; as public services; as the first public places built specifically for women; as places to control health and taxes on food; as places where the urban-rural relationship can be articulated; as places to control citizens' behaviour; or as places providing local trade within a structure. There are fewer studies exploring public food markets as cultural and social capital with a view to improving the local and new-endogenous economy, an economy which not only involves the environment, but also the sociality linked to the tradition of food production. Research on public markets in small provincial towns is scarce, particularly the role they play in maintaining the urban-rural relationship by providing a local food supply, and also in constructing the rural landscape. This case study concerns the province of Girona and its nine public markets halls. The aim of the study is to explore their role as a public service within the territory and the agricultural landscape, the communication system, the local gastronomic culture and economic culture, this apparently being more resilient and stable than the economy of scale.

#### Keywords

food market, proximity food supply, culture economy, resilient economy, province of Girona

#### How to Cite

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## INTRODUCTION

Over the past ten years, research on food public market halls has received increasing and renewed consideration by academics, practitioners and scholars. This is a part of contemporary territorial and urban transformation and is related to a renewed sensibility to food quality in terms of ecological and economic sustainability.

Scholars have paid attention to public market halls always taking into account their leading role in the structuring of European cities, albeit with different modalities and temporalities. This concern appears to be in response to an increased awareness surrounding the quality of food production, food consumption and the type of sociality connected to food and gastronomy, as well as a response to the dissipating connection between food systems and ecological systems, brought about by globalization.

From a historical perspective, the literature on the role of public market halls in the construction of urban spaces and sociality emphasises a multiplicity of aspects: the food market as the origin of the city; the food market as the place of connection between the rural and urban areas; public markets as the public services of the modern city which control how to supply the city; the market as new public space for 19th century city women to socialise; the food market as a generator of a complex system of local food retail and gastronomy culture transmission; and the food market as a place to consume and be directly involved in the culture economy<sup>1</sup>.

If all these aspects were common to the cities with a large, consolidated system of public market halls, such as Barcelona, our paper would shift from urban to rural market hall research, taking this as a new point of view which attempts to study their relevance in the construction of the rural landscape, as well as modelling the imaginary link to the tourist landscape. Our case study is the system of nine public market halls in Girona province, a region dedicated to multiple kind of tourism<sup>2</sup> but also to agricultural production.

Historically, markets were basically places for supplying food under public control, which entailed the public policies on food production, processing, distribution and retailing. Today the role of the public food market makes up only a small segment of the entire food supply. However, the market place still deals with the public policies concerning that part of cultural economy that applies to food consumption and quality control. One of our main concerns is to question how the public policies surrounding feeding the population are now mostly related to cultural projects. This tends to react to the contemporary shift in consumer pattern. As Deloitte's research on food value chain <sup>3</sup>stated "Modern North American and European consumers are more health conscious than ever before. They are worried about the content of their food, its origin, freshness, and safety. These consumers are increasingly concerned about the sustainability of food production and its impact on the environment. Buying local and the organic food is a growing trend that has taken hold with the modern consumer"

Interpretations of the economic origins of the city and its relationship with the countryside have traditionally shown preference for production activities, an outlook probably originating from the experience of industrial age cities that does not correspond to their historical reality or their current conditions. According to J.R. Lasuén<sup>4</sup> many of the shortcomings of urban policy are caused by the limitations of its basic assumptions. Among them, the priority given to production activities, this is understood as the production of tangible goods that are easier to measure. For Lasuén, the origin of cities was, in fact, "consumption in common, not joint production". In recent years, there has been evidence of increased attention given to anything that affects consumption, but there are still very few studies giving an insight into this area. Therefore, examining the history of the relationship between markets, cities and the rural territory can be a good exercise for reviewing aspects that significantly affect the problem of economic, environmental and social sustainability<sup>5</sup>.



## FOOD HERITAGE, TERRITORIES AND PUBLIC FOOD MARKETS

The emergence of processes involving the relationship between identity, food and terroir has been widely debated since UNESCO listed the Mediterranean diet as intangible cultural heritage of humanity in 2010.

Food identities regarded as selected cultural heritage are set within the sphere of globalization and emphasize “local production structure” processes<sup>6</sup>, along with the establishment of a “common local culture” or, in stricter economic terms, the formation of a local “monopoly rent”<sup>7</sup>. Similar ideas are expressed by the territorialist school. This approach to urban and regional planning defines territory<sup>8</sup> as a cultural construct which include people, places, as well as landscape, urban features, local knowledge and culture in which the short food chain could have a strategic role in sustaining a “local self-sustainable development” and economy. More specifically, in the case of rural areas, cultural markers can include food, historical sites, landscapes associated with the agriculture. In the same trend, the emergent neo-rural phenomena attempted to control the economy by means of revaluing a place through its cultural identity development<sup>9</sup>.

Girona Province has nine food market halls and more than fifty weekly food markets which could be considered important cultural markers, that opens a question about the relationship between the cultural identity and natural landscape.

Historically, in Catalan rural villages and towns, the intermediary of this fusion of cuisine and landscape was the weekly market. The remark attributed to the Catalan writer Josep Pla: “cooking is the landscape in a pan” clearly illustrates the notion that traditional cuisine is born from the logic of proximity. Each region identified itself with a certain landscape and cuisine. Landscape and cuisine consequently became two of the most widely shared expressions of local identity. The need to examine and rethink the history of the landscape and the food chain, including production, processing and distribution is due to provide elements of analysis and judgment regarding the latent contradictions between economic and social and cultural logic and the limits of the environment<sup>10</sup>.

## PAU VILA: FOOD MARKETS AND THE COMARCAL<sup>11</sup> QUESTION

In his book *Fires i mercats a Catalunya*<sup>12</sup>, Lluís Casassas explains how in the 1930s the old medieval system of holding weekly markets was losing its main function, which was to supply food. The main reasons for the transformation were connected to industrialization and the new railway system, both of which changed the relationship between rural and urban areas. The populations of the main industrial cities grew considerably, while those of other localities shrank. The weekly open market system was no longer adequate for supplying cities with populations of more than 10,000 inhabitants, which needed a daily delivery of food and a wider range of merchandising.

In this period of territorial disequilibrium, the role of food markets became critical. The markets became a synonym of a world that was going to be lost, and at the same time a symbol of a cultural identity, which encompassed both human activity and the natural landscape.

Until the 18th and 19th centuries Catalonia experienced exceptional demographic and economic growth. During this period, a dynamic, enterprising, industrial and commercial bourgeoisie emerged. It was a society open to contemporary European urban planning culture, and it managed the relationship between the city and the countryside, with proposals taking in the suggestive idea of Ebenezer Howard’s “garden City”, which he interpreted as a productive urban land on a regional scale.

This political period also introduced new landscape values related to the Catalan identity and nationalistic politics. After the loss of Cuba, the last Spanish colony, in 1898, the Spanish regeneration movement known as the revival, contributed to the resurgence of a renewed nationalistic pride in Catalonia. The Lliga Regionalista Party, formed in 1901, was one of the most significant Catalanist political parties favouring regeneration, and took administrative control of the province of Barcelona in 1908<sup>13</sup>.

The Lliga Regionalista held the power in Catalonia, and in 1913 it established the Mancomunitat institution, a body, which was to co-ordinate the territorial actions of the four Catalan provinces, Barcelona, Girona, Lleida and Tarragona.

In this period, Mancomunitat developed two main plans of action in order to organize the territory: the Catalonia Regional Plan by Rubio Tuduri, Nicolau in 1932 and the regional division of Catalonia, by Pau Vila Daneru in 1931. Both plans sought to bring structure and balance to the city of Barcelona and its surrounding rural areas, and to develop the Catalan Countryside. Farmland was considered a national wealth, and therefore to be protected. Industrialization and urbanization were to be balanced with agriculture and forest protection<sup>14</sup>.

The *comarcal* division outlined by Pau Vila clearly emphasised the importance of the market place<sup>15</sup>. When defining new criteria to demarcate the *comarques*, Pau Vila took commerce and not production into account, and the *comarcal* division<sup>16</sup> of Catalonia was one of the objectives of the Mancomunitat from 1917<sup>17</sup>. This was when they tried to define the natural region they belonged to, but it was not until October 16th 1931 that the Executive Council of the Government of Catalonia approved a Decree, which led to a study of Catalonia's regional structure.

The first objective was to establish the general principles guiding the regional division into *comarques*<sup>18</sup> followed by a second phase, which was to decide the survey questions to be asked in order to define the *comarques*. The survey was sent to all municipalities in Catalonia and asked just three main questions, two of them focusing on the relationship between the citizens and the place where they usually bought food. The questions were as follows: Which region do you think belongs to your people? Which market do you usually go to? Do you go to another market?

The results of the survey led to the first map of Catalonia in which public food markets (open air or covered) were the main pole structure of the region and the main pole of every *comarca*. The culture and social capital of the relationship between rural and urban territory, the territory administration, food supply and local identity was in this way fixed in the territorial idea of *comarca*.

## PUBLIC FOOD MARKETS IN GIRONA PROVINCE

Today, the province of Girona has 9 market halls, of which only 4 were built before the Spanish Civil War (1936-1939), and were a consequence of the increased population in the more industrial cities along the new railway route. (Figure 2)

Following the results of the survey regarding open-air markets, Pau Vila determined five *comarques* in the province of Girona. However, the first covered market was not built until the end of the 1930s, when the provincial cities had a population of around 10,000.

Markets in Palafrugell (1901), Sant Feliu de Guixols (1930), Olot (1937-1950-1985-2015), Port Bou (around 1930), were the first market places in the province built using wrought iron, probably following the Barcelona example, which at that time had already had around about 17 market hall. The first local train service of the province was the Flacà-Palafrugell-Palamos line (Fig.3), called *El tren gros*. The train made its first trip in 1887<sup>19</sup> and was primarily used to serve the cork industries located along the route. These were mostly in Palafrugell, and this was where the first market hall of the Girona province was erected.<sup>20</sup>



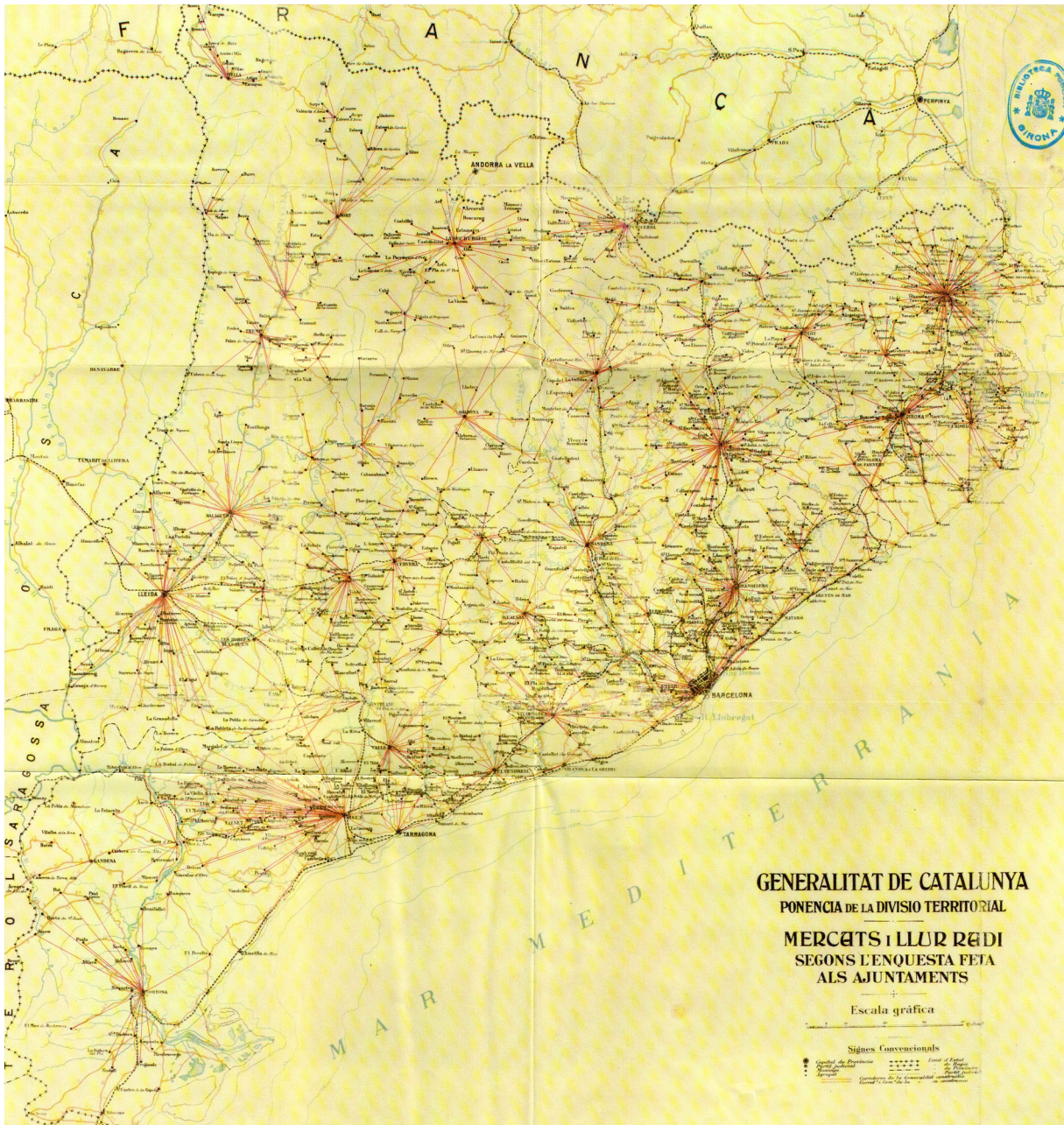


FIGURE 1 Markets and their areas of influence, 1932.



FIGURE 2 Market Halls and year of construction in Girona Province.

Likewise, the train service Sant Feliu de Guixols-Girona was launched 1892<sup>21</sup> in order to transport cork to the port of Sant Feliu de Guixols or Girona. Both Sant Feliu de Guixols and Palafrugell experienced a significant rise in population and industry. The population in both cities was around 10,000 at the beginning of the 20th century<sup>22</sup>.

The situation in Olot was similar when its market was built. The Girona-Olot railway was launched in 1898 and the boost in the textile industry expanded its population to 10,000 inhabitants by 1930. It was then that the city council decided to retrieve the idea of constructing a covered market.

The memorandum of the Olot market proposal<sup>23</sup> clearly expressed the reasons behind building the market. There was as need a market in a city with a population of 14,000 inhabitants. A new closed market would provide better hygiene and a solution to weather conditions of the open-air market- rain in winter and high temperatures in summer that that compromised the quality of the meat.

Girona market was built during the Franco dictatorship by the municipal architect Juan Gordillo Nieto<sup>24</sup>, as part of the project of modernizing the old city, but the idea had already been maturing since the beginning of the 19th century<sup>25</sup>. Four proposals for a new market hall were presented between 1892 and the start of its construction in 1941 with the main aim of freeing the streets and the square from an open-air market. When Girona Market was finally finished in 1941, the rest of Europe saw the market hall as an old-fashioned formula in comparison to the new emerging retailing systems<sup>26</sup>.

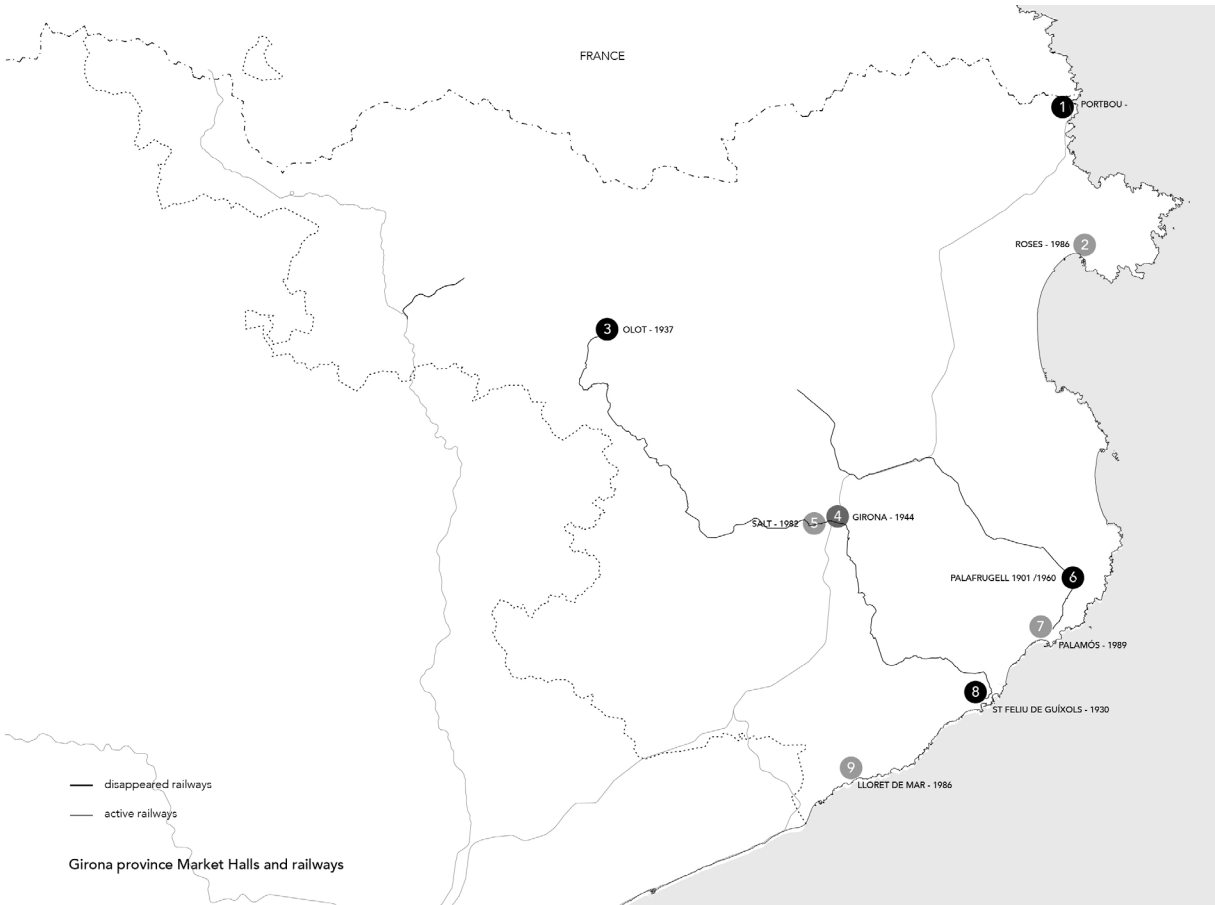


FIGURE 3 Girona province Market Halls and Railways system relationship.

The next generation of Girona Province markets was around the 1980s, within the context of a very different political, economic and social situation. Franco passed away in 1975 and the “transition” to democracy and the modernization of the country, in line with the other European states, began. Mass tourism had begun to change the landscape of the Costa Brava, which was losing agricultural land through abandonment or developments in construction<sup>27</sup>. This generation of markets was characterized by the construction of 3 market halls along the Girona coast. Food markets in Roses (1986), Palamos (1989), Lloret de Mar (1989) were built around the same time, and were one of the public services offered to citizens by the new democracy. The memorandum of the proposals seem to express the difficulty in finding a role for this market building at a time when direct contact between food producers and consumers was at an end, and supermarkets were about to boom.

For example, the language used in the Roses market project proposal expressed these contradictions. It reports they were working on the “semiologic expression of the market building” as a public building and for this reason they were suggesting historicist architecture<sup>28</sup> with some modern elements, such as refrigerators or an outside car park. The report stressed that the main focus of the project was the construction of a public building surrounded by a green public zone, but there was no reference to product quality, or to social, functional or economic aspects in relation to the project (Fig. 4).



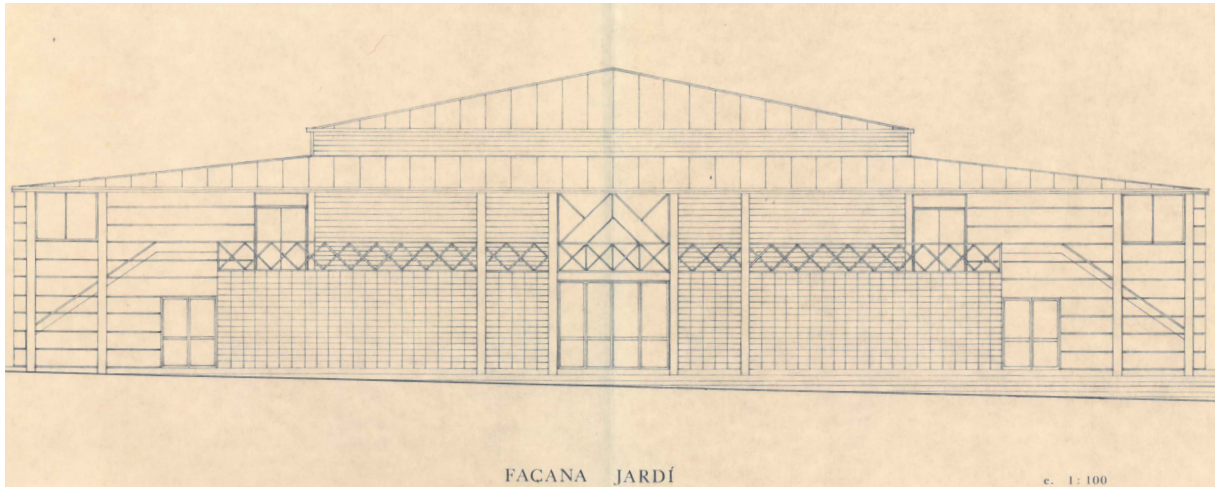


FIGURE 4 Roses Market Hall building project, 1985.

The nine food market halls of Girona Province were not a system, which had been pre-planned as like in Barcelona. They arose out of specific city council policies. Even today, there are no common goals or objectives, which can give value to their cultural capital as link to urban and rural territory.

The situation in the Catalan capital was rather different, with a strong system around 40 markets at the end of the Franco regime. During the 1980s, the market halls in Barcelona recovered their prominent role. The Barcelona Food Facilities Plan (PECAB)<sup>29</sup> (Fig.5), which was introduced by the city council, adopted the commercial polarities of the market halls as something to be strengthened. This was in order to restructure a local commercial system. The plan also sought to limit the effects of the megastores that were beginning to acquire great importance in Spain. A sustained policy of modernization of the market halls and their surroundings has been promoted in the city since that time. Their purpose is to revitalize the local commercial structure and, consequently, bring renewed activity to the neighbourhoods.

Despite the example of Barcelona, the nearby Province of Girona did not consider the cultural capital of the market place to be valued as a social space where rural and urban values could come together. It was merely seen, in the case of the Olot and Girona market, as part of the food value chain, able to activate the cultural economy in the food sector.

## CONCLUSION

Nowadays nearly all of the markets in Girona province are active. However, apart from the renovated market in Olot, which opened in 2015, and with a new image following the principles of “sustainable”, “organic” and “local”, most of them need to be adapted to the “reflexive modernity”<sup>30</sup>. They need to acknowledge a society requesting a renewed relationship with food, and which includes both its production and distribution. (Fig. 6)

Knowing how to eat and how to produce food has now become a part of the image of the city and territory, and generates new sources of income. By the end of the 1960s, Catalan gastronomy was receiving growing attention. To recover the Catalan cuisine was a way to claim local identity. The discourse on gastronomy took a new turn at the beginning of the 1990s, when Catalan gastronomy was presented as a candidate for UNESCO heritage. As in other European countries, in Barcelona gastronomy became an economic driver and involved the public administration, but also with the food social movement.

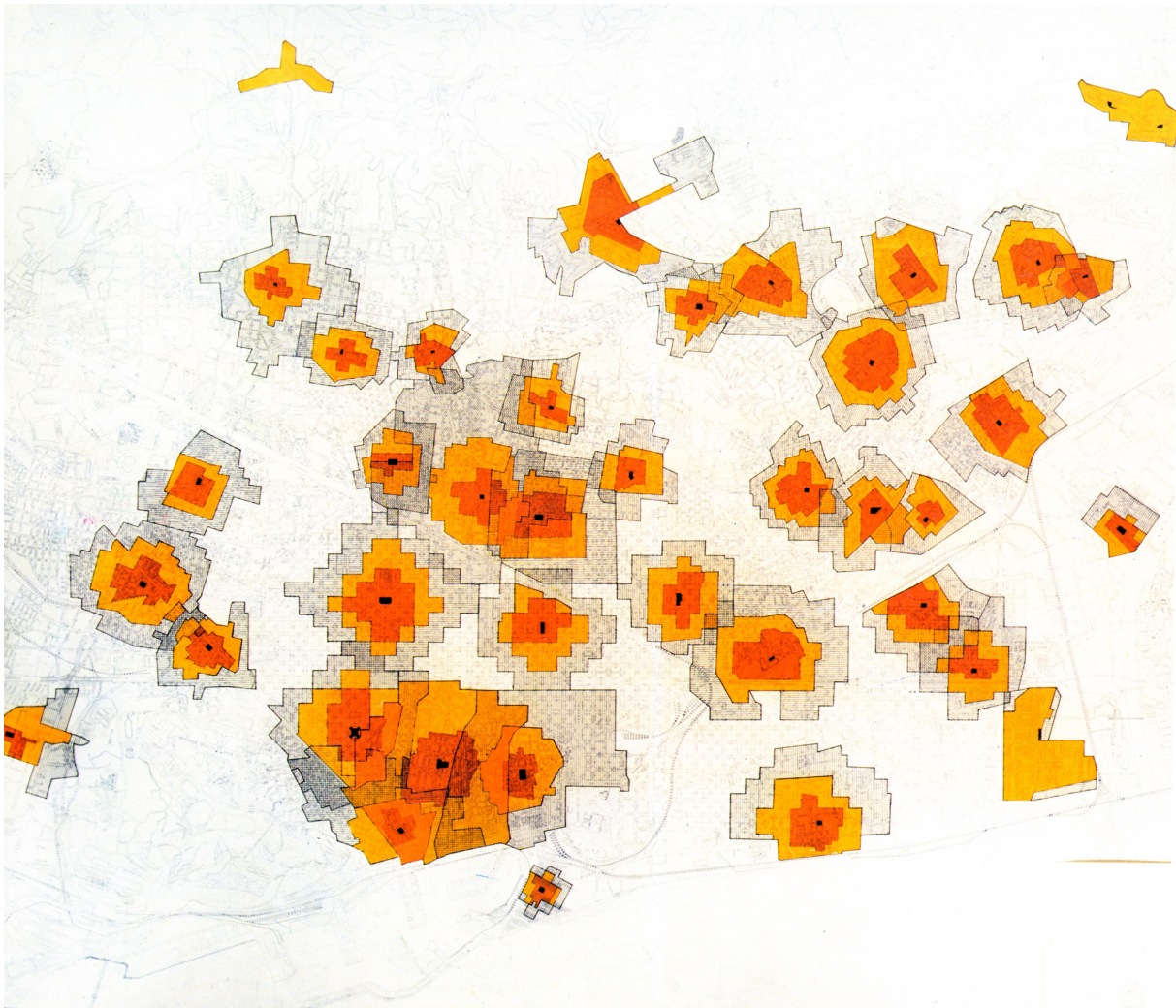


FIGURE 5 Areas of Clientele of Local Municipal Markets according to data from 1983-84 by the PECAB. The three crowns mark the source of 25%, 50% and 75% of the clientele of each market.



In Girona Province the discourse on gastronomy was and is mostly handled by the private sector. If Pau Vila seen in the market institution the identity symbol for the structuring the Catalan *comarcal* system, today the reality is fragmented. Even today, the public food market is still not seen as cultural capital. It is not perceived as something which is not only able to attract tourism, but also able to develop an active and more creative relationship between the territory and its citizens.

Appropriate policies developed at a municipal and regional level could strengthen the cultural role of food markets, and at the same time bolstering the local micro economy, making it more resilient to the cycles of economy of scale.

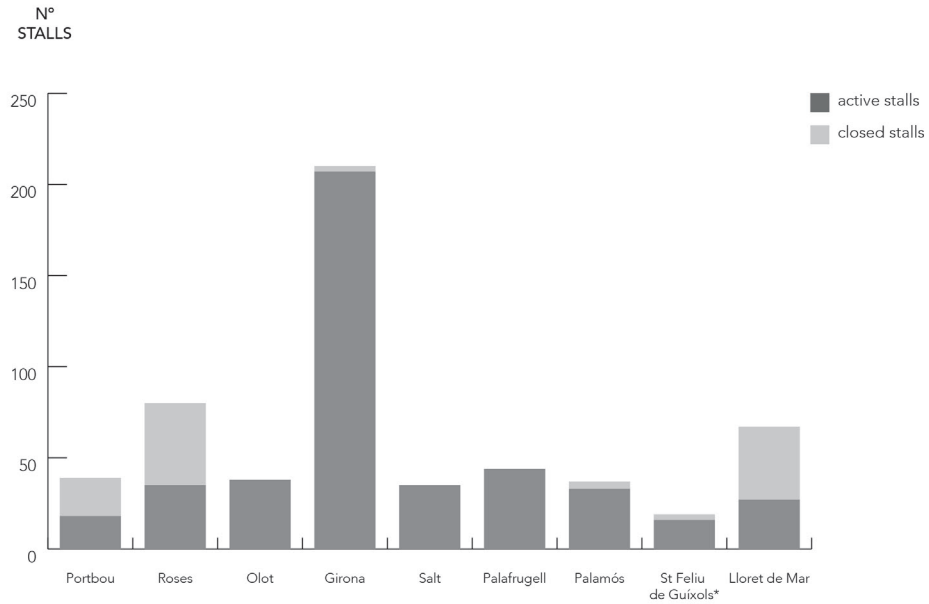


FIGURE 6 Occupancy in Girona province Market Halls, 2016. The image shows that the markets of Lloret de Mar, Roses and Portbou are in crisis and most of their stalls are closed.

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## Disclosure Statement

No potential conflict of interest is reported by the authors.

## Notes on contributors

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– Endnotes)

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- 2 In Girona Province there is mass tourism mostly on the sea villeges, but also internal tourism from Barcelona looking for rural and mountain landscape and their local food products.
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- 15 Catalan markets were still functioning in the 1930s, while in the rest of Europe they had begun their decline.
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- 17 Jesús Burgueño, Una enquesta de la Mancomunitat sobre les comarques naturals (1917), *Treballs de la Societat Catalana de Geografia*, 76,( 2013) : 261-287.
- 18 The general principles were as follows: to divide Catalonia into the smallest number of districts possible in order to not multiply the fees; the people of each district could go in one day from in their respective capitals; to try to provide a demographic balance among comarques, in terms of the number of inhabitants.
- 19 Closed in 1956.
- 20 Carles Salmerón i Bosch, *El Tramvia del Baix Empordà: història del ferrocarril Palamós-Girona-Banyoles*, (Girona, Edició d'autor, 1985).
- 21 Closed in 1969.
- 22 Sant Feliu de Guíxols went from 6,500 inhabitants in 1860 to 10,013 inhabitants in 1920. Palafrugell went from 6,328 inhabitants in 1877 to 8,796 inhabitants in 1920.
- 23 Arxiu Comarcal d'Olot, Collection 03.03.02 Plaça mercat.
- 24 Juan Gordillo Nieto was modifying a previous proposal by the architect Ricard Giral, drawn up in 1939, just after the end the Civil War.
- 25 The first proposal was in 1836, at the site of the disentailed Franciscan convent. In 1892, the architect Camploch drew up plans for a new market building, including it in the "Girona extension plan". A few years later, in 1897, Marti Sureda i Vila, a city hall architect, proposed a iron market hall, but the majority of shoppers rejected the proposal. The idea of a new market came to light again at 1929 when the city hall council asked the architect Maggioni to draw up plans. The site was to be on the new bridge crossing the Onyar river. However, this proposal also faced many objections, and was eventually abandoned.
- 26 During the Francoist period, 24 market halls were built in Barcelona in order to control the price and quality of food during the dictatorship, a time when there was a scarcity of food production and distribution.
- 27 Debat Costa Brava Congrès : un futur sostenible (Girona : Col·legi d'Arquitectes de Catalunya, Demarcació de Girona, 2005).
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- Figure 2: Map elaborated by Laura Plana.
- Figure 3: Map elaborated by Laura Plana.
- Figure 4: *Projecte Bàsic del Mercat Municipal de Roses, 1985*. Arxiu municipal de Roses.
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- Figure 6: Map elaborated by Laura Plana.

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# MAPPING CONSUMER MODALITIES: RETAIL CENTERS, TRANSPORTATION AND CONSUMER CULTURE IN CONTEMPORARY NEW DELHI

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*Morgan State University*

This paper describes a project that seeks to initiate a critical investigation of Indian urban society as it specifically applies to the collective, present-day idea of the nation via displays of contemporary material culture and acquisition. Theories of continuity and extinction are described that relate post-Independence Indian eras conspicuous consumption, and creative as well as co-opted consumerism as modern historic phases characterized by urbanization in India. It also strives to define the uniqueness of Indian conspicuous consumption, as well as the specific cultural, religious, and political, and economic parameters through which these attitudes and behaviors are shaped by focusing on the domestic market as mediated through global commercialism. The project explores historic precedents and extant examples, and persons, ideologies, and traditions that have defined conspicuous consumption in India's capital city. This investigation into historic archives and in situ examples and direct contact with consumers bolsters theoretical understanding of the social and physical structure of consumer culture specific to the South Asian subcontinent. The research reveals multiple systems of tension as Indian conspicuous consumption is discussed in relationship with nation, state, religion, and gender. Applied case studies reference current theoretical ideas about the influence – both positive and negative – of civic tradition (indigenous, imposed, and coopted) and of over-determined urban design amidst the rapid alteration of social structure, which provides a context for understanding the contemporary relationship between post-colonial global urban design and the everyday urban interaction on urban consumer culture. This particular inquiry considers the consequences of metropolitan planning and development that has impacted urban retail spaces in New Delhi via a matrix of urban sociology and culture, urban enjoyment, and environmental design. This investigation bolsters theoretical understanding of the social and physical structure of urban culture specific to the South Asian subcontinent as it struggles to live up to the demands of functional urbanism.

**Keywords**

consumer culture, South Asian, urban development



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# THE TRANSFORMATION AND INFLUENCE OF OVERSEAS COMMERCE OF MINGZHOU PORT-CITY IN TANG AND SONG DYNASTIES (821-1279) - CONCENTRATED ON THE HISTORICAL RELICS

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Li Baihao | Wu Sha

Southeast University

Known as Mingzhou in the Tang and Song Dynasties, Ningbo was one of the largest port-cities in ancient China. This thesis takes historical relics as the breakthrough point to research the transformation of overseas commerce in Mingzhou port-city from the Tang to the Song Dynasty (821-1279), and on this basis, to discuss the effect on the city. By comparing the historical relics and archaeological information of “Heyi Gate-Yupu Gate District” and “Dongdu Gate-Lingqiao Gate District”, which are the port areas of the Tang and Song dynasties respectively, this thesis explains that the core port-zone in Mingzhou has shifted from Tang to Song Dynasty. Additionally, the port’s function has transformed from that of a single to a comprehensive. This shift reflects a process in which management of overseas-related institutions in the sub-city scaled up and spilled over, then completely separated. Finally, the author suggests that a function of the port-city was that it transformed the port region into the earliest street market, which caused the relaxation and disintegration of the Block Mart System; the nature of a port-city established an asymmetric spatial pattern in which “western residential, eastern commercial”; the orientation of the port-city gave birth to the ideas and concepts of open culture.

## Keywords

Mingzhou port-city, overseas commerce, Ningbo, ancient city planning of China

## How to Cite

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## INTRODUCTION

### STUDY ON THE ANCIENT PORT-CITYPLANNING

In recent years, European and Japanese historian circles have compiled a wealth of achievements in the studies of port-cities, which is one of the special forms of a city. However, Chinese historical research on the port-city is still confined to the historical representation of individual city cases and the analysis of related cause and effect. Few researchers have set the ultimate research goal of clearly ascertaining the universality and particularity of changes of Chinese port-cities<sup>1</sup>. At the same time, existing research on the port-cities in China rarely analyse the impacts of ports on cities from the perspective of city planning.

Ancient China attached importance to the mainland culture, and regarded the oceanic culture as the “edge of culture”. Therefore, the development of port-cities, represented by Ningbo, was naturally less subject to central political policies. City planning of port-cities is distinguished from that of most political and military type cities. They focus on economic trades as the main goal and motivation of city developments. This paper studies the characteristics of planning in ancient port-cities under economic and political competition. This research can not only provide the reference for research on planning of port-cities, but also provide a more practical significance to the theoretical researches of modern city planning.

### SELECT NINGBO AS A CASE STUDY

Ningbo has always been a big overseas port for commerce with other countries. It is a central state-level city of the eastern Zhejiang Province, and also an important port for cultural exchange between China and outside world. The choice of Ningbo as a research case is both representative and unique.

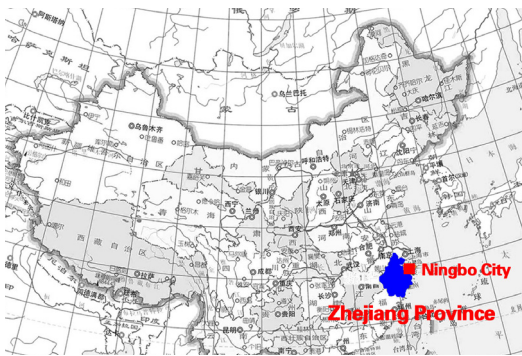
The first element is the continuity of Ningbo city’s culture. Since its establishment in 821 A.D., the old city of Ningbo has steadily endured at its original site for a millennium. Furthermore, the history of foreign exchanges in Ningbo could be traced back to 7000 years ago; it began from the Gouzhang port<sup>2</sup>, then gradually to the lower reaches of the Yangtze River, and finally advanced to the coastline. Though there were ups and downs, the history length of its continued development is unique in the history of China’s ports<sup>3</sup>.

Second is the historical status of Ningbo city. The most important ancient ports of overseas commerce in China are Guangzhou, Quanzhou and Ningbo<sup>4</sup>. Among these, Quanzhou and Guangzhou mainly face the South China Sea routes, and Ningbo faces the East Sea route. Additionally, Ningbo is on the coastline and is the junction between the North-South routes. It can be concluded that location of Ningbo port determines its character and historical status.

Finally, the port-city feature has played a decisive role. As a local city that combined both port and waterside characteristics, the Ningbo’s city planning is not only limited by its waterside property, but also guided by the development of port trade. At the same time, it possessed the flexibility of a local city beyond the ancient capital under the central system. Among these three points mentioned above, the most prominent feature of Ningbo exists in its characteristic of being a port-city.

### OBJECTIVE AND METHODS

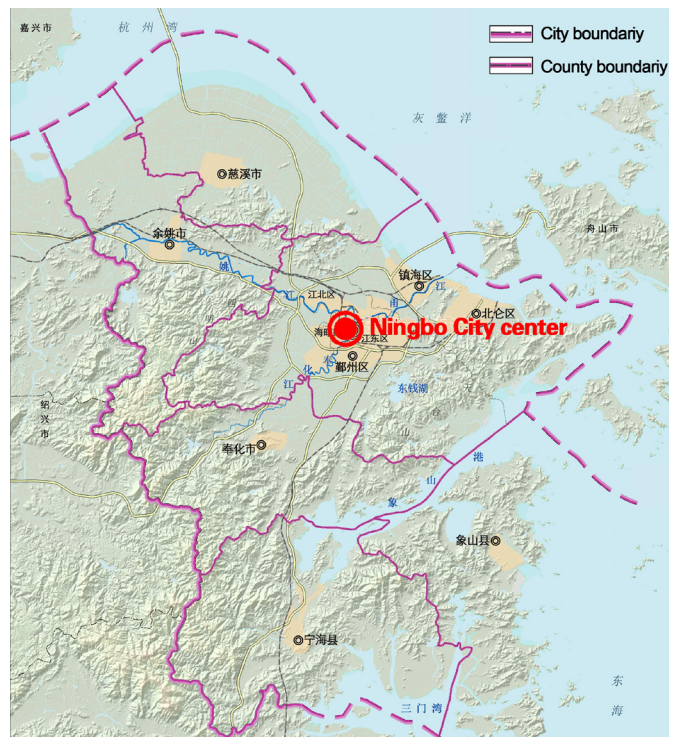
By studying the transformation of overseas commerce in Mingzhou port-city from the Tang to the Song Dynasty, this paper analyses the process of change and its causes and characteristics. On this basis, it analyses the influence of the shifted port-zone in the decisive city planning of ancient Ningbo.



Ningbo's position in China



Ningbo's position around Hangzhou Bay



Ningbo's City area

FIGURE 1 map of Ningbo showing the geographical area

The reason for defining study period as the Tang to the Song (821-1279 A.D.) is that ancient Ningbo overseas commerce port has been developed since the late Tang Dynasty (618-907A.D.) and reached its peak during the Song and the Yuan Dynasties (960-1368A.D.). The research focusing on the transition period of reaching its peak can represent the characteristics of a port-city.

This paper focuses on relics<sup>5</sup> and ruins and uses documentation as supporting. There are two reasons: Firstly, the existing archaeological material of the port-city is rich and highly reliable. Secondly, the information of foreign relations and trades in Ningbo's ancient chronicles and the literatures is sparse, thus it can only act as a supplementary material for this paper.

## ANALYSIS OF THE PROCESS, CAUSES AND CHARACTERISTICS OF CORE PORT-ZONE CHANGES

In this paper, we use the word “port-city<sup>6</sup>” to summarize a waterway hub of coastal cities, which differs from the modern “port metropolis” and other terms. The port-zone function in pre modern time consisted of water shipping terminals, ancillary storage, lodging, shops<sup>7</sup>, and etc. Therefore, we use “port-zone” to summarize the spatial characteristics of this unique city in this paper.

Ningbo is located in the Eastern part of the Zhejiang Province. To its north is the Hangzhou Bay, its west is the Shaoxing, its South is the Taizhou, and it crosses the sea in the northeast Zhou Mountain (Figure1). Ningbo is the economic centre of the Yangtze River Delta Southern wing, and it is an important port city on the southeast coast of China, the state historical and cultural city<sup>8</sup> of the country.





FIGURE 2 map of Ningbo showing the model of Mingzhou city in the Tang Dynasty



FIGURE 3 map of Ningbo showing the 1843 Walled City



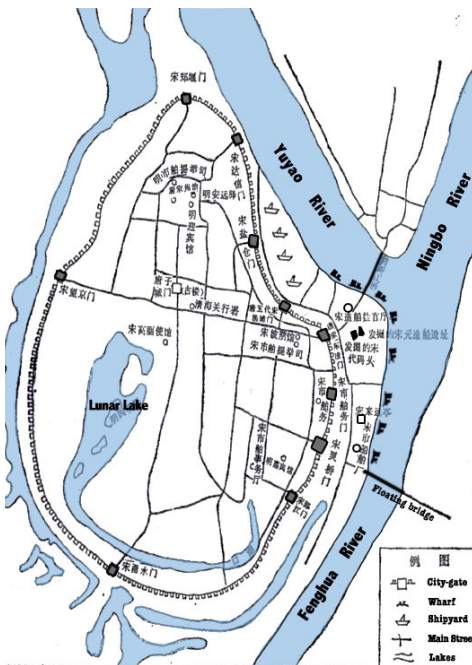


FIGURE 4 map of Ningbo showing the ancient ruins of overseas traffic



FIGURE 5 map of Ningbo showing the excavated site at Heyi Road-Yupu Gate District

Ningbo city was originally founded in 821 A.D. (the Tang Dynasty). Prefectural governor Han Cha constructed the Sub-City<sup>9</sup> of the Mingzhou at Sanjiangkou (Figure 2). This Sub-City continuously served as the location of Mingzhou’s State government office<sup>10</sup>. In 898 A.D. (late Tang Dynasty), prefectural governor Huang Sheng mobilized the populace to building the Outer-city<sup>11</sup>(Figure 3). Since then, the Mingzhou port-city has been established as the centre of state-level politics, economics, and culture in the Eastern Zhejiang Province.

## SHIFT OF CORE PORT-ZONE: HISTORICAL RELICS AND ARCHAEOLOGICAL PROCESS AND CONTENT

As the overseas commerce port, the Mingzhou city equipped good port facilities and possessed a fixed pier location. Therefore, this port had a rich accumulation of relics (Figure 4). According to archaeological excavations, there are concentrations of historical relics alongside the Yuyao River, the Fenghua and the Ningbo River: the Heyi Gate-Yupu Gate District and the Dongdu Gate-Lingqiao Gate District in the Mingzhou city.

### Heyi Gate-Yupu Gate District: historical relics in Yuyao riverside

This region refers to the Sanjiangkou confluence. It is near the southwest bank of the Yuyao River along the riverfront, and is near the Yupu Gate on the northeast side of the Heyi Road. As such, it is referred to as the Heyi Gate-Yupu Gate District (Figure 5). During the Heyi Road excavation of 1973, archaeologists discovered the ruins of large area with significant “Tang Dynasty Culture Accumulation”<sup>12</sup>. The major remains are as follows:

**Tang-Song Dynasty City Gate** The Tang Dynasty Gate had width of 3.02m and depth of 9.6m. Based on the gate in the Tang Dynasty, The Five Dynasty (907-960) Gate had width of 2.96 m and depth of 8.9m. In the Song Dynasty, the gate had width of 4.4m, depth of 10.96m. In conclusion, to some extent, the Song Dynasty Gate was stacked on the five Dynasty Gate, and it has been widened comparing with the gate in previous generation. The gate ruined is the Yupu Gate of the Outer-city, Mingzhou.

**Tang Dynasty Ships and Shipyards** These sites are located in the north of the Heyi Road. Archaeologist unearthed woods slags, irons nail rusts, and etc., which clearly belonged to ship components<sup>13</sup>. Based on this, the shelters for maintaining and constructing ships were constructed in these places in the Tang Dynasty. In addition, wide vessel was found in the north of the Heyi Road, which has length of 11.5m and width of 0.95m.

**Tang, The Five and Song Dynasty Relics Cultural** There are 3 cultural relics including the Tang, The Five and the Song Dynasty Relics Cultural in all. Divided into 3 layers, cultural layer of the Tang Dynasty relics has the thickest formation among all eras and the most abundant relics. The excavated of the cultural layers are generally same and give priority to porcelains and building components.

Seen from the above mining data, the most abundant culture accumulation of the Tang Dynasty has in the historic district of the “Heyi Gate-Yupu Gate” along the Yuyao River. There is a large number of nonlocal porcelain, which could be shipped overseas. In addition, gates, shipbuilding factories, ditches and other relics indicates that the region had been made constructed elaborately in the Tang Dynasty and it should be the location site of the whales in the Tang Dynasty.

#### **Dongdu Gate-Lingqiao Gate” District: historical relics near Fenghua riverside**

Lying in the Southern Sanjiangkou, this region is near the western bank of the Fenghua River. It is named for the two relics of the Dongdu Gate and the Lingqiao Bridge (Figure 6). The identified remains are as follows:

**Shibo Department<sup>14</sup>, Laian Pavilion, Laian Gate<sup>15</sup> in Song Dynasty** In 1995, the Ningbo Municipal Archaeological Institute excavated the relics and ruins of Shibo Department. Firstly, they found the Laian Pavilion and the Laian Gate, which confirmed the existence of the Laian Pavilion in the first time; Secondly, they found the warehouse of the Shibo Department. The Shibo Department in the Song Dynasty occupies an area of about 12000m<sup>2</sup>, and confirmed its scope<sup>16</sup> (Figure 7). In addition, archaeologists dug out the base floor of Shibo Department fared 50m from the Laian Gate.

**Song Dynasty wharfs** In 1978, the Municipal Relics Management Committee excavated the shipping wharf<sup>17</sup> of the Song Dynasty. Then, they dug up 3 piers in the east gate of the Fenghua River extended from west to east. Through the unearthed ancient ceramics and other artifacts, it can be proved that they were the piers in the Song Dynasty (Figure 8, Figure 9). Moreover, a seagoing ship of the Song dynasty was clean out in lower of Pier 1.

**Song Dynasty Shipyard** A large number of the wood, nail and other relics were unearthed in the northwest side of pier 1, which proved that it was the location of shipyard with repairing<sup>18</sup>. The relics located in the Song Dynasty cultural layer and in the pier outside the Dongdu Gate.

Comparing the above two historic district, we find that the Heyi Gate-Yupu Gate District and the Dongdu Gate-Lingqiao Bridge District directly gave priority to the remains in the Tang and the Song Dynasty. Therefore, conclusion supported by archaeological data is shown as follows: after the Song Dynasty, the core port-zone of the Mingzhou city had gradually shifted from the southwest bank of the Yuyao River to the west bank of the Fenghua River in the Sanjiangkou.

## NATURAL GEOGRAPHICAL AND POLITICAL POWER: REASONS FOR THE SHIFT OF THE CORE PORT-ZONE

### **Limited by nature technology and geographical location conditions**

The natural environment of the Mingzhou city is that there is the Fenghua River flowing from south to east in the eastern city and the Yuyao River flowing from north to south city in the northern city. Two rivers intersect into an obtuse angle at Ningbo River in the east of the city, then form the “Sanjiangkou”, and finally flow eastward to the sea. The water flowing in the upstream of the Fenghua River is gradually reduced, and the shipping function weakens. However, the Yuyao River is different from it. Its upstream can not only communicate with the Grand Canal, but also becomes the start point for deep in the inland of Eastern Zhejiang Province, and becomes the other end of the logistics from the eastern Zhejiang Province and other place.

In addition, the common ground of the 3 rivers is that the water level is along with the tide fluctuation of the East China Sea. Ancient marine technology must rely on the tide and wind, thus Ningbo River mouth of Sea-going ships can flux and reflux with the up and down to the Ningbo River and the Yuyao River. However, the Yuyao River and the Fenghua River constructed a right angle. It was extremely inconvenient for the ships arriving at the western bank of the Fenghua River, which had no choice but to upstream during the low tide. Furthermore, the technology also failed to meet the requirements<sup>19</sup>.

Therefore, selecting the southern bank of the Yuyao River near the Heyi-Road as the location of the port-zone in Tang Dynasty was conformed to the objective laws of nature and it was the most appropriate.

### **Decided by the city spatial pattern including the government office and street market**

In ancient times, the port-zone should be very close to the city centre. The closer the port-zone with the main market street and the management organization was, the more convenient the affair of trade, warehousing, traffic and management were. When the Mingzhou’s Sub-City was built in Tang Dynasty, the distance between the north margins of the Sub-City and the northern bank of the Yuyao River was only 500m. It was extremely convenient for the seagoing ship to be inspected.

In addition, there were 3 marketplaces set up in the Tang Dynasty, including the Big Marketplaces, the Medium Marketplaces and the Small Marketplaces, in which Sub-City was centred. However, in the Song Dynasty, specialized management institutions and facilities for overseas commerce, such as the Shibo Department, the Laian Gate and warehouse and etc., had begun to set up in Jiangxia Street zone, which was established for the foundation of the Jiangxia international docks in the Song Dynasty.

Therefore, it was a practice of adjusting measures to local conditions that the wharf shifted from the southern bank of the Yuyao River to the western bank of the Fenghua River.



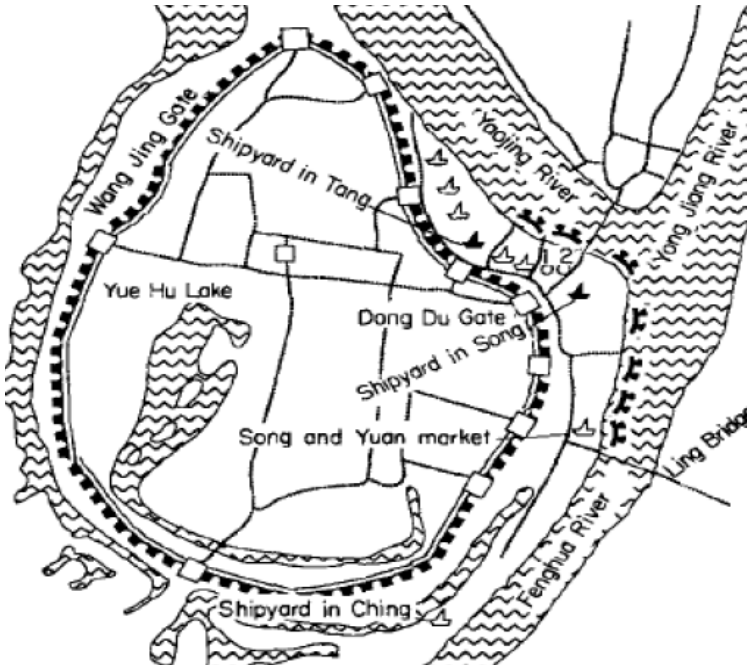


FIGURE 6 map of Ningbo showing the wharf sites at Dongmenkou

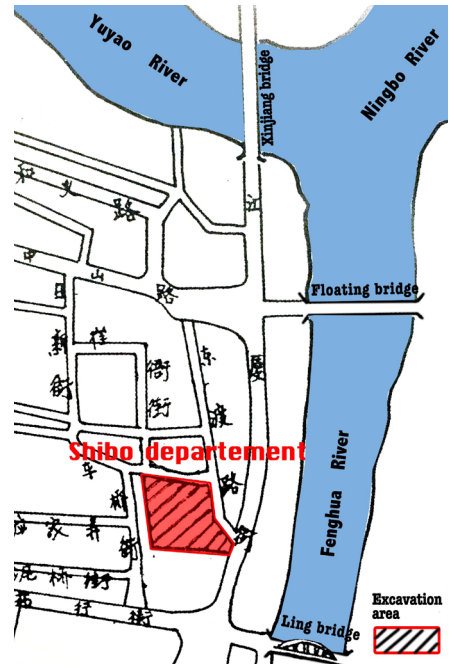


FIGURE 7 map of Mingzhou showing the Shibo Department sites



FIGURE 8 map of Mingzhou showing the wharf sites at Dadaotou in Song Dynasty



FIGURE 9 map of Ningbo showing the wharf sites at Dongmenkou in Song Dynasty

## THE MANAGEMENT SPECIALIZATION OF OVERSEAS COMMERCE: CHARACTERISTIC OF SHIFT WITH CORE PORT-ZONE

### **Single to comprehensive: the structural evolution of port-zone function**

The Mingzhou's port-zone function gradually developed from the track of necessary, comprehensive and diverse in the Tang to the Song Dynasty. Meanwhile, it reflected the general disciplines of the port-zone spatial growing matched up with the city development.

In the Tang Dynasty, there were such ancillary facilities as the fixed wharfs and warehouses near the Yupu Gate of Outer-City. At the same time, the archaeology also proves the existence of the hovels for ship build and repair in the port-zone. In the Song Dynasty, the overseas commerce of the Mingzhou port reached to a new peak<sup>20</sup>, which has brought a significant adjustment of the port's function and structure. Firstly, functions of the port-zone were expanded in a large area. For example, the number of wharfs increased from 1 to more than 3 (Figure 10, 11). Secondly, functions of the port-zone were added. The additional specialized management institutions such as the Shibo Department, Laiyuan Pavilion and Shibo warehouse were added. Living facilities such as the Korean embassy, the Persian embassy, etc. were added too.

In short, in the Song Dynasty, the formation and establishment of diplomatic institutions and foreign embassies made the port-zone's function mature and perfect, which was also a product of overseas commerce developing to a certain historical stage.

### **Brief summary: the refinement and specialization of the administrative agencies' functions concerning overseas affairs**

At the beginning of the city building in the Tang Dynasty, the Mingzhou Sub-City assumed a responsibility of management of overseas commerce. In the Northern Song Dynasty, the centre government has removed the Shibo Department of Zhejiang Province into Mingzhou city<sup>21</sup>. The establishment of the Shibo Department made the management of overseas-related institutions in the sub-city scaled up, spilled over, and then completely separated. Compared with that of the Tang Dynasty, the Shibo Department's function division was thinner, the procedure setting was more reasonable and the responsibility was more pragmatic in the Song Dynasty. This reflects the refinement and specialization of the function of administrative agencies concerning overseas affairs in Mingzhou port-city.

In short, the development of port commerce was closely connected with the extension of political power in ancient time. Although the port trade, as an economic factor, can produce an irreplaceable influence on city development, the political power is sure to be strengthened accordingly, and then in turn accelerates the development of economy and trade. It is inevitable that happened in ancient China, where political occupied the absolute dominances. Even the port-city is no exception.

The prosperity of the overseas commerce would bring a series of effects on the management system and the spatial pattern of the city planning.





FIGURE 10 the map of Ningbo' counties and China' ships in 19th Century

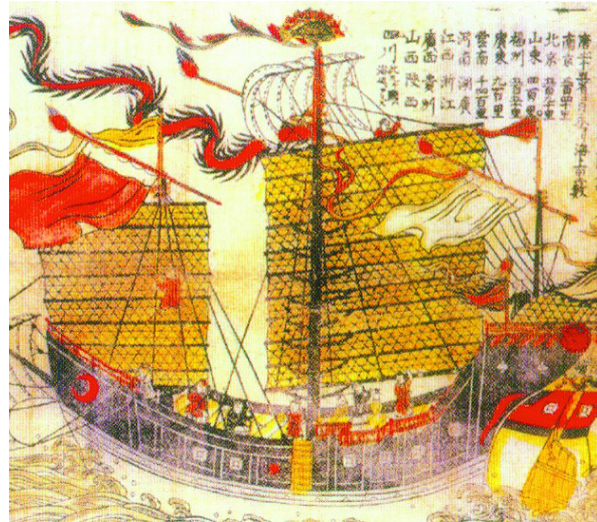


FIGURE 11 map of Ningbo showing the Ships leave for Japan

## FROM ECONOMIC DOMINANCE TO POLITICAL SYNERGY -INFLUENCE OF PORT-CITY PLANNING

### SYSTEM REFORM: PORT-ZONE BECAME THE STARTING POINT OF THE DISINTEGRATION OF THE BLOCK-MART SYSTEM

In Song Dynasty, the Block-Mart System<sup>22</sup> was broke up in Chinese cities, which began to implement the Street-Market System. Similarly, the Mingzhou city started to carry on the reform of Block-Mart System.

The first year of the Southern Song Dynasty (1228), the illegal structures and the street invasions of residents led a big fire, which destroyed the half of the city. After the disaster, the prefect Wuqu was ordered to rectify the lane boundary. The fire was a demarcation line, marked the complete end of Block-Mart System in Mingzhou port-city. After this rectification, the Mingzhou city was divided into 4 compartments including the southeast, northeast, southwest and northwest compartments<sup>24</sup>. Finally, by the use of the Street-Market System, the government of the Song Dynasty obtained the effective management of the city<sup>25</sup>.

#### **Anchor to market: function transform of the core port-zone**

In fact, the reform of the Block-Mart System was formed with a long process of spontaneous. Since the Northern Song Dynasty, with the development of economy and society, the merchant organization of “Hang<sup>26</sup>” and “market” grew and then they promoted the vigorous growth of the sites nearing the bridge and the river and the city-gate, as the traffic core space<sup>27</sup>.

However, the commercial space was firstly born in port-zone in this port-city. In the early Tang Dynasty, 3 marketplaces are planned in near the quay wharf and revetment<sup>28</sup>. In the Song Dynasty, along with the prosperity of overseas commerce, port-zone gradually transformed from anchor function into the market center<sup>29</sup>. The interface of port-city including the East Main Street, South Road, Dongdu Gate and Lingqiao Gate has spontaneously gathered into kinds of commercial activities of shipping, commerce, finance, equal etc.

At this point, from the Tang to Song Dynasty, the first born of the market centre was transformed from the port-zone, and thus brought the change of other public space inside the city wall.

### **Rise of commences inside the city: workshop and Wa Zi30 appeared in succession**

Explosion of the Markets outside city became the catalyser of the commerce and thus it led to the generation of the professional workshops inside city. Wa Zi and the business district were around the city gates.

Firstly, the development of production has brought the differentiation of industry, therefore, a variety of professional workshops inside the city has formed. Then, textile industry, brewing industry and iron processing workshop area had concentrated in the lunar lacus area in the West of city. Meanwhile, Wa Zi produced, which distributed in the present of Xinqiao area, with opera, ballad singing<sup>31</sup> and etc.

Secondly, from the Tang to Song Dynasty, the city began to expand to connect the traffics of markets in port-zone, therefore, the new market concentration was born around the city gates. Such as the doorway of the Yupu Gate in the south bank of Yaojiang River broadened from 3m to 10m during this period. At the same time, the Yupu Gate had become a famous market street.

In conclusion, with the prosperity of the overseas commerce since the Song Dynasty, the port-zone functions spontaneously transformed from anchor function into the market centre function gradually, and thus promoted the development of the workshop, Wa Zi and market streets inside the city wall. Consequently, the port-zone markets have become the starting point of the disintegration of the Block-Mart System.

### **Asymmetric spatial pattern: the western residence and eastern commerce**

Mingzhou's Sub-City planning followed the Chinese traditional Confucianism and ritual ideology and adopted the fully axial symmetry principle. However, due to the development of overseas commerce in the Song Dynasty, the spatial pattern still produced an interesting and unique change (Figure 12).

### **Solemn and prosperous: shipping, commerce and administration of the East city**

Demarcated by the central axis Zhenming Road, Ningbo city formed two kinds of character that were totally different in west and east.

First was the function of shipping. Port-zone such as shipyard dock and warehouses were all located in the east side. The management facilities of the port, such as the Shibo Department and the Laian Pavilion, were located in the east side. Thus, facilities related to sea shipping less appeared in the west side.

Second were the market streets and lanes. The East Street of the Dongdu Gate was the largest commercial street, however, the same east-west direction street in the west side was just a commodity street. In addition, the density of the streets in the East was higher than that of the West.

The third were the administrative offices. Mingzhou's Sub-City had located on the northeast since the city built firstly. Since the Song Dynasty, with the overflow of the administrative facilities, the management institutions were all move along the port development trajectory<sup>32</sup>, which never touched the West city.



FIGURE 12 Thus, the shipping space of the east port possessed the characteristic of prosperity. The administrative offices located on the East and the North created the solemn and elegant atmosphere of the East city. Therefore, the East city became the first place of the Mingzhou port-city<sup>93</sup>.

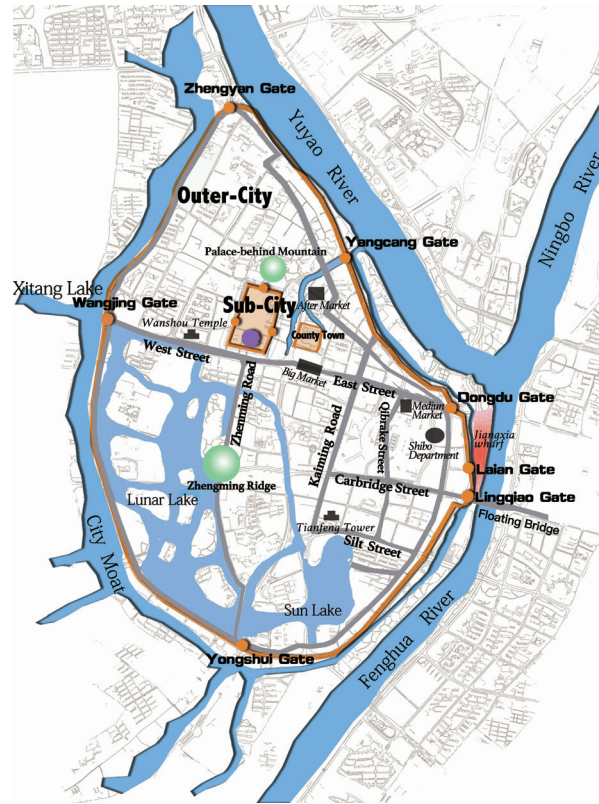


FIGURE 13 map of Ningbo showing the transform of spatial pattern in Mingzhou port-city from Tang to Song Dynasty

### Quiet and indifferent: culture and residence of the West city

Located in the west of the Zhenming Road, the west half of the city had another scene. First of all, the west was a pure area of citizen living. Due to the excavation of Ten Continents of Lunar Lacus, the lake zone turned from a Reservoir into a Park, and thus attracted celebrities and bachelors to move there.

At the same time, it was suitable to read in the West city because of the quiet and indifferent environment. Thus, the West city has become a cultural region. The ten Libraries of the Mingzhou were located in the West city, and also, most of academies were run there. In addition, temples and other religious facilities were set in the West city. Therefore, the West city became the education land.

Overall, with the further development of overseas commerce, the port-city characteristic was purer and the intangible traction of a port-city was reflected more clearly. Space texture that radiating from external into the inner of the city was reflected more clearly, hence the asymmetric pattern of “western residence and eastern commerce” were totally appeared.



## IDEAS AND CONCEPTS: THE FORMATION OF THE MIXED SPACE NODES AND THE OPEN CIVILIZATION

### GEOGRAPHICAL LOCATION: A MIXED SPACE NODE OF THE CHINESE AND FOREIGN CULTURES

Located in the middle of China's coastline, on the one hand, Ningbo was a window for foreigners contacting and understanding the mainland through overseas commerce, on the other hand, radiated the advanced mainland culture to foreign countries. At the intersection of logistics all the time, flow and information flow, Ningbo has become a space node for the propagation and the blend of the East Asian culture.

Port-zone was the specific projection of such culture blending on the space. Firstly, the spaces, such as the Persia Embassy and the Celestial Queen Palace, hold a large proportion of the port-city inside. Secondly, the city owned more than 60 main streets in the Southern Song Dynasty, of which was a Persian street. Consequently, the opening concept to outside world has been incorporated into the fabric and gone deep into a city culture.

In conclusion, Ningbo was not only a space node for the propagation of the East Asian culture, but also gave birth to the distinguishing regional cultures, in which the open ideas and concepts are one of them.

### IDEAS AND CONCEPTS: THE FORMATION OF THE OPEN CULTURE GENE

There is continuity between the classic and the modern theories. Despite a long time, the classical and the modern theories are not separated but have internal relations.<sup>34</sup> For thousands of years, the open feature of the Ningbo city has internalized into idea and conception, which is reflected in the planning and the construction of the city.

First of all, when the first building of the Outer-City in Tang Dynasty was built, a Long and narrow band about 100m was sets aside along the rivers in the east of the wall. It does not only show that the overseas commerce in this area has been very well developed when the city built, but also proves that this deliberation is a more visionary far-sighted consciousness of the city planning. Secondly, the concept of hydrotropism was reflected in the Mingzhou city planning. There are 10 city-gates in the Tang Dynasty and the 7 of them face the water. It is rarely seen in ancient China where the continental culture was regarded as the core culture.

Thus, the characteristic of ancient Ningbo as a port-city gave birth to the open civilization of itself. Interpreting it from the perspective of city planning, the open civilization had already been cultivated into its idea, which has been used in city construction. Long term material constructions and planning concepts had combined action, and then continued to affect the formation of the concept of modern city planning.

## CONCLUSIONS

Regarding two historical riverside relics of Mingzhou port as the origin, this paper elaborates the shift process of the riverside core port-zone. And we propose that the reasons for the shift are the common function of natural geographical restrictions and the control of political power. Among above, the control of political power is the main reason. At the same time, when port trade developed to a certain stage, it's a history product that the port's function transformed from single to comprehensive and tended to be mature and perfect.

Finally, we propose that the development of port would prompt the revolution of city management policy, bring about the spatial pattern change of port-city, and accelerate the formation of city ideas and concepts.



The general conclusions of this paper:

First, the development of port trade is inseparable from the political power’s extension. Although the port trade as an economic factor can produce an irreplaceable influence on city development, the political power is sure to be strengthened accordingly, and in turn accelerates the development of economy and trade. That is to say, the port-city will eventually change to be political collaboration from economic dominance. It is inevitable that the society which the political power has the overwhelmingly dominant in ancient China. It is no exception to the port-city.

Second, the city planning of the port-city is more open in concept and more freedom on the space pattern and more front in system than that of a general city.

Third, port has a one-way traction effect on the city’s spatial structure. However, at the same time, there is a two-way interactive relationship between the city and the port. City planning, including management system and infrastructure construction, can provide the hinterland for the port development. At the same time, the development of the port can enhance the status of the city and promote the development of city planning.

ANCIENT	CONTEMPORARY	INTERPRET
Mingzhou port-city	Ningbo city	It has been called Mingzhou, Qingyuan Prefecture, Qingyuan Road, Mingzhou Prefecture and Ningbo(now).
Shibo Department	Customs office	Foreign trade administration in ancient China.
Laian Pavilion		Places for the ticket checking and imported goods pumping.
Block-Mart System, Street-Market System		The Urban Planning Administration System in ancient China.
Wa Zi(Wa She)	Theater Terms	Sites for performances, with abundant folk rap acrobatics.
Hang		Hang is also refers to trade, market.

TABLE 1 Attached Table – Glossary of comparison between ancient and contemporary times

## Acknowledgements

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## Notes on contributor(s)

Li Baihao, male, born in 1963. Professor of the School of Architecture in Southeast University, Nanjing, China. As the Vice-chairman and Secretary-general of Academic Committee of Urban Planning History & Theory and Urban Planning Society of China, his research interests are mainly in urban planning history and theory.

Wu Sha, female, born in 1992. Master Candidate of the School of Architecture in Southeast University, Nanjing, China.

## Endnotes

- 1 Liu H. W., Wang L. J. "Formation of Ningbo port-city and development of the foreign maritime route." In *Ningbo and the maritime Silk Road*, edited by Ningbo Institute of cultural relics and Archaeology, 123-132. Beijing: Science Press, 2005.
- 2 Gouzhong port is Ningbo's first military port. Archaeological excavations proved that the mountain is located in the Chengshandu, the construction of a city.
- 3 Yu H. X. "The main culture of Ningbo: culture of Maritime Silk Road." *Ningbo Daily*, February 2, 1999.
- 4 Yu H. X. "The main culture of Ningbo: culture of Maritime Silk Road." *Ningbo Daily*, February 2, 1999.
- 5 Relics in this paper refers to the historical remains that have already excavated by archaeologists.
- 6 Mingzhou was kinds of estuary ports in the Tang Dynasty, which was different from that of inland ports and sea ports.
- 7 Liu H. W., Wang L. J. "Formation of Ningbo port-city and development of the foreign maritime route." In *Ningbo and the maritime Silk Road*, edited by Ningbo Institute of cultural relics and Archaeology, 123-132. Beijing: Science Press, 2005.
- 8 In July 2, 1999, the State Council has approved the overall planning of Ningbo City, to determine the location and nature of city.
- 9 Tang and Song Dynasties, Ningbo was called Mingzhou, because of the territory of the mountain of Si Ming.
- 10 The regime refers to the local government resident, including provincial governance, government, state government, county government etc. In the ancient city, Mingzhou city has always been the local government administration and governance.
- 11 The Outer-City is also known as Luo Cheng.
- 12 Lin S. M. *To reproduce the old civilization—the archaeological research of the eastern port Ningbo*. Shanghai: Shanghai Sanlian Bookstore, 2005.
- 13 Lin S. M. "Ningbo Heyi Road excavation site Report in Zhejiang Province.", *Oriental Museum*, January 5, 1997.
- 14 Shibo is known as the foreign trade ships in ancient China. The meaning is not consistent in different ages. In Tang, Song and Yuan Dynasties collectively called Shibo. The establishment of the overseas trade is a sign of the Mingzhou port-city into a prosperous stage.
- 15 Shibo department also called Laiamen, is set for the management of overseas commerce. In addition, Laianting was built in the Song Dynasty (1165-1173), located outside of the Laiamen. Laianting is the most important official facilities in Mingzhou port-city.
- 16 Lin S. M. *Transformation of Sanjiang: history research of the city development of Ningbo*. Ningbo: Ningbo Publishing House, 2002.
- 17 Lin S. M. *To reproduce the old civilization—the archaeological research of the eastern port Ningbo*. Shanghai: Shanghai Sanlian Bookstore, 2005.
- 18 Lin S. M. *To reproduce the old civilization—the archaeological research of the eastern port Ningbo*. Shanghai: Shanghai Sanlian Bookstore, 2005.
- 19 Xu M. G. "Verification for the forming time and the exact site of Mingzhou Port in Tang Dynasty." *Zhedong culture*, (2001):172-180.
- 20 The Northern Song Dynasty increased with the Korea (North Korea) trade, foreign trade in the Southern Song Dynasty object expanded to Southeast Asia, Southeast Asia and Arabia and other countries.
- 21 Lin S. M. *Ming Zhou, as a famous port of the maritime Silk Road*. Beijing: Ocean Press, 1990.  
To set up overseas commerce duties for the Bureau, proved that Song Dynasty government attaches great importance to overseas trade, also illustrates the importance of the overseas commerce in Mingzhou port-city in Song Dynasty.
- 22 The system of Chinese ancient authorities of city planning and market management.
- 23 From the "inside square" evolved, cancel square wall, the neighborhood oriented streets, shops along the street set, and along the roadway layout of residential streets to. Commercial and industry layout is open.
- 24 Luo R (Song Dynasty). *Baoqin Siming Zhi*. Taipei: Chengwen Press, 1983.
- 25 Wang R. C., Kong W. *The history of Ningbo City*. Ningbo: Ningbo Press, 2010:64.
- 26 Hang is also refers to trade.
- 27 Yang K. *Study on the system history of the capital in ancient China*. Shanghai: Shanghai people's Publishing House, 2003.
- 28 (Japan) Y. Shiba. *Chinese urban history*. Beijing: Peking University press, 2013:96.
- 29 Lin S. M. *Ming Zhou, as a famous port of the maritime Silk Road*. Beijing: Ocean Press, 1990:29.
- 30 "Wa Zi" is also called "Wa She", "Wa Si", which are places concentrated with entertainment in the city in Song and Yuan Dynasty.
- 31 According to the book of "Ducheng Jisheng" published in the Southern Song Dynasty of Naideweng.
- 32 Zhe F. *Old Pictures of Ningbo (atlas)*. Ningbo: Ningbo Publishing House, 2004.
- 33 Zhou S. F. *The old city of Ningbo*. Ningbo: Ningbo Press, 2008:113.
- 34 Dong J. H. *Study on the history and theory of city planning*. Shanghai: Tongji University Press, 1999.

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- [17] Zhe F. *Old Pictures of Ningbo(atlas)*. Ningbo: Ningbo Publishing House, 2004.

## Image sources

Figure 1: The author paints them itself.

Figure 2: Ningbo City Museum.

Figure 3: Lin S. M. *Ming Zhou, as a famous port of the maritime Silk Road*. Beijing: Ocean Press, 1990:148.

Figure 4: Zhe F. *Old Pictures of Ningbo(atlas)*. Ningbo: Ningbo Publishing House, 2004.

Figure 5: Lin S. M. *To reproduce the old civilization——the archaeological research of the eastern port Ningbo*. Shanghai: Shanghai Sanlian Book-store, 2005:111.

Figure 6: Lin S. M. "Ningbo Heyi Road excavation site Report in Zhejiang Province. ", *Oriental Museum*, January 5, 1997.

Figure 7: Liu H. W. *Foreign cultural exchanges of ancient Ningbo: centered on the historical and cultural relics*. Beijing: Ocean Press, 2009.

Figure 8: Lin S. M. *To reproduce the old civilization——the archaeological research of the eastern port Ningbo*. Shanghai: Shanghai Sanlian Book-store, 2005.

Figure 9: Ningbo City Museum.

Figure 10: The United States National Library of Congress.

Figure 11: Baidu Encyclopedia.

Figure 12: The author paints them itself.

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# THE INDUSTRIAL AND COMMERCIAL HARBORS OF STRASBOURG: WASTELAND TERRITORIES IN TRANSITION TOWARDS A SUSTAINABLE CROSS-BORDER METROPOLITAN CORE

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The current location of the commercial and industrial harbour of Strasbourg dates from the late nineteenth century, as the municipality decided to remove it from the inner city and bring it closer to the Rhine. In reality, Strasbourg's port facilities were first situated on the river Ill, in order to avoid the frequent flooding of the Rhine, whose course was not canalized before the nineteenth century. Located between Basel and Karlsruhe, Strasbourg is trying to assert a leading position among the other Rhine harbours and engaged a strong development policy at the beginning of the twentieth century. Today, the future development of these territories is a major challenge for the construction of the cross-border metropolis, due to harbours' central location, as well as for the energy and ecological territorial transition, a central issue within local debates. Presented as the new "metropolitan belt", the Strasbourg-Kehl urban development axis connecting together the French and German historical city-centers, highlights the interface between the city and the harbours areas. The international competition for the urban development of the customs sector in which we have participated as urban designers in 2012 is a very good illustration of these debates. In reality, the harbour sets new challenges related to industrial ecology, energy transition, environmental concerns, innovative mobility as well as contemporary urban condition and lifestyle, that are at the core of our professional practice (Atelier CMYT) and our action-research (AMUP-ENSAS research laboratory). This contribution aims to set, from a historical perspective, the socio-economical issues for the territorial development on both sides of the Rhine. We will refer to the new conceptual tools of the metropolitan scale - exploratory scenarios and Territorial Modelling and Visualizing Platform - that we explore through both our research programs and operational practice.

## Keywords

harbour, resilience, industrial development, cross-border metropolis, Rhine

## How to Cite

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## INTRODUCTION

In the European context, Strasbourg appears to be an exemplary case study due to the central position of its commercial and industrial port(s) within the new cross-border metropolis and its geographical location in the Upper Rhine. The planning history of Strasbourg, considered through the harbor's relation to the city, shows that the port has always played a key role in defining a "sustainable" planning practice. In reality, since the nineteenth century, when the port first moved from the river Ill to the new southern canal, the city had already started to initiate long-term urban development thinking. By recovering and transforming old harbor sites into urban neighborhoods and completely rethinking urban connections to the new port, Strasbourg essentially engaged a "life-cycle" based urban process. Furthermore, ever since the historic establishment of trade routes along the Rhine, the "long-term" urban planning school of thought seems to characterize not only the development of Strasbourg, but also of all the cities within the Upper Rhine valley. This "long term" urban approach contributes to the creation of the polycentric urban network of the valley, structured by a very dense communication system, over both short and long distances. Ports, like railway stations, represent the strategic nodes of this system, sustaining its proper functioning and ensuring lasting durability. In this paper, our hypothesis is that the prospective planning of the city of Strasbourg and the engaged transformations for achieving a cross-border metropolitan dimension are strongly linked to both a "long-term" logic and the idea of "life-cycle". These concepts have always accompanied the city's urban development and planning. Thus, the idea of slowness as seen through a long-term, life-cycle lens, combined with the respect of natural and geographical constraints lead us to think of Strasbourg as a "resilient city". Besides, in terms of energy transition strategies, the new planning tools - the *Plan local urbain intercommunal* (PLUI) in particular - also point out this long durability tradition and attention to the natural elements of the territory.

Regarding the relationship between planning history and planning practice, we stand by the theories of historians such as Reinhart Koselleck, who understood contemporaneity as a sequence of time that fits between the "space of experience" and the "horizon of expectation". Moreover, we embrace the theories of Italian urban planners, such as Bernardo Secchi, for whom wastelands and brownfields are not to be understood as territorial "wounds", nor as "pockets of poverty" (architectural, social, economic, relational, etc.). Instead, these urban situations could be seen through the concept of the "life-cycle" and through the potential of resilience they express. We also relate to Secchi's ideas regarding the importance of future thinking for urban planning, through projects, visions and scenarios. In this sense, we also refer to Future studies theorists, like Lena Börjesson and her colleagues, whose theoretical frameworks accommodate our position in favor of an experimental and imaged prospective, as a necessary step in planning practice.

## THE PORT WITHIN THE CITY: A MOVING HARBOUR ALONG THE ILL RIVER

The planning history of Strasbourg shows that although once a structuring element, water thereafter became a protective element in the thirteenth century following the construction of the Faux Remparts basin on the north branch of the river. This basin presented a central median, a piece of land where tower-gates, marking the entrance into the city, were built. In the eighteenth century, as the central median became obsolete, it was first converted into a pedestrian walking area and then completely demolished between 1803 and 1833. Thus, until the nineteenth century the harbour activity was maintained in the southern part of the island ellipse, along the old customs area. In fact, within the first decades of the nineteenth century the use of the riverbanks extended almost to the mouth of the Marne-Rhine Canal.

When Strasbourg became a border-town due to its attachment to France with the Treaty of Westphalia, a heavy fortification system designed by Vauban was consequently built. **(Figure 1: The first harbor on the Ill River)** These fortifications durably marked the city's development especially when it came to those across from Germany.

At the same time, on the other side of the Rhine, the fortress of Kehl was built in order to protect Strasbourg. Once again, water played a major role: the dam designed by the military engineer Vauban as part of the fortification, allowed for flooding in the southern territories (Montagne-Verte, Meinau, Neudorf) in case of siege.



FIGURE 1 The first harbor on the Ill River

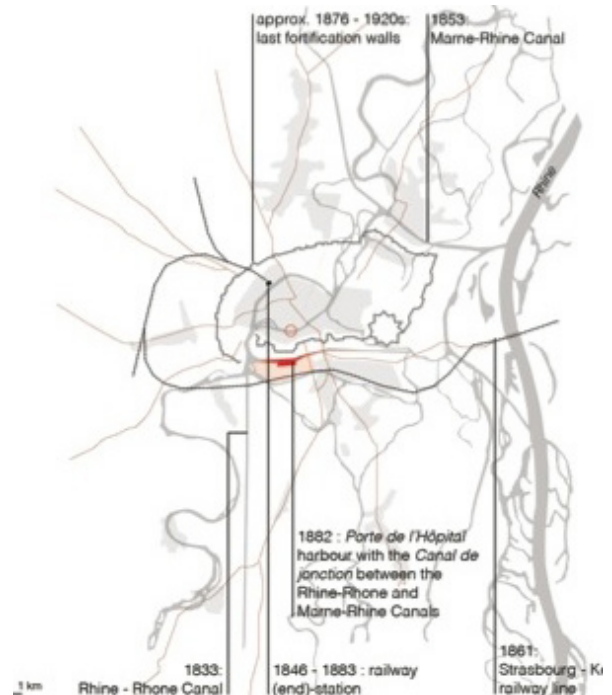


FIGURE 2 The harbor during the 19th century



FIGURE 3 Strasbourg and the canalization project of the Rhine 1830

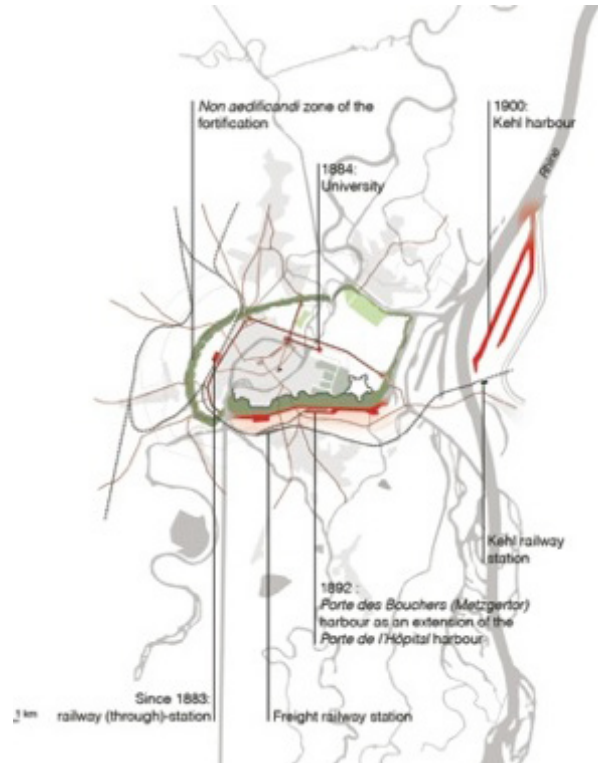


FIGURE 4 The harbor at the beginning of the 20th century (before 1910)





FIGURE 5 Commerce basin activity



FIGURE 6 Oil Port

Initially a protective element, the notion of water transformed once again to become a developmental factor, especially along the newly built canals: Bruche (J. Tarade 1682), Rhone-Rhine (open for navigation in 1833) and Marne-Rhine (open for navigation in 1853). The Bruche, with a length of twenty kilometers starting in Soultz-Bains, was redesigned according to the plans of Vauban. He quickly allowed commercial use and transport of materials, hewn stone in particular, used for the construction of the fortification<sup>1</sup>. As for the Rhone-Rhine Canal, its Alsatian section was part of a larger project, linking the two rivers (the Rhone and the Rhine) and connecting Marseille to Rotterdam. 324 km long and punctuated by 161 locks, its construction began in 1784 and ended in 1833. Its layout in the south of Strasbourg would fundamentally change the urban development of the suburbs. The straight line of the canal crossing the countryside permanently divided the territories south of the city, which were initially vegetable plots. The suburban neighbourhoods of Elsau and Meinau were thus separated and therefore pursued different urban developments.

Finally, the Marne-Rhine Canal was created, and connected Strasbourg to the rest of the hydrographical network of the nineteenth century. With a length of 314 km, it crosses the Vosges Mountains through the Saverne Pass. This technical achievement was not only an answer to economical issues, but more importantly, it represented a political statement: the inclusion of Alsace, and Strasbourg in particular, to French territories through the river network. This was also an opportunity to restructure certain northern city districts notably the “neighbourhoods of the three suburbs”. The establishment of an intramural railway station was also announced and the structure of main boulevards in the northern insular ellipse, were to be further extended in the nineteenth century in the Neustadt. The train station’s location on the site of Les Halles in 1855 would have a major impact on further port developments, which took a decisive turn. **(Figure 2: The harbor during the 19th century)**

Indeed, in the 1830s, Mayor Schützenberger considered the development of a new intramural port. However, the idea was quickly abandoned, as the military was strongly opposed to it. Besides, sailing conditions seriously deteriorated partly because of the canalizing works undertaken by the Baden engineer Johann Gottfried Tulla<sup>2</sup>. **(Figure 3: Strasbourg and the canalization project of the Rhine 1830)** In 1864, the port of Strasbourg was no longer accessible to the barges coming from the Rhine and freight transport upstream of Mannheim was done via railway.

## THE PORT OUTSIDE THE CITY: STRASBOURG'S HARBOUR MIGRATION TOWARDS THE RHINE

After the annexation of Alsace-Lorraine to the German Empire in 1871 and the expansion of its capital city Strasbourg, the ambition to open towards the Rhine was reaffirmed. For the city and the *Reichsland*, this came from an economical and political necessity: to be integrated into the German market. The new urban extension plan established in 1871, tripled the city surface with a new system of fortifications. In this plan, the port as well as the railway station and the university, became the main urban polarities, symbolising the new economical and cultural role of Strasbourg. **(Figure 4: The harbor at the beginning of the 20th century – before 1910)** It is within this building momentum, attempting to become a new industrial capital that Germans decided to remove the former French railway end-station and the old port on the Ill. Thus, the construction of the new monumental through-station was planned in the west, in order to replace one of the former bastions of Vauban. The university was set to be developed in the northeast extension of the medieval city. As for the port, the long debates regarding competition of the urban extension led to its location in the southern part of the city, on the *Canal de jonction*<sup>3</sup>.

The municipality financed the construction of the *Porte des Bouchers* harbour in 1892. This was the starting point of the slow migration of the port and industrial infrastructures towards the Rhine. The groin system of the Commerce and Industry basins opened in 1901. **(Figure 5: Commerce basin activity)** As a response to the increasing traffic and the threat of economical monopoly that Strasbourg represented, in 1900 Baden railways inaugurated the port of Kehl in order to keep control of fluvial transit to southern Germany. During this German urbanization period, a unitary vision of the city emerged called the *Großstadt*. This concept shows how the engineering of the port and rail infrastructures, as well as architectural design and urban planning, articulate together in order to shape a coherent metropolitan landscape, despite the contrasts and fracturing elements it might include and/or generate. Through this unified vision, the emerging metropolis reinvested the old port and rail sectors, offering them the possibility of a new life-cycle. At the same time, new interconnected roadway systems, such as boulevards and avenues, were set up and linked to the old urban fabric through new bridges over the Ill.

After the First World War, as Strasbourg returned to France, its harbour continued to play a major part on the Rhine's chessboard, while the port of Kehl became, between 1920 and 1929, an international organization, working in harmony with Strasbourg. A new special status for the French side of the port established new rights and freedoms: in 1926 the *Port Autonome de Strasbourg* was created. Between 1919-1928 and 1945-1951, the Port of Kehl was repeatedly put under French jurisdiction. Later, a Franco-German board consisting of members from Baden-Württemberg and the *Port Autonome* will gain control of the port. In the 1930s, Strasbourg's port was extended north and south to occupy the entire Rhine façade. To the south, connected to a shunting yard, six docks were planned therefore doubling the size of the port infrastructure<sup>4</sup>. However, their construction never took place due to the Second World War. Nevertheless, activities related to hydrocarbon continued to grow, especially with the oil port's creation in 1927, and extension later in 1963<sup>5</sup>. **(Figure 6: Oil port).**

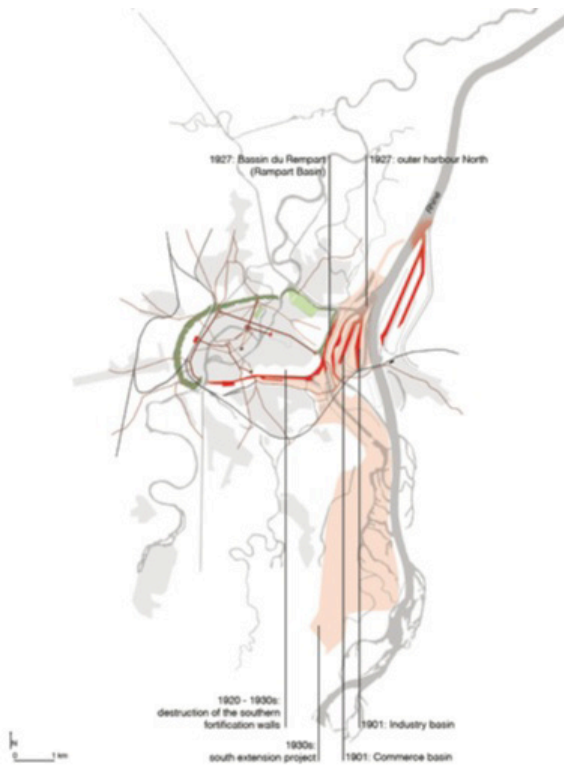


FIGURE 7 Extension towards the Rhine in the 1930s

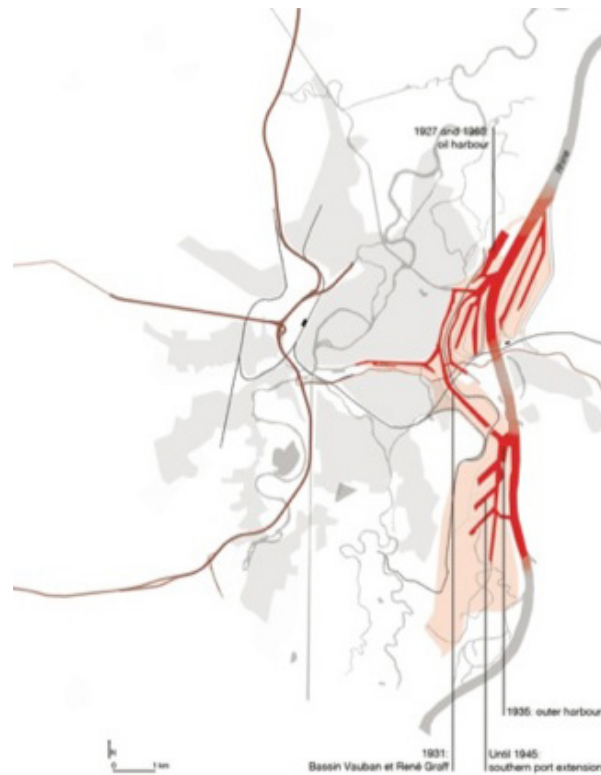


FIGURE 8 The last extension of the harbor along the Rhine

## THE CITY WITHIN THE PORT: THE CROSS-BORDER DUAL-HARBOUR-CORED METROPOLIS

All the aforementioned historical developments help to understand the close relationship between urban development and harbour areas, emphasising the complex nature of recent urban planning challenges and debates.

As previously shown, the relationship between the port and the city, in Strasbourg’s singular historical context, has gone through either symbiotic or conflictual periods. Outside of the city walls, before the southern fortifications were demolished in the 1920s, the new harbour area reached a strategic metropolitan location, between the city centre and the southern neighbourhood of Neudorf and was very well connected through an efficient railway, tramway<sup>6</sup> and logistical system. **(Figure 7: Extension towards the Rhine in the 1930s)** It was also directly connected to the Stock Exchange headquarters (*Place de la Bourse*), strategically located at the crossroads of the North-South transit routes and East-West fluvial trade flows (aspiring to have a major role in national and international trade). Further developed by the French state, port facilities extended progressively to the east, away from the city, creating a North-South development along the Rhine. That is why, within the second half of the 20th century, Strasbourg’s urban development was conditioned by this thick double boundary – the national border and the harbour strip - preventing its growth to the east and the urban connection to the river. Thus, during the 1960s and 1970s, the city’s development was always envisioned either in a North-South direction (parallel to the Rhine) or, growing at 180° angle, leaning against the Rhine and the harbour. **(Figure 8: The last extension of the harbor along the Rhine)**

However, as the harbour's activity was permanently migrating towards the Rhine, it was already agreed upon dating from the 1960s that the old port sites (west of Pont Churchill) were doomed to urbanization. By the end of the 1980s, the old port and former industrial areas on the *Canal de jonction* were vacated and became a huge abandoned wasteland territory next to the city centre. Together with the "green belt" of Strasbourg<sup>7</sup> whose *non aedificandi* status was repealed only in 1990, the old harbour areas turned out to be a great urban development opportunity for the city.

In 1992 the city of Strasbourg organised an International Competition of Ideas for the urban development of this East-West axis, covering the old port's land up to the Rhine. The designs envisioned urban continuums expanding throughout the city and connecting them to the river by this urban strip in between Strasbourg's north harbour and south port area, while also creating connections to Kehl's urban fabric. Though not of operational use, the 1992 designs gave rise for the first time to the idea of cross-border urban development, which was to be reinforced in 1993 with the opening of the borders. Although the idea existed long before, it was only by the end of the 2000s that both French and German stakeholders commonly put pen to paper in a joint document (*Ecocités*).

Meanwhile, the first official step in this direction was the engagement of Strasbourg's and Kehl's local authorities in a common project: a cross-border garden park located on both riverbanks of the Rhine (*Jardin des Deux Rives*) in 1996. Completed in 2004, its construction became a symbolic gesture marking a different understanding of the border, a closer partnership between the two countries, a symbol of their European roots, and also the beginning of a closer collaboration between French and German stakeholders.

The *Ecocités* approach, elaborated in 2009, was the first official document expressing the cross-border metropolitan goal and stating common principles for a shared urban strategy. Signed by both Strasbourg's and Kehl's authorities, *Ecocités* structured the cross-border urban development within three specific "threads" or networks: the blue hydrographical one, the green vegetal one, and the "red" one, specifically underlining the rail and light-rail (tramway) public transport infrastructures. **(Figure 9: Ecocités Approach)**

At its core, a cross-border metropolitan "belt" connecting Strasbourg and Kehl's city centers and accommodating new metropolitan facilities and functions would take shape in the old port and the "green belt" areas, resuming the initial ideas of the Strasbourg-Kehl axis, studied in 1992. But, for many observers, this urban cross-border development directly threatened (at least on the French side) the accessibility of the northern and southern port areas, weakening and ultimately leading to a decline in port activities.

These issues became strategic key points regarding the discussions between urban and port authorities and thus led to two co-produced documents: the Development Agreement CUS8/City/Port (2010) and the *Schéma Directeur des Deux Rives, the Two Riverbanks Masterplan* (2012).

In the first document, the Port recognized the decommissioning of its central part as an active productive area, but decided to maintain ownership of the land. Future urban development of this territory is therefore further subject to a shared project management between the two authorities. The city also committed to ensuring and reinforcing existing industrial activities, and to maintaining a dual access to harbour areas. Both sides were equally strongly in favour of acting for the betterment of the environment and working together as partners by putting into place joint energy transition strategies<sup>9</sup>.

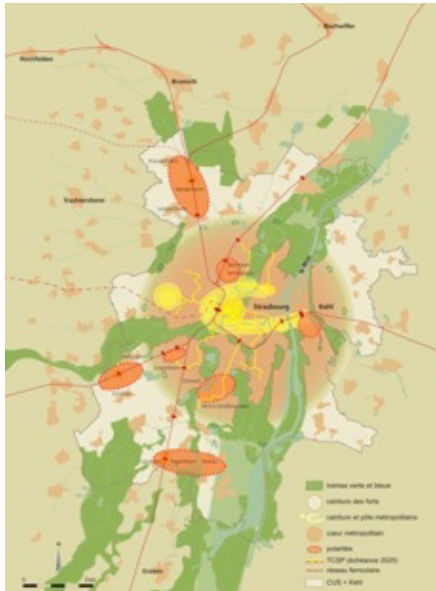


FIGURE 9 Ecocités Approach, Strasbourg, the two-riverbanks metropolis (Strasbourg, métropole des deux rives) : general view



FIGURE 10 Two Riverbanks sector (Schéma Directeur des Deux-rives) - extracts, Reichen et Roberts et associés/CUS-PAS, 2011

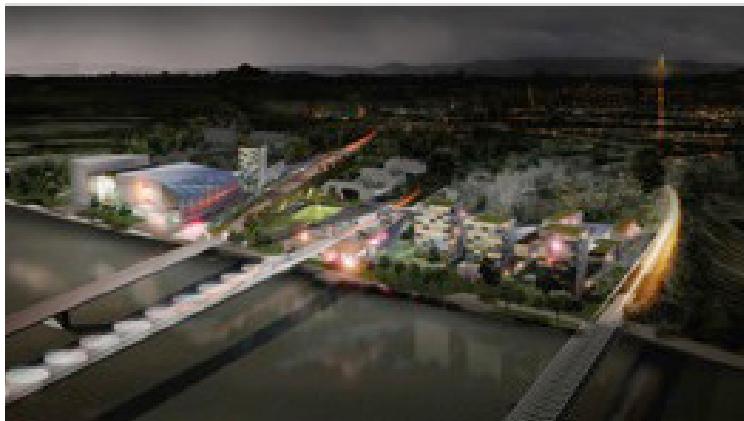
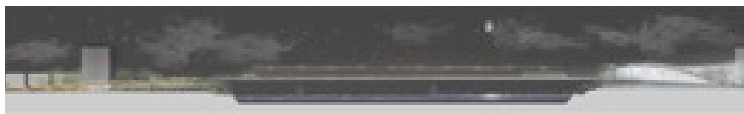


FIGURE 11 Border thickness (L'épaisseur de la frontière), urban design project - international competition " Cours des douanes Kehl et Strasbourg (Custom's Yard Kehl and Strasbourg)", 2012-2013, CMYT et associés/CUS-DAUH-Ville de Kehl, aerial perspective: Matthieu Buisson.

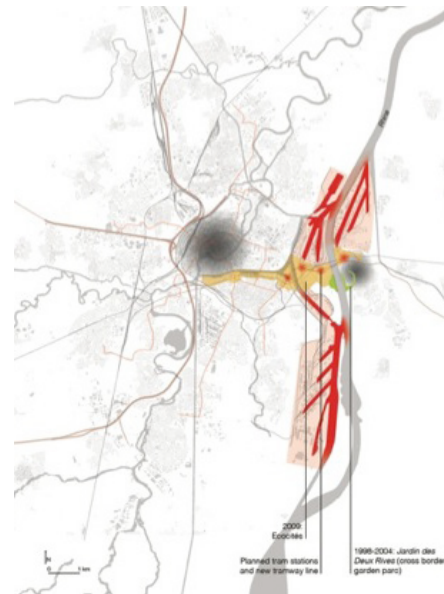


FIGURE 12 The harbor and the cross-border urban projects (under construction)



Accordingly, in 2012, in the *Schéma Directeur des Deux-Rives*, the eastern, cross-border part of the “belt”, called the Two Riverbanks sector (*Deux-Rives*), represents the spatial framework of these commitments. Designed at first to mainly accommodate tertiary and economic activities, the project gained a stronger residential dimension. **(Figure 10: Two Riverbanks sector)** This development strategy relies on a new planned cross-border tramway line, which would complement the existing east-west railway and road networks, and become the main structuring element of urban development, according to a TOD10 approach. This joint development strategy is an interesting and complex example of the three intertwining “threads” (blue, green and “red”). On one hand, the city-port relationship demonstrates both the strategic role of the port as a multimodal platform as well as its priority as an economic site<sup>11</sup> for the city. On the other hand, we can see the strategy used in residential areas to reduce heavyweight traffic and pollution sources. From the German border perspective, the city-port interface issues are similar. New residential neighbourhoods, connected to the tramway line coming from Strasbourg represent the city’s extension to the north, beyond the railway station, next to the Kehl harbour. The old French and German customs sectors representing the face-to-face urban development across the Rhine, were the object of an International urban design competition in 2012. **(Figure 11: Border thickness (*L'épaisseur de la frontière*), urban design project - international competition)**

The numerous ideas, sketches and designs that have been developed since the 1990s for Strasbourg, are finally coming together in the new cross-border urban band, which is still under construction. **(Figure 12: The harbor and the cross-border urban projects –under construction)** The ambition to keep the two sides of the Rhine together while remembering the multiple heritages of this strip - military functions, industrial features and heavy transport networks crossing the harbour areas -, finally leads to a unique way of imagining cross-border development. In Strasbourg, this important cross-border metropolitan project responds at first to the desire to build the “city within the city”, as well as to the goal of reconnecting to water through direct contact with basins and the Rhine. Throughout its development, what really emerges is the very idea of building the city within the port, as seen by the Port Authority position itself as a proponent of keeping control of the land.

Today, as discussed within the new PLUI, the future of this dual-harbour-cored metropolis evokes new challenges related to industrial ecology, energy transition, environmental concerns, innovative mobility as well as contemporary urban conditions and lifestyles. A new life-cycle is still at its beginning, based on the heritage of the historical structures and infrastructures of the early twentieth century metropolis.

Thus, as we have emphasized with our work as urban designers (Atelier CMYT) and with our research (AMUP laboratory), the challenge for Strasbourg is to give life to the cross-border metropolis by relying on existing mobility infrastructures, ports and railways, which are all the technical and humanistic heritage of urban planners from the late nineteenth and early twentieth century; Joseph Stübben and Georg Simmel in particular. The future scenarios we develop through our action research and master workshops, envision for Strasbourg 2030, resulting encounters between a “smart” and a “human” city, between high speed and slow mobility, between historical heritage and multiple horizons of expectation. It is through these encounters that Strasbourg may continue to be a resilient and sustainable city.

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The authors thank Lauren Doppler-Speranza and Jeremy Allan Hawkins for their review and assistance for writing in English. Our researches would not have been possible without the commitment of the stakeholders of the Eurometropole of Strasbourg within the Chair of Innovative Metropolitan Mobility (ENSAS-SYSTRACAUP/Tongji): seminars, research platforms and FabLabs.

## Disclosure Statement

The authors state no potential conflict of interest.

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## Image Sources

Figure 1: The first harbour on the Ill River, ©Andreea Grigorovschi, H el ene Antoni (AMUP, 2016).

Figure 2: The harbour during the 19th century, ©Andreea Grigorovschi, H el ene Antoni (AMUP, 2016).

Figure 3: Strasbourg and the canalization project of the Rhine, 1830,   Generallandesarchiv Karlsruhe H-c/4.

Figure 4: The harbour at the beginning of the 20th century (before 1910),  Andreea Grigorovschi, H el ene Antoni (AMUP, 2016).

Figure 5: Commerce basin activity, in: Port Autonome de Strasbourg, Le Port de Strasbourg, Strasbourg: Editions des Derni eres Nouvelles d'Alsace, 1948, p. 32.

Figure 6: Oil port, in: Port Autonome de Strasbourg, Le Port de Strasbourg, Strasbourg: Editions des Derni eres Nouvelles d'Alsace, 1948, p. 132.

Figure 7: Extension towards the Rhine in the 1930s,  Andreea Grigorovschi, H el ene Antoni (AMUP, 2016).

Figure 8: The last extension of the harbour along the Rhine,  Andreea Grigorovschi, H el ene Antoni (AMUP, 2016).

Figure 9: Ecocit es Approach, Strasbourg, the two-riverbanks metropolis (Strasbourg, m etropole des deux rives): general view,   CUS-DAUH, 2009.

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Figure 11: Border thickness (L' paisseur de la fronti ere), urban design project - international competition " Cours des douanes Kehl et Strasbourg (Custom's Yard Kehl and Strasbourg)", 2012-2013,   CMYT et associ es/CUS-DAUH-Ville de Kehl, aerial perspective: Matthieu Buisson.

Figure 12: The harbor and the cross-border urban projects (under construction),  Andreea Grigorovschi, H el ene Antoni (AMUP, 2016).

## Endnotes

- 1 CUS-DUAH, « A la d ecouverte des quartiers de Strasbourg », Montagne-Verte, 2013.
- 2  ber das Leben des Wasserbauingenieurs und Gelehrten Johann Gottfried Tulla, Beitr age zur Stadtgeschichte, Rastatt. [exhibition catalogue, 2015]
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- 6 The first tramway network of Strasbourg created in 1878 and developed until the 1930s, included both urban and suburban lines. The longest suburban line reached Markolsheim village, at about 60 kilometres south to the city. An urban tramway line crossing the Rhine to the city of Kehl was inaugurated in 1907. As the road public transport (at first the trolleybus and then the bus) gained ground since the 1940s, the whole tramway network was closed and dismantled by 1960.
- 7 Resulting from the city's former defence system the Green Belt area is basically the former large free space surrounding the fortifications. After the fortifications' destruction, this area was classified as *non aedificandi* land (non-constructible green area and free space maintained in a hygienic purpose) by the laws from 1922 and 1927, decommissioning the fortification status. That is why, within the 20<sup>th</sup> century, the free space of the Green Belt served mostly for the development of the railway and highway infrastructures.
- 8 CUS -Strasbourg's Urban Community (administrative unity). Since January 2015, according to the French law on cities of 27 January 2014, Strasbourg has become a local authority with special status - the Eurom etropole - replacing the former CUS (Communaut e Urbaine de Strasbourg). Supposed to "enhance metropolitan economic functions, transport networks and academic resources, research and innovation, in a spirit of regional and interregional cooperation and with a desire for balanced development of its territory" (LOW 2014-58), this new status offers the opportunity to invent new cooperation strategies and frameworks in order to further question the metropolitan territorial development within multiple scales: from the Upper Rhine metropolitan region to the metropolis' urban cores.
- 9 Beyer, A., " Les ports fluviaux, outils d'une m etropolisation durable ", Colloque International Futurs urbains, Session no. 4 - Des infrastructures et des services urbains pour une ville  conomique ?, Marne la Vall ee, 2013. [Online], date of access: 08.04.2016, URL: <https://trid.trb.org/view.aspx?id=1267900>
- 10 Transit Oriented Development (TOD) is a planning strategy introduced by the American architect and urban planner Peter Calthrope in the 1990s. Neighbourhoods envisioned within the Sch ema Directeur des Deux Rives are typically mixed-use (residential, commercial and tertiary functions) TOD designed, centred on the transit (tramway) stations located within 400m and 800m from each other.
- 11 The port is considered to be « a vital asset for the economic development of the metropolis, that needs to be consolidated » (Strasbourg Eco 2030, Un territoire   faire grandir ensemble. [Online] URL : [http://www.europtimist.eu/wp-content/uploads/2015/12/STRASBOURG\\_ECO\\_2030.pdf](http://www.europtimist.eu/wp-content/uploads/2015/12/STRASBOURG_ECO_2030.pdf))



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# Urban Expansion & Urban Innovation

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# THE “VENEZIA NUOVA” DISTRICT IN LIVORNO, ITALY - THE ROLE OF THE DOMINICANS IN THE URBAN DEVELOPMENT OF THE CITY

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**Maria Grazia Turco**

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The paper analyses, through a study of the Dominican convent in Livorno, the development of this city, from the 17<sup>th</sup> century, when the Friars established there. They reached Livorno, a maritime trading center, and obtained from the Grand Duke Cosimo III, in 1695, a land in an expanding area, the “Venezia Nuova”. The Dominicans found an urban structure which was particularly appealing to their religious activities and their desire to expand. Indeed, this area had developed in order to suit the merchant class needs. After the suppression of the Dominican convent, this complex was assigned to the Ecclesiastical administration. During the French dominion (1808-1814), the structure was turned into a prison until a few decades ago.

A recent restoration on the ex-Dominican convent, which aim was the transformation of the edifices into a new site for the State Archives, gave the opportunity to know the religious complex.

Nowadays the area still provides great potential, deriving from a perfect synergy between architecture, urban environment and the city. This “value” relationships need to be recovered in a future project that will reinterpret the site and foster retrieving both the functional use and the valorisation of the architecture within the entire urban center.

## **Keywords**

Dominican Order, Livorno (Italy), Venezia Nuova district, urban transformation, planning strategies

## **How to Cite**

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FIGURE 1 Livorno, (above) the “Venezia Nuova” district

## INTRODUCTION

The Dominican monastery in Livorno (Italy) was recently consolidated and renovated in order to house the city’s State Archives. This was a perfect opportunity to collect more data about the complex which over the years has undergone architectural and functional alterations. The survey and archival research clarified its history as an *unicum* within the city, i.e., the urban area developed in the late seventeenth century based on the master town plan, better known as “Venezia Nuova”, drawn up by the Governor of the city, Alesandro Dal Borro (...-1701)<sup>1</sup>.

This essay analyses the urban history of the Tuscan city when the Order of Preachers settled there permanently. The Dominican monastery has always characterised the whole area and continues, even today, to be an important point of reference in the historical, cultural, religious and tourist debate.

The perfectly integrated religious architecture and historical landscape in this complex urban area reciprocally influence each other. To this day the district and the monastery cannot be considered as separate entities; they have reciprocally modified each other and adapted to the economic and social changes they have both experienced down through the centuries.

## “VENEZIA NUOVA”

The Medici family founded the city of Livorno in the late sixteenth century (1577) based on a design by Bernardo Buontalenti (1531-1608), architect at the court of the Grand Duke in Florence. Commissioned by Francesco I (1541-1587) to draft a town plan that included the fortified city and the port (Figure 1), Buontalenti based his plan on contemporary enlargement projects implemented in several cities in The Netherlands.

When more and more people settled in the Medicean city its boundaries had to be enlarged. In 1629 approval was granted to another project by the Siense architect Giovan Battista Santi (...-1631) who designed the ‘enlargement’ of the inhabited area between Fortezza Nuova and Fortezza Vecchia<sup>2</sup>. The intervention involved an area – trapezoidal island – running alongside the Canale dei Navicelli which from Pisa<sup>3</sup> flowed directly into the port of

Livorno<sup>4</sup>. Work progressed slowly due to both Santi's death and the difficulties associated with building on marshy ground. In 1646 only some houses and warehouses had been built along the canals, as well as a small church dedicated to St. Anne and the Nativity of Mary.

To continue to build on the swampy ground a decision was taken to adopt more complex building techniques and bring in specialised workmen from Venice<sup>5</sup>. Technicians and workmen were called not only from Venice, but also from The Netherlands, while architects were brought in from the Low Countries and France so that they could become familiar with these novelties and improve their skills<sup>6</sup>.

The district earned its name, "Venezia Nuova" thanks to the small islands, ditches and canals that influenced the urban plan and to the Venetian labourers entrusted with building the underwater foundations. The envisaged division of "Venezia Nuova" into plots included an initial strip of land along the canal and a second plot near the envisaged fortifications; part of the latter was to be allocated to the Dominican Order so that they could build a monastery.

Work began again in 1653; the first enlargement of "Venezia Nuova" included houses and warehouses arranged orthogonally to the pre-existent Canale dei Navicelli, as well as a new link to the rest of the city ending at the small port of the Genovesi.

This urbanisation phase was supervised by Annibale Cecchi who also designed the seventeenth-century Customs House. In 1682 the Governor, Marco Alessandro Dal Borro, authorised the construction of a proper fortified system further north: the fort dedicated to St. Peter of Alcantara under the supervision of the Grand Duke's architect, Pier Maria Baldi (1630-1686)<sup>7</sup>. The ravelin of St. Mark was built between the latter and Fortezza Nuova, while the Canale dei Navicelli was redirected, before entering the city, towards the Fosso Circondario, an integral part of the city's defensive system.

The buildable area allotted to the Dominicans was located between these three fortified systems while another enlargement (also designed as an island) involved the partial demolition of Fortezza Nuova (Figure 2). Most of this area was granted to the Jesuits so that they could build a monastery.

The "Venezia" district was built mainly for the merchant shipping community; it included rentable housing, multi storey buildings, warehouses and storerooms. The private entrepreneurs supervising its construction developed a new housing that included large, covered, three-floor warehouses with vaults and pilasters as well as an underground floor, connected to the moat, a floor at street level and a second floor to be used as residential accommodation<sup>8</sup>.

When the famous, French traveller Bernard de Montfaucon (1655-1741) sojourned in Livorno, considered one of the most important cities on the eighteenth-century Grand Tour, this is how he described the district: "This extremely well-fortified city has developed day by day; there is a part of the city that has been built and is now called Nuova Venezia, since there are canals in the middle of the streets"<sup>9</sup>

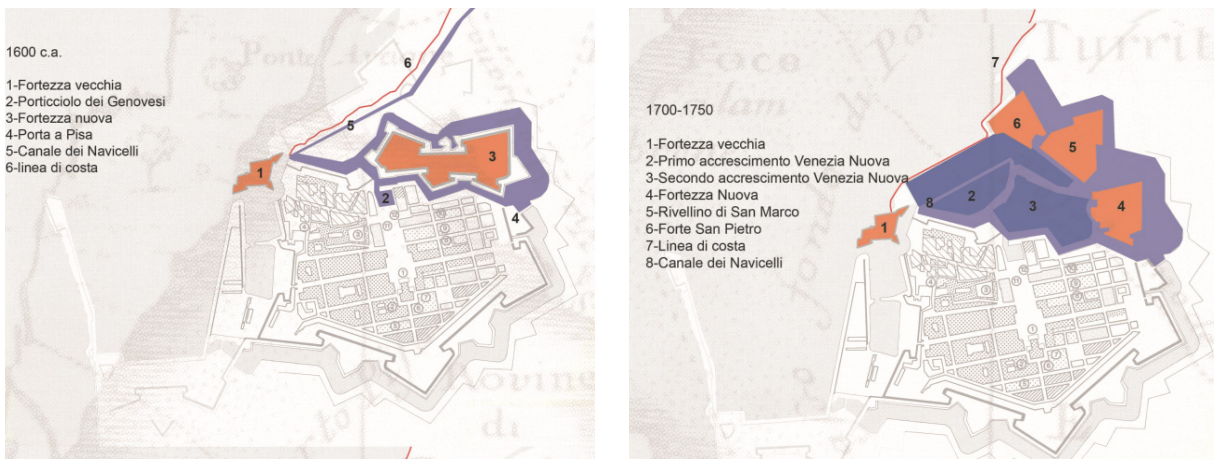


FIGURE 2 Development of the “Venezia Nuova” district between the seventeenth and eighteenth centuries

## THE ARRIVAL OF THE DOMINICANS

The Dominican Order arrived in Livorno, the cosmopolitan city of maritime traffic and trade, in 1695. Grand Duke Cosimo II granted them a plot of land in the new enlargement known as “Venezia Nuova” so that they could build their monastery. The Dominicans considered this district as a perfect area in which to carry out their religious activities and proselytism. The district was created for the mercantile community and the very diverse population present in that area were chiefly traders. The monks were rather suspicious of traders because the latter were more vulnerable to the ‘ultimate sin’: usury<sup>10</sup>.

In fact, in the early eighteenth century several religious complexes belonging to the Jesuits, Trinitarians and Dominicans, amongst others, were erected in this area. The latter had gradually settled in Livorno. The first monks – the German missionary Sebastianus Kenap (or Knab, 1632-1690) and the Armenian priest Israyélean – arrived in 1669; both had been invited by the Congregation for the Evangelisation of Peoples to act as the spiritual heads of the Armenian community in Livorno<sup>11</sup>. The monks stayed in a small inn in Via Grande and performed their religious rites in a small chapel inside Fortezza Nuova<sup>12</sup>. Later on, Cosimo III Medici (1642-1723) authorised the master general of the Dominicans, Antonio Cloche (1628-1720), to set up the first Inquisition Tribunal in the city. From 1686 onwards it was located in a small alms-house near the church of St. Barbara close to the Pisa Gate<sup>13</sup>.

As instructed by the Order, the learned, linguist Dominicans chose to settle in the seaside city of Livorno because it provided excellent opportunities for evangelisation due to the many ethnic communities living in the city. The task of the Dominicans was to support the Christian faith, represented by the Catholic Church, in a city overrun with social and economic unrest. Preaching and apostolic poverty were the arms they used to achieve their goal; their commitment focused on tangible objectives in a complex social situation that required flexible behaviour and conduct.

In 1547-1548 Cosimo I de’ Medici (1519-1574) had already promulgated two edicts granting freedom and safety to foreigners who had decided to settle in Pisa and Livorno because they had problems with the law in other towns. Foreigners in Livorno included: Jews from the Iberian peninsula, Greeks, non-Catholic Orientals, people from Provence, Liguria, Lucca, Corsica, England and The Netherlands, inhabitants from the Kingdom of Naples and the Papal State, as well as slaves, most of whom were Muslims<sup>14</sup>.



Duty-free trade quickly increased after Ferdinando I (1549-1609) not only issued a series of edicts (beginning in 1590), known as the “Livornine”<sup>15</sup>, granting privileges to shopkeepers, merchants and artisans, but also named the city a “Free Port” in 1618 as a subsidiary of Florence’s mercantile activities. This led to a plethora of rather complex social and religious traditions between Christian, Jewish and Muslim merchants, so much so that it prompted numerous religious Orders to settle in the city.

The Livornine Laws were to spark an increase in the population in Livorno: the city went from 530 inhabitants in 1590 to 10,000 in 1606 when Ferdinando I proclaimed the castle-port of Livorno a “City”. In 1690 it increased to 30,000.

It did not take long for the Catholic Church to get organised in this complex situation after being pressured by the Medici to play an active role in the religious construction of the city. The first to arrive were the Augustinians in the church of St. John; a few decades later other religious orders arrived, called to evangelise a region where heresy and apostasy appeared capable of co-existing with Jewish tradition and the Greek-Catholic communities. All the orders in the city focused on reviving the initial religious fervour to combat its widespread moral and disciplinary decadence. Undoubtedly the Catholic Church could not intervene to curb this religious tolerance considered necessary to achieve the Livorno project, but it could keep an eye on the verdicts of heresy: different populations with different faiths resided permanently in Livorno, but not those condemned by the Inquisition. The monks’ vow of poverty was a powerful weapon in the battle against heresy; it gave the monks credibility and freedom of movement, but at the same time made them dependent on all kinds of foundations and the donations people were often willing to make to save their souls.

The first settlement strategy enacted by the Dominicans appears to be anything but haphazard, instead it looks like a well-prepared development plan associated with activities linked to the Inquisition and preaching.

Given the demographic and religious situation the Dominicans wanted to ensure their presence, but this required a permanent monastery, i.e., the complex in the Medici “Enlargement” area. Mendicant Orders always try to establish themselves in more developed cities and productive areas not only because the latter provided better settlement prospects from an economic point of view, but also due to the spiritual and social environment in those areas. Rarely are they to be found in city centres, instead they settled more frequently in recently renovated old city centres or close to more newly-established areas.

In 1695 Cosimo III, supporter of a rigid Catholic moral, facilitated the establishment of the cenoby in Livorno by granting the Dominicans a piece of land near the Fort of St. Peter of Alcantara<sup>16</sup>. The irregular area where the new district of the Dominicans was being built is 9,332 square Florentine *braccia* adjacent to the cemetery<sup>17</sup> (Figure 3).

Later on, when the Dal Borro project was being reviewed the surface area was reduced by a third, because “during the redesign of the enlargement plan of Livorno a decision was taken to narrow the moat and the street and this required reducing the size of the entire plot assigned to the Fathers”<sup>18</sup>. The envisaged reduction of 6,674 square *braccia* changed the shape of the plot and included a street between the area assigned to the monks, near the cemetery<sup>19</sup>. The smaller plot, where the monastery and church were to be built, now required a planimetric solution to optimise the space available.

In February 1698 the monks pestered the superintendent of housing in Livorno, Matteo Prini, to be given the area as quickly as possible because they had already “designed and built a model of the new building which had been sent to Rome to be approved by their superiors”<sup>20</sup>. The monastery, completed in the first two decades of the eighteenth century (1699-1720), included a small church dedicated to St. Catherine. The church (now completely lost) was located in the south-west corner of the monastery.

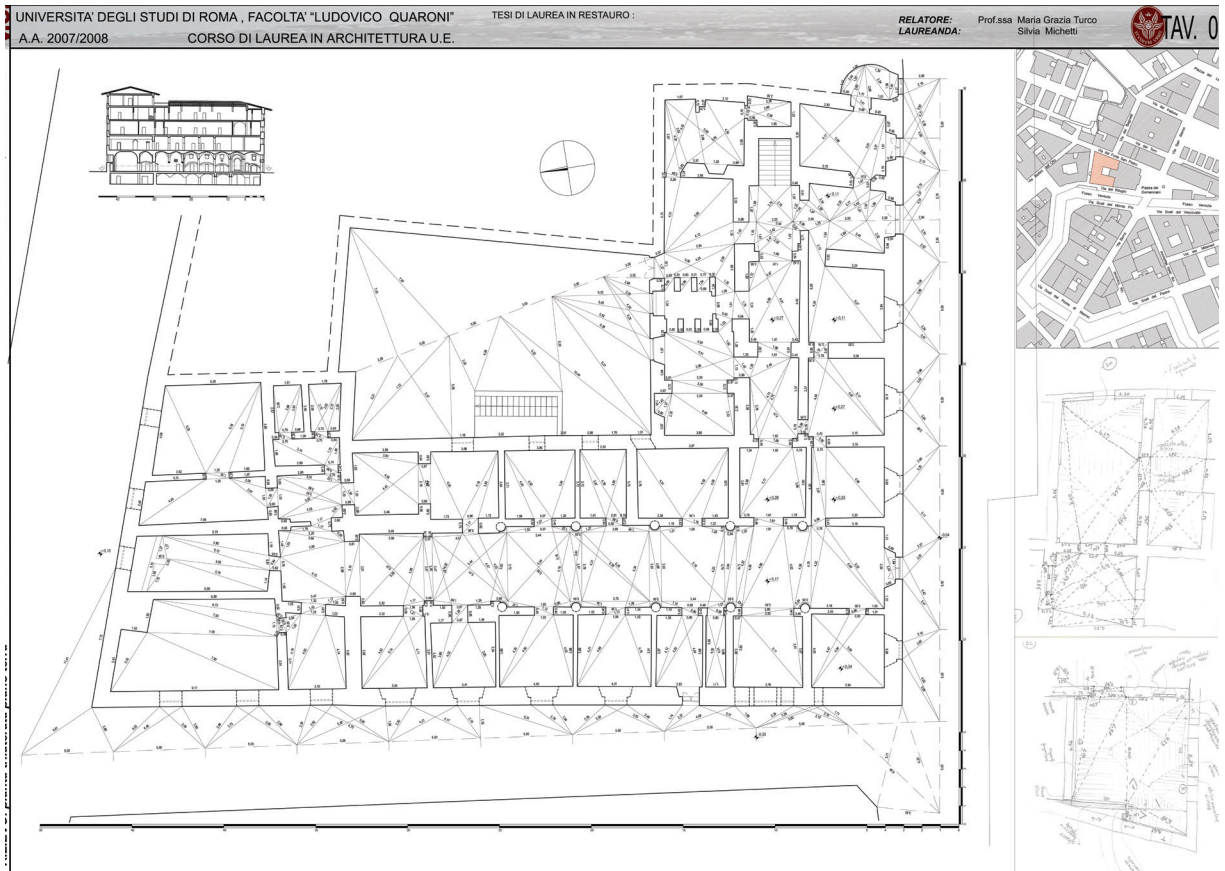


FIGURE 3 Livorno, the Dominicans monastery. Survey

The French missionary Jean Baptiste Labat (1663-1738), a Dominican abbot, wrote about events surrounding the monastery in Livorno while travelling in Italy (1706): “The Preacher Monks, known in France as Jacobins, began to settle in Livorno in 1704. The Grand Duke granted a piece of land next to the Royal Port to the Congregation of St. Mark so that they could build a church and monastery. Facilitated by the generosity of the Grand Duke and other monasteries of their congregation, in 1706 they had begun to build one of the wings of their monastery when I passed through for the first time. Since then they have successfully continued and in fact in 1716 the monastery is almost finished and building appears to have begun on the church”<sup>21</sup>.

Indeed, work on the monastery began after collecting alms and contributions from other Dominicans monks – St. Mark in Florence, St. Dominic in Fiesole, St. James in San Miniato and St. Agnes in Montepulciano<sup>22</sup> – who pledged to donate 100 *scudi* each year to maintain the monks in exchange for hosting monks from other monasteries. In 1699 the Dominican building was mentioned for the first time in archival documents when the monks began to make detailed records of the expenses for the works “to be executed for the construction of the new monastery” dedicated to the Virgin of the Rosary and St. Catherine of Siena. They began by buying the “stones for the building”, including bricks, mortar, “sand, beams” left over from the demolition of the nearby Fortezza Nuova<sup>23</sup>. The numerous pine trees used as foundation poles were floated down the river from the pine forests of the “Offitio de Fossi di Pisa”<sup>24</sup>. In fact, the position of the building along the canal required the use of special building techniques: these Venetian techniques included, for example, choosing and producing the right poles for the foundations.



FIGURE 4 Livorno, “Venezia Nuova”. Dominican monastery with the new church of St. Catherine (right)

The first building was completed in two years. In fact, the monks moved on 12 November 1701 while continuing to work with all haste on the nearby church of St. Catherine<sup>25</sup> (Figure 4). The almshouse had to be comfortable in order to welcome visiting monks; this is how Jean Baptiste Labat describes his stay there: “We were welcomed by these pious monks with particular kindness and generosity. The prior was from a high-ranking Florentine family and had lived for a few years in our monastery in Via S. Honoré in Paris. His education and status compelled him to take special care of us, for which I will be eternally grateful ... The poverty of this new institution had forced the prosecutor general of the order to ask all the religious who stayed there to pay a per diem of two *Giuli*, approximately fifteen *soldi*, to cover expenses. Although this is a small amount in a city where supplies are very expensive, the monks never forced anyone staying at the monastery to pay, nor did they force them to continue their journey when they were unable to pay”<sup>26</sup>.

The church covered the fully vaulted room used as a cellar. The first floor, used as a dormitory, could be accessed using a rather pokey staircase the remains of which could, most probably, be the small flight of steps discovered during a recent restoration project between the extrados of a vault of one room in the monastery.

Work progressed rapidly so that they could welcome fellow monks from all over the world; this justified the enlargement of the monastery and the church, decorated with stuccoes and large windows, running along a north-south axis<sup>27</sup>. The church has “three naves with *pietra serena* columns, five on each side, two altars on either side, a main altar placed on the spot of the former chapel, seven confessionals placed in niches in the walls and a pulpit and sacristy, all covered in real vaults”<sup>28</sup>.

In 1711 the church dedicated to St. Catherine was completed and was blessed by the provost of Livorno, Angiolo Franceschi. The church was now fully functional and since 1712 the rooms underneath had been very profitably rented to private individuals who used them as warehouses<sup>29</sup>. In fact, owners of houses in the “Venezia Nuova” district were allowed to build under their houses and under the road to create cellars with entrances giving directly into the moat area. These underground depots had palisade walls built using huge poles and groin vaults, thus making large open spaces in which to store goods<sup>30</sup>.

In 1706 Labat realised how important these canals were for communication and transportation: “all the streets have a canal in the middle with magnificent banks and, from time to time, bridges ... These canals are very convenient. The tugs transport the goods to the doors of the depots. The goods that are not affected by moisture are stored in cellars accessed from entrances dug out of the walls of the banks; they are placed well above the water level so that high tides will not be able to ruin them”<sup>31</sup>.

When the Dominicans needed to enlarge the complex they asked other congregations of the Order for funds while other worksites in the “Venezia” district also donated some of the materials they needed to continue construction.





FIGURE 5 Livorno, St. Catherine. Inside the church

A bigger church was built in the nearby kitchen garden. Designed by the architect Giovanni Del Fantasia (1670-1743), the “foundations of the New Church began to be laid on the feast day of St. Martha, 29 July 1720, and on 17 September 1720 the first stone was solemnly laid in the second pilaster to the right in the evangelical chorus”<sup>32</sup>. The new church was used for the first time by the Bishop of Pisa and Livorno in 1721 during a solemn procession from the old to the new church<sup>33</sup> (Figure 5).

In the 1740s the first church (no longer consecrated and in a state of neglect) was rented out as a “storeroom” together with other underground rooms connected directly to the moat area by the same entrance<sup>34</sup>. These decrepit and decaying depots<sup>35</sup> were used to store “grain, fodder and similar supplies”<sup>36</sup>.

Between 1753 and 1758 the three-storey monastery was reorganised to accommodate “two free schools and ... [an] Oratory for the education of young girls” in one area of the old church<sup>37</sup>. Building continued until the 1780s in order to financially exploit the rooms in the monastery complex. These important upgrades were performed to turn the refectory rooms on the ground floor into “supply storerooms”. All the other rooms in the “Old Church” along the moat underwent the same refurbishment<sup>38</sup> (Figure 6).

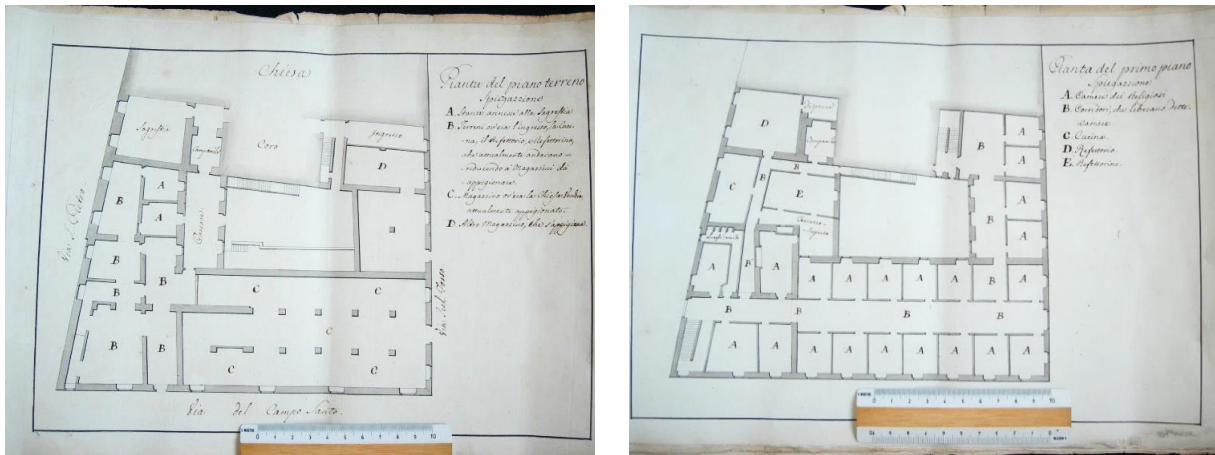


FIGURE 6 Livorno, the monastery, 1753-1759. Plans ground floor and first floor

## THE SUPPRESSION OF RELIGIOUS ORDERS

During the suppression of the religious orders<sup>39</sup>, Grand Duke Peter Leopold of Lorraine (1747-1792) issued a *motu proprio* on 25 September 1785 ordering the closure of the Dominicans monastery, protectors of Catholic orthodoxy and opposers of the Jansenist heresy.

While the church was erected in the parish (1790), the complex was assigned to the administration of the ecclesiastical heritage and in 1786 underwent architectural and functional alterations.

The annulment of the secular confraternities and regular orders, together with their monasteries and convents, severely affected the social fabric and church buildings; it led to their abandonment or reuse and many pieces of antique furniture ended up on the market.

An enlargement plan was presented for the Dominican complex; it was to be turned into a public school and further divided up to create classrooms as well as rooms for the prior, clerics and chaplain.

The monks returned to the monastery for a brief period after Queen Maria Luisa of Etruria (1782-1824) returned it to the Order. However in 1808 they were again evicted by Napoleon. Under the French (1808-1814) the monastery was used as the city prison after an order was issued by the Tuscan Junta on 19 September 1808. It has continued to be used in this manner until very recently<sup>40</sup>.

On 9 April 1811 an Imperial Decree assigned the building of the Dominicans in Livorno to the Commune; in fact, the decree established that departments, districts or communes could freely use buildings as courts or public education facilities.

In 1815 the monks returned to the city after restoration of the old Grand Duchy, but the *motu proprio* issued by Ferdinando II (1769-1824) on 4 April 1817 only assigned the Dominicans the new church and part of the monastery not yet used as a prison<sup>41</sup>. From this moment on, the complex gradually underwent important alterations that changed the monastery forever<sup>42</sup>.

However, there were limits to how a pre-existing monastery could be used as a penitentiary. A report by a “visiting commission” on 8 November 1897 highlighted the dire conditions of the prisons due to the extremely small cells.



Nor did the situation improve in the twentieth century; the prison remained overcrowded and unhealthy hygienic continued to prevail due to the insalubrious air of the moats that facilitated the spread of contagious diseases.

Between 1948 and 1950 the prison complex was damaged during an aerial bombing attack, while on 1-2 April 1950 the complex was hit by an earthquake. This prompted further reconstruction and alterations including the additional floor and the enlargement of the women's wing<sup>43</sup>.

After such an eventful past, the building was given a new lease on life in 1984 when the correction facility was transferred to the new Prison. The building was earmarked to become the new State Archive. Since 2001 the project is part of the historical and architectural system of the city of Livorno for the recovery of historical buildings.

## **CONCLUSION**

By using unpublished sources the study has provided new data regarding the foundation and development of the Dominican monastery; the latter is crucial if we are to obtain more in-depth data about the settlement dynamics of religious communities during this period of massive economic and social growth.

Notwithstanding the different, specific characteristics of the site, the Dominican complex has recurrent uniform features that more often than not reveal that the architectural model changed continuously, influenced as it was by its surroundings closely linked to the customs and ideals of the religious community. The fact it is now an Archive housing historical documents regarding Livorno from the late sixteenth century to the second half of the twentieth century bears witness to the conservation project implemented to preserve a unique and priceless cultural heritage.

That said, any other alternative should allow the community to take it over and open the complex since it not only testifies to its own history, but also to the culture of a multi-religious and multi-ethnic city that still contains documents and important remains. These structures are all linked to the communities of foreigners who passed through or worked in the free port of Livorno up to the second half of the nineteenth century. The city has a long tradition of cohabitation, at times dialectical but never banal. This cohabitation has always been based on the merger of very diverse cultural and spiritual heritages which, however, was inspired by a common economic and social perspective.

## Endnotes

- 1 Alessandro Del Borro was Governor of Livorno from 1678 to 1701. During his tenure the “Venezia Nuova” district was enlarged (and the main street in the district named after him: via Borra). The northern fortifications were also modified: part of Fortezza Nuova was demolished and, at the same time, the St. Peter Fort (1682) and St. Mark ravelin were constructed.
- 2 In 1517-1518 Cardinal Giulio de’ Medici (1478 -1534), later Pope Clement VII, commissioned Antonio da Sangallo the Elder (1453 o 1455-1534) with the design of Fortezza Vecchia.
- 3 The Canale dei Navicelli is a moat built between 1563 and 1575 that still links Pisa and the port of Livorno.
- 4 Stefano Ceccarini, *La Venezia Nuova. Parte prima, Il Pentagono*. Bollettino dell’Associazione LEGBLU. 6-8.
- 5 The celebratory name “Isola Ferdinanda” initially proposed by Santi in memory of Ferdinando I de’ Medici was replaced by the toponym “Venezia Nuova” to better represent the distinctive features of the urban landscape.  
Including the Dutch engineer Cornelius Meyer (1630-1702) active in Livorno in 1684-1691 where he proposed designs and performer the first survey of the city published in Rome in his *Nuovi ritrovamenti...* (1696). Mario Bevilacqua, *Architetti e costruttori del Barocco in Toscana*, in *Architetti e costruttori del Barocco in Toscana opere, tecniche, materiali*, edited by Mario Bevilacqua (Roma: De Luca Editori d’Arte, 2010). 11-39.
- 7 Marisa Tabarrini, Bernini e Borromini: consulenze per l’ampliamento di palazzo Medici Riccardi a Firenze, in *Architetti e costruttori del Barocco in Toscana opere, tecniche, materiali*, edited by Mario Bevilacqua (Roma: De Luca Editori d’Arte, 2010). 133-157.  
Maria Luisa Conforto, Lucia Frattarelli Fischer, *Dalla Livorno dei Granduchi alla Livorno dei mercanti. Città e proprietà immobiliare fra ‘500 e ‘600*, Bollettino Storico Pisano, LIII, 1984. 211-234, but 233.  
Bernard de Montfaucon, *Diarium italicum Sive Monumentorum Veterum, Bibliothecarum Musæorum, &c. Notitiæ singulares in Itinerario Italico collectæ: Additis schematibus ac figuris*, (Parisiis: apud Joannem Anisson, 1702), in Davide Ultimieri, *Livorno descritta dai viaggiatori francesi (1494-1836)* (Livorno: L’informazione, 2000). 22.
- 10 In 1623, the Monte Pio had been founded to tackle the usury practiced by the Jews.  
Clara Errico, Michele Montanelli, *La confraternita di Santa Caterina da Siena presso i PP. Predicatori*, Quaderni del Museo di Storia naturale del Mediterraneo. Livorno. Series Proceedings, 3, November 2000 (Livorno: ed. Benvenuti e Cavaciocchi, 2000). 8-23, but 9. The Dominican priest Sebastiano Knab, Archbishop of Nachitschewan in Armenia, played an important role in the Armenian community that could not receive the sacraments unless it performer an act of faith. Thanks to his work, in 1672, the “Congregation for the Doctrine of the Faith allowed the Catholic priest Karapet to celebrate mass and recite the Office according to the Armenian rite”; Stefano Ceccarini, *La Nazione armena e la chiesa di S. Gregorio Illuminatore. Parte prima, Il Pentagono*. Bollettino dell’Associazione LEGBLU. 6-8, (6).
- 12 Giuseppe Vivoli, *Annali di Livorno. Dalla sua origine sino all’anno di Gesù Cristo 1840*, t. IV (Livorno: Sardi, 1842-1846). 357.  
Ibid. 342.
- 14 Riccardo Burigana, “Troppa tolleranza”? La ri-fondazione della città di Livorno (1606), *Revista de Teologia e Ciências da Religião*, 5, 1, dezembro 2015 (Recife: REV. TEO&CR, 2015). 121-138.  
Bandi per il popolamento di Livorno, 1590-1603, Introductions by Lucia Frattarelli Fischer, Paolo Castignoli, (Livorno: Cooperativa Risorgimento, 1988).  
In May 1695, Father Ambrogio Caterino Spannocchi wrote a letter to the Chancellor, Carlo Casali, in which he announced the intentions of the Dominicans “to build a simple almshouse for the foreign fathers of their religion with a chapel so they could celebrate mass and say the rosary”; Clara Errico, Michele Montanelli, *La confraternita di Santa Caterina da Siena presso i PP. Predicatori*, Quaderni del Museo di Storia naturale del Mediterraneo. Livorno. Series Proceedings, 3, November 2000 (Livorno: ed. Benvenuti e Cavaciocchi, 2000). 8-23, (9).
- 17 State Archive Florence (ASF), *Archivio Mediceo*, f. 2089, letters dated 18 and 19 February 1699.
- 18 ASF, *Mediceo del Princ.*, 2089.  
A letter dated 18 February contains information about the negotiations involving the area of the Dominicans: “Avendo questo S.re Gener.le Borri e Magg.re Lorenzi rimodernato la pianta d’accrescimento di Livorno da quella prima fattosi, per ridurre il fosso stretto e le strade è convenuto restringere ancora l’istesso sito di terra dei PP. [domenicani] nella prima pianta erano braccia 9332 et in questa rifattosi restano braccia 6674. Come possi riscontrare dal sito segnato di rosso nello schizzo e l’altro sito accanto segnato di nero angolato resta riservato per farvi un cimitero”; ASF, *Archivio Mediceo*, f. 2089, letters dated 18 and 19 February 1699.  
Clara Errico, Michele Montanelli, *La confraternita di Santa Caterina da Siena presso i PP. Predicatori*, Quaderni del Museo di Storia naturale del Mediterraneo. Livorno. Series Proceedings, 3, November 2000 (Livorno: ed. Benvenuti e Cavaciocchi, 2000). 8-23, (11).  
Jean Baptiste Labat, *Voyages du P. Labat de l’ordre des FF. precheurs en Espagne et en Italie* (Amsterdam: Aux dépens de la Compagnie, 1731), in Davide Ultimieri, *Livorno descritta dai viaggiatori francesi (1494-1836)* (Livorno: L’informazione, 2000). 38-39.
- 22 State Archive Livorno (ASLi), *Fondo Conventi*, n. 5, Entrata e Uscita della fabbrica della chiesa nuova dei pp. Domenicani sotto il titolo di Vergine del Rosario e di S. Caterina da Siena, 1695-1720.
- 23 ASLi, *Fondo Conventi*, n. 5, Entrata e Uscita della fabbrica della chiesa nuova dei pp. Domenicani sotto il titolo di Vergine del Rosario e di S. Caterina da Siena, 1695-1720.
- 24 ASLi, *Fondo Conventi*, n. 5, Entrata e Uscita della fabbrica della chiesa nuova dei pp. Domenicani sotto il titolo di Vergine del Rosario e di S. Caterina da Siena, 1695-1720, f. 50.  
Due giorni dopo, di domenica, su ordine dell’Arcivescovo di Pisa Mon.re D’Elci, il canonico Cosimo Bani benediceva la chiesina dell’ospizio”; Clara Errico, Michele Montanelli, *La confraternita di Santa Caterina da Siena presso i PP. Predicatori*, Quaderni del Museo di Storia naturale del Mediterraneo. Livorno. Serie Atti, 3, novembre 2000. (Livorno: ed. Benvenuti e Cavaciocchi, 2000). 8-23, (13).  
Jean Baptiste Labat, *Voyages du P. Labat de l’ordre des FF. precheurs en Espagne et en Italie* (Amsterdam: Aux dépens de la Compagnie, 1731), in Davide Ultimieri, *Livorno descritta dai viaggiatori francesi (1494-1836)* (Livorno: L’informazione, 2000). 38-39, (39).
- 27 ASLi, *Fondo Conventi*, n. 5, Entrata e Uscita della fabbrica della chiesa nuova dei pp. Domenicani sotto il titolo di Vergine del Rosario e di S. Caterina da Siena, 1695-1720, ff. 107-132.  
Clara Errico, Michele Montanelli, *La confraternita di Santa Caterina da Siena presso i PP. Predicatori*, Quaderni del Museo di Storia naturale del Mediterraneo. Livorno. Serie Atti, 3, novembre 2000. (Livorno: ed. Benvenuti e Cavaciocchi, 2000). 8-23, (15).

- 29 ASLi, Fondo Conventi, n.13, Cause civili varie e docc. di corredo, 1671-1750; ASL, Fondo Conventi (1453-1806), n. 3, Testamenti e contratti pergamenei e cartacei.  
Maria Luisa Conforto, Lucia Frattarelli Fischer, *Dalla Livorno dei Granduchi alla Livorno dei mercanti. Città e proprietà immobiliare fra '500 e '600*, Bollettino Storico Pisano, LIII, 1984. 211-234, but 233.  
Jean Baptiste Labat, *Voyages du P. Labat de l'ordre des FF. precheurs en Espagne et en Italie* (Amsterdam: Aux dépens de la Compagnie, 1731), in Davide Ultimieri, *Livorno descritta dai viaggiatori francesi (1494-1836)* (Livorno: L'informazione, 2000). 30-31.  
ASLi, Conventi, n. 6, Entrata e Uscita della fabbrica della chiesa nuova dei pp. Domenicani sotto il titolo di Vergine del Rosario e di S. Caterina da Siena, 1720.
- 33 ASLi, Fondo Conventi, n. 21, Costituzioni e decreti, 1695-1752.  
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- 35 ASLi, Fondo Conventi (1453-1806), Convento della Vergine del Rosario e di S. Caterina da Siena dei PP. Domenicani, n. 15, Causa Langloio - S. Caterina dei Domenicani.
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# NORTHERN ISTANBUL PROJECTS: A CRITICAL ACCOUNT

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As an urban settlement dating as early as 8000 years ago, and the capital for Byzantine and Ottoman empires; İstanbul has been a significant global city throughout history. The most drastic changes in the macro form of Istanbul have taken place in the last seven decades; starting from 1950s with rapid industrialization and population growth; pacing up after the 1980s with the efforts of integration to the global capitalist system; reaching to a climax in the 2000's with the adaptation of a neoliberal urban regime. Today, the rate of urbanization, together with land speculation and real estate investment has been growing enormously. Every inch of urban land is conceptualized as a commodity to be capitalized upon. This neoliberal mindset has many controversial implementations, from the privatization of public land to the urban transformation of historical neighborhoods and consumption of natural resources. City planning decisions have been mainly top down initiations; conceptualising historical, cultural and natural heritage as commodities to be capitalised and consumed in favour of creating rent value. One of the most crucial implementations of this neoliberal urban regime, is the project of establishing a “new city” around northern Istanbul; together with a number of large scale infrastructural projects such as the Third Bosphorus Bridge; a new highway system, a Third Airport Project and a secondary Bosphorus project called the “Canal Istanbul”. Urbanizing northern Istanbul is highly controversial as this area consists of major natural resources of the city; being the northern forests, water supplies and wild life; which are bound to be destroyed to a great extent following the implementations. The construction of a third bridge and a third airport began in 2013, despite environmental objections and protests. Over five hundred thousand trees are planned to be cut for solely the construction of the bridge and the Northern Marmara Motorway. Yet the real damage will be the urbanization of the forest area; irreversibly corrupting the natural resources and attracting millions of additional population towards Istanbul. Furthermore, these projects lack an integrated planning scope as the plans prepared for Istanbul are constantly subjected to alterations forced by the central government. Urban interventions mentioned above are executed despite the rulings of Istanbul Environmental plan by top down planning decisions. Instead of an integrated action plan that prepares for the city's future, Istanbul is governed by partial plans and projects issued by a profit-based agenda; supported by legal alterations and laws issued by the central government. This paper discusses the ongoing implementations of northern Istanbul; claiming they are not merely infrastructural interventions but parts of a greater neoliberal urbanization strategy. In the course of the study, a brief account on the northern forests of Istanbul are presented first. Then, the projects are discussed in detail, addressing how the current planning schemes deal with the natural heritage of the city. Lastly, concluding remarks on how the implementations could affect the future of Istanbul are presented.

## **Keywords**

northern Istanbul, natural resources, infrastructure, urban planning, policy making





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# GARDEN CITIES AND SUBURBS IN BRAZIL: RECURRENT ADAPTATIONS OF A CONCEPT

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*State University of Maringá*

What is the contribution of the garden-city idea to urbanisation in Brazil? Focusing on several layouts for new towns and suburbs designed along garden-city lines all over the country throughout the twentieth century, this paper will show that the garden-city concept was adapted to various purposes and different contexts and will present a panorama of recurrent adaptations. As a conclusion, the paper will stress that the fashionable garden city was mostly and extensively used as a way of achieving modernity, a civilising instrument, a real-estate venture, a potent regional planning tool. It was adopted not because of effective urban-reform initiatives or genuine social problems; it was mainly embraced for stylistic convenience, ideological principles, and as a marketing strategy.

**Keywords**

planning diffusion, planning models, new towns, urban development

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## INTRODUCTION

The garden-city idea invigorated planning initiatives in Brazil while swept through the world. The garden suburb was the first version of the idea to be locally disseminated in the 1910s; two decades later, whole new towns were being designed upon the garden-city layout and a huge private land-development enterprise was considering the social city scheme for a regional planning proposal; later on a capital city and spa town were also designed following the same path. Afterward, private and governmental colonisation schemes in pioneering agricultural zones adapted the satellite town concept.

While major projects for urban improvements in the most important Brazilian towns evoked images of Paris, new residential areas were also being designed according to the formal principles of the garden city,<sup>2</sup> for everything 'English' was highly appreciated in early XX-century Brazil, when a kind of informal British imperialism was still being experienced.<sup>3</sup> Moreover, an outward-looking economic orientation within South America had also brought about an association by local elites of 'modern' with everything foreign, whereas 'traditional' remained associated with activities linked to domestic production.<sup>4</sup> Furthermore, the creative and dominating role played by world metropolises endorsed urban globalisation to the point that cultural deference and native aspirations encouraged local initiatives for foreign models, reinforcing the international circulation of ideas.<sup>5</sup>

Though resulting from a specific set of historical circumstances,<sup>6</sup> the garden city ended up being re-used in different contexts and for new reasons. From its initial appearance in Howard's book, *Tomorrow: a peaceful path to real reform* (1898), and its 'classic' implementation at Letchworth, the garden-city idea found fertile soil worldwide, though its international dissemination did not strictly follow the original proposal. The garden-city movement thus popularised 'country' aesthetics; the lanes and *cul-de-sacs* designed by Raymond Unwin 'became the exemplar for hundreds of "garden-type" suburbs and developments catering to this need to partake of "country" in territory that was by no stretch of the imagination any longer countryside'.<sup>7</sup>

As a point of fact, Atlantic crossings provided a kit of planning tools, some of which lay unused while others were eagerly taken up, and others still were transformed.<sup>8</sup> The garden city's dissemination proved that Howard's model was capable of being reinterpreted to suit local climates and cultures.<sup>9</sup> As noticed elsewhere, a selective application occurred during its process of global diffusion, as well as a shift in emphasis from social reform to physical planning.<sup>10</sup> In fact, 'the more that the original blueprint was mediated through various disciples of the cause, and the more that cultural factors came into play, the greater was the degree of deviation'.<sup>11</sup> For planning ideas are not imported and put into use as easily as a material object; it rather involves emulation, rejection, combination, and transformation. Indeed, the movement of ideas – from person to person, from situation to situation, from one period to another – necessarily involves processes of representation and institutionalisation, which are different to those at their point of origin.<sup>12</sup> More commonly, foreign cultural aspects are partially accommodated, partially rejected, and transformed by their new uses and their position in a new time and place.

With no specific association in Brazil, the garden-city concept was mainly disseminated through isolated personal attitudes and international intercourse. In 1917 Victor da Silva Freire, the engineer responsible for São Paulo city planning, lectured on the garden city idea at the local engineering institute after having visited Letchworth Garden City and Hampstead Garden Suburb in 1910 – probably one of the earliest references to the British planning idea in Brazil. In that very year Barry Parker disembarked in São Paulo, where he designed some new residential areas, including *Jardim América*. However, from 1930s onward Brazilian planning culture also assimilated the garden-city idea through less direct sources, particularly via imported specialised texts (such as those published by Werner Hegemann, Karl Heinrich Brunner-Lehestein, and Georges Benoit-Lévy besides those by Ebenezer Howard himself, Raymond Unwin, Thomas Adams and Charles B. Purdom); international conferences and fairs; the contact with foreign consultants (namely Joseph Antoine Bouvard, Alfred Agache, Giacomo Palumbo, Father Lebret, Josep Luis Sert, Paul Wiener, Robert Moses and Constantinos Doxiadis); the knowledge of French,

German, Italian and American planning practices as well;<sup>13</sup> and, more importantly, the roles of (national and international) model cities and native aspirations, which helped stimulate the mirroring of progressive ideas and modern practices.

Focusing on several layouts for new towns and suburbs designed on garden-city lines all over the country along the twentieth century, this paper will show that the garden-city idea was adapted to various purposes and different contexts in Brazil and will present a panorama of its recurrent adaptations. The paper is divided into three different sections according to the design scales: the suburb layout, the regional planning and the design of entire new towns, so that their physical and symbolic aspects can be noticed.

## NEW NEIGHBOURHOODS IN TRADITIONAL URBAN SETTINGS

Early Brazilian garden suburbs are related to urban modernisation, healthier environments and ‘aristocratic’ way of living. The ‘modern’, greener and ‘chic’ new neighbourhoods boosted the real state market, inspired the creation of company suburbs and occasionally served as governmental propaganda.

*Jardim América*, probably the first garden-city initiative in Brazil in 1917, was originally ‘a middle-class enclave, not a comprehensive endorsement of the Howardian ideals of a self-contained settlement’, and the local requirement for detached houses mitigated the enclosed spaces created by groups and terraces, found in the English interpretation of Camillo Sitte.<sup>14</sup> Its original semi-public internal gardens were progressively being eliminated for Brazilians tended to consider gardening in a different light to Britons: as descendants of a slavery society, there was no dignity in outdoor manual work;<sup>15</sup> besides, neither homeowners nor the municipality felt responsible for the Victorian gardens laid out by Parker, which led to the re-parcelling of the areas, eliminating the original internal gardens.<sup>16</sup> As a result, plots ended up being walled off, leaving just a few aspects of the original garden-city layout intact – the winding tree-planted streets and the substantial green areas. Moreover, the affluent people who could afford to live in such a remote area tended to be fond of French-style luxury palaces rather than of the house styles seen in Letchworth Garden City and Hampstead Garden Suburb. Yet, the first Brazilian garden suburb affirmed the successful transference of British garden suburbs to a tropical milieu, and its adaptability to the local conditions.<sup>17</sup>

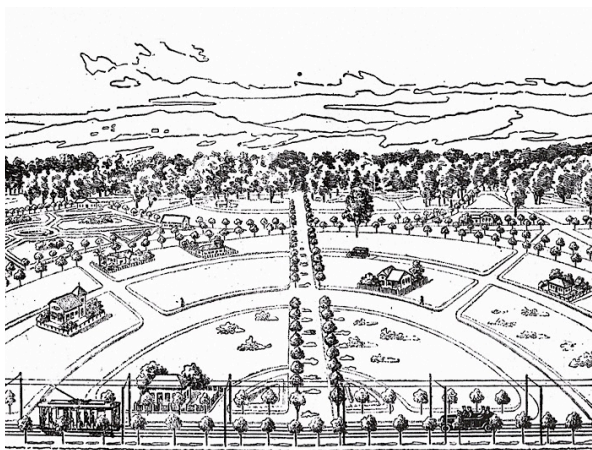


FIGURE 1 Nova Manchester Garden Suburb, 1924



FIGURE 2 Vila IAPI, 1950s.

Many speculative builders and land developers were inspired by the *Jardim América* venture, and *Pacaembú* (1919), *Alto da Lapa* (1921), *Jardim Japão* (1922), *Chácara da Moóca* (1923), *Jardim Europa* (1923), *Vila Maria* (1923), *Vila Nova Manchester* (1924. Figure 1), *Parque Edu Chaves* (1926), *Jardim Saúde* (1938), *Vila Campesina* (1947) and *Vila Formosa* (1947) are just a few garden suburbs create in São Paulo city. Jorge de Macedo Vieira, who was an intern of The City of St. Paul & Improvements Freehold Land Co Ltd when they hired Barry Parker to lay out *Jardim América*, designed most of those new neighbourhoods; actually, Vieira was responsible for the layout of 1,300 ha of new residential areas, besides the design of four new towns (*Águas de São Pedro*, *Pontal do Sul*, *Maringá* and *Cianorte*, which make 2,800 ha), as we will present later on. Likewise, in the increasing urbanisation and modernisation context of early twentieth-century, other Brazilian cities sprawled by adding the unusual, contrasting and thus modern layout of garden suburbs to their more traditional urban forms; this was the case of *Cidade Jardim Fazenda Velha* (late 1930's) in Belo Horizonte; *Vila Recreio* (1929) in Rio Grande do Norte; and *Vila Balneária Nova Belém* (1927), *Vila Cristo Redentor* (1930), *Balneário de Ipanema* (1930) and *Vila Conceição* (1940) in Porto Alegre.

Company suburbs also evoked garden-suburb aspects.<sup>18</sup> Pioneer *Vila Operária* was created in 1919 in Niterói, Rio de Janeiro, for the employees of *Companhia Comercio e Navegação*. The new district designed by Ângelo Bruhns de Carvalho included school, church, medical facilities, warehouse and accommodation for bachelors, among 158 houses for employees: single or double-family chalets in a picturesque scenery of winding roads. Bruhns de Carvalho followed Unwin's planning manual while Port Sunlight was among his planning models.<sup>19</sup>

Differently though, *Vila IAPI*, in Porto Alegre (Figure 2), stands out as a result of the federal government policy for social housing in late 1930's along with an adaptation of the garden-suburb ideal. President Vargas aimed at boosting an urban-industrial, capitalist society by strongly intervening in many aspects of Brazilian economic activity. Thus, national retirement funds (IAPIs) were destined to foment real state market by financing the mass-production of social housing.<sup>20</sup> The sixty-seven-hectare new neighbourhood for working class presents single and double-family chalets and multi-family three-story buildings arranged in an organic layout, among tree-lined winding roads and parks that, according to the engineer Edmundo Gardolinski, would 'permit the development of an integral and healthy life'.<sup>21</sup>

In general, informal pattern of roads and greenery represented both modern and healthy environments for residential areas. However, certain City Beautiful features can be noticed when the bucolic, countryside image of garden suburbs did not solely correspond the longed image of progress. That is the case of *Campina do Derby* (1922-1926. Figure 3), in Recife: a new neighbourhood created to expand the town, occupy an inhospitable area and accommodate a new military base; the grand project was used for governmental propaganda as a sign of progress.<sup>22</sup>

The 'discourse of distinction' was usually applied to the launching publicity of these new suburbs, mostly eminent upper and upper-middle class neighbourhoods. The posh *Jardim América* was described as a 'chic suburb' (*bairro chic*) and a 'noble suburb' (*bairro nobre*), enabling each of its residents to become a 'privileged man'.<sup>23</sup> Likewise, *Shangri-lá* (a suggestive name for a garden suburb) was marketed in 1952 as the first 'aristocratic residential neighbourhood' in Londrina, a new town created in 1931;<sup>24</sup> interestingly its houses were styled according to mid-twentieth century modernist/rationalist taste. Thus, these new neighbourhoods clearly embody what Robert Fishman has called the bourgeois utopia.<sup>25</sup> All in all, somewhat distant from the idea of Howardian social reform and more closely related to lush green planned residential environments, Brazilian garden suburbs can be understood as the emulation of a stylish image.



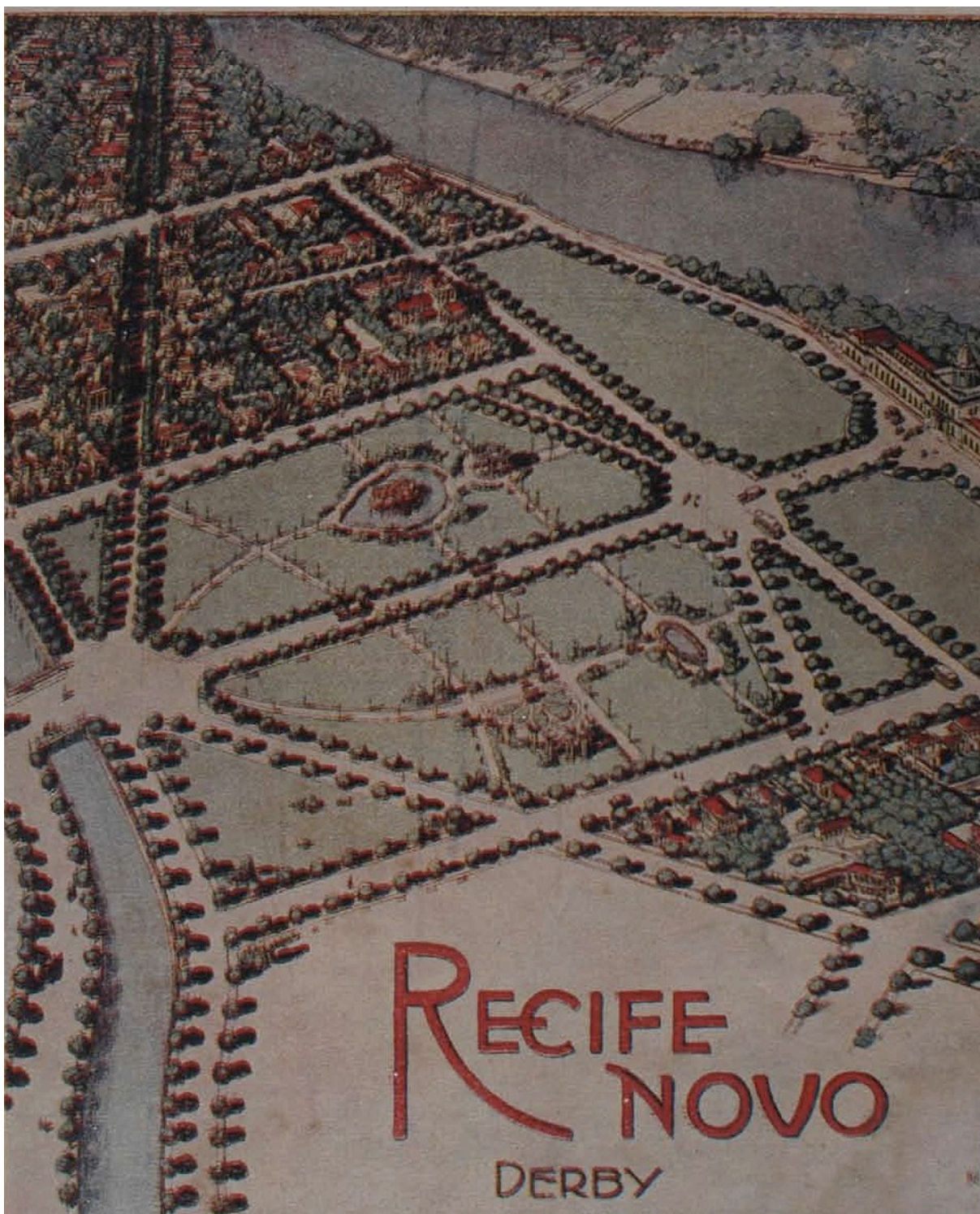


FIGURE 3 Campina do Derby, 1922-1926.



## PRIVATE AND GOVERNMENTAL COLONISATION ENTERPRISES

Along with the proliferation of garden suburbs all over the country, accelerated urban growth and industrialisation forced the ‘reconstruction’ of town planning notions and practices put into use in Brazilian cities in 1930s, which included aspects that are rooted in the garden city model.<sup>26</sup> The two most eminent planners of São Paulo, engineers Francisco Prestes Maia and Luiz Anhaia Mello, albeit in different periods, somehow employed ideas from the garden city movement in their planning proposals for the city’s metropolitan growth. Maia, in his 1930 Plan of Avenues, emulated the ‘park ring’ proposed by Barry Parker; he also brought up the satellite towns scheme as ‘remote agglomerations of limited area, but complete in themselves,’ which ‘receive preferably the character of the garden city, according to the land price;’ at the same time he criticised urban sprawling and concluded that ‘garden cities are only appreciated by intellectuals.’<sup>27</sup> Mello, on the other hand, proposed the construction of two garden cities, each of 60,000 inhabitants, in order to solve the problem of metropolitan growth. For him, it was time to ‘choose between making 120,000 citizens materially and spiritually happy in the graceful and comfortable environment of the garden city, or simply increase the number of victims of the metropolitan chaos, a path to national suicide by negligence.’<sup>28</sup>

These two engineers – as well as Macedo Vieira – graduated from, and taught at, São Paulo polytechnic school, where modern planning ideas were lively debated. Two other engineers graduated from that school belonged to *Companhia Melhoramentos Norte do Paraná* board of directors, a company responsible for a huge private settlement enterprise that founded dozens of new towns in a pioneering agricultural frontier. Their urbanisation policy adapted the English satellite-town scheme, comprising a hierarchical system of urban settlements.<sup>29</sup>

*Companhia Melhoramentos’* colonisation scheme and planned settlement venture in Paraná state were initiated in 1924 by a British company, which adapted the garden city repertoire to a new agricultural region and, less than five decades later, had settled one million people in 1,200,000 ha, in what was considered to be ‘the greatest private colonisation experience in Brazil.’<sup>30</sup> Originally it adapted Ebenezer Howard’s regional planning scheme (Figure 4), namely the social cities concept, which was later on turned into a satellite towns’ scheme in which Maringá was to be one the regional centres.<sup>31</sup>

*Companhia Melhoramentos’* successful results turned it into a planning model for other colonisation enterprises, which also featured hierarchical, inter-connected urban settings, closely related to rural areas, and green belts. In northern Mato Grosso state, a cluster of new towns founded by a private company in early 1970s was based on that regional planning concept.<sup>32</sup> In unison, a governmental plan targeting land reform via settlement and colonisation in northern Brazil agricultural frontier proposed an urbanisation scheme along the Transamazonian highway that featured similar regional planning.<sup>33</sup> The colonisation scheme for the Amazonian region, named Rural Urbanism [*Urbanismo Rural*], built a series of hierarchical, connected, regularly spaced urban settlements that were to stimulate agriculture in small rural plots and bring the benefits of town life to the countryside. Thirty rural villages and one small town had already been built by 1973, eleven more villages were being created and a medium-sized town was under construction in Pará state, along nearly 1,200 km of highway, in an area of roughly 2,400,000 ha.<sup>34</sup>

While in the Amazonia settlement new towns were designed according to post-Brasília functionalist planning ideas in northern Paraná two regional centres were laid out upon garden-city lines: Maringá and Cianorte.

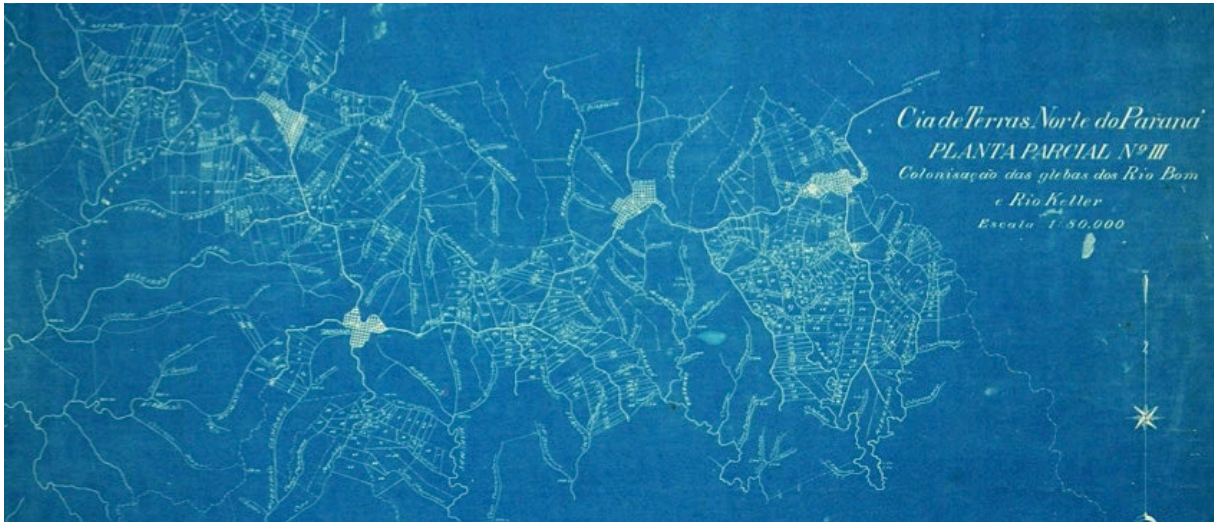


FIGURE 4 Northern Paraná regional planning featuring the social city idea.

## URBAN SETTLEMENTS IN PIONEERING AGRICULTURAL ZONES, A CAPITAL CITY AND A SPA TOWN

The layouts for Maringá (1945-1947) and Cianorte (1953, Figure 5) clearly reproduce Unwin's recommendations to artistically design a new town. When Macedo Vieira designed those towns he already had a reputation as a designer of modern, garden-city-like towns and suburb layouts. According to Vieira himself, in Maringá he intended 'to design a modern town. A town whose street layout didn't obey the grid that the Portuguese had taught us, had bequeathed in the colony'<sup>25</sup> – which meant the picturesque, irregular street pattern taught to him by Parker.

The layout of Maringá presents different influences combined in a harmonious style. Combining with planning notions by Camillo Sitte, Saturnino de Brito, Werner Hegemann, Nelson Lewis, Jean Claude Nicolas Forestier, and Frederick Law Olmsted, it depicts the image of the garden city's physical model and, consonant with it, features of the City-Beautiful movement, particularly the placement of a civic centre at the core of the urban form and Beaux-Arts characteristics in the design of the public gardens. Regarding the city as an organism, the layout reveals a functional hierarchical street system, with the unusual roundabouts, wide winding avenues, principles of zoning (especially for residential and industrial areas), and multi-nuclei urban structure.

Nevertheless, the most impressive element of the plan was certainly the civic centre: a symmetrical grouping of public buildings at the end of a wide palm-tree-planted boulevard that connected the train station to the main, central public area. Crowned by a crescent, the main square was to be adorned with fountains and parterres. In fact, the implemented layout actually depicts a fairly functionalist square layout surrounded by avant-garde modernist buildings. Around the civic centre, positioned on a plateau, the gridiron endorses the convenient classical formality of the administrative and central commercial area of a regional capital city; beyond it, residential areas present a picturesque image as street patterns are irregular and less formal, leading to small and intimate secondary commercial centres with enclosed squares. Vieira, once again, insisted on large residential, single-house lots with a conspicuous number of public squares, rather than on internal semi-public gardens, which were not viable in a land speculation enterprise.

The grandiloquent layout for the new capital city of Goiás state had also combined garden-city notions and City Beautiful features. Attilio Corrêa Lima designed Goiânia in 1933 according to site conditions, traffic improvement recommendations and zoning specifications, as well as Beaux-Arts principles of formal composition.



FIGURE 5 Cianorte, 1953.

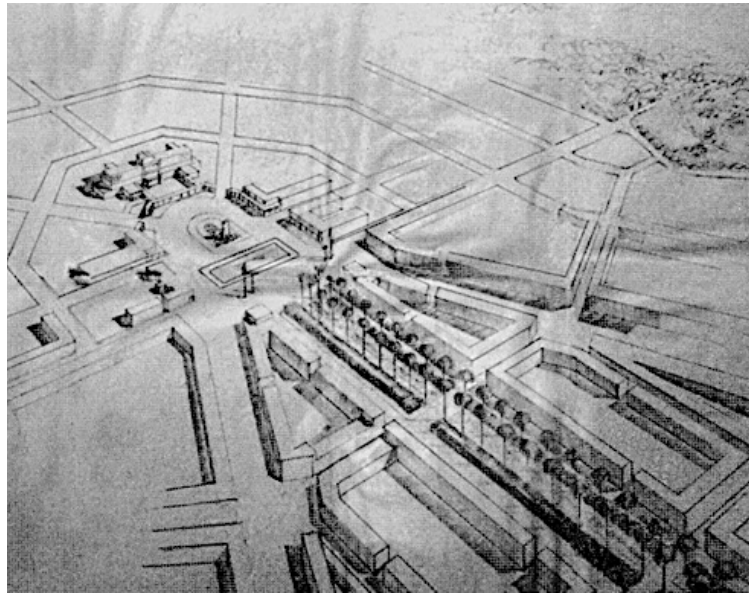


FIGURE 6 Goiânia, civic centre, 1933

Goiânia's classic central arrangement of three convergent boulevards (Figure 6), inspired by the layout of Versailles, Karlsruhe and Washington,<sup>36</sup> clearly set the civic centre at the core of the new capital city, with the expected pomp arising from the grouping of governmental buildings. On the grand boulevard, whose exceptional width and luxurious aspect would suit parades and civic festivals,<sup>37</sup> tropical palm trees were to enhance the monumentality, while a transversal fourth avenue would define the commercial area. Clearly the focal point of the town layout, the civic centre was set on the highest area of the site for aesthetic and symbolic effect.

Despite formal historical references, the layout also depicts modern, functional town planning values, particularly those expressed by the circulation system put forward by Eugène Henard. Nevertheless, a parallel primary target was the creation of a green urban environment. Lima had laid out a network of parks and parkways in order to preserve natural environments and improve the quality of urban life, and, according to his plans, tree-lined streets and squares were to be widely planted. This would tame the searing heat during the extended dry season that normally affects the region.<sup>38</sup> Tree-planting and landscaping were essential elements of the English garden-city image, and its idyllic, healthy, park-like appearance was a recognised model for Lima's design for Goiânia.

Partially implemented, Goiânia's layout was revised in 1936 by the civil engineer Armando Augusto de Godoy, who had just replaced Lima as the town planner in charge of this governmental enterprise. Godoy was primarily known as an advocate of modern town-planning ideas, whose writings helped to disseminate the garden-city model by arguing that Howard's idea was 'an admirable project for the people, raising them to the level of a modern civilisation, educating them and guiding their activities in the right direction'. And the garden city, according to him, was 'the most perfect creation of our time' for establishing, among other things, the most extended contact between town inhabitants and nature.<sup>39</sup> Godoy reinforced the garden-city aspects of Goiânia's original plan, preserving much of the initial proposal, though he believed that classical layouts could no longer withstand the demands of modern cities. The town expansion proposed by Godoy depicted a new middle-class residential neighbourhood whose layout was based upon an irregular, organic urban tissue, unusual super blocks, *cul de sacs*, and the total separation between cars and pedestrians – as had happened in Radburn, USA, – a 'garden city for the motor age'.<sup>40</sup>



However, Godoy neglected a major local cultural aspect in the design of the new neighbourhood: the habitual relationship between the house and the plot area, with the front door facing onto the street. In his layout, the main entrances to detached single houses were to be positioned facing the superblock-interior parks, while back entrances would face the internal lanes. The foreign pattern was not compatible with the local tradition of providing houses' main façades with straight, visual and physical communication to the street, which led to a distortion of the plan right from its implementation. Thus abandoned, the remaining marginal semi-public green areas became the destination for illegal waste-disposal and illicit activities, and the eventual location of the surrounding buildings left no sign as to their original purpose.

Otherwise, *Águas de São Pedro* presents a more picturesque townscape. For aspects of British villages were traditionally found in spa towns in Brazil, notably the usual cottages and the 'arranged disorder' of the *jardin anglais*, and the marriage between town and country offered by the British garden-city idea was an additional, important promotional force for this sort of development as long as it could appeal to a select public interested not only in cures and leisure, but also in the benefits of a high-quality environment. Bearing that idea in mind, the developers of *Águas de São Pedro* intended in 1936 to build a new health-town model for South America in São Paulo state based upon modern principles of medicine, sanitation, and town planning. Thus, the garden-city model was applied to the layout of the *Águas de São Pedro* spa town in order to enhance the relationship between nature and urban settlement, setting up vast green areas, park-avenues and tree-lined boulevards as a means to attract tourists. The foreign planning model added greatly to the building of scenery befitting the needs of quietness and contemplation, and the local newspaper proudly announced a town designed according to the 'patterns of famous European spa towns'.<sup>41</sup>

A park system was the backbone of the town, settled in a valley, proving Macedo Vieira's ability of enhancing the sites' particularities. *Águas de São Pedro* was located close to the spring between two parks, which were connected by a 100-meter-wide avenue, set alongside the open canal. The upstream park surrounded the main buildings (hotel, casino, spa, swimming pools, gazebos, etc.) and offered a picturesque four-kilometre path through English-style gardens, while the downstream park was created to avoid flooding.<sup>42</sup> Tree-lined winding streets meandered from the town centre and the commercial zone and continued throughout the main residential area, where plots accommodated single or semi-detached houses, no higher than two stories, set back from the front boundaries of the plots; and carried on up to a posh residential neighbourhood, where larger plots bordered streets on both their front and rear boundaries. Residential lots were to be enclosed by either hedges or low, discrete fences in order to maintain the garden-city style. Initially, residential lots were 600 square meters, but later, unfortunately, they were halved, interfering with the overall picturesque aspect of the town.<sup>43</sup>

## CONCLUSION

The garden-city concept contributed to the changing image of Brazilian towns in a period of intense urban modernization and expansion. The local planning culture absorbed physical aspects of the garden city, as well as other planning notions.

According to the examples discussed, the garden-city model fashioned by the prestigious British thus came to be used in Brazil as a way of achieving modernity, a civilising instrument, an efficient planning tool, a real-estate venture. Derivatives of the garden-city image were adopted not because of effective urban-reform initiatives or genuine social problems: they were mainly embraced for stylistic convenience (as the most aesthetically and functionally appropriate image for an exceptional urban settlement such as a spa town); for ideological principles (as the best modern prescription for a healthy and high-quality urban form); as a marketing strategy (as the novel, modern town layout in contrast to the traditional, ordinary grid); and as a potent regional planning scheme for colonisation enterprises where new towns were to be created.

The sophisticated way the garden-city idea dealt with nature within the urban form also suited different proposals and local interests. Urban parks, abundant open spaces, and parkways were tools for building an uncommon urban beauty – be it in a bucolic spa town, a modern capital or even in a private settlement town built in a deforested area. The copious green areas and tree-lined streets not only created pleasant townscapes but also improved tropical urban climates. The conformation of the urban settlement according to site conditions was indeed a technical improvement. And along with low population density and larger lots, the irregular street layout was to produce a trendy, modern urban environment.

Nevertheless, physical town planning was a welcomed sign of progress usually associated with industrialisation and urban overcrowding, and the picturesqueness of the garden city ultimately conveyed a rural aspect to the townscape, threatening the ‘civilisation’ process.<sup>44</sup> But this did not compromise the supposed image of progress of the garden cities and suburbs, for combining different planning traditions and ideas they ended up being better balanced with formal arrangements, modern wide avenues and boulevards, functional roundabouts, park systems and a touch of *beaux-arts* urbanism and City Beautiful monumental grandeur and elegance.

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## Notes on contributor

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## Endnotes

- 1 . A preliminary version of this paper was published in *Journal of Planning History* 13, no. 4 (2014).
- 2 . See Leme, *Urbanismo*; Segawa, *Prelúdio*; and Toledo, *Prestes Maia*.
- 3 . Rego, *As Cidades*; Segawa, *Prelúdio*.
- 4 . Almandoz, *Planning*, 23.
- 5 . See Almandoz, “Para Una Reseña,” and Nasr and Volait, *Urbanism*.
- 6 . See Aalen, “English Origins,” and Ward, *The Garden City*.



- 7 . Meacham, *Regaining*, 182.
- 8 . See Rodgers, *Atlantic*; see also Sutcliffe, *Towards*, and Ward, “Re-Examining.”
- 9 . Miller, “Garden Cities.”
- 10 . See Ward, “Ebenezer.”
- 11 . Hardy, “The Garden City,” 198.
- 12 . Said, “Travelling Theory,” 157; Tota, *O Imperialismo*, 193.
- 13 . See Andrade, “A Circulação.”
- 14 . Miller, “Barry Parker,” 9.
- 15 . See Paula, *A Cidade*.
- 16 . See Bacelli, *Jardim América*.
- 17 . Miller, “Barry Parker,” 12.
- 18 . Correia, “O Pitoresco,” 3-4.
- 19 . *Ibid.*, 12 and 13.
- 20 . Bruna, *Os Primeiros*, 119-120; see also Bonduki, “Origens.”
- 21 . Derois, Rocha and Eckert, “Primeiros Passos,” 6.
- 22 . See Moreira, “A Construção.”
- 23 . Segawa, *Prelúdio*, 115-116.
- 24 . *O Estado*, 1952, 19.
- 25 . Fishman, *Bourgeois Utopia*.
- 26 . Feldman, “A Década,” 51; Andrade, “O Ideário,” 7; Leme, “A Circulação,” 1 and 8.
- 27 . Maia, *Estudo*, 130 and 302.
- 28 . Mello, “A Cidade,” 30.
- 29 . See Rego, *As Cidades: Rego, “A Tropical,”* and Macedo, “Maringá.”
- 30 . Tavares, *Considera and Silva, Colonização*, 32.
- 31 . See Rego and Meneguetti, “Planted Towns.”
- 32 . See Rego, “A Integração.”
- 33 . Katzman, *Cities*, 80.
- 34 . Camargo, *Urbanismo*, 2 and 28.
- 35 . Vieira, *Entrevista*.
- 36 . Ribeiro, *Goiânia*, 61.
- 37 . Leme, *Urbanismo*, 227.
- 38 . Pires, *Goiânia*, 227.
- 39 . Godoy, “A Cidade.”
- 40 . Miller, “Garden Cities,” 18.
- 41 . Franco, *Cidades*, 150-151.
- 42 . *Ibid.*, 168-169.
- 43 . See Bonfato, *Macedo Vieira*.
- 44 . See Bresciani, “Imagens.”

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## Image Sources

Figure 1: *O Estado de São Paulo* (1925): 1.

Figure 2: <http://wp.clicrbs.com.br/almanaquegaucho/2012/06/20/a-vila-dos-industriarios/?topo=13,1,1,,13>.

Figure 3: *Revista de Pernambuco* 2, no. 9, March (1925).

Figure 4: Museu da Imigração.

Figure 5: Museu da Bacia do Paraná.

Figure 6: Pires, 2009.

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# TRANSFIGURATION OF URBAN CENTERS AND THE MODERNIZATION OF PORT LOGISTICS IN YOKOHAMA CITY, JAPAN

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Today port cities are facing worldwide port logistic competition and are required to have an appealing urban center not only for citizens but also for domestic/international tourists.

Therefore, the land-use change and redevelopment of old port area have been the common issues to be tackled among those cities for these several decades. In Japan, Minato Mirai 21 in Yokohama City is known as the most successful case of waterfront urban redevelopment. The purpose of this study is to examine the process of the redevelopment, especially focusing on its early period. Yokohama is the one of the major port cities in Japan and its history starts from 1859 when the port was constructed by Edo Shogunate as one of the first five ports open to the Western countries. Therefore, the development of port has strong influence upon the planning of urban centers. Especially, the modernization of port logistics started in 1950's accompanied by the introduction of container-system, and required not only the modernization of port facilities but also the change of its location and scale. The oldest part of port, neighboring old downtown, was not suitable for container transportation and expected to be less used. Accordingly, the plan of urban center in Yokohama had to be renewed and "Urban Rehabilitation Project (URP)" was proposed as one of "6 Major Projects" that was announced by Yokohama City in 1965. The original ideas of these projects were planned by Kankyo Kaihatu Center (KKC), pioneering planning firm established by Takashi Asada, former assistant of Kenzo Tange and honorable chairman of Metabolism Group. The chief planner of this project was Akira Tamura, who became the head of the head of Planning and Cordination Bureaux of city government later in 1970's. Based on this plan, urban redevelopment project called "Minato Mirai 21 (MM21)" was started at the beginning of 1980's. In this paper, author tries to clarify the planning process of "6 Major Projects" and reviews the concept of this "Urban Rehabilitation Project" by examining the report proposed by KKC. As the result of the study, following points were identified; 1) 6 Major Projects were proposed as an integrated solution to cope with the expected change of industrial structure and modernization of port logistics, 2) the original ideas were mainly planned by Akira Tamura but some conceptual ideas like 'master program' and 'urban axis' are proposed by Takashi Asada.

## **Keywords**

port city, water front, modernization of port logistics, Tamura Akir



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# Port History

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Chair: Dirks Schubert





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# THE RHETORIC OF “PROVISION”: PUBLIC AND POLITICAL DISPUTES OVER PORT PLANNING IN HAMBURG IN THE 1970S AND 1980S

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Urban development projects are usually specific. There is a concrete designation of what the land is going to be used for, what buildings will be built and what infrastructure will be required. This enables a meaningful discussion of the proposed concepts and the balancing of public and particularistic interests. But what happens when areas are designated for development and cleared of inhabitants as a measure of economic “provision,” without a precisely defined purpose and with a time schedule stretching decades into the future, and when the underlying ideology of economic growth is called into question? This paper will discuss this question in the form of a historical case-study on port expansion in the North German city state of Hamburg in the 1970s and 1980s. It will shed light on public and political conflicts, some of which were the result of particularities of port planning in general, some were the result of specifics of place and time. It will focus on rhetorical strategies used to bridge the ideological gap between politicians, port planners, environmentalists and private citizens directly affected by the expansion plans.

**Keywords**

provisionary planning, port expansion, Hamburg

**How to Cite**

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## INTRODUCTION

Many historians currently focus on the 1970s as a watershed in the economic and social history of the second half of the twentieth century. With the first oil crisis of 1973/74 roughly twenty years of uninterrupted economic growth in Western Europe and the United States came to an end. “After the boom” the 1970s and the following decade were not only marked by a new economic scenario of deindustrialization and rising unemployment but by a variety of profound changes on many levels of politics and society.<sup>1</sup> The emergence of new social movements, in particular the rise of the environmental movement, had important consequences for many areas, not the least urban and infrastructure planning. Urban development and the building of infrastructure, from hospitals or schools to power plants and transportation, were no longer a matter of experts and government officials alone. New stakeholders made themselves heard in public and subjected projects to scrutiny.<sup>2</sup> Today there are administrative instruments and processes in place that ensure public participation and attempt to balance out general interests and individual needs, but in the 1970s and 1980s conflicts played out in less structured ways.<sup>3</sup>

The following article is presenting a case-study on the conflict over port expansion in the German city state of Hamburg and the framing of the contemporary public discourse about it. It is based on a broad survey of archival sources, parliamentary debates, and contemporary journal and newspaper articles. In the 1970s protests against the expansion of the port of Hamburg, one of Europe’s biggest seaports and an important pillar of the local and regional economy, flared up by residents of the area in the Southwest of the city that was to be evacuated and prepared for use for the port. Critics questioned the ideology of economic growth that lay at the base of the expansion plans. Peculiarities of port planning, especially the long time horizons and the indefiniteness of projections on future cargo development, put additional pressure on Hamburg’s government, the Senate.<sup>4</sup> The political and economic leadership of the city responded by devising a rhetorical strategy to overcome public resistance that revolved around the term of “land provision” (“Flächenvorsorge” in German). This strategy can be described as an early attempt at solving planning legitimacy issues through communication.<sup>5</sup> The seizure of private property in the villages of Altenwerder, Moorburg and Francop for the port was justified in countless public statements of the Senate and port-related interest groups like the Chamber of Commerce as a measure of “provision,” indispensable for the economic well-being of the entire city. This calls for a closer look and an explanation, since the term is not often used with regard to planning in economy and infrastructure but is primarily linked to social, public health, or environmental policies. Here the term and its underlying concept of restricting risks of modern life has become increasingly important in the second half of the twentieth century and is usually connoted positively.<sup>6</sup>

Moorburg and Francop are still partly residential areas, not because of the protests but as a result of unforeseen changes in transportation economics, whereas in Altenwerder in the 1990s – more than a decade later than originally anticipated – a huge container terminal was built. Nevertheless, in retrospect the strategy of the Senate to take advantage of the positive image of “provision” for port planning must be considered a failure. Today expansion projects in city ports worldwide are difficult to implement, and “negative externalities” of port expansion especially from an environmental perspective are broadly discussed and even mathematically measured in the literature.<sup>7</sup>

## PROVIDING LAND FOR THE PORT OF HAMBURG

Provision in the port of Hamburg since the late 1950s has meant “land provision:” the purchase or expropriation of property and its preparation for the expansion of the port. It took place not only at a specific location – for geological reasons south of the river Elbe and to the West of the existing port –, but the identification and legal and physical transformation of (parts of) the urban space itself was the act of provision. It was not about port planning in general and concepts for the future, which could have also related to the technical equipment of the quays, the organizational structure of the port, or the development of new markets. Since the land in the port of

Hamburg was (and is) owned by the city and the municipal enterprise of the “Hamburger Hafen- und Lagerhaus-Aktiengesellschaft” (HHLA) was closely linked to the Economics Ministry and in charge of the day-to-day operation at the quays, the state played a central role in all port matters.<sup>8</sup>

A first attempt at expanding the port in the Southwest of the city was made in 1929, when the city state of Hamburg reached an agreement with neighbouring Prussia to expand the port onto 4,500 hectares of Prussian territory, but because of the economic downturn of the Great Depression it had no consequences. The same was true for the expansion plans of the Nazi era: The “Greater Hamburg Act” of 1937 had incorporated the areas in question into Hamburg to allow for self-determined port planning, and the “General Development Schemes” of 1941 and 1944 envisioned extensive port expansions, but in World War II they were not executed. In the interwar years, city officials and their planning experts felt no need for devising a line of argumentation to convince the public and especially the inhabitants of the affected villages of their concept – they simply announced their intentions.<sup>9</sup>

After the massive destruction of port installations in the war, in the post-war period and the reconstruction years port expansion was not an issue. Only in the late 1950s, when the annual cargo throughput of the port surpassed the previous peak of 1928, port expansion became relevant again, not the least because other European ports identified new areas for dealing with the growth of cargo handling and for attracting more port-related industry. In Hamburg the expansion of the port was supposed to strengthen its economic position and make sure that it would not fall behind in the competition with its direct rivals Bremen, Rotterdam, and Antwerp. This seemed particularly urgent after the loss of part of much of its hinterland in the East because of the Iron Curtain.<sup>10</sup>

## THE “PORT EXPANSION ACT” OF 1961 AND ITS CONSEQUENCES

On October 30, 1961, Hamburg’s state parliament passed the “Port Expansion Act,” which designated 2,500 hectares of land in the village of Altenwerder and in neighbouring Moorburg and Francop as “port expansion area.” The people living there were subjugated to constricting regulations and in perspective to resettlement. In addition, Hamburg traded with the state of Lower Saxony harbour rights it held in Cuxhaven in exchange for the Elbe estuary islands Neuwerk and Scharhörn, which were being considered as a location for a new deepwater port more than 100 kilometres away from the existing upstream port. For a variety of economic, financial, and political reasons, this port was never built though.<sup>11</sup>

It was in the context of the activities in the early 1960s, that officials introduced the phrase of “provision”. Friedrich Mühlradt, the director of the municipal Port Construction Office, argued in his concept for port development in August 1960, that in view of the growing worldwide flow of cargo and its structural changes, it had “become necessary to take provision for a more distant future,” as had been intended in 1929 already. Hamburg could not do without “far-sighted spatial planning and the valorisation of land for port purposes,” even though Mühlradt acknowledged that it involved speculative moments. Mühlradt demanded a special law and had no objections to expropriate land if necessary, because port expansion was unquestionably in the public interest.<sup>12</sup> In a newspaper article on the occasion of the 775th “anniversary” of the port in May 1964, Hamburg’s Economics Minister Edgar Engelhard emphatically proclaimed “provision for the port” as an act of “provision for Hamburg” as a whole.<sup>13</sup>

Mühlradt and Engelhard both spoke of provision already with a thrust that should become another central feature in addition to “land provision,” namely the concept as an expression of developments which might – or might not – happen in the port in the mid to distant future.<sup>14</sup> Taking provisionary measures was different from concrete planning of new docks, terminals or the establishment of industry. It was basically a statement of political intent to keep the uncertainties and risks of the future under control and to keep options for action. Port construction officials wanted to be able to adapt “elastically” to changes in shipping and transportation and demanded “freedom of choice”.<sup>15</sup>



FIGURE 1 The port of Hamburg in the early 1960s. Marked in red is the designated port expansion area of Altenwerder, Moorburg, and Francop / Insert: The city state of Hamburg. The river Elbe divides it into a northern and a southern part. In the latter area in the district “Mitte” most of the port installations and the expansion area are located

Future port planning at this time was less motivated by scientifically based predictions, but the latest trends in maritime and port industry were relatively freely extrapolated. One of Mühlradt’s successors, Hans Laucht, argued more than ten years later still vigorously for a praxis-driven and pragmatic approach to port planning and rejected any “principled” solutions to planning problems.<sup>16</sup> Nevertheless, experiences and activities of the competing ports played an important role: In particular, Rotterdam, where from 1958 to 1964 with the “Europoort” a large new port was built and in the 1960s additional expansion plans were announced, simultaneously served as role model and bugbear.

Public opposition or at least a controversial discourse on the planned activities in the Süderelbe area did not exist in the 1960s. The Senate could rely on broad political, public, and media support. The victims of this policy, primarily the inhabitants of the village Altenwerder who faced relocation, were pitied rather casually.

Shortly after the passage of the Port Expansion Act the city bought the first properties in Altenwerder. About ten years later, in 1973, relocation activities were accelerated to allow for the construction of a new bulk cargo port and a new container terminal. Engelhard’s successor, Economics Minister Helmuth Kern from the ruling Social Democrats (SPD), justified the activation of the first parts of the area set aside for port expansion in 1961 by arguing that it was necessary “to take provisional measures in time for the need to increase the economic strength of our city and the competitiveness of our port.”<sup>17</sup> The emotionally charged debate focused on the remaining 2,000 inhabitants of Altenwerder. They were relocated with financial aid, but also under more or less massive pressure and the threat of expropriation for those reluctant to leave. The neighbouring villages of Moorburg and Francop were targeted by the port expansionists for use in the 1990s.





FIGURE 2 Proponents of “land provision:” Hamburg’s Economics Minister Edgar Engelhard (1957-1966) (left) and his successor Helmuth Kern (1966-1976)

In Altenwerder the relocation came to a halt at the end of 1978, when one of the remaining inhabitants who had sued the city triumphed in court. At this time, the Hamburg Finance Ministry, which managed municipal land and was responsible for the expropriations, had internally already raised doubts about the legality of the procedure and the far-reaching rights the city had granted itself by the Act of 1961.

## LEGAL AND POLITICAL IMPLICATIONS OF PORT EXPANSION IN THE 1970S

One of the key problems of Hamburg’s approach had been described in legal port literature at the beginning of the 1970s already. It is directly linked to the pitfalls of a “provisionary” clearing of land with long time horizons. After all, expropriation of land in the interest of the common good for infrastructure projects was allowed only for concrete projects, which required planning assessment processes and development plans, but it could not be “stockpiled” for some unspecified use for the port in years or even decades into the future.<sup>18</sup> The relevant Federal Building Act also covered only classic infrastructure projects – highways, bridges, railway lines – but not the profitable establishment of private industry, on which the Hamburg Senate insisted for the port expansion area under the slogan of the modern “universal port.” In internal considerations the definition of “port industry” had been even expanded to include not only industry directly dependent on deepwater access but also its suppliers. Expropriation should also be allowed “in order to ensure effective structural policies” – which was vague and not necessarily congruent with the legally required public interest.<sup>19</sup>

At the same time it was undeniable that the port expansion area could be prepared for use economically only by using existing dredged material from the Elbe and the port basins and that the land had to settle for some time before port installations could be built and that therefore aspects of time had to come into play in port expansion planning in a different way than in other quickly realizable construction projects.<sup>20</sup>

But in the second half of the 1970s, the port came under criticism not only because of the legal problems of the expansion plans. Firstly, in light of an ever growing demand of the port for financial subsidies – to be able to meet the challenges of containerisation and other technical upgrades – and declining tax revenues after the crisis of 1973/74, even in the Senate and the state parliament sceptical voices could be heard. The conflict of goals between support of the port and other politically relevant issues such as education, healthcare, or urban development was evident. Secondly, the Senate encountered increasingly fierce headwind from the environmental movement. In its formative years in Hamburg, next to the fight against nuclear power plants and the pollution of the Elbe, resistance against port expansion in Altenwerder, Moorburg and Francop was an important and emotionally charged field of mobilisation for the movement. Its representatives challenged the economic assumptions provided by the government and the port that lay at the base of the paradigm of “provision”: “The so-called progressive planners think that you need these residential areas for port expansion and industrial development. At a time in which one can read daily about the limits of growth, for the port expansion planners progress cheerfully proceeds, progress that the affected citizens don’t believe in at all.”<sup>21</sup> The leftist newspaper “taz” commented that the destruction of Altenwerder was premeditated “in the heads of people who have the power to impose on us their visions of the future. These are terrible visions, nightmares. Some of these dreams have become a reality already. Much of it is only paper however. And here our resistance must begin. We must fight these dreams, when they are dreamed, tug the plans to light when planning is done. And if that is not enough, we must prevent that these dreams become reality.”<sup>22</sup>

During negotiations between Social Democrats and the Green Alternative List (GAL) to form a coalition government in the summer of 1982, a GAL representative reiterated: “Senate and SPD have to do without the port expansion. The plans are based on unrealistic hopes of growth, the expansion does not bring new jobs and destroys beautiful villages and an ecologically valuable landscape.”<sup>23</sup> Instead of a port policy focused entirely on the preservation of competitiveness, the GAL demanded “political general planning” in the port, restriction of the size of the port and increased collaboration with other ports.<sup>24</sup> Compared to the harmonious debates of the early 1960s in economic and port policy, there was now – as in other fields, too – a fundamental conflict visible, in which official planning and economic activities and (claimed) interests of the society as a whole were newly scrutinized and weighed against the interests and needs of individuals. The alternative social movement fundamentally criticised the ideology of progress and distrusted technocratic promises of salvation which had been important characteristics of planning in general.

## “LAND PROVISION” AS A STRATEGICAL ARGUMENT

The Senate responded to the legal problems of the Port Expansion Act of 1961 and the questioning of its port policy of growth and competition on two levels: with the drafting of the “Port Development Act” which was adopted in January 1982, and a rhetorical strategy of justifying its activities in Altenwerder, Francop and Moorburg by emphasizing in public the argument of “provision”. In this discourse general ideas of the government being responsible for economic growth and prosperity – and with the aid of modern planning and management instruments being able to achieve it – mixed with the attempt to activate generally positive connotations of provision from social and public health policies such as a sense of responsibility, foresighted action, and the establishment of security.

After the defeat of the Senate in court in 1978, the Port Development Act was tailored to the specific needs of the port and defined a “gliding” planning process with several separate steps. It was supposed to cast the provisional principle – expropriation and eviction a long time ahead and without concrete intentions of usage – in a legally acceptable form.<sup>25</sup> In the text of the Act itself the term “land provision” was not used, but those in charge in the Senate, First Mayor Klaus von Dohnanyi (1981-1988) and the Economic Ministers Jürgen Steinert (1978-1982) and Volker Lange (1982-1987), all Social Democrats, argued in countless public statements with the need for “provision”. They were supported by the Hamburg Chamber of Commerce and interest groups representing the port industry.<sup>26</sup>

Minister Steinert declared in April 1980 in front of 450 enraged citizens in Moorburg that the competitiveness of Hamburg had to be preserved. He claimed that not following a policy of provision meant stepping backwards.<sup>27</sup> A year later Steinert defended his port policy in a parliamentary debate on the planned eviction of Moorburg and parts of Francop: This had “nothing to do with growth euphoria but something with provision for future generations and securing jobs even in 15 to 20 years.” Helmuth Kern, since 1976 chairman of the board of the municipal HHLA, seconded that the Senate acted correctly if it took “timely provisional measures” since the reserve of available land in the port was down to just 200 hectares. Steinert and Kern both acknowledged that a short-term decline of cargo handling at the port was possible and that forecasts of cargo turnover reaching more than ten years into the future were difficult, but Steinert nevertheless persisted that there was a clear trend “and this trend obliges us today to take provision and not only in the year 1990. Because then it would be too late.” As always, a reference to the much larger land reserves of competing Rotterdam and Antwerp on the Rhine estuary and some words of appreciation for the “victims” of his policy of “securing the future of the port” were included.<sup>28</sup> Environmentalists countered: “Who says that land provision is done to secure long-term prosperity of the population, obfuscates that here the short-term quality of life is already impaired.”<sup>29</sup>

In October 1982 in a radio broadcast on Moorburg, Steinert’s successor Volker Lange referred to tradition: “It has always been said: provision. And if you read the protocol of the debate in parliament, then all chief whips [...] said very clearly, we have taken this decision out of a need for provision for Hamburg.” Even without an increase in the volume of cargo more space was needed for containerisation, and one had to be prepared for “potential enterprises.” Lange concluded: “You have to grant a state, a city the right to take provisional measures.”<sup>30</sup>

First Mayor Dohnanyi emphasized in February 1983 that he wanted to combat unemployment and maintain the economic competitiveness of the city. Strengthening the port which he claimed was good for more than 100,000 jobs was crucial for this goal. Therefore, he would “consistently continue a provisional policy in the port.”<sup>31</sup> In the same parliamentary debate, Social Democratic chief whip and later First Mayor Henning Voscherau went one step beyond the city’s “right to provision” by stating: “Since no one can predict with certainty to what extent the need will increase, Hamburg is lawfully obliged to take provision. [...] Careful, differentiated legislative provision is important and useful.”<sup>32</sup>



FIGURE 3 Hamburg's First Mayor Klaus von Dohnanyi (1981-1988) (left) in 1986

Despite the efforts of Dohnanyi and the others, the Senate was politically on the defence with its plans for port expansion, as became clear in a survey of the Institute for Applied Social Science in late fall of 1982: Although a majority of the population of Hamburg attributed to the port great importance for the economy and its job share was even overestimated, about a third of the people opposed port expansion, in particular young people (72 percent) and people with high school degrees (52 percent). Not surprisingly 91 percent of the supporters of the GAL rejected port expansion, but also about a third of Dohnanyi's Social Democrats and a third of the economy-friendly conservative Christian Democrats opposed it.<sup>33</sup>

The Senate tried to combat this mood with the argument of provision: In the context of port policy it was to be an expression of responsibility, logic, rationality – against the emotionality of the opponents –, foresight, and anticipatory action for the public good. In addition, it was supposed to close the legally and, given the forced relocations, morally problematic time gap between the early evacuation and lengthy filling of the land and the subsequent steps of concrete planning and utilization. However, given the decline of cargo volumes in the port of Hamburg in the early 1980s and a by no means strong demand for industrial land close to the water, in June 1985 even representatives of the port economy, including HHLA chairman Helmuth Kern, granted that Moorburg initially would not have to be used for port expansion.<sup>34</sup> Social Democrats of the District Assembly in the southern district of Harburg reproached Lange that the needs of the port were “increasingly in tension to the needs of the people living in these areas.”<sup>35</sup> The Senate decided on some relief for the residents, but did not advance from its principles. Lange stressed in another emotional parliamentary debate in April 1986, that the Port

Development Act was a compromise between the interests of the city and the interests of the affected citizens. Although the conservative opposition criticized that the forecasts of the Senate from the 1970s had proved to be faulty and denounced that parts of Moorburg and Francop “for years had been let to rot” instead of improving the living conditions of the people there, but “the overall long-term provisional policy for the port” was not called into question. The GAL reiterated that the Port Development Act was “megalomaniac,” stipulated “completely exaggerated standards for the space requirement of the port” and had “already completed widely the destruction of the southern Elbe villages.”<sup>36</sup>

This debate focused again on the fundamental differences between the specific interests of local residents and the interests of a vague “general public” and between a concrete present age and an undetermined – and presently indeterminable – future. The fact that future spatial requirements of the port could not be proven by scientific means and that predictions about the time horizons from the 1960s and 1970s had turned out to be wrong, increasingly undermined the postulate of rationality of the Senate and the port economy and therefore upset a key element of any policy of provision. Altenwerder, which at this time was almost completely cleared but lay fallow and was partly used as a landfill, appeared in the mid-1980s as a warning sign that the economic provision the Senate promoted, unlike social policies of safeguarding against illness or poverty, not necessarily paid off and may have been superfluous. Critics were not convinced that the benefits would exceed the costs – just as in other areas where environmentalists balanced economy with ecology and the well-being of society in a different way – which meant that another central justification of provisional action was undermined.

Ironically, both sides were under the impression of increasingly accelerated changes in world economy and cargo transportation since the 1960s but arrived at different conclusions. The shock of the containerisation, when in a short time all major seaports had to change their spatial layout and technical equipment at huge costs new in order to remain economically successful, continued to have an effect. The consequences of deindustrialization became noticeable in the ports for example in the crisis in European shipbuilding. Gloomy forecasts had already in the late 1970s predicted economic decline for the Northern German coastal states and saw the future of the Federal Republic in the south. Precisely because the economy appeared to be subject to further changes, reliable forecasts for the future were difficult and concrete investment plans with longer time horizons in the port appeared to be no longer useful, officials in Hamburg concluded that it was all the more important to provide for future uncertainties and be prepared for all kinds of scenarios with large undetermined land reserves. By contrast, the critics were committed to accept the limits of growth, in the port literally, and to respond to new economic challenges by structural reforms.

In Altenwerder the construction of the ultramodern CTA (Container Terminal Altenwerder) began only in 1997. In 2002 it was completed, nearly thirty years after the start of the evacuation. However, at that time those in charge could feel vindicated by the economic success of the CTA and the spectacular growth in cargo handling in the 2000s: Had Altenwerder not been available and ready, Hamburg would not have been able to respond as quickly to the new economic opportunities after the fall of the Iron Curtain and the opening of China.<sup>37</sup>

The framework that had established in Hamburg in the late 1950s the economic need for “land provision,” that is: growth as a key indicator of the success of a port, the desire to have substantial freedom and flexibility for planning, and the fear of falling back in the competition between the seaports of the European North range, has not changed much to this day. The political disputes over port policy, however, have moved to other fields such as the deepening of the Elbe because there have not been activated any new controversial areas for a while now.



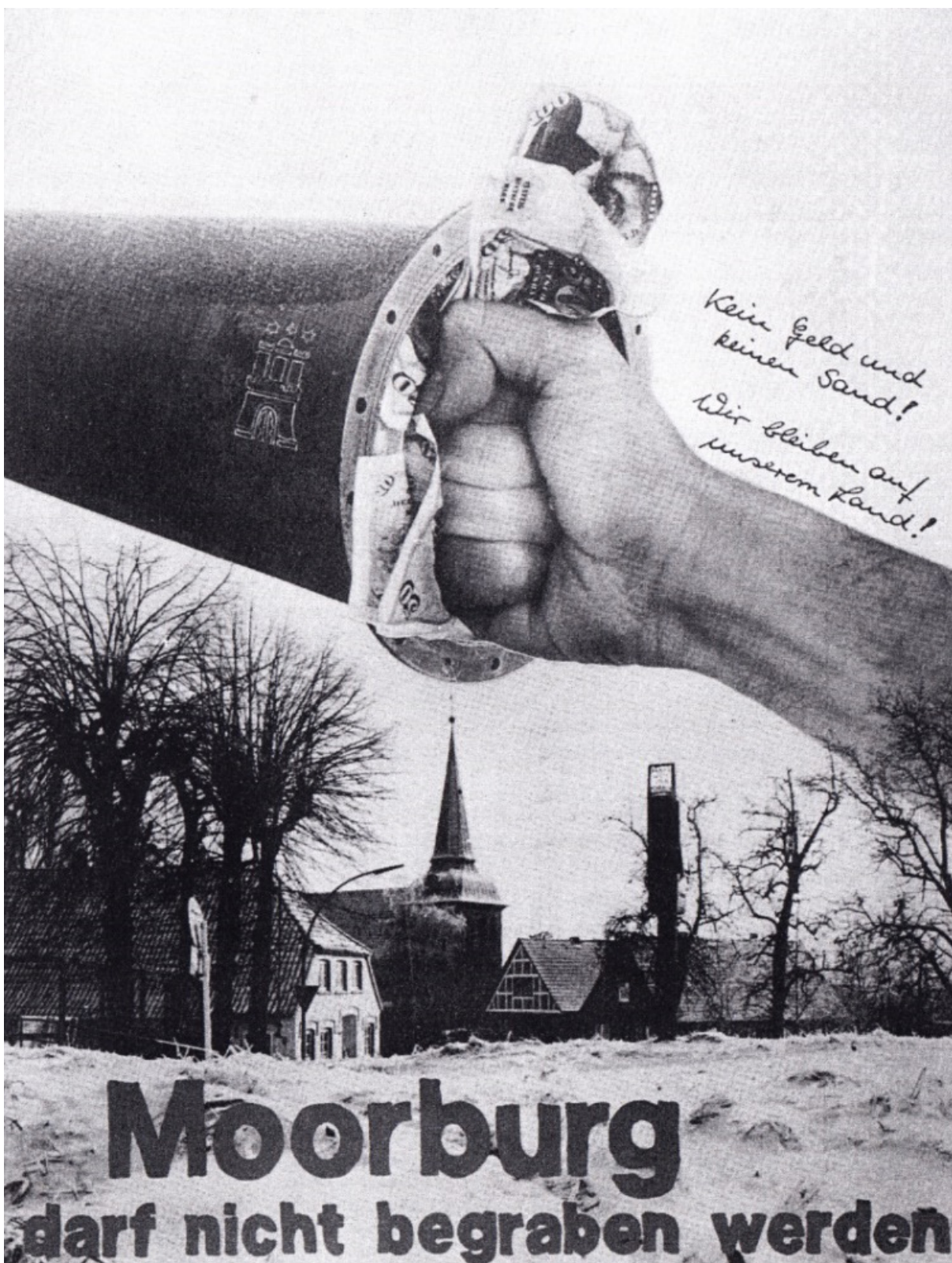


FIGURE 4 Protest against port expansion in 1982: "Moorburg mustn't be buried. No money and no sand! We stay on our land!"



FIGURE 5 Container terminal Altenwerder in 2004

## CONCLUSION

In the 1970s and 1980s, the Hamburg Senate used the argument of “land provision” to overcome the resistance of local residents and environmentalists against the eviction of land for the expansion of the port and to convince them of the necessity of the measures. The desire of the port planners for maximum long-term flexibility – beyond concrete construction projects – and thus long-lasting uncertainty of planning in a time of accelerated economic and technological change made this difficult. Abstract benefits in the future: to be a citizen of an economically successful city, came at the cost of concrete disadvantages in the present, namely the destruction of ecologically and socially valuable living space in an albeit small and not central part of town. This dilemma could not be covered by the rhetoric of “provision” and is still a contentious issue in urban and regional planning. The conflict in Hamburg took place at a time, when the sole legitimacy of the state and its technocratic experts in issues of economic and infrastructure planning and the underlying ideology of growth was publicly called into question by the new social movements, but democratic mechanisms of civic participation and new forms of balancing public interest and the interests of individuals had yet to be developed.



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## Notes on contributor

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# THE PORT OF NEW YORK, 1865-1929: TOWARDS A MULTI-SCALAR HISTORY OF PLACE

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By the turn of the 20th century, the Port of New York had become the busiest in the United States and one of the busiest in the world. Between 1865 and 1929, the Port's huge increase in cargo and passenger traffic was accompanied by a reconfigured, enlarged, and modernized material form. From a ramshackle collection of wooden docks and wharves, New York's waterfront would eventually be characterized by massive concrete and stone piers, shipyards and terminals that involved the dredging of hundreds of thousands of tonnes of riverbed and the creation of thousands of acres of infill from Brooklyn to Manhattan. In this paper, I ask how we can study this diverse, complex, and challenging site, and what implications this study would have for urban history and geography more widely. This paper seeks to elucidate the significance to urban history and geography of the study of the Port of New York, and suggests possibilities for further research. I ask how we can study such a functionally and historically diverse set of linked spaces as the Port of New York. From Manhattan to Brooklyn to Staten Island, the port was geographically expansive. Local landowners, industrialists, and international shipping companies vied with the city, state, and federal governments over ownership, use, and construction of the port's facilities. This broad historical, functional, and spatial context within which the port needs to be studied is reflected in past scholarly work.

Scholars have examined the port by looking at its governance, focusing on novel administrative configurations developed from the 1870s to 1920 (Betts 2002; Buttenwieser 1987; Scobey 2002; Doig 1993). Other scholars have examined the ecological history of the port, particularly human-made changes to the river and shoreline (Steinberg 2014). The built form of the waterfront, particularly its architecture, has received considerable attention from scholars (Bone et al. 2003). Still other studies of the port have focused on labour and social life at the waterfront (Mello 2010; DiFazio 1985; Levy 1989). Undoubtedly important, these histories of the port remain largely isolated from one another, and from the larger-scale contexts of national and international economic, technological, and social changes. I argue that a multi-scalar examination of the port, with particular attention to the larger theoretical and historiographical frameworks of infrastructure, ecology, and capital, promises a more contextual understanding with implications outside of the local history of New York City. Using a brief preliminary examination of a case study of the construction of the Chelsea Piers in New York, I demonstrate some of the potential avenues for the study of the Port of New York. By bringing together the diverse range of scholars who have worked on New York, this paper suggests ways in which to move past such compartmentalization and demonstrates the significance of the port to urban history more broadly.

## **Keywords**

port, urban, waterfront, historiography, scale, political ecology



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# LEARNING FROM WATERFRONT REGENERATION PROJECTS AND CONTEMPORARY DESIGN APPROACHES OF EUROPEAN PORT CITIES

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This paper analyses the processes and approaches of waterfront regenerations in Europe and aims to evaluate the implementations. There are some common processes and cross-cultural transactions between port cities, as all port cities have to respond to the same functions to be part of the network. Since ports were interrelated, architectural approaches and implementations in port cities were transferred to other locations. Port areas changed through the expansion of the city, economical changes, technological developments, wars, fires, de-industrialization and containerization. Facts like containerization and de-industrialization caused the relocation of the port. Through regeneration projects, industrial heritage is preserved and derelict areas are used for the implementation of contemporary architecture. Examining some case cities (Docklands, Genoa, Hafencity) helps learning from previous projects realised in last decades. Hamburg Hafencity project demonstrates a successful intervention, but a relatively failed example might be Izmir waterfront regeneration project. The port area of Izmir became a derelict area after de-industrialization. As industrial buildings could not adapt to the changes, they have been abandoned. The failure of the project provides an opportunity to study the role of actors (including architects, planners, organizations, stakeholders) and draw some lessons through previous generations of waterfront regenerations for Izmir.

## Keywords

port cities, European waterfront regenerations, Izmir, contemporary architecture

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## INTRODUCTION

This paper discusses the history and evolution of the waterfront regeneration projects undertaken in Europe via paired comparisons in order to highlight the current changes in architectural design and development approaches. Waterfronts in port cities have unique qualities, such as being located on water's edge and have valuable, but abandoned industrial heritage in historical environments. This situation is a chance for architects to develop ideas and implement their design practices. This leads to an opportunity to observe changes in the interface between cities and ports. These areas can also be considered to be laboratories for the process of urban renewal on a wider scale and lessons can be drawn as instructive for contemporary architecture and planning. Here, the main aim in examining different implementations of port city regenerations is to draw lessons for a Turkish city, which experienced an unsuccessful transformation procedure. This paper is developed from the completed master thesis of one of the authors<sup>1</sup>.

## THE NEED OF WATERFRONT REGENERATION PROJECTS

The urban waterfronts of port cities have always been hubs of transportation, trade and commerce<sup>2</sup>. However, the port and city relationship also shifts due to the needs of the port and the temporal needs of some key players in time<sup>3</sup>. Global, political, economic and technological developments have reshaped ports and their waterfronts since the first interrelations between cities started. In terms of waterfront regeneration, we can see it is forced by port closure, deindustrialisation, land abandonment, a desire for open space and containerisation<sup>4</sup>. After becoming derelict, since the 1960s most of these spaces have been converted to other uses in an attempt to reconnect local people with water and associated waterside areas. Urban waterfronts have been under debate since then and it is argued they have become great opportunities to create public open spaces. Technological changes in shipping and cargo handling facilities triggered the transformation of ports. Containerization and other technological innovations were accepted on a global scale after the mid-1960s, and ports moved away from the city core<sup>5</sup>. Once this move had happened, the port-city relationship began to split and they started to become two distinct entities. This separation was accelerated with the advent of more recent advanced port logistics and especially with containerization: the effect of which cannot be underestimated on the relationship between the working classes and the port as employment levels within the port decreased significantly. Such effects can also be seen in the physical landscape with changes in building stock and new uses for the land. Schubert<sup>6</sup> recognised a more general trend when he labelled these changes as “from ships to chips”, reflecting the increased value of information processing for economies globally and the corresponding decreased value of the physical transportation of cargo.

Because of their geopolitical locations and the interest, port city waterfront projects have garnered from various agents and actors, regenerated port areas have somehow become a reflection of the contemporary architecture of each decade since the 1960s. Four case studies are chosen to exemplify successive waves of port city renewal –London Docklands, Genoa Expo, Hamburg Hafencity and Izmir by authors. These case studies are selected from different decades in order to reflect the effect of accumulated experience in European waterfront projects culminating in suggestions for the Izmir project.

## LONDON DOCKLANDS DEVELOPMENT PROJECT

By the mid-1930s, London's upriver docks were at their peak and The Royal Docks achieved a peak of economic growth in the 1950s. But between 1961 and 1971, Greater London lost a significant quantity of jobs in manufacturing, trade, communications and public utilities. After the advent of containerisation and other technological changes, the decline truly began and, at the end of the 1960s, the Port of London Authority (PLA) decided that the docks were no longer affordable. The ports of London have shifted several times towards the

North Sea across their history. This reflects the fact that container ports are usually located further from ports, which emerge with or close to the city core. Today, Tilbury Port is in use but Gateway Port has been under construction on the North Bank of River Thames since 2011.

The West India and Millwall Docks were closed in 1980 and the Royal Docks were closed for general cargo handling at the end of 1981. Cargo handling operations were transferred to Tilbury after the closure. When the Docklands area became deindustrialized, working and living conditions were not suitable in these areas anymore. Additionally, in the 1960s, the manufacturing industry dramatically declined in the United Kingdom. This has been traditionally associated with poor housing. These are the reasons why socio-economic and environmental problems were incurred after deindustrialisation.

Similar to other regeneration projects, Docklands Development Project was a long-term project, which can be understood through the three phases of the process. The first phase of the development was based on the initial decisions. First of all, a decision was needed over whether or not to fill the land. The main purpose of the project was the economic regeneration of the East End. Accordingly the actors of development project clarified the focal point as the Isle of Dogs. The marketing process started to sell the land to investors, and to the private housing market. The infrastructure development programme played an important role in order to connect the East End and central London. Therefore, transport was a significant issue and Docklands Light Railway (DLR) became part of the agenda and a decision was made to build it.

According to Meyer<sup>7</sup>, the development of the Isle of Dogs is based on three elements:

- An improved connection to the city centre, a highlight of which is the construction of a new eastern extension of the Jubilee Underground line.
- The development of Canary Wharf into a full-fledged city centre surrounding the basins of the West India Docks.
- A strong spatial awareness of and anchorage to the Isle of Dogs was to be achieved by a good structuralization of east London's large open spaces: parks, watercourses, and basins.

The urban design of the area was based on the architectural and landscape design, and conservation of the architectural and industrial heritage. Wharves and warehouses along the Thames became abandoned after port activities moved further downstream. Therefore conservation works became important to maintain the industrial and maritime heritage.

Conservation decisions decreed that<sup>8</sup>:

- the remaining water areas that distinguished the area from other parts of East London were to be retained.
- the remaining docks were to be repaired.
- large areas of filled dock were to be re-excavated in Wapping, Surrey and Greenland Docks.

In 1981, LDDC faced the problems of dereliction in Docklands. The image of Docklands for living and jobs in the area changed rapidly after the regeneration. Economic decline was notable until the project started. Most of the area enclosed with water became abandoned and under-used. This situation was related to the economic collapse of Docklands. The local inhabitants of Docklands were no longer appropriately skilled for the economic growth of London. Therefore the idea of selling the land was important to lead to social regeneration rather than simple marketing, thus the project resulted in gentrification.



## GENOA EXPO'92

In the mid-nineteenth century, Genoa played an important role in industrial activities connected to the sea and maritime transport facilities and related industries such as shipyards, steel production and oil refineries<sup>9</sup>. This resulted in the rise of Italian industrial development in the late nineteenth and early twentieth centuries. Genoa, thus, became not only one of most industrialised cities in the world at the time, but also the most economically advanced area, with the so-called 'industrial triangle'.

The decline of the old port started in the 1950s and in 1965 the building of a substantial physical barrier, a super elevated road, finally excluded it from the old town<sup>10</sup>. Since the modern facilities came into use in the 1990s, the circulation of goods and people both increased. However, the city and port could not reintegrate after the earlier creation of the physical separation. The reasons for decline can be summed up as follows<sup>11</sup>:

- Maritime activities alone did not provide enough wealth for the inhabitants of Genoa.
- After de-industrialisation, the factories close to port did not produce anymore and the fuel industry ceased to exist.
- Residential neighbourhoods were badly affected by the overall port system (due both to the traffic movement and to the permanent structure of terminals, roads and railways). The waterfront of Genoa maintained the local identity.

Genoa established first rehabilitation of the crescent-shaped port via EXPO'92, an event to celebrate the fifth centennial of the arrival of Christopher Columbus in America. Reconnection of people and water in the frame of cultural development was the main objective of the project in Porto Antico. The focal point of the project was the re-connection of the port and the historical city centre. Renzo Piano was responsible for the whole project.

Seassaro<sup>12</sup> indicates the objectives of EXPO '92 as:

- to regenerate the previous port functions and remodel the passenger terminal (100,000 m<sup>3</sup>) to create a port grill (6000 m<sup>3</sup>) and a cruising centre with shopping and sport facilities (180,000 m<sup>3</sup>);
- to develop the service sector related to water with the creation of a multicentre to accommodate hotels, a shopping centre, housing, marina and parking (360,000 m<sup>3</sup>), a culture and exhibition center including marine research institute, university library, museum, public parking, etc. (400,000 m<sup>3</sup>);
- to expand the city's service functions with the special project entitled 'Colombo 1992' (416,000 m<sup>3</sup>)<sup>13</sup>.

The abandoned waterfront was regenerated through cultural development. Genoa EXPO '92 as an example of 1990s' waterfront regeneration project provides a guide for event-based developments. As a result of the Genoa port regeneration project, the waterfront changed and gained cultural, recreational and commercial activities via museums, restaurants and other entertainment facilities. In terms of architecture, the most important criticism was about the demolition of some buildings. The project area in Genoa was not as big as other port developments in Europe and it was dominated by only one architect in contrast to the HafenCity Project, which chose to open the design up to architectural competition.

## HAFENCITY HAMBURG

The face of Hamburg has changed many times throughout the history. The Great Fire of Hamburg in 1842 and the massive destruction occasioned during WWII caused unplanned transformations. Today, the last planning approaches undertaken on the former port area have occurred through functional transformation. Moving back to recent past, Hafencity area became a place of abandoned sheds and warehouses. Hafencity's master plan has been revised several times in order to reach the ideal plan for HafenCity. The first master plan was established in 2000 and revised in 2010<sup>1415</sup>.



FIGURE 1 Building Arabica located in Überseequartier and designed by Trojan + Trojan & Dietz Joppien on the left, former warehouse in use of Maritime Museum presently on the right.

According to the updated master plan, the eastern part of the city was re-designed in order to transform the area for a variety of uses. Three districts with a variety of uses are in the pipeline: the Baakenhafen neighbourhood will be used for different types of housing and recreation. Oberhafen will become a creative and cultural district, where existing older warehouses will be reused and sport facilities right by the water will be provided. The most eastern district, the Elbbrücken neighbourhood, will be the entrance gate with higher buildings and a mix of offices, residential and shopping facilities.

The main objectives of the project are:

- 1 to respect architectural quality.
- 2 The urban landscape and sustainability.

The master plan was evolved with public discussions through a series of exhibitions and other events. In fact, the pattern of the area has been almost totally changed. Previously, the sheds were completely rectangular and located along the fingers of the Elbe. According to the master plan, the majority of the buildings tend to be vertical in contrast to Speicherstadt's horizontal character. The master plan is based on mixed-use. As a result, innovative façade designs can be observed in the HafenCity project. Numerous sub-projects within Hafencity have ecological certificates due to their concepts of flexibility, redundancy, diversity, compactness, mixed-use and perspectives of adaption and resilience.<sup>16</sup> The Übersee Quarter neighbourhood plays an important role in the Hafencity project. Significantly, the district is blended with port heritage (Figure 1).

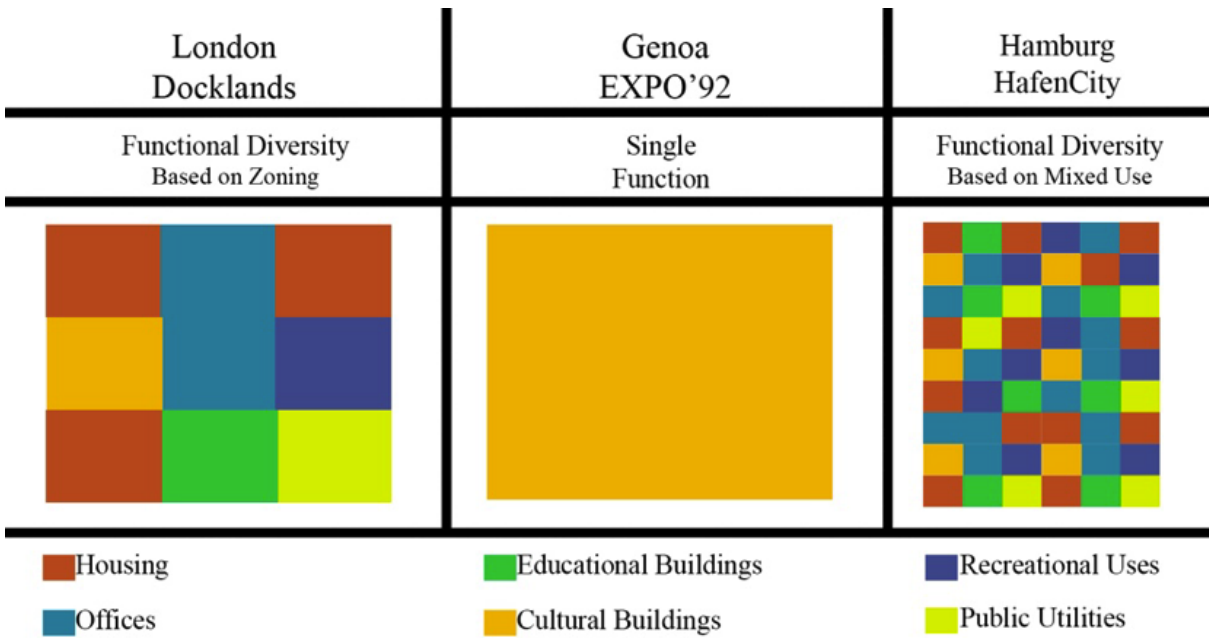


FIGURE 2 Functional Diversity in the Waterfront Regeneration Projects

Historically, the area of Hafencity was a former port area. The port cities were originally conceived from the sea or rivers. Hamburg had been perceived from River Elbe before the former port area became derelict. This is why the warehouse district Speicherstadt had an important role for the face of the city. However, Lake Alster gained more importance during the modern era. Therefore planning and building activities increased around Alster, while former Hafencity area was becoming derelict. But today, Hafencity project thus is a tool to reintroduce the value of the former port area. On the other hand, the neglected port area became accessible and available for public use after the transformation. So the project can be seen as a tool to reconnect the public and water as well. Hence social and cultural capacity generation is concerned.

## EVALUATION OF THREE EUROPEAN CASES

There is a clear progression from London Docklands to Hafencity today. Each the biggest regeneration projects of their time in Europe, there have been significant differences in planning and architectural approaches, especially with regard to social cohesion, between London and Hamburg waterfront revitalizations. The latter is a project of accumulated knowledge and experience of previous waterfront projects, which focuses on building quality, sustainability, new approaches regarding the use of resources and learning through the evaluation of previous works.

The Docklands Development Project was linked to regional strategy, but then its influence spread all over the world with the idea of the 'Mega Project' exemplified in Canary Wharf. Across the projects under examination, the methods for waterfront regeneration can be seen to differ. As the London Docklands Development Project's focal point was local economic regeneration, it was expected that social development would be obtained as a result of the regeneration project. Hafencity Project is a more recent example of such a project, which is equally concerned with economic and social development.

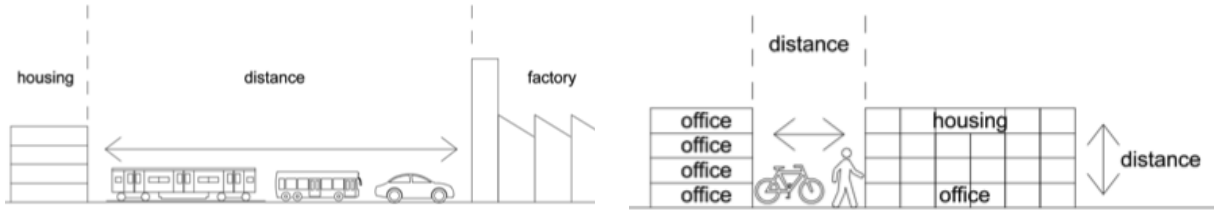


FIGURE 3 Housing-distance-office relation in modern times based on zoning on the left, housing-distance-office relation in Post-modern times based on mixed-use on the right

Today, the contemporary architectural movement is abound with landmarks, which are irrelevant to their built environment. Even though the Hafencity project already has its landmark, partially observable initiatives, like the opt out from OMA's Ring, lead the way in escaping this architectural crisis. The Überseequartier could be highlighted as a guide for contemporary architecture, for instance.

While only Hamburg, Genoa and London have been examined, these examples lead to clear conclusions about the identity of Europe. Because Europe has a cumulative culture, we can see this reflected in architecture throughout its history. Planned and unplanned interventions, such as great fires and wars, have destroyed some aspects of local heritage, but nevertheless port cities have been able to keep the identity and pattern and, in particular, the memory of their heritage alive.

Hafencity, as a relatively late project, references the previous projects. The concept of mixed-use is important as it makes the city slower. In addition, modernist cities are based on zoning. London Docklands followed the modernist idea and is based on an office-led concept but mostly separated the functions, whereas, the Hafencity project created a slower city (Figure 3) partly based on the notion of mixed use (Figure 2). In contrast to the modernist zoning approach, functional diversity exists within mixed use neighbourhoods, exemplified by master plans created around notions of increased bicycle and pedestrian pathways supported by rail links rather than roads, in the case of transport and mobility (Figure 3). This does not mean that in Hafencity, the work places of the residents will immediately be in the close surrounding or vice versa, but the project gives us the chance to observe the tendencies of inhabitants.

Hafencity project offers different typologies for housing so that people can afford to rent or buy. Most of the waterfronts were developed with recreational facilities in mind, as well as offices, housing and other functions, in order to attract tourists and visitors. Street activities such as fairs, festivals etc. create a lively atmosphere and attract people to be a part of this kind of new regeneration project. Although Hafencity is not yet a completed project, there are already users, offices, companies, restaurants and tourists in the area. Spaces meet with users and this shows the project has already achieved the expected success.



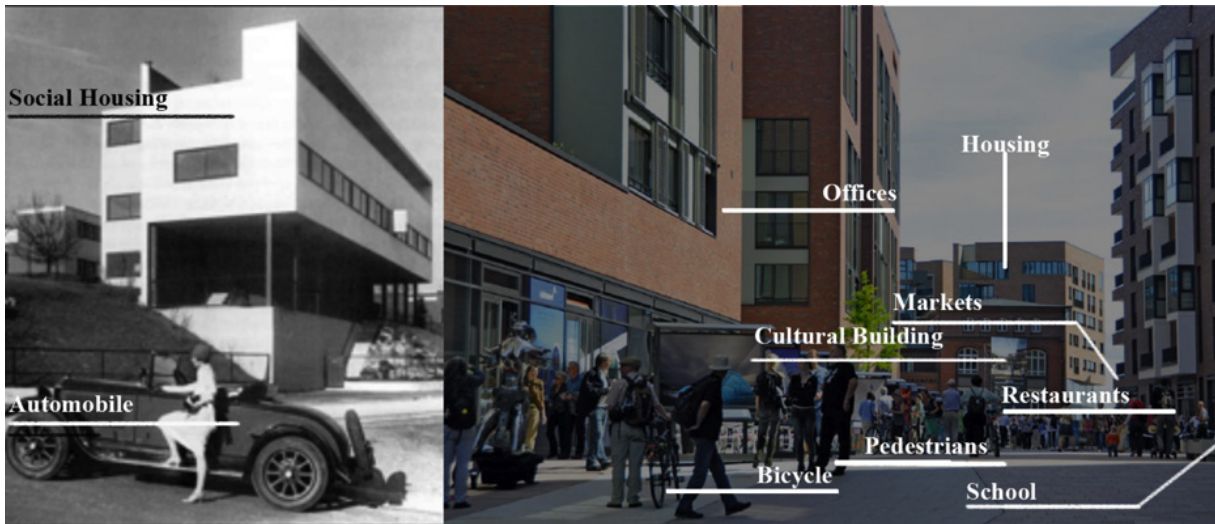


FIGURE 4 Comparison between Modernist and post-post Modernist Era

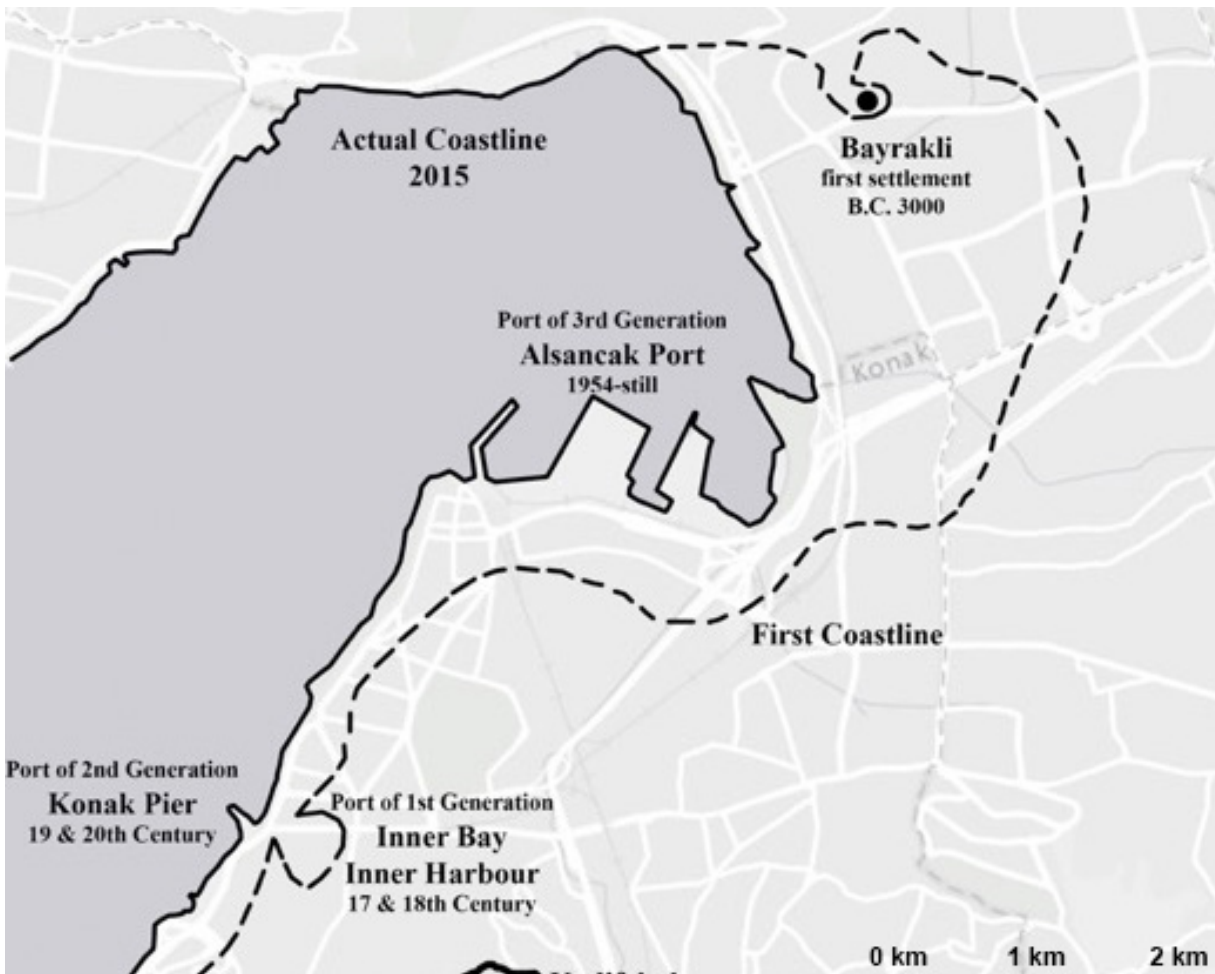


FIGURE 5 The Shift of Izmir Port



## REFLECTIONS ON IZMIR

As the case studies show, general themes can be ascribed to the decline of port city waterfronts, which can be used to make predictions for the future of other port cities. Some predictions can be made based upon this examination with concrete implications for contemporary port cities like Izmir, which are as yet to complete the process of transformation.

In this study, four case studies were chosen to exemplify successive waves of port city renewal – London Docklands, Genoa Expo, Hamburg Hafencity and finally Izmir as the main target. Additional factors in the choice of case studies includes the fact that the study deals with different scales of transformation, which can be seen in the various examples. Not only that but the case studies were also selected from different decades to reflect the effect of accumulated experience in European waterfront projects culminating in suggestions for the Izmir project. While London, Hamburg and Genoa are considered successes, which exemplify their generations, Izmir stands apart. Izmir is a port city and it has long played an important role in transshipments in the east Mediterranean. In fact, the city of Izmir has had the identity of a port city since its establishment in 3000 BC. The port of Izmir shifted several times throughout the history (Figure 5) and the coastline also changed over time. But the port-city identity of Izmir reached its peak in the nineteenth century, when the city became the main entrance port of Europe to Western Anatolia, especially in connection with the industrialization processes underway all around the world.

In common with the other case studies, the port area of Izmir became a derelict area after de-industrialization. The industrial zone, which is directly connected with the port, was particularly heavily affected by geopolitical changes and became vacant. Industrial buildings could not adapt to the economical and global changes and so they therefore became abandoned.

The Greater Izmir Metropolitan Municipality launched an international competition for the redesign of the waterfront in 2001. The successful project was influenced by London Docklands and proposed an enterprise zone for Izmir. The master plan competitions for both the Hafencity project and Izmir waterfront regeneration project were launched at the turn of the Millennium. The development process began for both cities more or less at the same time. However, the Hafencity project is on track, but the Izmir waterfront development project has not yet come into effect as expected. There are a number of differences between the port-city structures of Hamburg and Izmir, such as the generation of the port. In recent decades, most ports were separated from their city centers all over the world. But Izmir port remains in the city core. So the first phase has not yet been completed. There is motivation for moving the port, but current levels of investment are not enough to realize the project.

## CONCLUSION

Cross-culturalism is an important factor that influences the identity of the city with a harvest of different cultures. There are lots of reflections of transcultural movements in waterfronts of port cities and their hinterlands. Infrastructure developments were important to connect the ports and hinterlands in order to transport raw materials and goods. Waterfronts were therefore shaped through trade-relations and this is affected by cross-culturalism. Interestingly, cross culturalism seems to have developed in parallel to Konratieff's globalization waves. Cross-culturalism may have achieved its peak today as it is illustrated in Figure 6.

Stage of Cross Culturalism	Trade Routes	London	Genoa	Hamburg
	Google Türkiye			

FIGURE 6 Cross-culturalism and its influences on waterfronts of port cities

Although port cities have dynamic character, the line and the face of the waterfront changes rapidly in any port cities around the world, the historical pattern and the local identity must be considered in any step of development project. As we accept that the waterfront regeneration projects are the ambitious projects for the contemporary architectural design approaches, we can say that today’s architectural and urban design tendencies are mostly based on sustainable design with sustainable identity.<sup>17</sup> Waterfront regeneration projects are considered as ambitious initiatives for the urban development process and shall be the layout for reflecting the architectural design approaches of the era or decade. The changes on waterfronts through waterfront regeneration projects are reflected in Figure 5. The waterfront regeneration projects steer our future through past. With this in mind, it could be better to avoid implanting iconic buildings simply to attract tourists. Instead, the project itself must be contemplated with ideas and decisions that consider the built environment. Architectural heritage and the identity of the area must be preserved. Learning from previous projects and even from projects themselves will provide more sustainable and successful results. High architectural quality, regionalism, conservation & preservation of the pattern and the environment of the architectural heritage, the avoidance of irrelevant iconic buildings, an emphasis on the local identity and a re-connection with the port culture through events, which are connected to the identity are the leading notions of today’s architectural approaches.<sup>18</sup>

**Disclosure Statement**

No potential conflict of interest was reported by the authors.

**Notes on contributor(s)**

Fatma Tanis received a bachelor degree in architecture from Mimar Sinan Fine Arts University in 2013. She earned a master of science degree from Istanbul Technical University, Architecture Department, History of Architecture Programme with the thesis entitled “The Waterfront Regeneration Projects And Contemporary Design Approaches Of European Port Cities”. She is a PhD Candidate in History of Architecture and Urban Planning, TU Delft. Her research explores how shifting networks have created a unique palimpsest of structures and actor networks between 16th and 21st century in Izmir, a port city on western coast in Turkey.

Fatma Erkök is Associate Professor in ITU Faculty of Architecture. She received her PhD from ITU in 2002. She was a visiting scholar at IUAV Venice in 1997 and at TU Delft in 2007/8. She has taken part in national and international level research projects. She has been author or co-editor for a number of books, such as: “Doctoral Education in Architecture: Challenges and Opportunities” (2015), “Danube Delta Advanced Research Center Murighiol, Romania (2012) and “Residential Entrances and Doors of Istanbul” (1996). Her research areas focus on doctoral education in architecture, urban issues, water & city relations, body & space relations.

## Endnotes

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# CAPITAL ACCUMULATION PROCESS AND RESILIENCE: URBAN PLANNING AND REDEVELOPMENT OF PORT AREAS, A CASE STUDY OF SANTOS (BRAZIL)

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The present work aims at outlining a current urban scenario of the urban planning implemented in the city of Santos (Brazil), especially the policies of urban and port requalification through the analysis of the actions of *Alegra Centro* Program. *Alegra Centro* is the Revitalization and Development Program of the Historical Central Region of Santos. This work discusses the realized actions in the process of urban requalification and compares them with the ones taken towards housing policy. It discusses and concludes the following hypotheses: the proposal of requalification is more of an ideological rhetoric, which perpetuates the accumulation of capital, therefore the resilience of the urban space; the studied demonstrates the impact of the proposals in the urban dynamics and reality and its social issue. It confirms the thesis that the ongoing redevelopment project is an urban policy that favors the allocation of public resources in strategic areas, especially in the central area, for the benefit of private entrepreneurs. And finally it demonstrates the city plan or scheme that is being implemented in Santos, which is the allocation of public resources in the central area as a public strategic that has been deepened the social issues without considering the local residents.

**Keywords**

urban planning, resilience, regeneration projects, port cities



## INTRODUCTION

This paper addresses the urban planning in the city of Santos, in the twentieth century. The methodology is the analysis of the urban planning history in the city of Santos focusing the analysis on urban revitalization policy that has been implemented in the city, in the central area.

The study object is the central area of Santos, the first urban site and port facilities, which have become outdated<sup>1</sup>. This area is a strategic site as an urban and social place. It is a service area linked to port activities, a shopping center for low-income and poor living space, however it has infrastructure and public facilities, concentrating the largest collection of historical / cultural heritage.

It is an area of high social vulnerability: low income, low education, informal labour, and the existing concentration of housing in slums. This area is the object of the urban revitalization project, called *Alegra Centro* and most recently, the project named *Porto Valongo*, based on the premise of “adaptive reuse”<sup>2</sup> of the old warehouses of the port and its incorporation into the urban structure as the renewal of the water front<sup>3</sup>.

Urban revitalization projects are widespread strategic to leverage local, tourist and cultural development of the city in the same way adopted in global cities such as Barcelona, Baltimore among others.

The thesis explored in the present work, is that the Santos redevelopment project is an urban policy that perpetuates the allocation of public resources in strategic areas, and also that the proposed urban renewal model is the adoption of “displaced ideas”<sup>4</sup> therefore the importation of models without considering the local reality and social fragility.

## URBAN PLANNING

Santos urban planning is historically formed by the development of various master plans, which determine the functions of the city and proposes strategies for development and zoning, in order to control the rapid urban growth in the late transition from the nineteenth century to the twentieth, known as the coffee cycle<sup>5</sup>.

Even before the sanitarian intervention, the city promulgates in 1847, the Code of Postures establishing building criteria for the central area, but without having a direct relationship with the existing urban structure. In this code it is possible to see the “embryo” of what had become the spatial segregation process through the urban legislation. The code prohibits traditional buildings and industrial uses in the central area, creating a pattern of urbanization that aims to preserve the quality of life of the richest citizens and excluding the residents in slums.

This is the beginning of sociospatial segregation in Santos where the regulation pattern defines the space for the formal city, leaving out of regulation the periphery zone.

In the early twentieth century, it is implemented the proposed by engineer Saturnino de Brito, hired by the state government to develop the infrastructure of Santos in order to maintain the port activities and the capital reproduction in the space<sup>6</sup>.

Since 1930 we have the production of various plans that define proposals, but there is the gap between plan and execution, discourse and practice, it is the modernist and functionalist urban planning, the Fordist economy and the mass consumption society<sup>7</sup>. These actions conceal the true source of the problem and the failure of the state to solve them, so “there is the speech planning and ineffective planning.”

Among others urban law, the Master Plan of Santos from 1968 is the first to foresaw the need for urban renewal of the central area, but it was not implemented. Actually actions to face this problem only occurred in the 1990s, with the adoption of strategic planning<sup>8</sup>, that outlined goals, policies and well-intentioned guidelines, which eliminated the disagreement and hidden conflict in order to build the consensus, the strategies known as “market urbanism”<sup>9</sup>.

Within the development of the global economy and market flexibility, there is the emerging of “urban competitiveness”, where it is up to governments to “sell the same thing to the same virtual buyers who have invariably the same needs”<sup>10</sup>. In this new scenario it is understandable that the so-called urban marketing has been grown and that basically all strategic plans have essentially the same characteristics.

The Plan of Santos can be analysed by this focus, by proposing the flexibility of urban instruments, defining strategic areas of the city and proposing the sale of the city to international buyer without considering the existing social fragilities.

## SANTOS: REGENERATION PROJECTS

In 1980 it began the mobilization of Santos society in the rescue of cultural heritage with the establishment of the local heritage council in 1988, called CONDEPASA. Caldatto<sup>11</sup> remember that the articulation and formulation of a local political rescue of historical heritage was necessary due to the low activeness of the agencies already in place, IPHAN (federal government) and CONDEPHAAT (state government). The CONDEPASA begins its operations topling representative historic buildings, most of them built in the coffee cycle<sup>12</sup>.

The formulation of a specific policy in preserving the existing heritage happened in the Master Plan of 1998 with the definition of Cultural Protection Corridors (CPC) Figure 1. These corridors are further including in the Cultural Protection Area (APC) that also started the strategy for *Alegra Centro* in 2003.

## ALEGRA CENTRO

The Revitalization and Development of Historical Central Region of Santos (*Alegra Centro*)<sup>13</sup> is a specific urban policy, the first in Santos history, focused on the revitalization of the central area.

The *Alegra Centro*'s policy encourages the resumption of economic development through actions in the following areas: improvement of the urban landscape; preservation and restoration of historical, artistic and landscape heritage; integration between the pier and the central area - project *Porto Valongo*; rescue of identity; economic re-articulation; social inclusion and housing solution with the implementation of *Alegra Centro Housing Program*, approved in 2010<sup>14</sup>.

The first actions took place with the restoration of cultural heritage and the search for a new urban center image in order to leverage the economic recovery process in the city as a whole, the so-called urban renewal.

We can cite the following interventions: urbanization of the central squares (*Mauá*, *Rui Barbosa*, *Andradas* and *Republic*), replacement of sidewalks paving honouring the coffee cycle, restoration of the train station, among others. Therefore, these interventions seek to rescue the symbolic value of the central area to build a new image for the city center in order to leverage urban regeneration.

Since its establishment the number of properties incorporated by the program tripled, from 686 to 1805 properties in its atual phase<sup>15</sup>.

The identification and classification of properties of historical and cultural relevance is done through cultural inventories that points the existing architectural heritage and classifies them into four levels of protection<sup>16</sup>. The inventory establishes which of the building has historical values, therefore can receive tax benefits defined by law, in order to stimulate the economy and attract investors to the projects. The main idea is to stimulate emerging of new activities, such as entertainment, culture, leisure and tourism.

The program also defined the possibility to sale the construction potential not used in this building to others cities areas such as the beach zone. Despite this possibility it's almost impossible to do so, since the adopted building standards in the city are so high that does not make it possible<sup>17</sup>.

We can define as *Alegria Centro* features: the regulation, the definition of standards and the creation of tax incentives as tools to leverage the revitalization of the central area. The public investments, the responsibility to invest in urban interventions (squares, streets, infrastructure) that will serve as the starting point of the process and creating the necessary conditions for the emergence of private investment property restoration and the establishment of new uses.

The tax exemption for private property and public investments in infrastructure and public buildings are essentially the *Alegria Centro* strategies, but the most significant point is that none of the strategies include the social fragilities and even actions to face these problems. Housing policies and social programs were not part of *Alegria Centro*.

Therefore, the public-private partnership is based on the allocation of massive public investment in strategic points. As a result of this action there is the deepening of social disparities, the fragmentation of the city. The real estate speculation process is also benefit by these strategies<sup>18</sup>.

The program is guided by the reference of the strategic plan, which aims to sell the city and its investment opportunities from “deregulate, privatize, fragment and give the market an absolute free pass”<sup>19</sup>. Therefore, the *Alegria Centro* is a program of strategic actions and not a revitalization urban plan<sup>20</sup>, since they did not implement integrated actions in infrastructure and urban re-articulation (port-city). More direct action related to a new urban re-articulation will be defined during the development of “strategic projects” or “anchors” in key points of the city, such as the area of the old warehouses, the use of which will be discussed in the implementation of this project, *Port Valongo Santos*.

## ALEGRIA CENTRO HOUSING PROGRAM

The Rehabilitation Program of Residential Use in the historic Central Region of Santos (*Alegria Centro Housing Program*) is created by the supplementary law number 688 in 2010 and its origin is a direct result of *Alegria Centro*. Initially the program did not provide housing witch will be included only in the *Alegria Centro* review, in 2008, with the installation of residential use in the periphery area and not inside of it.

Therefore the *Alegria Centro Housing Program* (2010) do not include the central neighborhoods like *Valongo* and *Center*<sup>21</sup>. that concentrated almost entirely the public investments already made, a contradiction within itself. For the slums existing in the area the law defines “the properties of families living located in the area of *Valongo* [...] may be directed to properties located in the area covered by the program”.

So in the area of *Valongo*, it will not be encouraged and existing housing should be redirected. This attitude shows that the *Alegria Centro* will result in the gentrification process<sup>22</sup>. Theafore, we can establish that the *Alegria Centro* is based on a mistaken premise, displaced from the social reality of the central area, not including the residential use and the resident population of the *Valongo* neighborhood.

For the suburbs the program establishes a strategy to adopt tax incentives for private investors and owners of real estate in the rehabilitation of precarious houses<sup>23</sup>. The program identifies 221 precarious properties and establishes a deadline of two years to the beginning of the rehabilitation process, and administrative penalties for non-compliance.

Since the beginning of the program in 2010, no property has been rehabilitated, not by the government or by the private sector and no administrative penalty was imposed. There is no political interest to face the housing problem.

In this sense the public action is omitted since it is not planned municipal budget source for the rehabilitation of precarious housing estate, leaving the owners and / or residents facilitate the rehabilitation of homes through existing funding programs in the market.

If we compare the *Alegria Centro* and *Alegria Centro Housing Program*, in the first the public sector “signals” to entrepreneurs the possibility of intervention throws public investment (historic buildings and infrastructure), in the second it is established that public investments are not intended, leaving the owners undertake rehabilitation of precarious buildings, aggravating the sociospatial segregation.

Therefore, the *Alegria Centro Housing* policy can be seen as another legal instrument that exists on paper and not in fact.

## PORTO VALONGO SANTOS

This Project embraces the intervention of warehouses 1 to 8, for urban revitalization in order to return to the urban landscape its aquatic view, the waterfront renewal strategy and aiming to “[...] transforming them into one of the largest tourist centers, leisure and entertainment and business in Brazil. This project will be one of the main urban interventions in port areas already held in Brazil”<sup>24</sup>.

It was established a shared management model between the city hall (PMS) and the port authority (CODESP), made official by the signing of the agreement on 28 February 2008<sup>25</sup>. The agreement establishing the Working Group Participatory (GTP), composed equally by PMS and CODESP and the decisions are taken from the consensus between them.

The proposed program consists of the implementation of diversified uses based on the development of tourism and the service sector, including marina, cruise terminal, restaurants, shops, event space and fairs, offices, site and services. The program seeks to illustrate possible promotion strategies that it is possible to do in order to attract potential investors, is the adoption of city marketing.

With the change of municipal management in 2013 the program is in standby, without effective action of viability.

## PROGRAM RESULTS

After a decade it is possible to define some results of *Alegria Centro* program, however being a recent case it is important to verify the ongoing actions. As it can be seen in Tables 01-03, since the beginning, it has been invested more than R\$ 100,000,000.00 (one hundred million reais) of public nature (municipal and other spheres), without considering previous investments before 2003, which were not accounted or disclosed. (Tables 01-02: identifies the amounts invested by the program and details these values in 2009 and 2010)

For private investments, the amounts estimated by management and disclosed are less than R \$ 50,000,000.00 (fifty million reais). This value is obtained by lifting any intervention in the central area and its cost is calculated by square footage, for example: the face of a building is painted, it is an estimated area the cost per square meter and counts as private investment. The calculation of investments follows this methodology since the beginning of the program. The justification of the administration for the use of this method is guided by the premise that the values declared in the payment of any type of service tax (ISS) do not correspond to the actual amount invested, so take as real tax evasion and also estimate a higher value of the private investment made. With this method the amounts disclosed private investments are in fact lower than estimated, would otherwise be released the effectively declared values and not estimated.

According to official reports the sum of amounts invested in the program both public and private exceeds R\$ 150,000,000.00 (one hundred and fifty million reais). However, we found that in this value were not accounted the amount invested in infrastructure such as *Perimetral Avenue*. If we sum these projects the invested amounts exceeding R\$ 300,000,000.00 (three hundred million reais), 82% of public investment, public-private 3% and only 15% private. (Table 02).

The strategy of displaying the amount investment in the program, regarding the value adopted in infrastructure, it is strategic to show the effectiveness of the program in capture the private investment, which it is not relevant, as shown before.

In relation to real estate benefited from the program, we found that the 254 granted tax exemptions are concentrated in 64 properties, among 889 (NP1 and NP2). It should be noted that only 22 business licenses were granted within the program, which can induce the *Alegria Centro* has not been effective in its role to attract and stimulate new activities.

The creation of jobs and activities are the key arguments for the implementation of the project, with the indicated results reveal *Alegria Centro* weaknesses regarding these matters. Thus, the reflection on the cost-benefit of the program is needed, even in the case of an urban policy based on public investment ratio and tax incentives to entrepreneurs. Note that the first two years of the *Alegria Centro* reports that the program is responsible for creating 172 jobs jobs, concentrated in 13 companies and more than R\$ 14,000,000.00 (fourteen million Reais) invested. If we compare the number of jobs created 172, with the number of unemployed in March of the same year (2005), corresponding to 34.087, we find that the program is inefficient and insignificant in job creation.

In the physical aspect, interventions by public authorities recover the cultural and artistic heritage of the central area reshaping the urban landscape. Such interventions are located on the APC1, where is also the concentration of the particular investments. The region of Valongo concentrated public investments in the same proportion generates the concentration of private investment.

So the appropriation of public investment (more than US \$ 300 million) occurs in only 64 properties that concentrate 254 tax exemptions. We can define the beneficiaries of *Alegria Centro* are these private entrepreneurs, who use public resources for capital reproduction warranty on urban space<sup>26</sup>, accentuating the sociospatial segregation.

There is a relationship between beneficiaries and non-beneficiaries, and the beneficiaries are the real entrepreneurs and non-beneficiaries are the local people. As shown before, the program does not include the social reality of the residents of the central districts, not facing the housing problem, which has historical roots, not put into practice the instruments provided by the municipal law in order to ensure the settlement of the local population.



In an attempt to combat the process of real estate speculation and aiming the search for a process of social re-articulation, it is promulgated by Federal Law in 2001, the Statute of City<sup>27</sup>. However, despite inserted and regulated the instruments of the Statute of City in the municipal law, no municipal action was found that seeks to break the speculation process.

We can define the actions implemented by the *Alegra Centro* perpetuate socio-spatial segregation process by establishing investments in specific areas, promoting the real estate valuation and does not take control actions to the real estate market. The implementation of the rehabilitation project of the port area, focused on upgrade citizens and the massive public investment required for its implementation will put in check the public policy in place.

## CONCLUSION

This work reflected on the capitalist process of space production through urban planning analysis focusing on the urban renewal project implemented in Santos, the *Alegra Centro*, *Alegra Centro Housing Program* and *Porto Valongo*. As studied the sociospatial segregation in Santos was consolidated by urban regulation that defines occupation standards for the formal city, and leaves unregulated the impactful uses and housing in the periphery areas.

By opting for intervention in the official spaces of the city, in this case the central area of Santos, public policies have strengthened the sociospatial segregation process, excluding the right to citizenship, people who are not seated in these spaces, which in Brazil is mainly the low income population. The adoption of urban planning practices that exclude part of the population reinforces unequal opportunities contributing to the maintenance of poverty.

So it is correct to say that urban legislation transfers to space the ideology of class society, where the introduction of a large number of laws is not linked to effective actions to confront the problem of sociospatial segregation, but indeed to reinforce the *status quo* patrimonialism of Brazilian society of classes.

The *Alegra Centro* program, although recent, has proved a municipal urban policy that allocates massive public investment, rather than few private investments, in infrastructure and restoration of buildings symbols of the city, grants tax exemption for entrepreneurs and especially do not invest to face the housing problem. In other words, the strategy of revitalizing the central area is based on the attraction of new uses and solvents users, not the resident population.

The adoption of urban practices that disregard the resident population, leads us to say that the implementation of the urban renewal strategy is the adoption of “ideas out of place”<sup>28</sup>. It is the resumption of the central area by the elite and the market.

These facts confirm the thesis that the ongoing redevelopment project in the city of Santos is an urban policy that favours the allocation of public resources in strategic areas of the city, especially in the central area, for the benefit of private entrepreneurs. And finally it demonstrates the city plan or scheme that is being implemented in Santos, which is the allocation of public resources in the city central area as a public strategic that has been deepened the social issues without considering the local residents.

## TABLES AND FIGURES

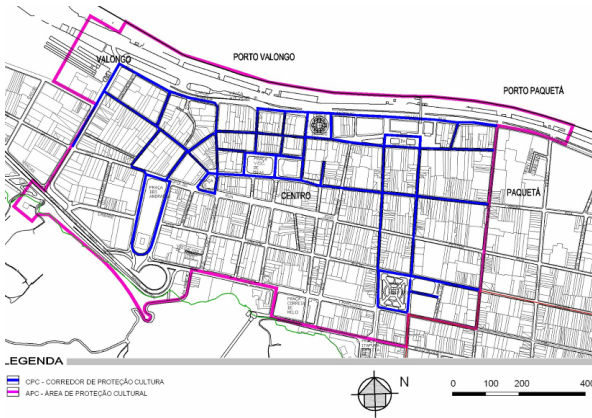


FIGURE 1 Alegre Centro Program and its areas: Cultural Protection Corridors (CPC) and Cultural Protection Area (APC1)

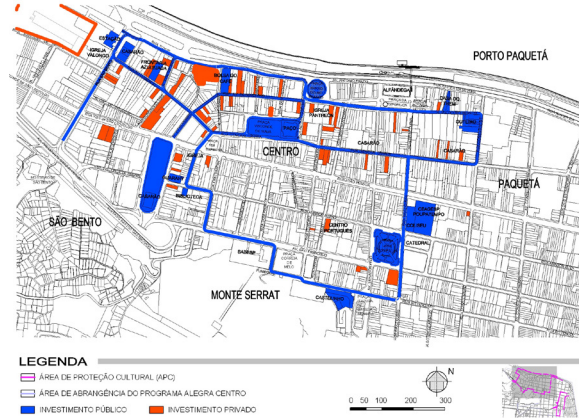


FIGURE 2 Investments of Alegre Centro Program. Blue Public Investment and Red Private Investments.

### ALEGRA CENTRO INVESTMENT VALUE FROM 2003-2010

	Year	Public investment municipality		public investment others		private investment		public/private investment		total	
		No	VALUE	No	VALUE	No	VALUE	No	VALUE	No	VALUE
<b>Restauration and conservation of historical building</b>	2003	1	3.250.000,00	2	10.500.000,00	19	4.761.200,00	0	0,00	22	18.511.200,00
	2004	1	7.250.000,00	0	0,00	8	412.400,00	0	0,00	9	7.662.400,00
	2005	1	3.500.000,00	1	2.000.000,00	14	1.831.200,00	0	0,00	15	7.331.200,00
	2006	3	1.700.000,00	3	5.200.000,00	70	7.357.262,00	0	0,00	77	14.257.262,00
	2007	3	330.000,00	1	1.000.000,00	96	15.940.000,00	1	3.000.000,00	101	20.270.000,00
	2008	1	2.250.000,00	2	6.228.975,00	69	4.499.279,00	0	4.100.000,00	72	17.078.254,00
	2009	5	13.546.000,00	2	2.133.022,00	64	7.833.705,00	0	1.000.000,00	72	24.512.727,00
2010	6	14.195.000,00	1	700.000,00	55	5.818.347,00	1	1.000.000,00	63	21.713.347,39	
<b>Total Works</b>		<b>21</b>	<b>46.021.000,00</b>	<b>12</b>	<b>27.761.997,00</b>	<b>395</b>	<b>48.453.393,39</b>	<b>3</b>	<b>9.100.000,00</b>	<b>431</b>	<b>131.336.390,39</b>
<b>Infrastructure</b>	2003		0,00								
	2004		0,00								
	2005		2.000.000,00								
	2006		13.520.000,00								
	2007				7.011.000,00						
	2008				2.250.000,00						
	2009				2.250.000,00						
<b>Total Infrastructure</b>			<b>15.520.000,00</b>		<b>11.511.000,00</b>						
<b>Total per Sector</b>			<b>61.541.000,00</b>		<b>39.272.997,00</b>		<b>48.453.393,39</b>		<b>9.100.000,00</b>		<b>158,367.390,39</b>

TABLE 1 Font: Alegre Centro Investment Value from 2003-2010

**ALEGRA CENTRO INVESTMENT VALUE WITHOUT INFRASTRUCTURE FROM 2003-2010**

Public Invest. Municipality	46.021.000,00	35,00%
Public Invest. (Others)	27.761.997,00	21,00%
Private Invest.	48.453.393,39	37,00%
Public-Private Investment	9.100.000,00	7,00%
<b>Total</b>	<b>131.336.390,39</b>	

TABLE 2 Font; Alegra Centro Investment Value without infrastructure from 2003-2010

**ALEGRA CENTRO INVESTMENT VALUE WITH INFRASTRUCTURE FROM 2003-2010**

Public Invest. Municipality	61.541.000,00	
Public	39.272.997,00	
Infrastructure 1	91.600.000,00	
Infrastructure 2	54.100.000,00	
Infrastructure 3	8.591.484,60	
Total Public	255.105.481,60	82,00%
Public-Private	9.100.000,00	3,00%
Private	48.453.393,39	15,00%
<b>Total</b>	<b>312.658.874,99</b>	

TABLE 3 Font; Alegra Centro Investment Value with infrastructure from 2003-2010

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**Disclosure Statement**

No potential conflict of interest was reported by the author.

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**Endnotes**

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- 10 Vainer, 2000a, p. 80.
- 11 Ney Caldatto, architect and head of the Department of Urban Revitalization of the City Hall of Santos 2012. Interview granted to the author in January 2012.

- 12 The coffee cycle corresponds to the period of transition from the nineteenth to the twentieth century when the agro-export economy of Brazil is based on coffee production. Ana Lucia Lanna, 1996, studied this period in the city of Santos, marked by agro-export entrepreneurs that redesign the urban landscape by investments in infrastructure and symbolic buildings such as: Coffee Exchange, Theater among others. The coffee cycle ends with the global crisis in 1929 and the burning of the coffee stock in 1930.
- 13 *Alegria Centro* was created by a municipal law, number 470 from february 5<sup>th</sup>, 2003.
- 14 *Alegria Centro Housing* was created by a municipal law, number 688, 2010.
- 15 The first phase (2003-2005) includes the properties located in the Cultural Protection Corridors (CPC), as defined in the Master Plan of 1998, including 686 properties. The second phase (2005-2008) includes the rest of the properties listed in the Cultural Protection Areas (APC) through to 1785 properties. After 2008 it was set a new border totaling 1805 properties.
- 16 The four preservation levels defined in *Alegria Centro* and later revisions are based on the compartmentalization established by Law of Use and Land Use n. 312/98 to the properties located in the Cultural Protection Area and defined as follows:  
Protection Level 1 (NPI) - Total protection, reaches real estate to be preserved fully, the entire building, its construction elements and decorative, internally and externally;  
Protection Level 2 (NP2) - partial protection, reaches the buildings to be preserved partially including only the facades, the volume and the roof;  
Protection Level 3a (NP3a) - free design option, keeping the predominant type of existing NPI and NPII property in tested the court;  
Protection Level 3b (NP3b) - free design option, but respecting the jig 35 meters counted from the border to curb property.  
Protection level 4 (NP4) - free design option, respecting the urban indices of the area where the property is, as the supplementary law n. 312/98, as amended.  
The subdivision protection level 3 in 3a and 3b is given in the review of the law 470/03 for the supplementary law No. 640 of 2008, which eases the feedback from real estate to this classification, allowing construction with feedback up to 35 meters. This revision was necessary as the property entered in the APC were "frozen", according to information from the director of urban revitalization.
- 17 The building potential sale is based on the City Statute instruments (Federal Law, number 10.257 of 2001 regarding the transfer of the right to build and onerous grant the right to build. It has premised on the possibility of the entrepreneur to sell the unused potential in fallen buildings to other areas of the city. However, as the law of use and occupation establishes fivefold use coefficients to lot area and an extensive list of non-computable areas, building potential purchase is not required. for the selling tool or building potential transfer to take effect it is necessary that the town planning legislation is more restrictive.
- 18 Ferreira, 2003, p. 215.
- 19 Maricato, 2001, p. 59.
- 20 Jordi Borja, 2001a, p. 70, the revitalization plan has the role of integration, accessibility and mobility seeking "a qualitative leap regarding the accessibility and mobility of the urban-regional space and the generation and centrality of conversion throughout the territory "and are linked to the" [...] feasibility operations and mass transit, logistics activity zones, realization or conversion of communications infrastructure [stations, ports] etc. "
- 21 Law n. 688/ 2010.
- 22 Arantes, 2000, p. 31, defines the concept and gentrification Bidou-Zachariassen (2006) discusses in detail the gentrification process in several cities worldwide.
- 23 Paragraph 5642 Decree of July 29, 2010 identifies the real estate precarious plurihabitacional residential use that will make the property of the rehabilitation process, must within two years from its publication.
- 24 Caldatto, 2008.
- 25 The process of integrated management between the municipal level and port authority begins in the 1990s, in the management of Mayor Telma de Souza, with the signing of a cooperation agreement. However more concrete actions will only take place after 2006 when the Development and Zoning Plan of the Port of Santos (PDZ) approved by the Port Authority of the Port of Santos (CAP) CAP Resolution No. 2 of March 22, 2006, establishes the extent of warehouses 1 to 8 for urban revitalization area in line with the set up *Alegria Center*. It is worth noting that the current GTP is premised on the loon intervention strategy approved by the Technical Group, created as concierge July 2003.
- 26 Harvey, 2002
- 27 The CF (1988) in its Article 182 provides that the urban development policy is aimed at ordaining the full development of the social functions of the city and ensure the well-being of its inhabitants, also defining the urban property fulfills its social function when it meets the fundamental requirements for the ordainment of the city expressed in the master plan.
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### Image sources

Figure 01: Souza, Clarissa. Elaborated by the author with the database from the PMS, 2012.

Figure 02: Souza, Clarissa. Elaborated by the author with the database from the PMS, 2012.

Table 01: Alegria Centro Technical Office, 2010.

Table 02: Alegria Centro Technical Office, 2010.





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# Coastal Landscape

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Chair: *Michelangelo Russo*



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# "THE FUTURE OF JAMAICA BAY:" PLANNING THE COASTAL LANDSCAPE OF JAMAICA BAY IN NEW YORK CITY, 1898-1942

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Across the United States, the movement to make shorelines malleable for a future of rising tides is already underway. City, state, and federal agencies, nonprofit institutions and philanthropies are mobilizing to build coastlines that are resilient to global warming. The phrase "hard infrastructure" appears widely in the movement's discourse to denote state-built structures that sharply define land from water in a given coastal landscape; while "soft infrastructure", describes adaptable networks of materials which allow for new coastal formations. In this oppositional logic, the former is cast as out-dated and harmful to people and plants, while the latter is seen as capable of accommodating the city and ocean of the future.

This paper is a case study of the design and implementation of "hard infrastructures" around Jamaica Bay in the first half of the twentieth century. The body of water covers nearly forty square miles of New York City, and as such, many proposals have come forth in its history. Examining these proposals requires a multiplicity of sources (letters, newspapers, reports, and plans) supported by evidence from Jamaica Bay's built environment. Several distinct eras are legible in this assembled archive, connected by shared "truths" about the city, nature, and society. My paper takes up two: The first period starts in the late 1890s, when plans emerged to transform Jamaica Bay into the world's largest port. These plans were instigated by the congestion of Manhattan piers, recent improvements to the Erie Canal, and the consolidation of New York City's five boroughs in 1898. Businessmen, elected officials, and appointed commissioners worked on a series of plans to transform the shallow bay into an industrial landscape of piers, warehouses, and railroads. The primary motivation was private monetary gain, with wealthy industrialists lobbying the state to construct reclaimed land, piers, and bridges. Regional plans would eventually place the port expansion in New Jersey, yet port plans remained in city ordinances and the public imaginary for decades. The second period starts following Robert Moses' appointment to various commissions in the 1920s and 30s, whereupon his planning apparatus dismantled the port plans and built highways, parks, beaches, and sewage systems around the bay. Moses wrote down his vision in the 1938 pamphlet, "The Future of Jamaica Bay." The framework laid out in this pre-war era increased recreation and transportation through large-scale interventions; these plans protected wildlife, promoted public leisure, and bettered circulation in the city. The government projects prior to 1942 continue to dominate Jamaica Bay's present landscape. I examine the shift between these two eras using the concept of "futura" to unpack how people projected the future of Jamaica Bay. Through an analysis of the actors according to their contemporary circumstances, I rearticulate how they constructed the future using claims to truth in the present. Tracing how truths have shifted in the past planning of Jamaica Bay complicates the location's current plans, which utilize a "hard" and "soft" argument to instigate funding and political support for infrastructures of the future.

## **Keywords**

resilience, landscapes, water, hard infrastructure, soft infrastructure, parks, ports





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# ANTWERP CITY WASTESCAPES - HISTORIC INTERPLAYS BETWEEN WASTE & URBAN DEVELOPMENT

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KU Leuven

This paper analyses waste management and the production of space over time in the city of Antwerp, Belgium. By reconstructing how shifting waste practices simultaneously reshape our urban environments at multiple scales, this paper also articulates historic interplays between waste management, urban development and planning practices. Benefiting from available waste processes and materials is a practice that disappeared during industrialisation scale jumps and more linear processes of urbanisation and consumption indeed dominate the current practices. But cities like Antwerp are rethinking these resource consumptive processes and orienting their policies towards what is generally labelled as a resource independent 'circular economy'. In order to be resilient for climate change, Antwerp's centralized and heavily engineered and stressed waste collection and treatment installations of the last century require revision, if not systemic redefinition. After a century of dumping on peripheral locations, bottom-up initiatives such as repair cafés, zero waste shops, green schools and even supermarkets are changing the cultural appreciation of 'waste' in Antwerp by pulling 'waste practices' back into the city and activating social community spaces. What can we learn from the historic interplays between waste and urban development in Antwerp at the eve of Antwerp's next -circular- waste geography?

## **Keywords**

urban form, waste and history, infrastructure, transition, Antwerp

## **How to Cite**

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## INTRODUCTION

This paper brings a retroactive planning history of Antwerp, from the angle of waste management. Such a reflexive exercise is timely at a moment when paradigms in waste management are once again shifting and a new phase in the interplay between waste and planning announces itself. Before industrialisation, waste did merely exist as such. It was not something to be disposed of. It was systematically integrated into cycles of reuse and considered as a resource.<sup>1</sup> With the rise of consumption society after the second world war, and with the centralisation of waste management by the Flemish waste Agency (OVAM), citizens and municipalities became more and more detached from their wastes. Waste travelled ‘out of sight, out of mind’ to inter-municipal, always peripheral, wastewater treatment plants, landfills, incinerators and recycling centres in city peripheries. Today, with resource scarcity around the corner, municipalities like the city of Antwerp are reorienting their waste policies from ‘waste management’ to ‘sustainable materials management’ in a transition towards a circular economy that is detached from resource extraction<sup>2</sup>. The reappearance of waste as a collective urban, social as well as economic, agenda, asks for reintegration of waste practices and infrastructures in urban space and life. By consequence, it becomes part of an integrated (public space, social innovation, ...) urban design and planning agenda.

The historic interplay between waste and urban development is closely linked to transitions between linear and cyclical practices. A waste, or better reuse, system that initially functioned as a (cyclic) (eco)system with limited waste streams, became more and more linear with the industrial revolution. Chemical fertilisers were more reliable and performant than biological residues and consumption society after the second world war massively generated what we know today as ‘waste’.<sup>3</sup> The introduction of plastics and other not biodegradable materials substantially added to our modern ‘waste issue’. Today, as a result of a resource crisis, waste is increasingly revalorised as a resource with economic, cultural and social value. The consequences of waste are gradually (re)integrated into spatial design agendas that spatialise the ‘circular economy’.

## WASTE AS A RESOURCE, A BLAST FROM THE PAST

Before industrialisation around 1900, waste flows were a more integrated part of daily life, economy and culture. Materials flowed in cycles between the city and the countryside. Poverty forced people to use and reuse every resource until it had no more use. Food scraps were given to pigs and chicken in the streets and organic waste such as human faeces was transported from the city to the countryside and used as natural fertilizer. As early as in the Roman Era, inert waste was used as foundations for buildings and roads<sup>4</sup>.

In Antwerp, this biological cycle of ‘waste as a resource’ was supported by an infrastructure of inner-city waste farms such as the ‘Mestkaai’ in Antwerp, where waste was collected to be transported to the countryside across the Herentalse Vaart and later the Campine Canals. One of the arguments to construct a new canal to Antwerp in 1748 and to improve the Herentalse Vaart, was the possibility to ship up to 4.000 waste loads to the countryside.<sup>5</sup>

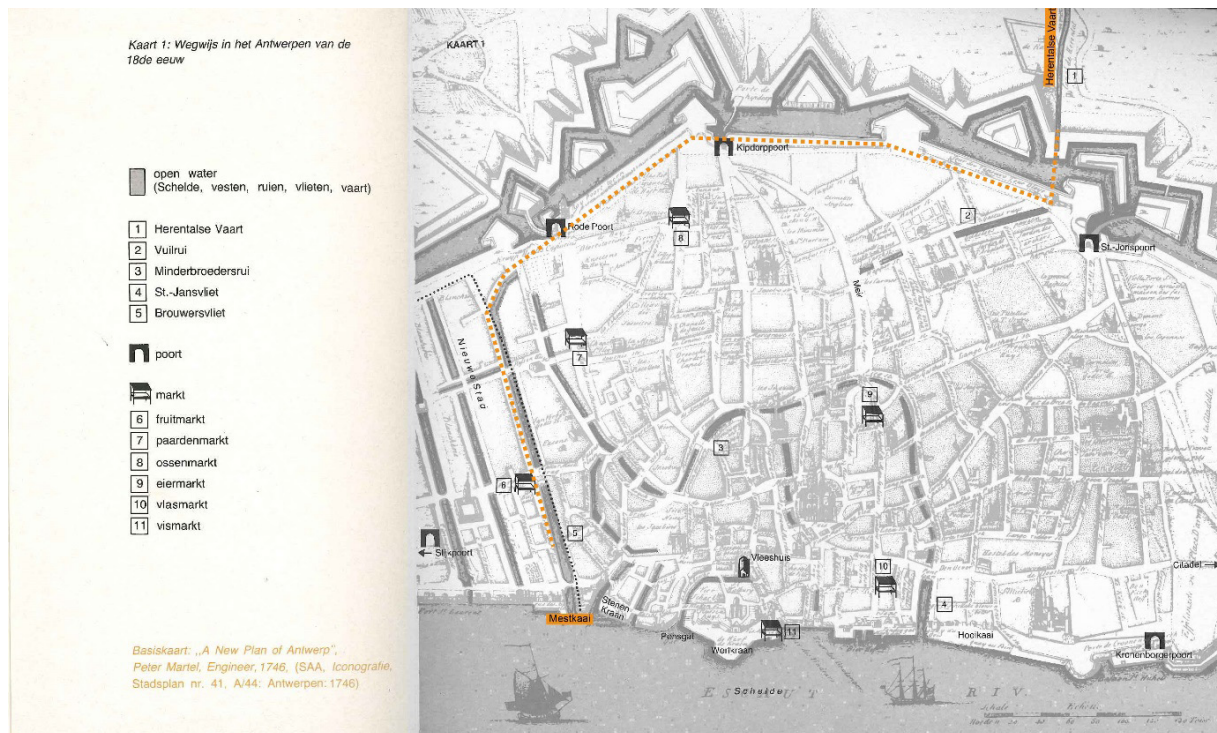


FIGURE 1 18th-century map of Antwerp showing the 'Mestkaai', where waste was collected, and waste transportation routes (open water connecting underground to Herentalse Vaart).

The countryside functioned as the vacuum cleaner of the city, producing food for the city, that was transported back across the same canals. This 'circular economy' initiated a series of trades and professions around waste. In Antwerp city accounts of 1401 mention a civil servant who is responsible to keep important public and economic places clean, the 'slykmyder'<sup>6</sup>. Around the middle of the 15th century, waste was a lucrative business. In the city of Antwerp waste was collected selectively by specialized haulers with a monopoly over a certain type of waste, the 'gruismeester' for construction waste, the 'moosmeier' for household waste and the 'pachters van beer' for faeces<sup>7</sup>. From the 16th century onwards, waste collection and treatment became a source of income for the municipality, by granting exclusive rights to waste collection<sup>8</sup>.

Despite local 'circular economies' around waste, there was still quite some waste left and the medieval city was smelly. Around 1400 most city streets were unpaved. Horses and carriages were the main transportation mode. Farmers travelled with their cattle over the roads from the field to the slaughterhouse. On the way the animals produced manure. Inhabitants and craftsmen also did not have a formal 'dumping' place for their wastes, so many of it ended up on the streets or in waterways. Small animals such as pigs, chicken or goose were scratching the streets. All that that did not really contribute to a hygienic environment<sup>9</sup>, but norms and standards of cleanness and the like were of course very different in that time.

## WASTE AND THE EMERGENCE OF URBAN DESIGN: THE RUIEN AS A TRANSFORMATIVE MULTIPURPOSE URBAN INFRASTRUCTURE

Waste has been an important factor in the emergence of the discipline or urbanism. One could say that dealing with the hygienic condition of the 19th-century was the reason for urban management to emerge. Pressured by congestion, diseases and impossible living conditions, streets were widened, sewage pipes were introduced below ground and waste management systems such as the collective waste bin (Paris) were put in place<sup>10</sup>.

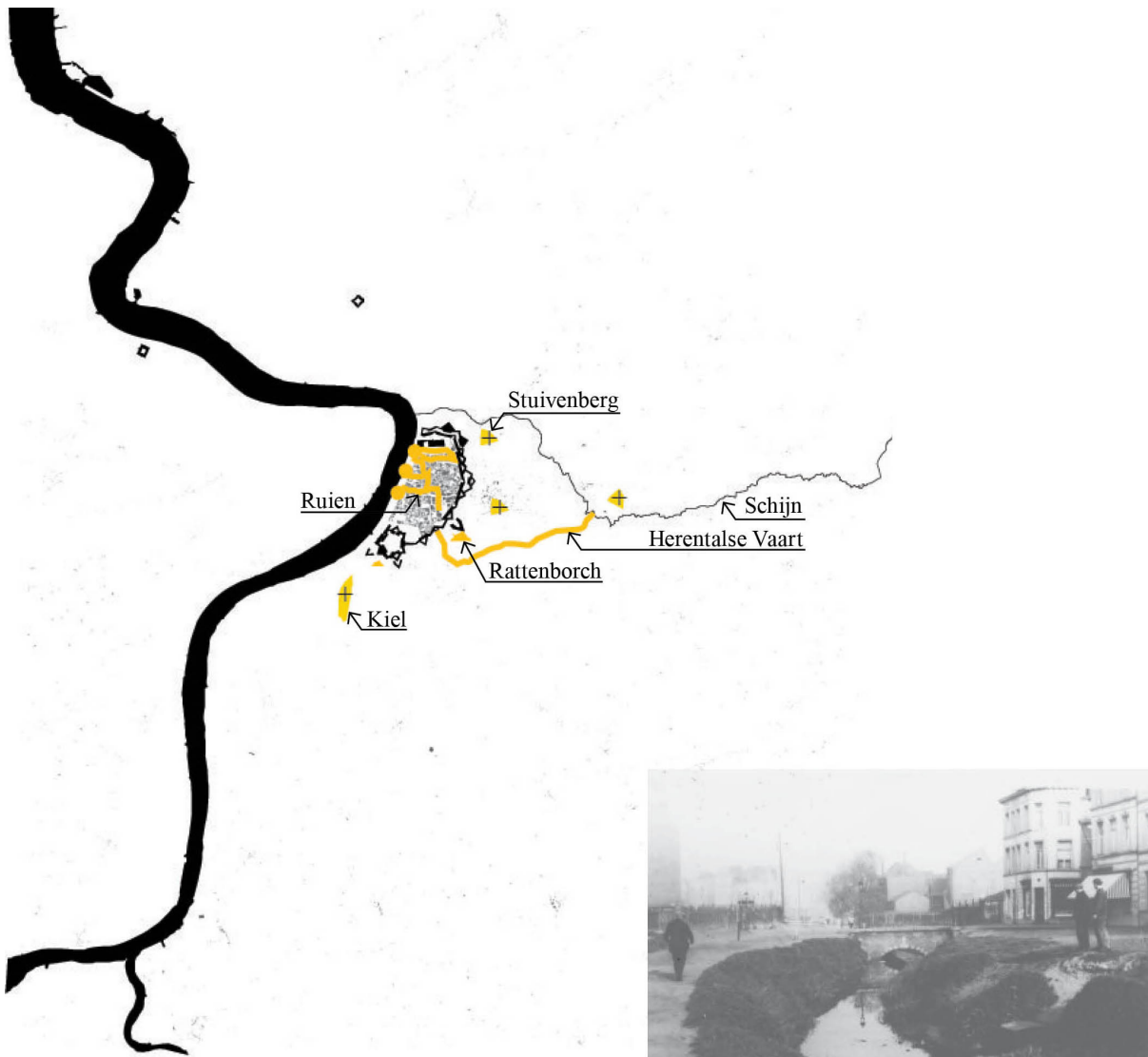


FIGURE 2 Pre-industrial waste infrastructures in Antwerp. Situation around 1783 (map) and photograph of Herentalse Vaart (1928).

The Ruien (indicated in light grey on Figure 1), a network of small-scale waterways conceived in the 11<sup>th</sup> century, are one great example of how hygienic conditions were translated into infrastructural transformations, even before the concept of hygiene was widespread. Originally, the Ruien drew in water from the Scheldt river for multiple purposes. The water was pumped up as drinking water or used by craftsmen such as painters or delivered to watermills. Inner-city ports were created for the transhipment of goods. With time tidal changes increased and the Scheldt water became brackish. In order not to pull brackish water into the city, a series of sliders was put in place to stop the brackish water from entering the city. At the same time these sliders became a mechanism allowing to gather water in the Ruien, enabling to clean the Ruien by purging the water at once into the Scheldt. But by the late Middle Ages the Ruien had transformed into open dumps. Craftsmen dumped their industrial waste in the Ruien and citizens connected their 'privaten' (toilets) directly to the Ruien.



FIGURE 3 Situation between 1850 and 1950 (map). The Ruien were entirely covered and integrated into the municipal sewage system, evacuating waste water in the Scheldt River. Waste was transported to the countryside via the Campine Canal (1885-1916) (picture) and railway network.

In the 16<sup>th</sup> century, when the dumping of waste in the Ruien and the streets started to create discomforts such as smells, pests and diseases, it became the municipality's problem. In an attempt to keep the inner-city clean, Antwerp ordered its inhabitants to clean the street in front of their houses every two weeks.<sup>11</sup> Instead of dumping the collected dirt in the Ruien or other ditches, they had to bring the waste to Antwerp's first legal landfill, Rattenborch. Rattenborch was located on a swatch of vacant land at the edge of the city, between the Begijnen and Sint-Jorispoort. Animal cadavers had also to be taken outside city walls, near the water at het 'Kiel'. In 1783, there was also a new rule by Kaiser Jozef II that human corpses should be buried outside of city walls. In this case, Antwerp selected a couple of terrains in the north (current Stuivenbergplein) and the south (current Kielpark).<sup>12</sup>



Smells and diseases became a big problem in the 16<sup>th</sup> century, Antwerp's golden century as a metropole of trade, when population, and by consequence the waste they produced, increased. The municipality tried to regulate waste dumping by encouraging the use of septic tanks, giving fines for dumping waste in the Ruien and by organising big 'ruie-cleanups' in which sludge was removed from the Ruien. But these clean-ups cost the municipality a lot of money and the inhabitants along the Ruien who were asked to share in the costs were complaining about this. In the meantime, initiatives took place to incrementally start covering the smelly Ruien. The Jesuits for example, created a new square and the current Sint-Carolus Borromeus church by covering two Ruien. From the 17<sup>th</sup> century onwards, when the Ruien started losing their economic importance, the municipality also started subsidizing inhabitants to cover the part of the Ruien in front of their houses. Parts of the Suikerrui and the Minderbroedersrui were covered in that way by citizen committees as they were allowed by the municipality to construct new buildings on top of the Ruien on the reclaimed 'land'.<sup>13</sup>

In 1803 Napoleon ordered the complete coverage of the Ruien. By 1835 around three-quarters of the Ruien were covered and it would take until 1882 for the entire covering of the Ruien<sup>14</sup>. By that time population in Antwerp was still growing, as was the number of poor people with bad sanitation infrastructures. The introduction of the water closet made the septic tanks overflow and cholera, pocks and dysentery were forming another health threat.

Only in 1849, the link between contaminated drinking water and cholera was made. The thousands of victims urged the municipality to get some order in the management of the Ruien, that became officially part of Antwerp's sewage infrastructure in 1882. Advised by expert committees the municipality improved the water level to increase the water's force in order for it to take with it waste along its way. In 1862, a public sanitation department was created. The 'Régie des Vidanges, Boues et Immondices' kept the public domain clean and collected household waste.<sup>15</sup>

The hygienic conditions in the city improved relatively quickly. The demolition of the Spanish city walls around 1860 enabled a city expansion, allowing the population pressure in the centre to release. By the end of the 19<sup>th</sup>-century the open ditch system of the Ruien had completely disappeared. In 1898 the city allowed home owners to connect their toilets directly to the Ruien, which were then officially part of Antwerp's sewage infrastructure. From then on, the originally multipurpose water infrastructure of the Ruien became a subterranean waste infrastructure (Figure 4 middle picture).

The Ruien accumulate traces of its tumultuous history, such as segments of the incremental coverings and original stone walls. The Ruien are still part of the current municipal waste water infrastructure. Two collector pipes, one for wastewater and one for rainwater, collect this water from the entire city center and bring them to a 3km collector along the Scheldt Quays, that was installed in 2002 and directs the water to the waste water treatment plant just south of Antwerp (Kielsbroek). Only in case of heavy rainfall, rainwater spills over directly in the Ruien instead of through the drainage pipes.

The interplay between the Ruien and the production of urban form is closely linked to water. Besides drawing in water from the Scheldt river, the Ruien were fed by the Schijn river, that formed a natural edge to Antwerp until the 15<sup>th</sup> century. At the end of the 19<sup>th</sup>- Century, when the Ruien were integrated into the municipal sewage infrastructure, the Schijn was disconnected from the Ruien<sup>16</sup>, canalised and rerouted in different phases around the ever expanding docks of the Antwerp Port.



FIGURE 4 The Ruien tunnels were partially recovered and rerouted for the construction of the premetro in 1970 (top). For a large part, houses were built on the covered Ruien. Their sewage was directly connected to the underground Ruien network (middle). Where the Ruien were transformed into streets, such as the Minderbroedersrui, the width of the street is quite generous, based on its subterranean ‘water size’ (bottom left). Above ground, elements such as ventilation shafts offer clues of the now entirely covered Ruien network (bottom right).

## BREAKING CYCLES: FINDING SPACE FOR WASTE

The industrial revolution at the beginning of the 20th-century meant the start of our modern waste issues. Industrialisation brought specialisation, mass production and upscaling for the economies of scale, centralisation and increased technicality. Gradually, material streams were segregated in efficient industrial processes. The idea of getting waste ‘out of sight’, gradually disconnected waste production and processing from daily life and economy, erasing it from the collective conscience ‘out of mind’, as it increasingly became something people did not need to worry about as soon as the trash bins and the like were picked up from the curb side. While innovations in production processes were thriving, methods of waste disposal remained similar to those from the Roman era. Ideas of re-cycling and conserving surely existed, but were meant to save labour rather than natural resources. From the point of view that ‘our natural resources are ample for all our present needs’<sup>17</sup>, commodities were extracted from nature, efficiently turned into products, to be dumped after consumption. Production was a linear process, from commodity to product to waste.



FIGURE 5 Map of polluted soils (light orange) and former landfills (dark orange), often located in naturally floodable areas (light grey).

The spatial context of Flanders' dispersed urbanisation<sup>18</sup>, with its dense occupation and little, but crucial leftover open spaces, caused high land prices. Together with the lack of a market for compost, this made municipalities, who were responsible by law for their waste, opt for an incineration oven rather than a composting facility or a landfill, like the city of Merksem in 1978 to the north of Antwerp. Only financial arguments, not environmental ones, were taken into account<sup>19</sup>.

The fact that each municipality in Flanders dealt with waste in its own way, resulted in a landscape of scattered landfills and incinerators. In Antwerp it was not different. A confetti of former landfills in what used to be Antwerp's edge or periphery, is now hidden under forests or parks such as the Rivierenhof in Deurne. Many of them are located in the riverbed of the Groot Schijn, since this type of wet land was considered useless or unproductive, waste-land<sup>20</sup>.

Up to the 1970s, there was a general ignorance about the causality between waste disposal and environmental problems such as soil, water and air pollution. As a result of environmental issues and disasters which had previously been hidden or unknown, at the end of the 1960s a new social movement arose that placed the environment as a priority. In the Antwerp Province, local Action Committees such as 'Actiecomité Leefmilieu Rupelstreek', opposed against environmental pollution in their immediate surroundings. Growing incidents around waste and pollution led to the creation of the first Belgian Waste Law on toxic waste in 1974. In Antwerp environmental activism was fierce. Around that time (1979) the political ecological party AGALEV (To live differently) was founded. AGALEV was one of the forerunners of opposition against illegal dumpings in the Hooge Maey landfill in Antwerp.





FIGURE 6 (situation 2015) As a result of waste centralisation policies, Antwerp's waste processing facilities are composed of a series of outer city waste hubs that combine different waste related infrastructures such as waste water treatment plants and municipal recycling parks. Picture: Hooge Maey.

On the Flemish level, this 'environmental awareness' resulted amongst others in the creation of the Flemish Waste Agency (OVAM). Being part of modernist planning at that time, gradually, responsibility for waste management was centralised at the Flemish level, resulting in a 'cleaning' and upscaling of waste processing facilities. But the centralisation of waste management immediately created problems, in terms of increasing the burden of waste handling on certain communities and in terms of the cost of waste transport. In Antwerp, an inter-municipal waste incinerator (ISVAG) was created in 1975 about 5 km to the south of Antwerp in the middle of a housing area. The creation of ISVAG immediately caused protest by inhabitants. After a high number of birth defects and health problems with neighbouring citizens, ISVAG became a symbol file in the battle against waste incinerators. Advised by a panel of scientists, in 1994 a judge closed the ISVAG incinerator in Wilrijk because of environmental and health issues<sup>21</sup>. Today, ISVAG is still burning waste and is positioning itself as a 'green' industry, converting waste to energy for about 20.000 families<sup>22</sup>.

## BACK TO THE FUTURE? GRADUAL TRANSITION TO A CIRCULAR ECONOMY

Within the transition to a circular economy, the city of Antwerp is aiming to go much further than simply recycling waste. Its latest administrative agreement sets out ideas for ‘innovative materials management- circular economy’<sup>23</sup>. In an optimisation effort of its building stock, the city is working on a centralising project of Antwerp’s current 18 waste collection facilities into two multifunctional technical clusters, one in the north and one in the south of the city. These two clusters will be developed as exemplary hubs for the circular economy, integrating innovative and sustainable technology and synergies between various public services. There will be publicly accessible workshops where materials as well as tools are shared and reused. While sharing collective spaces and materials is definitely in line with the philosophy of sustainable resource use in a circular economy, the idea of centralising solid waste appears a continuation of the 20th- century centralisation thought.

Antwerp appears to be vulnerable to the consequences of climate change. The city will become hotter, dryer and is expected to experience more peak moments of pluvial flooding<sup>24</sup>. 19th- and 20th- century energy and sewage networks were not conceived for these extreme future conditions. The existing sewage network has an under capacity to respond to these changes, but because of the high cost to adapt this existing infrastructure, the city council prefers infrastructural interventions above ground. The city will over dimension new sewage pipes, new city developments will limit paved surfaces to allow rain water to infiltrate in the soil, and where possible rain water is buffered. Urban areas are being greened as much as possible.<sup>25</sup>

At the same time when the municipality is recovering the cyclic ideas from the past about materials reuse and nature-based solutions<sup>26</sup> for rainwater management, a renewed collective interest in ‘waste as a resource’ can be identified in Antwerp, as in many other cities both in Flanders and abroad. Small-scale waste practices such as flea markets, repair cafés or ‘geefkasten’, are collaborations between the city and community organization to encourage reuse or give a second life to clothes, electronics or even food in a stimulated ‘sharing economy’. Other initiatives, such as the Flemish MOS or ‘green’ schools initiative, support primary and secondary schools to make the school a sustainable and environmentally friendly learning environment where limiting waste production is one point of attention. Also in the private market, waste-conscious businesses such as a ‘zero waste’ shop without packaging are making their entry. Not only do these waste practices contribute to the reduction of waste volumes, they also bring back waste as part of daily life and economy.

## CONCLUSION

At this moment, paradigms in waste management are once again shifting. With the introduction of the circular economy, a new cycle in the interplay between waste and planning announces itself. Untangling the intricate historical relationships between waste flows and the production of space in Antwerp, reveals direct interdependencies between choices related to waste management, urban economies, infrastructures, natural systems and urban spaces. After decades of centralist waste handling outside of the collective realm, the transition to a circular economy could be seen as a chance to reconnect waste flows to daily urban life, economies and urban form as well as to integrate synergies between varying public agendas (social, economic, ecological, ...).

The subsequent uses and appearances of Antwerp’s Ruien infrastructure give us an insight in how flexible and hybrid infrastructures can adapt over time, supporting an evolving urban tissue. The Ruien are a fantastic example of a polytechnic infrastructure<sup>27</sup>, a layered, flexible and transformative infrastructure that combined different uses over time, while remaining strongly intertwined with urban form. The Ruien were conceived as a functional water infrastructure, anchored by the natural hydrographic system of the Scheldt and the Schijn rivers. The Ruien evolved into municipal sewage infrastructure, sometimes in combination with transportation infrastructure (part of Meir metro). They demonstrate that resilient infrastructures have the potential to be reinscribed in new logics that give them meaning in subsequent layers and transformations of urban form. At the same time studying the Ruien reveals the strong interconnection of Antwerp’s waste and water flows and the river system.



## Acknowledgements

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## Disclosure Statement

No potential conflict of interest was reported by the author.

## Notes on contributor(s)

Julie Marin is an Architect and Urban designer. Today she is a Phd candidate at KULeuven (BE). Julie's doctoral research by design focuses on the potential of transitioning geographies of waste and resources to (re)structure the Flemish diffused territory. At KULeuven, she is teaching assistant in multiple courses and urban design studios for which she collaborates with governments, public and private stakeholders. Before joining the KU Leuven in 2014, Julie worked as an architect and urban designer at Scape/Landscape Architecture in New York City and as an Associate in Architecture at the Urban Design Program of Columbia University.

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Figure 1: Peter Poulussen, *Van Burenlast Tot Milieuhinder: Het Stedelijk Leefmilieu 1500 - 1800* (Kapellen: Kapellen : Pelckmans, 1987). maps 1 and 2 (edited by author)

Figure 2: by author, based on Rosso, Caterina; Van Maercke, Carmen. "Dirty Antwerp: Re-Engineering Flows, Editing the 20th Century Belt." KULeuven, 2015. 10 (map) & Stadsarchief Antwerpen, Digital Archive AVA [sa035160] (photograph).

Figure 3: by author, based on Rosso, Caterina; Van Maercke, Carmen. "Dirty Antwerp: Re-Engineering Flows, Editing the 20th Century Belt." KULeuven, 2015. 12 (map) & Stadsarchief Antwerpen, Digital Archive AVA [sa356005] (photograph).

Figure 4: left column: extracts from map Ruien visit, right (top): image from [www.tramstad.be](http://www.tramstad.be) (edited by author), right (middle): Stadsarchief Antwerpen, Digital Archive AVA [sa307167] (photograph) (edited by author), right (bottom) photograph by author

Figure 5: by author, based on Rosso, Caterina; Van Maercke, Carmen. "Dirty Antwerp: Re-Engineering Flows, Editing the 20th Century Belt." KULeuven, 2015. 32 (map), data landfills: Openbare Vlaamse Afvalstoffenmaatschappij (OVAM), Mechelen, data flood zones: AGIV. "Geopunt". Accessed March 30, 2016. <http://www.geopunt.be/>

Figure 6: by author, based on Rosso, Caterina; Van Maercke, Carmen. "Dirty Antwerp: Re-Engineering Flows, Editing the 20th Century Belt." KULeuven, 2015. 14, cover (photograph) & Google. "Google Earth". 2015.

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# CARIBBEAN 'CRUISEBANISM', THE RESILIENT CRUISE DESTINATION

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This paper explores the spatial conditions of a Caribbean urbanity within the context of what Wood called the most rapidly growing type of tourism in the Caribbean and almost certainly the most globalized form of all: 'Cruise tourism.' As a reference in 1950 there were 25 million international tourist arrivals worldwide. 60 years later only the Caribbean receives that number of tourist alone and is the leading region of the world concentrating up to 50% of cruise market share. More specifically the past processes of urban transformations resulting from an encounter with the very fast changing cruise economy contain learning potential for pursuing the project of accommodating a regional urbanism in a global era; The changing Centre – Periphery and as such City – Pier relation of (Caribbean) cruise destinations can be categorised a spatial condition that engenders and regulates a certain regional urbanity. The paper illustrates how cruise tourism over time is changing the spatial (also environmental), economic and social interrelation between the city and pier, centre and periphery and questions the cruise destinations and Caribbean regions' resiliency. Although piers always had a recreational and consumptive aspect, nowadays, the introduction of the cruise pier the on transport-oriented function has given in completely on this recreational aspect. Originally the pier was the extension of the local economy. It was meant to be the gate that marked the entrance of a destination. As the cruise industry is now financing, building and deciding the position of new piers, the pier has become an extension of the boat itself not of the destination. This apparently insignificant shift is a crucial move that has displaced the role of destinations in the power game of tourist spatial economics. If originally the cruise pier became the extension of the touristic destination that had to lead the tourist carefully to the old city centre by seducing him to spent as much time and money as possible in locally owned shops, nowadays the cruise pier became the destination as such providing leisure and shopping wrapped up in duplicates of historical villages, divorced from the existing cities and its economies. As massive cruise ships sail away from their old ports of call and lay course towards small, nearly inhibited territories, the ratio between visiting and stable populations on shore shifts. The changing Centre – Periphery and as such City – Pier relation of (Caribbean) cruise destinations can be categorised a spatial condition that engenders and regulates a certain regional urbanity.

## **Keywords**

Caribbean cruise tourism, resilient cruise destinations, regional planning in the global era



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# RESILIENT OCEAN CITY, MD: LANDSCAPE HISTORY AND URBAN DESIGN

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Resilience means to rebound; it refers to the performance of dynamic systems, both natural and man-made. The concept of resilience has been deemed pertinent to coastal cities and urban islands. We study Ocean City, the largest coastal town in the barrier islands of the Delmarva Coast (Delaware – Maryland and Virginia) to evaluate and build resilience.

Evaluating resilience entails a retrospective judgement; it is a historiographical task. Here we trace the morphological changes to the natural and built environment in response to storm and demographic surges. Two dramatic events had long term unintended consequences:

- 1933 hurricane divided the island in half. The Army Corps of Engineers built two jetties to keep the inlet open for nautical access. It created a permanent land division between Ocean City, an urban resort to the north and Assateague Island to the south. The jetties interrupted wave patterns and Assateague moved 1 km. inland.

- 1962 nor'easter submerged the barrier islands. Assateague was subdivided but not developed yet. In 1965 it became a National Seashore and expanded the 1949 Chincoteague National Wildlife Refuge at the south end. In contrast, Ocean City became even more urbanized.

After major storms, Ocean city acted with resilience to protect and rebuild their town. Throughout the mid 20th c, they invested in “best resilient practices” of its time. To respond to storm surges, they built groins and jetties to fight erosion. To respond to summer traffic surges, they widened highways and built parking lots, to respond to demographic surges, they built high rises along the beach and filled wetlands in the bay for canal communities with mobile homes. In retrospect, their actions seem reactive, opportunistic and contentious. Despite their intentions, the resulting townscape is neither sustainable nor resilient. The form of development patterns makes a difference. Building resilience is a prospective task; resilient scenarios are conjectures. The lessons from past performance offers probability, but no guarantees. Three alternative scenarios will be considered:

- Building ecological resilience. This includes protecting wildlife and wetlands and the use of softer techniques, like beach renovation for shoreline protection.

- Building community resilience with comprehensive, sustainable and hazard mitigation plans. These set performance goals with the support of a local democratic consensus. However, the gap between permanent and seasonal tourist population creates a question of legitimacy.

- Building both types of resilience through more sensitive urban design. We envision compact, walk-able towns to replace ubiquitous strip development and wetland lagoons to minimize the sea of asphalt, improve water quality and storm-water management and promote alternative transit modes.

Ocean City and its eco-systems will remain vulnerable to natural and demographic surges. Resilience ought to be assessed historically, over the long duree. Building future resilience will require wise investment in ecologically sound development. In a democracy, this requires a political process. Design and politics can be unpredictable. To evaluate and build resilience we need to be resilient.

## **Keywords**

resilience, coastal cities, planning history, urban and ecological morphology





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# Resilience, Path Dependency and Port Cities

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Chair: Stephen J. Ramos



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# GUTSCHOW'S STADTLANDSCHAFT HAMBURG IN THE 1940S

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**Sylvia Necker**

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Since the beginning of the 20th century, planners dreamed of merging the hitherto separate concepts of the “urban” and the “rural”. A variety of ideas, such as loosening the built structure of cities, adding garden cities, and creating urban landscapes, were discussed not only among architects and planners, also experts for public health, public transport, biologists and landscape architects were part of the discourse. Their common aim was to create a new order and a new town in which rurality played a fundamental part. In 1939 the young Hamburg architect Konstanty Gutschow was commissioned to transform the Hanseatic metropole into a new town spatially representing the Nazi regime. To solve this task Gutschow relied more on methods of urban planning than on architecture - in contrast to other well known architects like Albert Speer and Hermann Giesler. He cooperated with landscape architects such as Gernot Hübötter in order to develop a modern urban landscape (Stadtlandschaft). Gutschow and his team mapped the whole city and its region precisely, including socio-economic and socio-ecological contexts. The Generalbebauungsplan (Greater Plan) 1941 was the result of this comprehensive research. Gutschow planned to publish the data in a handbook for urban planning. He was convinced that the Generalbebauungsplan and his methods would establish a role model for Germany and Europe. After bombardments in 1944, the plan had to be adapted to the changed reality of the city. Defence strategies were part of Gutschow's plan. He believed that an organic Stadtlandschaft had the capacity to regenerate more easily from war attacks. With a special structure and land use strategy, the Generalbebauungsplan would make the city resilient against the effects of aerial bombardment. For the same reason, ecological strategies for composting and the re-use of garbage were included in the plan of 1944. Even if the end of the war was the end of Gutschows planning activities, his staff transformed the Generalbebauungsplan into a reconstruction plan for Hamburg after 1945. The paper focuses on the long tradition of the idea Stadtlandschaft in the first half of the 20th century, and situates the specific characteristics of Gutschows plans for Hamburg in the 1940s in it.

**Keywords**

urban planning, urban landscape, order and disorder





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# MILITARY INDUSTRIAL RESILIENCE IN THE PORT OF SAVANNAH

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**Stephen Ramos**

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The paper explores socio-historical and ecological themes of resilience for the Port of Savannah, and seeks to evaluate the importance of military industrial investment in the port for World War II production in relation to the port's contemporary success. By 1938, President Franklin D. Roosevelt famously declared the entire southeast region as "the nation's number one economic problem," for which he launched an ambitious series of New Deal programs since the beginning of his presidency. World War II production needs allowed Roosevelt to further channel federal economic development funds to the South by locating diverse military facilities there. Georgia greatly benefited from these federal investments, and by the end of the war, the Savannah District of the Army Corps of Engineers alone had been responsible for over \$1 billion for facility construction, of the total \$1.7 billion budgeted for the South Atlantic division. The Southeastern Shipbuilding Corporation, located just east of the downtown along the Savannah River, had over 15,000 employees, and built a total of eighty-eight "liberty ships" between 1942 and 1945 for the delivery of troops and supplies to Europe and the Pacific. Nevertheless, after the war, national military investment was scaled back. In the midst of the radical downsizing of the vast domestic war production holdings, the Savannah Quartermaster Depot, which was also known as the Army Service Force Depot, was sold to the state of Georgia to be developed by the newly-formed Georgia Port Authority (GPA) for the new terminal in 1948. The 400-acre site included 709 buildings, and offered strong railroad connectivity, as it is noted that 16,000 railroad cars per month were processed at the depot during the war. The new port facility was officially called the Savannah State Docks and Warehouses, but it was soon known more commonly as the Garden City Terminal. Construction began in 1951, and it began operations in 1953. The cluster investment in transportation infrastructure also included the Eugene Talmadge Memorial Bridge, which crossed the Savannah River at the northwestern corner of downtown Savannah. In 1958, the GPA also purchased the Ocean Steamship Terminal from the Central of Georgia Railroad, to increase trade surface capacity for freight cargo. By identifying the major actors in port investment and development at the moment of transition, when its primary cotton export was in crisis, the paper will address issues of path dependency and adaptation with regards to the resilience of the Port of Savannah. The paper proposes a methodology and a conceptualization of these terms that helps to ground resilience discussions in an historical trajectory, while also considering the ecological impacts of path development.

**Keywords**

Savannah port, resilience, military industrialization



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# SEAPORT CITIES AND RESEARCH PERSPECTIVES: FROM PATH DEPENDENCY TO RESILIENCE

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Most seaport cities have a long history in global trade and economic networks. Seaports also have long experience to overcome technological, logistical, urban, and human challenges; each port city responds differently to those challenges. Their ability for rapid adaptation, and on gaining a better understanding of the particular factors and actors determine their adaptation possibility. In this paper two strands of research are combined: Path-dependency and resilience as two modern/neuere research paradigms. Meanwhile perspectives of resilience as external shocks, natural or human made disasters, have been approved in Planning History (Campanella/Vale) and topics like impacts of earthquakes, fires and hurricanes and physical reconstruction and rebuilding have been used as examples. Resilience is asking for scenarios and perspectives of sustainability and prevention. Path-dependency is focussing on persistence, on decision making processes, impacts and outcomes, on institutions and stakeholders and but not on socio-spatial impacts and connection to planning history. This leads to questions and options of subjective preferences of stakeholders (“choices”) and objective, economic, juridical and political Umstände (“circumstances”) which constitute development paths. Here a past centred can be combined with a present centred perspective. Using some unique cases the following questions will be reflected:

- How catastrophies - flooding being most obvious - changed seaport cities and which decisions and development paths have been taken for a more resilient and sustainable future?
- How did local, regional, national and international actors, both public and private, react to the disruption of network of ports and their economic functions, when had been the critical junctures?
- Are seaport cities better positioned to deal with shocks than other cities in the hinterland?
- How does the “lock-in” in development paths, the “irreversible character” influence decisions?
- What can be learned from the past influencing future patterns?
- How changes in maritime transport technologies and structural disadvantages can be changed for positive adaptive perspectives?

In this paper we are analysing briefly three seaport cities: Hamburg, London and Philadelphia and analyse tendencies toward path dependencies, critical junctures and resilient perspectives with a spatial impact and importance for planning history. Key decisions are used as examples for the period from the beginning of the 19th century up until the end of the 20th century.

## **Keywords**

seaport, path dependency, resilience, economic networks



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# LAND IN LIMBO: UNDERSTANDING PLANNING AGENCIES AND SPATIAL DEVELOPMENT AT THE INTERFACE OF THE PORT AND CITY OF NAPLES

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**Paolo De Martino**

TU Delft / University of Naples Federico II (DiARC)

Numerous actors have been involved in the planning of the port and city of Naples; actors who have different ideas and goals, different tools, and even time-frames. The European Union, the Italian nation, the Campania Region, the Municipality of Naples, and the Port Authority act upon the port at different levels of planning. Each entity has different spatialities and temporalities. Their diverse goals have led port and city to develop into separate entities, from a spatial, functional as well as administrative point of view. The different scopes of their planning are particularly visible in the zone between port and city.

Using and challenging the theory of path dependency, this paper explores the diverging ways in which a range of different institutions have planned for port and city starting from nineteenth century until today. It studies how the introduction of different institutions and their evolution has influenced plan making over time. The case of Naples shows the challenges that arise from the palimpsest of plans and goals associated with port and city, and that are particularly visible in the port-city interface in Naples.

## **Keywords**

port-city, landscape, path dependency, planning

## **How to Cite**

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## INTRODUCTION

For many centuries before the Unification of Italy in 1860, the port and city of Naples were closely interconnected<sup>1</sup>. In the past, the port represented the main entrance to the city. It was the place of market and, at the same time, a public space and meeting area for different cultures<sup>2</sup>. Until the 16th century, the relationship between city and port of Naples was characterized by morphological fusion. The port was in close contact with the historic part of the city. The famous representation “Tavola Strozzi” (Fig. 1) perfectly represents the image of cohesion, between the urban structure, the port, the trade, the public life, and between social relations.

Historical representations of the city, such as the 18<sup>th</sup> century view by Antonio Joli (fig. 2) show this close connection between the city and the sea, as a link that has been present for a long time in the memory of the inhabitants. This historical and functional integration of port and city, and the perception of the port as integral to city dynamics has changed in the last 150 years. City and port have slowly but surely been separated in spatial, functional as well as in administrative terms. Therefore, during the twentieth century, the city and port of Naples have started to interrupt their secular dialogue. The beginning of the separation between city and port started in the second half of nineteenth century, when the modernization of port facilities and the development of the infrastructure network has been seen as a necessity for the revival of the city<sup>3</sup>. From that moment, port and city actors began to focus on port and city separately. The port as an integrated and attractive part of the city became a places of work, close to the city<sup>4</sup>.

The separation of port and city has been studied by numerous authors<sup>5</sup>; this study explores the particular case of Naples where, so far, no projects for a reconnection between the two has taken hold, and where the zone between port and city remains still in limbo.

Planning the spatial and economic development of a port and a city is not an easy task. Much like in other European port cities, the actors that have a formal role in Naples’ port planning—most notably the municipality, the port authority, regional and national government bodies—have different goals, tools, and agendas. Each actor perceives the port from different levels of scale and (policy) angle. Moreover, each actor has its own powers to influence the planning process, and they will act according its own implementation time frame.

As a result of these different development goals, the interface between port and city, particularly in waterfront zones that form the geographical area between the old city and the modern port, is undefined and its future is in limbo; in fact, the whole relationships between city and port requires rethinking. Since the year 2000, the multitude and heterogeneity of planning authorities has produced many uncertainties for the port-city relationship in Naples, and a stalemate for the areas where the port physically meets the city. Here a real regeneration process of the port areas is not yet started, for different reasons and city and port are really separated. This paper explores why the city and port of Naples, one of the most important historical ports in Italy, seems resistant to urban plans, as well as co-operation between various actors involved in the urban planning processes. Using the concept of path dependency theory, this paper aims to develop an actor-institutional and spatial understanding of the changing port-city relationship in Naples and the resulting urban transformations.

The historical analysis, starting at the end of nineteenth century, reveals how and when port and city actors started to ‘tell two different stories’ about the port-city relationship in Naples, that result in the waiting condition observed today. Considering the strong critical issues of the Italian ports, such as fragmentation of national and regional ports, excessive bureaucracy (113 procedures and 23 public entities involved into controls), lack of logistic intermodal connections between ports and rail corridors, inadequate infrastructure projects<sup>6</sup>, the paper will explore the different national and international reforms that Italian ports have been subjected to over the years. With the re-organization of national ports and the integration of ports into their urban-territorial context as a background, the case study of Naples proves an insightful case in explaining why city and port actors have found it so difficult to define a common strategy for the port-city interface, and what the path dependencies identified imply for its future.



FIGURE 1 Tavola Strozzi, 1472. Naples, San Martino Museum.



FIGURE 2 View of Naples from the sea, XVIII century, Antonio Joli.

## PATH DEPENDENCE AS THEORETICAL LENS

The central theoretical lens for this analysis is path dependence. This paper is going to test whether this theory allows for better understanding port city dynamics through the Naples case<sup>7</sup>. The idea of path dependence originated by Paul David and W. Brian Arthur in separated works. Their studies were focused on institutional inertia and difficulties in changing the established approach<sup>8</sup>. According to James Mahoney path dependence “characterizes specifically those historical sequences in which contingent events set into motion institutional patterns or event chains that have deterministic properties<sup>9</sup>”. Starting from Mahoney’s thought on path dependence, it is possible to say that research on path dependence so far focused on two important points: on one hand it focused on self-reinforcing institutional patterns. These are linked to the formation of a long-period institutional models that generate what economists call increasing returns and positive feedback processes. On the other, path dependence focused on “chains of temporally ordered and causally connected events”<sup>10</sup>. This means that the final output is influenced by when the events happen. In other words, some events, if they do not happen at the right time, they have no effect. However, research carried out so far has some limitations regarding the concept of “becoming persistent”.

## THE SPATIAL DIMENSION OF PATH DEPENDENCE

Most of the studies have focused mainly on the temporal dimension of path dependency and contingency events. Few scholars, with the exception of Sorensen, have used the lens of path dependency to explain the spatial dimension of this theory and the direct consequences in terms of planning. The idea of path dependence is that some past decisions have resulted in positive feedback for the actors involved and this influences future development, so very often changing path is difficult<sup>11</sup>. According to Sorensen (2015), new research questions should start from the analysis of the relationship between institutions and urban space.

**Why planning institutions in Naples are highly dependent on historical paths, and why are others cities more open to change? It is important to focus on the nature of some particularly critical moments also focusing on previous conditions that generated the current situation.**

## THE INTERNATIONAL CONTEXT: THE NEW EU INFRASTRUCTURE POLICY

The youngest among the actors is the one with the widest scale: the Europe Union (EU). This is an important actor also for the Naples port. Already with the Treaties of Rome (1957), Member States had stressed the importance of a common transport policy, but for almost 30 years, the results were quite poor. In particular, in 1985, The European Court of Justice invited the European Council to implement concrete actions with regard to a European transport policy.<sup>12</sup> The Maastricht Treaty, and “The White Papers” of 1992 and 2001 became important starting points with regard to the creation of the single sustainable and efficient transport space policy. The aim of these books was to increase the competitiveness of the port system through the use of more efficient transport systems. These documents also introduced the importance of the integration between various planning tools, as well as new cooperation with the actors involved in logistics systems.<sup>13</sup>.

In 2013, European Commission presented the most radical reform of the infrastructure policy ever made since its beginnings in the 1980s. The documents published by the Commission, reported the nine main corridors that will form the transport arteries in the European market, creating for the first time a central transport network<sup>14</sup>. The aim was to turn the current patchwork of ports, airports, roads and railways in and integrated Trans-European transport network (TEN-T). The new central network would link 94 seaports, 38 airports, 15,000 km of high-speed railway, in 28 State Members. The European Parliament decided that there ought to be nine major European corridors map of transport for which they have been earmarked 26.3 billion euro for the period 2014 - 2020. This European transport network, should be completed in 2030. Italy is crossed by four of these corridors<sup>15</sup>. In this scheme, the port of Naples is one of the main Italian ports, and it is located on the Trans-European corridor (TEN-T) Helsinki-Palermo (in rose) (Fig.3). Going back to the national context, the National Strategic Plan for Ports and Logistics, starts from the indications of the European Commission in order to improve the role of the Italian system as a leader in the Mediterranean region and improve its connection with the rest of the world.

Italy is invited to take advantage of its geographical position as regards of the international shipping, improving rail connections and the relations between ports and hinterland, analysing in detail the specific characteristics of the individual Italian ports in order to implement integration with the European corridors, promoting sustainable transport systems and removing “bottlenecks” in the system, localized especially in the regions of Southern Italy (Campania, Sicily, Calabria, Puglia and Basilicata).



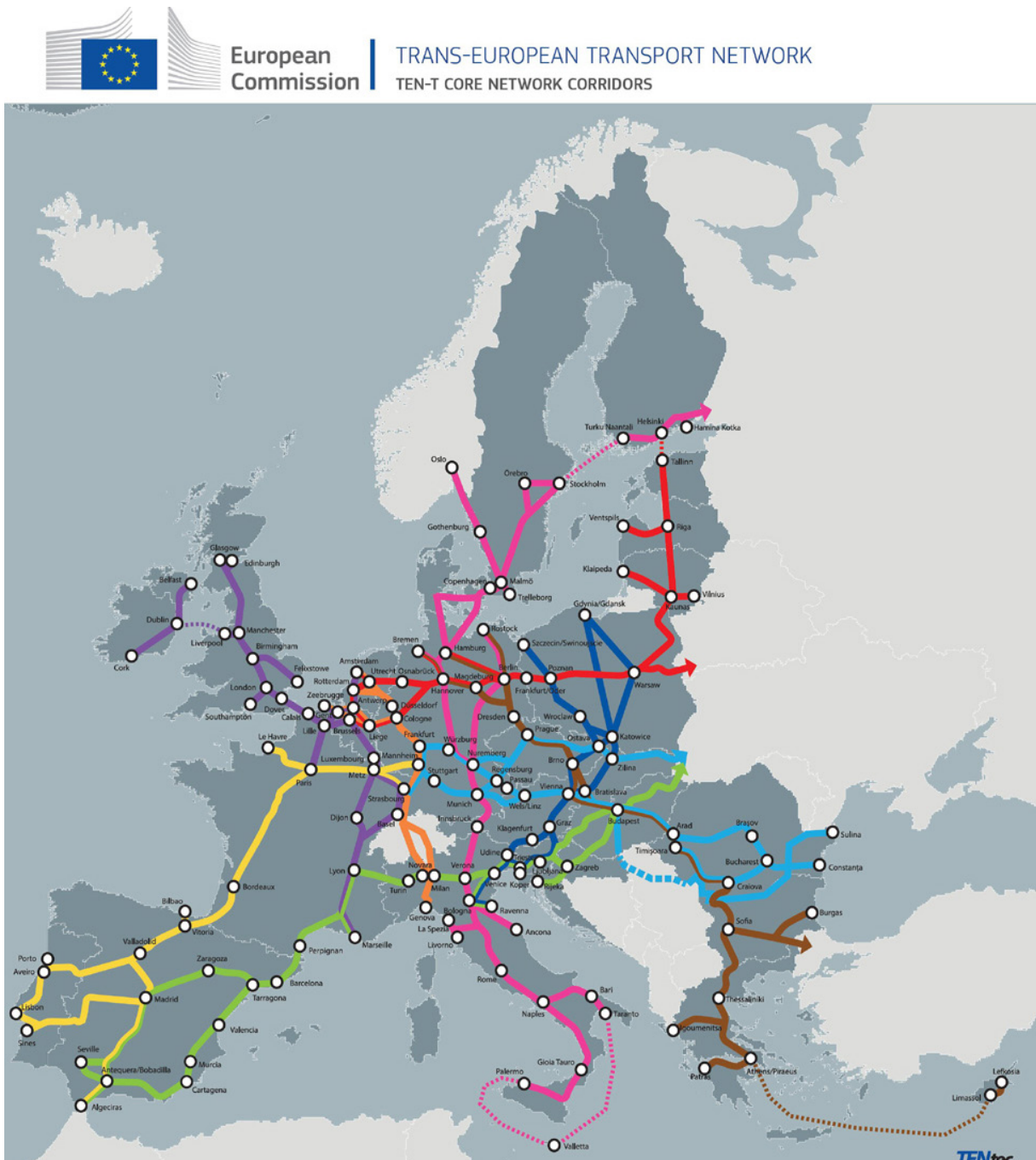


FIGURE 3 TEN-T Core Network / Core Network Corridors.

## THE NATIONAL CONTEXT: THE NATIONAL STRATEGIC PLAN FOR PORTS AND LOGISTICS (PSNPL)<sup>16</sup>

Italy is a nation with numerous ports, surrounded by water, all competing with each other; it is a nation that has a long seafaring history, that characterizes the different ports and their diverging roles. The Italian port system shows some strong specificities, and it has been in special need of a regulatory re-organisation in order to improve the competitiveness of national ports structure compared to other Mediterranean and Nord European ports. The Italian State defines seaports as public property. They belong to the State and they are inalienable. The Ministry of Infrastructure and Transport (MIT) is the executive structure of the Italian State in charge of different tasks including: planning, financing, construction and management of infrastructure networks of national interest; activities related to transport, traffic and logistics on the territory including navigation, safety and maritime transport. The MIT is responsible for the planning, financing and development of the port, supervision and control over the port authorities. Thus, the State, as “owner” takes care of the ports, in general of their administration, through the Port Authorities, special non-economic public entities<sup>17</sup>. In addition, the MIT is responsible for the assets and port services and work in ports. The Ministry also issues the general discipline of the ports and land use plans<sup>18</sup>.

In 1994 a State law was enacted which modified the organization of the port sector. With this law, port authorities were called to make a port masterplan (PRP). The old port plan became a planning tool. Ten years later, Guidelines for the formulation of port masterplan were issued. This is another important step, as the PRP became a strategic tool because the guidelines gave suggestions to the port authorities and generally to all other institutional entities involved in the preparation of port plans.

In 2014 the MIT, in order to improve the Italian ports system and create a real network between the different ports, has introduced an important reform of the national ports system. The article 29 of the Law 164 of 2014, that converted the Law Decree n. 133 of 2014 “Sblocca Italia” had provided the adoption of the National Strategic Plan for Ports and Logistics (PSNPL), with the aim, on one hand, to optimize the connections between the ports and between the ports and the surrounding and national territory, and on the other, to improve the port governance system. The plan moves from the analysis of some weaknesses in the Italian port system. In Italy there are many ports along a coastal area of about 7800 km. This makes the situation rather complex and fragmented. The Italian ports are collocated almost all near the historic centres of the cities. This condition makes difficult to move the container port for obvious reasons of lack of space. As result, huge waterfronts are used for port activities without any integration with the city. In addition, Italy bases planning and management of the ports still on an old law, the law 84/1994, “Reform of the port legislation”. On one hand, this law represented an important turning point in the transition from one type of “public service port” to the current “landlord port”; on the other hand, it presents, today, obvious limitations and it is not able to read the complexities of the contemporary port structure, as well as the actors involved in the system, that are increasingly changed. The strategic plan proposes, through a logic of system and nodes, concrete actions for the implementation of the network and a governance model that can centrally control and simplify the procedures. A very important point of the plan is the willingness to go beyond the “port individualism” proposing port systems and reducing to 15 the strategic core network nodes (Fig.3). The plan identifies 10 strategic objectives and 10 actions, including simplification and streamlining of procedures, strengthen the infrastructure system of ports and their links with the hinterland, promote research and technological innovation in the Italian ports, adapt and improve the governance of the Ports. These actions have to be implemented with subsequent acts and laws. The improvement of port and logistics system is identified as a central issue in order to reviving the role of the national territory and in particular of Southern Italy in the International context<sup>19</sup>.



## Le Autorità di Sistema Portuale

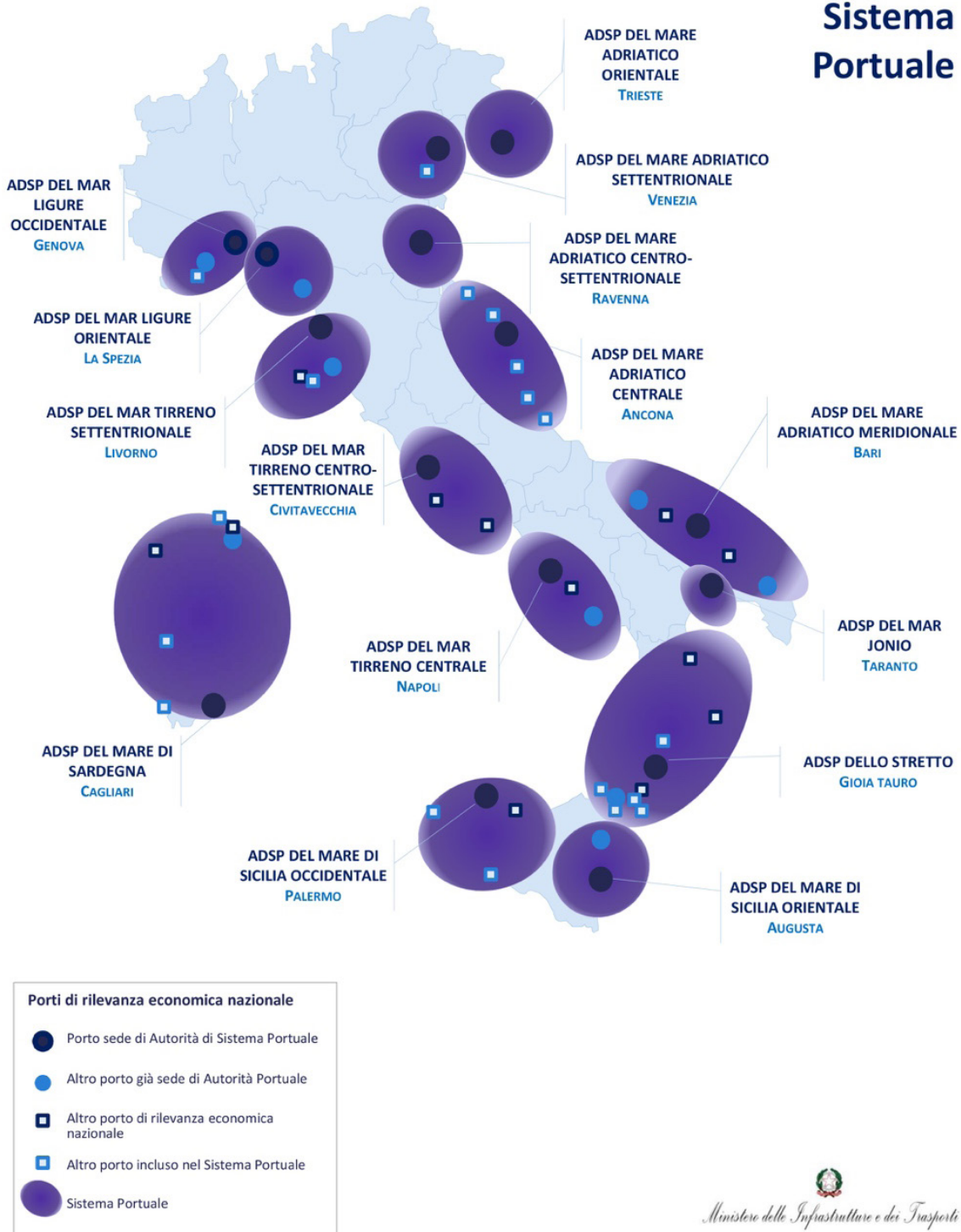


FIGURE 4 Italian Port Authority Systems.

Naples, along with Genoa, La Spezia, Livorno, Civitavecchia, Cagliari, Palermo, Augusta, Gioia Tauro, Taranto, Bari, Ancona, Ravenna, Venice and Trieste, is one of the ports that the European Union defines as strategic for the Global network<sup>20</sup> (Fig.4).

In conclusion, the law 84/94 and guidelines of 2004, transformed the old port plans into strategic and structural tools. In particular, the guidelines stressed the importance of a careful analysis of the different structural and functional parts of the port, and their relationships with the urban dynamics. Their focus was on the fact that the port does not host only specialized flows, rather wider metropolitan flows not necessarily related to the port. Indeed, between the city and the port, especially in the older port city areas, there are marginal areas more compatible with urban dynamics. However, the planning approach still continues to consider the port in a very sectorial way, without any consideration about its urban, metropolitan, regional and national role<sup>21</sup>.

The PSNPL, considering the profound change taking place in port areas, which see more and more ports as hubs into the transport chain (compared to the past when ports have been seen as “emporio”), is the new starting point for a complete rethinking of transport chain in the global network.

## THE CITY OF NAPLES

The city of Naples is proposed as a case-study through which highlighting critical aspects and potentialities in order to redefine a new centrality in the Euro-Mediterranean context. In Naples urban and port flows come together in the 5 kilometres of coastline, from the historic port to the east of the city.

Therefore, the port, with its longitudinal flows represents a barrier against the crossing flows that lead from the city to the sea<sup>22</sup>.

The cultural and spatial separation of the city from the port is due to different factors. The division of responsibilities and competences for planning between national and local administration is one of them. In Italy, the Royal Decree of April 2, 1885, established that, for the ports that are classified of national and strategic importance, the port plans could be drawn up by the Ministry of Public Works. This is an important date, because, since then, the urban plan of the city did no longer contain the port area. This separation immediately put into crisis the cultural and planning model of the port city as a whole<sup>23</sup>. In addition, in 1918, the Port Authority of Naples was established, a public body under the control of the Ministry of Public Works. This was another important step that led to the progressive spatial, functional and administrative separation. The General Regulatory Plan, PRG of 1939 just identified the port area as industrial area. This plan, even if in force, does not have an effective role in determining planning policies. As a result, the city began to rebuild itself according to disconnected parts without clear relations. A new PRG, adopted in 1972 (Fig.5), identified the port area as “F” (port area), divided into sub-zones F/1 (the strictly port area) and F/2 (areas related to port activities). Before the 1994, the discipline that regulated these areas was delegated to the “Special Plan of the Port.

Today the new PRG of Naples of 2004 (Fig. 6), remains still too generic about the port. The PRG defines and separates the “historic harbour” from the “harbour recently formed”, but the destiny of these areas is sent back to the port plan tools (Fig.7).

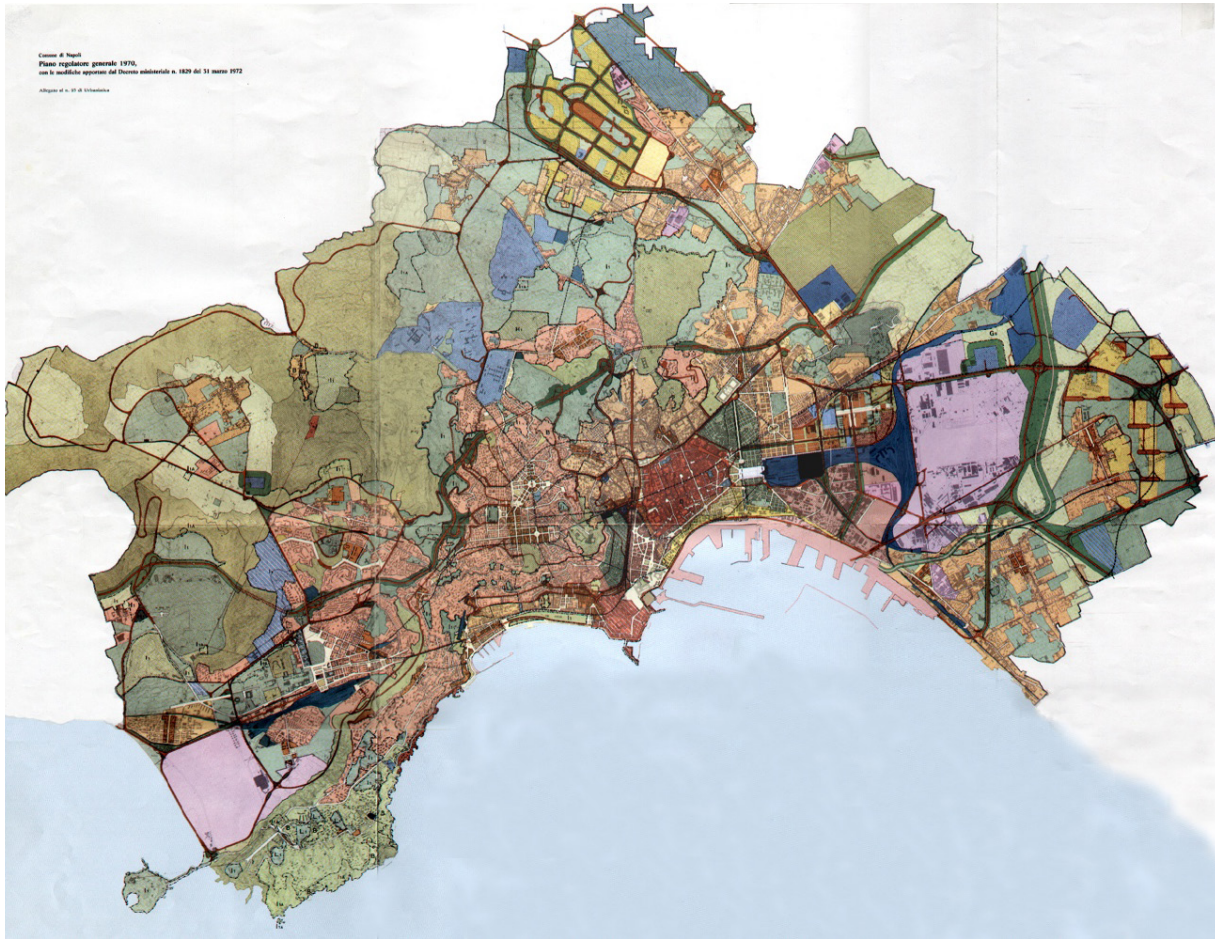


FIGURE 5 PRG Naples 1972.





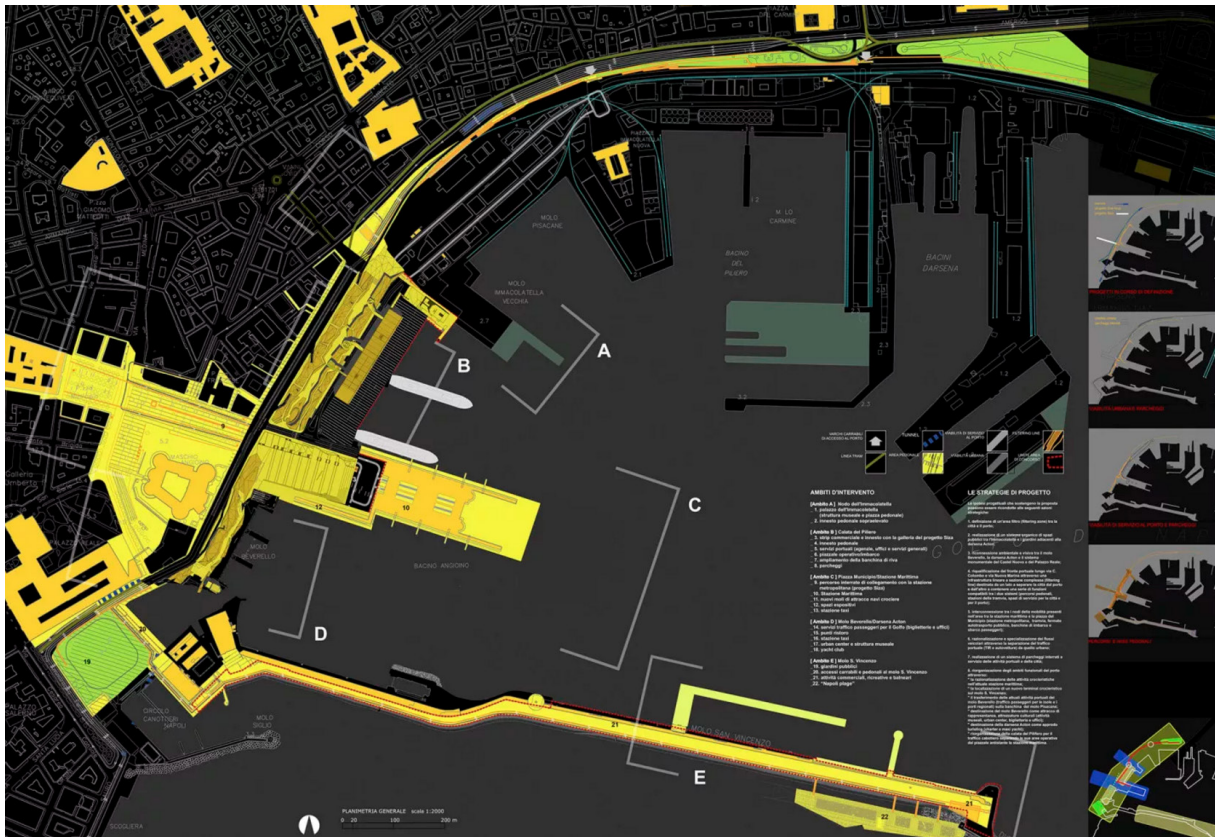


FIGURE 8 Naples: Monumental harbour redevelopment.

## CITY, PORT AND METROPOLITAN AREA: AN EFFORT TO COOPERATE FOR A COMPLEX TRANSFORMATION

With regard to the provincial and regional context, it must be said that the jurisdiction of the port of Naples, today extends over than 20 km, from Pozzuoli to the port of Castellammare di Stabia. The Region and the Metropolitan City of Naples (which in 2014 replaced the old institution Province of Naples) represent an intermediate level of planning. Nowadays, the Region, through the Regional Territorial Plan (PTR) of 2008, and the Metropolitan City of Naples through the Territorial Coordination Plan (PTC) of 2015, give strategic orientations in terms of regional and provincial planning. In Naples, the specific relationship between city and port has built over the years through mutual adaptations, of the port to the city and the city to its port. Port authority and municipality tried to work on the concept of multi-functionality of the port that not always generated peaceful relations, and also it contributed in defining an unclear vocation of the port.

In 2005, Municipality, Port Authority and Region have tried working together, proposing a new image of the port through an architectural design competition for the waterfront redevelopment of the historic port. The winner was the Arch. Michel Euvé and his design team. This competition was managed by the Public Company “Nausicaa”, between Port Authority, Municipality, Region and Province, created with the aim of managing complex transformations such as a port, proposes to work on an idea of a complex and malleable space in which to keep together temporary and specialized flows, to create a dynamic and contemporary place (Fig.8). Today the project is struggling to start for different reasons related to the feasibility of implementation. In conclusion, regional and provincial plans, projects and integrated programs, in the last twenty years in Naples stressed the need for an integration between the different planning tools<sup>24</sup>.



## CONCLUSIONS

Over the centuries, the urban structure of Naples has adapted to the port activities. However, the flexibility of the port to the new global requirements have a spatial dimension that transforms parts of the city at different speeds<sup>25</sup>. As a result, select areas are into a limbo. The guidelines of 2004 laid the foundation for an important reflection on the issues of compatibility between port and urban functions. Every part of the port has specific relationships with the city and its urban activities. There are port areas that require autonomy and are incompatible with the urban life, others that can restore a physical, functional and cultural relationship with the city. Who are the actors involved in the port city dynamics and how do they see the relationship between city and port?

The case of Naples shows that a sectorial way in planning is not enough. This departmentalized analysis has led to the creation of independent thought processes and actor networks, each with their own path dependencies.

The history of the port and cities of Naples shows how the diverging interests of both the city government, Port Authority and the Regional and National government have led to the emergence of two independent spaces (port and city) governed by separate sets of institutions, tools, methods, laws, ideas, and even different time frames.

The planning tools are configured too rigid and not in line with the flexibility and dynamism of the changes that nowadays are taking place. On one hand, there is the rigidity of the plans and the bureaucratic slowness; on the other hand, the dynamism and complexity of the actors involved, who have different views and interests about the question of coexistence of the port with the city.

Using the theory of path dependency, this paper has explored how the main institutions in Naples planned for port and city, understanding how planning tools still too oriented on a “zooming approach”, and a reform still too oriented on the logistic aspects of the port, can provide the elements to improve the compatibility and connections between spaces and actors involved. To do so, looking at space through the actors is a way to understand lock-in situations and break from path dependencies promoting co-operations and new synergies between different actors and levels of planning. Only in this way, municipality and port authority, can create a different relation and “draw a picture” of the port-city which is shared one more time by both.

## Notes on contributor

Paolo De Martino is doing a joint PhD in Architecture and Urban Planning at the University of Technology of Delft (The Netherlands) and at the University of Naples Federico II (Italy), working on a thesis entitled: “Port-city development. An interdisciplinary analysis for port city in transition. Naples as case study”. He is presenting and discussing his research at various National and International Conferences, such as at the Conference SIU 2016 – Italian Society of Urban Planners.

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- Figure 5: Municipality of Naples. The General Regulatory Plan, PRG of 1939. URL: <http://www.comune.napoli.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/14374> (visited 08 May, 2016).
- Figure 6: Municipality of Naples. The General Regulatory Plan, PRG of 2004. URL: <http://www.comune.napoli.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/1023> (visited 08 May, 2016).
- Figure 7: Port Authority of Naples. Port plan. URL: <http://porto.napoli.it/?p=614> (visited 08 May, 2016).
- Figure 8: Naples: Monumental harbour redevelopment. URL: <http://divisare.com/projects/18490-guendalina-salimei-danilo-romani-rosario-pavia-matteo-di-venosa-via-ingegneria-modimar-s-r-l-francesca-contuzzi-michel-euve-pierfrancesco-capolei-fabrizio-capolei-3c-t-capolei-cavalli-architetti-riqualificazione-dell-area-monumentale-del-porto-di-napoli> (visited 12 June, 2016)

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# GLOBAL FLOWS AND LOCAL PLACES – THE SPATIAL DIMENSION OF NETWORKED PORT SYSTEMS

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The emerging discourses on spatial consequences of globalization phenomena emphasize the relationship between places and flows and put forward the need to consider both dynamic and fixed aspects of contemporary cities. Defining a framework of theoretical arguments, this research focuses on the complex system of ports to propose a critical view about the recent Italian port reform and to pursue a research path for a new, wise, planning strategy. The circulation of goods and information has prompt global cities into a networked system made by nodes and links overlapping the territory and connecting distant spaces through infrastructures. This “space of flows” could dominate the “space of places” going beyond the concept of physical proximity. Furthermore, proximity is not suitable anymore to define the space of local, indeed the sense of locality is heightened by the spread of our social and economic relations due to our ability to move. Globalisation has led to “new geography of centrality and marginality” drawing the fragmentation of the urban space which has to be studied by social, economic and spatial perspectives. In this research, seaports are identified as instruments to gain a deep knowledge of the complex relationship between cities and flows. As infrastructural devices crossed by global flows and, at the same time, tied in with local issues, the role of ports in the global network was analysed discussing their spatial development and waterfront transformations. In the field of supply chains, the paradigm shift of ports embedded in global transportation system, posing new research questions on the role of ports in the new trading environment. This issue also implies spatial consequences: the port regionalization defines a new structure with the sea-core linked to inland terminals. The dry ports serve different seaports working both like spaces of collaboration and competition. Furthermore, the competition due to global markets generates “local pains” in order to respond with local adjustments to globalisation trends. These matters also concern the scale and the authorities involved in the port governance. In Italy, the new port reform tries to fix the old port law 84/1994 introducing a new model of governance based on the merge of port authorities in order to define two administrative layers: the national and regional levels. Taking into account how production and distribution processes run in the whole nation, this institutional operation appears not clearly embedded to territorial realities. By analysing traffic data, it seems evident that the geographical and topological features of the country produce different networks (in space and in quantity). While the northern area is recognized as a unique macro-economic region, the South struggles to work as an integrated system also due to an infrastructural gap. In this framework, logistic networks and governance issues are investigated as tools to territorialize global flows and pursue the spatial resilience of port system.

**Keywords**

flows, places, place





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# Urban Mobility and Transportation

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Chair: Stephen J. Ramos



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# THE TRAIN, URBAN MOBILITY AND TOURISM REGARDING THE REVIVAL OF THE HISTORY OF GUAPIMIRIM

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This article is the result of the development of a graduation final thesis, focusing on urban history and new possibilities for an area's economy, that includes tourism and its relations to culture and nature. This research is based on the town of Guapimirim, a satellite city in the metropolitan area of Rio de Janeiro and its relation to the railway and tourism. The city developed along the railway in the late nineteenth century, which connected Rio de Janeiro with Teresópolis, a growing touristic destination at that time, popular for its climate and location between a scenic mountain range that is part of Serra dos Órgãos National Park. After the 1950s with the end of the operation of the railway to Teresópolis, the train now connects only Rio to Guapimirim. The railway that used to connect Rio de Janeiro to Teresópolis now ends up in Guapimirim, with old trains and an inefficient system that does not resemble the old times, operating as local transportation, no longer with touristic usage. The social impact of the end of the railway systems is seen worldwide, and has affected directly the town of Guapimirim. In the last fifty years, the federal government invested in a new road, BR116, passing just outside of the city of Guapimirim, creating a process of urban decay of the city downtown, especially in the areas nearby the train. The last part of the line was abandoned in the late 50's and is now being reincorporated back into nature being part of the Serra dos Órgãos National Park. The city of Guapimirim no longer looks back to its past, regarding its railway. It is now a service based economy with great dependance on Rio de Janeiro. The city due to its location works informally as a local hub of buses between the neighbouring cities. This can be used to develop local tourism, especially based on its natural resources, the river and waterfalls inside its National Park, and the road that links the Park to Guapimirim downtown. In the same region of Guapimirim, is located the remains of The Mauá Railway, the first line to be built in South America back in 1856, which makes this location even more symbolic. According to Le Goff in History and Memory (2003) "we should work in such a way that a collective memory is useful to freedom and not to human servitude". As the city continues to deteriorate since the collapse of the railway, we can recall what is pointed out by Urry in Mobilities (2007) that the railways have a really important role in the development of the modern tourism developing the cities that surrounds the railway. The combination of community based tourism with the historical and natural attractions may lead to a city renewal.

## **Keywords**

train, mobility, tourism, Guapimirim, Rio de Janeiro



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# A DEMOCRATIC CITY? THE IMPACT OF TRANSPORT NETWORKS ON SOCIAL COHESION

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**Absalom Makhubu**

University of Johannesburg

Urbanity is political. Thus, urbanists have to engage with political issues and systems in order to address injustices of the past, and create a more equitable present. Especially in the context of South African cities, which are still dominated by apartheid morphologies. 2016 marks South Africa's 22<sup>nd</sup> year into democracy, but what are the achievements and advancements in transforming the spatial legacy the 'new' country inherited from the Apartheid dispensation? Moreover, what are the characteristics of a post-apartheid, democratic city and society? The City of Johannesburg, the local authority of the Johannesburg Metropolitan regions, believes that transport networks must play a role to support the creation of social cohesion in a highly segregated city to address the spatial legacy of apartheid. It has therefore implemented a number of transport oriented development plans throughout the city including the *Corridors of Freedom* development plan. This paper unpacks theory around the concept of social cohesion, in order to understand why this is relevant to planning trajectories in South Africa. Furthermore, it discusses social, economic and spatial legacies to which planning needs to respond. It examines the *Corridors of Freedom*, a 'Transit Orientated Development' framework proposed by the City of Johannesburg aimed at "stitching" the city together. It critically analyses the plan's objectives and how it addresses issues of social cohesion to highlight some of the strengths and shortcomings of the proposed 'Corridors'.

## Keywords

social cohesion, apartheid, Group Areas Act, Corridors of Freedom, Johannesburg

## How to Cite

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DOI: <http://dx.doi.org/10.7480/iphs.2016.3.1263>



## INTRODUCTION

The use of buffer zones through the implementation of Group Areas Act of 1950 in South Africa, transformed the spatial morphology of the country and its people, resulting in an exclusive and fragmented society. Decentralisation and urban sprawl in Johannesburg further added to the city's fragmented morphology which Martin Murray calls a 'geographically disfigured metropolitan region of enormous economic and social contrast'.<sup>1</sup> Apartheid has a clear spatial layout that is still a reality in cities such as Johannesburg even 22 years post-apartheid. These are principles that contradict democracy. Thus plans are being proposed and implemented to address apartheid spatial legacy supporting CHAPTER 8 of the National Development Plan Vision 2030. SA cities are interpreting this in various programmes and projects one of these is the Corridor of Freedom (COF), a Transit Oriented Development (TOD) framework, adopted from cities such as Bogota and Curitiba. The Johannesburg metro sees this as a strategic plan that will "stitch" the city together economically, socially and spatially.

The Louis Botha Avenue Development Corridor is one of these COFs and runs North-South of the city of Johannesburg. Louis Botha Avenue was once the main connection to Pretoria from Johannesburg, before the construction of the M1 motor highway in the 1960's. Today, Louis Botha Avenue divides communities it runs through such as Orange Groove, Highlands North, Balfour, Sandton and Alexandra. It stretches approximately 16kms through a diverse mix of disconnected communities.

The research paper addresses the inequality of unjust spatial planning that is still evident in post-apartheid SA by considering its origin and its implementation. It looks at a specific area in an attempt to understand broader national problems which may or may not apply to other cities or countries. The paper also employs a qualitative methodology to address the research question, this done in several sections which cover the following research questions; what is the spatial layout of a democratic city in a post-apartheid legacy? What impacts do transport networks have on social cohesion? What challenges and opportunities are presented by the Louis Botha avenue COF? It begins by unpacking the historical background from which apartheid planning policies were conceived and enforced. It then attempts to articulate and contextualise social cohesion in South Africa, more especially Johannesburg, and concludes by interrogating the proposed COF based on principles of social cohesion.

## HISTORICAL BACKGROUND

1948 was a defining year in the landscape of South Africa, politically, socially and economically. The rise of apartheid saw the country undergoing drastic and fragmented planning policies aimed at enforcing white superiority and black inferiority. The following section attempts to unpack this defining phenomena that occurred decades ago in the quest to understand why there is a current need for planning to restructure urbanity. What is important to note about the era prior to this time is that South Africa was colonised by Britain/Anglo and the Dutch/Afrikaner.

Louw writes, 'Apartheid grew out of Afrikaner's painful encounter with modernisation and British imperialism'.<sup>2</sup> He elaborates that this forced Afrikaners move into the cities. This resettlement resulted with confrontations with other cultural and racial groups which were largely Anglo colonies with large black labour market. The Afrikaner felt this was unfair to them, thus a new policy to right this wrong needed to be established. This was years before the institution of apartheid in 1948. According to Louw, apartheid was proposed by the Afrikaner's National Party (NP) as a better policy compared to the opposition party Anglo's United Party (UN) proposed segregation policy which separated people base only on race. DF Malan, then leader of the NP argued that their party's apartheid (apartness) policy was the better option because it went further than just separating based on races (horizontal separation), but on ethnicity as well (vertical separation), which they argued it 'freed' blacks to politico cultural

identity. This was obviously not true, the principle was to divide and conquer. Malan went on to argue that this would ensure white supremacy which was not evident in the UP's segregation/white domination policy; this was subsequently put into action when the NP won the 1948 national elections.

To ensure a smooth transition of white people into the city and more economically powerful position, Verwoerd, minister of Bantu Affairs in 1950, proposed an act that restricted non-whites from movement in and out of the city. Thus a redesign of South African cities became necessary, which required ethnic groups to be forcefully removed, resettled and separated from one another (group areas act). Added to this, it was believed that there needed to be separation of ethnic groups outside work areas and outlawing any interracial sexual relations. This separation was spatially achieved through buffer zones (green belts, industrial belts, railway lines, motorways and topography) in-between different ethnic groups<sup>3</sup>, see figure 1 which illustrates what would constitute an ideal apartheid city.

Years that followed after the implementation of apartheid policies, South Africa underwent very bleak times fuelled with political and socio economic uproar and struggle against this plan. These included, forced relocations especially of non-white population, women's march in 1956 (9 August) to the union building to protest the doom pass legislation, Sharpeville massacre in 1960 (21 March) where in 69 pass protesters were brutally killed by the police and the Soweto Uprising which saw pupils take to the streets in 1976 (16 June) to march against the enforcement of Afrikaans as medium of instruction in schools.<sup>4</sup>

Post 1994, South Africa is undergoing a process of transition. A very exciting and challenging process of addressing the wrongs of apartheid in a non-violent and inclusive manner, one that recognises the importance of the social fabric produced by apartheid spatial planning and how this needs to be interrogated. Hopefully to reflect a more socially cohesive society. A question that arises is why social cohesion as a design principle?

## SOCIAL COHESION?

Social cohesion is a concept that is widely researched but is not conclusively defined.<sup>5</sup> Jenson argues that the 'meaning is dependent on the problem being addressed and who is speaking'.<sup>6</sup> However, literature on the subject does coincide. Jenson draws on theories from "major social scientists" who have had an interest in the concept, including Emile Durkheim in the 1880s and Talcott Parsons later in the 1900s who according to Jenson developed theories on the concept from considering interdependence, shared loyalties and solidarities as key components of social cohesion.

Bruhn and Jenson both found that it is difficult to study/map social cohesion at macro scale, for a number of reasons such as lack of participation and fragmentation. Thus, Bruhn focused his study on "the group" addressing some of Jenson's gaps in research. His conclusions are that depending on the social ties and network connections, different degrees of cohesiveness can be achieved irrespective of group size.<sup>7</sup> According to Schmitt citing McCracken, social cohesion is viewed as a 'characteristic of society dealing with connections and relations between societal units such as individuals, groups, associations as well as territorial units'.<sup>8</sup> It is also 'a set of social processes that help instil in individuals the sense of belonging to the same community and the feeling that they are recognised as members of that community'.<sup>9</sup>

This paper echoes the same definition that so many have articulated in that: social cohesion is a democratic process that recognises all the different members of the society and their role (especially economic) in shaping shared values of the society at large. This articulation is based on the five Dimensions of Social Cohesion that Jenson derived, namely;<sup>10</sup>

- *Belonging- Isolation* which talks about identity and a sense of being part of community,
- *Inclusion- Exclusion*, talks about the degree of inclusion/exclusion in the economic market,
- *Participation- Non-involvement* refers to working together of different bodies within a community,
- *Recognition- Rejection* addresses the differences that exist within the community and stresses the importance for the community not to undermine but nurture these differences, and finally,
- *Legitimacy- Illegitimacy* refers to the recognition of the legitimacy of bodies that act as mediators within the community.

## HOW DOES ALL OF THIS RELATE TO THE CONTEXT OF THIS RESEARCH?

The second and very significant dimension of social cohesion as mentioned above is inclusion-exclusion. Social exclusion played a significant role in shaping South Africa's socio political and spatial landscape. Despite the wide spread of racism due to colonisations in many parts of the world, it is interesting to note that whilst parts of Western Europe and Canada were beginning to move towards 'versions of social democracy, Christian democracy and positive liberalism'.<sup>11</sup> Post 1945, South Africa on the other end of the globe was moving towards apartheid in 1948 which was later strengthened by the implementation of the Group Areas Act in 1950. This does not mean there was no racism in these parts.

Schmitt describes social exclusion; as 'the denial of citizenship rights (civil, political and social) which major societal institutions should guarantee'.<sup>12</sup> South Africa has seen first-hand what the impacts of social exclusion with the implementation of the Group Areas Act during the apartheid regime. A brief scan of the spatial morphology of the City of Johannesburg reveals the impacts of social exclusion with the high level of informality in and around the city in areas such as Ivory Park, Alexandra, Diepsloot, Orange Farm and the likes. Another substantial part of social cohesion is social capital.

Social capital encompasses the other four dimensions of social cohesion that Jenson describes. Schmitt describes social capital as 'the sum of institutions and the quality of relationships which binds a society'.<sup>13</sup> Moreover, it includes civic responsibility, democracy and governance. He elaborates that social capital is directly proportional to the economic well-being of a society, furthermore investigations show that a more cohesive society has improved dimensions of welfare. What does this mean for South Africa?

In 2009, the Gauteng City Region Observation (GCRO) was commissioned by the Gauteng Provincial Department of Economic Development to research the impacts of the 2008-2009 economic recession within the province and in their report the researchers describe Gauteng as an economic engine of South Africa and the Sub Saharan Africa adding that it is also part of the globalised world economy. With this being said, Gauteng province still shows strong traces of apartheid policies, with very polarised and highly fragmented distribution of people and economy.<sup>14</sup>

Figure 2 and 3 illustrate how apartheid at least on a spatial level, is still prevalent in the province, as notable on the race to area map, fragmentation still exists. This is further entrenched by the economic activity which according to these figures is largely still concentrated on previously white only zones of the province. As a microcosm for many cities within South Africa, the disparity between Alexandra and Sandton, north of Johannesburg CBD, bring to the fore the severity of apartheid spatial legacy and the challenges to overcome them.

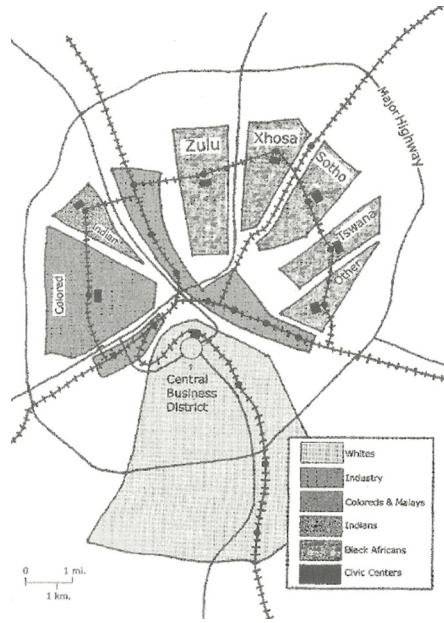


FIGURE 1 Illustration of Ideal Plan of an Apartheid City

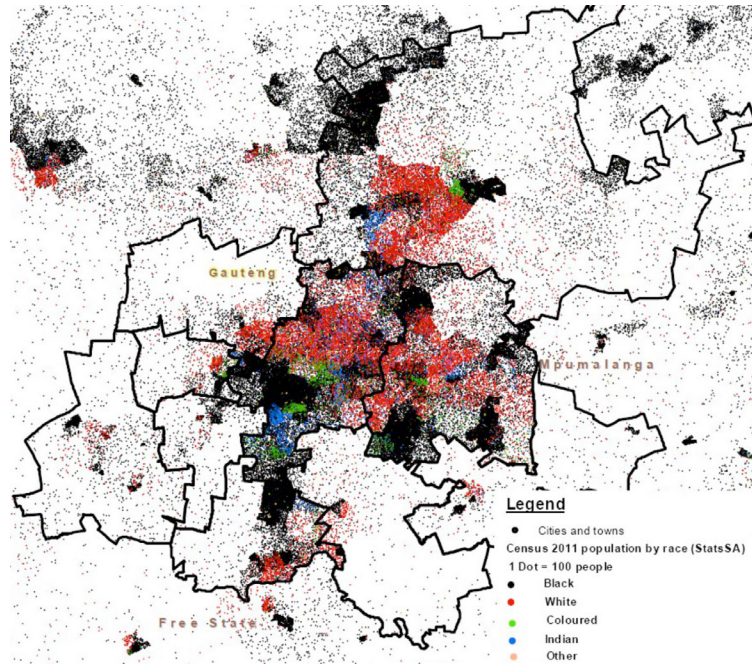


FIGURE 2 Population by Race 2011 Census in Gauteng Province

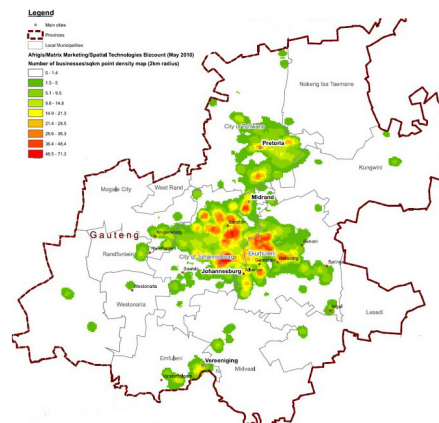


FIGURE 3 Economic Activity across Gauteng 2010



FIGURE 4 Population explosion- Alexandra in 1947





FIGURE 5 Map of Alexandra/Sandton.

Alexandra or Alex as it is widely known is a freehold township on the edge of Johannesburg City Centre established in 1912 to house Africans and coloureds working in nearby farms. The farm on which the township was established “belonged” to farmer and attorney Herbert B Papenfus. He had planned to sell the stands to white buyers, but the response was underwhelming thus was then sold to Africans and coloureds. It is apparently named after Papenfus’ wife Alexandra because of her “love” for Africans.

By the late 1930s, Alex’s population grew explosively, largely due to new arrivals that were accommodated through rentals by stand owners, rents would range from 10 shillings to £1 a month with one stand being able to house up to 15 rental rooms. The explosive growth in density was viewed a threat by the then ruling party (NP), and in 1948 the Alexandra Health Committee was established to manage the township, however this was with no government funding. Thus the growth was poorly managed, with untarred roads, no rain water drainage systems, sewage removal, street lighting and was characterised with haphazard shack settlement.<sup>15</sup>



As the years went by and strengthened by the institutionalisation of the Group Areas Act of 1950 Alex, as with many other areas in the country, experienced violent forced removals and policing of movement of people. There were a number of dislocations of people from Alex to surrounding black townships such as Soweto in the south and Tembisa in the north, to make way for grand master plans to radically transform the morphology of the township. These plans included the bulldozing and complete erasure the townships layout and social capital to make way for the construction of 25 hostels each housing 2500 black people that lived in surrounding white suburbs. However, only 3 hostels were eventually built amidst much contestation.<sup>16</sup>

During this time, Alex was also ground to heightened political activity, due to its diverse and rich political and cultural energy. 1944 saw the formation of the ANC Youth League in Alex, under the leadership of Anton Lembebe, AP Mda, Nelson Mandela, Oliver Tambo and Walter, Some very influential figures in the history of South Africa on its road to democracy. This highlights the significance of Alex's cultural and political role in the country's development.

Alex is also one of the country's poorest urban areas. With harsh edges that prevent any further development of the township. These edges include the motorways (M1 to the west and N3 to the East) and industrial buffer zones surrounding it. Making it very difficult for the township to gain access to potential economic development through the emerging economic hub west of the township, Sandton, an area that is the polar end compared to Alex. This is negligent of the fact that these two polarised areas exist less than 5 kilometres apart.

Agglomeration of commercial offices to the periphery grew, due to factors such as flexible employment, telecommunication and data processing which did not depend on the CBD anymore. Thus places like Sandton, which are on the periphery of Johannesburg CBD, developed (early 1970's) and continue to at accelerated rates attracting increased concentrations of capital investments, with companies moving their headquarters in the area, thus further adding to the already fragmented and polarised city morphology.<sup>17</sup>

According to the World Bank, in 2012 South Africa recorded a GINI coefficient of 0.63, an increase from 0.59 twenty years earlier, furthermore 60% of black South Africans live below the poverty line while the 9% white population of the country earns 8 times more than the black.<sup>18</sup> This raises questions about the country's levels of cohesion with such disparity. More so, are these questions adequately addressed in the spatial plans aimed at improving democratic cities such as Johannesburg?

## A DEMOCRATIC CITY?

Democratic urban space is the physical expression of 'general democracy'.<sup>19</sup> To design democratic urban spaces Burdett argues for a new approach, one that shifts focus of analysis away from 'blunt instruments of top-down versus bottom up', an approach that highlights the designer as facilitator rather than creator. Therefore, the urban frameworks, visions, or master plans must do more than respond to short term needs of the market, land speculation and 'weak' metropolitan governments concerned with the deadlines imposed by a mayoral election cycle than with long term sustainability.<sup>20</sup>

Professionals in the urban design and planning fields are still using out-dated methods of engaging with the city. Furthermore, they do not recognise the rate and scale at which cities are changing outside the formal structures managing city developments. 'In fact, the planning and urban design professions seem to have lost the ability to conceptualise and implement robust spatial models that are capable of adaptation and change at a time when city dynamics are both volatile and uncertain. Choosing instead to opt for anachronistic, one-dimensional, and rigid urban models that fail to live up to the social and environmental exigencies of twenty-first urbanization.'<sup>21</sup> What does this mean for plans such as the COF?

## CORRIDORS OF FREEDOM

The Executive Mayor of Johannesburg, Councillor Mpho Franklyn Parks Tau released a report that outlines the Growth and Development Strategy (GDS) of Johannesburg called “Joburg 2040” in October 2011. In the foreword, the Mayor describes the city’s morphology as ‘the city of stark contrast... divided and bearing spatial scars of the unjust and immoral apartheid system’. He elaborates further and highlights that a different story about the city needs to be told, which he lays out in that report.

One of the stories detailed in the report is about a new way of connecting the city, through transport infrastructural developments, because this ‘is central to the city’s economy’. It highlights how previous spatial planning contributed to urban sprawl, traffic congestion, and increased cost of transportation. It highlights that the future of public transport in Johannesburg lies in a change in mind-sets and the ‘creation of new cultures’ around transportation.<sup>22</sup>

The Louis Botha development corridor is one of number of corridors proposed to “help integrate Joburg residents”.<sup>23</sup> Maseng quotes Tau to describe the characteristics transit oriented developments, that of nodal, mixed use and pedestrian friendly environments connected to social facilities (such as universities, schools, hospitals and shopping centres). These various corridors will be phased in over the next couple of years (until 2016).<sup>24</sup> This paper briefly analyses the final report of the strategic area framework of Louis Botha Avenue Development Corridor (LBDC) published on 21 November 2014 to assess how it addresses social cohesion.

The framework gives quite a detailed overview of the different spatial considerations such as historical morphological evolution of urban areas around Louis Botha Avenue, and the predominant communities along the corridor. It maps key informants such as existing social facilities, nodes, networks and connections. As with many frameworks, it also provides guidelines for development along the corridor, dividing it up into eight precincts or ‘local areas’ which are further analysed and to which conceptual ‘new urbanism’ type drawings are presented to depict what each precinct is envisioned being. The framework adequately presents various housing typologies and how the mixed use will be achieved through time, but what is not clearly articulated is how the social functions will develop (such as educational facilities and health care facilities). Are there any new services proposed? If so where? In addition, has social cohesion through these services been considered? Unlike the original BRT system in Curitiba, which was more of a strategic spatial development that aimed at changing the development pattern of the city, the Louis Botha Corridor is implemented on an existing transport network. Therefore, one may argue that it at most enhances existing developmental patterns, which may not necessarily address apartheid’s spatial legacy.

Massive infrastructural upgrades are proposed for some bus stations such as the Wynberg station in between Alex and Sandton that will have a significant impact on existing economic and social networks that already exist on site. *TransMilenio* in Bogota, Columbia’s version of the Bus Rapid Transit (BRT) adapted from Curitiba, has gone to great lengths to protect and instil a cultural change towards its public infrastructure, limiting informal trading around the station and prohibiting eating of any kind in the facilities to maintain a ‘state of the art’ infrastructure. With quite a strong presence of informality in and around the proposed stations, the LBDC does not explain how it plans to address this issue. This is important because there are social networks formed by the informality that may be negatively affected. What is also missing on the planned proposal is an appreciation of the very intricate social fabric that already exists? Based on Jenson and Bernard principles and dimensions to measure social cohesion, one needs to ask, how socially cohesive is the proposed Louis Botha Avenue Corridor of Freedom plan?

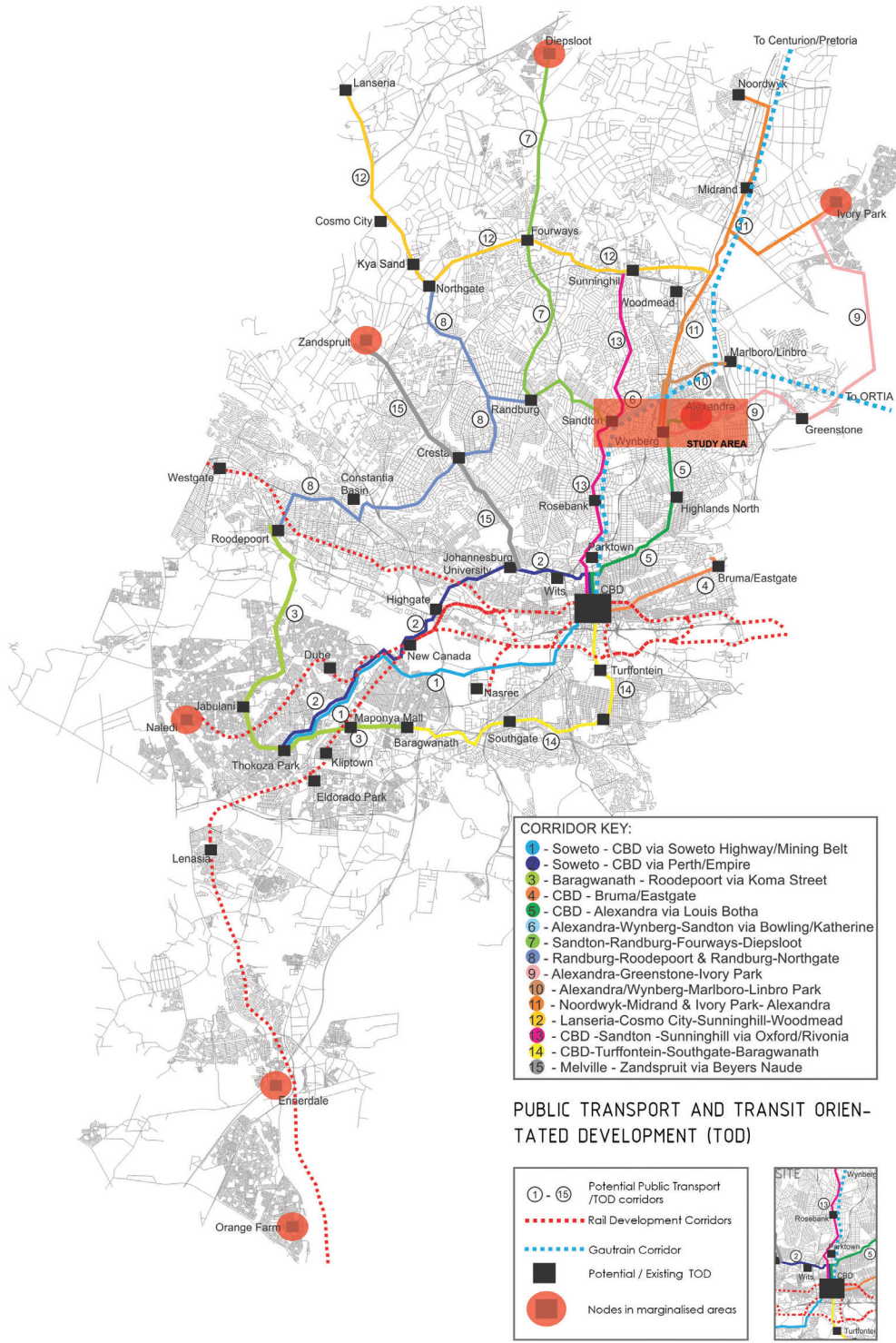


FIGURE 6 Network of Corridors of Freedom as proposed by the City of Johannesburg. Also highlighted on the map is the study area for this research paper.

In terms of 'Belonging/Isolation'- LBDC recognises the diversity along Louis Botha, but is not explicit about how it will create/strengthen a sense of belonging within these communities, of which some have strong and protective unit ties. LBDC scores very well in the other four dimensions, through their very inclusive, public participatory initiatives that recognise all members of the community and their role in making the project a success. Spatially, the plan goes to great lengths to describe the envisioned growth and densification patterns. LBDC is part of existing corridor projects planned and implemented in the city. What are the successes and shortcomings of other corridors, such as the Empire/Beth and Inner city corridors? Have these influenced private transport usage, reduced traffic congestion, social connections, and increased densities? Are these successful because they are built, or is it too early to measure their successes? The LBDC proposal does not include answers or even discussions around these questions, which I believe are vital in the planning, implementation and success of the corridor. Based on the above, it is not clear how success, economically, socially, civically and spatially will be achieved and measured once the project is completed, especially in strategic stations such as the Wynberg station.

## CONCLUSION

Apartheid as law and policy was a clear, well-articulated, implemented and enforced plan. Perhaps this clarity is necessary in plans post-apartheid that aim to address its unjust spatial legacy. The forced removal and control of movement of people especially non-white, in an around the city resulted in a fragmented city morphology with high levels of disparity.

Developmental plans such the Corridors of Freedom have the potential to address the fragmentation and redevelopment of the city of Johannesburg. However, to define the image of a democratic city, these plans need to go beyond merely addressing issues of mobility; they need to include other layers that work together with mobility, layers that actively address physical, social and economic boundaries and limits of apartheid planning. In so doing, these plans become more contextual and less generic. Democracy provides clear tools for design and production of space such as freedom of movement, accessibility, participation, diversity, innovation and citizenship. These principles are linked closely to social cohesion.

Social cohesion is not a utopian ideal that is based on forcing people to 'live together in harmony'. It is much more than that; it is about an understanding that one's wellbeing is directly influenced by the wellbeing of the other. In this paper, the argument presented is for the recognition of social cohesion in designing post-apartheid/democratic cities. An urban restructuring that recognises that to address urban morphology of apartheid planning, and thus define the image of a democratic city, it is necessary to understand the origins, objectives and, most of all, limits of apartheid planning.

'It is perhaps the role of the urban scholarship to bring these two dimensions (informal actors and professional agencies) closer together, both through a theoretical reframing of contemporary urban crisis and by the identification and explanation of projects and initiatives that are, by default or design, changing our urban world.'<sup>25</sup>

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## Disclosure Statement

No potential conflict of interest was reported by author.

## Notes on contributor

Absalom Makhubu is a young, black urban designer who recently graduated with a Master of urban design degree from the University of Witwatersrand, Johannesburg. He is currently a lecturer in the department of Architecture at the University of Johannesburg, the youngest architectural school in the country. He has previously worked for Albonico Sack Metacity Architects and Urban Designers, where his skills and passion for urban design, architecture and politics was inspired. He has also consulted for a number of practices in both research and professional work such as Urban Soup architects, Zulu Architectural Designers and A2 architects.

## Endnotes

- 1 Murray, *Evolving Spatial Form of Cities*, 17.
- 2 Louw, *The rise, fall and Legacy of apartheid*, 27-50
- 3 Ibid.
- 4 Morris, *Apartheid: An illustrated history*, 58-105
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Figure 2: Map of the month GCRO. Available from: <http://www.gcro.ac.za/outputs/map-of-the-month/#> Accessed [10/05/2016]

Figure 3: Original Map Source: GCRO, Available from: <http://www.gcro.ac.za/outputs/map-of-the-month/#> Accessed [10/05/2016]

Figure 4: Original Source: University of Witwatersrand, Historical Papers

Figure 5: Author 2014

Figure 6: LBDC Final Document 2014

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# ON THE RATIONALITY OF NETWORK DEVELOPMENT: THE CASE OF THE BELGIAN MOTORWAY NETWORK

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The development of transport networks has been explained, predicted and planned using a variety of methodological approaches. These range from narrative historical accounts to the application of models borrowed from the natural sciences. Probably the most remarkable studies are recent attempts to align network development with organic logics – e.g. the mimicking of motorway networks by slime mould in Petri dishes. The aim of this paper is to examine and compare methods mobilized to both explain and hypothesise on the development of transport networks. More specifically, we juxtapose methods in transport planning inspired by the natural sciences with historical inquiries into transport planning. Network modelling driven by topological features (e.g. connectivity and compactness) is compared with a more historical sensitive approaches taking contextual, sociospatial factors into account. In doing so, the paper contributes to transport geography by highlighting the influence of political choice, and indeed ideas about sociospatial organization, on the network model as well as adds to planning history by including the technical rationale in the discourse on sociospatial organization and form. Belgium was chosen as case because the topology of Belgium's motorway network is considered by some researchers as one of the most 'rational' in the world, while others have often qualified its form and materiality as 'chaotic', or indeed 'irrational'. On the basis of a two-sided analysis of the Belgian motorway network, a quantitative topological approach and a planning history lens respectively, the present paper critically assesses the views and values held by actors of the past, present and future of the development of transport networks.

## Keywords

transport networks, topology, rationality, metaphors

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## INTRODUCTION

The development of transport networks has fascinated researchers from a variety of disciplinary backgrounds. In order to explain the growth of a system, each approach emphasises a particular rationality, logic and/or order. Besides offering an explanation for past developments, the same methods and models are also used to predict and plan the expansion of existing infrastructure networks, and gaps or ‘missing links’ in networks are detected based on an underlying rationality. Interestingly, many applications across disciplinary boundaries rely on models and metaphors borrowed from the natural sciences. Probably the most remarkable example is the mimicking of motorway networks by slime mould in Petri dishes.<sup>1</sup> Transport networks are also conceptualised and explained by using fractals,<sup>2</sup> Newton’s law of gravitation,<sup>3</sup> the vascular system, Shiatsu meridians,<sup>4</sup> and so on. The surge of cross-disciplinary alliances in transport studies has resulted in an increasing influence of physics and complexity sciences in the analysis and planning of network development.<sup>5</sup>

In a recent paper, Gabriel Dupuy aims to identify the potential benefits of this disciplinary diversity, in particular of contributions from ‘naïve’ outsiders.<sup>6</sup> Such outsiders include mathematicians, biologists and physicists which apply their toolbox and concepts to transport networks without much knowledge of transport studies. Although he raises some critical remarks, Dupuy argues that hostility towards the contributions of outsiders is not warranted. In fact, there exists a continuum of studies that employ naturalising models and metaphors to transport networks, ranging from ‘naïve outsiders’ who hardly make reference to transport studies, to work in the core of the discipline.

This conclusion, however, urges us to re-consider why models and metaphors derived from the natural world have continued to attract scholars from different disciplines, and across different epistemic communities in time and space. Moreover, and more importantly, the continuous importance and even re-emergence of ‘naturalistic’ modelling in scientific discourse, should be analysed and assessed on its concrete effects and impact. Therefore, and on the basis of an analysis of the Belgian motorway network, the present paper critically questions the historical use of natural models and metaphors within transport studies. Although we recognize the merits of interdisciplinary, or even transdisciplinary research, and recognize that valuable inspiration can be found in other, seemingly unrelated, disciplines as well as outside the academic world, we are critical of using natural metaphors and models to explain, predict and plan human interventions. Not only do they seem to signal a return of overtly positivist ways of approaching the human world; they also evict the process of political-economics – and the consequential human strife related to the fundamental process of societal decision making – out of the equation. As we will demonstrate, de-naturalising the topology of transport networks precisely results in stronger historical explanations and stronger democratic policy practices.

## NATURAL SCIENCE MODELS AND METAPHORS

In the past few years Andrew Adamatzky has published with a number of co-authors a series of scientific articles on the rationality of motorway networks.<sup>7</sup> Their research method was rather unusual: a map of the study area was ‘drawn’ in a Petri dish by putting oat flakes on the location of cities. Subsequently, slime mould (*Physarum polycephalum*) was applied to the flakes representing the capital, and after the slime mould had grown and had connected all cities with a network of protoplasmic tubes, the resulting network was compared with the actual motorway network. The topology of the motorway networks in Belgium, Canada and China was best represented by the protoplasmic networks, while the lowest values of ‘bio-rationality’ were found for the networks in the USA and Africa.

The main author of these slime mould studies, Andrew Adamatzky, is ‘Director of the Unconventional Computing Centre’ at the University of the West of England in Bristol.<sup>8</sup> It seems indeed rather ‘unconventional’ to examine

transport networks using slime mould. However, as Mirowski reminds us, in the 1970s, 1980s and 1990s, leading economic journals published the results of experiments with laboratory rats and pigeons in which animals were seen as consumers with demand curves, as workers, and as players in different kinds of markets.<sup>9</sup> When plunging even further into history, the very idea of transport networks can be traced back to organic metaphors in the 19<sup>th</sup> century, on carefully constructed concepts reconciling the natural and artificial, as studied by scholars like Antoine Picon.<sup>10</sup> In fact the term 'réseau' (network) appears in engineering literature at the same time it is used in the medical sciences to refer to artery and nerve systems or tissue structures.<sup>11</sup> In the course of the 19<sup>th</sup> century, these organic notions moved from medicine, biology and engineering studies to the social sciences and philosophy, in which principles of the natural sciences were transposed to society as a whole.<sup>12</sup> These examples illustrate that the use of biological experiments is not unique, but taps into a long-running, and re-emerging positivist tradition of approaching and speaking about the human world as a 'natural environment'.

Indeed, a considerable number of studies have employed analogies and metaphors from biology, physics and other natural sciences, and what such studies share is the search for (an) order.<sup>13</sup> While the slime mould approach is situated at the margin of the discipline of transport studies, the application of gravity models is a significant element of transport economics and geography. Since the gravity model is used in transport models to estimate future demand to direct investments, its application is not an innocent act. The emphasis on rationality in the model suggests that society should strive for optimal transport networks. In a similar vein, newspaper articles reported that according to slime mould some motorways in the UK should be re-routed.<sup>14</sup> The question we raise is 'what kind of planning is mimicked by slime mould?'. The word 'polycephalum' in the Latin name of the organism means 'multi-headed' and indicates that the mould is a single cell with multiple nuclei. In other words, the development of a transport network is an organic process carried out by a decentral organism resulting in a rational, orderly outcome. From here it is a small step to Friedrich Hayek's war against central planning and his preference for spontaneous order.<sup>15</sup> In Hayek's view, no central planner can gather and process all available information to plan the most optimal outcome, instead, he proposes decentralised planning based on market mechanisms since the market can process information better.<sup>16</sup> The market is thus the ultimate information processor, on top of being an efficient allocator of resources.<sup>17</sup> Paradoxically, an opponent of the Chicago School of economics, William Vickrey, is credited for introducing this idea in transport economics, i.e. the idea that markets should guide investments in transport infrastructure on the basis of the willingness-to-pay of road users, which is 'decentrally' revealed in their willingness to pay tolls.<sup>18</sup> Also planning concepts like polycentricism in relation to 'bottom-up' policymaking, which are currently in vogue (see Davoudi)<sup>19</sup>, tie in with the notion of decentral development as well as with the splintered spatial reality.<sup>20</sup> In general, these concepts were used to describe and analyse the existing reality, but are increasingly deployed to plan and thus determine this reality.<sup>21</sup> The critical distance between analysis and project seems to be loosing ground when applying these 'natural' models.<sup>22</sup>

As indicated above, natural metaphors play a double role. On the one hand, biomimicry and gravity models are employed to explain the past growth of transport networks, on the other hand, the same models are used to plan extensions of existing networks. The former raises questions about the role of agency and contingency in the development of networks, while the latter reduces the role of government to building the optimal network that 'nature' reveals. To examine these issues, this paper focuses on the Belgian motorway network, a network characterised by a high level of 'bio-rationality' according to Adamatzky et al..<sup>23</sup> In what follows, however, we will argue that this supposed 'bio-rationality' of the Belgian motorway network is not a natural process at all, neither is it the outcome of 'naturalised' (read: 'neutral') market forces at work. Thus, natural explanations or models or only indicative on a descriptive level, but fail to analyse and explain what is driving historical change. To illustrate this central aim, we start with an analysis of the development of the Belgian motorway network using a classic gravity type of method. Subsequently, we complement and assess this analysis with a historical geographical view to indicate the shortcomings of naturalised models and metaphors.

## THE GROWTH OF TRANSPORT NETWORKS

Numerous studies have been published which simulate and explain the growth of transport networks.<sup>24</sup> It is generally acknowledged that networks start growing from and in between large centres while more peripheral parts of the network are built later. Once congestion becomes an issue, investments are again concentrated in core areas.<sup>25</sup>

Here, as is common in the literature, we focus on the topology of networks and on the question why a segment is added to the network (or not). Usually, the nodes in the network represent cities, although networks within cities are analysed as well.<sup>26</sup> Whether a segment connecting two cities is added to a network depends on construction costs, budgetary constraints, the structure of the existing network, and transport demand.<sup>27</sup> The latter factor is commonly estimated as in a standard transport model, i.e. demand is a function of both the size of and the distance between the cities: the larger the distance and the smaller the size of the cities, the lower the demand for transport between these cities. Rietveld and Van Nierop reformulate this in terms of the *rate of return on capital*: whether an investment in an additional segment is made depends on transport demand, which determines the receipts, which are in turn a function of passenger kilometres travelled (or in the case of freight, ton-kilometres). The number of kilometres travelled also determines the variable costs, while the length of the network is a proxy for the investment costs.<sup>28</sup>

Most studies use population data to estimate demand, although it is recognised that employment and economic development matter as well, but data on this are much more difficult to obtain. Regarding costs, expenses per kilometre are much higher in case of river crossings, steep slopes and marshes. Furthermore, the shape of cities is relevant since in more compact cities, a larger share of the population can reach a station or highway entry within a given time frame, and land acquisition costs might be lower.<sup>29</sup> Finally, investments in infrastructure can be motivated by political-military, mining, agricultural and exogenous reasons.<sup>30</sup>

## TRANSPORT PLANNING: TOPOLOGICAL MODELLING OF THE BELGIAN MOTORWAY NETWORK

Figure 1 depicts the (topological) growth of the Belgian motorway network. The unit of analysis is the segment, a finished motorway link between 2 of the 19 selected cities. The period under consideration is subdivided into three intervals: 1954-1965, 1966-1975 and 1976-2000.<sup>31</sup> For each of the three periods a regression model estimates the probability that a new link is added to the network.<sup>32</sup> The variables chosen were (1) demand, which is a function of the size of and the distance between two cities, (2) investment costs, which is a function of the length of a segment, and (3) overlap with the existing network, i.e. it is not very likely that a road is built close to an existing one. The results can be found in Table 1 in Appendix.

### Model 1: 1954-1965

On the eve of the Second World War, the Belgian government had started building a section of the motorway between Ghent and Bruges. However, it was not until the first half of the 1950s that the first segment connecting two cities was completed. From a topological perspective, Belgium was an edgeless graph at the start of this period, and taking into account the assumptions stated in Appendix, 79 segments could have been added to the network. In reality, only seven segments were completed in the period 1954-1965. Simple statistical analysis was used to explain why certain motorway segments were added, but none of the parameters were statistically significant at the 5% level, which might be partly due to the small sample size. Nevertheless, the estimates for the variables *segment length* and the *angle* between a segment and one of the other segments built have the expected negative sign. In contrast to what was expected on the basis of the literature, the demand variable has a negative sign, indicating that investments were mainly directed towards peripheral parts of the network. Note that no account is taken of the existing non-motorway network.



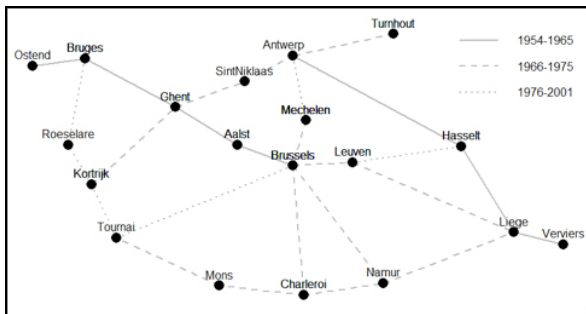


FIGURE 1 The Belgian motorway network



FIGURE 2 Plan with missing links (Source: Devallée 1938)

### Model 2: 1965-1975

After the completion of seven segments in the previous period, there were still 72 segments that could have been built. In the second period, thirteen segments were actually added to the motorway network and the regression model indicates that the larger the demand, the greater the probability of construction. Furthermore, a larger angle between the segment and other motorways increases the probability that a segment was built.

### Model 3: 1975-2001

The third period witnessed the completion of six additional motorway segments. The only variable that was significantly correlated with construction probability was the angle. Hence, the structure of the existing network seemed to be the main determining factor for new investments.

## PLANNING HISTORY: SOCIO.SPATIAL DEVELOPMENT OF THE MOTORWAY NETWORK

This contribution reflects on the search for rationality in transport networks, and rationality plays at least two roles in this context. First, scholars attempt to reveal the rationality underlying network growth to explain the historical formation of infrastructures. Second, it is regularly argued that infrastructure systems, and investments therein, should follow a certain rationality. The latter is especially clear in cost-benefit analysis, but we start here with a discussion of the explanatory power of models of network growth.

The case of the Belgian highway network illustrates that, despite a 'rational' outcome, investments were not made according to a 'rational' plan that can be summarised in one or two variables. The quantitative analysis of the development of this network reported in the present paper indicates that this supposed rationality is seldom followed and seemingly 'irrational' parameters literally deviate its growth. More specifically, for the early period, an explanation needs to be given why the segments connecting Ostend-Bruges-Ghent-Aalst(-Brussels) were built first (1954, (1956)), while the motorway between Brussels and Antwerp (via Mechelen) was not completed until 1981. Therefore, the quantitative part is complemented by a historical analysis which focuses more on the role, and indeed rationality, of historical actors and the wider institutional context.

In contrast to the early enthusiasm for motorways in countries like Germany, Italy and the United States, in Belgium this new type of limited access road for cars was perceived as 'snobbish' and indeed anti-democratic by many engineers and politicians. In addition to the loss of public street life, these roads would act as barrier, or 'Chinese Wall', in the densely urbanized landscape of Belgium. Instead of being a means to rebuild the nation

after World War I, the motorway would fragment the ‘typically’ Belgian landscape.<sup>33</sup> Even influential automobile clubs, often with a strong focus on recreational driving, preferred more exciting sceneries and capricious routes over functional and standardized infrastructure. Although the idea of special purpose roads was known in 1900, it took decades to make the concept acceptable in Belgium.<sup>34</sup> Consequently, the Road Fund, set up in 1928 by Prime Minister Henri Jaspar to reconstruct the damaged network as well as to respond to the growing popularity of the car, was not used for the conception of modern motorways. In this first wave of public works during the interwar period, engineers focused on adapting the surface and profiles to multimodal roads. For example, considerable investments were made in the Brussels-Antwerp connection, with some financial input from the legacy of King Leopold II. Accessible for cars, trams, bicycles and pedestrians in separate lanes, it was more than an ordinary road, but definitely not a motorway.<sup>35</sup> The availability of an, albeit somewhat less efficient, alternative might have reduced the need for an entirely new motorway between Brussels and Antwerp. Although the new type of multimodal road did not allow for high speed car traffic, it did incorporate the sociospatial motives of the Road Fund aspiring reconstruction and modernization. Infrastructure was designed as a collector of traffic and consequently attractor of urbanization and industrialization.<sup>36</sup> Translated to the slime mould method: not only the cities, also the connections between cities were designed to become attractors. Or, the mould had to transform into oat flakes: a fairly improbable evolution in natural science, a logic causal, and indeed intentional, development in history.

On the level of the network, engineers chose not to start from a clean slate, but to select existing roads requiring modernization, like the Brussels-Antwerp connection, as well as to graft new components on the existing network. Based on both contemporary flux diagrams and the aspiration to connect productive cities and regions for industry, leisure and agriculture, a plan of missing links was published by engineer-in-chief Armand Devallée in 1938 (Figure 2). Connecting Brussels to the coast as well as being part of the international London-Istanbul connection, the road between Brussels, Ghent and Ostend was defined as one of the four sections to be built first (Figure 3). Besides the logic of missing links, also regional preferences within the department of Public Works might have played a role in the geographical pattern, and speed of realization of the motorway network. In particular *Ponts et Chaussées* engineers in Bruges (Claeys and De Wulf), did believe in the potential of motorways.<sup>37</sup>

Although Devallée was critical for the road ‘as an obstacle’, he conceived a compromise between the contemporary mobility requirements and the road as ‘creating factor ... backbone of the agglomeration’.<sup>38</sup> When crossing thinly populated areas the road could be designed as limited access motorway. In or near urban areas the road had to transform to a multimodal road with level crossings and open to adjacent lots.

Although in the course of the 1930s and 1940s, several proposals were made, there did not exist a comprehensive motorway policy in pre-war Belgium. It is not until the 1950s that the integration of the variety of proposals lead to a national plan worthy of the name.<sup>39</sup> At the sixth Belgian road conference in 1950, engineer Henri Hondermarcq presented his program for 930kms of motorway defined by the twin goal of facilitating national socio-economic processes and surfing the wave of imminent European Integration. Hondermarcq presented Belgium, and more specifically Brussels and Antwerp, as the strategic crossroad of the new European politico-economic configuration, resulting in numerous connections linking Brussels and the port of Antwerp with its national and international hinterland. The following Road Fund positioned the Antwerp-Brussels region, and indeed connection, as an economic and urban core in both Belgium and Europe.<sup>40</sup>

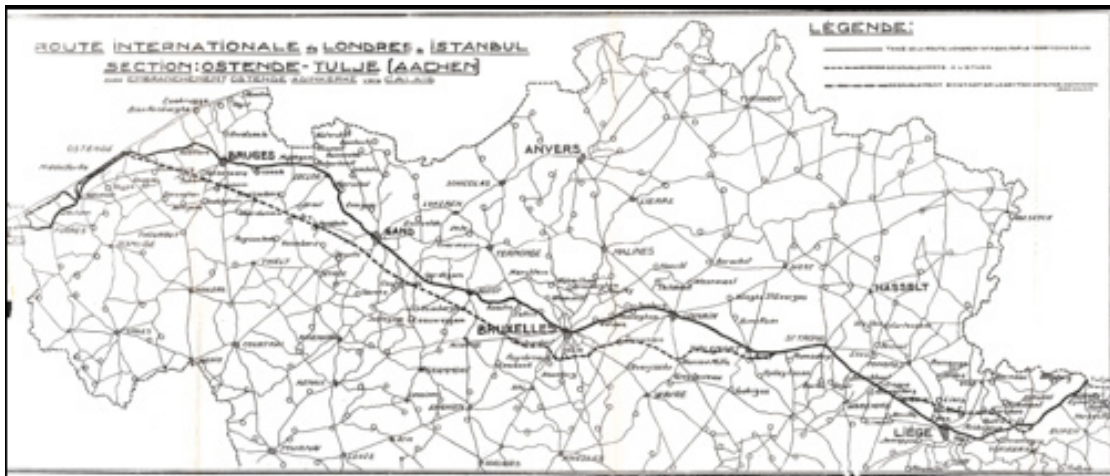


FIGURE 3 The Belgian trace presented at the Budapest conference on the London-Istanbul connection (Source: Claeys 1936)

## THE NORMATIVE FORCE OF SLIME MOULD AND OTHER FORMS OF TOPOLOGICAL RATIONALITY

As mentioned in the introduction, natural metaphors and models are not only used to explain the growth of transport networks, they are also employed to indicate which new segments would make the network more rational. Today, rationality is often defined in terms of productivity and demand, disguised in sweeping concepts on ‘natural’ development. Perhaps the most sustained critique comes from Karel Martens who points to the fact that demand-based cost-benefit analysis places a disproportionately large weight on transport projects beneficial for highly mobile groups. Accordingly, he proposes to replace the concept of demand by the concept of need.<sup>41</sup> Gabriel Dupuy, to whom we referred earlier, is aware that some logics, in particular the preferential attachment principle, might result in networks providing unequal access to destinations.<sup>42</sup>

Note that basing investments on ‘rational’ economic principles such as demand, productivity and efficiency, is distinctly different from an economic development rationale. Models based on principles such as demand and productivity identify projects that make the best use of resources, and this economic ‘rationality’ tends to favour the core regions, as is often argued in the regional policy literature.<sup>43</sup> In contrast, the economic development rationale of the post-war planning consensus aimed to develop the entire territory, and special attention was devoted to the growth of underdeveloped regions. Motorway construction in Belgium was mainly based on an economic development agenda,<sup>44</sup> fitting with a Keynesian state which emphasised planning and large public works.<sup>45</sup>

The distinction between economic development and market-based rationality can be seen in light of changing views about markets, the economy and economics. The modern view of the market popular in the first decades after World War II is built on the distinction between, on the one hand, a government sphere, and on the other hand, a market sphere, the economy.<sup>46</sup> Both spheres are supposed to follow their own logic. Applying this to the case of motorway planning, we have an engineering/planning logic aiming at national or regional economic development in the government sphere, and a market logic of firms which are supposed to locate themselves in new industrial estates near motorways. However, the modern government/market dichotomy has been blurred and has often been replaced by a neoliberal political rationality which boils down to the application of market norms, metaphors and logics to all social phenomena. Motorway construction is then no longer a tool of the Keynesian state, but the outcome of market-like processes. In the latter case, the consumption behaviour of motorists, preferably measured by their willingness to pay road user charges, indicates where new road capacity is needed.<sup>47</sup> This is nothing more than applying the principles of consumer democracy to motorway development, rendering public debate about road construction obsolete.<sup>48</sup>

Although metaphors can be interpreted in many different ways, the slime mould approach seems to correspond to the type of decentral market-like planning described above. Likewise, the demand-based gravity-style model can be used to replace democratic debate by a specific kind of technocratic decision-making.

## THE POTENTIAL ADDED VALUE OF MODELS

This paper offers a critical account of natural models that explain and plan transport network development. Nevertheless, these models have the potential to generate useful descriptive information for network planning. Dupuy refers to the use of graph theory in Geographical Information Systems (GIS) as an example of a fruitful collaboration between geographers and other scientists.<sup>49</sup> He also refers to the work of Laporte et al. who employ operation research methods to measure network characteristics and to suggest new designs for transport networks.<sup>50</sup> Laporte et al. stress the flexibility of the heuristics which can be adapted to meet a variety of objectives, in other words, the metaphors (which are abundant in the field of operations research<sup>51</sup>) and conceptualisations are less binding and constraining. This openness is a requirement for the use of models in network design if democratic dialogue is to be taken seriously, and if external actors are able to bring their own rationalities.

Despite its potential advantages, the topological approach has its limitations. The role and function of nodes may change over time and it is not certain whether a topological analysis will fully grasp changes such as the development of the Paris metro system from a relatively autonomous network serving the local population to one of the building blocks of a much larger integrated transport system.<sup>52</sup> Returning to the case of the Belgian motorway network, the topological analysis presented here ignores the lively debate that ensued over the integration of motorways in the urban fabric, democratic access, and the number and position of motorway entries and exits.<sup>53</sup> While it is possible to see each entry as a node in the motorway graph, this would add much noise to the analysis, and the approach would lose its appeal of rationality.

## DISCUSSION AND CONCLUSION: WHO HAS THE HIGHER EXPLANATORY POWER: SLIME MOULD VERSUS HISTORIANS

The question is how meaningful a distinction between ‘rational’ and ‘irrational’ factors and outcomes is, or between ‘predicted by the model’ and noise – or indeed between ‘objective’ or ‘neutral’ transport parameters like efficiency and connectivity, and, on the other hand, ‘subjective’ socio-political and cultural-economic factors. Earlier in this paper we referred to Gabriel Dupuy’s claim that studies of transport networks might benefit from interdisciplinarity, in particular from the application of natural science metaphors and analogies.<sup>54</sup> In a paper on transdisciplinarity in urban studies, Thierry Ramadier<sup>55</sup> recognises that ‘interdisciplinary bridges have been built’, but he also points to the existence of ‘contradictory theoretical schools’. The first school is mainly influenced by the natural sciences, with the gravity model as the most well-known example, while the second school is based on a cultural (critical, anti-positivist) vision. Regarding these schools, Ramadier states that ‘few attempts have been made to confront their points of view’. This paper takes up this challenge and confronted the ‘natural science’ approach to transport network development with a ‘historical’ view, and we particularly focused on the supposed and desired ‘rationality’ of transport networks.

We might conclude that while an *a priori* rejection of input from the natural sciences is not warranted, historical social science needs to uncover the underlying principles and rationalities of the models and concepts used. For example, the slime mould model used to mimic transport networks lends itself easily to describe it in terms of decentral market-like planning, and the economic concept of demand is regularly present in gravity-inspired models. The same metaphor can be used in many different ways, but what these examples illustrate is that it also evicts the process of political-economics – and the consequential human strife related to the fundamental process of societal decision making – out

of the equation. By ‘naturalising’ human sciences and historical explanations, the importance of political ideology and economic power within history is downplayed in favour of a positivist, technocratic reading of the human world. Material provided by this case study supplies fuel for discussion about broader issues, in particular the underlying ideological and political-economic claims associated with a particular methodological approach. This is especially relevant given the fact that models used to predict past transport investments are also employed to evaluate future investments in infrastructure. Quantitative approaches generally attribute a central role to the concept of demand, and thus degrees of ‘rationality’ are in fact linked to ideas of consumer democracy where individual demand guides investment decisions. In contrast, interpretations of a less deterministic nature emphasise the degrees of freedom of political actors/choice. We conclude that the views held by actors of the past, present and future of transport networks are relevant for democratic debates on transport policy since the metaphors and models used are not value-neutral.

## APPENDIX

To model the growth of the Belgian motorway network,<sup>56</sup> this study uses population data provided by the LOKSTAT project.<sup>57</sup> Data were aggregated at the municipality level (merged municipalities, since 1983, n=589) and distances were measured as the crow flies between the centroids of these municipalities (making use of Lambert 1972 coordinates). A threshold value of 50 000 residents was used to select cities. To this end, the population of all municipalities within a range of 5km was taken into account. Two cities which are located at a distance of less than 10km are considered as one urban area (this was the case for Mons-La Louvière and Hasselt-Genk). The centroid of the central municipality (whose name is used for the entire city region) is used for further calculations. On the basis of this method, there were 16 cities in 1931 and 19 in 1971.

The maximum number of edges in a network of 19 cities is 171 (note that cities in neighbouring countries are ignored, like in the work of Adamatzky<sup>58</sup>). In reality, only 26 segments were built (Figure 1). Only segments with a distance of less than 75km were used in the analysis (n = 79; note that the longest road built is Antwerp-Hasselt with a distance of 74km). Given the limited number of observations, the number of variables was kept small. Three binary logistic regression models estimated the probability that a segment was added to the network in the period under consideration (software: R). Figure 4 illustrates the situation.

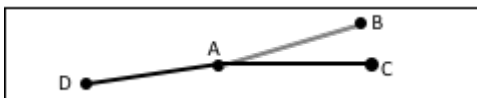


FIGURE 4 Graph representing four cities (A, B, C and D), one existing motorway (AB) and two possible connections (AC and AD) (Source: the authors).

The  $\cos \alpha$  variable is incorporated in the model to test the hypothesis that it is less likely that a more redundant segment was added to the network.<sup>59</sup> Given that AB has already been built, it is more probable that AD is added to the network than that AC is built. Since we might expect that it is known at the beginning of a period which segments will be built, the angle  $\alpha$  is measured between the segment under consideration and all other segments finished at the end of the period. When a motorway connects two cities without any other motorway connection,  $\cos \alpha = 0$ . The following independent variables were included in the analysis:

d: the distance between two cities, which is a proxy for construction costs

Demand ( $\log(D)$ ):  $D = \text{Pop}_A \beta_1 \text{Pop}_C \beta_2 / d \beta_3$ <sup>60</sup>

with  $\text{Pop}_A$ ,  $\text{Pop}_C$ : population of cities A and C respectively (in 1000s)

d: the distance between A and C

$\beta_1$ ,  $\beta_2$  and  $\beta_3$ : parameters, set at 1

$\cos \alpha$ ;  $\cos \alpha = (d_{AB}^2 + d_{AC}^2 - d_{BC}^2) / (2 d_{AB} d_{AC})$



**PERIOD 1954-1965**

Est.	Std. Err.	z value	Pr(> z )		
Intercept	28.96	23.22		1.25	0.21
log(Demand <sub>1951</sub> )	-4.29	3.14	-1.37	0.17	
distance	-0.15		0.12	-1.28	0.20
cos1965	-16.94	11.81	-1.43	0.15	
n = 79					
Y: new motorways 1954-1965					
Adjusted rho-squared = 0.86		AIC: 15.913			

**PERIOD 1966-1975**

Estimate	Std. Error	z value	Pr(> z )		
Intercept	-9.68	4.77	-2.03	0.043 *	
log(Demand <sub>1961</sub> )	1.14		0.50	2.28	0.022 *
distance	0.0096	0.032		0.30	0.76
cos1975	-2.25	0.99	-2.27	0.023 *	
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1					
n = 72					
Y: new motorways 1966-1975					
Adjusted rho-squared = 0.40		AIC: 59.531			

**PERIOD 1976-2001**

Estimate	Std. Error	z value	Pr(> z )		
Intercept	-0.94	7.08	-0.13	0.90	
log(Demand <sub>1971</sub> )	0.47	0.76	0.62	0.54	
distance	-0.0076	0.048	-0.16	0.87	
cos2001	-6.36	2.64	-2.41	0.016 *	
n = 59					
Y: new motorways 1976-2001					
Adjusted rho-squared = 0.62		AIC: 30.926			

TABLE 1 Results of three binary logistic regression models

**Acknowledgements**

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## Endnotes

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- 26 Levinson 2008; Levinson and Karamalaputi 2003a.
- 27 Levinson and Karamalaputi 2003b.
- 28 Rietveld and Van Nierop, 1995.; see also Koopmans et al. 2012.
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- 30 Kolars and Malin 1970.
- 31 Data regarding the growth of the Belgian motorway network stem from <http://wegen-routes.be> (access date 09/03/2016). This website takes 1965 and 1973 as cut-off points, here we take the year 1975 instead of 1973 to include the Tournai-Mons segment, which was finished in 1974, in the second period. No segments were added to the topological network in the periods 1965-1969 and 1975-1976, which makes these periods suitable candidates to act as breaks.
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- 34 Weber 2010.
- 35 Weber 2010.
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- 37 Ibid.
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- 40 Hondermarcq 1950, 1964; De Block, 2011.
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- 43 See e.g. Armstrong and Taylor 2000.
- 44 Ryckewaert 2009.
- 45 Witte et al. 2005; Saey 2013.
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- 51 Sørensen remarks that 'the behavior of bats, birds, ants, bees, flies, and virtually every other species of insects – it seems that there is not a single natural or man-made process that cannot be used as a metaphor for yet another "novel" optimization method', p.4; Sorensen 2015.
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- 59 Black 1971.
- 60 This corresponds to a gravity model, as used in most transport models. Following Black (1971), Demand is incorporated in the model as one variable to keep the model parsimonious.

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# MOBILISATION OF THE MASSES: POST-WAR URBAN PLANNING AND THE THREAT OF THE MOTOR AGE

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During the 1960s and 1970s signs of rapid and radical urban change were discernible all over Western Europe. Plans were launched for satellite towns with no fewer than 500,000 inhabitants as well as the wholesale demolition of nineteenth-century areas surrounding the larger cities' historic cores to make way for multi-lane expressways, shopping centres and spacious office blocks. The Netherlands was no exception in a zeal for modernisation that would alter the urban environment in fundamental ways. Several Dutch municipalities considered the comprehensive redevelopment of their inner cities, or at least those areas that planners deemed obsolete and out-dated. During the first half of the 1960s growth figures provoked and permitted the most ambitious plans, which would cast a long shadow over the years to come. This holds especially true for the way in which the tremendous rise in car ownership was perceived. The number of cars and commutes by car increased fivefold between 1960 and 1970. As early as 1963, future Labour prime minister Joop den Uyl argued that it was a democratic right for every worker to have his/her own car, a statement that signifies how mass motorisation was set to affect lifestyles profoundly. In the views put forward by Den Uyl and others, Dutch inner cities were in urgent need of redevelopment schemes that would correspond to the large-scale, uniform changes in society – setting in motion a process of creative destruction on a spatially fixed level. A first glance at these expressions and redevelopment schemes seems to correspond with the current historiography of post-war urban planning, in which planners are presented as overtly self-confident in determining the future of inner cities. The sources used in this paper however will allow for a different reading of Dutch urban planning during the 1960s. For Dutch planners the rise of the automobile posed a challenge rather than an opportunity, to which they responded with feelings of anxiety and resignation. They expected the Netherlands to be a fully motorised, overpopulated and densely built-up country by the year 2000. Contrary to current assumptions, the rise in car ownership led both planners and politicians to articulate gloomy and fearful predictions about its future impact on city centres. By focussing on their views, which were expressed in official documents, specialist journals and during council meetings, this paper will demonstrate that the professional and political elites of the 1960s designed and built car-centred cities not out of utopian aspirations, but out of a compulsive need and sometimes even a fear of what was yet to come.

## **Keywords**

post-war urban planning, automobile age, urban redevelopment





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# Floods and Infrastructure

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Chair: Errol Haarhoff



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# TOWARDS RESILIENCE IN CHENNAI

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The world is witnessing an increase of natural disasters due to climate change; inducing strongly, the awareness of building climate resilience globally. But the developing nations are facing challenges due to over population, growing economy and unplanned growth which negatively affects its resilience. One such example is the Indian city Chennai, which like other coastal cities, is vulnerable to cyclones and rains. Though the city has experienced major floods in the past; the recent unprecedented rainfall in the fall of 2015 presented an Indian context of climate change crisis – which is a consequence of expanding cities over existing environmental systems thereby damaging them severely. The city of Chennai, since colonial times, has been filling natural ponds, lakes and marshes to expand the city to allow closer proximity to the city centre for economic development. Thus it is essential to review the planning trajectory of Chennai and to recognise methods of planning used traditionally in the region to survive the environmental disaster, making the city flood resilient. This examination uncovers the traditional, the British Raj-era, the Post-Independence, and the contemporary development context in order to understand the local context for where and when coastal human settlement negatively impacted natural system.

## Keywords

climate change, resilience, urbanisation, india, floods

## How to Cite

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## INTRODUCTION

Global mean temperatures have increased, sea levels have risen, snow cover has decreased, glaciers and icecaps have started to melt, thunderstorms and torrential rains have occurred in dry areas, all pointing towards climate change<sup>1</sup>. Scientific researchers have already linked such intense weather phenomena to a changing climate and they unanimously agree that these indicators of climate-warming trends over the past century are mostly due to human activities. The Germany-based Potsdam Institute of Climate Impact Research, in its study, points out that of the total incidents of excessive rainfall that happened in the last 30 years, 12% can be contributed to climate change.<sup>2</sup> The United Nations has endorsed this position and forecasted that around 50 million people will become environmental refugees by the end of this decade. Due to this, most of the world is debating how to reduce greenhouse emissions that causes climate change and how to build resilience to the inevitable effects of climate change through various climate summits. Climate resilience is the capacity for a socio-ecological system to absorb stresses and maintain function in the face of external stresses imposed upon it by climate change<sup>3</sup> and to adapt to prepare for future climate change impacts<sup>4</sup>. Climate-resilient cities should therefore include mitigation and adaptation actions to take care of likely climate impacts, besides increasing the capacities of the population, infrastructure, institutions, and governance. The response mechanisms should also be focusing on preparing for extreme climate events such as storm surges, landslides, and floods.

The scenario in India is not very different. A 2006 study by the Indian Institute of Tropical Meteorology in Pune had shown that extreme precipitation events were increasing in frequency and intensity in India during the period 1950 to the 2000s including the heavy floods in Kolkata Chennai and Mumbai<sup>2</sup>. The case we are presenting today, Chennai, is one of low elevation coastal zone (10m above sea level) and is prone to floods and cyclones as per the study conducted by scientists at the Center for International Earth Science Information Network. Recently, the rains in Chennai have broken a 100-year record (374 mm in just 24 hours) causing a devastating flood. In November 2015, the city had received 1,218.6 mm (47.98 inches) of rain, which was almost three times more than the average the city receives (407 mm) which was 50 -90 percent above normal in the eastern states. Still more, 345 millimeters (13.5 inches) fell on Chennai in December 1 -2 storms, which were fueled by low-pressure system offshore.

Ironically, the city of Chennai still remains unprepared to combat rain during rainy season and water scarcity during summer season every year. The current occurrences of flood in the city are a wakeup call to think about how the city has developed without reflecting on its natural physiography, obstructing its natural hydrological system on a larger note and building over flood plains, marshes, lakes and ponds. Poor planning practices and relaxed enforcement of building rules have resulted in encroachment over majority of the city's natural system, affecting the urban ecology.

Its very vital for us to look back into the planning history of the city and problems related to its physical manifestation to understand the impact on environment and to with-stand the impacts of climate change. Unfortunately, the successive governments and authorities of Chennai have allowed weaker plans and poor enforcement of the rules. Amendments that regularise violations and exemptions that will benefit the more affluent has been pushed forward. It is easy to connect the devastation from the unexpected flooding to the results of nature and climate change when actually in fact; it is a result of poor planning and infrastructure. In Chennai, we are experiencing the destruction of our natural buffer zones such as rivers, estuaries, creeks, lakes and marshlands in the name of development.

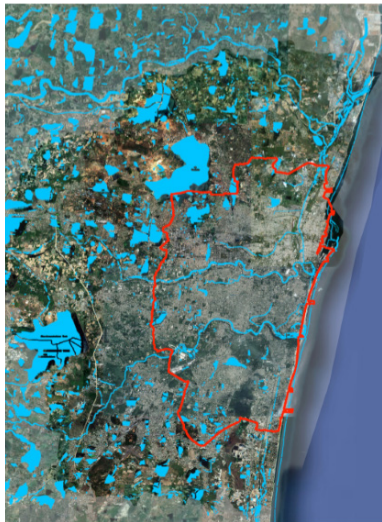


FIGURE 1 Map showing waterbodies of Chennai city



FIGURE 2 Map showing the old settlement pattern in Chennai in the context of the main waterbodies that existed that time.

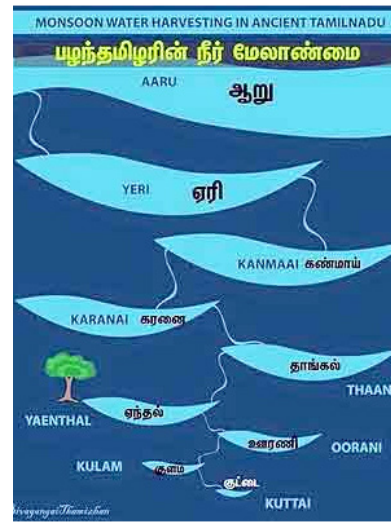


FIGURE 3 The connection between various typologies of waterbodies are shown in the diagram as Aaru (river)>Yeri (large waterbody)>Kanmaai>Karanai>Thanngal>Yaenthal>Oorani>Kulam (tanks or ponds)>kuttai (small ponds)

## APPROACH AND METHODOLOGY:

The paper is drawn from the comparative analysis of Chennai through past to the present structure of the city and its land use planning, physiography, environment planning, hydrological aspects and socioeconomic profile, infrastructure and disaster management. Information and data used were mostly secondary in nature. Reports and publications of different departments and agencies were put into use.

## PROLOGUE OF CHENNAI

Chennai (formally Madras) in Southern India on the Coromandel Coast of the Bay of Bengal is the capital of Tamil Nadu State, where the population has grown eight-fold over the past century. Chennai lies along Bay of Bengal in the Eastern Coast of South India where three watercourses meanders through it which are, Cooum River, Adyar River and Buckingham Canal<sup>5</sup>. Chennai is the 4th largest Metropolitan in India having a total population of nearly 47 Lakhs with 13% growth rate and density of 26903. The Chennai Metropolitan Area (CMA) covers 1,189 km<sup>2</sup> and is the third largest commercial and industrial centre.

## ANCIENT CHENNAI AND ITS HISTORICAL GEOGRAPHY

The site on which Chennai is situated has a long history. From the early days upto the 16<sup>th</sup> century AD, the area which constitutes the current city of Chennai saw growth under the Pallava,Chola and Pandya dynasties, later by the Naiks of Vijayanagara dynasty. Small towns in Chennai mainly grew as a major trading centres due to the presence of a sea port and also as an amalgamation of religious centres and settlements around it as seen in areas of Mylapore, Triplicane, Thiruvanniyur and Thiruvuttiiyur. These centres were formed with respect to trade links sea port and as well river linkages to the inland. The geographer Ptolemy had recorded it in the 2nd century AD that the Mylapore port was known to the Greeks and the Romans. The Port had a flourishing trade with the Roman Empire and received quantities of gold and silver in exchange for products like pepper and fine cloth<sup>6</sup>.



Chennai had good fertile soil with agriculture and trade as main occupation and developed as rich agrarian society with scattered small settlement around a nucleus of temple. Since the City doesn't have perennial rivers, it mainly depended on monsoon rains alone. Ancient times, a system was devised to conserve the water flowing in the rivers before it reached the sea. This is done through diversion of river water into tanks through dug out of these water channels. Cascading system of tanks has been followed to provide water for the far away villages from the main source of water. This helped in tackling any extreme situation like drought or flooding. Most of these tanks were seen as sacred and temples were built along it. Since their basic livelihood depended on the water-bodies water bodies were considered sacred and this approach helped to conserve them, directly or indirectly respecting the ecological role it has to play.

The water body map shown in Fig 3 showcases the ancient water management system of Chennai. The Yeri is a small body of water formed by damming a natural depression with bunds or embankments on three sides and leaving the fourth side open to the water that flows in from the catchment area. Water is stored for irrigation, drinking and recharging aquifers. Overflows are released through a weir and water for irrigation by a sluice which directs it into channels built to cover the entire designated area.<sup>7</sup> It is a small but precise feat of engineering designed for purely local conditions. There are thousands of these tanks or Yeris across Tamil Nadu. The Kulam shown in the diagram is the Tamil terminology for ponds/tanks. It shows the connections between the water bodies and how the people of Chennai were seen to have lived in a symbiotic relationship with nature and ecology. Other waterfront sites became small sustainable villages which survived on fishing, boat-making etc. Madarasipattanam was only a swampy fishing village.

In the early 16th century, Chennai was a settlement of scattered villages “on a sandy, shelving, breaker-swept beach” for centuries before the coming of the British. The land on which the city is built, forms a level of post-tertiary formation, not very much above the sea level. The eastern part is built on a ridge stretching along the coast. A parallel trough is seen on the west traversed by Cooum River in north and Adyar River in south which divides the city. Both the rivers have formations of sand-bars at their mouths due to the action of the waves which had driven the sand running north, which is characteristic feature of the Bay coast in this part. It is seen that the major settlement happened along these ridges traditionally, which highlights the fact that the people of Chennai built their settlements consciously by inhabiting the areas with slightly higher topography as they anticipated floods in the lower areas.

## CHENNAI IN THE BRITISH RAJ ERA

The colonisers, who came in later, did not prefer the already established urban centres of settlement – they rather looked at the under-developed cities as opportunity areas. In the 15<sup>th</sup> century, only Portuguese started showing interest in small villages and established trade with the traders. They were followed by the Dutch and Armenians in the 16<sup>th</sup> Century, who settled north of Madarasipattanam. In the 17<sup>th</sup> Century, the British declared Madras as a British port town and created a fort by 1630. This was when the foundation for the development of the present Chennai was laid (as seen in Fig 2). A white town for colonisers and a black town for the colonized separated by river Cooum came into being. The black town had thriving market and came to be known as George Town. Since City had formed over the ridges, the low lying lands with lot of interconnected lakes systems had remained untouched. The City started spreading in all the directions after the British came, because they concentrated on infrastructure development including roads and railways for their control over the land. Roads were laid towards northeast connecting Calcutta, to Mysore towards west, to kanchipuram and other southwards cities. All these connections were made connecting the existing scattered settlements at higher elevation in that direction. Since the road infrastructure developed in all the directions from Fort St. George, the closer proximity that the low lying lands had as they lay around the main transport axis, eventually were developed slowly, irrespective of the flooding condition. In addition to this, the formation of Royapuram railway station in 1862 induced people to

move northwards and settle in Royapuram. This gradually gave rise to the establishment of some timber saw mills and depots in Royapuram. Further, the railway line passed through the present Perambur area, which had so far been lying as swampy wasteland because of its low topographical level. The introduction of the railway line gave development potential to this place which was uninhabited until then.

By 1900s, the city extended over an area of about 70sq.km and had a population of 5.40 lakhs. George Town was the main business centre but substantial parts of it were used for residential purposes also. The main residential areas however were extensions of the older settlements. The areas outside these settlements were covered by gardens and agricultural lands with bungalows of the elite. A large number of tanks that were used for irrigation of cultivated fields started losing its importance and became place for breeding ground for malaria germs.<sup>8</sup> Hence they were filled up during colonial period as the economy shifted from agriculture to industries and for hygienic reasons as well. The filling of these tanks was a costly affair and it proceeded very slowly. As the water-bodies are connected, filling up of one tank will gradually cause the silting/drying of the other tanks. The larger tanks like the Vyasarpady Tank, the Spur Tank and the Nungambakam and Long Tanks have silted up and have been built over in parts.<sup>2</sup> These areas currently contribute to the large proportion of low-lying flood prone areas during the rainy season and remain dry during the remaining months.

By 1941 the population of the City increased to 8.6 lakhs and occupied an area of about 80sq.km with its extended boundaries. The important developments during the period 1901 and 1941 were the commissioning of the electrified suburban metre-gauge railway between Beach and Tambaram which gave a trigger for the development of the outlying suburban areas as far as Tambaram, and the development of the area occupied by the long tank at Nungambakkam was filled up and planned as a residential neighbourhood by the Corporation.

## CHENNAI IN THE POST INDEPENDANCE ERA

The 30 years between 1947 and 1977 saw tremendous growth in population and economic activity in and around the City. The population doubled itself in a short span of time. The main reasons for this fast growth can be attributed to the forces of economic activity released after the country obtained independence. The five-year plans and the impetus given by the industrial activity in the public sector brought about the transformation of the City from that of a purely administrative and commercial centre into a metropolis of national importance. Concurrently this period saw the deterioration in water supply and drainage services and mushrooming of many slum areas all over the city. The City's boundary no longer remained well defined. The developments extended into the adjoining areas, particularly, on the north up to Ennore, west up to Avadi and south up to Vandalur.

The land use in Chennai during the year 1973 indicates a predominantly agricultural based land use throughout the city with sporadic residential use, mainly concentrated along the major transportation corridors. Lots of water bodies are seen all through the city. The agricultural use had vanished to a great extent throughout Chennai during 2006 (As seen in Figure 4). Large parcels of land in the northern area of Chennai were lying vacant. Many of the small water bodies had also vanished. During this period, with the advent of Information Technology Policy by the Government of Tamil Nadu, several incentives were extended for Information Technology (IT) and Information Technology Enabled Services (ITES) projects. The Old Mahabalipuram Road was declared as IT Corridor improving the accessibility and permitting IT & ITES uses on either side of the IT corridor for a width of 500m. Declaration of IT corridor, extension of concessions / incentives and special provision for permitting multi-storeyed buildings for IT and ITES purposes throughout Chennai resulted in setting up of several IT Parks and ITES developments.

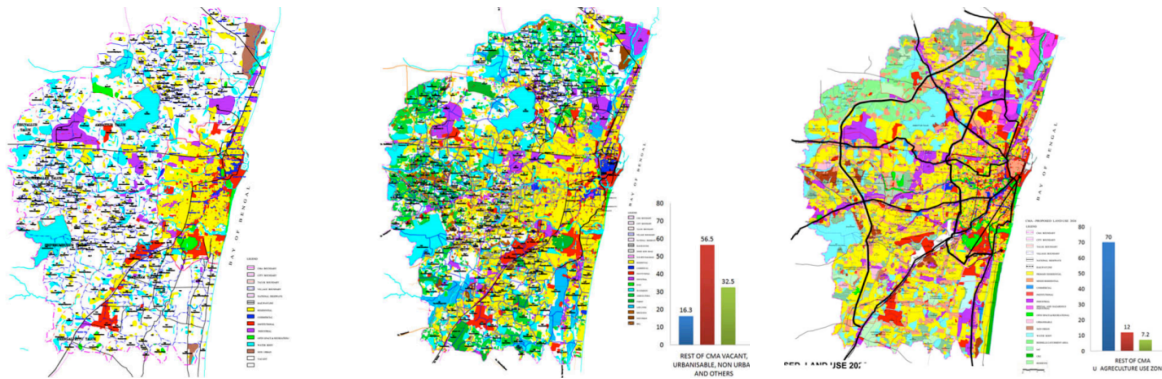


FIGURE 4 Chennai Landuse map 1975, 2006 and 2026 showing urbanisation over water-bodies

## UNPLANNED GROWTH OF CHENNAI AND CAUSES OF FLOODS

The growth of Chennai did not take place in a regulated manner nor did it correspond to the available infrastructure facilities. Chennai lacks natural gradient for free run-off which indicates the necessity of an effective storm water drainage system. Sewage system in Chennai was originally designed for the population of 0.65 million at 114 L per capita per day of water supply (further modified during 1989 – 1991) which is now inefficient as it is below the required capacity. The two rivers Chennai, Cooum and Adyar are almost stagnant and do not carry enough water except during rains when they play a major role collecting surplus water from about 75 and 450 tanks, in their respective catchments during floods. Buckingham Canal, built by the British, originally a navigation channel and waterway, now serves only as drainage channel. Chennai being a seafront city is inundated with low-lying areas which have an eco-sensitive relationship with the hydraulic system of the metropolis.

The city experiences floods during monsoon which is the dominant season of the year. During floods, water level of different water bodies rise and flow to different floodplains submerging them. The rapid growth of population which brought in an urgent need for urbanisation lead to encroachment on water bodies and water courses, unplanned laying of roads against natural slope in unapproved layouts and construction of buildings over and above these ecologically significant areas. These activities lead to severe floods during heavy precipitation, causing inundation of dwelling areas. Chennai had experienced such floods during 1943, 1978, 2005 and further, the recent unprecedented rainfall in the fall of 2015 caused by the El Nino phenomenon had collapsed Chennai massively with flash floods. Hindsight is important and it can prevent every tragedy before it commences. But unfortunately, it is always been reminded after these event. It is indeed a temptation to see how the city might have been saved if the existing natural safeguards hadn't been exploited.

Chennai with the fast pace of developments has witnessed a steady deterioration and decrease in the number of water bodies. It is estimated that more than half of the wetlands have been converted for other uses. Chennai had about 6503 small and big water bodies in and around the city, but today the number has been reduced to less than 30. In many of the water bodies, green cover and natural depressions have disappeared due to negative human interaction and filling with wastes or developments/encroachments leading it to be flood prone areas<sup>5</sup>. Figure 5 compares the flood prone zones and change in urbanisation of the area around a few water bodies in North-West Chennai. It can be seen that the flood prone areas have been declared as new areas for development according to the masterplan.



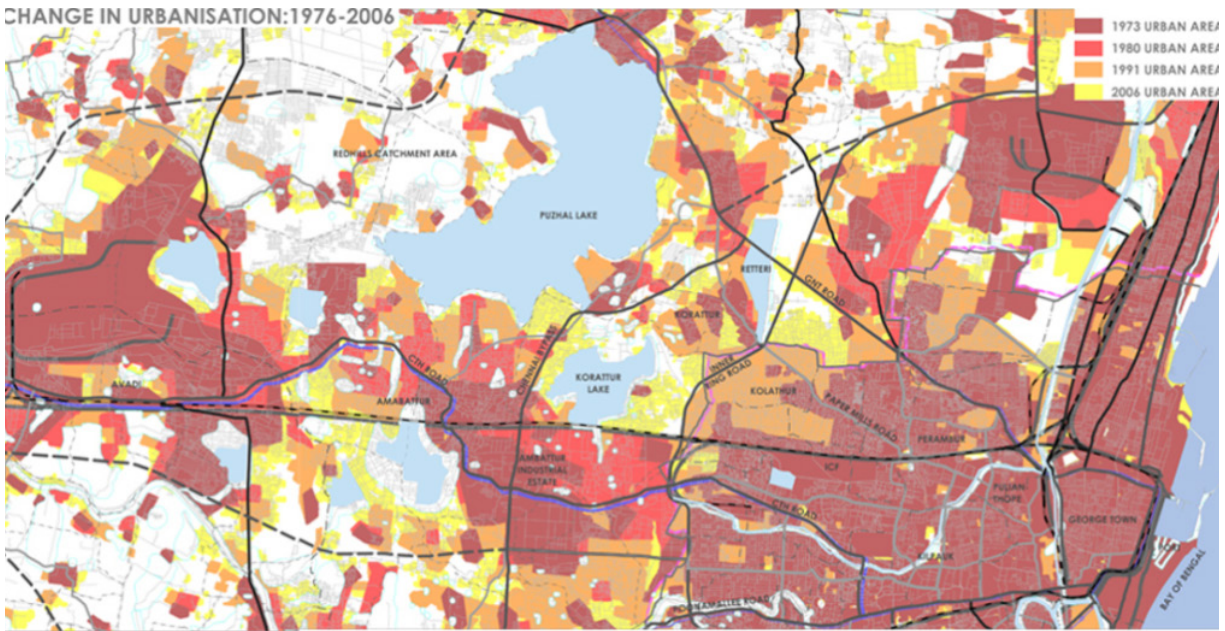


FIGURE 5 Flood prone zones and change in urbanisation along CTS road

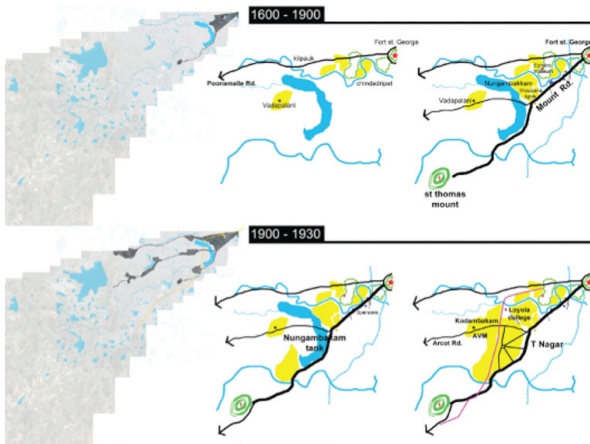


FIGURE 6 Urbanisation, Open spaces and topography of parts of Chennai

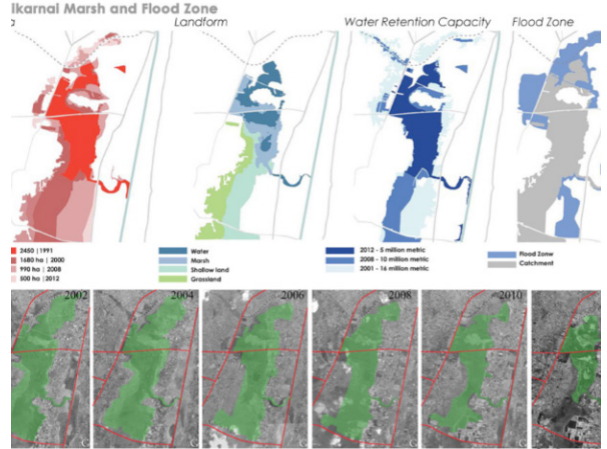


FIGURE 7 Pallikaranai marsh and flood zone

Chennai, a city that is so desperately short of water, is also prone to flooding, especially in so-called low-lying areas. Usually it is worst in the suburbs, though central areas such as T. Nagar and Mambalam which didn't exist on the old maps which is particularly prone to inundation are either on the edge of a lake or was part of a lakebed. It can be observed today that flooding as a result of heavy rainfall is 'naturalised' as being the result of 'naturally low-lying areas'. Though not false, this interpretation ignores the causes of filling in traditional water tanks and their interconnections, which would ultimately lead out to sea.

The old city of Madras was full of Yeris across its length and breadth. A great many of them have been filled up and built upon as we discussed earlier during the British Raj era. For instance, the so-called Lake Area that spans Nungambakkam and parts of T. Nagar is currently one of the perennially problematic localities. Parts of this area had four to five feet of water on the streets, and were unreachable for days after the deluge. Residents were trapped in their homes without power or water. The only food was what they had before the rain started. Dry ground was just minutes away in some cases but there was no way of getting to it.

“Make in Chennai” boom has also helped in worsening the situation. The airport built on the floodplains of the River Adyar, a huge bus terminal in flood-prone low lying land of Koyambedu, a Mass Rapid Transit System constructed almost completely over the Buckingham Canal and the Pallikaranai marshlands, expressways and bypass roads constructed with no regard to the tendency of water to flow, IT corridor and a Knowledge Corridor consisting of engineering colleges constructed on water-bodies, automobile and telecom SEZs and gated residential areas built on important drainage courses and catchments are the result of this.

Most of the area of the IT Park was a freshwater swamp until independence. Pallikaranai, the area close to where the IT park is situated, was once a complete aquatic ecosystem spread across approximately 80 sq km, the city’s only surviving wetland and one of the last remaining natural wetlands of south India. It is also a vast drain for the excess of monsoon precipitation in a catchment area of about 235 sq km. Today about 90 per cent of the marsh has been lost to development but the shrinkage was gradual until the IT corridor was designated. This triggered a real estate boom in this area and the marsh was slowly cleared, filled and built upon. Pallikaranai became a part of the Chennai Corporation in 2011 and is one of the country’s top investment destinations in residential real estate. A report by global property consultancy Knight Frank estimated that housing prices would increase 93 per cent in the period 2012-17<sup>7</sup>. It’s a abode of high-rise apartment for the IT employees. The villages surrounding the marsh also turned into prime real estate. All the warning about drainage, low-lying areas, danger of inundation and experiences of the past floods were completely ignored.

## EXISTING AND FUTURE CLIMATE RISKS

There is a substantial increase in the amount of rainfall in Chennai due to the increased precipitations due to global warming and climate change, apart from the usual monsoons. Moreover, coastal regions like Chennai is also vulnerable to storm surges or cyclones. It has been anticipated that the frequency of cyclones in Bay of Bengal is going to decrease whereby the intensity of these cyclones is going to increase. Stagnation of cyclones can cause large amounts of precipitation limited to a smaller area. This phenomenon presents a challenge for urban infrastructure as well as disaster risk measures.

One of the most devastating impacts Chennai is struggling with, are flooding events caused by an immense amount of precipitation in a very short period. One or two days of heavy rainfall leads to ten or even more days of flooding. In a long-term perspective, climate change related sea-level rise has the same effect. It presses water into the rivers and threatens the survival of entire ecosystems like mangroves on Tamil Nadu’s coast. With the loss of mangroves, the coastal water quality, biodiversity, and fish habitats will be reduced. Furthermore, sea-level rise can lead to changes in ground water recharge.

While flooding in Chennai is not as common as in many other metropolitan cities in India, it does occur during the northeast monsoon season from October to January. Certain low lying areas of the city are worse affected and the single major reason for this is unauthorised construction of multi-storey structures which fail to follow the principle of zoning, road widths, limits to building heights and the Floor Space Index (FSI). Another disturbing factor for flooding in the city is the encroachment onto water-bodies to build multi-storey structures.



## CONCLUSION

Every invitation to “Make in Chennai”, is leading the city to unmake itself and Chennai is eroding its resilience to perfectly normal monsoon weather events. The infrastructure of big commerce has replaced the existing infrastructure to withstand natural shocks. These are all man-made disasters and we need to take drastic steps to immediately arrest and reverse these developments. It is critical that we have high quality data and knowledge of our urban ecology and built drainage networks in the public domain, the lack of which has crippled the impact of citizens and activists in the city. One immediate need for a map of the current floods would be to identify the most vulnerable neighbourhoods to sharpen the government’s response, particularly for the urban poor. By adding information about the contours and elevation of the city we can create zones of risks from future instances of flood and the resulting potential vulnerabilities. We could also use such a map to assess the extent of damage to life and property, and to monitor if the government’s current relief and response efforts are appropriate. Such a map can also be layered with information about other public infrastructure, such as primary healthcare centres, dispensaries, storm water drain network etc, to help build resilience and disaster management measures. Mapping information on the extent and nature of violations and encroachments and the ways in which violators compromise public health, safety and convenience of other residents of the city, makes a compelling case for the planning and monitoring authorities to enforce building norms, impose penalties on violators and to reclaim the ecologically valuable areas.

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## Disclosure Statement

No potential conflict of interest was reported by the author.

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# TRAFFIC IN TOWNS, THE LOSS OF URBAN RESILIENCE AND THE CASE OF AUCKLAND'S CIVIC CENTRE

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University of Auckland

There are cogent arguments supporting the idea that resilient urbanism requires successful streets. Successful streets in city centres require a balance between efficient traffic movement and spaces for pedestrians on which urban vitality and economies depend. This balance was fractured in the 1940's with the growth of car ownership, and traffic solutions prioritising vehicle movement. Responding to these issues in 1963, the Buchanan Report, *Traffic in Towns* advocated building motorways in towns, but in such a way that these circled what were called 'environmental areas'. Auckland enthusiastically embraced motorway construction from 1955, and proposals to build a new civic centre at this time were seen as an opportunity to improved traffic flow in the inner city. This included the insertion of a new circular street, Mayoral Drive, cutting across the previous small scale grain of blocks and streets. The success of this street 50 years since its construction is assessed using urban design criteria. The conclusion drawn is that apart from two small areas, Mayoral Drive remains a largely unsuccessful street at the heart of Auckland, with a configuration that remains difficult to remediate from both a private and public investment point of view.

## **Keywords**

successful streets, traffic, quality urbanism, modernism, civic centres

## **How to Cite**

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## INTRODUCTION

Ewing and Clemente (2013) begin their book *Measuring Urban Design* asserting that ‘in terms of the public realm, no element is more important than streets’<sup>1</sup>. Successful streets in the context of city centres are those that facilitate necessary traffic movement, but prioritise pedestrians to create public realms that attract people, enhance opportunities for social interactions, and provide a framework for necessary economic activities at a range of scales<sup>2</sup>. Ehrenfeucht and Loukaitou-Sideris argue that successful street depends on the quality of the sidewalks as distinct public space, and the extent to which this encourages pedestrian foot traffic<sup>3</sup>. Resilient urban centres require good streets to achieve and sustain good social and economic outcomes.

However, understanding the important relationship between traffic movement, pedestrian activity and urban vitality become fragmented in the 1940’s with the rapid rise of private car ownership and shaping cities to better accommodate traffic movement. City centres increasingly became more hostile places for people, which in turn triggered critical responses<sup>4</sup>. Concerned with increasing traffic congestion and pedestrian safety in the United Kingdom in 1942, Alker Tripp observed that a ‘formidable...conditioning factor’ in cities was modern road traffic, and called for co-ordinating ‘the technique of town planning and road traffic control’<sup>5</sup>. A more comprehensive response to this relationship was articulated in a UK government study, *Traffic in Towns*, published in 1963. Led by Colin Buchanan, the remit was to ‘study the long term development of roads and traffic in urban areas and their influence on the urban environment’<sup>6</sup>. The Buchanan Report came to the view that ‘the future of the motor vehicle...is assured’<sup>7</sup> and went on to advocate that the UK should not only follow of the United States lead in building motorways between cities, but also to build them in cities. Recommended was the ‘canalization of longer movements on to properly designed networks serving areas within which...environments suitable for civilised urban life can be developed.’<sup>8</sup> This involved the establishment of what were called ‘environmental areas’<sup>9</sup> able to sustain quality urban life, surrounded by major roads dedicated to traffic movement. Envisage as ‘urban rooms’, the environmental areas were seen as places where ‘people can live, work, shop, look about, and move around on foot in reasonable freedom from the hazards of motor traffic...’<sup>10</sup> While the Report declared the motor vehicles ‘indispensable’ to the modern Motor Age, its significance was a search for a ‘balance’ between planning for motor vehicles and maintaining quality spaces for pedestrians in ‘environmental areas’.

Typical to many cities around the world, Auckland was early to respond to both building an urban motorway system and making inner city road improvements for more efficient traffic movement. Decisions to invest in Auckland’s motorways stem from what Mees and Dodson argue to be ‘one of the most extreme automobile oriented transport policies pursued by any major city between the 1950s and 1980s’<sup>11</sup>. This was driven by the 1955 *Master Transportation Plan*<sup>12</sup> opposed at that time by New Zealand Railways advocating the modernisation rail system and investment public transportation. The decision to invest in motorways was taken by a Technical Committee dominated by road engineers, who offered little in the way of justification of their decision. This, Gunder suggests, had broader motives related to:

- a complex set of values partially imbedded in American liberal concepts of material progress; the unquestioned value of growth, including the perception that the ‘unlimited’ land of the ‘new-world’ is only of worth when developed; and, foremost, individuality—as exemplified by the artefacts of the personal car and ‘freeways’.<sup>13</sup>

Mees and Dodson reinforce this argument by pointing to the way in which the 1955 *Master Transportation Plan* was bolstered in pictorial form:

- with eight full-page photographs showing traffic congestion in Auckland, which are then followed by are followed by eight pages of photos of freeways and multi-storey car parks from American cities. A powerful impression is created of a contrast between a backward Auckland and an American ideal of modernisation.<sup>14</sup>

Concerned with the fact that Auckland's population was growing faster than forecast, led to the subsequent appointment by the regional authority of the American international transport engineers, de Leuw Cather to reassess the city's transport plans. As Mees and Dodson observed, this moved the justification for motorways beyond an 'insistent rhetorical tone' to the deployment of computerised transportation modelling, and as Gunder further observes, added 'American-predicated value-goals of material progress and 'development'...masqueraded as value-free scientific and engineering expertise'.

Not only did Auckland build a motorway system that facilitated subsequent car-dependent, low density suburban sprawl, but also a number of micro-scale arterial road constructions intended to prioritise vehicle movement and improve traffic flow in central city locations. A mid-20<sup>th</sup> century decision to proceed with the building of a new civic centre was seen by the city as an opportunity to improve traffic flow in this part of the CBD. The outcome was the construction of a new street, Mayoral Drive, circling around the proposed civic centre, effectively enclosing the 'civic heart' of Auckland in an 'environmental area'. This paper reports on an analysis of Mayoral Drive to understand why it has failed to achieve urban vitality as a street fifty years after its construction.

## CREATING A 'CIVIC HEART'

Ian Morley observes that the field of civic design is a relatively unexplored domain within urban planning, despite manifest ways in which colonial authorities sought to 'express local pride and notions of nationhood'.<sup>15</sup> The first permanent civic building in Auckland was constructed in 1887, followed by the Town Hall in 1909, adjacent to the city market.<sup>16</sup> Creating a civic centre and square in this location was an early aspiration for the city, evident in a 1968 history written by the town planning division: '...since the erection of the Town Hall in 1909 particular attention has been paid to the area around it as the possible site of a Civic Centre, the focal point of civic life, and the one place able to be called the "heart" of the City'.<sup>17</sup> Several proposals followed including the 1911 one by Charles Read, and a winning entry to a 1923 competition by Gummer and Ford (see Figure 1), along with further amended proposal through to the 1940's, but none of these were realised.<sup>18</sup>



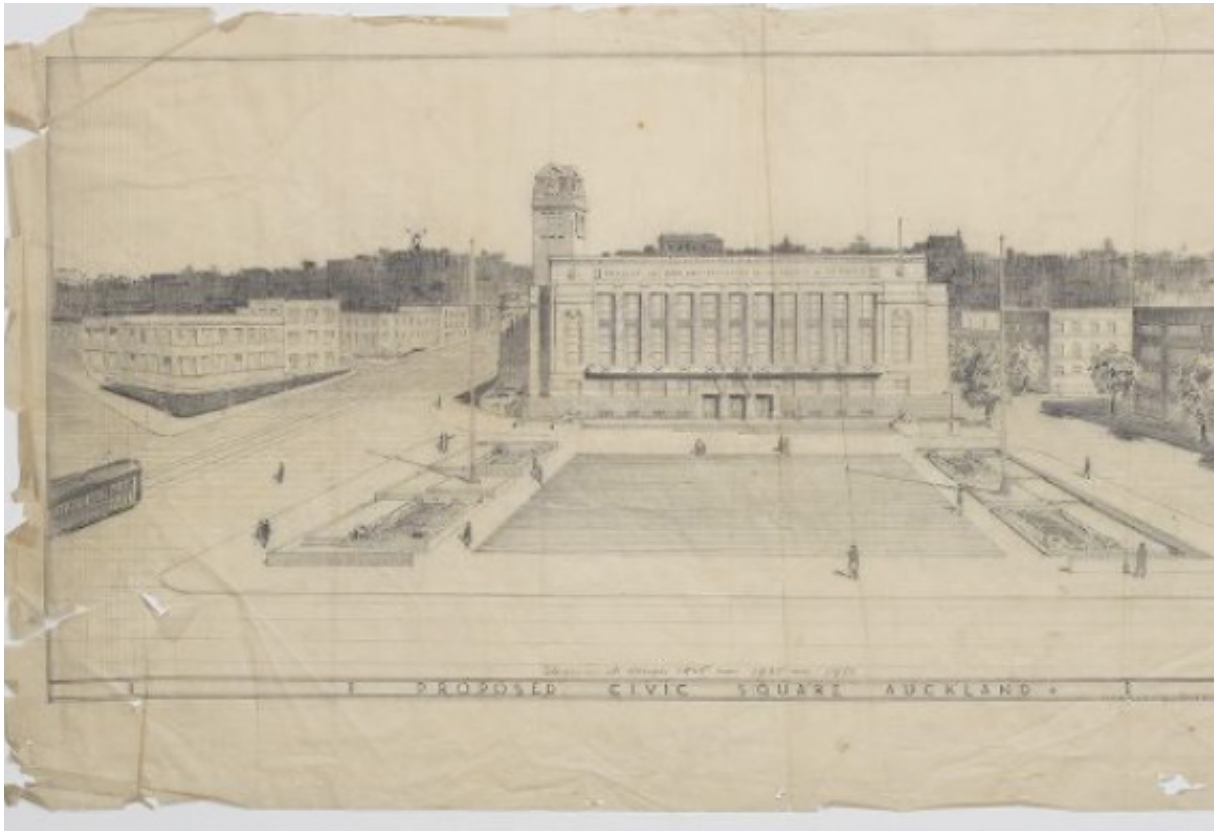


FIGURE 1 Gummer and Ford's proposed civic centre and city square for Auckland

New impetus came in 1945 following an agreement with the New Zealand Government to combine the requirements for both the central and local governments in the same civic centre. Despite the potential for a cooperative approach, the process led by the government, turned out to be antagonistic both over the design and financial responsibility. Whereas the pre-WW2 proposals were all neo-classical in character, the post war schemes were all heavily reflective of modern architecture at the time. In part this was consequence to the appointment of T.K Donner as city architect in this year, and the European modernism advocated by him and the Ministry of Works at that time. The initial scheme called for the demolition of significant buildings, including the 1909 Town Hall and the 1929 Civic Theatre. In their place, nine slab blocks containing civic offices, a new civic theatre and underground parking garage was proposed, surrounding a new city square (see figure 2).

Rival alternatives schemes prepared by the city council and the government's Ministry of Works followed, until there was acceptance of a somewhat compromised scheme 4 (see Figure 3), that become the basis for the development from 1951. Essentially this divided the interests of the city and government between sections of the site, the one government building realised (the Bledisloe Building) having commenced construction before resolving what constitutes a poorly considered masterplan and development process. The city proceeded with its administrative building designed by the city architect in the form of a tower, rather than a slab block, followed by the more controversial civic theatre in the 1990's<sup>19</sup>.

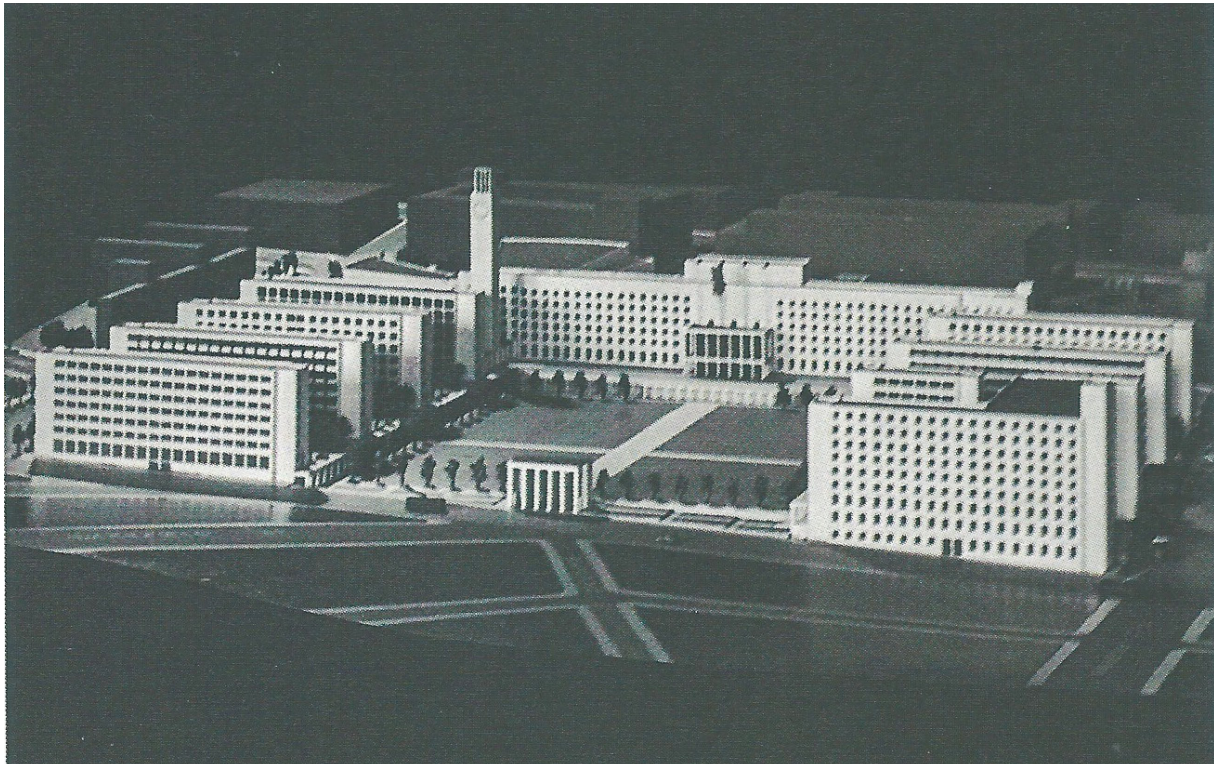


FIGURE 2 The government's Ministry of Works first proposal for the Auckland Civic Centre, 1946.

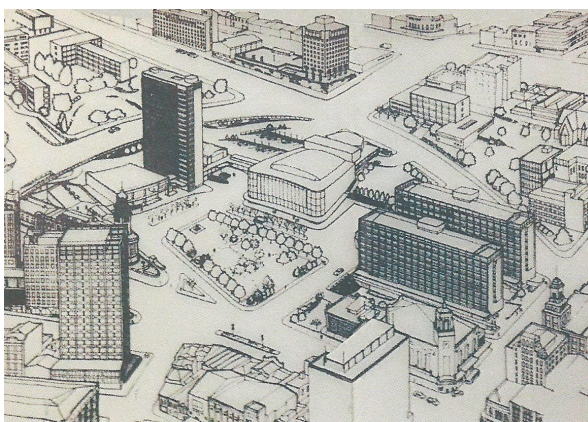


FIGURE 3 The fourth civic centre proposal, 1951, retains the 1909 town hall. The intention to include the new street (Mayoral Drive) to the west to the civic centre in this proposal is very evident in the agreed scheme. Only one of the slab blocks for government office was built.



FIGURE 4 The city engineer's plan for Quadrant Road (later renamed Mayoral Drive) and its extension to the south and east of the civic centre.



## ACCOMMODATING TRAFFIC MOVEMENT AROUND A CIVIC PRECINCT

Among objectives in various proposals was the city engineer seeing the civic centre construction as an opportunity to improved traffic movement in the CBD. The scheme 4 adopted (see Figure 3) clearly shows a new street, Quadrant Road (later renamed Mayoral Drive), curving around the proposed civic centre. The city engineer also pushed for this new road to be extended through commercial properties to the south and east of the civic centre, to complete a loop.

The route of Mayoral Drive as proposed (and constructed) is shown as an overlay on a 1942 photograph of this part of Auckland (see Figure 4). This new road also provided a connection along Wellesley Street to the planned motorways. The thinking behind the road engineering followed what was seen by the city town planning division as modern thinking about civic centre design in post WW2 United Kingdom:

- *the modern trend in the planning of administrative centres as evidenced by the latest reconstructions schemes for devastated areas in English cities is towards the formation of 'Precincts' by running the main thoroughfares round the area and arranging the buildings and access thereto so as to discourage 'through' traffic with the area<sup>20</sup>*

Consequently, what was added to the 1951 masterplan for the civic centre, was the creation of a civic precinct, around which ran an arterial road, avoiding as suggested any through traffic. However, to complete the road loop also required extension across commercial properties to the south and east of the civic centre, providing access to the planned motorways along Wellesley Street. To achieve this vision required large scale engineering works and building demolitions. Exiting roads running across the designated civic centre site were closed and removed (as shown in Figure 4). The most significant closure was that of Greys Avenue that converged with Queen Street to define the wedge shaped site of the Town Hall. The natural topography also required the construction of vertical retaining walls along the inner side of the new street, and in parts of the outer side. In addition, to maintain access to a park to the south of the Town Hall (Myers Park) a bridge was required. The inclusion of retaining walls along much of the street edge resulted in a number cross streets being severed (shown in figure 4). Consequently, the finer grain of streets and urban blocks that previously existed in this part of the CBD were lost and replaced with a large block surrounded by a busy road – the 'canalisation' of traffic movement and creation of 'environment areas suitable for civilised urban life' later to be advocated in the Buchannan Report.

## ASSESSING THE URBAN LEGACY

While there is agreement on the role of streets in contributing to good urbanism, urban design practices tend to be less rigorous on methods of objective analysis related to perceptual urban qualities. There is, however, a growing literature on such methods. Ewing and Clemente (2013) for example, propose a methodology to assess the quality of street spaces that incorporates the physical features (such as footpaths and street widths, traffic volumes, the level pedestrian activity, etc.) and less tangible perceptual qualities (such as imageability, legibility, sense of enclosure, etc.)<sup>21</sup>. The first way in which Mayoral Drive was assessed as a street and public realm, was to identify key physical features defining its qualities from a detailed field survey. The street length, close to one kilometre, was subdivided into 13 segments, each approximately 75 metre in length. The dominate features from the perspective of a pedestrian are: signalise pedestrian street crossings, access to parking crossing the footpath, the vertical retaining walls creating differences of level between the street and adjacent sites, imposed horizontal separation between the footpath and adjacent building, street frontages with retail activities, severed street intersections, and adjacency to open car parking areas. The outcome is recorded in table 1 in terms of the presence or absence of these features, and also shown in Figure 5 for each of the street segments surveyed, and graphically shown in Figure 5.

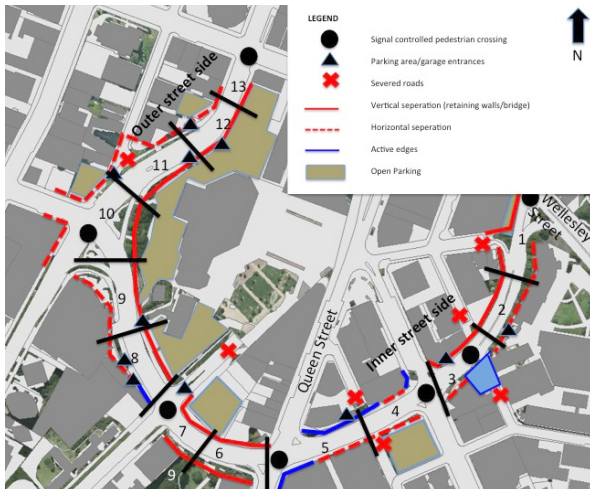


FIGURE 5 Analysis of the physical characteristic of Mayoral Drive, identifying the 13 analytical segments over a 2014 figure-ground map, for the inner and outer street sides.

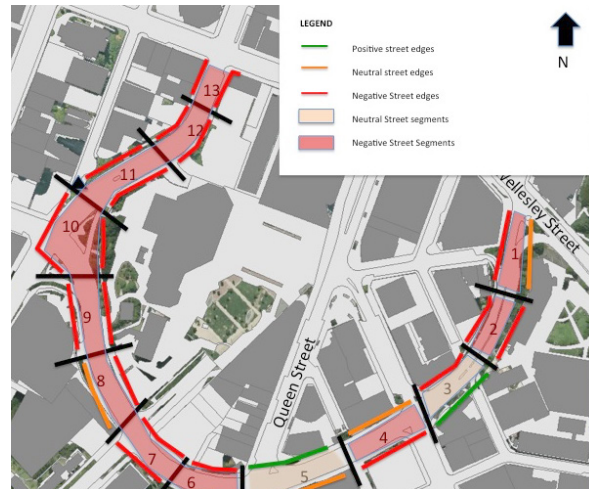


FIGURE 6 Analysis of pedestrian street attributes for the inner and upper sides of Mayoral Drive, and summation for each street segment.

Dominant are vertical retaining walls largely to the inner parts of the street to adjacent land located a lower level, a large number of entrances to parking garages and parking lots cutting across footpaths, and the large area of land still used as open car parking, despite the central city location. Horizontal separation refers the lack of connection between streets and adjacent building despite the potential for this to exist, and again this features strongly. Also very visible are the streets where connection was severed by the construction of Mayoral Drive. Signalled pedestrian crossings are fairly frequent although with the exception of one in segment 3, they are primarily intended to control traffic flow. Only four of the 13 street segments have activities such as shops and building entrances interacting directly with the street. Overall this suggested a poor street environment, but to further validate this conclusion a second method was deployed.

- Ensuring that streets encourage are ‘assembled’ (concentrated) rather than ‘disperse’.
- Ensuring that pedestrian movement is prioritised over traffic.
- Ensuring that street possess attributes able to ‘invite’ people, rather than to ‘repel’ by having no walls, short distances, low speed, single level and face-to-face orientations).
- Quality street conditions that engender a sense of pedestrian ‘protection’ (feeling safe, secure and few unpleasant sensory experiences).
- Quality street conditions that engender a sense of comfort (easy to walk, stand, sit, etc.).
- Qualities that engender ‘delight’: human scales, good climatic exposure (sun, wind) and positive sensory experiences (trees).
- Active street interface with adjacent buildings, ranging from most ‘active’ (15-20 doors/100m) to ‘inactive’ (0-2 doors/100m).

Using the seven successful street attributes identified by Gehl above, the street conditions on the outer and inner sides of Mayoral Drive were assessed for each street segment. This involves a scoring system ranging from 1, where the attribute contributes very negatively towards the pedestrian experience, to 5 where this is very positive. Table 2 below provides the outcome to this assessment. For the inner and outer street edges, scores are group into three ranges: negative (score of 16 or less), neutral (score between 17 – 26), and positive (more than 27). Only two street edge segments scored in the positive range (segments 3 and 5), while five scored in the neutral range. The majority of street edges in the segments score in the negative range.

STREET SEGMENT NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13
Signalise ped crossing	■												
Parking access points													
vertical walls/bridge	■	■	■	■	■	■	■	■	■	■	■	■	■
horizontal separation	■	■	■	■	■	■	■	■	■	■	■	■	■
active street fronts													■
closed street intersections	■	■	■	■	■	■	■	■	■	■	■	■	■
Adjacent open car parking	■	■	■	■	■	■	■	■	■	■	■	■	■

TABLE 1 Ground survey of physical characteristics of Mayoral Drive by street segment.

This is also shown graphically in Figure 5, where the street edges in red indicates negative (poor) street qualities. Also visible, is the fact that most of the inner edge to Mayoral Drive has negative conditions, in part the result of the retaining walls along most of the road length. Table 2 also shows a summation of both the inner and outer street edge scores, to provide an indicative overall rating for each of the street segments (also graphically show in figure 6). With the exception of two segments, the entire street length has scores in the negative range, indicating poor quality from a pedestrian perspective. It is interesting to note that a new café established on the ground floor in segment 7 failed within a few months due to the lack of pedestrian traffic.

The two exceptions are important for different reasons. Segment 3 is adjacent to the Auckland University of Technology campus, and new buildings running on the outer edge of Mayoral Drive have attempted to address street geometry. Moreover, a previous street connection has been transformed into a new small public space providing an entrance to adjacent buildings and the campus beyond. A dedicated pedestrian crossing also existing in this location, linked by public staircase to the severed street below.

The second exception is segment 5 that is located at an intersection with Queen Street, the main shopping street in the central business district. Buildings on each side of the street at the intersection have ground floor shops and cafes, and residential and commercial development above. Part of the commercial energy at this point spills over into this part of Mayoral Drive.

Jan Gehl in his *Cities for People* set out key urban design principles for successful street design as a ‘toolbox’ with seven key attributes, namely<sup>22</sup>:



Street segment no	OUTER STREET SIDE								INNER STREET SIDE								
	assemble/disperse	traffic/pedestrian	invite/repel	quality protection	quality comfort	quality delight	active inactive	Tot Outer St side	assemble/disperse	traffic/pedestrian	invite/repel	quality protection	quality comfort	quality delight	active inactive	Tot inner St side	tot street segment
1	3	3	2	3	2	3	1	17	1	1	1	1	1	1	1	7	24
2	2	2	2	3	2	1	1	13	1	1	1	2	1	1	1	8	21
3	3	3	5	4	4	4	4	27	1	2	1	1	1	1	1	8	35
4	1	2	1	2	2	1	1	10	3	2	3	4	3	2	3	20	30
5	2	3	1	3	3	4	3	19	4	3	4	4	4	3	5	27	46
6	1	3	1	2	1	1	1	10	1	1	1	1	1	1	1	7	17
7	2	3	2	2	1	1	2	13	1	1	1	1	1	1	1	7	20
8	3	3	3	4	3	3	3	22	1	1	1	3	2	1	1	10	32
9	1	1	1	1	1	1	2	8	1	1	1	2	1	1	1	8	16
10	1	1	1	1	2	1	1	7	2	2	2	3	2	2	1	14	21
11	1	1	1	1	2	1	1	8	1	2	1	2	1	1	1	9	17
12	1	1	1	1	1	1	1	7	1	1	1	1	1	1	1	7	14
13	3	2	2	3	3	2	3	18	1	2	1	1	1	1	1	8	26

TABLE 2 Scoring of pedestrian street attributes (1 = most negative, 5 = most positive), for the inner and outer sides of Mayoral Drive, and the summation, by street segments as shown on figure 6.

## CONCLUSIONS

Taking Ehrenfeucht and Loukaitou-Sideris position that successful streets depend on the quality of the footpaths as distinct public space, and the extent to which this encourages pedestrian foot traffic, the assessment of Mayoral Drive points to a highly unsuccessful street. To the extent that resilient urban centres require good streets to achieve and sustain good social and economic outcomes, we also conclude a failure in this regard as well, especially when compared to recent success in enhancing retail activity in adjacent streets and areas.<sup>23</sup> More surprising is that these poor conditions created in the mid-20<sup>th</sup> century have persisted to the present time. In part the issues arise from the way in which the civic centre is designed as set of pavilion buildings disconnected from the street frontage, and in this case, also separated by level differences. These conditions are much the same as those characterised by Roger Transik as ‘Lost Space’ where ‘urban development treats buildings as isolated objects sited in the landscape, not as part of the larger fabric of streets, squares, and viable open space’<sup>24</sup>. Moreover, almost the entire length of Mayoral Drive following around the civic centre surprisingly, given the economic value of land, remains open car parking. The outcome in one sense is not surprising, given that Mayoral Drive as conceived in the 1950’s was essentially a traffic conduit, compared to far better approaches to street design in this century. Nevertheless, Mayoral Drive will continue to be difficult to transform into a successful street, whether by public or private initiatives.

Not addressed in this paper, is the civic centre and city square (Aotea Square), but is analysed and discussed in another conference paper, where its own failings are reported<sup>25</sup>. Thus the civic centre of Auckland as a whole, driven by the fractious urban design and planning process in the 1940-50s, has failed to create a successful civic centre, city square and urban street. This leaves one to speculate on whether selecting one of the pre-WW2 proposals might have led to a far better and more resilient solution.

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## Disclosure Statement

The authors have no known conflicts of interest related to this paper.

## Notes on contributors

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Elizabeth Aitken-Rose is a Senior Lecturer in the School of Architecture at the University of Auckland, New Zealand. Her research is in areas of urban planning, specialising in planning history and theory, cultural policy and heritage. She is currently researching cultural planning in local government and has published on subjects as diverse as literary house museums, engineering heritage and engaging young people in planning. Prior to this she worked for the Paris-based Organisation for Economic Co-operation Development and for central government. She is currently the Chair of the Frank Sargeson Trust and on the Auckland Council's Heritage Advisory Panel.

## Endnotes

- 1 Ewing, R and Clemente, O. *Measuring Urban Design: Metrics for Liveable Places*, Washington DC: Island Press, 2013. City Council
- 2 These are well argued issues that have an origin in Jane Jacobs, *The Death and Life of the Great American City*, Harmondsworth: Penguin, 1964. See also Alan Jacobs, *Great Streets*, Cambridge, Mass: MIT Press, 1993 and Mentz, K. and Goble, S. 'Urban Economics by design down under'. *Local Economy*.
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- 9 Acknowledge is given to the source of the idea of environmental areas to the 'precincts' proposed by Alkar Tripp in 1942: See Alkar Tripp, H., *Town Planning and Road Traffic*. (London: Edward Arnold, 1942)
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- 11 Mees and Dodson, *Backtracking Auckland*, 2006, 2. Also discussed in Mees, P. and J. Dodson. "The American Heresy: Half a century of transport planning in Auckland" (Proceedings of Institute of Australian Geographers and New Zealand Geographic Society, 2001), Harris, C. M. (2005). "Slow Train Coming: The New Zealand State Changes its Mind about Auckland Transit, 1949-56." *Urban Policy and Research*; 23(1): 37-55 and Gunder, M. (2002). "Auckland's Motorway System: A New Zealand Genealogy of Imposed Automotive Progress 1946-66", *Urban Policy and Research*, 20(2) (2002),129-124.
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- 18 Department of Works, *Civic Centre - Part 1 History*, 1. The fully history of the Auckland Civic Centre is reported in another IPHS 2016 paper: Elizabeth Aitken-Rose and Errol Haarhoff, 'Heart Disease. The Quest for a Civic Centre in Auckland, New Zealand (1841-2013)'.
- 19 For a discussion of the controversies surrounding the design and placement of the new civic centre (Aotea Centre) see Ward, A and Hunt, J, *The Alternative Aotea Centre Project*, Auckland, New Zealand, *Journal of Architectural Education*, 41(1) 34-45.
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## Image Sources

- Figure 1: University of Auckland Library
- Figure 2: Auckland Libraries Archive
- Figure 3: Auckland Libraries Archive
- Figure 4: Auckland Council GIS viewer with overlays by the authors
- Figure 5: Authors
- Figure 6: Authors



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# METROPOLITAN FLUXES: THE MESH OF BENEFITS AND NEEDS

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The demand for the expansion of urban infrastructure coverage and the consequential increase of requests for quality improvements of networks in metropolitan areas, especially in developing countries, shapes a distinctive approach as to understand in what way certain benefits or limitations can eventually regulate the future of urban areas, and therefore, its strength to adapt to changes. This method of enquiry examines the historical development of São Paulo infrastructure network and appraises its expansion in regards to its geographical distribution into the metropolitan space. The essay establishes a direct relationship between the foundation of urban service infrastructure network and urban renewal projects. Through the implementation of a cross-analysis between urban renewal areas of the Greater São Paulo Region, socioeconomic and urban services infrastructure data, along with a sample analysis of the metropolis flows (using the tool of geographic information systems [GIS]), it was possible to produce an interpretation of the heterogeneity of the metropolis. This heterogeneity was confirmed both from the socioeconomic point of view, as in the coverage and quality of urban infrastructure services. Thus, the restructuring of a balance between supply and services demand in the metropolitan area is seen as indispensable in order to make the connectivity amongst urbanized areas possible, shaping a real space of fruition that is capable to meet the objectives of urban regeneration. The argument of this work is that urban renewal projects in developing cities that encompasses improvements over the coverage and quality of urban infrastructure tend to lose its intrinsic qualities that would differentiate them in the first place, causing their expected benefits to be overcome and dissolved in the metropolitan territory. Therefore, a fundamental condition for completing urban regeneration objectives should ensure equitable conditions of access and quality of urban infrastructure in the area of influence of the intervention. Accordingly, in order to plan and design solutions for resilient cities, it is imperative to build a deep understanding of the fluxes that permeate the urban territory, and most importantly, shape the living conditions of societies. The contraposition of empiric data that characterises human behaviour in terms of its movement in the Metropolitan Region of Sao Paulo, in contrast to the availability of resources - ecological, technical, social and economical - is in this study considered a discerning method to interpret the city and stimulate informed action to articulate these conflicting dimensions.

## **Keywords**

urban infrastructure, urban operations, urban regeneration, metropolitan areas, resilient cities





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# REGENERATING SÃO PAULO'S CITY CENTER: THREE INTERVENTION PROJECTS

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This paper analyzes the initiatives for the São Paulo city center over the past two decades, within the context of contemporary cities undergoing similar transformations through the implementation of urban projects in historic areas.

In São Paulo, three recent proposals have stood out due to their structural differences and complementarity: Urban Operation Centro (Operation City Center), a specific law aimed at attracting new activities to the center and raising funds for improvements to the urban environment; Ação Centro (Social program for the Center), an improvements and social development program drawn up through external financing; and Nova Luz (Nova Luz Project), which proposes the redesigning of 45 blocks.

This research thus analyzes how the projects have been carried out, the concept behind interventions and the ways in which these initiatives have been planned and implemented. We have concluded that these actions have complemented each other, with special emphasis on: attempts to attract real estate developers; on a lack of guidelines; and on their disregard for social participation. This fragmented scenario has created a backdrop for the lack of an effective integrated policy for the São Paulo city center.

## Keywords

São Paulo, urban projects, regeneration, historic centers

## How to Cite

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## INTRODUCTION

Historically, urban planning in São Paulo has been based on incrementalism and a predominance of the real estate sector in defining normative priorities and public investments<sup>1</sup>.

This conceptual framework has also been applied to São Paulo's city center. The three cases selected below reinforce that narrative, albeit from a perspective of complementary actions that have not led to integrated and comprehensive planning for the city's central area.

Contemporary cities are characterized by productive transformations that create empty urban areas that require specific and fragmented interventions that do not always meet the more encompassing demands determined by the city's planning. The fragmentation of contemporary society and the immobility generated by economic disordering, based on the auto industry, have created two characteristics very much present in São Paulo's city center: diversity in its territorial appropriation, which has manifested in popularization and conflicts; and growing congestion that has shifted central activities to new elitist tertiary central areas comprised of shopping centers and gated communities.

There are many forms of regeneration and rehabilitation of contemporary cities and the literature on the subject is vast, see Peter Roberts and Hugh Sykes<sup>2</sup>, Silvio Zancheti<sup>3</sup> and Eduardo Rojas<sup>4</sup>. However, the three interventions in São Paulo's city center that we investigate here, have different conceptual bases. Urban Operation *Centro*, which was launched in 1997, is based on the concepts of the French ZAC; *Ação Centro*, a social program launched in 2002, has been discontinued due to a lack of institutionalization; and *Nova Luz*, a project started in 2005 closely linked to the design of public spaces, has not included contemporary democratic participation processes.

Within the context of contemporary cities, downtown areas have undergone similar transformations: on the one hand, they have seen peripheral growth and metropolitanization; and on the other, population flights and changes to the economic profile of downtowns and traditional areas. This scenario has prompted several proposals and discussions for urban projects, urban operations and improvement and development programs for these areas.

In the case of the projects analyzed in Brazil, regardless of party political management the center has always been subject to interventions due to existing infrastructure, to the area's history or to its important strategic location. In São Paulo, the research shows that these projects started to gain strength as of the 1990s.

Specifically in São Paulo, at the end of the 1970s and throughout the 1980s the projects for the area aimed at building large esplanades and several metro stations. According to Raquel Rolnik, the implementation of the metro system and the construction of bus terminals in the center happened simultaneously to the dissemination of private car ownership – thus turning public transport into a means of transportation for the poorer population. As a result, where esplanades had already been implemented in the center, main streets also became pedestrianized, thus “turning the center into a popular area that has been gradually abandoned by the elites”<sup>5</sup>.

The devaluation process undergone by the center was marked by São Paulo city's scattered growth; by incentive from legislation and plans to decentralize commercial activities; and by the migration of the elites and difficult access of vehicles at a time when car makers were arriving in the country and promoting the use of private transport.

As of 1985, for the first time Director Plans (1985, 1991 and 2002) and Zoning Laws point towards stagnation of the center and a reduction in the resident population. They also created instruments to enable the execution of Urban Operations – exceptions were made within the Law for Land Use and Occupation in exchange for financial commitments aimed at regenerating specific areas. This paper analyzes three recent projects that have sought to reverse, based on contemporary regulations, the scenario presented so far. Each stage is focused on a different area in this territory.



Within the context of urban projects and the need to raise more funds, we found in the Mayor Office's Archives a report called "Proposal for the creation of a real estate development fund for the Urban Operation Centro", which was drawn up by representatives from SMC in the executive committee. The document proposes the creation of a management body aimed at revitalization of the sub-areas in the operation's perimeter. This body would be managed by the Municipal Urban Planning Agency with resources from the operation; from investors and from budget provisions for the implementation of an Urban Proposal. This proposal foresees the creation of smaller perimeters within a bigger one for the execution of an urban project through changes to the layout and through the construction of buildings and public spaces which, combined to a new urban design, would create a renewed area.

These data suggest a lack of policies and demonstrate interest from the committee's members in creating possibilities for an urban project strongly connected to design. However, these initiatives were not carried out.

Despite pressure from interested parties in policy management, the Law was not altered and has been used as an instrument and resource for various projects that have been executed in the center. Through access to the Urban Operation's financial records we have identified the absence of an action policy and of guidelines, as the investment of these resources went against the interests of the government at the time.

A lack of definition on how to raise the funds and apply them led the operation to lose its focus, as the resources were alternatively destined to the Luz area and to Anhangabaú; or were either invested in small works or in large intervention projects such as Patriarca Square. Thus, this has become a Law which simply supports other government initiatives such as the Ação Centro program and the Nova Luz project - which are the next two proposals discussed in this paper.

## AÇÃO CENTRO

The Ação Centro program has received financial support from the Inter-American Development Bank (IDB). The proposal was launched during the creation of the program and of the Procentro Committee in 1993. Subsequently, in 1996 the first consultation letter was sent to the appropriate body in the federal government seeking to make a loan from IDB viable.

In 2004, during the term of Mayor Marta Suplicy, the central area underwent several interventions, including the innovative "Virada Cultural", which is based on the French "Nuits Blanches" and which has created a new form of public space appropriation by the population until today.

Regarding urban planning projects and actions, after eight years of negotiations, the loan was approved for a 4.4 km<sup>2</sup> perimeter (much smaller than originally proposed by the Mayor's Office). In 2004 this area held 8% of the municipality's formal jobs; it was the destination of 29% of public transport; it had 69,000 inhabitants and received 2 million people a day. Furthermore, it held 763 landmarked buildings and 147 in the process of becoming landmarked. Additionally, this perimeter was defined "according to a qualitative survey carried out with social sectors from different income bands" <sup>6</sup>.

The financing proposal took into consideration existing programs and studies and research carried out with the population's participation. This resulted in almost 130 actions, subdivided into five components, as described below.

**Component 1:** A revision of real estate devaluation and the rekindling of the residential role. This aimed at drawing up legislation and urban intervention proposals, as well as creating management models for social renting and transitory living. No 2º: Transformation of the Social and Economic Profile. Its goal was promote



the downtown area and attract private investment; reverse the social exclusion process and tackle violence and public safety issues. No 3: Regeneration of the urban environment. This proposed a revitalization of public space, restoration works and a destination for solid residues. No 4: Transport and Circulation. This proposed a new circulation project and the creation of access facilities. N° 5: Institutional Strengthening of the Municipality. This foresaw the organization and systematization of existing data in tandem with technical training and support for transportation between municipal bodies and the center.

However, the implementation of the program was not homogenous. After there was a new mayor, the project underwent a brusque transformation - which we have called “One execution, two programs”. “One execution” refers to the fact that although the program’s structure and financing could not be changed, its essence and approach in relation to management changed significantly. Below is a description of this process in two stages: the first from 2002 to 2004; and the second from 2005 to 2014.

Regarding the program’s concrete results by 2004, most of the resources were destined to housing and to changes in social and economic profile, as well as to regenerating the urban environment. In 2005, Mayor José Serra (2005-2006) stepped into office, followed by Mayor Gilberto Kassab (2006-2013). Both of them slowed down the program’s implementation and made changes to its essence, which include transferring the resources to another area in the center.

In addition to changes in the team, the project was affected by exchange rate fluctuations. When the contract was signed the exchange rate was R\$3.20/US dollar; however, it subsequently dropped to R\$2.00. As the loan was paid by the bank in dollars, almost half of the money was lost, thus hindering the program’s development.

Until the period between 2006 and 2007, the Program was practically stagnant and its action guidelines remained the same. However, the initiatives foreseen by the five components were gradually altered, thus redirecting part of the resources to another part of the city, more specifically to *Nova Luz* Project, which we will discuss below.

Let us take for example **Component 1**: Review of real estate devaluation and rekindling of the residential role (the latter was drastically reduced). Studies suggest that it reached almost 1% of the resources. **Component 2**: Transformation of the Social and Economic Profile – there was a reduction to the spending budget and private consultancies were hired to provide services for a Technological Center in the Luz area. The sub-components related to vulnerable groups were kept in the research, but the existing social programs were subsequently cancelled <sup>7</sup>.

**Component 3**, Regeneration of the Urban Environment – this was the only one to receive an increase in budget provisions, namely for the development of projects and construction works. **Component 4**: Circulation and Transportation. The proposal for public transport was suspended and priority was shifted to street renovations. **Component 5** kept five of its original projects and added the *Nova Luz* Project as a technology center <sup>8</sup>.

Also in 2009, IDB consultants came to Brazil to conclude and define the priority works. Thus, a new proposal was put forward with forecasts for costs and financing for each component. Once again Component 3, which foresaw the regeneration of the urban environment, gained greater importance. This meant more resources for building constructions and for improvements to the urban environment rather than to the social sector. It was at this point that the resources actually started to be directed to the ongoing *Nova Luz* Project, as explained below.



FIGURE 3 Restoration projects. These restorations were made with a budget from the Urban Environment's component. The most of buildings are for cultural activities.

## NOVA LUZ

The Luz area had already undergone large building restoration works by the State government. Furthermore, it was considered as a very vulnerable area in socio-economic terms due to its large concentration of drug traffic outlets - a situation that was also negatively exploited by the media.

The 2002 Director Plan designated the area as a ZEIS (ZEIS – Special Social Interest Zone) and AIU (AIU-Urban Intervention Area). ZEIS are urban areas designated for regeneration through mandatory construction of social housing. Meanwhile, the AIUs were destined for the implementation of strategic urban revitalization projects. Thus, the Nova Luz Project was launched with Municipal Law 14.096, of December 8, 2005, which authorized the executive power to grant fiscal incentives to promote and boost the development of the São Paulo municipality. This Law was rarely put into practice and four years after its creation, the Urban Concession Law was drawn up and subsequently used as a basis for the implementation of a new project for the area.

Urban Concession Municipal Law n°14.917, of May 7, 2009, regulates concessions in the municipality of São Paulo, while Municipal Law n°14.918, from the same date, authorizes the executive power to grant urban concessions in the Nova Luz area. According to these laws, the concession is an instrument of urban intervention destined to revitalize infrastructure or rearrange the space through private initiative. Thus, the private sector invests in the region through the exploitation of properties in the area, becoming responsible for expropriation, demolition and renovation and construction works.



FIGURE 4 Perimeter of Nova Luz. The lowest perimeter is the same of the are for social housing . If the perimeter did not increase, the private sector would not profit.



FIGURE 5 Nova Luz zoning project. The figure shows how the project would segregate uses.

It was the municipality’s duty to regulate, inspect and oversee the quality and ensure interest in the area, while the concession holder was entrusted with carrying out interventions, buying and selling private properties, exercising preemption rights on behalf of the Mayor’s Office, receiving donations from property owners, keeping an inventory and registration of the assets, carrying out expropriations and making periodic account renderings. The law practically “auctioned off” the area to the private sector, as the municipality was left responsible only for the management and guidance of the involved parties.

After the law was enacted, the municipality launched a call for tender for the concessions and determined that priority should be given to street embellishment, property replacement, preservation and regeneration of historic landmarks and expansion of green areas and of leisure and culture activities. Initially, the proposal was supposed to also include the ZEIS, AIU and the Fiscal Incentive Law.

The original perimeter was increased from 23 to 45 blocks. The 23 blocks that were established initially were destined for social housing. However, the increase in perimeter included areas without ZEIS, thus enabling an increase in land value and generating high profits for the private sector.

The pooling of concession holders sought to exploit the land through an increase in density and through mixed use with a per-sector hierarchy.

Sector 1- **Nébias**: predominantly residential, with internal patios and spaces for recreational activities and squares with cafes and restaurants. **Sector 2: Rio Branco**: “real estate condominiums” with a stronger possibility of verticalization. To be used for commerce and offices. **Sector 3- Triunfo**: as this was basically delimited by the ZEIS area, it should hold social housing apartment blocks and buildings destined for social activities. And finally **Sector 4: Mauá**: this was designed to offer support to existing cultural initiatives.

Regarding the social actions that were extremely important for the area, only one initiative was devised to that effect: the Human Promotion Center (CRAS), an aid and rehabilitation space that offered various types of support services to the population.

We have concluded that this project was an extensive study on design, space embellishment and social zoning without any type of social participation in its development. As a result, the population sought to participate through judicial means and the project was written off. After all, according to Brazilian law, urban projects cannot be executed without social participation.

## CONCLUSIONS

Case studies point to the need for intervention as part of an interdisciplinary project involving shared management between government agencies, involving the private sector and above all involving social participation. In order to achieve this, we believe that it is necessary to create a specific agency to carry out these negotiations and whose main concern is the living conditions of the local population (including increases in jobs and income for a reduction in inequality).

Specific regulation and the creation of financial instruments aimed at local development (rather than handing the area over to the private sector) are also important aspects. However, it is necessary to implement a global policy to define the issues, targets and structuring elements in order to achieve its development and efficient implementation.

The Urban Operation *Centro*, which was structured by a law that offered incentives through mutual obligations, showed the importance of specific regulation. On the other hand, it also demonstrated its fragility, as its lack of guidelines and of an intervention policy turned it into a source of revenue for other programs and projects in the downtown area. Furthermore, this is a passive law that basically worked through investment by the market interested in building outside the area permitted by the zoning delimitations. Regarding social participation, although the law foresaw the participation of civil society in the executive committee, the latter was formed by institutions that were not linked to local social movements, thus leading us to conclude that the population was not represented in the process.

The *Ação Centro* Program was structured through proposals that were already being discussed with working groups inside the municipal secretariats and which involved the participation of local movements. As a result, the program was based on the concepts of shared and interdisciplinary management with social participation. In addition to improving the city's image through revitalization of urban spaces, the program also included social housing projects and proposals for the economic and social development of the area. Despite well-defined instructions, during the change in management there were changes in the intervention area, to the actions and to the destination of the funding (which was redirected to *Nova Luz*).

*Nova Luz* was a project promoted by public authorities that, through an urban concession law, handed over 45 blocks in the *Luz* area to the private sector, which in turn had to put forward a project and become responsible for expropriations and the sale of new buildings. Although the project had well-defined guidelines, they were all focused on urban design and on significant changes to the landscape in an area characterized by a large number of landmarked buildings. In order to increase density, it made use of the OUC Law. The project relied heavily on urban marketing and of the three projects. It was that which best fit the concept of "selling" an image in accordance with the idea of global-cities. Due to the Concessions Law, the project was heavily questioned as it allowed the private sector to profit and make decisions on behalf of the public authorities. As its proposals were developed without popular participation, the Public Prosecutor's Office ruled it unconstitutional and the project was never implemented. This model has not taken into account the particularities of the cities and the activities of the local population, as stated by Maquiaveli<sup>9</sup>.

During this research, we found that at some point these projects intersected or even complemented each other -especially regarding the OUC - as both projects used its resources to carry out some actions or proposals that required higher standards. *Ação Centro* stood out for including social participation and for the development of a shared management combined with well-structured actions - especially regarding local development and external fundraising. In fact, part of these funds was transferred to *Nova Luz*, which despite being an exclusion project stood out for its initiative to work with a program concerned with creating a quality public space.

Thus, São Paulo's case shows that regulation alone is not capable of transformation and that social participation is crucial. It brings to the table preexisting guidelines, the area's real needs and the means to create jobs and income for the promotion of individuals and reduction of inequality. Due to their discontinuity and to ineffectiveness of their proposals, we have come to the conclusion that the three projects as a whole cannot be considered as urban intervention projects and that, above all, there is a lack of plans and policies for the downtown area.

If we take into consideration that the word policy signifies a means of organization, then we need a policy comprised of intervention targets with a clear definition of the issues; structuring elements capable of well-funded interventions; a shared management office to oversee the actors involved in the project and above all, social participation to contribute towards the drawing up of an intervention proposal.

The downtown area has in fact undergone transformations since the 1990s: there is no denying that these projects have created changes in the area: building restorations, idle buildings that have become offices for the Municipal Government (and which have created demand for commerce and services), the establishment of cultural activity buildings and some demystification moments prompted by news of proposals for the downtown area. However, if there is real interest in implementing an efficient regeneration project, a new proposal must be put forward through an agency able to bring together technical knowledge and social participation, specific regulation proposals and above all, a comprehensive policy with clear goals for urban intervention. We therefore believe that a project proposal unifying these three action models could be the regeneration policy solution for the central region that several São Paulo municipal administrations have sought to implement in past decades.



## Notes on contributor(s)

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## Image sources

- Figure 1: Developed by authors in base map of SEMPLA / 2003
- Figure 2: Developed by authors
- Figure 3: Photo – Nelson Kon, Accessed June 14, 2015, <http://www.vitruvius.com.br/jornal/agenda/read/2552>.
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# Man-made and Natural Disasters



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# Planning Against Natural Disasters

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Chair: Fernando Pérez





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# EARTHQUAKE AND RESILIENCE POLARIZATIONS ABOUT MODERN PLANNING IN CHILE

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The paper poses the question about the modernization of planning in Latin America and the role that disasters, and specifically earthquakes, could have played in this process. It focuses on the reconstruction of Chillán and other Chilean cities, after the 1939 earthquake. The reconstruction process triggered a debate about the planning methods and criteria that should be implemented on the occasion. This exceeded the technical domain and permeated into the media and public opinion. The paper suggests that the polarization around the ideas of Karl Brunner and Le Corbusier represent two opposing approaches towards modern planning. Resilience, as the capacity of recovering from trauma, can be thought of as a process that offers opportunities to discuss new urban models and paradigms. The debate about the reconstruction of Chillán is not confined to the local realm, but can also be envisaged as expressing some of the internal tensions of the processes of modernization. At the same time, it makes evident a dispute about Latin America, as a professional field for foreign planners.

#### **Keywords**

Planning, modernization, Le Corbusier, Karl Brunner, disasters and resilience

#### **How to Cite**

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## INTRODUCTION

The naturalization of the idea of planning has often made us forget about the complexities of its dissemination during the 19<sup>th</sup> and 20<sup>th</sup> centuries. As Eric Mumford has described<sup>1</sup>, even within the restricted circle of CIAM, we can find a wide range of ideas and attitudes about planning practices. What a modern city should be has remained for long, and still remains, as an open question with a variety of answers. Perhaps, the already classical distinction between modernism and modernization<sup>2</sup> would help us to get a better understanding of those complexities, which can be seen as a central issue for 20<sup>th</sup> century history.

Modern planning and architecture developed as a global phenomenon as underlined by Kenneth Frampton<sup>3</sup>. It not only expanded from central locations towards peripheries, but also made those locations the seat of significant discussions and experiments. They often offered to modern planners the opportunity to realize their proposals. Paying attention to the case of Latin America could lend a significant contribution to the history of planning.

The idea of creative destruction developed by Schumpeter in the field of political economy, suggests that the perishing of certain industrial processes could favour the emergency of new ones. Within the urban realm we know that great fires, such as the one in Chicago 1871, provided opportunities for urban renewals, as also happened with European cities after World War II. These were occasions to explore new alternatives for urban planning, housing patterns and building techniques. Chile has always experienced natural disasters, especially earthquakes. As Guarda<sup>4</sup> has described, during the colonial period, they periodically destroyed the cities, mostly built in adobe. Although registered, at least during the 20<sup>th</sup> century<sup>5</sup>, the social and urban consequences of the permanent presence of earthquakes are now beginning to be properly studied, as shown by Crispiani and Errázuriz<sup>6</sup>.

The concept of resilience migrated from the domain of physics and engineering, to those of ecology and social sciences. Within this expansion wave, it also reached the planning domain, not without generating some criticism, as Davoudi<sup>7</sup> has described. Conceived as the capacity of cities to recover from disasters, the concept has become critical in the management of urban risk. But is the idea of recovering able to define the complexities of reactions detonated by a big earthquake? Can resilience go beyond that idea and open an opportunity to rethink the future, within the tragically free space opened by a disaster?

This paper seeks to shed some light upon this kind of problems, focusing on an earthquake occurred in Chile in 1939. The circumstances that surrounded the subsequent reconstruction detonated strong debates within the nascent planners community. They allow us to gain a better understanding about the complexities of the development of modern planning in Latin America. A remote place in a small country would thus offer the occasion for the confrontation of international planning ideas that sought for actual opportunities to be implemented. In this case, the radical or even utopian ideas of Le Corbusier, would confront the much more pragmatic, modest and historically rooted proposals of the Austrian planner Karl Brunner. These confrontations were the result not only of intellectual attitudes, but also a way of disputing a professional field, which by that time had become increasingly international. The presence of a significant number of European and North American planners in Latin America, during the first half of the 20<sup>th</sup> century, As summarized by Almandoz<sup>8</sup>, makes this clearly evident.

What were the main differences between the opposing positions about the Chillán reconstruction? Which were the implications of applying them in a Latin American context? How would they negotiate? How would earthquake destruction make room for such a debate?



FIGURE 1 Chillán Plaza, Old Cathedral and surroundings after Chillán Earthquake and Newspaper publication about the catastrophe.

## CHILLÁN EARTHQUAKE

On the 24<sup>th</sup> January 1939, at 11.30pm a big earthquake shook the city of Chillán, located 400 km south from Santiago, Chile's capital city (Fig 1). A few minutes later it stroke Concepción, a neighbouring city. Both, founded by the Spaniards during colonial times<sup>9</sup>, were heavily destroyed. The death toll varies from 6000, estimated by the government, to 24000 reported by the press. Although less intense than previous earthquakes, like those of Atacama (1922) and Talca (1928) it has been considered to be the deadliest registered in the country. The most significant public buildings, as well as the vast majority of private houses were destroyed. The quake provoked the electricity power and other services outage. The fact that it occurred during the night worsened the damages and made the situation even more traumatic for the population.

The Chillán earthquake found the country in a particular political situation. On the 25<sup>th</sup> December 1938, a month earlier, Pedro Aguirre Cerda, a member of the Radical Party, had assumed the position of President of the Republic, supported by a new political coalition, the *Frente Popular* (Popular Front). The coalition included Radical, Socialist, and Communist parties. The election has been considered a significant shift in the history of Chilean politics. It was about to initiate 14 years of political dominance of the Radical Party, representing middle classes and holding a popular orientation. According to Collier and Sater<sup>10</sup>, the earthquake and the subsequent reconstruction favoured the State's social and economical intervention planned by Pedro Aguirre Cerda, which otherwise, could have been strongly resisted by the political opposition.



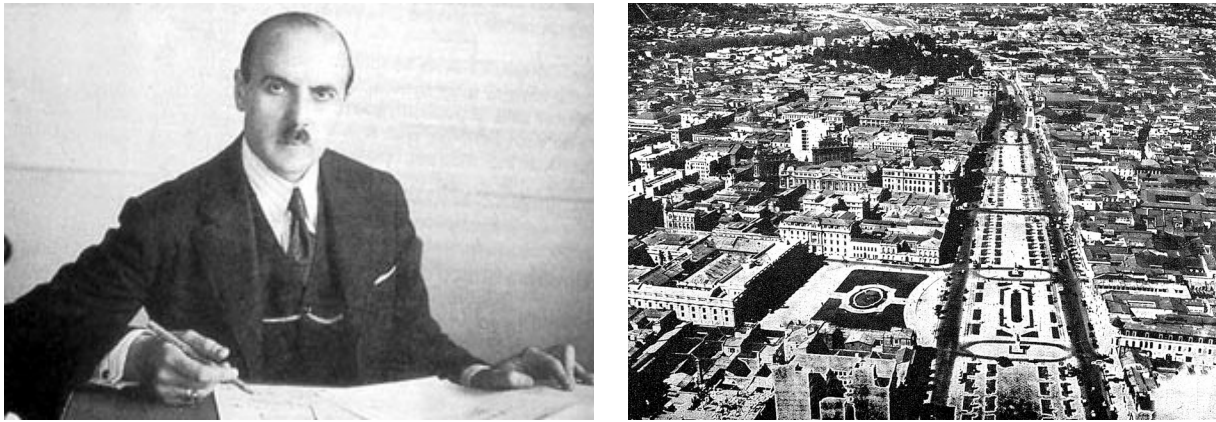


FIGURE 2 Karl Brunner in Santiago and an aerial view of the city probably taken under Brunner's suggestion.



FIGURE 3 Le Corbusier on board traveling back from Latin America in 1929

The traumatic beginning of his period would mark Aguirre Cerda's presidency, tragically interrupted by his death in 1941. More than an accidental event, the earthquake was envisaged and analysed within the frame of wider political picture, including the country's economy and political organization. Education and industrialization were central objectives in the *Frente Popular* program. In fact "governing is educating" was Aguirre Cerda's lemma. In this context, the earthquake destruction and subsequent reconstruction acted, very probably, as a political catalyst, promoting the industrialization and modernization of the country.

Other 20<sup>th</sup> century earthquakes had been critical in activating planning initiatives, under the pressure of destruction and emergency. As Páez<sup>11</sup> has suggested, in the case of Valparaíso, the 1906 earthquake seems to have convinced public authorities to undertake infrastructure works, as well as urban reforms, identified as urgent years before. It also contributed to the introduction of new building technologies, among them the use of reinforced concrete<sup>12</sup>. Following the 1928 Talca earthquake, in 1931, a new building code was promulgated in the country<sup>13</sup>. In the case of Chillán, the focus of the discussion seems to have been the necessity for planning and the specific characteristics that this should assume. In fact, the reconstruction process triggered a professional discussion about urban planning and its application to the reconstruction process. This is particularly well exemplified in a discussion within the national planners community, about an invitation to Le Corbusier to visit the country and participate in the reconstruction. This went far beyond the disciplinary circle reaching the press and therefore the public realm. For some weeks it even became a kind of “trending topic” in the country.

## KARL BRUNNER'S LANDING IN CHILE

In 1929, the same year that Le Corbusier (1887-1965) came to Latin America for the first time, the Austrian planner Karl Brunner von Lehenstein (1887-1960) arrived in Chile. A young Chilean architect, Rodolfo Oyarzun, had met him in Vienna, and convinced the local authorities to hire him as an urban consultant. In Chile, Brunner acted as planning adviser for the Ministry of Public Works and taught at Universidad de Chile. As stated by Pavez<sup>14</sup>, Brunner would organize the first planning seminar of its kind in Latin America and radically renovate the teaching of the subject, which had been introduced in 1928 by Alberto Schade. This gave him the opportunity not only to transmit his ideas to a professional and cultivated audience, but also to educate a generation of planners who would go on to become loyal defenders of his ideas. As an adviser to the government, he would make proposals for Santiago, the capital city, as to others in the country. Among them, according to Hofer<sup>15</sup> there were Concepción, Temuco, Osorno, Valdivia and Puerto Montt. He would remain in Chile until 1932. In 1934 he would come back for a brief stay, to elaborate an urban plan for Santiago, which would be developed by some of his disciples during the following years. As studied by Pavez<sup>16</sup>, Roberto Humeres and Luis Muñoz Maluschka should be mentioned among them.

Karl Brunner had been educated in the Technische Hochschule in Vienna. According to Hofer<sup>17</sup> and the planning ideas of his cultural environment were influential upon him. That was the case with Wagner's Grosstadt, the housing initiatives of the Red Vienna or the Central European Garden City. He was also closely related to Werner Hegemann with whom he shared some editorial endeavours. In 1929 the *Die Baupolitik* journal, edited by Brunner, was associated with other journal, *Städtebau*, published by Hegemann<sup>18</sup>.

Both Le Corbusier and Brunner were deeply interested in airplanes, although in very different ways. Brunner considered that airplanes could become technical tools to gain a better understanding of cities and territories. He had had the experience of being a pilot during the First World War, having participated in aerial photography missions. He published an interesting book on the subject<sup>19</sup>, shortly before arriving in Chile. During his stay in Chile, he promoted the use of aerial photography, to inform urban projects (Fig 2). Le Corbusier<sup>20</sup>, instead, saw the plane as a kind of metaphor of the well-posed architectural problem.

Totally aware about the problems of modern cities, such as traffic, population growth and housing provision, Brunner was convinced about the interdisciplinary nature of planning and the inherent complexities of its implementation. One of his contributions to the planning practice was the inclusion of population data. As described by Hofer<sup>21</sup>, he used the concept of *Baupolitik* to define his approach to planning. Brunner didn't believe in radical renovation, but in gradual interventions, able to produce the desired effects with minimum resources.

After teaching and working in Chile, Brunner would move to Colombia, where he stayed during the Second World War, also doing some work in Panamá. In 1939, the year of Chillán earthquake, he would publish his *Manual de Urbanismo*<sup>22</sup> in Colombia. There he summarizes a kind of state of the art about urban planning, including European, North American and Latin American examples. Brunner's planning criteria would confront Le Corbusier ideas in Colombia, when the latter was hired, together with José Luis Sert and Paul Lester Wiener, to develop a Plan for Bogotá in 1948. At that time Brunner would leave Bogotá for Vienna, where he went on working as a professional planner.

## A PROBLEMATIC AND CONFUSING INVITATION TO LE CORBUSIER

Le Corbusier could have visited Chile in 1939<sup>23</sup>. In that case he would have added another South American country to the list of those already visited in 1929<sup>24</sup> (Fig 3) and 1936<sup>25</sup>. However the visit, surrounded by a series of equivocal and even surreal circumstances, never happened.

In November - December 1938, two months before the Chillán earthquake, two Chileans, Roberto Dávila and José García Tello<sup>26</sup>, independently contacted Le Corbusier. They invited him to visit the country and eventually do an urban plan for Santiago. Those contacts seem to be part of a wider initiative to bring Le Corbusier to Chile, a country where he had many admirers. They knew that offering a commission was the only way to convince him to come. Therefore, they managed to get the support of the Municipality of Santiago to offer him to do an urban plan for the city.

As described by von Moos<sup>27</sup> in his biography, by that time, Le Corbusier was working on the Buenos Aires plan, together with his Argentine collaborators Juan Kurchan and Jorge Ferrari Hardoy. He was also working on the Algiers Plan, tightly connected to his sketches for Rio de Janeiro. None of them would actually be implemented. Since his 1929 visit, he had had great expectations about the possibility of applying his ideas in Latin America as he expressed in his *Precisions*<sup>28</sup>. Therefore, the invitation appeared as a significant opportunity to recover his South American contacts, especially those of Brazil and Argentina. Le Corbusier accepted Dávila's invitation, charging the amount of USD 20.000, plus travel expenses, to do the plan<sup>29</sup>.

Following the first contacts, the Chillán earthquake took place. Informed about it by the press in Paris, Le Corbusier saw that the possibilities to make the visit and obtain a contract increased. He hurried to offer a reconstruction plan for Chillán, Concepción and Talcahuano<sup>30</sup> for free, if he were hired for the Santiago plan<sup>31</sup>.

Two weeks after the earthquake, a Municipality officer, Carlos Charlín, apparently with no connection with the previous contacts, sent an official letter to Le Corbusier<sup>32</sup>. Charlin invited him to visit the country and collaborate in the reconstruction process. Following that, on February 15<sup>th</sup>, Graciela Contreras de Schnake, by then the Mayor of Santiago, sent him a confusing telegram asking once again about his fees, a subject that had been responded by Le Corbusier more than once. Later on, Charlin would do his best to clarify that mess of communications and contacts<sup>33</sup>. García Tello, one of the initial promoters of the visit, in a new contact with the master, suggested that contacts had been made even with the President of the Republic, which would support the invitation<sup>34</sup>.

To make the situation more complex, Le Corbusier made his own contacts with the French Ministry of Public Affairs<sup>35</sup> and the Chilean legacy in Paris. He considered that the support of highest political authorities was indispensable to make viable a plan of such characteristics. When asked about a travel date by the Municipality, he suggested that it could be in the month of May, under the condition of having received a contract and a portion of the fees<sup>36</sup>.

In the middle of this chaotic series of crossed contacts, neither the National Government nor the Municipality were actually committed to hire Le Corbusier and to pay him the US 20.000 plus travel costs he had solicited. Against such scenario, the promoters of the visit tried to convince the master to come and deliver lectures. Once in the country, he could get an official contract. Le Corbusier was strongly against that. After his 1929 trip he had decided not to do any more lecture tours and travel only under a reliable promise of a project.



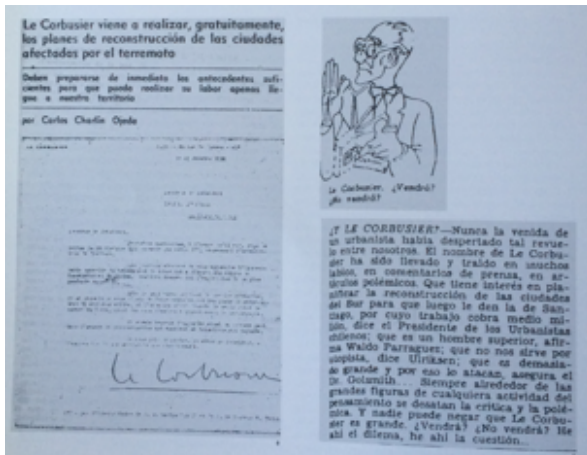


FIGURE 4 Visit of Le Corbusier publicized in two issues of Zig-Zag social magazine, February 1939



FIGURE 5 Chillán Cathedral and Plaza after reconstruction

At the beginning the press, and subsequently the public, was happy to hear that such a renowned architect was ready to collaborate in the reconstruction of the area devastated by the earthquake. The public opinion turned less favourable when it was revealed that Le Corbusier's collaboration pended from a parallel contract in Santiago. Its opponents<sup>37</sup> used this as an argument against the visit.

Finally, amidst turmoil of economic, political and professional difficulties, and given the urgent need to give an effective response to the devastated area, the idea of the master's visit was abandoned. Le Corbusier never understood that and continued doing efforts with the political authorities in Paris, to revive the initiative until mid 1939. Writing to his Chilean friends, he bitterly regretted the informality of Chilean authorities, which having sent official invitations, were not able to make them effective.

## A PROFESSIONAL AND PUBLIC BATTLE

Amidst the confusing contacts and the urgent demands of the affected territories, a public and professional battle had been detonated by Le Corbusier's invitation. It developed at different levels and in such complicated and confusing circumstances as the invitation itself.

In the first place there was the political debate. Le Corbusier's invitation had been in part associated with the renovation expected from the rise to power of the *Frente Popular*. This new political movement was supposed to be opened to innovative urban and architectural ideas. In fact, this government undertook building initiatives that allowed avant-garde architects to capture official commissions<sup>38</sup>. However, their popular and left wing orientation prevented the authorities to invest extraordinary resources to pay for a foreign adviser. Given the difficulties of the situation, this could have been judged as superfluous by the public opinion.

At a professional level, there was the classical dilemma of locals and foreigners. Was it indispensable to hire foreign professionals to face the reconstruction? Was it the case that local architects or engineers were not capable of confronting this challenge? Was the professional community able to loose the economic and technical opportunity offered by the reconstruction process? Those questions were posed, in a more direct or indirect way, during the months that followed the disaster.

Finally and perhaps most interestingly, at a disciplinary level, there was the discussion about planning orientation, polarized between the Le Corbusier partisans and the Brunner disciples. Brunner's followers legitimately considered that their master and themselves had introduced planning as a science to the country. They shared Brunner's pragmatic and illustrated approach and had witnessed his effort to propose a scientifically based plan for Santiago. Having worked for more than four years developing that plan, their authors were not happy to discover that they could have been wasting their time. Some of them were part of the public administration and had connections with university teaching. Therefore, they had deep knowledge about the political procedures that were needed to carry out an urban plan. This had been Brunner's strength from the beginning. He came thanks to an official invitation and was skilled enough to convince his counterparts that he was well prepared to solve urban problems, both with technical skills and a realistic approach. Finally, they had a critical view about Le Corbusier's procedures. Following Brunner<sup>39</sup> they considered him to be utopian, as well as ignorant of the economic and social aspects of urban reality.

On the other side, Le Corbusier's followers considered Brunner's approach completely insufficient to confront 20<sup>th</sup> century urban challenges. They judged their strategies to be completely insufficient: no more than a few street openings, using the old-fashioned resource of diagonals to solve traffic problems. On the contrary, they adhered to what was defined as *functional planning*<sup>40</sup>, involving a radical reorganization of the city. They sought a radically new image and a new functionality for cities. These could require changes in the urban property regime. Such political attitudes were, very probably, considered threatening by the more conservative political forces<sup>41</sup>.

The debate happened mainly within the Instituto de Urbanismo (Planning Institute), which grouped those interested in the field of planning. Brunner's disciples and the Le Corbusier partisans had peacefully lived together until then, but the possibility of Le Corbusier's visit broke that coexistence. Some of the polemics reached the press (Fig 4) turning the apparently technical debate into a social and political one<sup>42</sup>.

## CHILLÁN EARTHQUAKE AND THE CONSTRAINTS OF ITS RECONSTRUCTION

After the first traumatic days, there were a series of private and public reactions about the reconstruction of the devastated area. The government had to provide urgent solutions, such as provisional homes, making the economic and institutional arrangements to undertake the rebuilding endeavour in the long term. The earthquake undoubtedly awoke expectations about the needs of modernizing cities. Thus, a series of plans, images or suggestions were proposed to the authorities, not only to get the destroyed area to the previous situation, but to project it to a new and better condition. Among the multiple proposals, that of the architect Waldo Parraguez<sup>43</sup>, strongly in favour of Le Corbusier, was one the most radical. Local planners of the destroyed area, on their part, struggled to have a say in the reconstruction, defending that they had a closer knowledge of the local population's effective needs.

In addition to the emergency measures, in February 1939, President Aguirre Cerda proposed the creation of the *Corporación de Reconstrucción y Auxilio* (Reconstruction and Aid Corporation) and the *Corporación de Fomento a la Producción*, CORFO (Production Promotion Corporation). The first would take care of the reconstruction task. Later it, as studied by Carvajal<sup>44</sup>, would expand its influence to other areas. Until 1952, it would become a fundamental instrument for the provision of national housing. CORFO, still in existence, is universally recognized to have played a decisive role in the industrialization of the country.

Le Corbusier's invitation made blatant the different attitudes existing within the Planning Institute that were relatively hidden until then. Le Corbusier's invitation seems to have threatened Brunner's followers in two ways. Firstly, because they didn't adhere to CIAM proposals and therefore didn't want a plan based on them. Secondly, because Le Corbusier's plan would have meant losing a decade of dedicated work, following Brunner's directions.

Their opponents, on their side, aspired to a radical urban renovation, getting rid of the colonial grid and the traditional street as a dominant urban device. They imagined totally renovated cities populated by superblocks and all the new typologies provided by modern architecture.

Brunner's group was skilled enough to get their plan for Santiago approved in March 1939. This, in charge of the architect and painter Roberto Humeres, had been prepared during five years following Brunner's 1934 suggestions. Having done that, Le Corbusier's visit began to appear useless. Santiago already had an urban plan and it would have been a waste of money and time to hire a foreign adviser. Even the initial promoters finally resigned the invitation

Chillán, Concepción and the areas around them were reconstructed following rather conservative urban criteria that were closer to Brunner's than to Le Corbusier's ideals. The existing urban fabrics didn't suffer radical changes. The vast majority of the new buildings had to adapt to those grids and the existing land division. However, most of them were modern in terms of their use of materials, such as reinforced concrete, in the lack of classical or stylistic decoration and in the simplicity of their volumes. New typologies, or references to the artistic or architectural avant-garde, had scarce presence, with very few exceptions<sup>45</sup> (Fig 5). The great majority of architects accepted the rules and tried to get commissions during the reconstruction process.

## CONCLUSION

Le Corbusier's failure to visit Chile wasn't an isolated event. Under different circumstances, the plans for Buenos Aires and Bogotá, also failed to be carried out. In spite of its cultural prestige, radical planning found difficulties to be implemented in Latin American capital cities. The only exception would be new cities like Brasilia's Pilot Plan that happened some decades later. Chillán's case can be seen as a symptom of a tension behind planning modernization: the struggle between radical utopia and reformism. It wasn't, in fact, the opposition between tradition and modernization, but instead responded to different ways of conceiving planning and urban renovation. Reformism, as that of Brunner, was easier to be applied and gradually implemented. In Chile, as in other Latin American countries, when more radical principles became dominant, they were applied onto urban fragments and rarely to a whole city. Karl Brunner's idea of *Baupolitik* undoubtedly had a better understanding of the complexities associated to implementing urban planning: a mixture of political, social and economic decisions.

The idea of radically reforming existing cities scarcely succeeded in Latin America. This could be attributed, among other factors, to the complexities of real planning and also to the emergent conviction about the values of traditional cities, even within CIAM discussions. The increasing importance of urban heritage would accompany this process. On the other hand, modernization as Berman (1982) has suggested, not always coincides with modernism.

The case of Chillán sheds light upon the fact that disasters could open opportunities for renovation, undermining the difficulties and tensions usually involved in those processes. In this context, as Davoudi<sup>46</sup> has suggested, resilience, if applied to the urban realm, can mean something more than returning to the state existing before trauma. Overcoming disasters, like that of Chillán, asks for a great deal of effort but, at once, might offer unique opportunities for a new beginning, re-evaluating planning methods and ideals.

Perhaps planners, such as Brunner or Le Corbusier, don't simply fail or succeed. Instead, they seem to offer provisional horizons, partially incarnate in the urban reality. Le Corbusier's ideas, more associated with modernism, acted as powerful mobilizing images, while Brunner tried to act from a *less is more* attitude upon actual cities. Behind those attitudes, there were intellectual and cultural traditions, sometimes difficult to reconcile. There was also a dispute in the professional field involving not only individuals, but also countries, which saw planning and architecture as part of their international affairs.

## Disclosure Statement

No potential conflict of interest was reported by the author.

## Notes on contributor

Fernando Perez Oyarzun was born in Santiago in 1950. Architect, Universidad Católica de Chile (1977) and Doctorate in Architecture at the Universitat Politècnica de Catalunya (1981). Professor at the Universidad Católica de Chile, Head of the Doctorate Program in Architecture and Urban Studies (2004 - 2016). Director of the School of Architecture (1987-1990), Dean of the Faculty of Architecture and Fine Arts (1990-2000) and Director of the Cultural Heritage Centre (2007-2012). He has authored or co-authored ten books and published a significant number of articles and chapters both in Chile and abroad. Visiting Design Critic at Harvard University, Simón Bolívar Professor at the University of Cambridge and Fellow of the Swedish Collegium for Advanced Study (SCAS).

## Endnotes

- 1 See Eric Mumford, *The CIAM Discourse on Urbanism* (Cambridge Massachusetts, London: The MIT Press, 2000).
- 2 The distinction was done in the already classical Marshall Berman, *All that is Solid Melts into Air* (New York: Penguin Books, 1982).
- 3 On the subject see Kenneth Frampton *Modern Architecture a Critical History* (London: Thames and Hudson, Fourth Edition, 2007).
- 4 Gabriel Guarda, *Historia Urbana del Reino de Chile* (Santiago de Chile: Andrés Bello, 1978).
- 5 Earthquakes were widely registered by the press. In addition to this, it usually appeared in specific publications like the well-known album of the Valparaíso earthquake: *Recuerdos del Terremoto del 16 de Agosto de 1906* (Memories of the earthquake of the 16<sup>th</sup> August 1906) (c 1907).
- 6 Alejandro Crispiani and Tomás Errázuriz, “La Reparación de lo Público. Experiencias de Habitación Durante el Posterremoto,” *Revista 180*, n°31, (2013): 16-21.
- 7 Simin Davoudi, “Resilience: A Bridging Concept or a Dead End?,” *Planning Theory & Practice* 13, n°2, (2012): 299-307.
- 8 Arturo Almandoz, *Planning Latin America's Capitals Cities 1850, 1950* (London: Routledge, 2002).
- 9 Martín Ruiz de Gamboa founded Chillán in 1580. The city suffered various earthquakes and floods, leading to its relocation several times. In 1939 it was divided in two main areas. The first one was Chillán Viejo (old Chillán) corresponding approximately to the foundation of Governor Ortiz de Rosas in 1751, result of the destruction it had suffered due to a big earthquake in the same year. Another earthquake in 1835 provoked a re-foundation nearby. This area is known as Chillán Nuevo (new Chillán). Pedro de Valdivia founded Concepción in 1550 by the Bío-Bío River. Due to the Arauco war it was re-founded several times changing its original position.
- 10 Simon Collier and William Sater, *Historia de Chile 1808-1994* (Madrid: Cambridge University Press 1999), 213.
- 11 Pablo Páez, *La oportunidad de la Destrucción en la Urbanística Moderna. Planes y Proyectos para la Reconstrucción de Valparaíso tras el Terremoto de 1906* (Master Thesis, Santiago de Chile: Pontificia Universidad Católica de Chile, Instituto de Estudios Urbanos y Territoriales, 2008).
- 12 *The Compañía Holandesa de Obras de Cemento Armado* (Dutch Company of Reinforced Cement Works) was established in Valparaíso in 1906 and would make a significant contribution to the dissemination of reinforced concrete in the following years. The French architect and builder Victor Auclair, expert in reinforced concrete techniques came to Valparaíso on the occasion of the 1906 earthquake. He stayed in Chile for 18 years making a significant contribution to the establishment of this building technique.
- 13 A general regulation on building and planning was promulgated by the national government in May 1931 (DFL345).
- 14 María Isabel Pavez, *La Institución del Urbanismo en la Facultad de Arquitectura y Urbanismo de la Universidad de Chile 1928-1988* (Santiago: Universidad de Chile, Facultad de Arquitectura y Urbanismo 1992).
- 15 Andreas Hofer, *Karl Brunner y el Urbanismo Europeo en América Latina* (Bogotá: El Ancora Editores, 2003).
- 16 María Isabel Pavez, *Institución*.
- 17 Andreas Hofer, *Karl Brunner*.
- 18 Andreas Hofer, *Karl Brunner*.
- 19 Karl Brunner, *Weisungen der Vogelschau, Flugbilder aus Deutschland und Österreich und ihrer Lehre für Kultur, Siedlung und Städtebau* (München: G.D.W. Callwey, 1928).
- 20 Le Corbusier, *Vers une Architecture* (Paris: Les Editions G. Crés et Cie., 1923).
- 21 Andreas Hofer 2009 “The Latin American City and its Viennese Planning Approach: Karl Brunner in Chile and Colombia 1929-1948,” in *Bitte, Hegemann and the Metropolis, Modern Civic Art and International Exchange*, ed. Bohl, Charles and Lejeune, Jean François, (London and New York: Routledge, 2009).
- 22 Karl Brunner, *Manual de Urbanismo* (Bogotá: Consejo Municipal de Bogotá, 1939).
- 23 All the details of the frustrated visit in Pedro Bannen, Fernando Perez, and Claudio Vazquez, “Entendidos, Subentendidos y Malentendidos sobre el Urbanismo Moderno: Alternativas del Frustrado Viaje de Le Corbusier a Chile,” in *Massilia 2003. Anuario de Estudios LeCorbusierianos* 130-151, (Barcelona: Fundación Caja de Arquitectos, 2003), 130-151.
- 24 See Fernando Pérez “Le Corbusier y Sud-América en el Viaje del 29” in *Le Corbusier y Sud-América Viajes y Proyectos*, ed. Fernando Pérez, (Santiago de Chile: ARQ, 1991), 14-41.
- 25 See Cecilia Rodríguez dos Santos, Margareth da Silva Pereira, Romão Veriano da Silva Pereira and Vasco Caldeira da Silva “El Viaje del 36” in *Le Corbusier y Sud-América Viajes y Proyectos*, ed. Fernando Pérez, (Santiago de Chile: ARQ, 1991), 42-49.
- 26 The Chilean architect, Roberto Dávila, who had worked with Le Corbusier in Paris in the early thirties, wrote to Le Corbusier on the 25<sup>th</sup> November 1938. José García Tello, a physician interested in architecture, who would become a teacher at Universidad de Chile, apparently had a correspondence with Le Corbusier and wrote to him on the 10<sup>th</sup> December.
- 27 Stanislaus von Moos, *Le Corbusier* (Barcelona: Lumen, 1977).
- 28 Le Corbusier, *Précisions sur un état présent de l'architecture et de l'urbanisme* (Paris: Les Éditions G. Crés et Cie., 1930).
- 29 Letter from Le Corbusier to Roberto Dávila Carson, 10<sup>th</sup> December 1938. FLC A3-11-123.
- 30 Talcahuano is a seaport close to Concepción.
- 31 Letter from Le Corbusier to the Municipal Council, 29<sup>th</sup> January 1939. FLC A3-11-128 to 131.

- 32 Letter from Carlos Charlin to Le Corbusier, 31<sup>st</sup> January 1939. FLC A3-11-127.
- 33 Letter from Carlos Charlin to Le Corbusier, 16<sup>th</sup> February 1939. FLC A3-11-136.
- 34 Letter from José García Tello to Le Corbusier, 21<sup>st</sup> February 1939. FLC A3-11-138.
- 35 Letter from Le Corbusier to Mr Commert, in charge of American Business of the French Foreign Affairs Ministry, 2<sup>nd</sup> February 1939. FLC A3-11-128 to 131.
- 36 Answer from Le Corbusier to the Mayor of Santiago, after receiving a telegram from her, 26<sup>th</sup> March 1938) supposedly accepting his economic conditions. FLC A3-11-118.
- 37 Among them was Federico Oehrens (El Frente Popular, 11<sup>th</sup> February 1939), who despised Le Corbusier for being an inexperienced theoretician.
- 38 This is the case of the Hogares Defensa de la Raza (Race Defence Homes) in Santiago, social facilities for young people, designed with the participation of Enrique Gebhardt, young avant-garde architect and adherent to Le Corbusier's invitation.
- 39 Karl Brunner, *Manual*.
- 40 Pedro Bannen, Fernando Pérez and Claudio Vásquez, "Entendidos", 135.
- 41 See Guillermo Ulricksen "La tierra liberada para edificar (a propósito de las teorías de Le Corbusier)" (Liberated land for building, about Le Corbusier's theories), *El Frente Popular*, 15<sup>th</sup> February 1939.
- 42 This happened mainly during the last two weeks of February 1939.
- 43 Waldo Parraguez, together with Enrique Gebhardt, who would later become secretary of the local CIAM, was part of functional planning group. His proposal included a low-rise version of Le Corbusier redents.
- 44 David Carvajal, *Institucionalidad Nacional y la Catástrofe de Chillán. La Corporación de Reconstrucción y Auxilio en la reconstrucción de Chillán (1939)* (Master Thesis, Santiago: Instituto Estudios Urbanos Pontificia Universidad Católica de Chile, 2011).
- 45 The new cathedral by Hernán Larraín, with its parabolic nave, was an exception.
- 46 Simin Davoudi, "Resilience".

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Figure 1: National Library Archive, made available on line by Memoria Chilena, and El Mercurio newspaper.

Figure 2: Andreas Hofer Karl Brunner y el urbanismo europeo en América Latina. Bogotá: El Ancora editores, 2003.

Figure 3: Fondation le Corbusier, published in Cecilia Rodrigues dos Santos et al Le Corbusier e o Brasil.Sao Paulo: Tesela Projeto 1987

Figure 4: Zig-Zag magazine collection, 1939, published in Massilia.

Figure 5: Post Card, Quintana Photographer.

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# AN EMPIRICAL ANALYSIS OF URBAN PLANNING IN CASE OF SEISMIC DISASTERS

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This proposal refers to the role of urban planning as a main tool of urban development in the case of natural disasters and especially earthquakes. Investigations of how much urban planning contributes to urban development is sought here, both at the stages of prevention and restoration. Case study research is used as a methodology to draw empirical conclusions.

Urban planning constitutes a necessary and sufficient condition which expresses a priori all the procedures required to make and implement decisions for every stage of the before and after earthquake period. In other words, it is the mechanism through which all housing needs and the perspective of economic recovery are met within a sustainable city. According to international experience, effective post-disaster urban planning can be a powerful instrument for incorporating disaster risk management into redevelopment efforts, provide a framework for coordinated, integrative efforts towards sustainable reconstruction by defining the framework within which infrastructure, transport, environmental management, and development occur.

In regards to the Greek reality, two case studies were examined to indicate the differentiation in using urban planning tools. Their selection and comparison was made based on different operations at an organisational, administrative and urban planning level which, in spite of the two cities' several common characteristics, led to opposite effects. Kalamata (1986) therefore, constituted the country's leading example because of the significance of urban planning upon earthquake defenses, and because of its pivotal role in the city's future development. In contrast, in Volos (1955), the project is considered a complete failure due to rough organisation and a lack of planning, resulting in the city missing the opportunity to showcase its special nature and achieving a better urban development, notably after World War II. The two examples included occur in different chronological and political frameworks and thus, the different ways that were used to address them is justified. However, they were consciously selected because the urban planning value is timeless and its contribution to major spatial, environmental, economic and social issues is imperative. The conclusion reached by comparing the two cases and analyzing the way was used to deal with the seismic disasters. The main inferences are related to the criteria of efficient urban planning such as forecasting and preventing methods combined with sustainable urban planning and management that shields cities from natural (and man-made) hazards, financial planning, organisation and collaboration of the competent administrative bodies. Urban planning itself, though, does not suffice unless it is part of an integrated policy that responds to the requirements of sustainable development. Besides, a resilient community should also be a sustainable community, in order to meet legislative requirements, and –more importantly – to ensure the needs of future generations are met, economically, socially, culturally and environmentally.

## Keywords

urban planning, earthquake / seismic disasters, empirical conclusions



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# PLANNING FOR DISASTER RESILIENCE: THE EVOLUTION AND CHALLENGES OF URBAN PLANNING IN TAIWAN

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Taiwan is very vulnerable to natural disasters. Taiwan island is in the Circum-Pacific seismic zone. Three to four typhoons landfall the island every year which cause flooding in the plain areas and landslide or debris in the mountain areas. Therefore, how to apply the hazards mitigation measures into urban planning process to promote disaster resilient cities become an important issue. This study uses governmental documents collection method and literature review method to explore the evolution of the urban planning for disaster resilience. This study also uses depth interview method to understand the challenges on the implementation of the resilient planning in both public and private sectors. This study finds out the progresses of the disaster resilient planning has the relationship with the major disasters. The 1997 revision ordinance for the Periodical Overall Review of Urban Planning which emphasized the planning for disaster response facilities and roads was influenced by the Kobe Earthquake in 1995. The handbook of Urban Planning for Disaster Reduction was introduced in 2000 which was intended to solve the problems caused by the Chi-Chi Earthquake in 1999. The 2011 revision ordinance for the Periodical Overall Review of Urban Planning which focused on the vulnerability analysis and planning for flood retention space was to cope with the impacts by the Typhoon Morakot in 2009. This study also finds that the challenges on implementing the disaster resilient planning, which are: (1) the urban planners lack the training on the disaster related professionals; (2) the budgets for periodical overall review of urban planning are limited; and (3) the confusion of urban disasters reduction spatial planning and the local disaster management planning, and (4) the urban review committees do not emphasize disaster related planning.

## **Keywords**

Disaster resilient planning, natural disasters, urban planning, Taiwan





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# URBAN RESILIENCE AND RECONSTRUCTION THE NATURAL DISASTER CASE THAT STRUCK THE HISTORICAL CITY OF SAO LUIZ DO PARAITINGA, BRAZIL

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The subject resilience is nowadays of fundamental importance for the understanding of urban reconstruction processes, especially in those cases where there is the presence of relevant monuments and heritage references. It applies to the Brazilian city of Sao Luiz do Paraitinga, officially founded in 1769, preserved by the State Historical Heritage in 1982 and struck by a great flood in 2010. The main reason of the disaster was a flood of the Paraitinga River that left more than 4,000 people homeless, i.e. 60% of the city's population. St. Louis was the first planned city of São Paulo state, organized in perpendicular courts, Enlightenment influence of Governor General Morgado de Mateus is fundamental to the understanding of urban patterns adopted by the Portuguese in the exploration and conquest of Brazil, in the period of mining cycle, which extended through the seventeenth and eighteenth centuries. The current architectural complex date most of the sec. XIX, (because of sec. XVIII almost nothing remains) being the exception Matrix Church, one of the buildings protected by state and federal heritage. The aim is to an approach through the reconstruction of the Church and some of the major symbolic buildings of the city, highlighting, in addition to urban instruments, community role and its positive improvement over the situation, incorporating concepts of identity, collective memory and representation. Understanding resilience in its original concept (arising from the physical area and the environment), as a measure of the persistence of the systems and its ability to absorb changes and disturbances and still maintain the same relationships between populations or state variables, we can state that in the case of Sao Luis do Paraitinga, this phenomenon was fully verified. Within this framework reproduction works, and post-reconstruction community ownership, we ask: which community strength linked to the damaged monument in reconstituting material into a historical process broken? When retrieving the physical standards, it is necessary to connect them to cultural images in an approach from the bottom up, involving the local community? The study will also enable to compare this experience with similar cases that occurred in other countries and contexts, in order to expand concepts, respecting specificities and approaching postures. It will allow to think over in future interventions, and extend it to other missing assets, defining new strategies against these adversities - and the process of facing and adapting to the new situation - involving the reconstruction of heritage, identity of cities and cultural references its inhabitants.

## **Keywords**

resilience, reconstruction, São Luiz do Paraitinga



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# Resilience and Climate

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Chair: *Pedro Garcia*



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# PLANNING WITH CLIMATE CHANGE

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**Pedro Garcia**

Architect

Territorial resilience, reduction of carbon emission, and overall adaptive capacity to global warming are now seen as important parameters for consideration in the urban environment contemporary debate. In Portugal, the National Strategy for Climate Change Adaptation, (2010) pushed for a broader range of actions and during same year, Cascais Municipality (CMC) took the national lead by becoming part of a niche of municipalities with a local climate change strategy. The Cascais Strategic Climate Change Plan (PECAC) is considered, up to this day, the most complete and progressive local scale climate change assessment in the country. This paper aims to analyze the strategies intending to adapt the urban environment and discuss their role in planning history. The strategies aim to anticipate how climate change will play a striving force against the current relation between the environment, the economy and social development. Both plans PECAC and Cascais' Master Plan raise important questions regarding the territory that hold specific vulnerabilities and resources, and how they will lead to the loss of a valuable biological, geological, tourist and economic resource. The opportunities depend upon the triangle of mobility/community/environment and the guidelines to the improvement of infrastructures. The three main topics interact and continuously challenge the equation to contemplate and integrate climate change in planning decisions. If each topic is set on one side of the triangle they are influenced by a fragile equilibrium. To reach positive results, it is required to consider the needs from each topic, thus keeping the triangle balanced. PECAC depends on the use of an interdisciplinary methodology to deal with the complexity of the system where the built environment interacts with mobility infrastructures and the improvement of the community's quality of life. The present strategies cover the following main recommendations:

1. Promotion of pedestrian walkways and bicycle paths to reach more users.
2. Open air reservoirs that collect gray waters and are linked with the hydraulic system. The circuit of water is one of the odd parameters, it influences the urban design at a visible level but depends on invisible infrastructure and territorial management; the water supply, the separation of gray and dark waters from sewage, and the creation of water reservoirs along the water streams.
3. Change in flora and fauna, require the expansion of permeable soils, thus concentrating the built areas.
4. Growth of flooding areas and sea level rise protection measures demand the expansion of buffer zones.
5. High temperatures and insulation' strategies influence the design of public space and the materials used in the built environment.

The discussion aims to evaluate the process where each recommendation influences the interdisciplinary method to adapt to global warming. The complexity of PECAC and its strategies challenge which should take precedent, urban planning or territorial management. Another important question, is whether territorial management and urban planning are the same thing, or if they are two different aspects in the process to face climate change.

## **Keywords**

urban environment, climate change strategy, Cascais





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# THE GOVERNANCE OF FLOOD RISK PLANNING IN GUANGZHOU, CHINA: USING THE PAST TO STUDY THE PRESENT

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Based on the framework of governance adapted from the work of Patsy Healey and drawing on the case of Guangzhou, which is regarded as the most vulnerable city in China to flooding and waterlogging, this paper adds to the literature on urban climate change adaptation. It does so by shedding light on the history of the city's struggle against the water and examining why the current spatial planning and flood risk management fails to address the growing flood risk linked with climate change. The paper distinguishes two major transformations of the approach to dealing with water in Guangzhou. Historically, the city was built under the influence of Fengshui Philosophy and co-existed with water. Then, the approach shifted towards engineering-based solutions to containing flood risk under the stress of rapid city expansion. After that, in the context of a changing climate, to minimise flood risk the local government is transferring its priorities from the planning of hard engineering solutions (back) towards soft nature-based solutions. However, the deeply rooted top-down planning culture and clear-cut functional separation between different departments of the local government critically affect the implementation of the policy and cooperation between the different agencies to address the present and increasingly urgent cross-cutting climate change adaptation agenda.

## Keywords

coastal cities; flood risk planning; climate change adaptation; governance challenges; on-going process

## How to Cite

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## INTRODUCTION

Climate change usually brings about more negative impacts than positive impacts, heat waves, rising sea levels, frequent storms, severe water scarcity, etc.<sup>1</sup> Due to poor preparation, most coastal cities with low altitude cities are negatively influenced by the flood risk, with existing large accumulation of populations and assets threatened.<sup>2</sup> What is worse, in some rapid growing countries, for instance China, uncontrolled urban expansion is rapidly eroding floodplains which leaves the new urban areas at high risk of flooding. Consequently, these coastal cities face tremendous pressure from the tension between leaving the room for water or for urban development.<sup>3</sup>

To meet these challenges, a new notion of climate adaptation in flood risk planning is increasingly adopted by coastal cities.<sup>4</sup> Corresponding, various measures, strategies and programmes in the realm of spatial planning tries to apply this notion. However, in practice, it remains extremely challenging to integrate adaptation measures with the existing governance behaviour.<sup>5</sup> The potential reason might be there is a gap of a deep understanding of the underlying mechanism of governance of flood risk planning. This paper tries to respond to this gap by exploring the mechanism via a historical perspective, using the past to study the present. It helps to understand what the characteristics of governance in flood risk planning are, in what context they emerge, and, the most important, how they change and evolve over time.

The term governance refers to ‘an arrangement where one or more public agencies directly engage non-state stakeholders in a collective decision-making process that is formal, consensus-oriented, and deliberative and that aims to make or implement public policy or manage public programs or assets.’<sup>6</sup> It has been increasingly used in analysis of spatial planning when climate adaptation and flood risk are concerned.<sup>7,8</sup>

In this paper, a framework from Healey is adopted in the analysis of governance of flood risk planning. In her theory, the governance is a dynamic process.<sup>9</sup> This standpoint helps to present how the characteristics of governance are linked together and how they evolve over time.

This article uses the case of Guangzhou to enhance our understanding of the governance of urban flood risk planning and its implications. It does so by looking back into the history of the relationship between urban development process, approaches to tackling flood risk and the stakeholders and network involved, which in turn allows for better understanding of the present challenges that the city faces in climate change and the magnified flood risk that it brings. Thus, the paper addresses the following research questions:

- Q1: How governance of flood risk planning has been organised and changing over time in Guangzhou ?
- Q2: How the negotiation between the different stakeholders in the governance of flood risk planning is organised across different governance episodes?
- Q3: How culture characteristics and values embedded in the Chinese governance determine the changes in governance behaviour?
- Q4: What are the implications of this evolution for the current challenges posed by climate change?

The article is organised in the following way. First, it explains why Healey’s governance theory is adopted as a theoretical framework for this study. Second, the paper takes stock of Guangzhou’s historical relationship with water and the evolution of the ways in which flood risk was addressed within the planning system. Policy tools such as the central government’s mission statements, policies and regulation, or local and regional strategic plans and detailed urban designs, are examined in a chronological order; to investigate the changes of scale, type, content and discourse concerning flood risk. Thirdly, the article rethinks the current changes and future trends in the planning system itself, reflecting upon the opportunities for better integration and implementation of flood risk reduction measures in climate adaptation measures. These opportunities are related to the on-going shift towards greater stakeholder engagement and more integrated approach to urban challenges.

## GOVERNANCE OF FLOOD RISK PLANNING AT MUNICIPAL LEVEL

Governance, as opposed to government, refers to the involvement of public and private actors in decision-making in the public sphere.<sup>10</sup> Nowhere should this approach to public policy be more advocated than in flood risk planning in cities. First, the wide scale of impacts of flood in cities and vague definition of responsibilities to address them make this issue difficult to tackle drawing on expertise in just one specific area, such as water management.<sup>11</sup> Second, the long term perspective and uncertainty associated with flood risk management, exacerbated in the wake of climate change, call for a flexible mechanism to receive the feedbacks from the changing situation and create scope revising the original plans. Third, given the potential negative and uneven impacts of flood and measures to counter it on the different actor groups in the city, the involvement of the different stakeholders is a necessity to allow everyone to exercise the right to defend their interests.<sup>12,13</sup> In the context of spatial planning responses to flood risk, governance is the mechanisms allowing to mitigate the conflicts stemming from planning strategies and maintaining coordination between flood-risk management actions and the different spatial interventions.<sup>14</sup>

## FRAMEWORK USED IN THE ANALYSIS OF GOVERNANCE OF FLOOD RISK PLANNING

Following Healey’s framework governance has three dimensions: episode, governance process and governance culture (see Table 1).<sup>15,16</sup> This framework was first used by Healey to assess the experiences with the introduction of ‘area committees’ to local planning system by Newcastle City Council in the UK.<sup>17</sup> That paper examined the potential of ‘area committees’ as an institutional innovation and explored its capacity to set off changes in that context.

In Healey’s framework, a specific episode represents a period when agreements between practical problems and strategies are made in spatial development. It starts by an initiative caused by a big event in natural environment, for example a serious flood, or a transition in spatial planning system, such as a revocation of an department and lasts until a new configuration of actors and arenas arises and opens a window of opportunity that drives policy-making into a new episode.<sup>18,19</sup> A specific episode, therefore, can be regarded as a reflection of a series of constant changes in a period of time, which turns to another new episode by some dramatic or remarkable event. Every episode is marked by the special characters of stakeholders, network, discourses and practices and influenced by modes of governance, embedded cultural values and formal and informal structures for policing discourse.

**DIMENSIONS AND ELEMENTS OF GOVERNANCE OF CLIMATE ADAPTATION. SOURCE: HEALEY (2003)**

<b>Specific episode</b>	<ul style="list-style-type: none"> <li>Actors - roles, strategies and interests;</li> <li>Arenas - institutional sites;</li> <li>Setting and interactive practices - communicative repertoires</li> </ul>
<b>Governance processes</b>	<ul style="list-style-type: none"> <li>Networks and coalitions</li> <li>Stakeholder selection processes</li> <li>Discourses - framing issues, problems, solutions, interests, etc</li> </ul>
<b>Governance cultures</b>	<ul style="list-style-type: none"> <li>Practices- routines and repertoires for acting</li> <li>Range of accepted modes of governance</li> <li>Range of embedded cultural values</li> <li>Formal and informal structure for policing discourse</li> </ul>

TABLE 1 Dimensions and elements of governance of climate adaptation. Source: Healey (2003)

Furthermore, governance process represents the way in which measures are actually worked out and governance culture represents the assumptions and meanings associated with the spatial planning system in relation to social values, governance traditions and beliefs. Compared with changing governance process, governance culture is usually continuous and stable, even if it can change gradually in some circumstances as a result of learning processes or major reforms redefining the structures of opportunities for the actors. This framework is used here to analyse the governance of flood risk planning of Guangzhou, albeit with an emphasis on the evolving character of governance in the planning practice.

## CASE SELECTION

The paper examines the governance of flood risk planning using the case of Guangzhou, China. In the past, the livelihoods of generations of Guangzhou dwellers were nurtured by Pearl River. They lived in proximity to or even with water and adapted to the frequent flooding, which brought fertility to the arable land. Areas at higher altitude were used for residential area, while the lower places were used for farming. Today, however, the rapidly expanding Guangzhou – a megacity located at the heart of the economic powerhouse and magnet for millions of migrants namely the Pearl River Delta (PRD) - is emblematic of the flood risk management challenges encountered in many Chinese cities. The climate change scenarios for the PRD include, among others, such negative impacts as the growing risk of coastal flooding and more frequent extreme precipitation. These phenomena, together with the continuing urban expansion into flood-prone areas, strengthen both the scale and degree of Guangzhou's exposure to flood risk.<sup>20</sup> Actually, in the file *Ranking of the exposure of world coastal cities to coastal flooding caused by climate change, assessing current and future exposure (2070)*, Guangzhou ranks second in terms of assets exposed and fourth in terms of population at risk.<sup>21</sup> Thus, it is a city that has a long and rich history of living and fighting with water, which currently is at highly vulnerable level to new flood risks stemming from the changing climate.

## DATA SOURCES AND METHODS

The research builds on an extensive review of academic literature of relevance in the fields of spatial planning, flood risk management and political science. The data is drawn from planning and policy documents (strategic), building regulations (guidelines, technical handbook), government publications and reports (mission statement and other policy documents). Most of the documents studied played critical roles in framing the decisions on tackling flood risk in the course of history of Guangzhou's development. In order to show how the governance of flood risk planning is evolving and how the water issue is incorporated as a part of spatial planning at the local level, the following variables are investigated : institutions and stakeholders involved, policy activities, tools and discourses in the field of flood control. This is complemented by an analysis of the governance culture and features deeply embedded in the Chinese planning system.



FIGURE 1 Map of Guangzhou in Qing Dynasty illustrating the relationship between the city and the water according to Fengshui philosophy, Source: Xie Shaoliang (2014)

## THE EPISODES

### EPISODE 1: CO-EXISTENCE AND ESCAPE (BEFORE THE 1910'S)

In Guangzhou`s history of living with water, the first episode could be named co-existence and escape. Before the 1910`s, China was still a feudal society. Urban construction was then based on empiricism. The traditional belief of *Fengshui* was regarded as the basic paradigm for construction. It concerned the relationship between humans and the living environment and focused on the harmony between natural and man-made forms. An important principle in *Fengshui* was that the ideal location for a city was a place adjacent to high mountains and water resources. Building a city in a place with too high altitude should be avoided, because it would increase the difficulty in the access to water. Building a city in a place too close to the water was not advised neither, because of the need to invest more heavily in managing the flood risk.

The location of ancient Guangzhou was selected according to these traditional principles. It benefited from a high terrain to the north and a lower one to the south. The Yuexiu Mountain sited in the North of the city formed a natural defence to protect the town, while the Pearly River located in the South of the city provided favourable conditions for shipping and farming. Based on this geographic condition, three types of water systems formed. The six canals flowing through the inner city were regarded as important shipping lines, which supported numerous commercial activities alongside waterways. The canals surrounding the ancient city were used as the moat to protect the whole city.<sup>22</sup> The Pearly River was recognised as the economic lifeline for the external trade with many docks built along the side. During this period, the slow development of ancient Guangzhou followed the traditional principle of living with water, while avoiding the disadvantages of periodic flooding.



### Stakeholders and network in the first episode

In this period, official water affair administrators, such as Water Official in Qing Dynasty(1916-1912), were merely set at national and regional level, while folk organisations played an important role in water management at municipal level. The responsibility of flood management in Guangzhou at Qing Dynasty was in the hands of the so-called River Dredging Association (*Qinghao Gongsuo*). Qinghao built and maintained water infrastructure in the city, while at the same time promoting the economic activities along the river and canals. In fact, Qinghao was composed of rich merchants who invested in water facilities construction, then bought land at a discount price along waterways and finally established commerce along the side of the water. One could thus argue that water management was then organised in a bottom-up manner and was in the hands of the private sector, even though the construction required a consent of the local authority.<sup>23</sup>

## EPISODE 2: STRUCTURAL FLOOD CONTROL AND URBAN EXPANSION (FROM 1910`S TO THE END OF 20ST CENTURY)

During the second episode, that could be named structural flood control and urban expansion, the city mainly relied on engineered construction to offset the negative impacts of flood and allow for an expansion of the city toward the floodplain area. It was attributed to the rapid growth in population and the increased demand for land. Specialised flood control infrastructure were then built in a wide scale which gradually channelled the natural river into an inland river. This episode could be divided into two stages. The first stage covered the period from 1910`s to 1980`s, during which the expansion of Guangzhou was a gradual process. The second stage covered the period from 1980`s to the end of 20st century, during which Guangzhou had experienced a rapid expansion in the wake of liberalisation and opening of China`s economy prompting unprecedented economic growth and migration from the country side to the cities.

After 1910`s, China stepped into the era of The Republic of China. Guangzhou was ushered in a short term of stable development from 1910`s to the end of 1930`s. In that period of time, the position of Guangzhou had been greatly raised by the central government.<sup>24</sup> According to *Plans for National Reconstruction*, proposed by President of Sun Yat-sen in 1921, Guangzhou was expected to be the most important harbour in Southern China. In this spirit, the attention was transferred from the development of inner city to the coastal areas. It brought up two effects. First, the plans *Guangzhou development and implementation plan* launched in 1930 and *Guangzhou Urban Design Guideline (Draft)* launched in 1932, paid more attention to the development of private industry and commerce along the two sides of the Pearl River. Hence, massive construction of water defence infrastructure, such as docks, levees and harbours was prioritised. Second, the commerce along the six open canals in the city gradually faded and the economic function of these inner canals degraded.<sup>25</sup> As a result, these canals were abandoned and finally covered up.<sup>26</sup> It seemed that Guangzhou were well prepared with fast development. However, due to the disturbance of wars and revolution from the end of 1930`s to 1970`s, Guangzhou`s development slowed down due to economic stagnation or even recession at certain times. Nevertheless, some big projects were still carried out at the end of 1950`s. Four artificial lakes were constructed in Guangzhou to improve its capability to face flood risk and waterlogging. After that, the large-scale construction of flood control infrastructures in Guangzhou stalled.<sup>27</sup>

From the 1980`s, when the reform and opening-up policy was proposed, a new chapter in the history of the city was opened. Guangzhou was then redefined as an important port city and a centre for finance and foreign trade in the *14th Guangzhou Land Use Masterplan* in 1984. Based on that, Guangzhou stepped into a period of rapid expansion. One thing to note here was that in 1988, the Ministry of Water Resources was founded, which was officially granted the power to take measures to control flood risk. From then on, engineering-based resistance measures were widely advocated in flood management regulations issued by water affair administrators. While the recognition of flood risk was limited in land use masterplans, which paid much more attention to economic development. For instance, in the *15th Guangzhou Land Use Masterplan* (1992) and *16th Guangzhou Land Use Masterplan* (2002), the commercial development in coastal areas was emphasised, while very little attention was paid to flood risk issues.



### Stakeholders and network in the second episode

The stakeholders in the first stage of the second episode were limited to mainly governmental sectors. Guangzhou municipal government was the main actor who owned a high degree of autonomy and responded to flood risk. The municipal department in charge was the Works Bureau, whose duty covered the urban planning and building construction. That said, in that period the President of the Republic of China, Sun Yat-sen, personally played an important role in shaping the water policy in Guangzhou, by outlining the main principles for water management and flood risk infrastructure construction in the *Plans for National Reconstruction*, which sketched the blueprint for China's economic development and reserved a key role for Guangzhou's harbour and waterways for Southern China.

#### THE EPISODE OF STRUCTURAL FLOOD CONTROL AND URBAN EXPANSION (FROM 1910'S TO THE END OF 20ST CENTURY)

First stage: gradual expansion (1910's -1980's)			
Department / Level	Policy activities / Year	Content of tools / Category	Activities of water defence and structural flood control measures
President Sun Yat-sen	Plans for National Reconstruction (influential book outlining, among others, the strategic role of water and harbour of Guangzhou for the economic development of China) / 1921	resistance measures / flood (risk) management	emphasis on infrastructure construction in coastal areas, such as channels docks, harbours;
Works Bureau of Guangzhou municipal government / Municipal level	Guangzhou development and implementation plan/ 1930	resistance measures / flood (risk) management	mainly focus on water infrastructure construction, for example: dredging the clogged channel, straightening the natural channel and building dikes and levees
Guangzhou municipal government, Municipal level	Guangzhou Urban Design Guide-line (Draft)/ 1932	resistance measures / flood (risk) management	emphasis on infrastructure construction docks and harbours
Second stage: rapid expansion ( 1980's - the end of 20st century)			
Department / Level	Policy activities / Year	Content of tools / Category	activities of water defence and structural flood control measures
Guangzhou Urban Planning Committee / Municipal level	Guangzhou land use masterplan (the 14th version)/ 1984	resistance measures / flood (risk) management	mainly focus on water infrastructure construction, for example: dredging the clogged channel, straightening the natural channel and building dikes and levees
	Guangzhou land use masterplan (The 15th version)/ 1992	No description	emphasis on the importance of construction of harbours and commerce in coastal areas
	Guangzhou land use masterplan (the 16th version)/ 2002	No description	emphasis on the importance of commerce in coastal areas
Ministry of Water Resources / National level	River management regulations of the People's Republic of China /1988.06	resistance measures / flood (risk) management	emphasis on water infrastructure construction and management
	Guideline Framework for Safety and Construction of Flood Storage Area/ 1988.10	resistance measures and avoidance measures flood (risk) management	and non-engineering flood control measures (e.g. flood storage area to mitigate flood)
	Regulations of Reservoir Dam Safety Management/ 1991.03	resistance measures / construction of technique basis	emphasis on infrastructure construction in levee and dike
	Flood Control Regulation of the People's Republic of China / 1991.07	resistance measures / flood (risk) management	emphasis on flood dispatching and temporary remedial measures,

TABLE 2 the Episode of structural flood control and urban expansion (from 1910` s to the end of 20st century). Source: Author

In the second stage, there was a trend for clear functional division. Before the second stage, the description of flood risk management was an important issue in urban planning, and was considered in documents such as *Guangzhou development and implementation plan* and *Guangzhou Urban Design Guideline*. However, in this second stage, the main responsibility of dealing with flood risk became the sole responsibility of the water resources administration, and urban planning documents paid less attention to water issues. The history of this functional fragmentation helps to understand the current difficulties in collaboration across the municipal departments dealing with water and urban development to tackle the growing flood risk, as will be argued later in the article.

### EPISODE 3. TOWARDS THE NEXT EPISODE OF ADAPTATION AND SYMBIOSIS? (AFTER THE END OF 20TH CENTURY)

As the negative impacts of climate change have been increasingly recognised from the end of 20<sup>th</sup> century, the need to respond to them was gradually brought to the forefront. In seeking to deal with these threats, the National Climate Change Coordinating Leading Small Group (NCCCLSG) was founded by the Chinese government in 1990. It was the first step towards the emergence of the Chinese climate policy. Nonetheless, due to limited authority in the early stage of its activity, this pioneer agency failed to spur the development of climate change governance in China.<sup>29</sup> In Guangzhou as well, climate adaptation considerations were not at all reflected in the plans and strategies related to flood risk. Although there were some early attempts to explore the potentiality of low impact development or green-blue infrastructure, for example in the *Nansha District Develop Plan*, launched in 2001, which tried to apply the notion of “Green-blue network” to protect the hydrological and ecological values of the coastal landscape, while trying to address the conflicts between land use and water management. However structural flood control was still regarded as the main method to deal with flood risk.

The substantive progress of adaptation initiatives dated back to 2007 when China`s *National Climate Change Programme* was launched at national level. Even though the emphasis was put on climate mitigation with limited description about adaptation, it set the basis for preparation of climate actions in China. The year 2011 could be regarded as a big turning point for the promotion of climate adaptation (see Table 3). In the document *12th 5 Year Plan (National Social and Economic Development Plan 2011-2015)*, a chapter was introduced to describe the impact of climate change. This was significant, as the 5 Year Plans in China actually define the direction that the whole country should strive to follow deploying all possible efforts. Normally, previous 5 Year Plans merely focused on social and economic issues instead of climate issues, which require actions that do not tangible benefits in the short-term. It was thus the first time that climate adaptation was proposed and emphasised in this series of national documents. Before 2011, in the documents such as *10th 5 Year Plan and the Plan for the Reform and Development of the Pearl River Delta*, flood risk was always considered as a paroxysmal hazard with little connection to the long-lasting trend of climate change. Therefore, responses during that period from national to municipal level mainly focused on resistance measures to avoid flooding. Lots of money was thus poured into the construction of water engineering defences.

The next step in this evolving approach was the policy promoting the notion of a sponge city. Following the *12th 5 Year Plan*, *Technical Guideline for Sponge City Construction* was launched in 2014, emphasising the combination of “engineering facilities” (drainage system) and “biological facilities” (green space system, river system and road system) to improve the permeability of the city’s underlying surface in the face of flood and waterlogging. More importantly, the document clearly pointed out the necessity of horizontal cooperation among different departments at the municipal level to reach that goal. It provided the institutional support for urban planners to handle waterlogging. However, this problem was not explicitly recognised as being exacerbated by climate change. Before the sponge city policy, most plans concerned with water management in the urban space remained on paper with little support from other departments such as the municipal *Water Affairs Bureau*, however, this policy is set to change that pattern.

Although in the national level there were limited new policies beyond the sponge city policy, at the municipal level, the trend went further. *Construction planning for ecological city of Guangzhou (2014.08)* and *Guangzhou Centre City Draining System Comprehensive Planning (2015.06)* were issued successively by the Water Affairs Bureau of Guangzhou, underlining the improvement of drainage and storm-sewage diversion system as a priority. These documents helped turn the focus of Guangzhou's municipal government from resistant measures to resilient measures. Both of them could be regarded as supplementary materials for the notion of sponge city, which provided the basis for practical project cooperation with *Guangzhou Land Resources & Urban Planning Committee*.

### **Stakeholders and network in the third episode**

The stakeholders in the adaptation and symbiosis episode are numerous with different levels and various fields (see Table 3).<sup>30</sup> However, governmental institutions are still the main actors. National Development & Reform Commission (NDRC), Ministry of Housing & Urban-rural Development, Guangzhou Land Resources & Urban Planning Committee and Guangzhou Water Affairs Bureau are the key stakeholders, with little involvement of NGOs and civic organisations. This weak involvement of non-state actors reflects the features of the Chinese political system, in which participation act is regarded as a mere consultative process by the local government, with limited inclusion of its outcomes into the research, and with limited knowledge co-creation.<sup>31</sup> However, the main reason might also be that civic organisations and NGOs do not have sufficient knowledge about climate adaptation. The recognition of adaptation needs is slow even among the departments of the municipal government, let alone the among the public.

There is also a deficiency in the operation of the network of stakeholders. Due to the strict functional division, the cooperation between the different departments at the municipal level is weak. In Guangzhou, Water Affairs Bureau usually has little connection and cooperation with Urban Planning Bureau.<sup>32</sup> They work separately, relying on strict functional division. Such fragmented system can cause conflicts and obstacles in communication. A collaborative environment between the different sectoral municipal departments is needed to coordinate policies and build include a broad range of stakeholders in agenda-setting and learning opportunities.<sup>33,34</sup> Although the policy of sponge city is a good start, as it advocates horizontal cooperation between the different institutions, its impact has to be evaluated over time and once the policy is actually implemented.

**THE EPISODE OF ADAPTATION AND SYMBIOSIS ( AFTER THE END OF 20TH CENTURY)**

Department / Level	Policy activities / Time	Content of tools / Category	activities of flood risk planning with partly adaptation consideration
Guangzhou Urban Planning Committee / Municipal level	Nansha District development plan / 2001	No description	Emphasis on construction of "Green-blue network" to protect the hydrological and ecological values of the coastal landscape while trying to address the conflicts between land use and water management
	Guangzhou land use masterplan (the 16th version)/ 2005	No description	Emphasis on the construction of green belt along the Pearl River
National Development & Reform Commission (NDRC) / National level	10th 5 Year Plan (National Social and Economic Development Plan 2001-2005) / 2001	resistance measures / flood (risk) management	enhancing the construction of flood control infrastructure
	The Outline of the Plan for the Reform and Development of the Pearl River Delta (2008-2020) / 2008.1	resistance measures / flood (risk) management	focus on water infrastructure construction, without any description of climate change or climate adaptation
	12th 5 Year Plan (National Social and Economic Development Plan 2011-2015) / the beginning of 2011	resistance measures / climate change	The plan including a chapter on climate change and specific section on adaptation for the first time; mandating the development of a National Adaptation Strategy (NAS).
Ministry of Housing & Urban-rural Development (MoHURD) / National level	Key Work of Urban Construction Division in the Ministry of Housing and Urban - rural Development in 2014 / 2014.2	resilience measures / sponge city	emphasis on infrastructure construction in drainage improvement and Storm-Sewage Diversion System , firstly come up with the notion of sponge city in a national material, without any description of climate change or climate adaptation
	Technical Guideline for Sponge City Construction / 2014.11	resilience measures and construction of technique basis / sponge city	emphasis on the combination of "engineering facilities" ( anti-waterlogging drainage system) and "biological facilities" ( green space system, river system and road system) to improve the permeability of the underlying surface in face of flood and waterlogging,
	City adapt to climate change action plan / 2016.03	resilience measures and resistance measures / Climate change	emphasis on difference of climate features in different cities to compile action plan of climate adaptation ; Select 30 cities as pilot projects to implement climate adaptation action.
Ministry of Water Resources / National level	Guidelines for Developing Flood Risk Mapping / 2008.12	construction of technique basis / flood (risk) management	emphasis on the basic principles of flood risk map, still very vague, without any description of climate change or climate adaptation
	Technical Details for Developing Flood Risk Mapping / 2009.10	construction of technique basis / flood (risk) management	emphasis on difference of flood risk maps according to the geographic characteristics, still very vague, without any description of climate change or climate adaptation

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**THE EPISODE OF ADAPTATION AND SYMBIOSIS ( AFTER THE END OF 20TH CENTURY)**

Department / Level	Policy activities / Time	Content of tools / Category	activities of flood risk planning with partly adaptation consideration
Pearl River Water Resources Commission / Regional level	Pearl River Basin Flood Control Planning / 2006	resistance measures and avoidance measures / flood (risk) management	emphasis on infrastructure construction, management and monitor with a regional framework ,without any description of climate change or climate adaptation
Guangzhou Land Resources / Urban Planning Committee / Municipal level	Guangzhou land use masterplan (2006-2020)/ 2006	resilience measures / land use planning and economic development	emphasis on infrastructure construction in levee and dike, without any description of climate change or climate adaptation
	Guangzhou Comprehensive Plan (2011-2020) / the middle of 2010	resilience measures / land use planning and economic development	emphasis on infrastructure construction in drainage and water reservoir, without any description of climate change or climate adaptation
	Guangzhou Haizhu ecological city comprehensive plan / 2013	resilience measures / land use planning and economic development	emphasis on ecological technology and water infrastructure construction to lower flood risk and improve aquatic ecosystem.
Guangzhou Water Affairs Bureau / Municipal level	Guangzhou Water White Paper 2013 / 2014.5	resistance measures / flood (risk) management	start to transfer attention to water management, climate change is regarded as one of reasons that resulting in the vulnerability of city in the face of flood risk and waterlogging
	Construction planning for ecological city of Guangzhou / 2014. 08	resilience measures / flood (risk) management	emphasis on water infrastructure construction in drainage and storm-sewage diversion system and the sustainable development of water economy
	Guangzhou Centre City Draining System Comprehensive Planning / 2015.06	resilience measures / flood (risk) management	emphasis on infrastructure construction in drainage improvement and Storm-Sewage Diversion System

TABLE 3 the Episode of Adaptation and Symbiosis ( after the end of 20th century)

## UNDERSTANDING THE CURRENT CHALLENGES THROUGH THE PRISM OF GOVERNANCE CULTURE

In spite of these new initiatives, it should be admitted that specific strategies and deep understanding of climate adaptation in Guangzhou at municipal level were still developing. In practical project, limited plans set adaptation as their initial targets, it is usually framed as a sub-topic of other policies and plans that could generate other socio-economic or environmental benefits in the categories of land use planning and economic development or flood risk management,<sup>35</sup> although some attempts in the notion of sponge city were promising. As the project progresses step by step, original intentions might change gradually with the topic adaptation finally neglected. After all, it was first defined as a sub-topic with less attention on it. At the same time, the diversity of adaptation has not been realised. It could be reflected in policies that although adaptation could be translated into different items in various projects, such as sponge city, low impact plan, sewage diversion system construction and drainage improvement, limited plans or projects set a notion that they related and could be organised overall. There is also a lack of description of the connection between these strategies and climate change, which leads to the fragmented understanding of adaptation measure, not conducive to the formation of a continuous response. It also explains that in the *12th 5 Year Plan*, even climate adaptation proposed, there are limited descriptions about how to use this item in spatial planning.

The difficulties in getting adaptation agenda off the ground in Guangzhou can be attributed to some features of the Chinese governance culture. First, one is the top-down planning system. Chinese planning system is centralistic with limited autonomy of local government.<sup>36</sup> The strategies at the municipal level mainly rely on the direction of central government.<sup>37</sup> Although in the *12th 5 Year Plan (2011)*, the notion of adaptation is proposed, there is no clear description of measures and principles about how to handle this issue on the ground. This situation has been changing, however, since 2014 when the *Technical Guideline for Sponge City Construction* was issued. It offered a concrete and practical guidance on how to handle waterlogging and flood by the combination of engineering facilities and biological facilities. In that way, sponge city as a variation of adaptation is spread among the local governments and known by their departments gradually. That is the reason why there is a delay in the promotion of climate adaptation at municipal level and why many adaptation planning initiatives are mainly at national level, while fewer at the municipal level.

Another governance culture feature that hinders the development of urban climate adaptation is the narrow focus on the technical role of spatial planning in most cities of China. Climate adaptation planning, if recognised as an objective at all, is regarded as a technical process to face the negative physical impact of climate change and to formulate the final blueprints,<sup>38</sup> not a course of mutual learning involving interaction between multiple-actors, which helps to improve the understanding of the present and future problems, and finally make better decisions.<sup>39</sup> Such learning-centred decision-making process is suitable for planning climate adaptation, as it facilitates handling multifarious negotiations among the multiple stakeholders concerned by climate change impacts dealing with uncertainties,<sup>40</sup> which require flexibility and adjustment to the plans in response to the changing situation.<sup>41</sup> The incompatibility of such a 'soft' and performance-focused planning approach with the predominant rigid and formalistic Chinese planning approach, leads to weak cooperation in practical projects, misperceptions of the outcomes of a specific plan and, ultimately, implementation deficit.



## CONCLUSION

By looking back at the history of the links between urbanisation and water in Guangzhou and exploring the current challenges posed by climate change in terms of growing flood risk, the paper highlights the transformations of the ways in which Guangzhou dealt with water over time. Historically, the city was built based on the notion of Fengshui philosophy. In that period people tried to learn living with water while avoid the negative impact of it. However, in the process of rapid city expansion, these traditional approaches were abandoned and the city shifted its attention to engineering-based infrastructural solutions to control the water. Ironically, this engineering-based solutions were not effective enough in the face of climate change impacts, such as intensifying rainfall. So the city now tries to make efforts to minimise flood risk by transferring its priorities from the planning of hard engineering solutions towards soft nature-based solutions (green-blue infrastructure, low impact development, sponge city etc.) under the influence of climate adaptation. Nevertheless, the development of adaptation policies and plans in Guangzhou just starts and is likely to face many challenges in the future. Currently, adaptation is barely mentioned and framed as a sub-topic of other policies and plans which can directly generate socio-economic or environmental benefits.<sup>42</sup> As plans progress step by step, adaptation can be easily neglected and ultimately waived, in favour of other priorities, such as profit from real estate development. At the same time, there is a lack of recognition of the close connection between spatial strategies and vulnerability to climate change. Adaptation initiatives such as sponge city, low impact plan, and drainage improvement are regarded as separate issues. This fragmented understanding of adaptation strategies is not conducive to the formation of an integrated response in flood risk planning.

Apart from the early age before 1910`s when folk organisations were deeply involved and played an important part in water administration, normally the stakeholders in governance of flood risk planning are mainly governmental sectors, with limited participation from NGOs and civic organisations. This weak involvement of non-state actors makes it difficult for planners to safeguard the interests of the public and to take advantage of the local or expert knowledge that such actors could offer.<sup>43</sup> Moreover, the weak cooperation between different municipal departments can cause conflicts and obstacles in communication and implementation of adaptation strategies.<sup>44</sup> Spatial planning cannot only be regarded as a technical tool to draw a blueprint for the city's development, but instead should provide a platform for negotiation and mutual-learning,<sup>45</sup> which is particularly necessary when the multi-faceted challenges of climate adaptation are concerned.

Such governance arrangements in Guangzhou are subtly affected by the top-down planning culture, clear-cut functional divisions and the uncoordinated and sometimes conflicting agendas of the sectoral departments at different levels, from central to local. These planning culture characteristics critically affect the autonomy of the local government in proposing policies or plans. In addition, they also prevent horizontal cooperation between the different municipal agencies- which is needed to address the cross-cutting adaptation agenda - and undermine the motivation of the local leaders and planners to promote the notion of climate adaptation in the longer time perspective.

To sum up, the flood risk planning in Guangzhou is an on-going and self-evolving process, which presently is marked with the new notion "adaptation", though it is still at an initial stage. The adaptation epoch challenges the municipal government in at least two ways: there is little recognition of the climate change impacts in the policies and no guidelines on how to tackle them; and there are many stakeholders concerned while they are not collaborating and operate in separation. Addressing these challenges would require a shift in the understanding of the climate change impacts and the way that would combine the different sectoral agendas.

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## Disclosure Statement

No potential conflict of interest was reported by the Authors.

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# EFFORTS TO IMPLEMENT A COMMUNITY RESILIENCE ACTIVITY: THE CASE OF TARANTO

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The research focuses on the crisis context of the city of Taranto, starting by analysing the current state of shock caused by the presence of the steel factory, ILVA. In order to determine whether this presence has really begun to implement a resistance/resilience activity or not is important to understand if the local community has undergone a processes able to face “emergency events” such as the establishment of the above-mentioned steel plant.

The attention is concentrated on the contrast between the government action, which rules the changes of the territory, and the native community, together with its local associations, which is therefore questioning itself about the impacts of the steel plant and about the transformation of the city by means of social actions. The citizens proved to be able to live in life-threatening conditions, awkward conditions they would have never thought to have to cope with. In the writer’s opinion, this is the reason why the only way to achieve the stability of the system is by gaining a sort of balance between resilience and resistance. To this purpose we took on the definition that the two terms have in the language of ecology. In ecology, resilience is the capacity of an ecosystem to respond to a certain amount of anomalies by resisting damage without changing the processes of self-organisation and its basic structures. In addition, it is also considered to be the regaining of a steady state after a disturbance occurred. These two concepts, closely connected one another, contribute to define the whole meaning of the term.

The word resistance, on the contrary, defines the ability of a system to keep its state, despite the pressure exerted by environmental perturbations due to both natural and anthropogenic causes. Although their meaning is different, both denote a reaction to a catastrophic event affecting a socio-ecological system or a community. It can be said that without such an event or shock, which is threatening the existing balance, the process does not even begin, thus being the starting point of an action of resilience or resistance. It is from this viewpoint that we should read the initiatives of the local community, which asks the competent authorities to solve the problems of the city, rejecting the specific positions and ideals of a certain political party. As a result, many single entities without a shared project, cannot act as cohesive communities, neither resilient nor resistant ones. So, the real question is: could it ever be possible to overcome such an emergency event if the project is not truly shared? Can several single communities, unable to group together, try to overcome such a shock?

## Keywords

Taranto, Ilva, resilience, resistance, community, shock





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# RESEARCH ON METHODOLOGIES FOR RECONSTRUCTION URBAN PLANNING IN THE HISTORICAL CENTER TOWARD TO LONG-TERM REGIONAL MANAGEMENT AFTER NATURAL DISASTER IN ITALY - A CASE STUDY ABOUT FOUR DIFFERENT CITIES DAMAGED BY NORTHERN ITALY EARTHQUAKES IN 2012

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The research focuses on the crisis context of the city of Taranto, starting by analysing the current state of shock caused by the presence of the steel factory, ILVA. In order to determine whether this presence has really begun to implement a resistance/resilience activity or not is important to understand if the local community has undergone a processes able to face “emergency events” such as the establishment of the above-mentioned steel plant. The attention is concentrated on the contrast between the government action, which rules the changes of the territory, and the native community, together with its local associations, which is therefore questioning itself about the impacts of the steel plant and about the transformation of the city by means of social actions. The citizens proved to be able to live in life-threatening conditions, awkward conditions they would have never thought to have to cope with. In the writer’s opinion, this is the reason why the only way to achieve the stability of the system is by gaining a sort of balance between resilience and resistance. To this purpose we took on the definition that the two terms have in the language of ecology. In ecology, resilience is the capacity of an ecosystem to respond to a certain amount of anomalies by resisting damage without changing the processes of self-organisation and its basic structures. In addition, it is also considered to be the regaining of a steady state after a disturbance occurred. These two concepts, closely connected one another; contribute to define the whole meaning of the term. The word resistance, on the contrary, defines the ability of a system to keep its state, despite the pressure exerted by environmental perturbations due to both natural and anthropogenic causes. Although their meaning is different, both denote a reaction to a catastrophic event affecting a socio-ecological system or a community. It can be said that without such an event or shock, which is threatening the existing balance, the process does not even begin, thus being the starting point of an action of resilience or resistance. It is from this viewpoint that we should read the initiatives of the local community, which asks the competent authorities to solve the problems of the city, rejecting the specific positions and ideals of a certain political party. As a result, many single entities without a shared project, cannot act as cohesive communities, neither resilient nor resistant ones. So, the real question is: could it ever be possible to overcome such an emergency event if the project is not truly shared? Can several single communities, unable to group together, try to overcome such a shock?

## Keywords

Urban Origins, Historical Centre, Recovery Management, Central City Regeneration, Resilience



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# The Planned Destruction of North American Urban Landscapes

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Chair: Domenic Vitiello



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# RAILROADS, SLUM CLEARANCE AND A RECONSIDERATION OF THE CLEVELAND UNION TERMINAL, 1919-1935

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**John Mccarthy**

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From 1919 to 1930, thousands of workers built the Cleveland Union Terminal, an enormous new passenger train station at the center of its downtown, and a complex that included the Terminal Tower, which was the second tallest building in the United States at the time of its completion. The event was hailed in the local media as a major step forward for Cleveland, which now had a centerpiece civic structure that was sure to enliven the city, make it more appealing for visitors, and boost civic pride. The two entrepreneurs behind the Union Terminal's building, the Van Sweringen brothers, were similarly feted as visionary businessmen whose investments would improve the city as a whole. The Union Terminal Project also involved the demolition of well over 2,000 buildings and essentially erased one of the city's oldest neighborhoods, the Haymarket, in the name of progress and modernity. This paper will narrate the building of the Terminal Tower and the "unbuilding" of the Haymarket neighborhood, and I seek to tell a familiar story from several different vantage points. First, I argue that while the scale of the Union Terminal project was abnormally large for its time, its practical, economic impact was very similar to downtown building projects across early twentieth century urban America. These kinds of projects did not merely strengthen downtowns but they also altered spatial patterns in important ways: from low-income to middle income, industrial to commercial, and even from city resident to suburban and out-of-town commuter. Secondly, the Union Terminal represents an obvious case of intentional slum clearance, with eminent domain used and condemnation proceedings undertaken, but in this case to the benefit of railroads, which essentially acted as facilitators of downtown rebuilding. Using these perspectives on Cleveland's downtown, I hope to demonstrate that transformation of cities from places of production and industry to centers of consumption and white collar-related services is not confined to the late twentieth century, but rather was a process that unfolded more gradually over a far greater expanse of time, and involved entities (such as railroad interests) rarely considered before.

**Keywords**

City Beautiful, Cleveland, Railroads, Planned Destruction





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# THE PLANNED DESTRUCTION OF CHINATOWNS IN THE UNITED STATES AND CANADA, C.1900-2010

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Chinatowns in North American cities have been the target of removal and destruction since they first formed at the end of the nineteenth century. This paper and presentation will chart the patterns and trends of destruction and preservation in central city Chinatowns from c.1890s to the present. Examining fifteen of the largest 20th century cities in the U.S. and Canada, it will document where, when, and why public and private plans for highways, stadiums, hospitals, convention centers, shopping malls, casinos, and other large redevelopment proposals have destroyed Chinatowns or been prevented from doing so. This history covers three main eras of planned – and often realized – destruction: the City Beautiful era of the 1890s and early 1900s; the Urban Renewal era in the decades after World War Two; and the era of postindustrial economic development. These three eras share important commonalities, including plans for transitioning downtown economies and infrastructure systems, but they also differ in key ways, including planners' stances towards Chinatowns and their residents. The literature on urban redevelopment and planning history has largely ignored Chinatowns and their residents. Historians and allied social scientists have focused more often in the U.S. on African Americans' experiences of discrimination and displacement, and sometimes Puerto Rican, Chicano, and Asian neighborhoods, and in Canada on the recent gentrification of working class European immigrant communities. Some scholars have examined redevelopment and gentrification of individual Chinatowns, but have largely ignored the broader patterns and trends that this paper and presentation will trace. Our historical research project grows out of Domenic Vitiello's involvement in a comparative study of contemporary land use and redevelopment in the Chinatowns of Boston, New York, and Philadelphia, led by the Asian American Legal Defense and Education Fund (AALDEF).

## **Keywords**

Chinatowns, City Beautiful, Urban renewal, Gentrification



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# THE DESTRUCTION OF PRESERVATION: URBAN RENEWAL IN PHILADELPHIA'S SOCIETY HILL NEIGHBORHOOD

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*University of Pennsylvania*

Philadelphia's Society Hill neighborhood stands out as a landmark example of postwar urban renewal that incorporated historic preservation. By contrast with leaders in hundreds of other American cities, planner Edmund Bacon and preservationist Charles Peterson achieved the socioeconomic remaking of a neighborhood without simultaneously destroying all of its built fabric. While the project is notable for its substantial incorporation of restoration, however, this prevailing narrative downplays the destruction that still characterized their preservationist approach. Planners realized destruction in Society Hill in three major ways. First, in a manner typical of cities across the postwar nation, they implemented the large-scale clearance of industrial, residential, and commercial buildings to make way for Interstate 95 and the superblock project of I. M. Pei's Society Hill Towers. Second, they cleared and modified scattered sites located throughout the neighborhood to achieve the piecemeal eradication of Victorian architectural style and of contemporary commercial and industrial uses. In place of these surgical erasures they "preserved" a reimagined, largely residential past populated with Federal and Georgian-style rowhouses. Third, they permitted dramatic interior renovations behind the restored facades of these same rowhouses. Thus, even as historic preservation salvaged a substantial portion of the neighborhood, its accomplishments remained limited. Large- and small-scale destruction still dominated the overall endeavor. This paper will offer case studies of selected parcels within Society Hill that illustrate the second and third of these approaches. By operating at the scale of the building and site, this analysis will demonstrate how residents, architects, planners, real estate appraisers, and preservation professionals combined demolition with restoration to realize renewal on the ground. It will also emphasize the critical role played by photographs in this process. Pre-renewal images helped give visual form to the amorphous categories of "slums" and "blight" that helped sanction destruction. In addition, nineteenth-century photographs provided the historical basis for the restoration work that followed. Finally, preservationists turned to photographs to document the completed neighborhood. The sanitized, still-frame images produced in the 1980s, as part of the neighborhood's local registry nomination, showcase picture-perfect vistas. Yet they simultaneously silence the destructive process behind these scenes' creation.

**Keywords**

Urban renewal, Historic Preservation, Photography, Destruction



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# OPERATION BREAKTHROUGH: "ASSEMBLY LINE FOR THE DREAM HOUSE"

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In 1968, the United States Congress, through its Housing and Urban Development Act of 1968, declared housing the nation's low and moderate income citizens a matter of "grave national concern." At the time, the United States' housing problem was being addressed through a number of ambitious federal initiatives such as urban renewal, model cities, and a lesser known program, Operation Breakthrough. Launched in 1969 by George Romney, in his first year as Secretary of the United States' Department of Housing and Urban Development (HUD), Operation Breakthrough presented a relatively novel approach to solving the housing crisis. In contrast to HUD's approach with urban renewal and model cities, Operation Breakthrough was primarily a demonstration program intended to transform the entire housing production process by stimulating the private market for industrialized housing. In this paper, the authors trace the history and 'failure' of Operation Breakthrough to explore why modular housing never gained traction in the US, and what larger implications this had on failing to solve housing affordability for Americans. The infamous demolition of Pruitt Igoe, a modernist high rise public housing project in St. Louis, Missouri in 1971, and its subsequent representation in housing discourse, provides a convenient marker for the failure of government-initiated urban renewal initiatives and to some extent, the modernist approach to affordable housing in the US. George Romney personally ordered for the demolition of Pruitt Igoe as he saw many flaws with this housing typology, and championed Operation Breakthrough as a viable alternative. Operation Breakthrough offered an experimental approach to ensure basic housing for all people in the U.S., and was initially celebrated by the media as an innovative solution through the use of modular, pre-fabricated construction. While critics of modular housing voiced their concerns of this housing typology becoming monotonous, U.S. housing policy's over emphasis on private-market, individualistic housing, ironically lead to the construction of drab suburban developments across the country. The program's quiet disappearance is largely attributed to the election of U.S. President Richard Nixon in 1972. By 1973, the general political climate surrounding housing policy had dramatically changed after Romney's resignation, and with Nixon instating an 18 month moratorium on the construction of subsidized housing. This marked a significant shift in federal policy in the U.S. towards greater deferral to the private market and decentralization. Due to this change, Operation Breakthrough lacked the time and financial support necessary to significantly impact the production of housing on a national scale. As Andrew Carswell wrote, "the fate of Operation Breakthrough reinforces the suggestion that industrialized production of housing—along European lines—is not possible in the United States unless there is a significant public housing program." Operation Breakthrough's inability to achieve its goals has led to a continuation of traditional stick-built construction and decentralized federal policy on housing production. In this paper, the authors use the case of Operation Breakthrough to question the role of the government in housing programs, and to what extent decentralized planning has continued to weaken federal approaches to affordable housing policy.

## Keywords

Operation Breakthrough, modular housing, industrialized housing, affordable housing, United States housing policy





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# Destruction of the Built Environment for Reasons of Political Ideology

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Chair: *Walter Peters*



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# HERITAGE OF THE SECOND WORLD WAR: DESTRUCTION AND RESILIENCE OF THE SOVIET HINTERLAND CITIES AND THEIR URBAN PLANNING

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**Ivan Nevzgodin**

TU Delft

The history of urban reconstruction of war-damaged Soviet towns is quite well known. Post-war rebuilding of Moscow, Leningrad (St.-Petersburg), Stalingrad (Volgograd), Istra, Minsk, Kharkov (Kharkiv) and Kiev received sufficient attention from researchers. The Soviet regime used the rebuilding plans of these cities for propaganda purposes to demonstrate the achievements of Socialism both inside the union and abroad. Yet, some of the most important processes including events and facts were unknown, and several current urban problems in Russian hinterland cities could not be explained. These problems came to light during the analyses for the new Master Plans in the last decade. The origin of this obscurity was the dominance of military purposes and the shame of Soviet (planning) authorities, both led to state secrecy. Nevertheless, some archival documents from meetings of urban planners and architects immediately after the end of the Second World War supply us with surprising information. For example: in one of these meetings in Novosibirsk, architects spoke about the major destruction of the Siberian towns, the huge damage of their urban infrastructure, and greenery during the war. How was it possible to destroy towns in the heartland, thousand kilometers from the front line? What has been happened there? During the war many factories and institutions were evacuated from the West to the East of the USSR. We can speak about the Second Industrialization of the Urals and Siberia. This industrialization was more rapid and more ambitious in scale than that of the famous two First Five-Years Plans (1928/9-1932/3-1937). In comparison with the first industrialization, the second had a completely military character and not at all well-planned. This forced local authorities to improvise and apply “temporarily” solutions, which later lead to long-term urban problems, which were very difficult to solve. Experiments and mistakes in the urban reconstruction in the extreme circumstances of wartime determined development of these provincial cities not only in the immediate post-war period, but during the entire soviet period of Russian history. Redistribution of industry and population, lack of attention for urban infrastructure, required by the growing urban population, created a sort of urban life that it is very difficult to imagine. The municipal authorities did not maintain urban infrastructure in many parts of the cities during the war. The best territories of the cities were occupied by factories, which used the railways and tram tracks to transport their production, and polluted rivers with industrial waste. All transportation means were applied for the industry, the public transport nearly ceased to exist. The population consumed parks, public gardens and other greenery as firewood. The “self-service” of the population of these territories ruined the urban structure. In my paper I analyse this largely unknown side of the Soviet planning practice, arguing that the history of Soviet urban and regional planning should be substantially rewritten.

## **Keywords**

Soviet Urban and Regional Planning, War Urbanism, Post-War Reconstruction, Militarization, Official and Informal Urbanism, Urban Heritage, Soviet Vernacular, Infrastructure



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# BUILDING PEACE? GERMAN PLANS FOR THE RECONSTRUCTION OF NORTHERN FRANCE AFTER WORLD WAR I

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**Anna Karla**

University of Cologne

The reconstruction of destroyed regions in Western Europe has been a key issue of European post-war policy after 1918. In France, seven percent of the country's territory, and most of its industrial centres were devastated. Rebuilding northern France thus became a central point of peace negotiations and a topic of debate on the man-made disaster of the war. Most studies so far however, focus on the domestic aspects of reconstruction at a regional level, and usually neglect the international dimension of the post-war building policies. Based on the records of the German Ministry of Reconstruction (Reichsministerium für Wiederaufbau), and contemporary newspapers, this paper investigates Germany's role in the reconstruction process. It illustrates the extend German actors perceived post-war building opportunities in the neighbouring country and analyses their suggestions. According to part VIII of the Versailles treaty, Germany was obliged to deliver building materials to restore infrastructure and housing along the former front lines. Besides official negotiations, building companies, architects, and trade-union representatives were interested in new building opportunities. Having lost the war, German building experts presented their contributions to reconstruction as a part of the post-war reconciliation, and as an essential step of 'peace building' in a highly rhetoric debate. Concomitantly, these offers reflect political, economic, and not least aesthetic interests in the era of reconstruction. On these grounds, this paper argues that participation in the French reconstruction was not only a key ambition for German political, economic, and social actors right after the war, but also an opportunity for introduction and discussion of new building practices, and building materials in a veritable international context. In fact, those actors tried hard to participate in the reconstruction of France by repeatedly proposing the dispatch of building material and labour, technical expertise as well as architectural advice. Among their propositions, one can find the idea of delegations of building labour organized in a very military way, or prefabricated dwellings to accelerate the reconstruction process. However, these 'well-intentioned' offers encountered resistance during the peace negotiations. Not only will this paper on the post-war building policy yield an understanding of the French suspicions regarding the far-reaching plans of the former aggressor, but also it will provide a new perspective on time-saving building practices, material-saving technical solutions and architectural aesthetics in the immediate aftermath of World War I.

## **Keywords**

Physical reconstruction, reconstruction policies, building trade, building labour, war zones, World War I, economization, rationalization





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# CHANGING IDEOLOGIES AND SPATIAL STRATEGIES: URBAN PLANNING DURING SOCIALISM AND AFTER

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**Jasna Mariotti**

*Independent*

This paper aims to explore the post-socialist spatial restructuring of capital cities in European context by providing an insight into the planning practices both before and after the fall of state socialism in Bucharest, Budapest, Prague and Sofia. Urban planning throughout the period of state socialism had to operate in a system in which the central governments were responsible for the decision-making on all levels, leading ultimately to high levels of control of the urban development in cities. Central level decisions shaped the models of growth of cities, and urban planning served as an instrument that fulfilled the requirements for societal change. Rapid political and economic changes after the fall of state socialism left an undeniable mark on the planning processes, and on the urban form of cities as the transition from one organizational system to another fundamentally alternated the context in which planning operates. The transformation towards the market economy and the re-introduction of private land ownership in cities, required an establishment of a new planning system with decentralized decision-making, a driver to changes that impacted the structure and form of cities after the fall of state socialism. Furthermore, the triumph of neoliberalism and the privileges given to the private sector created particular models of development of post-socialist cities, resulting from the social, economic, cultural, political and societal processes of change. As part of the urban transformations of cities after the fall of state socialism, changes in the locational patterns of shopping centers in cities occurred, illustrating diverse patterns of dispersal than the ones that existed during the period of state socialism. This research aims to highlight the spatial restructuring of cities during the period of state socialism and after, drawing relationships among the locational patterns of shopping centers, urban planning processes and their dynamics.

**Keywords**

decentralization, (post-)socialist city, shopping centre, urban planning



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# URBAN AIR POLLUTION AND POLITICAL SUPPRESSION IN CHEMICAL VALLEY, 1963-1968

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During the 1960s, Sarnia, Ontario's economy was dominated by Chemical Valley, the city's petrochemical industry composed of eleven firms. It was both the wealthiest city (on a per capita basis) in Ontario, and the one with the dirtiest air. Unlike in more diversified cities, no prominent local elites identified air pollution as a problem needing attention. Chemical Valley firms and their executives were also civically active, donating resources to public causes, dominating the local chamber of commerce, and working closely with provincial and municipal officials to ensure a friendly business environment. In response to the air pollution problem, the firms created the St. Clair River Research Committee (SCRRC) to research and implement solutions and promote Chemical Valley as responsible stewards. The SCRRC operated in a regulatory vacuum, neither sharing information about pollution levels with the public nor allowing the province to report the SCRRC's propriety data. In this paper, I explore how economic elites in Sarnia prevented the problematization and regulation of air pollution. I ask: what confluence of factors brought about this outcome, and how did this political system respond to contestation? Because the main case study is ostensibly a nonevent, I focus on two specific occurrences during the late 1960s that revealed details of the clientelist system. First, I focus on a Sarnia allergist who, during the late 1960s, openly advocated for the creation of a bylaw addressing air pollution in the city. As a result, the other physicians in town collectively stopped referring patients, forcing him to relocate. Second, I examine the SCRRC's and Sarnia City Council's response (public, and in private correspondence) to the announcement of the International Joint Commission's investigation of air pollution crossing the Canada-US border from Sarnia to Port Huron. This case study underscores the challenge that a lack of economic diversification in an urban area has historically presented to planning strategies that otherwise might foster social-ecological resilience.

**Keywords**

air pollution, urban history, smog, political economy



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# Urban Vulnerabilities

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Chair: Horacio Torrent





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# UNDERSTANDING THE VULNERABILITY OF HISTORIC URBAN SITES

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Turkey is a country which is vulnerable to great disasters. In particular, Istanbul as its former capital and the largest metropolitan city has suffered significant losses that have been well-reported. In the last 500-years, numerous earthquakes, fires, and other devastating disasters have damaged the city and caused a huge amount of losses for its inhabitants. Not only its monumental buildings but also its densely built housing areas have repeatedly been destroyed and rebuilt. In order to protect the multi-layered cultural and natural heritage of Istanbul, original methodologies were developed. These have included insurance maps, the implementation of innovative buildings techniques and evacuation strategies. This study includes an analysis of several major disasters in the history of Istanbul and post-disaster assessments based on historical site plans made between the 16<sup>th</sup> and 19<sup>th</sup> centuries. The outcome of this study is twofold: (1) the representation of significant disasters together with historical maps of Istanbul (2) the assessment of innovative site renovations and renewal methodologies to minimize destructive impact of the disasters. The impacts of the disasters were not only physical, economic and social but also caused a disruption in the authenticity of the continuous city form.

## Keywords

Istanbul earthquake, quake, fire, cultural heritage, conservation

## How to Cite

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## INTRODUCTION

Cultural Heritage is vulnerable to various risks which change from country to country. In Japan, traditional buildings constructed with combustible materials are prone to the risk of fire; in Nepal, the monumental and historical structures built with un-reinforced masonry as the main structural system are more vulnerable to the ground motion from earthquakes. In Turkey, as well as their being vulnerable to earthquakes and fires, natural, archaeological and historic urban sites are also under pressure from rapid urbanization, and the listed buildings in the urban fabric are prone to deterioration change and disappearance.

Risk mitigation in historical sites was discussed in detail during the 1980s, but the first platform on the protection of cultural heritage under risk began in 1992 with a series of seminars and meetings organized by ICOMOS, ICOM, and UNESCO. The Inter-Agency Task Force (IATF), was established in October 1992 for the protection of cultural heritage against many kinds of risk. The IATF works on five different issues: the creation of financial sources, emergency response, documentation, education and the preparation of regulations, and takes as its main legal base the Venice Charter of 1964. The group has worked on different cultural heritage protection field studies at various scales.<sup>1</sup> This pioneering step was followed by several other meetings and collaborations resulting in risk reduction projects for heritage sites.

Turkey is located on an active part of the Alpine-Himalayan belt. Consequently, it is a vulnerable country that faces a major earthquake on average every year and a half.<sup>2</sup> Turkey suffered two major earthquakes in the Marmara Region in 1999. The first one registered 7.4 on the Richter scale in August 1999 and before any real recovery could be made, a second hit the same region in November 1999 with a magnitude of 7.2. According to the official numbers, a total of 15,000 lives were lost. As this implies, Turkey has a history of large earthquakes that can be both progressive and adjacent.

During the last 500 years, Istanbul suffered several devastating earthquakes (Table 1). The earthquakes of August 1509, July 1690, May 1766 and July 1894 were recorded to have produced massive amounts of physical destruction as well as great social and economic losses. In addition to the significant number of casualties from each earthquake, monumental buildings and examples of civil architecture, now listed as world cultural heritage sites: the City Walls, Topkapi Palace, the Hagia Sophia, Fatih Mosque and the Grand Bazaar, as well as thousands of residences and inns, were damaged and needed to be reconstructed.

Addition to these major earthquakes, Istanbul also suffered a number of great fires. In 1729, a fire destroyed an eighth of the city, from the gate of Fener to Ayvansaray. The Beyoglu, Galata, and Karakoy districts have been fully burned in the Great Beyoglu Fire of 1870, and between 1782 and 1784, there was a further series of major fires. The destruction triggered new development decisions and preventive measures. After each disaster, more innovative techniques were used, and more durable materials were employed in the reconstruction processes. Also, the urban pattern was altered according to the needs of the recovery phase, for instance: the establishment of evacuation routes and temporary accommodation for disaster survivors.

Cultural and natural heritage sites are not only vulnerable to disasters such as earthquakes and fires, but are also under pressure from rapid urbanization and are prone to deterioration, change and disappearance. Significant efforts have been made to prevent physical damage and minimize the number of possible deaths, especially in the historic urban sites in Turkey, and principles to redefine goals, strategies and implement better risk mitigation have been developed.

DATE	LATITUDE	LONGITUDE	INTENSITY	MAGNITUDE	DAMAGE OF THE HISTORICAL MONUMENTS AND NEIGHBORHOODS
10.09.1509	40.90	28.70	vii	8	(1) Hagia Sophia, (2) Aqueduct of Valens, (3) Sea Walls, (4) Gates, (5) Topkapi Palace, (6) New Palace, (7) Sultan Beyazid II Mosque, (8) Sultan Mehmet II Mosque and its Complex, (9) Yedikule, Fener, (10) Davupasa, (11) Galata Walls, (12) Galata Tower, (13) Dikilitas, (14) Pera, (15) Prince Islands, (16) Maiden Tower, (17) Rumeli Fortress
11.07.1690	Epicentre offshore Istanbul		—	—	(1) Walls of Topkapi Palace, (2) Surrounding Residence, (3) Minarette of Fatih Mosque
22.02.1766	40.80	29.00	VII	9	(1) Sea Walls, (2) Tower in Yedikule, (3) Grand Bazaar, (4) Kitchen Complex and its Chimney, (5) Kariye Mosque, (6) Faith Mosque, (7) Eyup Sultan Mosque
10.07.1894	40.60	28.70	X	7,3	(1) Sirkeci Train Station, (2) Faith, (3) Besiktas, (4) Aksaray, (5) Edirnekapi, (6) Topkapi Palace, (7) Balat, (8) Bakirkoy, (9) Silivrikapi, (10) Princes Islands, (11) Ruhban Mektebi

TABLE 1 Chronological List of Istanbul Earthquakes and their Recorded Damage to Historical Monuments and Neighborhoods.

This paper focuses on great disasters that threatened the urban fabric of Istanbul, and those types which still threaten its urban conservation sites. It is aimed at producing a discussion on how to continue conservation studies to risk preparedness and preventive care for Turkey’s cultural heritage. In this study, the post-disaster assessment literature for urban conservation sites is investigated to better comprehend the recovery phases of the major disasters of the last 500 years, and to highlight the vulnerability of the urban conditions. Risk prevention and mitigation principles, consisting of structural peculiarities, open space networks, and routes for evacuations will be discussed based on the old site plans of Istanbul from the 1500s and the 1900s. Lastly, alternative interventions for the conservation of historic urban sites under the disaster risk will be discussed with case studies in urban planning, conservation and architectural design tools.

## MAJOR HISTORICAL DISASTERS

Throughout history, the accessibility of water has been one of the most important factors in determining settlement locations. Therefore, historic settlements were often nestled in coastal areas. This location preference left them prone to disasters. Istanbul is a city that has suffered numerous earthquakes, fires, and other disasters. The disasters affected Istanbul socially, culturally and economically. During the Ottoman period, the first earthquake to cause significant damage occurred on January 16, 1489.<sup>3</sup>

The second major disaster was the 1509 earthquake, which was as known as the “Little Doomsday” (Figure 1). This disaster was one of the strongest earthquakes of the last five centuries in the Eastern Mediterranean region. It occurred in the Marmara Sea on September 10, 1509.<sup>4</sup> The earthquake destroyed the urban center of Istanbul. In the early 16<sup>th</sup> century, Istanbul had an approximate population of 160 thousand, and the Galata neighborhood had 35 thousand households. The earthquake destroyed over a thousand residences, killed around 4 thousand people and injured a further 10 thousand. Almost all buildings in the Historic Peninsula and Pera were damaged. The land and sea walls of Istanbul were demolished, as were the gates of Edirnekapi and Yedikule. Additionally, the earthquake destroyed the remains of the Constantine walls, the walls of Galata and the Galata Tower. The Hagia Sophia was largely unscathed, except for damage to its added minaret and mosaics. However, the Blue (Fatih Sultan Mehmet) Mosque suffered damage to its four central columns, its main dome, and its minarets. Topkapi Palace was partially destroyed. The aqueduct of Valens and the Dikilitas (the Obelisk of Theodosius) in the At Meydani (Hippodrome) were also demolished.<sup>5</sup>

There was more damage to the neighborhoods of the Historic Peninsula as well as to the Princes Islands in addition to numerous other monumental structures such as the Rumeli fortress and the Maiden's Tower. In March 1510, reconstruction started with 3000 master builders and 11,000 assistants.<sup>6</sup> Extra taxes were applied to pay the reconstruction expenses. The city was rebuilt.

The epicenter of the 1766 earthquake was the Historic Peninsula. The sea walls were severely damaged. The observation towers in Yedikule collapsed. The Grand Bazaar and several surrounding inns were destroyed. The kitchen complex and its chimneys of Topkapi Palace were wrecked, and the palace itself was damaged. Sultan Murat III (1717-1774) and his family moved to another city.<sup>8</sup> The monumental Kariye and Eyup Sultan Mosques were demolished, and the Fatih Mosque was damaged.<sup>9</sup>

After the 1766 earthquake, executives ordered that brick and stone would be used as restoration materials, due to their durability in fires. However, timber continued to be used in individual reconstruction projects because it was believed that timber houses were safer in an earthquake.<sup>10</sup> The government also implemented permanent housing units with identical or similar plans to the demolished buildings.<sup>11</sup> Additionally, the significance of cultural and historical heritage protection was stated, and cultural and historical heritage was prioritized in the reconstruction process.<sup>12</sup>

On July 10, 1894, another destructive earthquake occurred in Istanbul. A significant amount of civil architecture was damaged (Figure 2).<sup>13</sup> The Grand Bazaar was destroyed. Most of the Sirkeci railway terminal along with the Fatih, Besiktas, Aksaray, Edirnekapi, Topkapi, Balat, Bakirkoy and Silivrikapi neighborhoods were demolished. Over 2 thousand buildings were wrecked. After this earthquake, Sultan Abdulhamid II (1842-1918) appointed Demetrios Eginitis (1862-1934), the head of the Athens Observatory, to carry out post-disaster assessments.<sup>14</sup> This investigation included a scientific report into the magnitude of the earthquake and the affected regions. The report also indicated that the Princes Islands were affected by the quake. In particular, the Ruhban Mektebi on Heybeli Island was demolished.<sup>15</sup>

The earthquake of 1690 was also devastating for Istanbul. This earthquake caused many deaths and the destruction of many neighborhoods. It damaged the walls of Topkapi Palace, and the surrounding residences were severely damaged or destroyed. The earthquake that occurred on the morning of May 22, 1766, was the second most severe earthquake to occur after that of 1509.<sup>7</sup> It caused a tsunami that swept through the Istanbul Bosphorus and several Bosphorus villages from Besiktas to Istinye were affected.

Victims of the disaster were sheltered in open urban areas. Local municipalities controlled daily diary supplies to prevent any epidemics.<sup>16</sup> Immediately after the earthquake, a volunteer help commission was established.<sup>17</sup> The commission assisted authorities in rehabilitation work and collected money to support reconstruction efforts. The rebuilding and rehabilitation work was completed in ten years.<sup>18</sup>

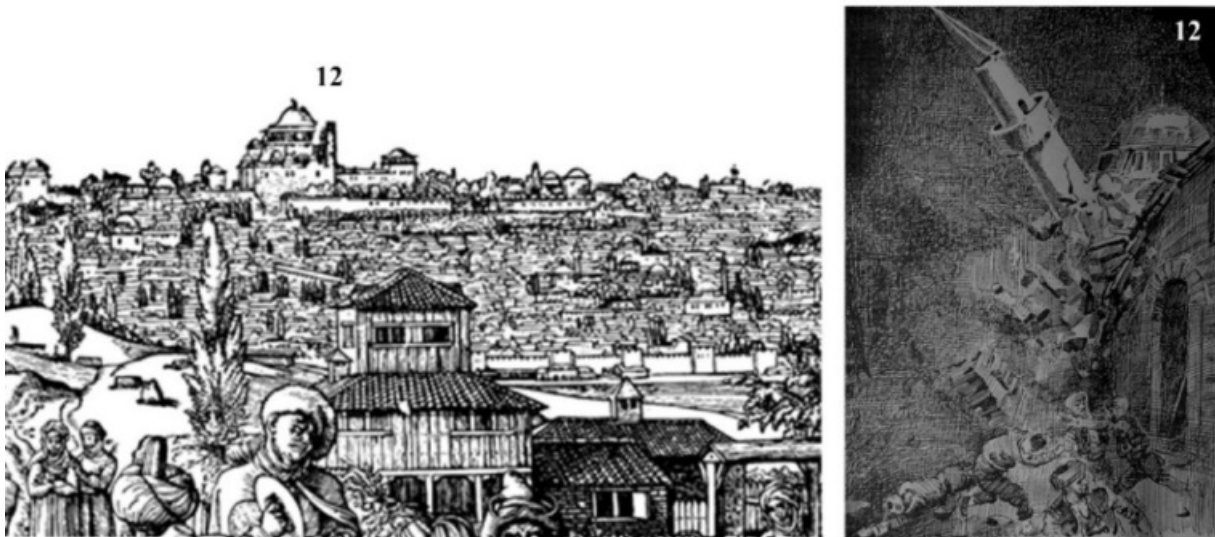


FIGURE 1 The earthquake of 1509. The Plan Indicates the Damaged Monuments in the Historic Peninsula of Istanbul; Illustrations of the Sultan Mehmet II Mosque and its Complex after the 1766 earthquake.





FIGURE 2 The earthquake of 1894. Damaged Historic Neighborhoods and Monumental Structures



The impacts of these major earthquakes were recorded in a broad range of documents including scientific reports, travelers' journals and the archives of foreign diplomats. The effect was so severe that most of the Byzantine remains and many Ottoman monuments were damaged. However, after each devastating earthquake, the reconstruction efforts were aimed at rebuilding the previous architectural pattern identically without any consideration of precaution or prevention evident in the planning process. Timber structures were common and continued to be used due to their perceived resistance to earthquakes even though those structures remained vulnerable to fires – the other significant danger to the city.

Fires were an inevitable risk in Istanbul. Each time the city was ruined, it was revived in its vernacular form. In addition to disaster-related city transformation, the increasing population of the downtown area also changed the building pattern. Connected buildings started to be constructed. The street network was shaped much more narrowly, and dead-end streets occurred due to a lack of planning. Thus, the urban fabric changed rapidly and with different dynamics. This changing urban fabric increased the likely impact of a fire or any other natural disaster.

On August 22, 1782, a fire started in a house in a neighborhood near the Gul Mosque (Hagia Theodosia) in the Cibali district.<sup>19</sup> It took sixty-five hours to extinguish. Over 20,000 houses and workplaces were destroyed, and people drowned in the Golden Horn and the Marmara Sea while attempting to escape from the flames. Previously, there had been a fire in Samatya on July 10, which damaged 1000 houses, and on August 21, 1782, a fire in the Balat district had spread to the Fener, Fatih, Edirnekapi and Yenibahce districts and burned approximately 7 thousand buildings to the ground. Spanish cartographer Thomas Lopes (1730-1802) indicated the losses from these three fires<sup>20</sup>. Almost half of the city was destroyed (Figure 3).

Together with the instances of fire and earthquakes, storms and lightning are also worth mentioning. One of the oldest illustrations of Istanbul shows a significant storm of 1489.<sup>21</sup> One of the earliest cartographers, Hartmann Schedel (1440-1514) published a representation of a storm and the lightning strike that blew up a gunpowder storehouse in the At Meydani (Hippodrome) and destroyed the Gungormez Mosque (Temple of Zeus Hippios, later the Soter Khristos Tes Khalkes Church) (Figure 3). It is therefore quite possible to state that the city of Istanbul has witnessed a broad range of natural disasters throughout its history, and each time it was resurrected from the ruins.



FIGURE 3 (a) Thomas Lopez's Map – Ruined Districts in the Historic Peninsula of Istanbul indicated in Yellow (b) an Illustration by Deroy-Kohl after the fires of the 1780's, (c) Hartmann Schedel's Illustration, the Damaged Gungormez Mosque.

## POST-DISASTER ASSESSMENTS

A French writer, Bertrand Bareilles came to Istanbul in 1880 and saw the remaining aftermath of the great Beyoglu fire of 1870. He indicated that the Pera district was still partly vacant, construction was continuing, and new buildings were being made of timber in a similar fashion to the remaining old part of the settlement.<sup>22</sup> Although the city had lost a significant amount of structures, the post-disaster assessments still lacked mitigation measures regarding urban planning, architectural design tools, and conservation. These evaluations are the only documented surveys of the city, and only a few of them include recommendations to reduce casualties in the aftermath of a disaster.

Helmuth Karl Bernhard Graf von Moltke (1800-1891) was commissioned to establish a street network for Istanbul by Sultan Mahmud II (1785-1839), and he completed the maps around 1839 under the reign of Sultan Abdulmecid (1823-1861).<sup>23</sup> Moltke's aim was to allow access from all popular neighborhoods and gates. The importance of eliminating dead-end streets and developing neighborhood squares to decrease the impact of fire were stated in the plan report (Figure 4). Even though Moltke's plan was not implemented, his proposed street pattern is still available.

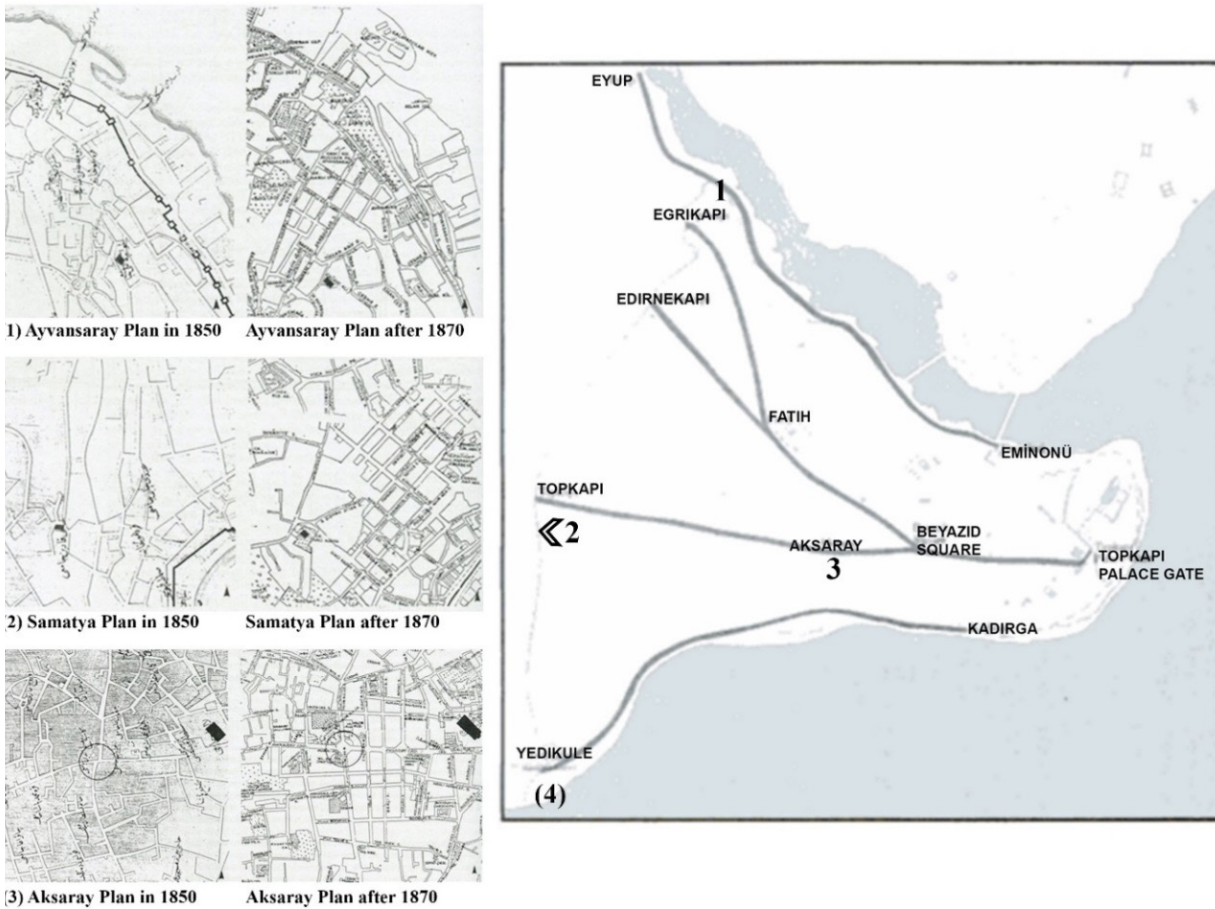


FIGURE 4 Moltke's Plan, The Proposed Transportation Axes for The Historic Peninsula of Istanbul and The Urban Pattern Transformation with New Planning Approaches

Insurance, which was then a common practice all over the world, started to be sold in Istanbul as a consequence of the economic collapse that follows a great disaster. Together with the effects of Westernization, several interactions were made with European countries to analyze the risks and results of disasters. After the 1870 fire, Charles Edouard Goad (1848-1910) developed a series of Istanbul fire insurance maps.<sup>24</sup> These are 1/600 scaled maps which consist of the functions, construction materials and sizes of buildings, the width of streets and the proximity of firefighting services and water supplies to estimate appropriate premiums (Figure 5). Existing gardens, market gardens, and historical structures were also included. These maps clearly indicate the urban development pattern and topography as well as the architectural pattern of the city.

Great fires plagued Istanbul several times in the 1870s, which made it a profitable market for insurance firms. Jacques Pervittich (1877-1945) was one of the cartographers who surveyed Istanbul.<sup>25</sup> The resulting maps systematically covered every district of the Historic Peninsula, Uskudar, and Kadikoy.<sup>26</sup> Similar to the previous insurance maps, these plans indicate construction materials, proximity to water and open green spaces as well as the functions of buildings.<sup>27</sup> The plans were completed between 1922 and 1945 (Figure 6).



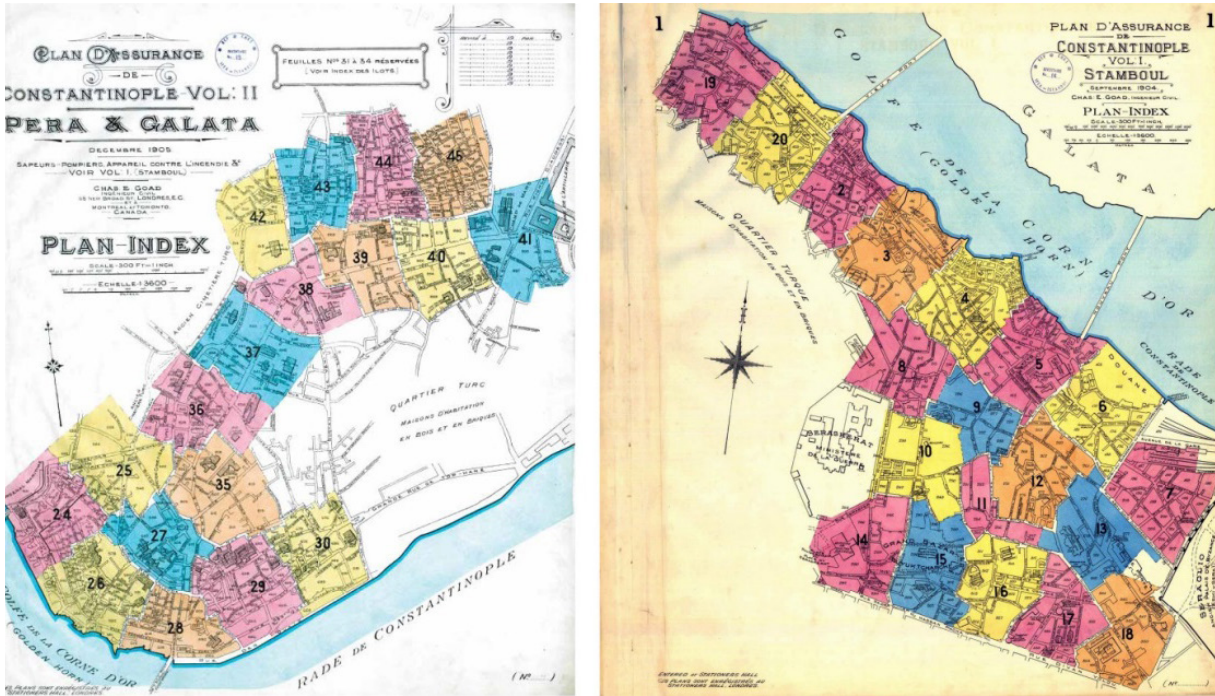


FIGURE 5 Goad's Insurance Map for Galata, Pera and South of the Golden Horn, Fatih, Eminonu

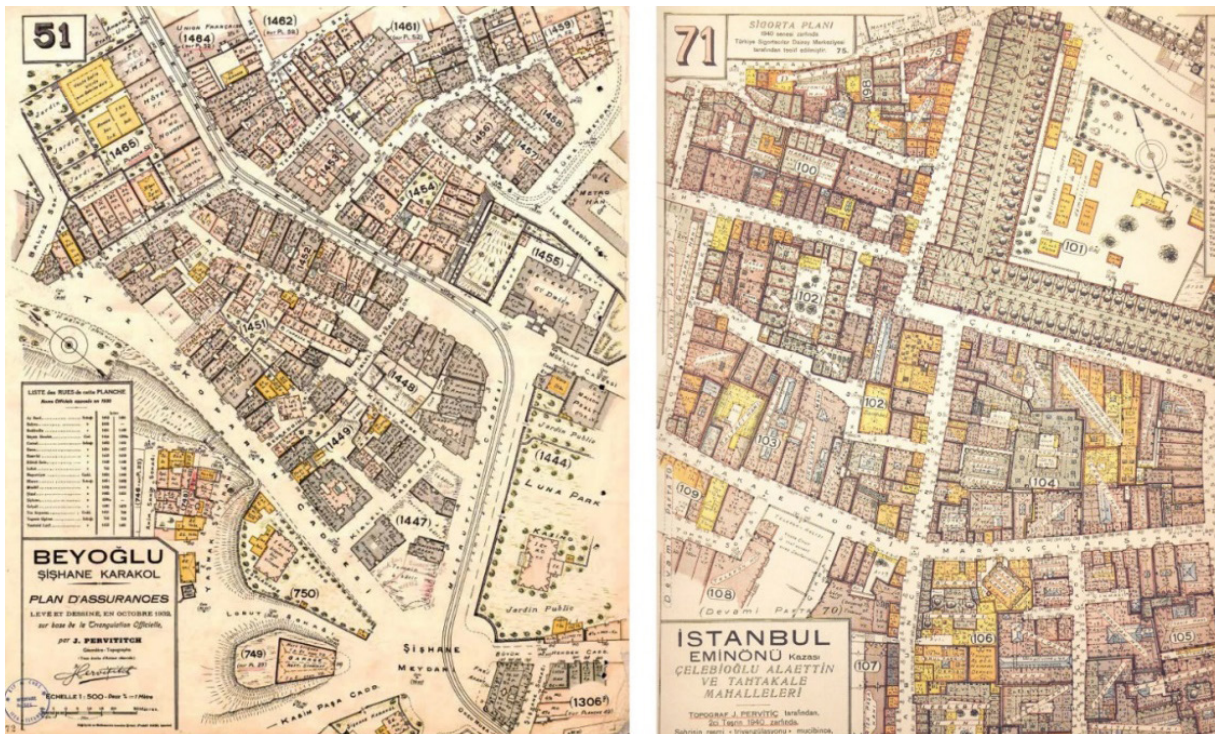


FIGURE 6 Pervititch's Insurance Plan for Beyoglu and Eminonu

The destructive effects of both the historic fires and earthquakes have made interdisciplinary conservation studies a necessity concerning the city's vulnerability to disasters. When the intervals of the historical earthquakes are studied, it becomes evident that the risk of a major earthquake will be a permanent threat to the cultural heritage of Istanbul (as well as for that of other cities in Turkey). In the 1999 earthquakes, not only monumental buildings such as the Orhan Bey Mosque, the Pertev Pasha Mosque, and the Sinan Pasha Mansion but also a significant amount of historical civil structures were damaged.

After the Izmit and Duzce earthquakes of 1999, immediate conservation actions were taken. The "Museum Disaster Preparedness Program" of 2000 and the "Seismic Conservation of Historical and Cultural Treasures of a World City" of 2003 were initiated. The aims of these programs were to provide an education for those authorities responsible for cultural heritage conservation and to equip them with the means to accurately survey the vulnerability of selected monumental heritage sites for the production of a risk-preparedness guideline. In addition to these efforts, the "Istanbul Earthquake Master Plan" was produced in 2003.<sup>28</sup> Heritage conservation is now taken into account in the physical strategic plans, and documentation, reinforcement, restitution and restoration studies on the monumental scale, and urban conservation projects at larger scales are conducted. Local action strategies are also made. Thus, the 1999 earthquakes became a catalyst for planning approaches that aims for the conservation of cultural heritage against any major disasters in Turkey.

## RESULTS AND EVALUATION

An assessment of the historical maps and illustrations related to vulnerability indicates two distinct approaches: documenting major disasters and establishing post-disaster development plans. Major disaster documentation places an emphasis on destruction and includes districts and/or monumental buildings that are damaged or destroyed. Post-disaster development plans which consist of insurance maps and city plans constitute a new pattern for the city fabric with alterations in the construction of materials and its transportation network. The plans include some design recommendations; for instance, eliminating dead-end streets and establishing district squares for evacuation. Also, these plans state the need for material adjustments to sustain structural durability.

According to the historical maps and illustrations, the city transformed after each major disaster. A natural pattern of the transportation network yielded a new grid system. Timber buildings, bridges, and piers were reconstructed in stone, brick, and other more durable materials. Immediate repairs to bazaars, schools and sanctuaries were made to revitalize socio-economic activities. When the cartographic archives for the last-five-era period of Istanbul are assessed, certain improvements which were aimed at preserving the city against major disasters become noticeable. Even though there were not any special pre- or post-disaster conservation regulations, monumental buildings and structures such as the Blue Mosque, the Hagia Sophia, the Grand Bazaar, the City Walls and the Obelisk were reconstructed and had been preserved.

Today, certain national and international interventions for the conservation of at-risk historic urban sites are still discussed regarding urban planning, conservation and architectural design tools. According to the JICA and IMM report of 2002, some measures to reduce the vulnerability of buildings and urban structures are compatible with the regulations of some conservation area systems, especially in those districts of Istanbul that were developed before the 20<sup>th</sup> century.<sup>29</sup> This contradiction was also addressed by UNESCO and led to the initiation of some collaborative projects to explore management guidelines regarding the risk preparedness of World Heritage Cities in 1992.



In the twenty-year review of the Committee's activities (1992), the need for a systematic process above the national level of protection of cultural heritage was stated. In pursuit of this, a "Risk-Preparedness Manual" was published. This manual demonstrates principles and approaches of risk-preparedness for individual monuments, historic settlements, historic landscapes and archaeological sites.<sup>30</sup> It also includes site-specific guidelines and emphasizes the significance of national level involvement in improving conservation strategies against disasters. These initiatives will continue to evolve according to technological developments in the construction sector and advances among planning-related disciplines.

## CONCLUSION

The old and historical plans, illustrations, and archives related to major disasters demonstrate the reiterated vulnerability of Istanbul's historic sites. These documents clearly indicate the level of destruction, reconstruction, and rehabilitation at both the neighborhood and individual structure scales. Between the 16<sup>th</sup> and 18<sup>th</sup> centuries, post-disaster implementations were mostly aimed at the rebuilding of damaged structures at the same location with an identical or similar character. During the Westernization period, these applications were transformed into new planning approaches, both in the scope of city pattern and the use of more durable construction materials.

The findings of this study illustrate two main points. First, the historical maps of Istanbul include a broad range of information related to significant disasters. Thomas Lopes' maps and the illustrations of Hartman and Deroy-Kohl give some indication of the damage caused by disasters, and the insurance maps of Pervitich and Goads' illustrate the post-disaster situation. This evidence can be interpreted as proof that the impacts of disasters on city life and city structure were too high to be ignored. Second, the historical maps constitute contemporary, site-specific solutions and recommendations for the preservation of the authenticity of the city while reducing the after-effects of great disasters. The information from these historic plans and illustrations may assist in estimating the damage from future disasters and may contribute to scenario planning and mitigation studies.



## Disclosure Statement

No potential conflict of interest was reported by the authors.

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# TABULA RASA MEETS RESILIENCE: URBAN RECONSTRUCTION AND THE DILEMMAS OF MODERN PLANNING IN CHILLÁN, CHILE (1939)

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The total destruction of a city by an earthquake, its possible relocation or reconstruction -i.e. the conversion of land to a tabula rasa- was an incredible opportunity for the application of modern urbanism ideas. Chillan earthquake was, in 1939, the occasion to reinforce the idea of planning in general by creating new organisms at national level. Modern urbanism was promoted both by the possibility of realization of the destroyed cities plans by Le Corbusier, as by the implementation of his ideas and models in some of the proposals. However, modern urban planning was questioned, by landowners and by the supporters of the traditional forms of urban development. It was further reduced to the establishment of zoning as a figure for the urban plan, mainly defining preventive constructive characteristics and delineation of the urban form. Modern buildings erected within the traditional grid framework, under only few restrictions set by the plan and the financing of new organisms was the form definitely acquired by resilience for urban reconstruction.

**Keywords**

modern urban planning; urban reconstruction; earthquakes; modern architecture

**How to Cite**

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## INTRODUCTION

An intense earthquake took place in Chile at the very beginning of 1939, shattering an important number of cities and destroying the economic basis of a large region in the country. The impact of Chillán earthquake was such that shocked institutional structure, proposing a definite advance in urban legislation and building while a new concept of planning at national level was raised. But also was the opportunity for the emergence and debate of modern urban planning ideas. The devastation induced the establishment of new governmental planning offices and policies related to both economic development and the possibilities of restoring urban dynamics by reconstruction. Concerning the latter, the following paper examines the development of urban planning alternatives, including Le Corbusier's failure to design the destroyed cities plans; a significant local proposal following the same corbusian ideas; and the more definitive strategies contemplated by the traditional national planning office. It also describes the debates regarding the opposition to relocate the city and any expropriation process, and the reduction of planning ideas to the mere control of future construction by zoning regulations. It finally refers to the actual process of reconstructing the city, and the ability to overcome the earthquake's repercussion while building an urban environment that became in time modern heritage.

## DESTRUCTION AND RESILIENCE: THE CHANGE OF INSTITUTIONAL FRAMES.

On January 24 at 11:30 pm, the earth trembled causing what may have been one of the most damaging earthquakes on record. Chillán was almost completely destroyed by an earthquake, equivalent to 8.3 on Richter scale. Published photographs showed the extent of the catastrophe<sup>1</sup>: the city streets piled with waste materials from destroyed buildings.

Chillán was founded in 1580; since its origins it was subject to successive earthquakes, the most important the one in 1835 that destroyed the city. Thus, it was relocated and definitely established with a regular scheme of 12 blocks per side, surrounded by four avenues, with a central square and four others towards the corners. Early on the twentieth century it showed a continuous urban fabric pattern, consisting of neoclassical architecture basically made of brick masonry. These buildings, erected with a technology unsuited to a soil without structural capacity, were the ones totally destroyed in the earthquake. The city's regular layout and the continuity of urban form were blurred, only intuited amid the rubble through some walls still standing. The technical reports produced immediately after the disaster focused primarily on building conditions<sup>2</sup>, but also in the quality of the soil<sup>3</sup>, in order to capitalize the experience in the form of more restrictive regulations.

Advances in Chilean building regulations have been directly associated with the effects of earthquakes. But the impact of Chillán earthquake was such that shocked institutional structure, proposing a definite advance in urban legislation and buildings that, although established nearly a decade earlier<sup>4</sup> would only be definitive by 1939, as the implementation of a master plan for the cities of over 20,000 inhabitants. The plans would be developed at a central level by the Urban Planning Section of the Department of Public Works. (Figure 2)

But also a new concept of planning at national level was raised, and two institutions were created, which would be key to reconstruction and later economic and urban developments: Corporación de Fomento de la producción (CORFO) and Corporación de Reconstrucción y Auxilio (CRA).

CORFO was based on Keynesian principles and assumed the country's development, initially by promoting the substitution of import, and played a key role in generating different economic conditions in the territorial structure. CRA instead was directly in charge of the recuperation of cities and in this context, among others, had the power to formulate a reconstruction plan for devastated areas, to determine which towns and cities would be rebuilt, to develop total or partial master plans, to issue mortgage loans, to approve fiscal constructions works, and -a particularly controversial attribute- to expropriate, buy, sell or exchange properties to meet with plans including streets, squares and public goods<sup>5</sup>.





FIGURE 1 Chillán, 1939: “A painful procession”. People walking in a street piled with waste materials from destroyed buildings, the morning after the earthquake.

It is known that the ideas of planning at the national level were suitable for institutional formalization; the earthquake would be the argument to request a credit to the US Eximbank, by which the national productive apparatus would be rebuilt: the CORFO would be the institution with a degree of autonomy to assume the planned economic development. Moreover, the need to manage the reconstruction would impose the existence of a specific organism, capable of ordering the process and granting rationality to both public and private decisions. In that sense the CRA became the instrument -although at the level of urban planning development, control would be shared with Public Works. Adversity thus was transformed into the opportunity for economic development and establishment of forms and figures of the territorial and urban planning.

## LE CORBUSIER, MODERN PLANNING ENTERS THE SCENE

The destruction of the cities had been such that almost nothing was left standing. In Chillán, technical reports after the earthquake indicated between 19 and 28 buildings standing from an amount of 3600 that had originally shaped the city. The devastated land was available for the new city to be built and the possibility for the application of modern urban models was given. As stated by Sergio Larrain -the architect who had built the first modern building in Chile over a decade before- “to make these ideas of urban advance feasible... there cannot be a more opportune time than the present moment, for the catastrophe that has just happened -however tragic and horrific- has given rise to a unique advantage to carry out a new plan: that in some cities nothing exists as regards construction, for having all been destroyed by the catastrophe”<sup>6</sup>.



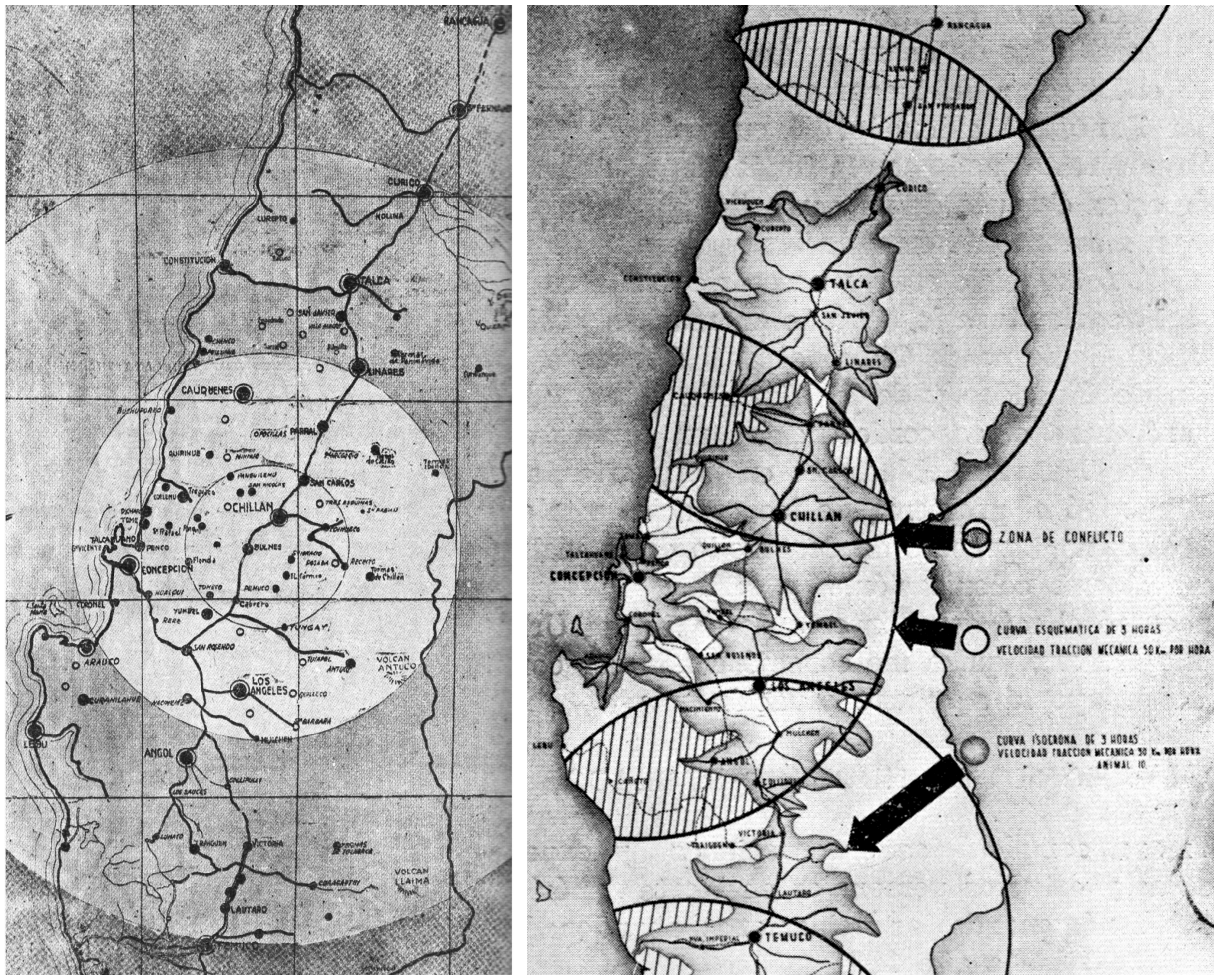


FIGURE 2 The area affected by the earthquake -about 600 kms long- in a map showing the epicenter, and the area in the regional and urban studies for the devastated zone by Luis Muñoz Maluschka from the Urban Planning Section of the Department of Public Works.

The debate on the possible development of new cities called for renowned architects and urban planners. Many individuals and institutions contributed with their knowledge and expressed their interest in rebuilding in the most diverse ways. The Instituto de Urbanismo -an organization with several years of trajectory- promoted a number of meetings in order to affirm the idea of the need for planning at national and local level. The initial proposal was the creation of a technical ministry for reconstruction, which assumed later the task of territorial planning. The idea of planning promoted was comprehensive and assumed sequentially territorial, regional and municipal levels.

The same day the Instituto de Urbanismo made his proposal public, various media reported on an offer by Le Corbusier for the free realization of the urban plans for devastated cities. The news recognized him as “representative of a new spirit and new ideas”, that his principles had already traveled the world and his work had already “created a language common to technicians in all countries, demonstrating solid based theories.” Reported also “the gesture of Le Corbusier corresponds to his strong impetus, that on other occasions has brought all of his knowledge to the service of countries awaiting his wise word, concerning the solution of architectural and urban problems posed by contemporary modern techniques, which undoubtedly have given him fair universal fame.”<sup>7</sup>



Le Corbusier had been invited to advise on the Plan Regulador de Santiago by the end of 1938; he had accepted, confirmed and set his fee on the early days of 1939. After the earthquake, he sent a note offering free plans for Chillán and Concepción if his proposals were accepted<sup>8</sup>. Simultaneously, he received a third invitation to design the plans for Chillán, Concepción and Talcahuano, and his answer was what transcended. (Figure 3)

His trip was promoted by a group of young admirers who promoted ideas regarding modern architecture and urbanism. However they managed for the Instituto de Urbanismo to publicly support the idea, the proposal unleashed a relentless struggle between two opposing visions of modern urbanism: the more radical one, represented by the young, and the already more traditional one, concerning a Central European matrix, developed after the visit of Karl Brünner at the beginning of the decade.

The debate would be polarized so that the figure of Le Corbusier would appear often in newspapers, with opinions for and against. The biggest argument against came from other members of the Instituto, stressing the importance of the figure, “universally known as a fruitful theorist of urbanism”, and emphasizing however that he “could not implement any of the studies made for cities”. Calling him a utopian stated his “studies have not led to practice for various reasons, as considering different economic or ideological facts that made his projects unfeasible.” If the government accepted his offer their presence would be “a factor of healthy technical benefit for our professionals, but we doubt that their presence in Chile can be an effective utility for the country”.<sup>9</sup>

The opposition came from professionals close to the Communist Party and arguments had an ideological character; but paradoxically if on the one hand he was accused of “imagining technically perfect cities, as part of an idealized system of capitalist imperialism”<sup>10</sup>, on the other hand he was demanded the ability to hold negotiations with landowners.

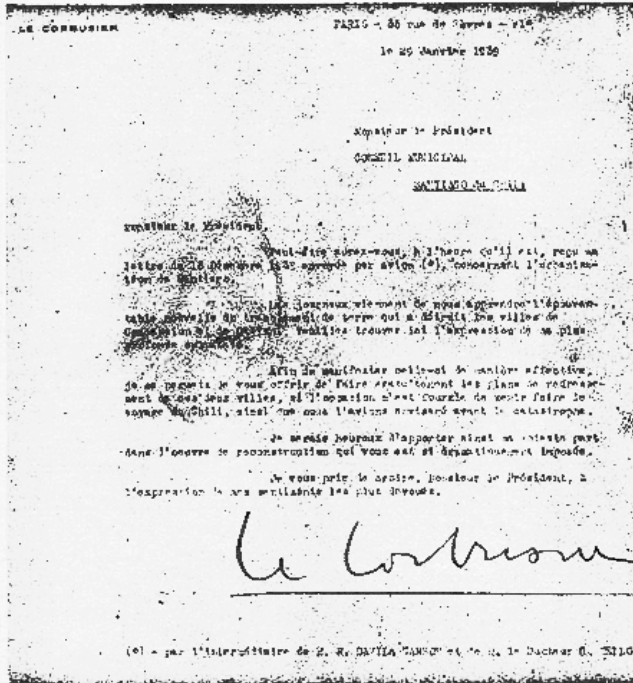
In an analysis on the possibilities of having free land to build, the need to abolish the limits of property “that obstructs the free flight of urbanistic thought” was evaluated. It went further: “those who know the work of Le Corbusier should recognize that it could reach any significance on the basis of land freed for reconstruction. And if his name is prestigious enough to produce an agreement against such sensitive decisions, other resistances against his utopian theory caused in healthy technicians would disappear, to give way to a feeling of gratitude toward those who are able to achieve an agreement that breaks decisively with the mean bias of property, which has largely hindered the healthy, normal and extensive development of modern cities”<sup>11</sup>, it was said in clear knowledge that the figure of the Le Corbusier would not have that power in Chile.

However, the argument recognized a condition key to the debate: “Only in this way we create the premises that all modern urbanism requires: a horizontal area to arrange freely all the elements of the projected city, freedom for coordination of partial areas, zones, centers of public buildings; an area for expansion and growth of the city projected”.<sup>12</sup> In short, what was under discussion was the possibility of clearing land ownership system, ie to delete the only vestige left in a devastated city: a tabula rasa.

## Le Corbusier viene a realizar, gratuitamente, los planes de reconstrucción de las ciudades afectadas por el terremoto

Deben prepararse de inmediato los antecedentes suficientes para que pueda realizar su labor apenas llegue a nuestro territorio

por Carlos Charlín Ojeda



Carta autógrafa de Le Corbusier, en la que ofrece gratuitamente sus servicios para trazar los planes de reconstrucción de las ciudades devastadas por el sismo del sur.

En nuestros artículos anteriores nos hemos referido a la conveniencia de una planificación previa sobre la zona afectada por el terremoto. Manifestamos en ellos la importancia que tiene la estructuración de la economía regional, como una base para compensar el esfuerzo que la nación realizará para recuperar su ritmo. Esta oportunidad trágica de realizar el ideal de muchas generaciones en lo referente a descentralización administrativa, viene a constituir el punto de partida de la solución de muchos interrogantes nebulosos de nuestra organización económica. Los terrenos arrasados por el sismo suben del 10% de la superficie, y corresponden a más de la tercera parte de nuestra zona agrícola nacional.

Nos permitíamos sugerir la conveniencia de contratar técnicos de fama mundial

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El gran arquitecto Le Corbusier

en estos problemas, y proponíamos a Le Corbusier como el hombre más adecuado para realizar los planes de las nuevas ciudades que se levantarán en esas regiones. Justamente, hemos tenido la suerte de contar con él en un ofrecimiento que nuestro Gobierno está en el deber de agradecer y aceptar. Le Corbusier se ofrece GRATUITAMENTE para realizar la obra. Este urbanista, que ha planificado la "ville radieuse", como la única solución del caso de París, que ha elaborado los planes de la ciudad de Argel, de la ciudad universitaria de Río de Janeiro, del Palacio de la Liga de Naciones, del Centrosoyus de Moscú, etc., vendrá a Chile a poner desinteresadamente su experiencia al servicio de millares de habitantes, que obtendrán de este modo la más valiosa de las donaciones.

Mucho antes de que ocurriera la catástrofe se había pensado en solicitar su colaboración para la realización de los planes reguladores de las ciudades más importantes del país, y para justipreciar lo que significa el sacrificio pecuniario de Le Corbusier, baste señalar que existía la idea de contratarlo para Santiago por una suma superior a 20.000 dólares.

La labor inmediata en estas circunstancias, es preparar los antecedentes suficientes para que se aborde el estudio apenas llegue a nuestro territorio. Las oficinas respectivas deben hacer un censo prolijo de la zona y tener cuadros estadísticos de avalúos, población, catastros de bienes raíces, producción agrícola, ganadera e industrial, redes camineras y ferroviarias con

(Continúa en la pág. 175)

FIGURE 3 Charlín Ojeda, Secretary of the Municipality of Santiago, published Le Corbusier's letter offering the plans for the devastated cities, in an article he wrote to support and promote the visit.

## A NEW CHILLÁN AND THE VILLE RADIEUSE MODEL

Several architects published proposals for the new city: some on the same site, other moving it to securer ground. A more radical project proposed the transfer to new territories, creating a new modern urban form. The layout was a grid with a regular circulatory system, surrounded by parks. A density of 200 people per hectare was proposed -against preexisting 250- and provided a 22-blocks city with a capacity for 52,800 inhabitants.

It was a project developed by Waldo Parraguéz, one of the youngsters who had promoted Le Corbusier's visit. Along with Enrique Gebhard, had jeopardized architectural culture in recent years with the magazine *ARQuitectura* -published between 1935 and 1936<sup>13</sup>. From there, they proposed an affirmation of modern architecture and urbanism spreading manifestos and documents such as papers from the CIAMs in Brussels and Frankfurt, texts Gropius, Van Doesburg, Giedion and Le Corbusier. Among them it was obviously the recently published *Ville Radieuse*, illustrating one of the combative articles against Santiago's plan inspired by the work of Brünner.

The design by Parraguéz was certainly in debt with Le Corbusier's model. Le Corbusier had published "La Ville Radieuse" in 1935<sup>14</sup>; text and images appeared already on October of that same year in *ARQuitectura*<sup>15</sup>, plenty of doctrinal representations: the main points against the corridor street, in favor of high density and low occupancy floor, and fundamentally a deep lyrical about the city as a product of the times<sup>16</sup>. (Figure 4)

Parraguéz scheme was similar to that of radiant city. In addition to residential sectors, it proposed a fairly clear industrial zone in relation to the railway system and a structure with an upper head with public services and major institutions, a sector where school buildings and a future university focused. Proposed a circulation system with parallel streets on ground level -the one parallels on the longest side of the plant, related to workplaces- and underground those perpendicular, with the intention of eliminating crossroads and performing a series of bridges and ramps systems connecting both levels. Thus intersections were replaced by circulation connections specially developed in detail. Parking lots would be underground, on 300 meters long streets. The city would consist of a few housing types, developed in a continuous mode a redent with a uniform two stories height, with the intent to compensate different densities ranging between 50 h/hectare and 350 h/hectare in the city before the earthquake. He conceived housing surrounded by green areas and in an equal opportunity system. However, reducing the redent to two-stores volumes is frankly ridiculous considering the dispersion of urban tissue proposed. The similarity between the proposed structure and that of the *Ville Radieuse* is evident in the configuration of ground level, while the height of Parraguéz's city established a clear counterpoint to the model.

Not only the model of the radiant city was present, but also its main conceptual structures: the idea of building in new soil, and the possibility that the new floor provided to organize the city with scientific criteria. Parraguéz stated that "the planning of a modern city to be built in accordance with an ideal plan, should include certain capital ideas, which are those that have joined Urbanism among the exact sciences," accompanied by "Urbanism is the organization the functions of collective life"<sup>17</sup>. It proposed changing the city's location: considering the destruction degree of infrastructure and paved paths, it was inconvenient to rebuild the city in the same place "without studying the matter would be a mistake from the urban point of view, given the case that there is now the possibility of erecting it on new grounds ". He was aware that the earthquake was a unique opportunity for the affirmation of modern urbanism in Chile: "Now it is presented an opportunity to rebuild the devastated area on essentially scientific and rational basis, thereby giving a step in the progress of Urbanism", he granted in the final sentence of the presentation texts. In another immediate release, the headline alleged: "Everything advises not to make the mistake of erecting it on the ruins of the old one, which had been formed by the agglomeration of houses without being subject to any plan and without previous urban studies"<sup>18</sup>. Parraguéz found the opportunity to develop new principles on a sector free of occupation and with the complete action of new plan. Even if the aspirations of shaping the city were more unrealistic than those proposed by the master, the project placed in the tabula rasa all its possibilities.

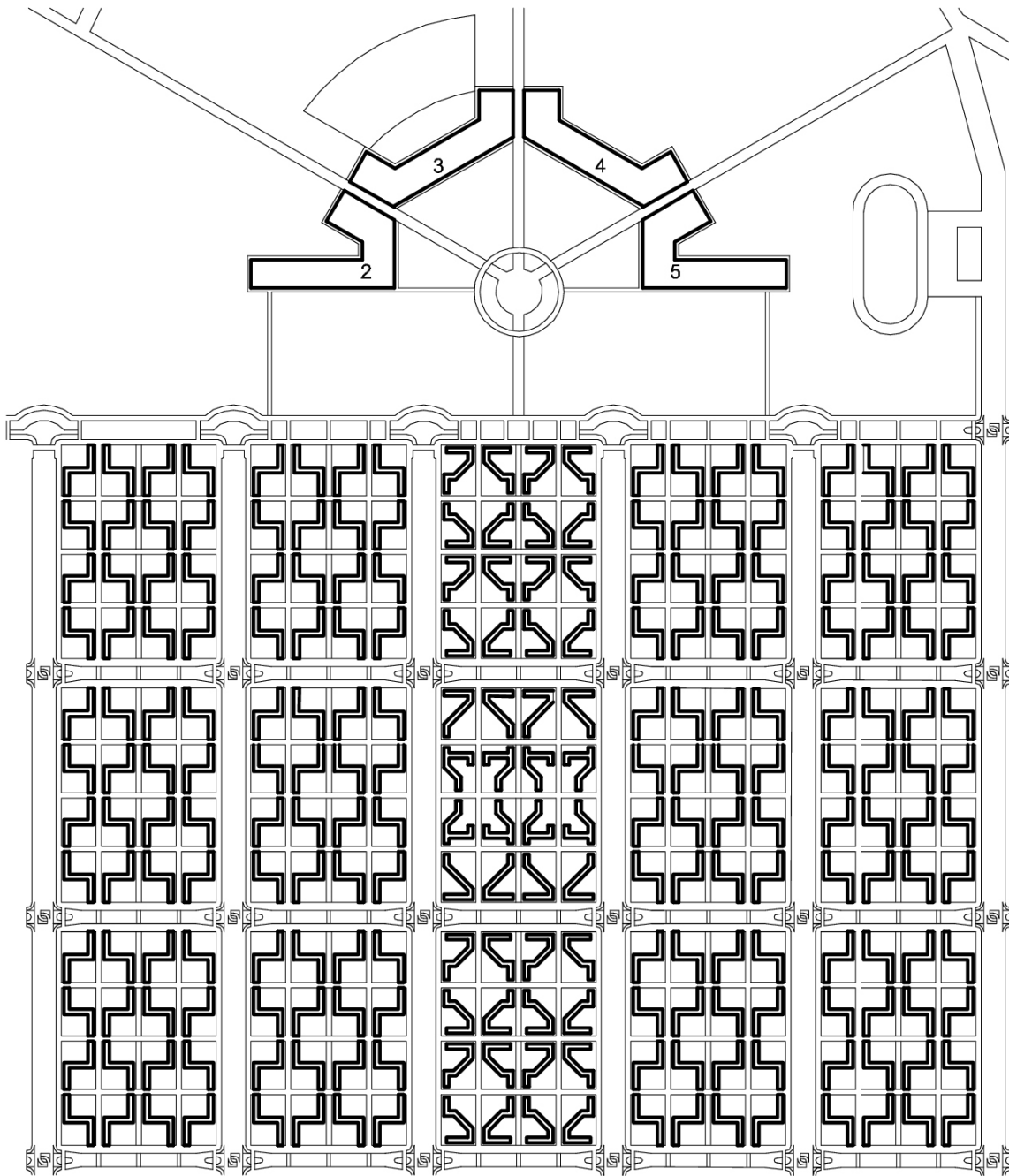


FIGURE 4 Parraguéz plan for the new city of Chillán, based on Le Corbusier's Radiant City model.



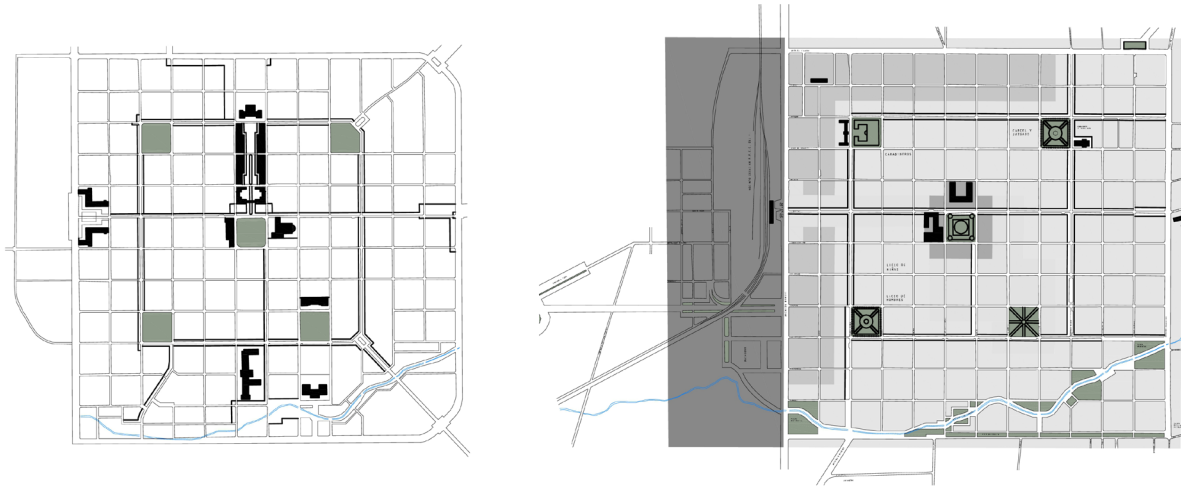


FIGURE 5 a. Preliminary draft of the Master Plan from the Planning Section of the Department of Public Work during 1939; and b. the definitive Master Plan - mostly a zoning regulation- from the Technical Department of the Planning Section of the Corporación de Reconstrucción y Auxilio, 1943.

## TABULA RASA REJECTED, MODERN PLANNING IN DEBATE.

Contemporary to the debate on the presence of Le Corbusier for the proposed new city, the government attempted to expropriate all the land of destroyed cities. A project aimed to declare public utility “all the land occupied by cities and affected populations” and “the adjacent area to a radius of 500 meters,”<sup>19</sup> an action initially supported by homeowners associations in general and subsequently strongly rejected. In Chillán, possible expropriations and possible transfer of the city led to the definitive rejection of the option.

Luis Muñoz Maluschka -in charge of the Planning Section of the Department of Public Works- took over the development of a first draft of the regulatory plan (Figure 5a). The proposal maintained the traditional layout of 12 x 12 regular squares bordered by the founding avenues, and streets linking the 4 plazas now transformed into avenues by retroceding the building. It recommended a monumental system based on two axes -one between the station and the main plaza, the other departing from the plaza up to the north, with a central avenue and side blocks for public and residential buildings culminating in a popular dinner building “surrounded by meadows” and parks. The plan based its possibilities in the fact that “squares across the boulevard will be expropriated for preferential buildings”<sup>20</sup> such as the Municipality or public buildings, as well as the central parks system. The rejection to the proposal -which changed the land property- and to expropriations was organized by the Asociación de Propietarios de Chillán, formed to face the possibility of planning to include such measures.

A consensual strategy was then proposed, abandoning all expropriation and considering an alternative zoning strategy, based on: an area for the monumental civic center, a commercial sector, residential areas, and an industrial zone. (Figure 5b). The proposals were gradually reduced, finally ending in a series of reasonable measures that consolidated previous urban structure, with the addition of proposals at the street level, maintaining subdivision of land and the disappearing of the central park, one of the main tactics adopted to give meaning to urban form. Faced with the deterioration of aspirations regarding the plan, it was Muñoz Maluschka himself who expressed that “we have not dared to try changes that would be of enormous importance and significance, because we have seen that comes to dominate created interest before general conveniences. It is unfortunate from the modernization of Chillán’s point of view. We are here in an environment hostile to innovations demanded by modern planning.”<sup>21</sup> A remarkable confession of the abandonment of urban planning expectations, particularly important if it is understood that the position of Muñoz was tempered regarding the possibilities of contemporaneous urbanism.

## RECONSTRUCTION IN PROGRESS.

The Plan recorded in short some of the major actions that could be developed in a context of possibilities, especially those that would be built with central power resources, whether public architecture or private works through property loans.

The key operation was aimed at building the city's center, mainly the administrative district. The Public Services and Administration building, by Benavente and Morales (1940) (Figure 6) formed one of the sides of the plaza, occupying a full city block with a symmetrical plan that frees an interior space and opens a large portico with freestanding pillars for the establishment of continuity: likely a remaining from its original participation in the monumental system in previous versions of the plan. Also facing the plaza, the City Hall, the Municipal Theater and the Technical School by Müller and Cooper (1940) formed a unitary piece of remarkable scale and composition. On the other side, the Cathedral by Hernán Larraín (1939-1950) was placed to complete the ensemble. In the same context some works of great importance were designed, such as the Central Cinema Theatre (Rodríguez Arias, 1945) and the Market (attributed to Müller, 1941) in the commercial sector, as the Railway Station (G. Bustos, 1940) plus its surroundings, built with linear structures that would monumentalize it years later.

Notwithstanding the lengthy process of normative statement of a regulatory plan and its figures, the reconstruction of Chillán began with definitive force in September 1939, when the CRA itself began providing loans for the building. The sequence of the reconstruction was remarkable, having a strong initial momentum between late 1939 and early 1943, probably held back by the elevated cost of materials caused by the war.<sup>22</sup> It was mainly houses that partly ratified continuous building notions, semi-detaching from their neighbors and releasing the curves of their balconies to gardens and open spaces in relation to cattle activities, inserted in the urban fabric itself. A notion of open tissue permeated, with a higher value of free land that partly characterizes some areas of the city. Beyond the proposed zoning, it was rebuilding itself that gave character to the city. That was the process by which the city of Chillán was actually rebuilt and turned into a modern city.





FIGURE 6 Public Services and Administration building, by Benavente and Morales (1940), the main building of Chillán new civic centre.

## CONCLUSIONS: TABULA RASA MEETS RESILIENCE

The concepts of a whole new city organization were behind the idea of a blank field, a *tabula rasa* regarding both relocation of the city or complete deletion of its historical layout. Opposition to the potential plans designed by Le Corbusier depicted the clear traditionalist trend of Chilean urban professionals, even though a group of young architects favored his ideas as a solution for reconstruction. At the same time, when the traditional side tried its own planning instruments, some of the ideas were completely rejected by population and landowners. Then, finally, a joint process was agreed.

The challenges of the reconstruction of Chillán showed particularly the debate over urban planning ideas, both in the professional field and in the public realm. The concepts for a complete reorganization of the city involved both the relocation to the complete deletion of the city's historical layout. Destruction caused by the earthquake became the opportunity to assess one of modern planning main ideas: the *tabula rasa*, as a blank field to build a new modern environment. The opposition to the plans designed by Le Corbusier marked the traditionalist trend of urban professionals in Chile, even when a group of young architects favored his ideas as a solution for reconstruction. However, when the more traditional urbanism –settled at the Planning Section of the Department of Public Works- tried to use the instruments of planning, some of the ideas were completely rejected by the population and landowners.

This forced the beginning of a consensual process, and finally the Urban plan was only based on the aspects related to lands future capacity of resisting an earthquake, mainly by zoning in relation to soil resistance and construction technologies possible to be used in public and private buildings. The debate for the reconstruction of Chillán called for various urban approaches, forms and figures of modern planning. The final plan was only related with the zoning regulations, but the reconstruction was based on a strategic localization of the public buildings and the financing by the CRA, of a few residential types, that promoted modern architecture in the traditional grid. That was the resilient way to rebuild the city that finally became modern heritage.

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## Disclosure Statement

No potential conflict of interest was reported by the author.

## Notes on contributor

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- Figure 1: "Una caravana dolorosa" (A painful procession). Photograph, unknown author. Published in: Zig-Zag N°1767, (February 20, 1939) : 40
- Figure 2: Map of the earthquake area, in Zig-Zag N°1767, (February 2, 1939) : 16 and the area in the regional and urban studies, from Luis Muñoz Maluschka, "Concepción dinámica del urbanismo, espacios vitales urbanos". *Urbanismo y Arquitectura* Vol.2. N°10, (1940) : 46
- Figure 3: Page of Zig-Zag N°1769, (February 16, 1939) : 22
- Figure 4: Drawing by Natalia Moreno (Fondecyt 1140964) based on the plans published in *La Hora*, March 26, 1939
- Figure 5: Drawings by Natalia Moreno (Fondecyt 1140964) based on: a). the plans published in *La Discusión*, de August 26, 1939 and on: b). the plans published in Ulricksen, Guillermo. *Ordenanza Local de Urbanización de Chillán, 1943*. Dpto. Técnico. Sección Urbanismo. Corporación de Reconstrucción y Auxilio. Santiago, 1946.
- Figure 6: Chillan, Public Services and Administration building. Postcard. Photographer Antonio Quintana. C.1950. Private collection.



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# RESTRUCTURING OF A COASTAL TOWN SINCE THE EARTHQUAKE IN 1957: FETHIYE, TURKEY

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In ancient times, cities were not resilient to catastrophic devastations, and thus many were abandoned to their own fate. However, technological progress in modern times, enables the physical fabric of cities to be rebuilt, and socio-economic and cultural structures are quickly resurrected after natural or human-induced disasters. It is the modern technology that provides the reconstruction of a city after a catastrophe; however, the resilience and recovery of a city is not just physical rebuilding. It is an adaptive and evolutionary process that absorbs all the impacts of hazards. Moreover, it includes the human endeavor and struggle, cooperation, self-reliance and sense of belongingness. The social and cultural scope of the resilience is the defining features of the cities, which sustain its essence and the urban fabric. The case area of this paper, Fethiye has a profound history with its coastal settlement dates back to Lycians. The name of the first known settlement in the town was Telmessos. Many earthquakes damaged the region since ancient times and people had to seek for new and secure inhabiting destinations therefore, there are very few remains from ancient settlements except for rock tombs. Today, Fethiye is a modern coastal town in Turkey. It is significant with its touristic port, harmony of ancient and modern urban fabric, everlasting tourist industry and agricultural production. Many severe earthquakes have been recorded in Fethiye throughout history. The first planned urbanization started with the recovery works after the damage of earthquake in 1856. However, the town was demolished again after an earthquake in 1957. Since then, it has been rebuilt with a modernist understanding and technique. This natural disaster formed a basis for the first legal regulations and organizational structure related to natural hazard areas, which was generated and ratified in 1959 in Turkey. Thus, the urban fabric of Fethiye is restructured according to modern lifestyle and new legal regulations for urbanization on natural hazard areas. A new district with the name of Karagözler is created. In the meantime, geographical advantage of the town, the coastal strip, which led to the initial settling, helped the resurrection of the town. However, with the popularity of sea holiday and growth of mass foreign tourism in 1960s, the wetlands in Fethiye were filled to make room for massive residential development. Fethiye is trying to enhance resilience with respect to the challenges of earthquake, rapid growth, eradication of natural resources, and touristic overpopulation especially in the summer months. The aim of this paper is to present the restructuring process of the coastal town Fethiye which absorbs the impacts of the abovementioned various hazards since the earthquake in 1957. It evaluates the positive and negative consequences of this restructuring process in terms of both resurrection of the town with tourism potential and loss of wetlands and natural resources.

## Keywords

Fethiye, resilience, recovery, earthquake





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# CHANGING REALITIES: TRAUMATIC URBANISM AS A MODE OF RESILIENCE IN INTRA-WAR BEIRUT

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In 1975, and in an ambiance of increasing tension, the streets of Beirut served as a stage for a series of violent events and in a matter of days, the sounds of mortar shells and machine guns provided an applied interpretation of the conflicting interests of the different Lebanese and global political players. With few intermissions and a fluctuating intensity, the urban warfare continued for the following 15 years, and resulted in massive destructions and significant movement of citizen's displacement. Following its instinct to survive and as a reaction to the on-going conflict, Beirut induced new forms of urbanism to maneuver through the imposed reality. The city became divided into two sides, and the once cosmopolitan vibrant city center, developed into an uninhabited green buffer between the rivals. Checkpoints were introduced to re-mark the acquired territories and the citizens' relation to their public space was redefined by the fields of snipers' fire. This metamorphosis of the city, together with the irregular and inconclusive nature of the conflict increased Beirut's immunity to a fatal end. During the 15 years course of the conflict hopes were revived with every ceasefire and few reconstruction plans were developed. This presentation looks into the spatial production in Beirut under the traumatic conditions of the Lebanese civil war. It argues that the continuous process of spatial production which is displayed in the rearrangement of spaces and everyday urban practices is in itself a demonstration of resilience.

## Keywords

Civil War, Beirut, Resilience, Traumatic Urbanism

## How to cite

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## 1. INTRODUCTION

The Lebanese civil war, like most civil conflicts, had left a strong imprint on Beirut's urban fabric. In 1976, by the end of the second year of the 15-year conflict, a significant number of the buildings in Beirut downtown and hotels districts was already devastated by the crossfire of the rival militias.

Escaping both real and magnified threats, and seeking 'safety in similarity', many of the citizens of Beirut relocated in other districts throughout the early years of the war, creating more homogenous enclaves in many parts of the city. Checkpoints and roadblocks were installed by the fighting groups along the borders of these new territories, and strategic locations became occupied by militia members.

According to the available scholarship on Beirut's war spatiality, nearly every neighborhood of the city has been impacted by the armed conflict (Colleo, 1989, p.110). However, looking more closely, this paper argues that the transformation of the city during the war has created relatively safe enclaves. These enclaves have provided a considerable level of protection for the built environment, and a minimum practice of everyday life, which took place within its boundaries (Al Azm, 2017). As the conflict became largely contained on the border lines and particular fighting axes, many of the buildings within these enclaves survived the conflict and continued to stand during the following years.

In his work on the post-war reconstruction of Beirut, geographer and professor Heiko Schmid, documents and illustrates, that with an exception to some buildings along the fighting lines, many buildings around Beirut districts remained till the end of the war (Schmid, 2006). Similarly, Lebanese architect George Arbid agrees that "While many buildings were destroyed during the war, the majority of buildings were destroyed after" (Creative Cities Cairo, 2016).

The arguments of both Schmid and Arbid, are mainly addressing the case of downtown Beirut, posing criticism to the post-war trends in the re-construction of the city. Nonetheless, the arguments also provide an insight on the "structural" status of Beirut's built environment at the end of the war. Taking this further, and through establishing relationships between the physical structures, and the everyday life confined and shaped by (but also, actively shaping) such structures, an understanding of the level and dimension of the quotidian practice during the conflict could be developed.

Looking at this continuous process of spatial production, in terms of practices and spaces which shape and are being shaped by the built environment and other forces, the majority of wartime spatial interventions and transformations were not driven by a formal planning process, but rather by impromptu necessities, and in a spontaneous response to various actions and forces. Building upon this, the discussion here is based on a recognition of the city as one intelligent adaptive evolutionary system (Moystad, 1998; Malfroy, 1998) encompassing actors, structures, networks and the built environment. The following paragraphs explore the theoretical foundation of adaptive urbanism, or what has been termed by many authors as "Urban Morphogenesis".

## 2. DEFINING MORPHOGENESIS

Over the past years, the morphogenesis of the urban form, has become a rich area of study for urban historians and scholars. Swiss professor and architectural historian Sylvain Malfroy (1998) provides a good entry point as she proposes the city as a "woven tissue" of different elements, which transforms over time, through organizing and reorganizing itself, following particular modes or logics. Departing from this hypothesis, both Malfroy (1998) and Moudon (1997) explain urban morphogenesis as the transformation of the built environment as a result of the sum of uncoordinated small acts carried by individual groups.

Over time, the urban setting transforms and configures its form in reaction to various social, political and economic forces. The users of the built environment, regularly alter their spaces and the way they use them, to respond to their changing priorities and needs. The scale of these alterations could vary from the very intimate space to the neighborhood. The inter-relational network of these alterations, taking place without previous planning could be rendered as morphogenesis. A deviation from what is planned, or what has been seen as a final state, driven by the actual situation, with an aim of facilitating or securing the use of space. In this sense, the city with all its structures and actors is rendered as an evolutionary system that is responsive to changing forces and contexts.

Following this interpretation, the process of urban morphogenesis highlights the open end of spatial production and the resilient capacity of cities in general.

### 3. DEFINING RESILIENCE

In order to investigate whether the transformation of the Lebanese capital during the civil war could be seen as a form of resilience, a relevant definition of resilient urbanism is brought to discussion. Architect and educator, Adrian Lahoud (2010) defines the resilient city as “one that has evolved in an unstable environment and developed adaptations to deal with uncertainty”. For Lahoud, resilience is the ability of cities to adapt to the shock, caused by an unexpected traumatic event. He stresses on the difference between “recovery” and “return”, for resilient cities do not return to their pre-traumatic state but try to develop “new forms of stability” based on their history and traumatic experience.

Similarly, Diane E. Davis defines resilience in operational terms as the acts to establish pre-violence normalcy. She explains that resilience becomes clear through the ability of the citizens to practice their everyday activities by adapting to the new violent conditions (Davis, 2012, p.32). The pre-violence normalcy which Davis talks about, does not contradict with Lahoud’s refusal of defining resilience as a return to a pre-traumatic state (of stability). The normalcy here is understood as a minimum degree of practicing everyday life, but not a particular (previous) urban state. Davis clarifies “resilience is evident when residents [are able] to cope with and adapt to violence such that their lives are able to absorb it without being in consistent disruption” (Davis, 2012, p.32).

In the same context, Vale and Campanella argue that recovery is an on-going process. They argue for an understanding of resilience, as how we go through traumatic events, and not how we get over them (Vale and Campanella, 2005, p.14). It becomes clear here that adapting - regardless of how passive the term may sound - is a main aspect of urban resilience. In urban and architectural terms, this adaptation could be translated to every spatial practice and modification to the built environment which contribution to the development of an “everyday normalcy”, as opposed to a “state of shock”.

Furthermore, Davis introduces the concept of Negative Resilience, where “decreased levels of violence are achieved through the domination of non-state armed actors”, a definition that could facilitate our understanding of the case of Beirut, where the strong presence of armed militias played an important role in creating spaces for resilience, as the following sections will discuss.

A challenge emerges here as the paper tries to avoid falling into the problematic comparison between the action and the reaction, for that case “urbicide” and “negative resilience”. Sara Fregonese (2008), interprets urbicide as both a deliberate violence against the built environment, but also, and this is more important for the scope of this paper, “as a statement, for example, the destruction of heterogeneity and its substitution of homogeneity”. She argues that according to Martin Coward’s “politics of urbicide”, the re-arrangement, and the creation of new spatial orders that limits and reduces the interaction between the different groups, is an intrinsic part of the process of Urbicide. However, this paper proposes a different reading, which locates this homogenisation (safeguarded by checkpoints and armed actors in the case of Beirut) in a morphological transformation of the urban fabric. It argues that this morphogenesis, had actually created an enabling environment for resilience, which became manifested in the survival of a large portion of the built environment, and the creation of new shopping districts within this homogenous enclaves, benefitting from the relative safety created by the very act of homogenization. This paper hypothesizes, that without this process of transformation during the conflict, the damage to the built environment and everyday practices could have been larger under the particular condition and nature of the Lebanese civil war.

It is important to clarify that this paper does not attempt to give more value to homogeneity, over heterogeneity, but rather tries to avoid this discussion by looking directly into the spatial resilience of Beirut, the divided city, throughout the civil war.

#### **4. BEIRUT’S MORPHOGENESIS AS A MODE OF RESILIENCE**

Different writers and scholars tend to view the Lebanese civil war in its complete destruction of Beirut and its livability. However, a closer look onto the urban fabric, brings our attention to different scenarios.

In the early weeks of the conflict, as the fighting has intensified, checkpoints were introduced by the rival militias drawing new boundaries and territories. As a result, a wave of displacement took place as inhabitants of Beirut found more safety in districts controlled by militias belonging to their own sects. Many of the Christians of West and South Beirut, had moved to the Eastern side of the city and its Northern suburbs. These areas were mainly controlled by Christian and nationalist militias like the Kata’ib, and the Tigers. Similarly, Sunnis of East Beirut sought shelter in the Western neighborhoods, at that time controlled by the Palestinian militias and their Lebanese allies. After the failure of a handful ceasefires, and as it started to become clear that the conflict will last for more weeks, the commercial activities, faced by the increasing destruction in down town, moved to these new homogenous enclaves to meet the purchase needs of the displaced population (Beyhum, 1994).

In the following paragraphs, the paper explores the available data about the practice of everyday life - or what we can term here as resilience - in the different neighborhoods during the conflict.

Starting from the (North) Western district of Ras Beirut, Maria Abunnasr argues that, to an extent, Ras Beirut remained both safe, and inter-confessional during the first years of the conflict (Abunnasr, 2013, p.248). In 1976, it was described as the safest part of the city (Abunnasr, 2013, p.223). At least till 1982, the district has witnessed a presence of both local Christian and western communities, in what was rendered as the Muslim side of the city. In the years following 1982, the situation has slightly changed, with increasing attacks on the Westerners living around Ras Beirut. Abunnasr discusses the transformations that took place in the district during that period, quoting Maha Yahya’s (1998) estimate of around 6,000 homes being partially or totally destroyed during the battles of 1984 between the Lebanese army and the the opposition. Nevertheless, she assures that the war has not destroyed Ras Beirut so much physically, as much as the postwar period (Abunnasr, 2013, p.255).

Looking more closely at particular streets and neighborhoods of Ras Beirut, Hamra, which had served since the early 1970s as a high-end commercial pole, next to downtown's older market, started to adapt to its new clientele. Many of the Christian traders left to the other side of the city, creating a confessional homogenization among the remaining traders. Imported goods were replaced with affordable Middle Eastern and Asian ones, and the currency exchange offices took over the place of the fancy jewelry shops and cafes (Arnaud et al., 2013). This transformation and adaptation to a new conflicting position, could be discussed here as a mode of resilience. Hamra remained an active commercial spot. The trade activity - the small unorganized acts taken by traders and street vendors, who had decided to remain (or relocate to) Hamra, and have their businesses open and operating - is in this sense an act of resilience; an attempt to create a space, where everyday life could be practiced, as opposed to the violence and uncertainty of the war. It could be even further argued, that the close off of the northern part of the "Green (dividing) Line" at the end of 1976, had contributed to strengthening such activities. At this moment, with some exceptions, the fight in Beirut became largely contained along the green line. The majority of destruction took place there as militants exchanged fire from the two sides.

Naturally, Ras Beirut, already had particular social qualities which, some could argue, paved the path for its resilience. The district has long been inhabited by a multicultural, multi-ethnic population, creating a mini-cosmopolitan zone within the city. Yet, similar resilient practices could be noticed in the other enclaves which has been formed during the conflict.

Mousaytbe, which did not have the same historical and social qualities of its neighboring Ras Beirut, witnessed the departure of the Greek Orthodox inhabitants to the Christian dominated quarters on the East side of Beirut. During the war, Mousaytbe became dominated by Muslim inhabitants. This had developed in parallel to an increase of the commercial activities which sought new locations outside of the older centers (Arnaud et al., 2013). Particularly, in Mar Elias and Mazraa, many shops and small businesses started to appear in what previously used to be a residential area, as it "was considered safe in respect to the armaments used" (Davie, 1994, p.2). Similarly, in Geitawi, on the eastern side of the divided city, the shops started to re-open again. Adapting to the new situation in East Beirut, and its disconnection from the other side of the city (Arnaud et al., 2013). During the 1980s, two shopping malls were established in Geitawi street, offering a variety of commercial activities, which were funded and supported in many cases by the militia system. Besides, many empty spaces around the area were illegally occupied and transformed into gaming halls or beauty salons (Arnaud et al., 2013).

While the commercial activities discussed above, represent only one dimension of a multi-dimensional resilient behavior in war-torn Beirut, an extensive investigation of the other spatial practices could provide a deeper insight into the everydayness of urban communities during conflicts.

## 5. CONCLUSION

Generally, the spatial patterns manifested in the built environment and the way it is experienced transform over years. During wars and conflicts, the pace and intensity of such transformations become evident as the urban fabric combining architecture, networks and users try to adapt to the unpredictable event. The process of adaptation to the conditions of the conflict, trying to establish an everyday normalcy lie at the core of urban resilience. During the Lebanese civil war, large parts of Beirut have been exposed to various forms of violence, forcing different groups of population to relocate in other parts of the city, and creating more homogenous enclaves. The enclaves were usually bounded by checkpoints, roadblocks, barricades and (or) the existing geographical and topographical boundaries. A strong presence of a particular militia group would define the nature of the territory, and control the access points. This form of transformation has contributed to the creation of relatively safe zones within these enclaves, pushing the armed conflict to the borders between the newly created territories.

Owing to this, a minimum practice of everyday life was exercised within this enclaves. Some schools and universities continued to function during the conflict. Smaller stores and grocery shops had their doors open. Responding to the changing needs of the resident of the city, new shopping activities started to appear in both sides of the divided city.

In addition to educational and commercial activities, residents of Beirut adjusted their spaces and the way they use it in order to go through the traumatic events. All these acts together formed a statement of resilience – an open process of continuous adaptation to the changing conditions of the civil war.

As a result, different parts of the city managed to survive the conflict, even if with some inevitable losses to the built environment and the urban life. The transformation of the city had, to an extent, limited the major destructions along the fighting lines and provided a space for a minimum level of everyday life practices within the territories marked by such lines.

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# Disasters

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Chair: Jeffry Diefendorf



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# LISBON - BETWEEN RESILIENCE AND CHANGE: FROM THE 1755 EARTHQUAKE TO THE 1988 CHIADO FIRE

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We intend to emphasize the resilient role of the city of Lisbon destroyed by the appalling Earthquake on 1 November 1755. Reconstructed in the eighteenth century by order of the Marquis of Pombal, it was one of the earliest cities transformed under the aegis of the Enlightenment through a complete modern plan. On 25 August 1988, the center of Lisbon is once again struck by a major disaster: a devastating fire destroyed Chiado, one of the most city's distinctive areas. In the aftermath of Postmodernism debates, several personalities related to architecture and culture as well civil community discussed the future of the affected area. Such a debate was polarized by two opposing views: the rebuilding of the destroyed buildings as they originally, or alternatively, the construction of new buildings with a new design expressing their own time and refusing a historicist pastiche. The assignment of the project to Álvaro Siza Vieira put an end to the debate and gave rise to a new controversy. Siza proposed neither the full reconstruction of the pre-existing buildings nor a radical break with the past. He proposed instead a compromise solution based on the thesis that the affected area integrates a larger unit – the so called Baixa, the lower part of the city reconstructed under Pombal's orders – which, as a "big building", should be "repaired" in order to preserve its identity. Through multidisciplinary approach, we do not only intend to reflect on the urban history of Lisbon, but also to demonstrate that Siza's reconstruction, which started in 1988, managed to reinterpret and to continue the 1755 plan, which has ensured the resilience of Lisbon's identity facing an increasingly globalized world.

## Keywords

Siza Vieira, Chiado Fire, Lisbon, 1755 Earthquake, Urban Planning, Urban History, Álvaro Siza, Chiado Fire, Lisbon, 1755 earthquake, Urban Planning, Urban History

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## INTRODUCTION

In the morning of November 1, 1755, Lisbon was struck by a violent earthquake (with several replicas tsunami and fire) that ravaged one-half to two-thirds of the city. 230 years after, in August 1988, suffered another disaster: a violent fire destroyed a significant part of Chiado one of the most affected areas in 1755 and whose reconstruction transformed it in one of the most charismatic neighborhoods of the city. Catastrophes such as these are recurrent throughout Lisbon history; in addition to the fire, a constant urban flagellum, on January 26 of 1531 the city already had endured a major earthquake even more violent than the one of 1755. The city has been transformed through calamities by acquiring at the same time, resiliency to such occurrences, as can be seen with the reconstruction of Lisbon ordered following the eighteenth century earthquake which determined the evolution of the urban structure of the city in the next two centuries, ensuring the maintenance of its character and its identity following the Chiado reconstruction.

## BAIXA ´S PLAN AND THE CONTINUITY WITH THE OLD CITY

The tragedy of 1755 had an impact in a broad international literature and led to the assembly of a civil protection system and also the establishment of a unique recovery strategy in the Portuguese panorama and also rarely within a European context. It is an absolutely unique and exceptional historic milestone in urban planning and architecture, whose scope is still less unknown at an international level<sup>1</sup>. Despite having been developed for over two and a half centuries it embodied a genuine territorial management tool in the modern sense of the term. For the first time in history was conceived and implemented a genuine plan, ie a document incorporating regulatory framework, design and a specific financing system<sup>2</sup>. Implemented in 1758 in order to regularize the city and alter its pre-earthquake urban morphology, the Plan has been prepared with great architectural accuracy and also a highly effective political control in order to ensure, as was stipulated by the Decree of 12 June of that year, the “public utility of regularity and beauty of the capital” against the “private” interests<sup>3</sup>. Demolishing what remained standing, which we now know was not so scarce, the plan chose to reconstruct ex novo dissipating the memory of such a drama and creating a new city over the remains of the earthquake. It sets also the forthcoming city expansion, committed to the remembrance of the destroyed city, in a strategy repeated on the occasion of the Chiado reconstruction, which by the end of 1980s and in full aftermath of postmodern discussion, proposed the reinterpretation of the plan pursued by Sebastião José de Carvalho e Melo, the future Marquis of Pombal and Secretary of State for Foreign Affairs and War at the time of the rise of D. José I to the throne.

## THE MODERNITY OF 1758 ´S PLAN

Supported the theoretical basis from Manuel da Maia Dissertations, the chief engineer of the kingdom and great strategist and urban planner of the process, the Baixa (Lower City) Plan was developed by a team of architects and military engineers led by Captain Eugénio dos Santos and the Lieutenant Colonel Carlos Mardel, the perpetrators of the first real projects, namely the front elevation for ordinary buildings and the design for the square that was going to recreate the former Terreiro do Paço (the once Royal Square) renamed the Praça do Comércio (Trade Square). These are the three main protagonists of the reconstruction of the city which, as part of the reforms of Pombal, has become, for history, “Pombal ´s Lisbon”<sup>4</sup>. Despite historiography have given supremacy to Eugénio dos Santos, author of the plan that has been approved and executed, latest research shows that it is almost impossible to unravel the role and responsibility for everyone<sup>5</sup>.

The layout of new Lisbon ´s plan, epitomized by the grid of Baixa, comprised between the Terreiro do Paço and Rossio, incorporated, in addition to this, the riverside area of Remolares / S. Paulo and Chiado, the intermediate zone between the two and the Bairro Alto (the Upper Neighbourhood), corresponding, as a whole, to the area affected by the fire which followed the earthquake and tsunami.



FIGURE 1 João Pinto Ribeiro, “Planta topográfica da Cidade de Lisboa arruinada também segundo o novo Alinhamento dos Architectos Eugénio dos Santos e Carvalho e Carlos Mardel”, (Topographic plan of the ruined city of Lisbon also under the new alignment of architects Eugénio dos Santos e Carvalho and Carlos Mardel) n.d., copy.



FIGURE 2 Rua do Ouro, one of the main streets of Lisbon's Baixa, 2016



The novelty compared to the old medieval grid, was the introduction of a reticule of longitudinal and cross streets that reordered rationally and pragmatically the Portuguese metropolis, creating measures and innovative solutions such as protection against seismic risk and fire; sanitation and circulation networks; using a prefabrication system of the elements in buildings serialized (window frames, stonework, guard rails, etc.) The Plan also breaks new ground by creating a unit which is generated by the urban scale which dominates the architecture. Architecture and Urbanism will agglutinate, distributing the different types of buildings in a set where churches appear absorbed by the all urban design integrating all the blocks<sup>6</sup>. Lastly, the Plan creates completely unique mechanisms for negotiation with the different developers / landowners, based on edificability redistribution duties resulting therefrom on the basis of pre-existing buildable rights, which is a pioneering experience of what we now refer to as equalization<sup>7</sup>.

From an urban planning point of view, the generative entity of the Plan is the block assumed as architectural unit basis instead of the isolated building, which has no self-expression, as do noted Helena R. Santos<sup>8</sup> and Walter Rossa<sup>9</sup> The block is defined by the articulated Streets in reticule and prioritized into three categories (“main, secondary and crossbars”) which are distinguished by different widths and for the morphological composition of the facades<sup>10</sup>. It is up to the block to stratifying the several uses in altimetry - the ground floor and mezzanine floor for trade and crafts, the upper floors for housing, which are also hierarchically assumed at the façade design depending on the social status of the residents to whom they are intended. Facades, in turn, obey to strictly design rules having been also all front elevations of street fronts been designed in order to guarantee full control of the volume and architectural expression of the blocks The architecture is thereby subordinated to urbanism, “as it should be in a modern city punctuated by rational principles of practical and symbolic use”<sup>11</sup>. The matrix of the 1758 Plan for this area of this part of the city, the most affected by the earthquake, remains almost intact in the lower part of Lisbon the Baixa, as we still know today. Its management strategically has played with time, the great doer of the city, by setting since then what should be irreversible: the alignments of the streets and squares which form the open air architecture, namely the large pieces of urban architecture, such as churches and squares Rossio, the Municipality Square (Praça do Município) and the once Royal (Terreiro do Paço) now renamed of Trade (Praça do Comércio), the latter opening over the river and adorned with the equestrian statue of José I, according to the symbolism - but do not the functions from the royal places - as highlighted by Raquel Henriques da Silva - which in France had been disseminating the king’s image throughout the territory<sup>12</sup>.

We tend as well emphasize the changes that occur in Rossio, the old eccentric square in the center of the medieval city which since the sixteenth century, became the heart of the popular city. The 1758 Plan regularizes it in a dynamic interplay with the Praça do Comércio and the Rua Augusta, the central axis of the Plan<sup>13</sup>. The Pombal Plan for the reconstruction of Baixa, 1758, was based on an unprecedented rationalism that “announced Western thought of the time that reason emerged as the new enlightenment verification instrument”<sup>14</sup>. An Avant guard operation, which goes well beyond its time and is expressed in absence of ornamentation, the refusal of monumentality, the abandonment of strategic priorities, streamlining the layout and design, the standardization, the prefabrication and construction in series, the economy, the subordination of details to general principles, the anticipation and foresight of planning to urban growth<sup>15</sup>. Thus modernity contained all the ingredients which are now essential to promote the city: a political program which expresses a vision of future, a negotiation strategy essential to mobilize actors and financial means, public space paths, architectural design rules, technical rules for its implementation, management criteria and a serious utilization of time. This Plan was, as Manuel Salgado once said, “avant la lettre”, what we nowadays not hesitate to designate as a major urban project<sup>16</sup>. Lisbon had, of course, other notable periods of its urban planning history such as when Ressano Garcia, in the late nineteenth century, extended the city to the plateau by extending the Passeio Público, a public walk and garden, to the north, or when Duarte Pacheco in the mid-twentieth century, organized the city in which we live today.



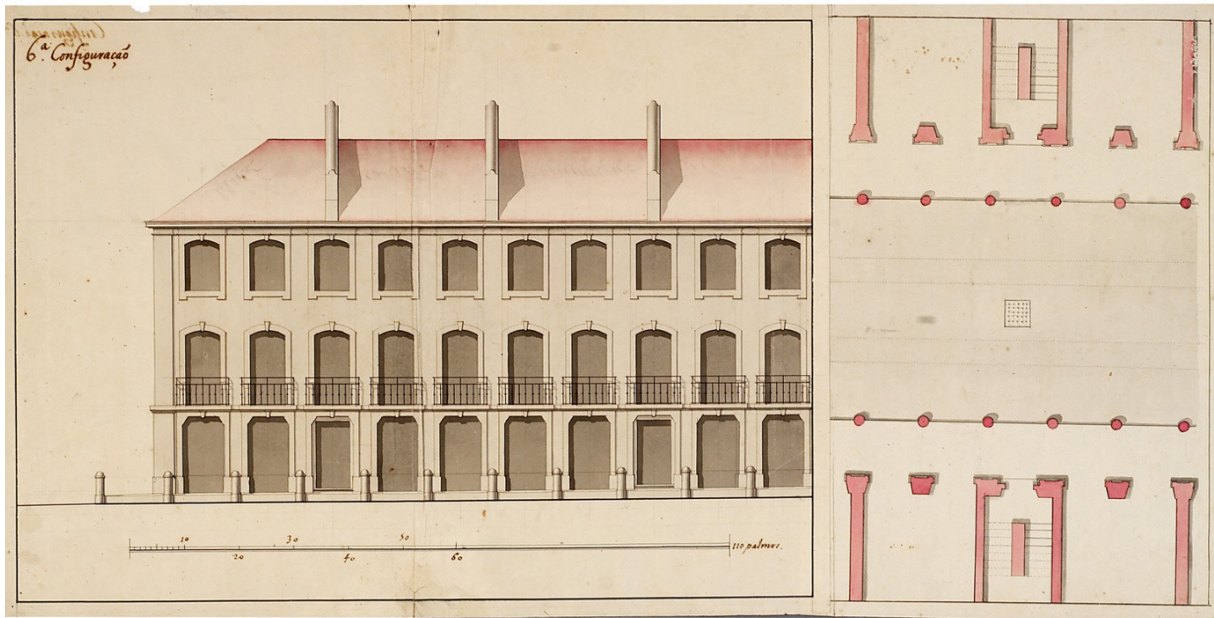


FIGURE 3 Eugénio dos Santos, 6th setting for the buildings of Lisbon's Baixa, 1756

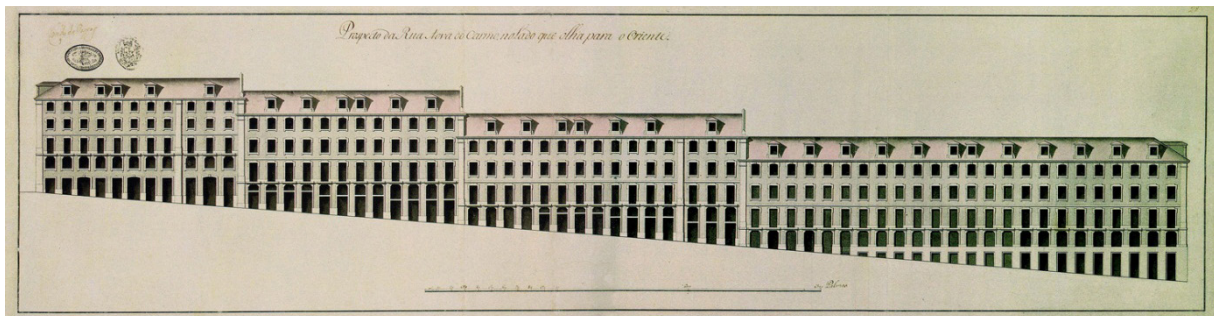


FIGURE 4 “Prospecto da Rua Nova do Carmo no lado que olha para o Oriente”. (Prospectus of Rua Nova do Carmo on the side that looks to the East) n.d.

However, no period compares, by the vision, the audacity of the solutions and uniqueness of the proposals, to the task from those military engineers of the eighteenth century, who conceived and designed an urban set as the Baixa, the scale of a city of a quarter million inhabitants, articulated between two large functional squares which promoted what we today would call a structural grid of the great Lisbon when the Baixa and Chiado were the center of Enlightenment city<sup>17</sup>. The significance of this operation was so great that, over time, the city's image turned out to be mistaken with the image from the very reconstruction, so strongly marked by the Praça do Comércio facing the river, the Rossio Square, the cartesian streets with their modular and typified facades, in short, by an architecture in the bone, pragmatic and repetitive<sup>18</sup>.

## A PLAN THAT HAS ADAPTED

The Plan 1758 took over a hundred years to be completed. Throughout time it was interpreted and adapted, revealing always a great ability to adapt to new realities and needs. Buildings have been subjected to several adjustments and urban space became and multiplied through the creation of new the public life places. Throughout 19th century the block unit with uniform buildings, which determines the character of the urban area, was matter of endurance and devaluation due to a lack of understanding on the part of current practices related to romanticism and then from a an eclectic refusal during the early years of the twentieth century. It became famous the statement Cyrillo Volkmar Machado (a famous artist of the 19th century) on the insipid uniformity and dull austerity of the Baixa buildings: “Lisbon has a monotony that freezes ... with bland and uniform decoration.” The blocks in his “monotony”, were now seen as utilitarian construction, which can be replaceable and transformable. The reaction to the formal and unitary stiffness of Pombal architecture, and the desire to transform its design despoiled and austere, are the source of rupture and transformation impulses that will mark the loose interventions in the Baixa that successively occur from the last decade of the nineteenth century, and in the most radical cases are likely to change the blocks unit<sup>19</sup>. Since late 19th century some buildings were replaced others magnified, many changed in its constructive structure, through of new construction techniques which have replaced the wooden cage - first iron and then the concrete - but also were constructed new assets to replace Pombal architecture. The necessity to concentrate more public services, banks, corporate headquarters, the large department stores and the “new” trade, as well as the installation of new means of public transport, such as rail, ferries, trams and public elevators, but also by virtue of various major fires that have devastated the city have forced Baixa to modernize with interventions either in the public space, or at the private buildings. However, despite the profound transformation the urban blocks matrix and morphology remained nearly intact. Moreover, as highlighted Manuel Salgado, although new construction techniques and the development of public transport systems having forced some adjustments and adaptations to the 1758 plan, the truth is that it has always revealed a great capacity for adapting and flexibility, non-having wasted its core values and characteristics<sup>20</sup>.

## BAIXA'S PLAN AND LISBON EXPANSION OVER THE LAST TWO CENTURIES

The reconstruction of Baixa underlies the urban expansion that Lisbon will see in the next century with the opening of new corridors to the north, the growth in the west, with the creation of alternative urbanization poles, as exemplified by the Amoreiras district with Carlos Mardel design or more peripheral settlements and therefore more disorderly as Lapa.

## CHIADO'S RECONSTRUCTION AFTER THE DEVASTATING 1988 FIRE

Almost two and a half centuries later, in the early hours of August 25, 1988, the history of destruction is repeated. This time, the Chiado, the heart of Baixa and the most important civic and commercial sector of the historical city, was partially destroyed after a devastating fire. For an instant, the memory of the 1755 tragedy once again echoed in Lisbon, despite the huge difference between the two events, both in magnitude and in the extent of the caused damages.

The municipality of Lisbon rushed to repair the damages, opting for the full reconstruction of the affected area. Option that will enforce a wide international support and that will make the architect Álvaro Siza a faithful interpreter of the difficult task that meant keeping the balance in the historical center of the city without resorting to unneeded disruptions. Although it could be an strong temptation to take advantage of this incident to introduce through innovative design, the basis for Siza strategy, the arguments that helped to defend his

reconstruction project that became completed in its final version in July 1990 and were immediately accepted by the municipal authorities of Lisbon, are rooted in the 18 th century urban structure, that was taken as the starting point. Siza assumes the commitment on restoring urban continuity by presenting the same type of image and definition of the 18 th century plan, from the time of the Marquis of Pombal, taking as inescapable reality the city´s own memory. According to Álvaro Siza, at the Chiado what is really remarkable is constituted by the implantation, by the topographical location of the set in relation to Baixa district, by the accesses and relations with the surroundings and not the buildings by themselves.

In this area, the urban unit does not result of the block, which doesn´t assume the relevance which have in Baixa´s board due to the topography and also to the pre-existing, but by the uniformity and regularity of the façades essentials to the maintenance of Baixa´s character as a whole.

Consequently, to provide the intervention with a presence based on a rupture in the area would mean destroying the right balance in this part of the city, a sector definitively completed and very remarkable: “no one would think now to move or change a façade of downtown Lisbon, Baixa, with its repeated windows because it is such compassed and rhythmic phenomena which makes it possible and gives it´s justification”<sup>21</sup>.

Siza considers that the new city, set by the Plan of 1758, can be considered as a single building; all downtown Lisbon is a single large building, prefabricated and uniform which suffered a setback that must be addressed and solved. “It is as if there had never been a fire at Chiado. Plus, for me there has never been such a catastrophe (...). Let us think for instance in a door in poor condition that simply had to be painted, or in a series of them malfunctioning preventing access to certain galleries and that we had to get them working properly, immediately. Everything is so in this way. Basically, the design idea is this, and somehow earned me, for the first time, the conservative qualifying, although so has not ceased to result in an tremendously interesting experience”<sup>22</sup>.

The Chiado´s reconstruction plan has become famous and is now recognized worldwide. However, less known is the Baixa Plan aimed to rebuilding Lisbon as the capital of an empire and ensure in the future resistance to majour tragic events such as the 1755 earthquake. Its implementation was supported by technical innovations such as the Pombaline cage, one of the first anti-seismic structures in the world, and also by legislative and unique political regulations, that allowed the implementation of an urban program of great complexity. Nevertheless its largest contribution was the consubstantiation of a real plan in a contemporary way.

Unappreciated and misunderstood throughout the nineteenth century and the first decades of the twentieth century, with the exception of some authors that in due time were able to recognize its relevance, it will be with the founding work of the great portuguese historian José Augusto França that Pombal´s plan and the reconstruction of Baixa will become the subject of a sustained historical research that integrates it in the second half of eighteenth century European social, political and economic context.

Since then the theme definitively entered the Portuguese historiography of architecture and urbanism consolidating itself in most recent years in initiatives such as the exhibition that was dedicated to it in 2008 by the municipality of Lisbon, within which were presented renewed readings and released new research lines, as shown by authors such as Walter Rossa, Raquel Henriques da Silva and Claudio Monteiro.





FIGURE 5 FRua do Carmo after Chiado ´s reconstruction, 2016.

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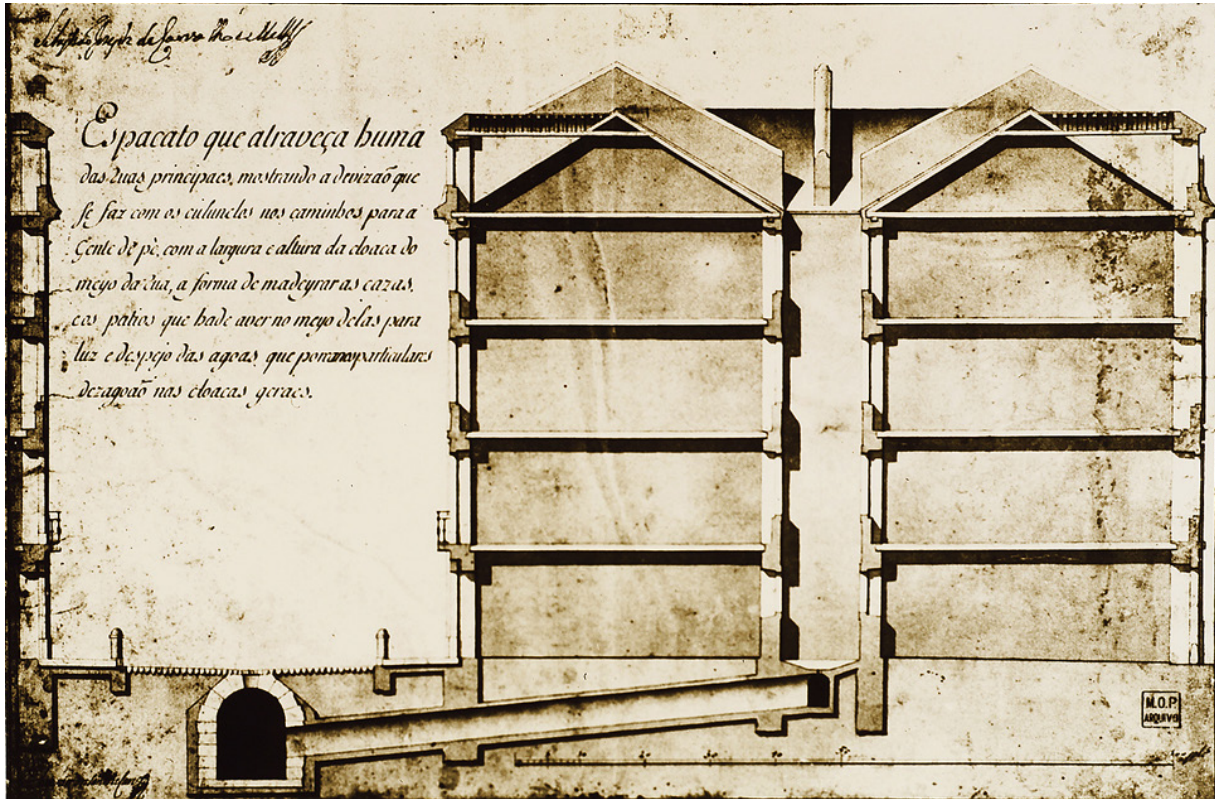


FIGURE 6 Eugénio dos Santos, Section of a street of Lisbon's Baixa, c. 1758. Copy.

Despite widely studied by the Portuguese historiography where is consensual the thought that represents a cutting edge operation in the context of urban planning and architecture of the Enlightenment period, Lisbon's Baixa Plan requires greater disclosure in order that its significance should also be recognized at the international level.

This is our main purpose : to promote its dissemination within the international scientific community.

A recognition of this urgency signal is the reference that Barry Bergdoll makes to the Lisbon's Plan in his work *European Architecture 1750-1890*, presenting it as from the urban theory discussed in France following the construction of Louis XV Square under which are highlighted the proposals of the French architect Pierre Patte.

These proposals, illustrated with the famous drawing of a section of an ideal street, are already unequivocal expression of the contemporary city program. The significance of the operation carried out in Lisbon becomes evident when we compare Patte's drawing, dating back 1769, to another, very similar, which integrates the plan implemented in Lisbon in 1758. However, there are few authors who know, in fact, that the section made by the Portuguese architect Eugénio dos Santos, precedes the work of Patte in 11 years, revealing that Lisbon was at the forefront of the urban operations carried out in Europe during the second half of 18th century.



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## Endnotes

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### **Image Sources**

Figure 1: Vieira da Silva, Plantas Topográficas de Lisboa, CML, Lisboa, 1950. Gabinete de Estudos Olisiponenses, MP.62.

Figure 2: Jorge Nunes

Figure 3: Museu da Cidade (Lisboa), DES.1079

Figure 4: Arquivo Municipal de Lisboa, AH, Cartulário Pombalino, doc. 28

Figure 5: Jorge Nunes

Figure 6: Arquivo Histórico do Ministério das Obras Públicas, Transportes e Comunicações, D.15-1 A.L



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# TRANSFORMATION OF PLACE-IDENTITY; A CASE OF HERITAGE AND CONFLICT IN IRAQ

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Throughout history, war and conflict have caused fundamental political, economic, and social transformations around the world, spatially impacting urban form. Nowhere is this more evident than in cities with distinctive identity and a rich historical landscape. Erbil, the capital of the Kurdish region is such a city. Increased political and economic stability after the 2003 invasion of the country has led to a period of reconstruction as a part of the recovery process from decades of war. This has empowered an array of urban actors that have influenced the transformation of the city's place identity. In this paper the consequences of planning mechanisms and strategies on the transformation of place-identity was analysed through four time periods using the city of Erbil as a case study. The discussion has shown that place-identity in the post conflict period has transformed rapidly. This transformation has negatively impacted local place-identity as many areas have lost links with their historical past and are embracing anonymous micro-identities. Although the government encourages and provides opportunities for new modern developments, there is an urgent need for holistic planning and urban design strategies that could guide future developments to reflect and respect heritage values, tradition and culture. The study has found that cities in post-conflict context need comprehensive strategies that could adapt to the political and economic changes in order to guide the reconstruction process.

## Keywords

Place-identity, Transformation, Architecture, Planning, Erbil, Kurdish, Iraq, Heritage

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## INTRODUCTION

Most towns and cities have their own character and identity, which distinguishes one place from another. Place identity is related to the quality of a place being unique and rooted in local context.<sup>1</sup> Although the concept of place-identity is engrained in history, it is neither static nor uniform.<sup>2,3</sup> It is the result of a continuous evolutionary process through the interaction of human and place during different cycles of civilisation.<sup>4,5</sup> This process is constantly influenced by the dynamic changes of social, political and economic forces over time.<sup>6</sup> One of the crucial factors that shape place-identity is heritage<sup>7</sup> as it represents the values and traditions of the past within the present, while reiterating the sense of national and regional identity.<sup>8</sup> Hence, it is strongly linked with nation building and national identity. For example, the Acropolis in Athens is a symbol of Greece and the national identity of Athenians.<sup>9,10</sup>

Throughout history many nations have consisted of different ethnic and cultural groups sharing the same geographical place. Some of these groups are considered minorities despite their distinctive culture, history and local identity<sup>11</sup>. Often their culture and identity is neglected, changed, or destroyed when different political ideologies practiced by a dominant ethnic group exist, and thus creating conflict. However, this attack on identity is not only on the human level, it also includes an assault on traditions and historical values, heritage sites, and architecture.<sup>12</sup> Once the situation stabilizes, reconstruction begins as part of the post-conflict recovery process.<sup>13</sup> This includes political, social and economic changes, which in many cases results in the transformation of character and identity of place. Often less resilient and responsive to the local context, this evolving place-identity may threaten the local urban fabric. The Kurdish minority and the city of Erbil in Iraq are clear examples of such a situation and are the focus of this paper.

## BACKGROUND AND METHODOLOGY

Kurds are the world's largest ethnic group without a state that shares a common and distinct culture, traditions, language, and identity.<sup>14,15</sup> The geographic area they inhabit, Kurdistan is divided between four countries; Iran, Turkey, Syria, and Iraq. However, it doesn't have an official boundary and is not an internationally recognised state.<sup>16,17</sup> In Iraq this area is also shared between different ethnicities such as, Arabs, Kurds, and Turkmens, with Arabs being the politically dominant majority. Iraq was established as a Kingdom in 1920, a period where Kurds were involved in political and military conflict with the Arab government to protect their right to practice their culture and maintain their identity.<sup>18,19</sup> When the country became a republic in 1958, the national government's provisional constitution recognised Kurds as equal citizens for the first time.<sup>20,21</sup> This national government was later overthrown by a Baa'thist coup in 1963<sup>22</sup> and introduced Pan-Arabism,<sup>23</sup> forcing all non-Arab ethnicities including Kurds to comply with the Arab way of life and culture.<sup>24,25</sup> These Arabist ideologies and policies resulted in nearly five decades of armed conflict, genocide, mass executions and human rights violations towards the Kurds. The city of Erbil, the focus of this research, is a source of identity and pride amongst the Kurdish nation. In addition to the physical fabric of the Citadel, a world heritage site, the city has a symbolic link to the intangible heritage of the Kurds. Moreover, Erbil has gone through different periods of governance, as well as armed and political conflict and represents the capital of an emerging nation.<sup>26</sup>

This paper examines the link connecting place identity, planning and conflict by discussing the transformation process of place-identity in four main historical phases of Erbil's development. It further explores the influence of planning and urban design regulations on place-identity in each time period. Furthermore, the selection of time periods reflects the political shifts influencing planning mechanisms, consequently impacting place-identity within urban form. The first period under study covered the city's early history before 1920. It was then followed by a period in which the area was under the Iraqi Monarchy from 1920 to 1958, and then during the republic of Iraq when the city was mostly influenced by the political system of Baa'th government. Finally, the study looks at the period of autonomy from 1991 to the present and how urban planning and design impacted place-identity within the post-conflict reconstruction process.

To examine this process, the research used in-depth morphological analysis<sup>27</sup> on site in Erbil, supported by discourse analysis of 47 semi-structured interviews with various key stakeholders. The goal was to explore their perceptions of place identity, their involvement in the planning system and the development process. Additionally, the morphological analysis included the review of historical maps, current and historic master plans, photos and review of planning policies and documents in order to understand how the political conflict influenced the planning and urban design mechanism and consequently transforming place-identity through time within Erbil's urban fabric

## EARLY HISTORY: THE CITADEL

Erbil is roughly 6000 years old and originated from a surviving ancient settlement called the Citadel. This area is thought to be the oldest continuously inhabited settlement in the world and is built on top of an artificial mound raised up by the process of building and rebuilding of structures in a form that has evolved naturally over thousands of years.<sup>28</sup> It represents layers of multiple civilisations from the Neo-Sumerian times when the first courtyard housing typology first appeared until the end of the Ottomans empire in 1918.<sup>29</sup> Therefore, the urban fabric of city was subject to various planning laws and regulations ranging from the organic development of urban fabric based on people's socio-economic needs to the adoption of Islamic planning principles. However, most of the existing urban structure of the Citadel mostly relates to the period of Ottoman Empire.<sup>30</sup>

The morphological analysis showed that the citadel's alleyways, paths and open spaces represent the character and identity of the Citadel in terms of its irregular but distinctive form. This network represents a unique organic urban fabric connecting a hierarchy of urban spaces, transitioning from public to semi-public to private (Figure 1). This complex pattern developed in order to avoid crossing enclosed spaces, to establish transitional spaces, and to provide privacy for the inhabitants. The character of the alleyways is the result of a multitude of individual and family decisions on how each house should look and reflects their lifestyle, financial capability and social needs. Additionally, families were responsible for maintenance and the management of the alleyways rather than a public authority. Therefore, the network of the alleyways evolved organically, the exact opposite to the planned approach in which everything is pre-determined by planners, architects, or urban designers before it is built.

The plots in the Citadel developed in an organic pattern from the main gate in the south and then gradually covered the whole Citadel area. The plots are mainly residential with few non-residential plots such as public bath (Hammam) and mosques. Therefore, plot patterns evolved and transformed over centuries based on the socio-economic needs and interests of residents. Hence, they vary in size, shape, width, and coverage areas allowing for a diverse demographic spectrum. The Citadel also includes various types of housing such as larger mansions for the rich called Diwakhana and Iwans<sup>31</sup>, as well as smaller traditional courtyard houses. As privacy was an important element of cultural identity, traditional houses had large windows overlooking their courtyards instead of the external alleyway (Figure 1). Meanwhile, only small ventilator openings were placed at high levels of these walls in order to protect the privacy of the inhabitants. Therefore, courtyard typologies were environmentally and socially responsive to the residents. As mentioned in the World Heritage nomination dossier<sup>32</sup>: *"The Citadel of Erbil is a rare surviving example of an urban ancient settlement which developed on an archaeological tell, following layer by layer and time after time, a spontaneous, non-planned growth that was influenced by a combination of previous urban layouts and successive architectural and urban elements, in a continuous process of addition and transformation extending back at least 6000 years, to the earliest phase of urbanism."*



FIGURE 1 Erbil Citadel urban fabric and courtyard housings.

Although the city started to slowly grow around the mound in the 12th century,<sup>33</sup> the Citadel still remained the heart of Erbil, as it is a symbol of Kurdish history and culture. It tells the story of how hundreds of past generations interacted with their natural environment and how they developed a way of life based on their socio-cultural values and needs. This next stage in the growth of the city represents the old town of the city and will be discussed in the following section.

## ERBIL UNDER THE MONARCHY: THE OLD TOWN

The initial development of the old town marks the first expansion of Erbil outside the Citadel to the lower plain and is the area around the citadel mound, which developed in the 12<sup>th</sup> century near the southern main gate (Figure 2). It initially started with the main bazaar and then grew to include a mosque, a cemetery, and a school, as well as residential structures.<sup>34</sup> The urban structure of the area developed following a similar pattern as the Citadel's urban fabric. This area includes four main neighbourhoods (Mustawfi, Khanaqa, Taajil, and Arab). The Arab neighbourhood is considered to be the oldest settlement outside the Citadel with the largest number of heritage buildings located within the old town (Figure 3).<sup>35</sup> The morphological analysis of the Arab neighbourhood is characterised by a pattern of narrow, irregular alleyways and streets with cul-de-sacs, most of which did not allow vehicular access. Like the Citadel, this network was either planned by the residents of surrounding dwellings to provide access or emerged over time as a result of incremental growth. With the absence of a planning system, the plots within this area also developed diverse land usage including institutional, commercial and mixed use due to its location next to the main Bazaar.

Historically, residential plot patterns developed based on decisions by individuals and families whose private socio-economic interests transformed the typology of residential plots over time. The range of different plot sizes resulted in a socially diverse neighbourhood with various family sizes from different socio-economic backgrounds living and sharing the same area, which encouraged social cohesion. Similarly, the buildings were initially developed based on individual needs following similar typologies that existed in the citadel. The prevalent building typology was the historic courtyard brick house of one or two stories. The layout of the residential dwellings was influenced and characterised by many factors, such as climatic conditions, availability of local building materials, construction methods, and social values. However, this started to change towards the mid 20<sup>th</sup> century.



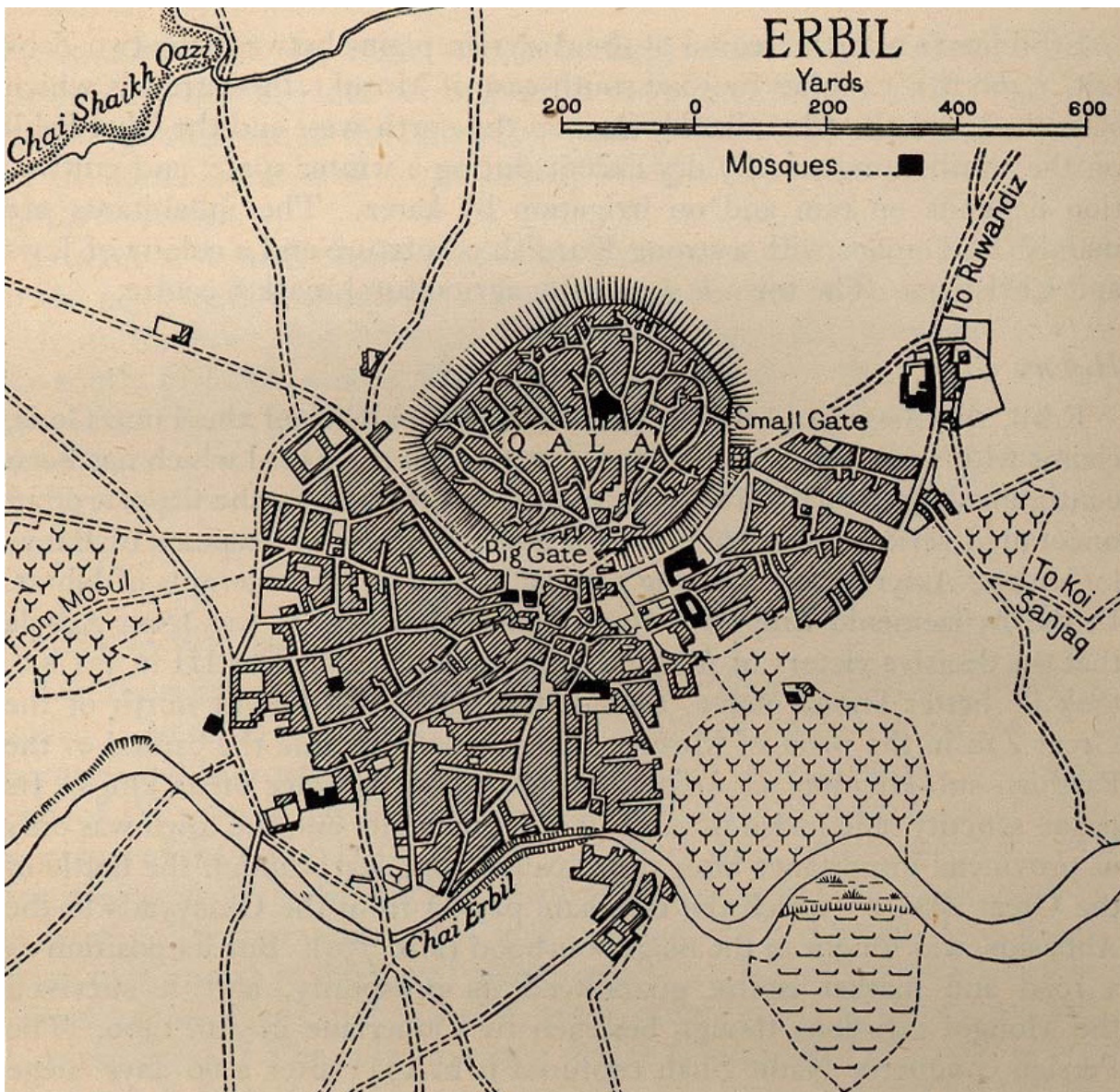


FIGURE 2 Erbil map of 1944. It shows the first expansion of the city outside the Citadel, which was towards the South where the main gate is located.

In 1920 Iraq was established as a monarchy under the British mandate after the collapse of the Ottoman Empire in 1918.<sup>36</sup> Colonial administrations and the Iraqi authorities replaced the Ottoman system. This period witnessed the establishment of the national authorities of Iraq in which the planning system started to develop mostly based on the British town planning principles.<sup>37</sup> Also, the majority of projects were developed by international firms until the 1930s when Iraqi architects educated in western countries returned from abroad and started to practice, first in Baghdad and then elsewhere in the country. All town planning and development strategies as well as building regulations were decided by the central authorities in Baghdad and applied elsewhere in the country ignoring the culture, tradition and heritage for minorities.<sup>38</sup>

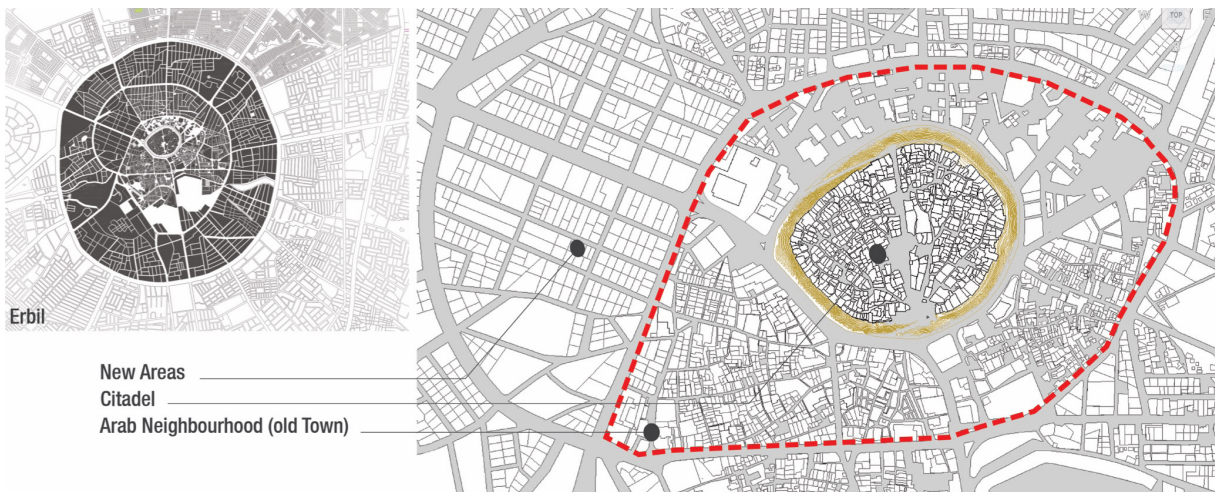


FIGURE 3 Existing map of Erbil showing the city growth from the old town. The area beyond the old town shows a departure to an international planning system despite the circular growth pattern of the city.

In the 1950s comprehensive town planning proposals were developed by Doxiadis, a globally scaled planning firm, for Baghdad, Basra, Kirkuk and Erbil. These proposals ignored the existing urban fabric rather than expanding and adapting to it. For example, Erbil's master plan proposal was modular grid system of streets cutting through the existing urban fabric and ignored the original circular growth of the city.<sup>39</sup> Therefore, the irregular plot pattern of the old town slowly transformed and evolved to a more regular geometric shape as shown in (Figure 3). This was accompanied by the appearance of new building typologies, a departure from the semi-organic plot pattern and the traditional courtyard dwellings. New houses began to be constructed by high and middle-income groups, who started to vacate their old traditional houses in the Citadel as the area became dilapidated due to the lack of conservation and upgrading programmes by the government. The new buildings were considered to be modern as they followed western styles of architecture. New developments followed patterns from different parts of the country as well as international western design ideologies.<sup>40</sup> Furthermore, there was a high demand for commercial and business uses because of the area's location in the city centre, which resulted in high land values. Consequently, many residential buildings transformed incrementally to non-residential usages such as mixed-used, commercial and retail. In addition to adopting Western design ideologies the use of imported material from outside regional and national boundaries started to appear, as did the loss of the neighbourhoods local character.

The old town and particularly its southern part indicate that Erbil's identity and sense of place was first and foremost based on the Citadel. In interviews conducted by the author with residents, many indicated that the Citadel was a source of pride and gave a sense of belonging, especially after becoming an international World Heritage site in 2014. As one elderly man said, "I feel nostalgic about the Citadel because my parents and grandparents were born there. I feel my roots are from the Citadel and that I belong here. It makes me feel proud to live in Erbil and to be Erbili" This discussion showed that Iraqi architecture and city planning was largely the product of international consultants and reflected typical patterns of modern British town planning principles. The central authorities adopted this international planning system for the development of urban fabric as part of the country's modernization process. These planning and urban design policies and regulations were first applied in Baghdad, then to other cities such as Mosul and Erbil.<sup>41</sup>

Although the city later developed radially beyond the citadel and the old town, the urban fabric started to dramatically change towards the end of the twentieth century. This was due to different political ideologies, design standards and the application of national planning policies that had an impact on the economy, culture and lifestyles of the people inhabiting the area. This will be discussed in more detail in the following section.



## ERBIL UNDER THE REPUBLIC: NEW AREAS

Iraq became republic in 1958, however, this government was overthrown by the aforementioned Baa’thist coup in 1963.<sup>42</sup> Decades of Baa’th party rule influenced many aspects of the country, including planning and urban design policies, processes, and architecture. While the historic urban fabric in Iraq was the result of the evolution of different layers of ethnic cultures and civilizations, Arabic and Islamic towns was considered the national architectural heritage of the country. Planning regulations and building codes were developed by the central government and applied all over the country. For example, the master plan for Erbil was prepared in Baghdad with little input from local officials and no civil society involvement.<sup>43</sup> Consequently, this has resulted in inadequate urban planning policies and frameworks that does not respond to local socio-cultural needs and priorities. Therefore, applying Arab national policies and development patterns in the region attempted to manipulate and change the local place-identity of the area, following colonial visions imposed early in the twentieth century. The traditional urban fabric of old towns and cities were demolished or replaced in the Citadels in Kirkuk and Erbil and other parts of the Kurdish area.<sup>44</sup>

Consequently, areas which developed beyond the Citadel and the lower old town in Erbil, contrasted with the traditional urban fabric that the city had acquired for centuries. However, the city maintained its radial growth pattern (Figure 3). For example, street networks were developed using grid system reflecting national planning principles while plot typologies transformed from irregular semi-organic shapes with diverse sizes to regular geometric shapes with a limited variety of plot sizes targeting particular demographic groups based on their social and financial level. This was obvious in the development of various new neighbourhoods such as the ‘Engineering neighbourhood’ and the ‘Teachers neighbourhood’. Furthermore, building typologies marked a departure from traditional brick courtyard houses, which reflected socio-cultural needs as opposed western style houses without courtyards and the use of imported building materials and techniques. Hence, the local place-identity of Erbil started to change gradually as you move out from the Citadel and beyond the city centre.

## ERBIL UNDER AUTONOMY: POST-CONFLICT

During this period the city gained political significance as the capital of Iraqi Kurdistan when the region became autonomous. However, the city was characterized by very limited development due to a decade of severe economic downturn resulting from both international and national sanctions. With autonomy came a period of economic growth when the Baa’th government was overthrown by the coalition forces.<sup>45</sup> This resulted in political stabilization accompanied by rapid economic growth in the region due to oil revenues, an active private sector, and United Nations support for rebuilding the area, transforming the city into a hub for investment, trade, tourism, and development in the region. This stability allowed the Kurdish government to develop and upgrade the region’s infrastructure and has altered the urban fabric in the region, particularly in Erbil.<sup>46</sup>

One of the first directives of the new government was to restore and preserve the Citadel as it represents the heart of Erbil, it’s identity and sense of belonging.<sup>47</sup> Consequently, the significance and the uniqueness of it’s distinctive historic urban fabric and architectural vernacular have focused efforts to have it included in UNESCO’s list World Heritage Sites in 2014.<sup>48</sup> In an attempt to make the Citadel a historical and cultural hub of the modern city of Erbil, a set of detailed planning and urban design guidelines are developed as part of the extensive conservation and rehabilitation implementation by the Kurdistan Regional government in collaboration with UNESCO.<sup>49</sup> Today the Citadel stands at the centre of the city of Erbil, both physically and symbolically, with the city expanding in concentric rings, following its origin.

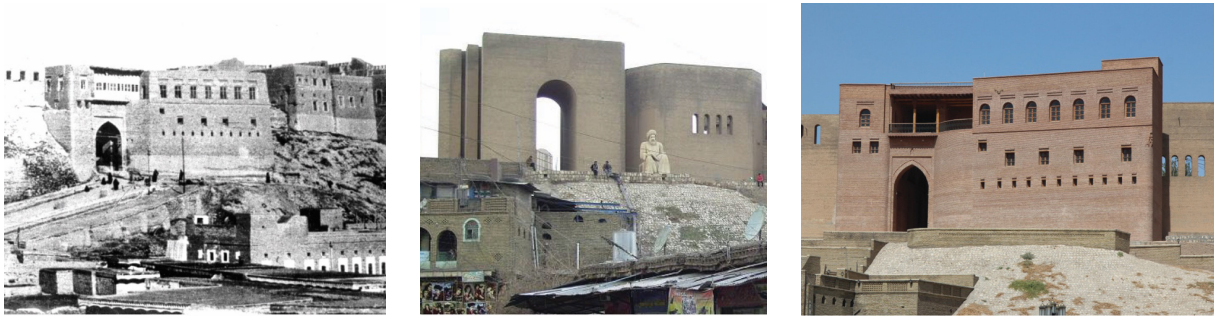


FIGURE 4 Citadel gates. (From the left) 1. The original gate, 2. The recently demolished Babylonian style replacement, 3. The redesigned gate based on the original.

From another perspective, the new autonomous government was also able to address political decisions adapted by the Baa'th party during its control over the city that affected urban form and identity. In the 1970s, the original historic gate of Erbil's Citadel was demolished and replaced with one that included architectural elements imported from Babylonian design from outside the region and was felt by many as an attempt to 'Babylonize' the Citadel (Figure 4).<sup>50</sup> Consequently, a decision was made by the Kurdish government to demolish the reconstructed gate and replace it with one that followed the original historic design. However, they did not consider that the 1970s Babylonian gate was a part of the Citadel's evolution process nor did they view it as a legitimate part of the city's transformed identity, highlighting the evolving nature of place identity in historic urban settings and conflict.

Furthermore, comparing the the old town's historical character and the different elements of its urban fabric with new developments, we can observe a lack of coherent rhythms and harmonious patterns of local character and consistency in the area that has resulted in a perceived visual intrusion on the historic urban fabric and the surrounding pattern. In an attempt to address this issue, the Kurdish government has started to develop a set of planning regulations and urban design guidelines for current and future developments. These guidelines and regulations aim to protect the heritage value and character of the Citadel and its surrounding historic districts by controlling and guiding development in the area. Unfortunately, despite these efforts and attempts, areas outside the citadel and the old town still lack comprehensive planning and urban design regulations as most of the planning strategies are still rooted in previous system. An interview with a senior official at the department of planning and urban design revealed that addressing place-identity as you move away from the citadel and the city centre becomes less of a priority, highlighting the lack of understanding of the need from an updated comprehensive holistic approach to planning and urban design.

To a great extent, the analysis has shown that the planning system is notably political and reflect aspirations for the global positioning of Kurdistan and Erbil as its capital. Most of the leading politicians and decision makers in the region share this vision for Erbil to be on par with places like Dubai.<sup>51</sup> This desire to compete on a regional and global level has led to a strong drive for rapid post-conflict reconstruction as part of the recovery process. All this has resulted in a rapid urban transformation across the region and particularly in Erbil, changing the city's local place-identity through its evolving urban fabric and new developments. Two clear examples are the introduction gated 'themed' communities and contemporary developments. To highlight the spatial consequences of this post-conflict transformation on place-identity, two examples will be explored in more depth in the following sections.



FIGURE 5 The English and Italian villages, examples of high income gated communities

## GATED COMMUNITIES AND CONTEMPORARY DEVELOPMENTS

As mentioned earlier, decades of conflict and severe sanctions have resulted in limited urban development in Erbil. Additionally, the recent influx of Internally Displaced People (IDP) and refugees has led to a shortage of housing across the city and an escalation in rental prices.<sup>52</sup> Consequently, housing policy and development became one of the first steps taken towards the post-conflict recovery process. The Kurdish government introduced affordable housing schemes that offered mortgage loans targeting low-income groups and has led investors to develop cost effective housing with limited consideration to socio-cultural needs and local place-identity. Moreover, the rapid economic growth also attracted both local and international investors. They developed housing projects that reflect global design ideologies to target high-income categories of society. Examples of these types of developments are the 'Italian Village' and the 'English Village' (Figure 5). Similarly, the urban fabric and design typologies used lack responsiveness to the local culture and climate and are segregated from the surrounding context as they introduce western identities that are different from the local built form and pattern of the area. Consequently, these residential developments have mostly failed to provide locals with their basic housing requirements and have led to their use by business firms and are now mostly occupied by international expatriates

Both types of housing mentioned above are considered gated developments with closed perimeter walls and strictly controlled entrances that targets a specific demographic of residents. Furthermore, most of these gated communities are composed of 100's of multiple units, are modular in type, and that lacks variety and distinctively. As a result, these housing typologies are in contrast with Erbil's residential landscape in terms of their forms and functions and have resulted in social segregation between residents of the city. Unfortunately, weaknesses in the current planning system does not regulate development or require developers to seek proper skills and awareness leading to consideration of 'place-identity' from architects and urban designers throughout the design process. Additionally, research interviews with the urban planning department in Erbil revealed that the issue of place-identity was not considered when the department designs, assesses, reviews and approves schemes and developments outside the old town. Consequently, these developments lack character, distinctiveness and connectivity to the surrounding urban fabric and speak an urban language that is in stark contrast with historical and traditional Kurdish models of inhabitation and social interaction.



FIGURE 6 Contemporary buildings reflecting global design ideologies

Additionally, during this period, the Kurdish government introduced new investment policies and incentives in order to attract and encourage foreign investors and developers to take part in the building and reconstruction process of modern Kurdistan. However, this has resulted in developments following new design ideologies that are globally influenced and architectural elements that lack consistency with culture, climate, and the existing context of the region. and reflect global influences and international architectural norms that could belong in any part of the world and are in contrast with the traditional values of the city and lack historical continuity thus ignoring the local place-identity of the area (Figure 6).



## CONCLUSIONS

In this paper the consequences of planning mechanisms and strategies on the transformation of place-identity was analysed through four time periods using the city of Erbil as a case study. The discussion has shown that place-identity in the post conflict period has transformed rapidly, especially in areas outside the citadel and the old town. The two examples mentioned in the previous section were used to explain the implications of the recent urban transformation of local-place-identity in order to highlight the lack of holistic approach to urban planning and design. This transformation has negatively impacted local place-identity as many areas have lost links with their historical past and are embracing micro-identities, which are anonymous and can be found anywhere around the world. As consequence, areas have embraced a collage of multiple identities that fail to collectively represent the city's local place-identity.

Although the government encourages and provides opportunities for new modern developments as part of promoting Erbil as the capital of Kurdistan, their main focus and effort is on the citadel and the old town in terms of the conservation and enhancement of the local place-identity and not on developing a holistic comprehensive approach to urban form. Therefore, there is an urgent need for resilient planning and urban design strategies that could guide future developments to reflect and respect heritage values, tradition and culture while allowing and embracing modern values. Without a targeted strategy, place-identity is at risk of evolving in a way that threatens Kurdish values, tradition and culture and fails to adapt and respond to the rapidly changing political and economic conditions. Most importantly, cities in post-conflict context need resilient strategies that could adapt to the political and economic changes in order to guide the reconstruction process without compromising local traditions and identity.

## Disclosure Statement

No potential conflict of interest was reported by the author.

## Notes on contributor

Avar Almkhtar is an Iraqi Architect and Urban designer. Currently he is finishing a Ph.D. degree in Urban Design, at Oxford Brookes University. His research is on enhancing place-identity in historic cities in the context of Iraq and the Middle East. He has been involved in variety of projects at different scales, including Regional planning for Iraqi Kurdistan with the British company Costain, master planning and architectural design for housing complexes, as well as different local architecture and urban design projects. He participated in workshops and presented his research at international conferences in the UK, US and Latin America.

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# KHANS - BETWEEN FIRES AND URBAN REVOLTS

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This paper analyses the urban planning challenges of the pre-modern era in Istanbul focusing on the khans – major commercial buildings that house many rooms organized around a courtyard. This period is considered as the preparatory phase for the urban modernization in the 19th century. The method of resolving the local planning issues by the central authorities defined the upcoming modern planning concepts. Among these issues, khans occupied a special attention, since their residents occasionally caused social problems. In this period, natural disasters were one of the main issues in Istanbul's urban life as major fires occurred frequently and the earthquakes devastated the citizens. In a city with an organic street network and timber framed buildings, fire was the main threat. Therefore, the authorities were continuously challenged to reconstruct the city with new urban approaches, trying to mitigate fire risks by issuing codes for building construction throughout the 18th century. Although most of the regulations were concerned with residential areas, there were also some documents addressing commercial areas. The main commercial area of Istanbul was the Historic Peninsula as it housed the main ports for landing goods which were then transferred to khans and shops. The khans were not only used for storage, but also housed single men like porters and boatmen. In most cases, the khans and shops were not allowed to be built from timber with the exception of financial constraints. However, the imperial order issued in 1731 contradicted former ones by banning the construction of masonry khans. The discrepancy among these consecutive orders lied in the history of urban revolts the capital faced in the 18th century. Five upheavals were performed by urban crowds and resulted in the dethroning of sultans and assassination of many government officials. The construction of masonry khans did not serve the purpose of the government, because the shopkeepers and khan residents sometimes joined Janissaries, the main army gathering in large groups and defending themselves in these robust structures. In traditional urban history narratives of Istanbul, there is a tendency to imagine the city being distributed into compartments: residential and commercial areas, administrative and religious complexes, etc. However, through studying khans, we conclude that Istanbul had a more complex structure and we are able to gain a new perspective on the traditional urban history approach. We can determine that the famous commercial areas of Istanbul like Mahmudpaşa was also one of the most crowded residential areas. Throughout their story in the 18th century, we see that the authorities were undecided about the endurance of khans. As massive urban elements and major commercial buildings, they were to be protected from fire, but as residential structures housing immigrants that became primary elements of urban revolts, they were not to be sustained. Despite the authorities' contradictory approach to the endurance of these massive structures; the khans survived until today and in a way there are the symbol of resistance to natural disasters and authorities' suppression towards immigrants.

## Keywords

khans, urban modernization, building codes, urban revolt, fire prevention





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# CASE STUDY: KINSTON-UPON-HULL, A POSTWAR TANGLE OF PROBLEMS

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Blitzed cities in Britain were seen as opportunities for applying modernist visions to new plans and spaces in Britain. But what plans did cities make and within the constraints of the postwar period, how did they cope with the difficulties of economic and legislative barriers? Numerous actions taken by central governments affected blitzed cities, but there was also a diversity of uniquely local issues faced by councils and officials within each city. While central government struggled with national economic issues, so too did the blitzed cities struggle with local issues. The loss of business in the city centres was a crucial blow, but greater still was the revenue loss from tax rates that were uncollectable: buildings destroyed left no reason for payment, and evacuated or bombed out homeowners meant further losses. Rents were mostly uncollectable on destroyed, empty or badly damaged properties, but equally crucial to obstruction of progress in some cities were the issues created by attempts to make plans for the future. From property owners unwilling to give up locations or freeholds to disagreement over changes to roadway layouts and usage zones, the lack of consensus in most bomb-damaged cities was palpable. All cities eventually had to decide who would create a plan - an external consultant or in-house official - and ensure the plan was agreed on - at the least by the city council. During the war every city had developed a separate rapport with central government, particularly with the planning ministry. Communication was established regarding future plans with all bomb-damaged cities. For better or worse, these relationships would also affect the outcome of local plans, applications, and proposals in the postwar period. Each city in Britain had a unique relationship with Whitehall, and faced its own challenges in creating rebuilding plans and their implementation of those plans. Kingston-upon-Hull was the closest city to Germany and received much of the bombing outside London. The city had nationally important industry as well as one of the busiest ports in Britain. Further, Hull had serious congestion issues and a lack of consensus about the future of the city. Hull also had one of the poorest local authorities in the country, and suffered most from the loss of rates. This paper will use Hull as a case study to examine the overwhelming complexity in preparing and implementing reconstruction in blitzed cities. Alongside national economic constraints and planning requirements, the local issues - of many shapes and sizes - explain why the consultant planner Patrick Abercrombie's plans were not only controversial, but practically impossible to implement. Although Abercrombie himself considered that this was "probably the best report he had been connected with", "no other wartime plan was so ignored or apparently ineffective". The city of Hull provides a key example of the mixture of problems faced by postwar cities in Britain, and around the world.

## **Keywords**

reconstruction, Hull, British planning



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# Long Term Adaptation to Changes

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Chair: Peter Martyn



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# CITY RESILIENCE AMID MODERN URBAN WARFARE: THE CASE OF NABLUS, PALESTINE

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**Abdallahman Kittana**

KU Leuven

Cities across the globe are increasingly becoming the main theatres of modern warfare. Reviewing the 15 largest conflicts in the world in which the International Committee of the Red Cross is active today, the most remarkable sites that emerge are urban centres. With the tremendous increase of urban crowdedness and violence, international aid and relief is becoming more challenging, less affordable and riskier. Relying on international relief leads to increased casualties; therefore, there is a need for exploring latent possibilities and alternatives that the city itself can offer. In this paper, I examine whether the city fabric influences the resilience capacity of an urban environment, taking the case of the city of Nablus in Palestine. Nablus is a hotspot of the ongoing, 68-year Palestine/Israel conflict that has experienced several forms and waves of disorder and urban combat. This paper concludes that the urban tissue and architectural features of the city's buildings influence the people's capacity for coping with the state of exception. It shows that old town tissue can function and survive longer than a modern city during times of siege, curfew and short invasions.

#### **Keywords**

urban warfare, resilience, Nablus, old town

#### **How to Cite**

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## INTRODUCTION

Cities across the globe are increasingly becoming the main theatres of modern warfare. The fifteen largest conflicts in the world in which ICRC<sup>1</sup> is active today, the most noteworthy sites that emerge are urban centres<sup>2</sup>. Cities like Gaza, Aleppo, Donetsk and Aden are enduring the hardest consequences of prolonged conflicts that transform the spaces of the everyday life into a confrontation with the most existential challenge: the survival of the city dwellers.

A few days before the invasion of Iraq in 2003, Taha Yasin Ramadan – then Iraq’s Vice President - envisioned the future of battlefields in the Middle East: “We let them go for a walk in the desert, but all our towns will resist”<sup>3</sup>. Thirteen years later, the cities of the Middle East are overwhelmed by intensive unprecedented urban combat that has completely annihilated entire urban zones, slaughtered hundreds of thousands and displaced millions from their homes. Ramadan’s statement heralded a new era of state defence; the State is no longer defending its cities with its National Army; instead, the State is defended city by city and street by street through decentralized armed groups of regular soldiers and armed civilians, blurring the traditional separation between military and civil spheres. As such, homes, markets, civic buildings and even hospitals are not only shelled from a distance, but are also transformed into ‘miniature’ battlefields.

Historically, a fundamental duty of armies has been defending or attacking cities<sup>4</sup>, which indicates that the relationship between City and War is a bond as old as humanity itself. This bond has passed through different stages, and developed in a manner that has influenced both the shape and structure of the City as well as those of military strategy.

Michael Evans<sup>5</sup> claims that the attention to the capability of the city to act as a battle space was introduced by European social revolutionaries between 1815 and 1918. They considered the city as a seedbed for armed revolution and tried to examine the relationship between insurrection techniques and street fighting. As social revolutions preferred the city as a new arena for confrontation, the pacification of such revolutions brought soldiers to fight inside the city. The first manual of ‘urban military operations’ was a product of colonial forces; namely, Bugeaud’s 1847 street-fighting manual entitled, *La Guerre des rues* (The War of the Streets), it was based on French military tactics to overcome the Algerian resistance leader Abd el-Kader in the city of Algiers. DiMarco<sup>6</sup> claims that Bugeaud’s principles were also used in suppressing the French revolts in the mid of 19<sup>th</sup> century in Paris. The notion of “military operation as urban design” is in fact describing Bugeaud’s counter-revolution tactics. DiMarco adds that Baron Haussmann was heavily influenced by those principles, which feature in his innovative plans for the city of Paris. This implies that the pacification of social revolution might have directly influenced the development of modern urban planning.

The nature and tactics of modern urban warfare, as witnessed since the beginning of WWII, have differed significantly from those of ancient, medieval and early modern urban fighting tactics; the frontier lines have not only moved from the fields to the city boundaries, but also from city walls to city streets<sup>7</sup>. World War II has provided numerous and varied cases of direct combat inside the cityscape.

In the post-Cold War era, a new type of warfare emerged, and cities have become the key sites of it; “Warfare, like everything else, is being urbanised”<sup>8</sup>. Wars are now entering cities from within; city spaces, public and private spheres, places of everyday life and urban services have emerged as the new sites of war. New military theorists speak of a new (fourth) generation of warfare based on “unconventional wars” where state armies fight against informal combatants or mobilized civilians<sup>9</sup>. This new generation of war has led to a perception of the city as the “very medium of warfare- a flexible, almost liquid medium that is forever contingent and in flux”<sup>10</sup>.





FIGURE 1 Location of Nablus.



FIGURE 2 an aerial photo showing the old town and modern urban sprawl of Nablus city.

As the city is still expected to be the theatre of contemporary and future warfare, its resilience capacity has to be revisited. While military academia is tackling city defence and offense rigorously, the city capacity to survive times of war has to expand beyond military answers; the mutual relationship between city shape and war technology needs to be revisited from a civic perspective.

“Modern warfare – in all its splintered, increasingly urban messiness – has altered the humanitarian space, changing the world of emergency relief beyond recognition”, says ICRC head Peter Maurer<sup>11</sup>. With the tremendous increase of urban crowdedness and violence, international aid and relief is becoming more challenging. Maurer claims that modern warfare has altered the humanitarian space by creating high demands on relief and repairs for cities subject to bombing and deterioration while still being inhabited by their citizens. Moreover, the complexities of delivering aid to insecure environments have pushed up the costs of humanitarian work at a rate that has outpaced increases in funding by donors<sup>12</sup>. Not surprisingly then, relying on international relief leads to increase casualties. Thus, there is a need to explore latent possibilities and alternatives that the city itself can offer.

## LEARNING FROM THE CITY OF NABLUS

The Palestine/Israel conflict presents multiple forms of urban conflict, ranging from civil disobedience to destructive war like the case in Gaza 2014. The city of Nablus represents a hotspot of this ongoing 68-years conflict; it has experienced several forms and waves of disorder and urban combat.

During the second Palestinian Intifada<sup>13</sup>, which escalated in 2000, Nablus had been presented as the incubator of Palestinian resistance in the West Bank. The casbah of Nablus is characterized by a traditional Islamic/Mediterranean tissue; a dense and complex morphology that attracted the Palestinian resistance to take refuge in its compact environment<sup>14</sup>.

The Israeli Army, in its attempts to suppress the Palestinian Intifada, found no solution but to attack the ‘heart and guts’ of the revolution. In the summer of 2001, following the escalation of the Intifada, the Israeli forces imposed a tight siege on the city, transforming it into a huge open-air prison. All entry points to the city were blocked and a network of control was installed in the surrounding hills and countryside. In April 2002, the Israeli army invaded most Palestinian cities within the so-called ‘Operation Defensive Shield’, Eyal Weizman in his article “walking through walls” has shown that prior to that attack the army officers had understood the urban fighting in the casbah of Nablus as a spatial problem; the tactic of ‘walking through walls’ became their solution.

After this large and harsh invasion of the city, Nablus has witnessed several and successive incursions and prolonged curfews; in some cases lasting for three months. Nurhan Abujidi described several patterns of invasion. The long-term invasion, which may last for several weeks, is normally implemented by imposing a tight siege and curfew on the casbah of Nablus in addition to other areas of the city. The short-term invasion, which may last for few days, is also accompanied by imposed curfew and siege around specific neighbourhoods of the city. The overnight incursion normally lasts for one night starting from midnight and concluding at dawn. This type of incursion became a regular pattern that is still applied today. Finally, the daylight incursion occurs during the working hours of the day, its main aim being detention of suspects or imposing a state of disturbance on everyday life<sup>15</sup>.

Nablus city comprises three different urban fabrics; the old town, the modern city and four refugee camps, however, in this article I focus on the old town and the modern city only, starting by a brief about their architectural and urban characters.

## THE OLD TOWN:

The casbah, of less than three kilometres square, is a living organ, functioning with its residential, commercial, industrial, cultural, religious and open spaces. It caters to its residents’ everyday needs within walking distance. Despite the lack of overall design and layout, its construction was not as spontaneous as might be imagined, but rather incremental, accumulative and undertaken with an awareness of the surroundings. In her unpublished master thesis, Thaera Bliebleh<sup>16</sup> studied the architectural contents of the Ottoman religious court’s records in the city of Nablus, from which she induced several guiding principles for the casbah’s construction. These records reveal that expansion of the city buildings was flexible, but also restricted by a concern for not harming the common good or quality of spaces shared with others. The records also revealed some outdated but remarkable real estate transfer procedures, for example, it was possible to buy and rent a rooftop or a wall section for expansion, which led to the creation of three dimensional property entanglement. This complicated entanglement and clustering of buildings led to a perception of the city as an invisible refuge for Palestinian resistance and as a striated space for the Israeli Army. The army then ‘reinterpreted the space’ and needed to smooth it out by moving through borders and walls<sup>17</sup>.

These types of building regulations produced a gigantic mass of aggregate and accumulated architecture composed of six main neighbourhoods; each neighbourhood consisting of several blocks. Blocks of buildings comprise different functions and typologies including houses, factories, baths, mosques, palaces, and shops. Inside each block there are residential clusters of houses (hush). Each cluster includes several houses, and each house comprises one or more dwellings.



FIGURE 3 the hierarchical arrangement of liveable spaces in the old town.



FIGURE 4 examples of shaded streets, bridge rooms and tunnel-like streets of the old town.

This hierarchical sequence of liveable spaces creates the town depth; man needs to pass through multiple invisible boundaries to reach the final destination. Approaching the residential cluster requires passing through social filters where every resident—including children—can question and decline entry of ‘strangers’<sup>18</sup>. The small-scale environs in which individuals are more recognizable create a sense of belonging and reinforces the social relationships between dwellers<sup>19</sup>, this is very perceptible once entering the cluster environment.

The main roads resemble the roman grid of the Roman city. They are main spines of pedestrian movement in the casbah; automobile movement is almost absent due to the narrow roads. Residential units are mostly not connected to the main roads but to irregular adjacent alleys. These spines and alleys compose four hierarchal levels of flow: public semi-public roads that are normally straight and regular, in addition to semi-private and private paths that are normally irregular and create a stonework labyrinth. Moreover, unofficial routes are generated informally between buildings, sometimes coinciding with the other four types. These routes – mostly controlled by women – include alleyways, bridge-rooms, rooftops, interior courtyards, windows, backdoors and other architectural elements.

In general, the old building regulations, which were monitored by religious courts, delivered to the 20<sup>th</sup> century a functioning built environment that is characterised by several physical qualities. Proximity is one dominant feature. By this, I mean the physical nearness of buildings as well as the functional closeness between everyday functional spaces from residential to commercial, industrial, educational, religious and so on. Throughout the city, this nearness takes the form of attachment and connectivity between structures.

Furthermore, invisibility is a primary characteristic of the casbah. Several features like shaded pathways, tunnel-like streets and irregular passageways fosters the invisible movement. Additionally, varying building orientations and heights also disturbs lines of sight and limits the visibility of outdoor spaces.



## THE MODERN CITY

However, most of these features started to vanish with the end of Ottoman era. In 1868, the municipality of Nablus was established and started to take control of the urban development of the city. With the beginning of the 20<sup>th</sup> century, buildings started to expand beyond the historic core, and the municipal government became responsible for issuing building permits and controlling public facilities. The modern city started to flourish during the British Mandate era (1921-1948), especially after an earthquake occurred in 1927. The city then expanded and developed in accordance with modern urban planning legislation and plans provided by British Mandate consultants. Town plans and building laws were prepared and approved on the basis of imported concepts that were designed in response to industrialisation and urbanisation of British cities<sup>20</sup>. These plans and laws resulted in new shape of the city, characterized by wide streets, setbacks, detached buildings and other features that distinguished it from the old core. Since then, and despite being under Jordanian and Israeli control, the building codes and regulations have not been significantly changed, keeping the urban expansion almost with the same procedure and resulting in fragmented urban densities surrounded and penetrated by wide roads.

Currently, the built up area in Palestine is regulated through master plans that are based on land use patterns and parcelization. According to building regulation, each land use pattern is assigned with specific setbacks, maximum building area, building percentage, building height and other limitations. The implementation of these regulations reduced the horizontal building density while increasing the vertical one, and led to the creation of stand-alone buildings separated by fixed intervals of setbacks that make buildings' boundaries recognizable and all their facades facing the outside environment. Additionally, dwellings became directly connected with public streets leaving no space for social filtration, thus reducing the depth of neighbourhoods to the minimum. These and other features made the modern city less immune to the conditions of combat and curfews, since invisibility of movement, proximity of services and the depth of the social sphere of interaction are missing.

## MATRIX OF CONTROL VS MATRIX OF INTERCHANGE.

When the city is subject to long- or short-term invasions, a tight control over the whole city, the casbah, or specific neighbourhood will be enforced. The Israeli Army routinely establishes a 'matrix of control' that normally includes imposing curfew, road closures, turning residential buildings into military posts, and establishing sniping positions over high buildings; this situation may last for several days and maybe weeks. Curfew might be suspended for a few hours a week so inhabitants can supply themselves with provisions.

In order for citizens to survive, they have to adapt counter-tactical operations that I might call the matrix of interchange and sharing. This matrix involves several behavioural patterns of social interchange and sharing by which people provide themselves with necessities essential to their survival. Normally, this interchange includes basic needs like food, water, medicine, space, expertise, or information.

Through intensive fieldwork, I have visited several families living in both the casbah and the modern city of Nablus; my main inquiries were about how people could survive during invasions and curfews. In all of the interviews I conducted, residents agreed on the imminent needs during these times of exception. The needs for food, water, medicine and rescue come first, but the need for electricity, baby clothing and receiving news is also crucial. Additionally, some psychological needs emerge like the feeling of presence of others and the feeling of unity and solidarity.

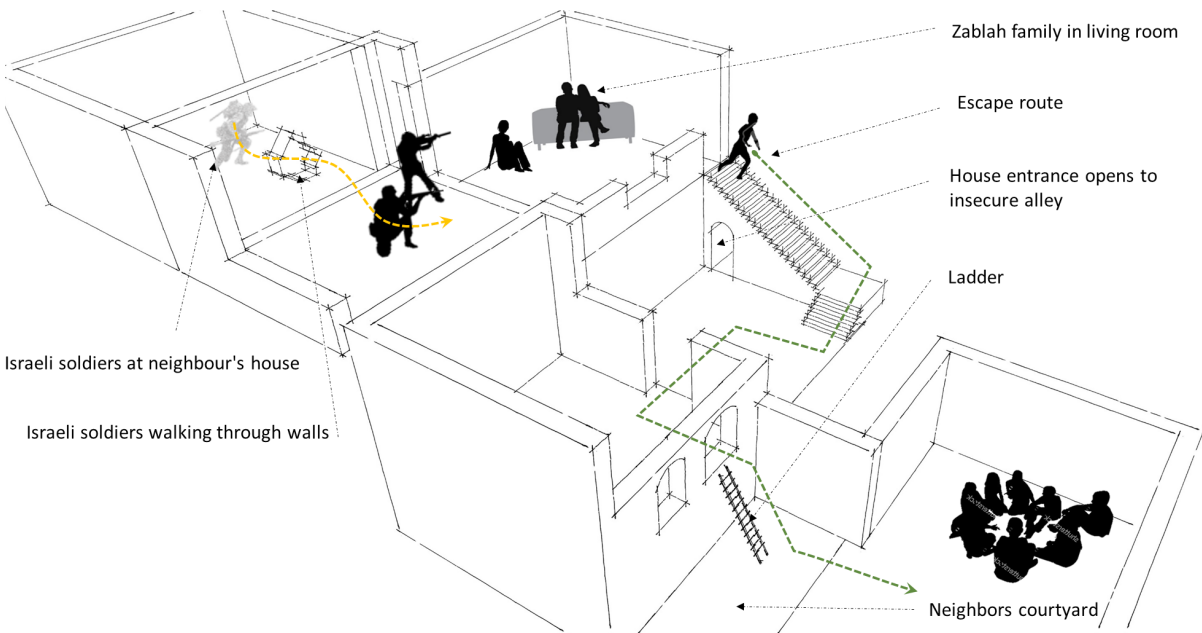


FIGURE 5 Zablah Family escape route.

In spite of being under heavy attack during the brutal invasion of 2002, the residents of the Alyasmeenah neighbourhood in the old town practiced several survival tactics more flexibly than Palestinians living in the adjacent Ras Alein modern neighbourhood. These tactics became common actions considered by residents prior to and during the attack and can be categorized as behavioural patterns; every pattern involves specific practices. These patterns start before the attack by storing goods including food, water, medicine, baby clothes, candles, charged batteries, cigarettes and other items, in addition to making known and preparing the safest room and way-out so they can shelter themselves when fighting breaks out. Then, once being amid combat, there will be other patterns of behaviours. I classify them as sheltering, sharing, delivering, rescuing, fleeing, communicating, refunctioning of spaces and some other behaviours.

Sharing, for example, is a very common pattern. People share their basic needs in addition to sharing space, time and feelings. For example, due to unpredictable length of the attack, people had to minimize their consumption by sharing meals as some families might run out of reserves. Mustafa, a resident of Alyasmeenah, explained that inside their hush<sup>21</sup>, it was possible to have collective cooking and dining. Each family provides what they have. One kitchen was used for cooking, one courtyard was used for eating and recreation, and some rooms were labelled as shelters. The network of covered and hidden routes around their hush facilitated communication and sharing with other clusters as well as providing a secure rescue route and an access to a water source. Despite three adjacent sniping outposts and heavy clashes in the area, the entanglement of architectural masses created in-between spaces that are sheltered from fields of fire.

On the other hand, in the adjacent Ras Alein neighbourhood, interchange between different homes was impossible unless the families live within the same apartment building, where communication is allowed only vertically, by means of the staircase. The stand-alone buildings leave visible in-between spaces that cannot shelter interchange between families. The Al-Usta family ran out of food for almost three days without being able to communicate with anybody because all were unable even to look through their windows. Although a shop is located just 20 meters away, they couldn't reach it and had to put themselves at risk by asking soldiers to provide some food and water.

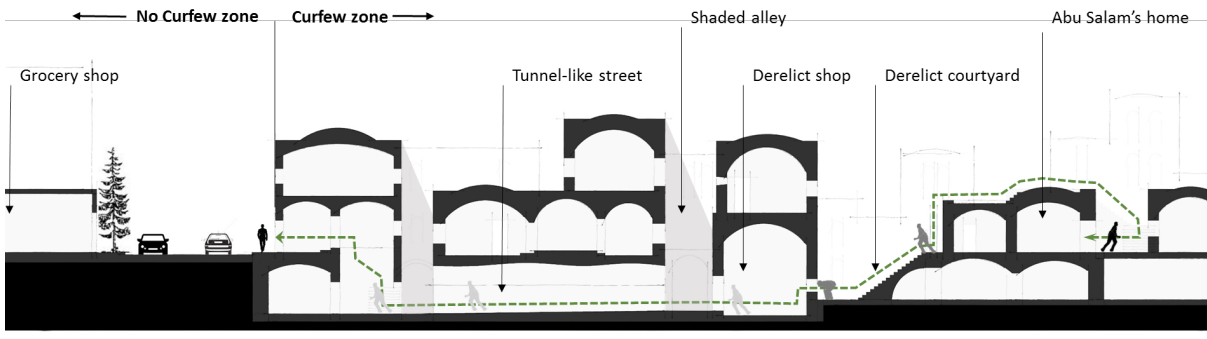


FIGURE 6 Abu Salam route of vegetable delivery.

Sheltering is also a very basic pattern of behaviour; in the old town, the traditional buildings used to orient their openings toward the interior space of the house; the courtyard, thus minimizing exposure to gunshots from the outside environment. This is not the case in most modern neighbourhoods, where all facades and openings are exposed to the outside environment. Additionally, in the old town, the narrowness of the streets obstructs the ability to directly shell the lateral sides of buildings, and so, shells are only expected from above, which indicates that ground floor rooms are much safer. This is exactly what happened with the Abu Rafat family: after the first night of firing, they decided to shelter themselves on the ground floor basement where gunshots and shells cannot reach directly; on the second night, the upper floor received a tank shell that destroyed the second floor room. Fortunately, the family managed to keep safe in the ground floor rooms.

In other cases, families could flee very few minutes before the destruction of their homes. The Zablah family, fearing the heavy firing and bombing around their house, noticed that Israeli soldiers were making a hole in their wall, leaving them no choice but to flee and leave their house. With many gunmen in the alleyways, and soldiers in surrounding rooms and on rooftops, they called on their neighbours to lean a ladder against their wall under the window so they could escape through the neighbours' courtyard. A few minutes later, Israeli soldiers entered their house through the hole and heavy firing occurred inside.

Delivering basic needs is another important pattern. The proximity of buildings and invisibility of in-between spaces in addition to the entanglement of dwellings facilitate exchange and delivery of items and even people from house to house. House-to-house transfer is eased through rooftops, backdoors, common courtyards, windows, and sometimes hidden passages. In Alyasmeenah, people could open and transfer goods from grocery shops, bakeries, pharmacies and restaurants that are available and easy to reach; the accessibility to these needs was relatively safe and within walking distance. Abu Salam has described how he could obtain some vegetables for his family and neighbours by moving from his hush to the outskirts of the old town. During this journey, he used his house's rooftop to reach derelict in-between space, and then entered a derelict house from which he arrived an empty shop through a small window. Then he had to cross a narrow alley before being covered in a tunnel-like street from which he reached a building that opens to the modern town streets where curfew was not imposed, and then he reached a store where large quantities of vegetables were still available.

Once basic needs are available inside the cluster, it can easily be delivered between dwellings and even between other clusters. Om Alaa, a resident of Alyasmeenah, was able to acquire provisions from her neighbours through her terrace that opens onto a neighbour's courtyard, and then she was able to deliver food for her upstairs neighbours through a basket hanging by a rope. Her neighbours were stuck inside one room of their house while Israeli soldiers were occupying the rest of the house. They were lucky to be put in that room that had a window opening to Om Alaa's house.



When access to basic services such as hospitals and schools is denied -either by force or by fear- people start to informally substitute these facilities by refunctioning available spaces. In 2002-2003, Nablus endured a very long curfew lasting for more than three months. As most schools are located outside the old city, citizens found no solution but to establish popular schools inside the old town. Having many educated residents and teachers, available empty spaces, and possibilities of secured routes, people started to invite students to attend informal public schools. Two family diwans<sup>22</sup> began functioning as public schools, safe and easy routes of access were introduced to students, and a matrix of news interchange kept students, teachers and families updated with instructions of movement on a daily basis. During several invasions, many spaces were appropriated and refunctioned, the Alkhayat family's diwan was fashioned into a small field clinic, an old derelict stable was prepared and made into a shelter; Al Baik mosque became a field hospital, and a portion of a palace garden was used as a temporary graveyard. These appropriations were not as flexible in the modern city as it was in the old town; even with the availability of empty and suitable places, accessibility was almost impossible.

## CONCLUSION

The survival patterns of behaviour examined above, as well as many aspects of everyday life of urban population during conflict times, are considerably overlooked by modern and contemporary urban planning academia and practice. The history of urban planning in Palestine was initiated by a colonial power, which neglected the social and cultural specificities of the local context; its aim was to enforce military control over Palestinian urban centres. Now, seventy years later, the heritage of this colonial urban planning system is still the main guideline for Palestinian urban development.

It is not feasible to claim that old towns were prepared to be more defensive against political powers, but it can be claimed that residents of old towns gain more security, controllability and empowerment against assailants. The operation anchor in Jaffa in 1936 is a concrete example of 'military operations as urban planning' that was targeting smoothening the space for military control over the local population.

The idea that old towns provide more protection for its residents is not at all a new discovery; this article is not trying to reinvent the wheel but it tries to uncover how this idea works. The analytical comparison between old and modern tissues provides a better understanding of the relationship between the urban form and culture, on one hand, and resilience on the other. With the physical features of proximity, invisibility, internal permeability and depth of the town, which are mainly derived from social and cultural values, people have more controllability over their everyday space and hence more coping capacity.

The study of the accumulation of these experiences not only reveals the inventiveness that extreme conditions catalyse, but highlights the fundamental impact of spatial conditions on possible survival strategies. Isn't survival the zero degree of resilience? In that sense, these accumulated experiences are an essential resource for any further physical and social planning of the city.

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## Endnotes

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- 17 Eyal Weizman, *Walking Through Walls* (*eipcp*, 2007) Accessed 2016. <http://eipcp.net/transversal/0507/weizman/en>.
- 18 Stranger here include anyone who is not a resident of the cluster.
- 19 Loeckx, André. 1998. "Kabyliya, the House, and the Road: Games of Reversal and Displacement." *Journal of Architectural Education* 52 (2): 87-99.
- 20 Rasem Khamaisi, *Structural Plans as a Mean of Local Development for Palestinian Government* (*Al-Syasa Al-Filistiniyah* 1994) No. I and II, pp.65-91 (in Arabic).
- 21 Cluster of dwellings.
- 22 The diwan is a family gathering space (building) that hosts family events.

## Image Sources

- Figure 1: The author.
- Figure 2: georeferenced map of Palestinian Ministry of Local Governance. 2015.
- Figure 3: The author.
- Figure 4: The author.
- Figure 5: The author.
- Figure 6: The author.

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# TOURNAI: ARCHITECTURE AND PLANNING THROUGH THE AGES OF A FORMER LEADING URBAN CENTRE, AND CURRENT PROVINCIAL HISTORIC CITY, OF THE LOW COUNTRIES

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Home to one of the first Netherlandish urban communities to secure municipal autonomy, Tournai boasts an illustrious past and wealth of historic buildings of comparable importance to Bruges. Despite prolonged post-mediaeval decline, the city remained a self-contained urban entity, with its own unique identity, well into the 20th century. This brief, summary text seeks to remind contemporary town planners and architects that cities of the pre-industrial ages benefitted both from place-specific forms of architecture and urban works that ranged in scale from the straightening and laying out of new streets, bridge building or planning river embankments to defence walls capable of embracing populous urban centres. Moreover, compared to the mediaeval, early-modern or industrial ages, the kind of stylistic guidelines currently dictating what goes up in the urban environment (as well as down; excluding listed buildings), may often seem ill-conceived. Largely preserved and further embellished during the 19th and first decades of the 20th century, the urban qualities and built aesthetics of Tournai were gradually undermined thereafter. By the 1980s and 1990s, much of the moderately wealthy city centre predating World War II was gradually falling into disrepair. Today, Tournai could be on the verge of far-reaching change. The potentially disastrous effects on the still extensively retained urban-architectural heritage remain unclear.

## Keywords

urban-architectural history, urban planning (Fr.: l'urbanisme), parochialism, persistence, (post-) urbanity, conservation-preservation, "genius loci", societal initiative

## How to Cite

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## INTRODUCTION

Long since dwarfed by Ghent and Antwerp, Brussels, Liège and French-administered Lille, Tournai (Flem.: Doornik) belongs to a prominent group of cities in the former Southern Netherlands that, due in part to their wealth of historic architecture, still enjoy considerable prestige. If, however, compared with the urban-architectural heritage of Arras, Cambrai, Douai, Valenciennes, Mons or Namur, it is the mediaeval and early-modern vestiges of Tournai that more fully attest to the astounding abilities of builders from the more distant past.

The approach adopted in this paper involves briefly examining outstanding historic architecture and urban works from the city's wider past, before paying due attention to some exceptional construction and town planning from the 19th and the gradual decline setting in from the mid-20th centuries. It concludes by examining recent developments with respect to Tournai's situation in relation to the Lille-Kortrijk-Tournai "Eurométropole", Wallonia and global forces.

Arising from the still relevant cultural clash between Francophone and Germanic-speaking Europe, an urban microcosm of such considerable importance as Tournai currently fails to receive the same level of exhaustive documentation of its historic buildings as towns and cities lying north of the so-called Flemish-Walloon linguistic divide<sup>1</sup>. This astonishing disparity is mirrored in a broad absence of professional internet website sources devoted to built urban heritage for the so-called Walloon region. Of published materials the only comprehensive picture of Tournai's general architectural profile comes from the relevant (but long out-dated) volume of *Le patrimoine monumental de la Belgique* (1978) which may be supplemented with more recent, less exhaustive monographs<sup>2</sup>, regularly upgraded Google Earth's satellite photographs, Gmaps.be.com and, in the final resort, individual perambulation. For the so-called Flemish region, in stark contrast, *De inventaris van het Bouwkundig Erfgoed* provides access to consistently exhaustive information on listed monuments, most buildings predating the 1950s and precise maps<sup>3</sup>. On the other hand, if the still strong lack of full engagement with the internet in Francophone, among other, countries that has resulted from the prevalence of English, it should be stressed that in Northern France and Wallonia demolition of urban architecture predating the 1950s is not, as yet, anywhere near so widely practised as in Belgian Flanders or even the Dutch *Nederland*. For reasons of maximum lucidity, quotes from almost exclusively French published and internet sources have not been translated.

## PAST GLORIES AND DISASTERS IN A NUTSHELL: TOURNAI AS A LEADING URBAN CENTRE (1ST/2ND CENTURIES AD - 1830)

*"Même s'il ne s'agit encore que d'une agglomération secondaire, la bourgade gallo-romaine de Tournai, sur l'Escaut, développe déjà des programmes urbanistiques et architecturaux ambitieux, dans le courant du IIe siècle de notre ère, à en juger les découvertes qui y ont été réalisées<sup>4</sup>."*

With a recorded history of continuous human inhabitation since late-Roman Antiquity, Tournai, thus far, has been in existence for around 2000 years. The above reference to 'a secondary vicus' on the River Scheldt emphasises the tremendous endeavour involved in the initial stages of urban foundation. Assumed to post-date Roman suppression of the Belgae tribes, much the same *Turnacum* that was enlarged in the 3rd century (confirmed by rich archaeological findings in and around the Cathedral) served the 5th-century Franks as their first power base after crossing the Rhine. The rise of France as a state has tended to complicate the city's historic association with Belgium. Even if the diocese of Tournai was subordinated to the metropolitan authority of Rheims, the origins of this stolidly 'French' city issued from the Belgian tribe of the Remi<sup>5</sup>.



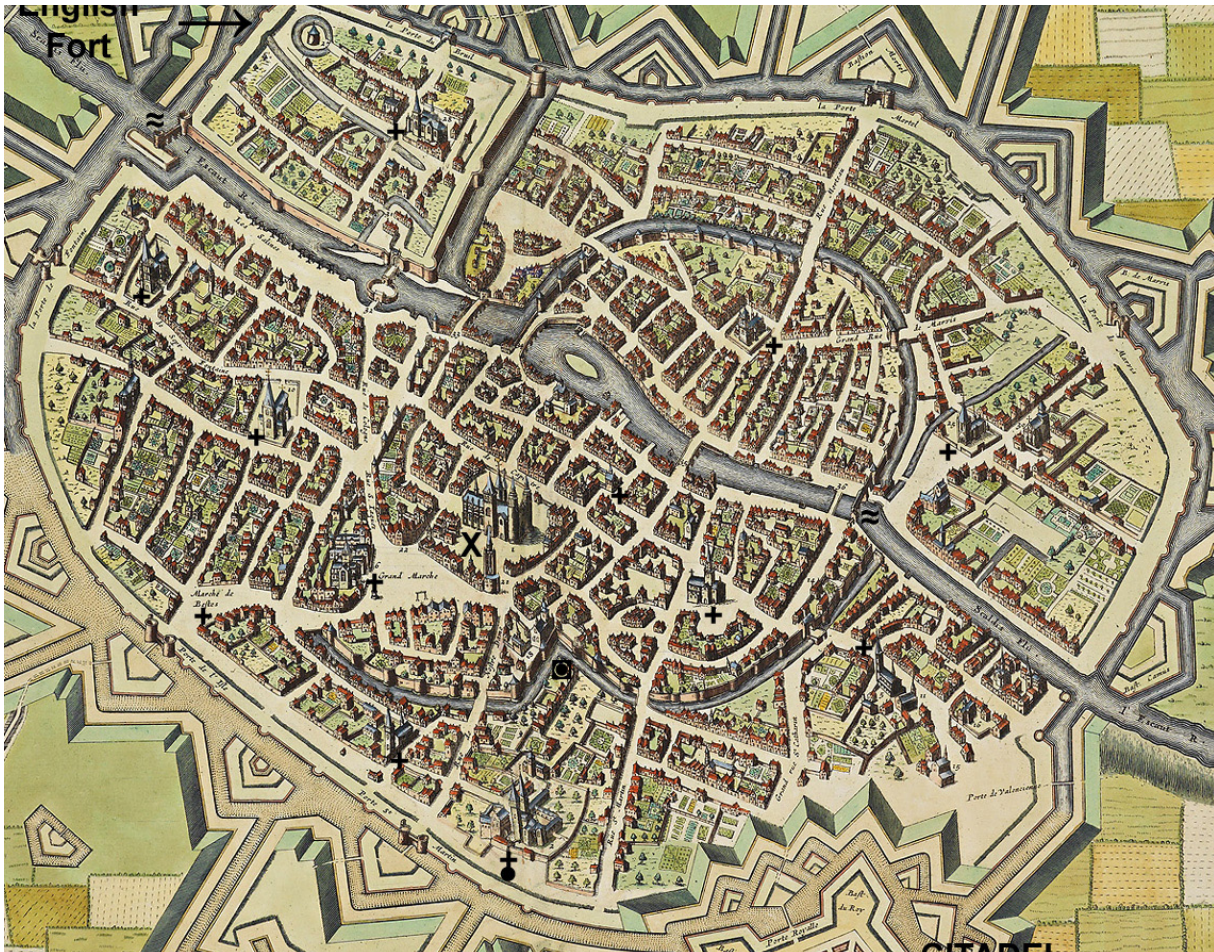


FIGURE 1 Schematised bird's eye view of Tournai from Johannes Bleau's Stedenboek. Surrounded by French bastions and earthworks, obsolete English Fort and technically advanced Citadel clearly marked (St. Catherine's parish semi-demolished). The river as yet not canalised; moated inner and outer city walls easily discernible; Cathedral and Beffroi (X) adjacent to triangular-plan Grand'Place; Halle aux Conseaux with Tour aux Six (■); St. Martin's Abbey (●+); parish churches (+); ponts des Troux & de l'Arche (≈)

For the purposes of this text, it is most practical to pinpoint the key aspects of Tournai's pre-modern history:

- 1 Belgian post-Antique history began with the Carolingian Empire's partitioning (843-80) between ultimately the Western and Eastern Frankish Kingdoms;
- 2 a watermark in Tournai's early-mediaeval history is marked by inclusion of its city on the Scheldt's left-bank (alongside almost the entire County of Flanders) in what became the French Kingdom and assigning of the right-bank, with the parish of St-Brice, to the Holy Roman Empire;
- 3 while the Flemish (initially under the Counts but subsequently led by the cities) broadly rejected French sovereignty, the *Tournaisiens* sought king Philippe Auguste's active support to free themselves of the Church's feudalistic dominion, as sealed by the urban charters of 1188 and 1211;
- 4 although a French vassal periodically besieged by the Flemish Counts, Tournai remained the diocesan seat for Flanders;
- 5 The city's mediaeval wealth<sup>6</sup> rested on a potentially disastrous combination of constituting France's fourth city (after Paris, Rouen and Orléans) and remaining a vital Flemish economic centre (clothe industry largely based on imported English wool, tapestry production and provision of various hues of Tournai stone);
- 6 coinciding with the demise of the Middle Ages, the brief English occupation (1513-19) and incorporation into the Habsburg-dominated Seventeen Provinces (1521-72) spelled certain loss of the city's pre-eminence as an independent urban variable<sup>7</sup>.

Among the architectural gems attesting to the 'glory' of mediaeval Tournai, the world-famous Romanesque and Gothic Cathedral of Notre Dame shares place of honour with the *Beffroi*<sup>8</sup>, situated at the head of the (main) market square, or *Grand'Place*. As also happened in most towns and cities throughout Belgium and today's North of France, the secular (in this instance) tower symbolises civic liberty<sup>9</sup>. Arguably a greater architectural testimony to the victory of *Stadtluft* over feudalism, two great systems of ramparts were raised to protect the expanding *République communale*. If the bishop's *civitas Turnacensium* had merely protected the Cathedral and immediate vicinity, the first civically initiated *enceinte* (55ha) encompassed the *Grand'Place* and former *fauxbourgs* of St-Quentin and St-Piat, before being extended to take in the right-bank parish of St-Brice (1188-1202). Comprising 18 gates and 42 towers, the second *enceinte* (c.190ha) was a gigantic undertaking carried out within a mere 25 years (*rive gauche*: 1277-1282/1295; *rive droite*: 1289-1302). It incorporated an additional eight parishes, of which the city churches of Ste-Marguerite, St-Jacques, Ste-Marie-Madeleine, St-Nicolas and St-Jean still stand<sup>10</sup>.

Enduring three centuries of outside interference in their socio-economic and cultural life, the *Tournaisiens* continued to identify with their city rather than any of the ensuing succession of European powers. Having largely converted to Calvinism, due to which Tournai was known as *la Genève du Nord*<sup>11</sup>, its citizens faced religious persecution from the Spanish. Following Farnese's two-month siege of 1581, thousands emigrated to France or the self-proclaimed Dutch Republic, leaving behind a depopulated city. Economic recovery within the Southern Netherlands (1581-1667) proved sluggish.

English occupation had entailed turning St. Nicolas's parish into a fort, of which only Henry VIII's Tower still stands<sup>11</sup>. Return of the French in 1667, after another destructive siege, was overshadowed by Louis XIV's Citadel. Requiring 30,000 men working in shifts of 10,000 from 4am to 7pm<sup>12</sup>, it was not conceived simply to protect the city from external threat but (like the gargantuan fortress outside Lille) to subdue potential urban insurrection. Conversely, the "42 *glorieuses*" (*années*) exerted by far the greatest pre-19th-century impact on the mediaeval built environment:

"Tournai doi son visage actuel à l'action de Louis XIV et de ses architectes"<sup>13</sup>;

"No other French town offers so many fine houses with similar façades from the reign of Louis XIV"<sup>14</sup>.

The Scheldt was canalised and its tree-lined embankments fronted by townhouses in the 17th-century French classicist style named for *le roi soleil*. If Tournai was eclipsed by the rising importance of Lille (Flem.: *Rijsel*; Dutch: *Rijssel*), the *Parlement* (i.e. justice courts to Flanders and Hainaut) was set up on the Scheldt; in a palatial edifice of imposing scale and architecture, as affirmed by the three-dimensional scaled model (*plan-relief*) of 1701<sup>15</sup>.

The most significant testimony to Tournai's built history is its remarkably diverse domestic architecture, as revealed in the great wealth of pre-industrial townhouses and subtly complex definitions of period and building type in accordance with the frontages' arrangement and decorative details. They vary from stone Romanesque, (featuring the *fenêtre tournaisienne* applied in much of North-Western Europe), Scaldian stone or Flemish stone-and-brick Gothic, through Gothic-and-Renaissance, or more emphatically defined Flemish and Louis XIII Renaissance, to variations of the localised Tournai 'traditional style' or *maison rustique* so distinct from the Classicist-orientated Louis XIV (Baroque), XV (Rococo) and XVI (neo-Classical)<sup>16</sup>. The wealth in Belgium and Nord-Pas-de-Calais départements of urban homes designed in the Empire, Historicist and Eclectic styles through to Art-Nouveau and Art-Deco reflects how the tradition continued through the 1800s into the inter-war years<sup>17</sup>.





FIGURE 2 Tournai townhouses. Left to right (upper:): Romanesque - Louis XV & Bruges neo-Gothic - 14th-century Gothic; (lower:): Louis XIV - stone-and-brick Renaissance - neo-Classical (part-adapted)

## BETWEEN HISTORY & MODERNITY: ENDURING VITALITY OF A SELF-CONTAINED CITY & URBAN COMMUNITY (1713-1940)

*“Prendre, autant que possible, la ville à son origine; suivre ses modifications à travers les ages; faire l’histoire et la description de toutes ses parties; en un mot, peindre le vieux Tournai et le Tournai de nos jours, tel a été le thème que nous nous sommes imposé”* 18.

First occupied by the anti-French Alliance, Tournai was returned to the now Austrian-ruled Southern Netherlands (1713-94), passing subsequently to post-revolutionary France (1794-1815) and the Dutch Kingdom (1815-30). True to its urban traditions, Belgian Flanders actively contributed to the earliest stages of coordinated industrial enterprise from the mid-1700s. In Tournai the disused *Parlement* building was adapted into François Péterinck’s porcelaine factory (1800), while in 1811 the wider known Piat, Lefebvre et Cie carpet factory on the rue Clarisse, occupying the pre-Revolutionary Ste-Claire nunnery, received a purpose-built neo-Classical frontage designed by Bruno Renard (1781-1861),<sup>19</sup> a local architect who had studied under Charles Percier. The reoccurring influence of Paris imposed further rationalisation on the city’s built fabric by adopting a localised variation on the style *empire*, lasting from the 1810s to 1850s. Demolition of the mediaeval complex of municipal edifices induced Renard, in collaboration with Benjamin Joseph Dewarlez (1768-1819), to plan the *Place du Parc* (currently named for Queen Astrid), fronted with well-proportioned neo-Classical townhouses (largely non-extant) and two public buildings: the *Salle des Concerts* (1822→) and *Hôtel Gorin* (c.1825)<sup>20</sup>. This monumentally conceived square connected the *Grand’Place* to adjacent parkland and new *Hôtel-de-Ville*, adapted from extension in the style Louis XV (1763-7) of Saint Martin’s Abbey (dissolved after 1794). Renard is probably best known for his design of *Le Grand Hornu* (1816-35), comprising a factory, its owner’s residence and workers’ colony<sup>21</sup>.

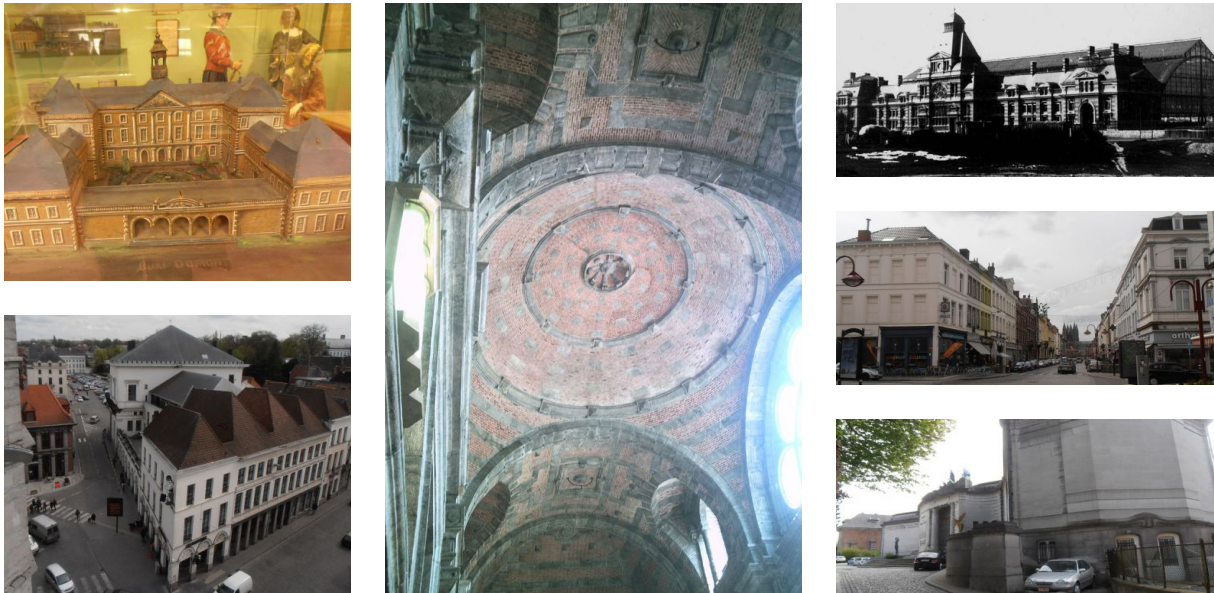


FIGURE 3 Left: late-17th-century Parlement, Renard's Salle des concerts with Place du Parc; middle: main hall plafond of H. Beyaert's railway station (1870s); right: station, exterior view (c.1880), Rue Royale viewed from Place Combez, Victor Horta's Musée des Beaux Arts (1903 onwards)

The greatest single piece of urban planning in Tournai combined demolition of the outer city walls (1867→) with construction of the third railway station (1874-9), by the Fleming, Hendrik Beyaert (1823-1894)<sup>22</sup>. An important railway junction, linking the city with Mouscron, Liège, Brussels and Lille, as well as Ronse (disused), took shape from 1842. Three avenues (rues de l'Athenée, Childeric, Royale), radiating from newly demarcated Place Combez were integrated with a system of magnificent boulevards laid out along the dismantled ramparts. Even if such far-reaching steps, facilitating assimilation of the outer suburbs and surrounding villages, anticipated rapid growth into a populous agglomeration to rival Liège and Lille, they came too late for the city to attract industrial location away from the Borinage, Charleroi or more proximate cross-border textile towns of Tourcoing and Roubaix. Factories in this nonetheless fastidiously commercial city were largely concentrated around the first two railway terminuses<sup>23</sup>, or went up behind pre-existing buildings.

Taking into account how Belgian independence initiated an era of recovery and sustained stability encouraging social improvement, it may be contended that during the 19th and early-20th centuries Tournai still functioned as a largely self-contained urban entity. Possessing its own commercial life, manufacturing businesses, museums, publishing houses, theatre, as well as local customs and urban mythology drawing on a prolific past, the city experienced an effective prolongation of its mediaeval autonomy. Richly supplemented by infrastructural innovation of municipally initiated underground sewers and running water, the supply of gas and electricity, raising of hospitals and other public services, this more parochial rekindling of Tournai's mediaeval *âge d'or* was seriously undermined by the cataclysmic German invasion of August 1914. The hypothesis that Tournai's modern history was one of encroaching provincialism is thus open to criticism for overgeneralising immensely complex processes. Considering the destructive changes on the horizon, the so-called *Belle Epoque* may be regarded as signifying an inventive and even dynamic reaffirmation of the city's pre-modern heyday so markedly at variance with the above-mentioned industrial agglomerations' development.

## THE AIR RAIDS OF MAY 1940, POST-WAR 'RECONSTRUCTION'

*“Aujourd’hui la tempête de fer et feu a passé sur ce qui n’était déjà plus qu’un souvenir. Il n’y a même plus de murs noirs par la fume; tout a été nivelé à ras du sol. Et etiam periere ruinae: les ruines elle-mêmes ont péri”*<sup>24</sup>.

As had already been inflicted on Guernica, Wieluń, Warsaw, Rotterdam, Middelburg, Maubeuge and soon struck a myriad other built-up areas, Tournai was subjected to merciless aerial bombardment. Between 16th and 23rd May 1940, great swathes of the centre were reduced to shattered remnants or heaps of rubble<sup>25</sup>. Of the most valuable historic architecture, the Cloth Hall and three most ancient churches of St-Quentin, St-Piat and St-Brice were reduced to gaping, partially obliterated shells. The Cathedral’s Romanesque nave also sustained bomb damage. Over a thousand buildings (ex-intra-muros) were either badly damaged or almost totally razed. In the desperate conditions of another German occupation within barely two decades, due to insufficient measures taken to preserve their invaluable remains buildings worthy of meticulous restoration were lost forever. All but the sturdiest of burnt-out walls were ripped down, leaving nothing but the cellars.

Detailed reconstruction à l’identique applied after the ‘Great War’ at Ypres and Dinant was limited to the most prestigious devastated edifices. Elsewhere, a modernistic approach was introduced from the early-1950s into the 1960s of a style – but not always proportions – specifically intended to ‘harmonise with’ the surviving historic architectural profile. Paul Bonduelle (1877-1955), an architect of national repute and *Tournaisien* by birth, was appointed *commissaire spéciale* to oversee the rebuilding, which – disregarding the implications of mass car ownership – made provision for the widening of pre-existing streets (Têtes d’Or, d’Argent, rues Puis d’Eau, du Pont, du Cygne, sections of Rue St-Martin), or laying out of new thoroughfares (rue Wallonie) to improve traffic flow across the city’s inner core<sup>26</sup>. The retreating British forces had blown up the Scheldt bridges, including the middle span of the mediaeval *pont des Trous* (1281-1329)<sup>27</sup> and four characteristic *levy bridges* (*ponts levants*) in the centre, raised by two pairs of mechanised pulleys resting on Doric columns<sup>28</sup>.

## PROGRESSIVE ATTRITION OF THE URBAN CORE - 1960S-1990S

*“Une nouvelle génération d’architectes avait fait son apparition et elle vouait un culte, tout particulier, au Dieu béton. Hôtels de maîtres et petites maisons au charme désuet ont été ainsi systématiquement sacrifiés, sans regret, pour faire place à des résidences dont on peut relever la pauvreté architecturale”*<sup>29</sup>.

A long drawn-out decline of large parts of the city’s building stock was intensified by profound changes to the social structure, associated with adoption of ‘modern’, internationalised ‘lifestyles’ and all that entails, began to take on dramatic proportions from the 1960s. The situation became dire in the 1980s, by which time new technology had transformed rural life in the *Tournaisis*, local manufacturing activities were in rapid decline and once numerous, typically family-run shops, hotels, cafes, bars and restaurants<sup>30</sup> succumbing to the impact of individualised motor transportation and accompanying preference for entertainment in bigger cities, *hipermarchés*, fast-food franchises, theme parks, shopping malls, etc.

A venerable city of Tournai’s priceless historic importance required far-sighted governmental policy. However, this period coincided with the devolution of centralised administration in favour of a federal state system. From a regional perspective, an unjust blow, predating national independence, had been dealt the city by its administrative subordination to (Belgian) Hainaut. With regard to the urban fabric’s advancing ruination, as actually occurred in the 1980s-2000s to Liège. With the municipal authorities more or less willing connivance, the Walloon political establishment resorted to severely unimaginative utilitarian redevelopment of the urban core, employing outside contractors and, as public funds ran dry, private developers<sup>31</sup>. In a city ten times smaller, while ruinous redevelopment (as cited above) struck particular streets<sup>32</sup> or squares<sup>33</sup>, the greatest loss was to



pre-20th-century housing, decayed or otherwise, replaced by typically tawdry-looking constructions that, bearing names highlighting their architectural banality like: “résidence Cathédrale”, “Le Versaille” (sic), “Crédit Professionnel du Hainaut”, severely contrasts with the pre-late-modernist urban fabric. In view of the municipality’s ineptitude at protecting historic architecture, a turning point was marked by the Pasquier Grenier Foundation’s purchase of desperately run-down historic monuments in danger of being condemned<sup>34</sup>. These included the 17th-century Sept-Fontaines barracks, while the churches of St-Jacques and Ste-Marguerite were saved by restoration projects<sup>35</sup>. Many other edifices, such as the church of Ste-Marie-Magdalene, still await substantial rebuilding. Elsewhere, work on disused buildings has failed to guarantee satisfactory results, as with . Renard’s former abattoirs on the rue de l’Arsenal of which one pavilion survived, the remaining two being sacrificed to enlarge the utilitarian clinique Notre-Dame.

## CONCLUSIONS & FUTURE PROSPECTS

“Après Lille, Rouen, le défi consiste à offrir au Tournais **une nouvelle address, une nouvelle vitrine** tournée vers le bien-être, la gastronomie, la reconstru, la détente, l’hébergement de standing; **une nouvelle capacité d’accueil:** seminars, salons privés, espaces conferences; **une nouvelle destination**”<sup>36</sup>.

- emboldened phrases as applied in the press report)

The broader changes of the later half of the 20th century proved as unkind to Tournai as the central and inner urban areas of many cities in the world. Although living and housing standards may have improved, the same could not always be said of the actual quality of urban life. If the century ended with efforts increasingly independent of official institutions to ensure a *sauvegarde* of the city’s phenomenal architectural inheritance, under more fortuitous conditions, it might have proved possible to extend conservation to the whole of the city centre and its formerly mediaeval *fauxbourgs*<sup>37</sup>.

Consideration of post-16th-century change to Tournai’s organically evolving urban architecture demonstrates the direct relationship between building ‘the new’ and destroying ‘the old’/‘outdated’. The forces of so-called historic inevitability may be claimed to have dictated long-term replacement of wooden buildings by stone-and-brick construction. The more immediate impact involved the loss of c.300 houses and St. Catherine’s to the Citadel’s esplanade, a further three parish churches, St. Martin’s Abbey and numerous monasteries ripped down after 1794, removal in the 1820s of the mediaeval political centre (fig. 5) and subsequent demolitions to accommodate straightened or new streets, production plants, public edifices, etc. It is only from the mid-1900s that the destruction finally begins to exceed creative building, as witnessed by wartime obliteration; expropriation from 1963 of c.150 properties along the *Quai du luche d’Antoing* widened to accommodate increased river traffic on the Scheldt<sup>38</sup>; large-scale substitution of ‘obsolete’ townhouses; widespread decline of churches, public buildings, etc. Considering the durability of solidly constructed and comparatively well-maintained architecture, the reckoning for 75 years of all too frequently mindless erasure is a bleak one<sup>39</sup>.



FIGURE 4 The 12th-century Fort Rouge tower adapted after 2000 into a 'luxury home' (stainless steel fencing and gateway out of keeping with the ancient architecture). Beyond: a townhouse on the Rue Perdue (many others eradicated from the 1980s), dwarfed by late- and post-modernist apartment blocks

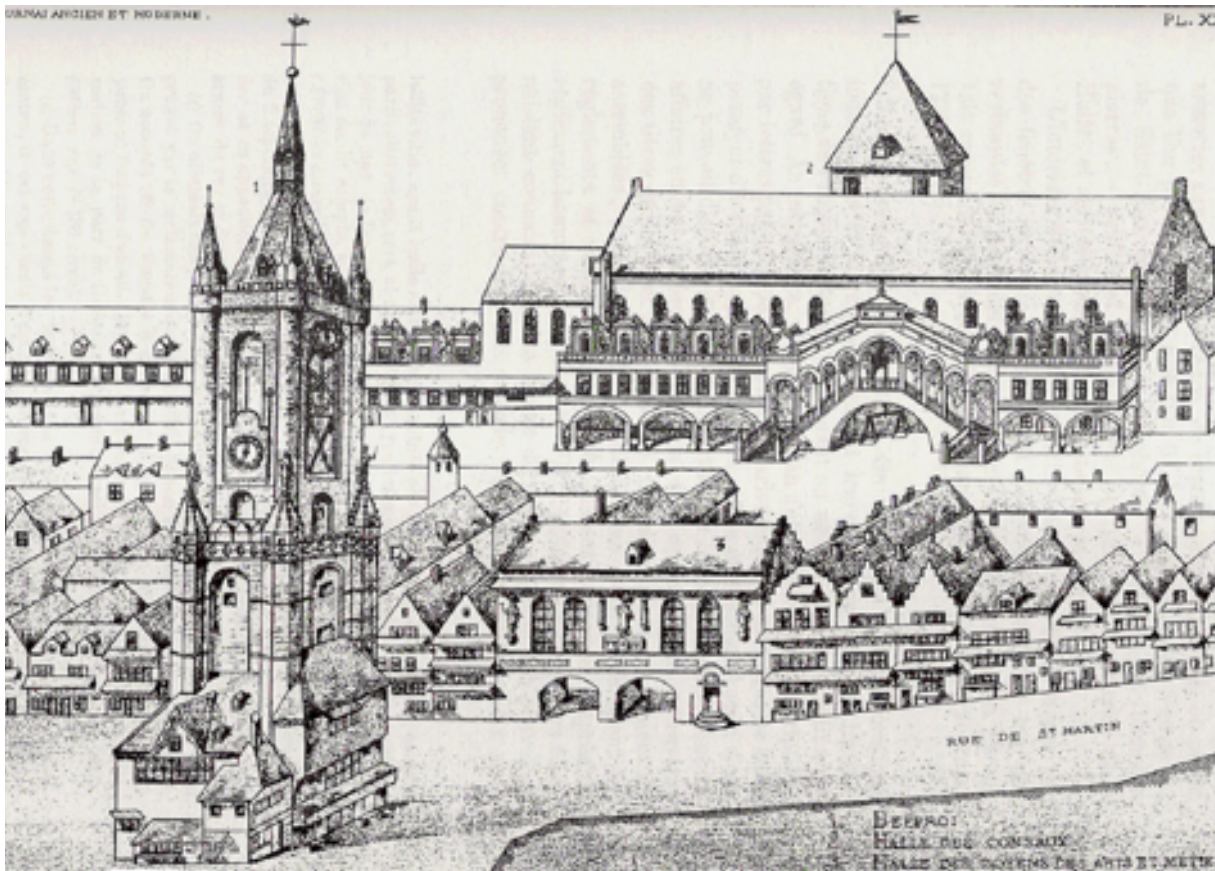


FIGURE 5 Lost urbanity of municipal buildings (Halle aux Conseaux, Tour de Six and Halle des Doyens), cleared of adjacent houses (foreground: Belfroi), in a mid-19th-century update of the 17th-century print

The question now is what the ongoing era of (so-called) globalisation may have in store for the city. Since the onset of the New Millennium, as an extension of prolonged restoration work on the Cathedral (€21 million), the most ancient quarter of Tournai has been undergoing would-be EU-funded “revalorisation” that, having overridden the local authorities, declares in grotesque French newspeak: *Le Fonds européen de développement régional et la Wallonie investissent dans votre avenir*<sup>40</sup>. Signs are evident of property developers’ interests enjoying the support of the regional government officials directly involved, desperate to ‘boost’ a flagging local economy by encouraging investment in the main thing they see going for Tournai: its tourist attraction. Attention has focussed on the disused 18th-century *Maison des Prêtres* which, with its main elevation overlooking the Place de l’Évêché (dominated by the Cathedral’s Romanesque west front and main entrance), is to become the city’s first 4-star hotel; complete with boutiques, top-class restaurant and obligatory roof-top terrace affording ‘die-for’ views over Notre Dame and the *rive-droite*. Underlining how, much as in the early stages of international modernism, architects propagating its contemporary variation(s) work for very wealthy clients<sup>41</sup>, the 44-page *dossier de presse* alludes to the general direction of forces currently under way, with the inevitable objective of attracting big money. Tournai’s geopolitical location as a provincial Belgian city is being overridden by its geographic (as well historic) proximity to Lille, whose cross-border importance as urban heart of a metropolitan region now spreads beyond French-administered Flanders into the western reaches of Belgian Hainaut, the Belgian-Flemish *Leiestreek* (Courtrai) and *Westhoek* (Ypres). If the press report’s plans and glossy photomontages already depict a new development facing the Place Paul-Emile Janson, links to websites publicised through *Skyscrapercity* have revealed alternative concepts that go to the extremes of a 110m glass-fronted tower (a full 27m higher than four of the so-called *cinq clochers* symbolising Tournai since the 12th century)<sup>42</sup>. Mere exercise or latent blueprint for the near future? That is the question.





FIGURE 6 Maison des Anciens Prêtres (“Hotel 4 étoiles”), views of the Cathedral from places de l’Évêché and Paul-Emile Janson, model of Cathedral precinct with one of various designs for the new hotel

*“Prêcher l’esprit d’équipe, réclamer la simplicité et la logique dans les formes, la bonne et saine construction, exiger l’utilisation de matériaux régionaux qui vieillissent en beauté, à l’exclusion des produits industriels qui ne résistent pas à l’action des éléments...”*<sup>43</sup>.

So quickly forgotten, even these guiding principles of the reconstruction, formulated in the classicist tradition of the Brussels and Paris Académies still fail to pay full tribute to the city’s own capacity for architectural construction and urban composition – too often forgotten, because each urban centre of the past most typically was a rule unto itself. Apart from paintings, models<sup>44</sup> and pre-1940 photographs, this *savoir-faire* is self-evident in the multitude of genial visual effects surviving or preserved for posterity in the *plan-relief* of 1701. As in other pre-industrial cities, this ability in designing townhouses or genuinely arresting public buildings to take maximum advantage of the pre-existing *tableau urbain*, with its subtly alternating topography and winding streets, reveals a combination of true appreciation, initiative and requirement to originate high-quality work that, semi-maintained or rediscovered during the 1800s, was all too readily squandered from the mid-1900s onwards<sup>45</sup>.

Nothing, as yet, has come of the satirically nicknamed *tour Michelin* in reference to its deviser, the Paris-based architect of AMNA<sup>46</sup>. An altogether less invasive project, possibly retaining the 1950s ex-State Archives building, may still prove the most practical, not to mention least controversial, outcome. But this hardly alleviates an ongoing threat to the magnificent *pont des Trous* posed by 1350 ton vessels plying the Scheldt<sup>47</sup>. All in all, the current state of affairs, involving the potentially failed region of a federal state whose chief city serves the

European Union<sup>48</sup> as its main political and administrative seat, cannot inspire optimism. Where municipal authorities spending residents' taxes on their 'behalf' have lost the initiative, hope could lie in 'citizens' power' injecting life back into political science through public meetings and free exchange of information, galvanised by socially engaged groups or individuals who are becoming progressively adept at protecting what is, after all, their city<sup>49</sup>.

### Disclosure statement

No potential conflict of interest was reported by the author.

### Note on contributor

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## Image Sources

Figure 1: Joan Blaeu, Stedenboek (p.100) pre-1673, Universiteit Utrecht (in the public domain)

Figure 2: Phot. Peter Martyn

Figure 3: Phot. Peter Martyn

Figure 4: Phot. Peter Martyn. Tournai Railway Station, c. 1880s, unknown photographer; refer: [https://en.wikipedia.org/wiki/File:M66435\\_std.jpg](https://en.wikipedia.org/wiki/File:M66435_std.jpg)

Figure 5: Hotel des Doyens des arts et métiers and adjacent municipal buildings, from A.F.J. Bozière, *Tournai Ancien, Tournai Moderne* (pub. 1864), p. 310 (in the public domain)

Figure 6: Phot. Peter Martyn

## Endnotes

- 1 Cf.: minimalised reference to historic buildings of Tournai with three times greater coverage of those in the town of Oudenaarde: [https://fr.wikipedia.org/wiki/Liste\\_du\\_patrimoine\\_immobilier\\_class%C3%A9\\_de\\_Tournai](https://fr.wikipedia.org/wiki/Liste_du_patrimoine_immobilier_class%C3%A9_de_Tournai). Accessed April 2016; [https://nl.wikipedia.org/wiki/Lijst\\_van\\_onroerend\\_erfgoed\\_in\\_Oudenaarde](https://nl.wikipedia.org/wiki/Lijst_van_onroerend_erfgoed_in_Oudenaarde). Accessed May 2016.
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# EARTHQUAKE DESTRUCTION, URBAN CONSTRUCTION, AND INFRASTRUCTURE IN CHILE (1906-1958)

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This paper examines the relationship between earthquakes, urban planning, building regulations and earthquake proof design developed during XXth Century in Chile. Despite being one of the most seismic countries in the world, Chile had legalized seismic urban and building codes as early as 1929. Onwards, and up to now, the country has established a fairly efficient code. Nevertheless, its efficiency must be understood as a result of a long term process crossed by severe seismic events, death and urban destruction. In fact, urban planning and building construction codes in Chile have been designed in a continuous improvement which has been based on adjustments and modifications as a cause-error dialectic process. Other highly seismic states and countries, such as California (USA), Japan, New Zeland, or even Italy, have been assuming different approaches to earthquake resistant building codes (Guevara, 2009). In this context, political and technical decisions undertook in Chile, have been also based in concrete buildings, rather than steel- as synonym of resistant. Certainly, concrete buildings are not earthquake proof themselves, as structural and architectural design criteria employed would be crucial. This kind of problem was observed early at the end of the XIXth Century in Chile, as in Japan and California. Thus, earthquake destruction and proof resistant, far to be a linear problem (cause-effect), suggests a complex issue (Jacobsen, 1956). In the the period that goes between 1906 and 1958, marked by Valparaíso and Maipo earthquakes, respectively, Chilean infrastructure, urban and architectural constructions, underwent radical adjustment process intended to become earthquake resistant. This suggests that the relationship between engineering infrastructure design and legal regulations instruments developed contributed in a sort of construction normalization process based on technological and technical advances mixed with empirical testing experiences. Such connections were expressed in theoretical and practice lines of engineering knowledge: infrastructure bridges design and its scientific analytical approaches (Dembo, 2003) to earthquakes resistance; studies related with ground conditions and construction foundations; and technological studies and testing lab experiences in concrete constructions. In this respect, one of the most interests achievements reached by engineers and architects (between 1906 and 1958), was reflected in different strategies devised to adapt scientific and technological methods from bridges structural design, to buildings and skyscraper. It suggests that these transferences could be partially determined the building shape and urban fabric in Chile during the XXth Century.

## **Keywords**

Earthquake destruction, Urban infrastructure, Building resistance





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# REGIONAL ADAPTATION: THE CASE OF AIRPORT INFLUENCE AREAS (AIA)

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Contemporary urban planning and airport infrastructure evolution describe an urban process integrating airports into regions. Theoretical and empirical studies support the airport's role in global cities' competitiveness. A historical review of air-transport evolution reveals airports as regional development anchors. Comparative review of Latin American and European airport influence areas (AIA) underscore their fundamental planning strategies. After the war, functional airport planning linked infrastructure capacity to industrial polarization, and master plans prompted prospective industrial planning in the 1970s. Pioneer regional planning studies anticipated airport developments over 20-km areas, including housing and mixed spaces, on the basis of economic stimulation. In the 1980s, intensification drove to diversification of airport activity, which was evolving as AIA hybrid patterns were being used as urban marketing tools, such as the airport city (1977), the aerotropolis (2001), the airport corridor (2007). Airport planning has evolved as a regulatory/compensatory urban planning process. The master plan has not been flexible enough for developing airport activity in an uncertain market environment, however; transport-oriented development (TOD) models have led to multiscale/multilayer sectors in dynamic, strategic project planning. Furthermore, airport-region models can adapt to global and local conditions in coordinated governance processes for construction of 21st-century industrial sites.

**Keywords**

Airport, territory, regional planning, airport governance.



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# Reconstruction of Cities Damaged in (Civil) Wars

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Chair: Jeffrey Diefendorf









