BEHIND THE WATERFRONT

Enduring Inequities and Illusive Renewals in the Making of Mediterranean Port Cities

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ABSTRACT

This dissertation uncovers the problematic legacies of large-scale urban design gestures in Mediterranean port cities. It evaluates lasting tropes, measures socioeconomic effects, and reveals neglected histories. This research challenges waterfront-centric narratives by demonstrating how port cities often reinvent their coastal *front* while turning their *back* on adjoining neighborhoods, relegating them to languish in the shadow of new development.

This study carries out a computationally rigorous yet culturally sensitive investigation to expose overlooked legacies *behind* urban waterfronts. It bridges urban design scholarship with port city literature, critical heritage discourse, and inequality studies to understand what frameworks and analytical methodologies can illuminate hidden-in-plain-sight, yet structurally ingrained, injustices stemming from the physical remaking of port-adjacent neighborhoods.

From a methodological perspective, it employs historical GIS techniques on primary sources collected in more than thirty archives in Barcelona, Marseille, Rome, Naples, and Beirut. It models socioeconomic data and urban morphology features extracted from archival materials spanning a period of 150 years. Finally, it creates new data through participatory mapping initiatives and contextualizes analytical findings with interviews and field observations.

The dissertation adopts a tripartite structure, with the first paper acting as the theoretical frame for two in-depth empirical case studies on Naples (Italy) and Beirut (Lebanon). BEHIND THE WATERFRONT introduces the "behind the waterfront" framework for the study of Mediterranean port cities and proposes a *longue durée* analysis of governance schemes (*power*), technical mechanisms (*progress*), and socioeconomic effects (*poverty*) shaping water-facing development patterns. THE MASKING OF INEQUITIES IN NAPLES evaluates the intentions and policies behind the late-nineteenth-century urban incision of Naples's historic center and examines its long-term effects and lingering tropes. EXCLUSIONARY TALES IN BEIRUT'S SPACES OF CRAFTSMANSHIP unearths the spatial history of crafts workshops in Beirut's port-facing neighborhoods and situates their recurring displacements in the city's design politics.

Overall, this dissertation demonstrates how spatial injustices have persisted through physical forms, political processes, and socio-cultural *milieux* in the *illusive* renewals of Mediterranean coastal neighborhoods. Its findings and interdisciplinary methods reveal the spatial inheritance of contemporary inequities, fostering the adoption of inclusive urban narratives, acknowledging plural pasts, and envisioning reparative futures.

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To my parents, my safe harbor;
To Elena and Costanza Fabiola, my guiding stars.

I was born and raised in a Mediterranean port city.

Despite an 8.5 Km-long urban waterfront, the view of the sea in Catania (Sicily, Italy) remains a rare privilege, eclipsed by its commercial port, engulfed by rail tracks, secluded by privatized marinas, and blocked by luxury housing perched on the coastal cliffs.

For the past century, Catania has relentlessly equipped its *front* on the water with industrial, maritime, and transportation infrastructures. By doing so, it has turned its *back* on the neighborhoods *behind* this "thin line" of development. Today, the remnants of a once-porous connection with the sea are still subtly discernible in some neighborhoods. These are the areas that fascinated me the most from a young age, even as I grappled with their state of disrepair and allegedly poor reputation. I kept wondering: "Why look down on those who were, by design, left *behind*?"

While Catania is not featured explicitly in this dissertation, it is both everywhere and nowhere on these pages. It has trained my design sensibility to look behind *façades* and unveil the mask of proclaimed progress.

Catania is here, ubiquitously latent. I will never be able to leave it *behind* me.

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[ACKNOWLEDGEMENTS ARE LISTED AT THE CONCLUSION OF THE DISSERTATION]

Table of Contents

List of Figures

List of Tables

DISSERTATION OVERVIEW

I. Research Topic

Urban waterfronts have long been landscapes of innovation and emerging technologies. The introduction of new maritime infrastructures (e.g., piers, containers, port cranes), the transition from industrial to post-industrial settings (e.g., promenades, museums, recreation facilities), and the emergence of new building typologies (e.g., office towers, luxury condos, convention centers) have radically modified the physical and social apparatus of water-facing neighborhoods. As a result of these alterations, the spatial development of waterfronts has become synonymous with visions of prosperity, exuberance, and desire for new self-images. By reinventing the *front* on the water and treating it as the place where everything happens, cities have often turned their *back* on adjoining neighborhoods, relegating them to languish in the shadow of new development. Obsolete infrastructures, collapsing buildings, and poor housing conditions have endured behind grandiose *façades* of wealth erected along waterfronts, where *élites* have used the built fabric as a device to display political power, stage cultural hegemony, and proclaim technological progress. In short, the transformation of water-facing neighborhoods—embodying both the land-based dimension of cities and their water-projected *milieu*—has often emerged out of an exclusionary rationale. This logic has materialized through forms of marginalization, exemplified by physical fractures in the built fabric, the displacement of communities, and the exacerbation of hostile living conditions.

The current literature on port cities has remained centered on the global (e.g., core-periphery discourse), the regional (e.g., port-city regions), and the hyper-local (e.g., waterfront design). The growing debates on globalization have deliberately highlighted port cities' outward behavior and water-based connections by focusing on cosmopolitanism and global trade. Urban design studies have often failed to resist the lure of the "thin line" of water-facing development by lacking a perpendicular comprehension of the physical and socioeconomic weavings between waterfronts and their backspaces. More recently, ecology and landscape studies have reinforced the centrality of the water edge by often neglecting to include historical perspectives on the deeply rooted inequities of water-facing neighborhoods. In response to these approaches, this dissertation challenges the notion of port cities as *outward*-oriented towards the world and the sea and advances a critical interpretation of port cities as *inward*-projected—towards their neighborhoods and local communities. In other terms, it foregrounds the *local*, with its people, politics, and spatial inequities, over the *global,* with its market systems, maritime finance, and architectural extravaganza.

II. Research Proposition

By focusing on the spaces and communities behind urban waterfronts, this dissertation explores the other *face* of modernization, and it uncovers how processes of socio-technical innovation in port cities may have compounded and further exacerbated forms of spatial inequities that still linger in contemporary urban landscapes. Its overarching research objective is to reveal the physical, political, and socio-cultural dimensions of inequities, whose roots run deep as wounds in cities' social fabric and whose traces are often ubiquitously latent.

This dissertation bridges port-city studies, design politics scholarship, and critical heritage literature. It does so by unearthing the tapestry of neglected histories and exposing the role of urban design and cartographic representations in constructing the invisibility of the most vulnerable. It also draws from theoretical debates in cultural geography and urban sociology to advance a more granular and longitudinal understanding of inequities related to the shift or endurance of spatial configurations.

Through this work, I ask what new frameworks and analytical methodologies can be developed to illuminate hidden-in-plain-sight, while structurally ingrained, injustices stemming from design gestures of the past. Thus, it moves towards more inclusive urban narratives and reparative futures. Most importantly, this dissertation investigates whose interests and benefits are better served by urban renewals along waterfronts. From an urban design perspective, I argue that the problematization of urban design forms and their politicization is instrumental in advancing plurality in the urban discourse and centering justice and 'the right to the city' in contemporary planning practice.

I address the broader research question of this dissertation through both theoretical and empirical investigations. By integrating planning and design theory with urban analytics and computational humanities, this dissertation explains how to unpack the problematic legacies of urban design gestures, evaluate their lasting tropes, and measure their socioeconomic effects. I advance a new approach to the study of port cities by constructing a theoretical framework on the spaces *behind* their waterfronts and adopting novel computational techniques in historical GIS and critical cartography to unearth deeply rooted inequities. I employ both new historical perspectives and urban analytics as powerful tools for centering justice in cities.

III. Research Sites and Temporal Window

The presence of an urban waterfront does not necessarily imply the existence of a port. Waterfronts with port infrastructures, however, have exposed cities to heightened forms of spatial tensions between diverse functions, built forms, and social usages. Waterfronts equipped with port infrastructures have provided cities with jobs and economic opportunities while also altering existing built forms to accommodate transportation needs. Urban ports, however, as the places where sources of wealth arrive and depart, are also linked to structural poverty, labor exploitation, disaster exposure, and environmental degradation. Historically, these problematic socioeconomic patterns experienced a rapid acceleration in the mid- to late nineteenth century due to the unprecedented

accumulation of wealth emerging from industrialization and the hegemony of empires. From an urban perspective, this led to an exponential rise in inequality in urban spaces. As a result, the spatial configurations forged during that period and their ideals remain deeply ingrained in present-day urban landscapes and city-making practices, contributing to lasting injustices and socioeconomic polarization, often under the guise of illusive renewals.

Among these configurations, the confrontation between *new plans* and *old structures* in coastal landscapes has often determined a diffused urban *masking* of the spaces behind waterfronts, whose conceptual lineage can be traced back to the series of pioneering plans initiated by Baron Haussmann for Paris starting in 1853.[1] While Haussmann's *grands travaux* of Paris have ignited 150 years of debate in the social sciences on their spatial politics, normative frameworks, and cultural meanings, Haussmann's emulative progeny beyond Paris and in coastal contexts have not yet received adequate attention. This is the case of several Mediterranean port cities that recorded extremely high population density growth rates in the mid- to late nineteenth century and attempted to embrace urban development forms *à la* Haussmann to address the needs of industrialization while grappling with stratified millennia-old urban fabrics. Unlike their continental counterparts, most Mediterranean port cities were not state capitals and often lacked the resources to fully complete their Haussmann-inspired plans. Moreover, the forms and alignments of these plans were significantly influenced by the configurations of ports, which acted as catalysts of radical urban transformations in both colonial[2] and non-colonial settings.[3]

Large-scale clearances by ports, urban incisions of water-facing neighborhoods, *cordons sanitaires* encircling *casbahs*, *corniches* widening waterfronts, and *étoiles* obliterating historic neighborhoods epitomize a Mediterranean urban archetype of Haussmannian lineage within port-city settings. The spatial nexus between Mediterranean ports and Haussmannian development defined an urban *tópos* that remodeled the waterfront while displacing communities and aestheticized forms of linear development while masking unworthy-of-being-seen neighborhoods. While prompts behind urban reconstruction have changed and keep evolving (e.g., industrialization, epidemics, disasters, neoliberal urban development, gentrification), the spaces where they keep unfolding are part of a spatial inheritance of social exclusion. In behind-waterfront spaces, the intertwinement of politics and technologies emerges in *masking* through reconstruction.

The act of *masking*, whether through urban design gestures or large-scale infrastructures, has remained a recurring city-making practice throughout the twentieth century (e.g., urban highways), and it continues to be prevalent in contemporary cities (e.g., post-industrial waterfronts). The paucity of longitudinal datasets at a spatially granular level and methodological challenges in situating the perspectives of community groups within top-down planning

[1] Interestingly, prior to Paris, Haussmann had already shown his appetite for large-scale demolitions and holistic city-building projects in a major port city, Bordeaux, where he had the role of chief administrator between 1851 and 1853.

[2] Some cities, like Marseille and Barcelona, performed as hubs of international trade trajectories linking port cities to states's colonial empires; others, like Algiers, Tunis, Alexandria, and Beirut, responded to the extractive commercial and cultural logics of colonialism.

[3] Venice, Naples, Palermo, and Istanbul, for example, carried the vanishing vestige of capital cities and, in some cases, the struggles of a complicated unification process.

schemes have frequently hindered scholars from recentering those omitted from dominant historical narratives in urban planning discussions. This dissertation, by employing primary sources collected in multiple archives, modeling socioeconomic and morphological datasets over time, and relying on interviews and ethnographic observations, addresses these methodological challenges. More precisely, it carries an analytically rigorous yet culturally sensitive investigation to expose neglected histories and overlooked legacies.

IV. Research Structure

The dissertation, titled "BEHIND THE WATERFRONT: Enduring Inequities and Illusive Renewals in the Making of Mediterranean Port Cities," has a tripartite paper structure, with the first paper acting as the theoretical frame for two in-depth empirical case studies (papers two and three).

The first paper introduces the 'behind the waterfront' framework for the study of Mediterranean port cities. It draws on examples from eighteen port cities across twelve different countries, paving the way to explore an inward-looking perspective on urban waterfronts. This framework is operationalized through the lenses of *power*, *progress*, and *poverty*, providing an analytical lens to interpret the locations, governance schemes, technical mechanisms, and socioeconomic effects of water-facing development patterns across Southern Europe, North Africa, and the Middle East. It highlights the tensions between water-facing promises and land-facing problems. The framework encourages the examination of urban fabrics 'behind the waterfront' through a *longue durée* analysis of spatial patterns from the late nineteenth century to the present, with a particular focus on how these patterns expose underlying socioeconomic inequities.

The second and third papers enliven the theoretical framework presented in paper one through case studies in the cities of Naples (Italy) and Beirut (Lebanon).

The second paper evaluates the intentions and policies behind the late-nineteenth-century urban incision (*Rettifilo*) of Naples's historic center and examines its long-term effects and lingering trope in the city. More precisely, this research asks what institutional, architectural, and sociological framings enabled poverty to endure behind veils of Haussmannian grandeur. And, more broadly, how does contemporary poverty relate to city-making practices of the past? To answer these questions, I employ computational humanities and historical GIS techniques to shed light on the design politics of *masking* the urban poor and on the spatial inheritance of social exclusion in the spaces behind Naples's 2km-long *Rettifilo*. In this paper, I harness archival administrative documents, extract urban morphology features from historical maps, and mine data from longitudinal socioeconomic records.

The third paper [coauthored] advances a counter-mapping effort to unearth the spatial history of crafts workshops in Beirut's port-facing neighborhoods and situate their recurring displacements in the city's design politics. In this paper, I ask what evidence maps can provide about the geography of dispossession of a city. What different methodological approaches could challenge the invisibility of creative cultural practices on maps through archival

ethnography and oral history? This study relies on a novel longitudinal dataset of 600 geolocated archival images of crafts workshops, urban form metrics constructed from historical maps, and interviews with craftspeople whose shops have been in business for most of the twentieth century and beyond. Through the lens of the disappearing intangible heritage of local practices, this work reveals the lasting legacy of 'spatial ordering' in Beirut's port-facing neighborhoods, initiated during the late Ottoman and French Mandate periods (1890s–1940s) and still ingrained in the forms of the *Solidere*-led plan and contemporary development practices (1990s–2020s).

The rationale behind the structure of this dissertation reflects the heterogeneity of spatial scales and methodologies employed in the three papers while embracing a shared conceptual problem: the endurance of spatial inequities rooted in the redesign of water-facing spaces of Mediterranean port cities. More specifically, it focuses on water-facing communities by looking at urban transformations from the perspective of both the urban poor of Naples and the small businesses of Beirut. Both cities' physical and socioeconomic transformations along their waterfronts fit within a broader conceptual framework on the long-term consequences of port cities' modernization in the Mediterranean region.

In addition to sharing similar spatial configurations, such as the dramatic topography and the proximity of industrial ports to historic city cores, the radical transformation of water-facing historic neighborhoods in Naples (during post-unitary Italy, 1890s) and Beirut (during the French mandate, 1920s) embraced Haussmannian tropes. In Naples, a Haussmann-inspired linear urban incision advanced by the *Risanamento* company masked an urban past deemed obsolete and unworthy of being seen through *façades* of wealth. In Beirut, French architects and urban planners imposed the Haussmannian form of an urban *étoile* (1930s) over the port-adjacent old *souks* to willfully treat the city's past as a *tabula rasa*. While portions of the *souks* had survived in the interstitial spaces behind the arms of the *étoile*, following the 1975–1990 Civil War, the reconstruction strategy led by the real estate company *Solidere* cleared the war-torn remains of the old *souks* and ultimately replaced them with high-end malls and luxury residential condos.

By anchoring these regional and urban investigations to the legacy of Haussmannian forms in port cities, this dissertation traces an urban history of long-term exclusion that, via path dependency, has shaped the current development of various Mediterranean waterfronts. Naples's historic tissue remains largely intact behind the city's Haussmannian *façades* along the *Rettifilo*. This boulevard continues to serve as an urban *façade*, hiding unresolved housing challenges from the past. Today, the trope of the *Risanamento* has morphed into the proliferation of short-term rentals and luxury housing in early twentieth-century buildings. In contrast, Beirut's historic core has undergone extensive alterations due to colonial masterplans, urban conflicts, and aggressive real estate-driven development. The area that once comprised the walled city of Beirut has almost entirely been purged of small businesses, which have either relocated to peripheral areas like Bourj Hammoud or struggle to survive in rapidly gentrifying neighborhoods such as Gemmayzeh. In general, although creative businesses have not endured in space, they have predominantly safeguarded their cultural legacy in more marginal areas despite relocations and the absence of coherent policies to protect both tangible and intangible heritage.

v. Research Methods and Findings

This dissertation employs mixed-methods research techniques to examine the interplay between changing urban forms, socioeconomic transformations, and design politics of large-scale urban interventions. The methodological framework of this work is rooted in theories of critical cartography and counter-mapping practices, through which I challenge the hegemonic tradition of mapmaking by introducing newly compiled datasets and comparing data points from different archival sources. In both empirical papers, I position my work in response to those institutions of power that not only enacted urban plans but were also responsible for the data survey efforts supporting those plans. I argue that by ignoring and failing to consolidate data on soon-to-be-displaced communities in official documents, the authorities behind large-scale design interventions treated these spaces as *terrains vagues*, effectively rendering them devoid of communities. Through combining geospatial analytics on historical cartography with archival research of administrative records, the work on Naples contributes to a nuanced use of digital tools and computing techniques to harness "big data" from the past. Moreover, by bringing longitudinal data analyses of urban form in conversation with oral histories of displacement, the research on Beirut advances a human-centered narrative of urban change. It also uncovers the invisibility of neglected spaces and overlooked communities through participatory mapping and archival ethnography.

In Naples, the application of historical GIS methodologies unveils how the lines of the *Risanamento* plan not only targeted pockets of poverty but also were more incisive in neighborhoods with fewer religious buildings. While this finding is in line with the literature on the path of least resistance, historical GIS measurements on the shifts in public space coverage provided unexpected results. Comparing the pre-*Risanamento* extent of public spaces, including streets and semi-public courtyards, with the planned forms shows that claims of increased public spaces through large boulevard development were misleading. There was no actual increase in the spatial extent of public areas; rather, there was a morphological transformation from networks of narrow alleyways and small courtyards to larger boulevards. This shift was accompanied by a change in the demographic of residents from low-income to middle-class, without any real expansion in their overall size, but rather a transition to a more ordered and regular layout. Furthermore, spatial regression models and urban indicators of social exclusion are used to identify patterns and statistically significant correlations that would otherwise be difficult to discern. For instance, the analysis of urban morphology includes a measurement of the "masking" effect of the *Rettifilo*, quantified through a specifically designed metric, and examines its relationship with the city's high density, low education rates, and high unemployment rates in 2021.

In Beirut, the digitization and analysis of historical imagery have involved georeferencing archival photographs, categorizing them by theme, and classifying them over time. This method enables a *bottom-up* interpretation of the city's history, uncovering aspects of urban dynamics that have traditionally been recorded through *top-down* planning documents. Additionally, measuring urban form parameters assists in assessing spatial conditions that influence the presence and absence of creative street commerce in both historical and contemporary settings. Furthermore, by "countermapping" the displacement stories of eight craftspeople through oral memoirs, this study illustrates the resilience of craft workshops as they relocated their production spaces to domestic

environments during the Civil War, as well as their struggles against enforced dispossession during the post-war reconstruction in the 1990s and large-scale infrastructure planning along the port-facing waterfront. Longitudinal analyses of urban form in Beirut's municipal district reveal that an increase in distance from the waterfront—due to coastal engineering and the expansion of urban ports—is associated with a decrease in small businesses in waterfront neighborhoods. Moreover, throughout different historical periods, the irregularity of urban blocks correlates with a higher presence of craft workshops.

VI. Research Contributions

In conclusion, this dissertation explores how forms of spatial inequities persist in the physical forms, political processes, and socio-cultural *milieux* of port cities by questioning what was irremediably altered, what has partially endured, and what has been reconstructed over time. Rather than focusing on the processes of waterfront regeneration in post-industrial settings and on the relationship between port infrastructures and global shipping networks, this research provides a spatially granular understanding of deeply rooted exclusionary processes *behind* urban waterfronts. In other words, it centers on how cities meet the water rather than how urban ports meet the shoreline.

Through this work, I argue that inherited Haussmannian lines continue to exert a trope of exclusion and precarity manifested through hidden-in-plain-sight, yet structurally ingrained, injustices stemming from the physical remaking of port cities. In Naples, changes in the *front* have paradoxically preserved—and simultaneously worsened—problematic conditions at the *back*. In Beirut, successive and deeply traumatic transformations have disrupted the *front*-and-*back* rationale of Haussmannian lineage, leading to a systemic erasure of the city's porosity and an exacerbation of socioeconomic divisions.

This dissertation primarily contributes to three areas of scholarship: first, it enriches urban planning literature on port cities with a new theoretical framework on behind-waterfront spaces and marginalized communities; second, it adds to the urban design scholarship on spatial justice by unmasking lingering inequities embedded in the processes, forms, and rhetoric of development; and third, it engages with critical theory studies through a cartography and heritage lens by revealing historical perspectives on overlooked legacies and challenging power structures in archiving and mapping practices. Additionally, this work enhances the use of computational tools and digital technologies to unlock the untapped potential of archival data through historical GIS techniques, archival ethnography, and urban analytics.

Overall, this dissertation reveals the spatial inheritance of contemporary inequities, paving the way for the adoption of inclusive urban narratives, the acknowledgment of plural pasts, and the envisioning of reparative futures.

Chapter 1

BEHIND THE WATERFRONT: A Theoretical Framework for Inward-looking Port City Studies in the Mediterranean Region

This paper introduces "Behind the Waterfront," a theoretical framework designed to scrutinize the transformation of spaces and their communities behind the urban waterfronts of Mediterranean port cities. This framework challenges the prevailing outward-focused narrative in port city literature, which emphasizes global trades and cosmopolitanism, by arguing that such perspectives overlook the intricate socioeconomic and spatial dynamics of water-facing neighborhoods.

Delving into the historical, socioeconomic repercussions of late-nineteenth and early twentieth-century masterplans—which not only dismantled ancient built environments but also displaced thousands—this research highlights a spatial inheritance of social exclusion in urban design gestures of the past, whose legacy continues to affect contemporary landscapes. Drawing from examples across the Mediterranean Basin, this article paves the way for unpacking the notion of *behindness* through an inward-looking attitude toward port city studies. It operationalizes this approach through the lenses of power, progress, and poverty, providing a theoretical framing to interpret the locations, processes, tools, and effects resulting from development patterns across Southern Europe, North Africa, and the Middle East from the late nineteenth century to the present, especially regarding ways that these patterns reveal socioeconomic inequalities.

In conclusion, this paper establishes a framework to advance empirical research on Mediterranean port cities. It advocates for a more nuanced, inward-looking approach to understanding the ongoing modernization of water-facing neighborhoods by shifting the perspective from the sea to the urban fabric.

1.1. Introduction

Wealth accumulation finds its tangible expression in the physical design of cities. This is particularly evident in coastal cities, where the redesign of water-facing neighborhoods served the logic of port economies, embraced processes of socio-technological innovation, and developed according to the legacies of imperialist agendas.

As *loci* of territorialization of the global economy and infrastructural nodes of global capitalism (Sassen 2000), port cities have held a pivotal role as sites of wealth concentration and labor exploitation, often resulting in urban forms with spatially adjacent, yet antipodal, socioeconomic compositions. As the places where sources of wealth arrive and depart, urban ports are fundamentally linked to extreme prosperity and poverty, through which historical (dis)advantages have been deeply engrained in their spatial configuration. The result of this dichotomous socioeconomic adjacency has been a physical rupture bisecting coastal neighborhoods, where the heightened concentration of wealth and ingenuity in the spaces of waterfront has often led to the neglect of directly adjoining areas, relegating them to languish in the shadow of new development. Obsolete infrastructures, collapsing buildings, and poor housing conditions have endured behind grandiose façades erected along waterfronts, where the *élites* have used the built fabric as a device to convey economic prosperity, display political power, stage cultural hegemony, and proclaim technological progress.

Historically, in the mid- to late nineteenth century, the consecration of nation-states, industrialization, and the hegemony of maritime empires led to an exponentially accelerated accumulation of wealth, driving an inevitable rise of inequality in port cities. As a result, the spatial configurations forged during that period remain deeply engrained in present-day urban landscapes, contributing to lasting inequalities and socioeconomic polarization. Drawing from Hommels's work on urban *obduracy* and technological *embeddedness*, it remains difficult to alter the built fabric of cities since their physical settings and cultural geographies tend to persist over time (Hommels 2008).

The confrontation between *new plans* and *old structures* in coastal landscapes has often determined a diffused urban "masking" phenomenon, whose lineage can be traced back to Baron Haussmann's pioneering 1853 plan for Paris. In his role as Napoleon III's Prefect of the Seine, he carried out unprecedented large-scale demolitions and imposed a spider-web of boulevards over Paris's dense urban fabric, extending into the undeveloped peri-urban land (Freemark, Bliss, and Vale 2021). While Haussmann's *grands travaux* of Paris have ignited 150 years

of debate in the social sciences on their spatial politics, normative frameworks, and cultural meanings, Haussmann's emulative progeny beyond Paris has not yet received adequate attention. This is the case in several Mediterranean cities, where the evolving relationship between ports, urban fabric, and different community groups living in the adjacency of waterfronts has led to drastic design outcomes and extreme socioeconomic disparities since the late nineteenth century. For instance, the thoroughfare dissecting Naples's port districts (1895–1920), the *cordon sanitaire* surrounding the *casbah* of Algiers (1858–1910), the urban incision slicing Barcelona's gothic center (1879–1900), the radial *étoile* replacing the Ottoman fabric of Beirut (1928–1940), the multi-lane *corniche* engulfing Alexandria (1882–1920), the boulevard connecting the two-sided port of Marseille (1864–1880), and the tree-lined road descending towards the waterfront of Thessaloniki (1867–1890) epitomize a Mediterranean urban archetype of Haussmannian lineage within port-city settings. In other words, the spatial nexus between Mediterranean ports and Haussmannian development defined an urban archetype that remodeled while displacing, aestheticized while masking, and modernized while segregating.

The investigative framework of this paper is tailored to Mediterranean cities as they were among the first port cities in the nineteenth century to experience extreme congestion (both of goods and people) and record high population density rates while grappling with an ancient and stratified urban fabric and responding to the needs of industrialization. As a result of this tension between forms of the past and forces of innovation, Mediterranean port cities not only advanced demolition plans of their peri-urban walls but also embraced urban development forms *à la* Haussmann in their urban cores. However, unlike their continental urban counterparts, most Mediterranean port cities were not state capitals and often lacked the resources to fully complete their Haussmann-inspired plans. Moreover, Mediterranean port cities witnessed radical urban transformations fueled by ideals of modernization and forces of industrialization both in colonial and non-colonial settings. Some cities, like Marseille and Barcelona, performed as receiving hubs of international trade trajectories linking port cities to states's colonial empires; others, like Algiers, Tunis, Alexandria, and Beirut, responded to the extractive commercial and cultural logics of colonialism; and others, like Venice, Naples, Palermo, and Istanbul, carried the vanishing vestige of capital cities.

While the physical reconfiguration of cities through linear demolitions emerged as a common practice in the modernization and proto-industrialization of Mediterranean port cities, the act of masking through the reconstruction of existing neighborhoods persisted as a recurring city-making practice throughout the twentieth century (e.g., highway planning) and it is still alive and well in present-day urban planning. Local conditions (e.g.,

epidemics, disasters, poor housing conditions) are sometimes used as expedients to legitimize a grand vision that otherwise would have found even higher resistance. In the early 2020s, in Cairo, for example, the construction of East Cairo's highways continues to slice through the mystical landscape of domes and tombs of the "City of the Dead,"[1] an ongoing process of Haussmannization of an urban landscape of heritage value and, for a long time, informally turned into housing.

The tension between large-scale planning—responding to broader regional or national dynamics or even global forces—and the local attributes of neighborhoods remain a point of contestation, especially in the neighborhoods most proximate to urban ports. The prompts behind urban reconstruction have changed and keep evolving (e.g., industrialization, epidemics, disasters, real estate-led development, gentrification); however, the spaces in which they happen and the socio-technical innovations they imply have become part of a spatial inheritance of social exclusion in behind-waterfront spaces where the intertwinement of politics and technologies emerge in design gestures aiming at masking through reconstruction **[Fig. 1]**. Whose economic and transportation needs are taken into account in the redevelopment of water-facing neighborhoods? Whose housing solutions or improvements are prioritized? And who benefits from such modernizing urban plans?

By linking urban design to cosmopolitanism, global trade, and international infrastructures, the growing literature on globalization and port cities has deliberately spotlighted port cities' outward behavior and water-based connections (Favero, Serruys, and Sugiura 2019; Darwin 2021). Through this paper, I argue that this outward-looking investigative lens has been emphasized to the detriment of a more granular and comparative understanding of how the built fabric, its social composition, and its economic forces shape the spaces *behind* urban waterfronts. By unpacking the notion of *behindness* in water-facing neighborhoods, this research focuses on how cities meet the water rather than how urban ports meet the shoreline. As a result of this shift, this research examines the influence of historical legacies, viewed through the lenses of power (*governance*), progress (*mechanisms and ideologies*), and poverty (*socioeconomic effects*), on the inequitable development practices of behind-waterfront areas in port cities. I address this research question by constructing a theoretical framework for an *inward-looking* understanding of how behind-waterfront spaces have navigated waves of modernization impacting port cities.

[1] Created as a Muslim cemetery during the seventh-century conquest of Egypt, the necropolis has developed into one of Egypt's most crowded informal settlements where the dead and living coexist in surprising porous neighborliness.

Fig. 1 – Poster photographed in *Rue d'Aubagne* in Marseille (2021). The poster is intended to commemorate the third anniversary of the tragedy in Noailles, where a building collapse claimed the lives of eight individuals. The words on the poster quotes lyrics from a 1997 song by the French rap group IAP: "*Les élus ressassent rénovation ça rassure. Mais c'est toujours la même merde, derrière la dernière couche. De peinture, feu les rêves gisent enterrés dans la cour*" ("Officials keep rehashing renovation; it's reassuring. But it's always the same crap, behind the last coat of paint, the dreams lie buried in the courtyard"). Photo by author (November 2021).

This paper is structured into three macro sections: in the Literature Review, I illustrate the ongoing scholarly debate on the port cities, highlighting how different disciplines have shed light on aspects of port city development that have remained mostly focused on a water-edge-centered urban regeneration. I also provide a series of examples from existing theoretical frameworks, identifying gaps and shortcomings and paving the way for a more people-centered and less-water-focused approach to port city studies. I conclude this section with a focus on the

Mediterranean Basin, its port cities, and processes of modernization and Haussmannization by the coast. In the Theoretical Framing, I introduce my concept of *inward-looking* studies of port cities through the lenses of power, progress, and poverty; I conclude this section by providing a taxonomy diagram that explains the spatial and thematic features that characterize *inward-looking* port cities studies, using examples from coastal cities in the Mediterranean Basin. In the Conclusions section, I summarize the key takeaways of this paper, and I reflect on future empirical applications of the *inward-looking* port cities framework for cities beyond the Mediterranean Basin.

1.2. Literature Review

1.2.1. Port Cities

By holding unique physical liminality between land and water, waterfronts have performed as sites of commercial trade, locations of industrial development, hubs of port logistics, areas of military bases, spaces of disease control, and, more recently, *loci* of leisure and tourism. While the presence of an urban waterfront does not necessarily imply the existence of a port, waterfront segments with port infrastructures expose cities to heightened forms of spatial tensions between diverse functions, built forms, social usages, and activities. Waterfronts equipped with port-related infrastructures have provided cities with jobs, spaces of interaction, economic opportunities, and, sometimes, iconic architectural artifacts. The evolving relationship between port infrastructure, the urban fabric, and communities living in the adjacency of urban ports has often led to drastic design outcomes and radical socioeconomic polarization. These outcomes are highly dependent on the resulting tensions between adjacent functions and the planning paradigms guiding their deployment. Hoyle (2000) thoroughly described the interface between ports and cities by advancing a historical taxonomy of six port-city relations, from the "primitive" port city to the "renewal" of port-city links **[Fig. 2]**.

STAGE	SYMBOL ○ City ● Port	PERIOD	CHARACTERISTICS
I Primitive port/city		Ancient/medieval to 19th century	Close spatial and functional association between city and port.
II Expanding port/city		19th–early 20th century	Rapid commercial/industrial growth forces port to develop beyond city confines, with linear quays and break-bulk industries.
III Modern industrial port/city		Mid–20th century	Industrial growth (especially oil refining) and introduction of containers/ro-ro (roll-on, roll-off) require separation/space.
IV Retreat from the waterfront		1960s–1980s	Changes in maritime technology induce growth of separate maritime industrial development areas.
V Redevelopment of waterfront		1970s–1990s	Large-scale modern port consumes large areas of land/water space; urban renewal of original core.
VI Renewal of port/city links		1980s–2000+	Globalization and intermodalism transform port roles; port-city associations renewed; urban redevelopment enhances port-city integration.

Fig. 2 – Table of the stages in the evolution of port-city interrelationships (1988).
Source: Hoyle, Brian. 2000. "Global and Local Change on the Port-City Waterfront." *Geographical Review* 90 (3): 395.

Building on Hoyle's work, Notteboom and Rodrigue (2005) have developed a schematic regionalization of port infrastructure in relation to the functions and logistics involved from the water-edge to inland areas. Their maritime logistics work also engages with the "Anyport Model" developed by Bird (1963). Bird proposed that Anyport was not designed as a universal template for all ports to adhere to but rather as a framework for empirical comparison of port development (Bird 1963). Despite variations stemming from local contexts, the recurring similarities validate the Anyport concept as a valuable descriptor of port morphological development: setting, expansion, and specialization. However, as Notteeboom and Rodrigue argue in their studies, Bird's model falls short in considering the hinterland dimension of ports and in understanding the emergence of offshore terminals or island locations. The processes of regionalization are crucial to Notteboom and Rodrigue, who consider port city regions to be a larger network of infrastructures of incredible importance for sustaining maritime logistics **[Fig. 3]**.

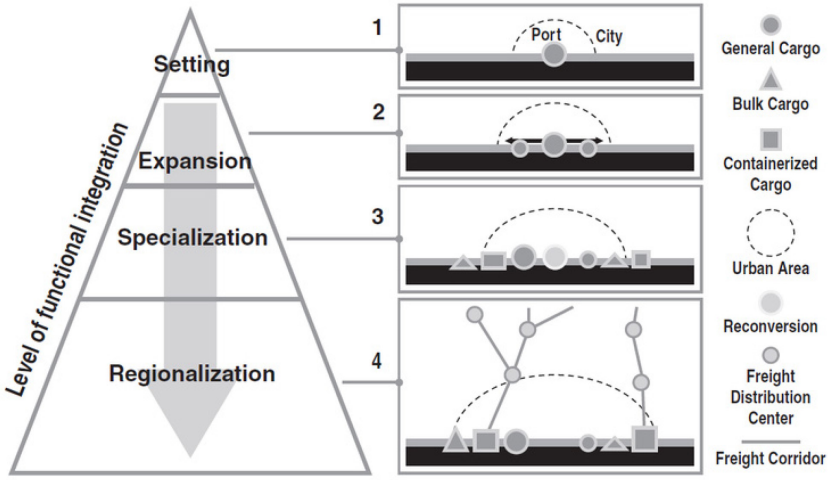

Fig. 3 – Notteboom and Rodgrigue's model of regionalization added as a fourth step to Bird's "Anyport model."
Source: Notteboom, Theo E., and Jean-Paul Rodrigue. 2005. *"Port Regionalization: Towards a New Phase in Port Development."* *Maritime Policy & Management* 32 (3): 297–313.

From a spatial perspective, Notteboom and Rodrigue's model presents a comprehensive framework of mechanization equipment, including bulk cargo, containerized cargo, reconversions, and freight distribution centers. However, the model neglects to delve into the urban environment itself. The depiction of the city is merely illustrated as a dashed curved line, expanding alongside the port, with no consideration given to the quality of the built environment near the waterfront.

More recently, viewing ports through an urban planning lens, Bruttomesso (2006), Carta (2016), Hein (2020), and Moretti (2022) have respectively coined the terms "city-port," "fluid city," "port cityscape," and "portuality" to articulate and legitimize an urban planning framework to untangle the complex relationship between ports and cities.

Carta and Ronsivalle (2016), in their "The Fluid City Paradigm," describe urban waterfronts as sites of "new urban metabolism," attributing to the waterfront the intrinsic potential to be sites of economic dynamism, cultural identity, and innovation. The use of terminologies such as "porosity" and "fluidity" in the port city literature has proven beneficial in veering away from a hierarchically segmented and subdivided understanding of port-city spaces. However, the widespread use of such terminology has resulted in a lack of emphasis on a more spatial and critical understanding of whose porosity and fluidity the port cities would benefit. Recent examples of waterfront regeneration, such as the one inaugurated in the city of Palermo (Italy) in 2023 **[Fig. 4]**, often result in meticulously designed urban landscapes with designated functions, where the word "fluidity" signals the use of

water primarily as an aesthetic element rather than embracing active design principles aligned with contemporary landscape ecology paradigms **[Fig. 5]**. These spaces feature captivating architectural elements like choreographed water fountains, upscale boutique stores, and docking areas for yachts. In light of the aesthetic appeal, these developments predominantly cater to a specific audience—those who can afford to frequent the upscale cafés and restaurants that line this area. Moreover, it employs exclusionary design expedients to rebuff other forms of usage. For example, the surrounding green lawns are inaccessible and patrolled by private police agents employed by the port authority, and physical gates signal entrances and hours of operation of this water-facing *leisurescape*. This project provides the opportunity to clarify that while an increase in (semi)public space coverage is the number one celebrated point in waterfront redesigns, unfortunately, questions of audience and embodiment of different socioeconomic groups remain unexplored and, sometimes, purposefully neglected. In other words, even more, recent waterfront redevelopment strategies keep the focus on the water edge as a space primarily for the wealthy. The behind portions remain out of focus, including, in the case of Palermo, the much more problematic multi-lane urban highway separating some of the poorest neighborhoods in the city (e.g., Borgo Vecchio, Kalsa) from the waterfront. Historically, these neighborhoods have borne the brunt of the decline in the fishing economy due to the construction of urban highways and the ongoing disappearance of street fish markets, such as the *Vucciria*. As the city, often through a laissez-faire approach, allows the reallocation of these spaces for tourism and nightlife, these areas' original character and economic foundation continue to erode.

Fig. 4 – Images of Palermo's waterfront redevelopment. (Top left) The entrance of the "Palermo Marina Yachting" with a private rooftop garden with succulents; (Top right) Upscale boutiques and seating area overlooking a large water fountain area, revoking the shape of the nineteenth-century waterfront of the city; (Bottom left) Dancing fountains and trees masking the building behind the new redeveloped waterfront; (Bottom right) Private police agent patrolling the (inaccessible) lawn and archeological area delimiting the intervention. Photos by author (December 2023).

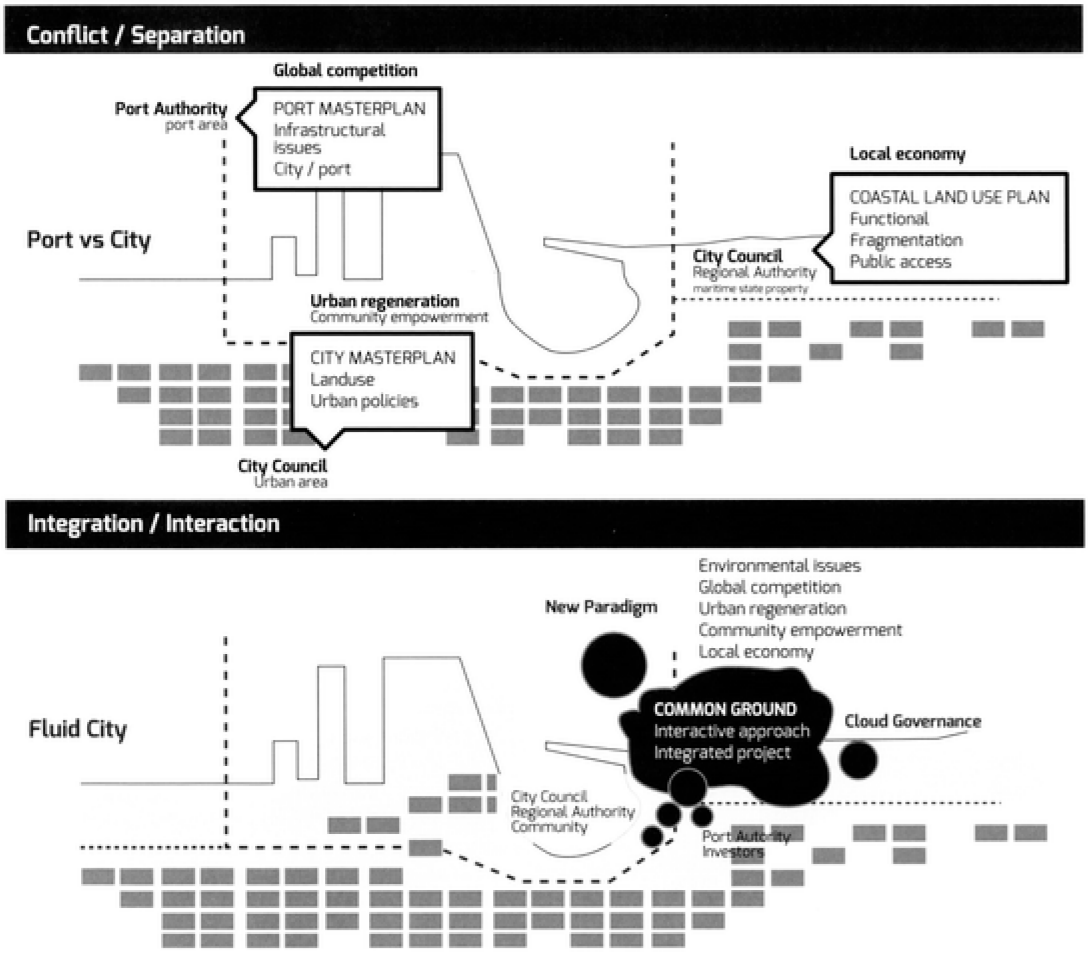

Fig. 5 – The "Fluid City" concept (2016). Image of the metamorphosis of waterfront governance from "port vs city" to "fluid city common ground." The spatial features of this diagram are based on the morphology of the Palermo waterfront.
Source: Carta, Maurizio, and Daniele Ronsivalle, eds. 2016. The Fluid City Paradigm: Waterfront Regeneration as an Urban Renewal Strategy. UNIPA Springer Series. Cham: Springer International Publishing.

Hein has been among the most prolific urban studies scholars in the field of port city studies. Her well-known "Port CityScape" has proven to be highly influential in setting multiple thematic grounds for the study of port cities across the globe **[Fig. 6]**. According to Hein, the complexity of port cityscapes depends on these areas' multiple institutions, actors, and functional needs. Moreover, she highlights the risks of segregated planning approaches to waterfront revitalization that would generate mono-functional areas, even though water would remain a connecting element across different functions. Hein's "Port CityScape" diagram summarizes the choreography of spaces and actors involved in the definition of port cityscapes. However, her lens of inquiry remains deeply focused on the water edge and the spaces of the port. This perspective is clearly visible in the diagram itself, where most of the graphic cells belong to the industries, infrastructures, logistics, and

administration offices connected to the port. The much more complex and contested process of "waterfront development" is visually represented as one single graphic cell. In other words, while Hein's work has carefully investigated processes of regeneration in several cities across the globe, the theoretical framework in use has carried an outward-looking lens from the city to the sea. This scholarly orientation towards the sea is iconically represented by the visualization of the sea as a common good, around which other aspects of the urban environment revolve **[Fig. 7]**.

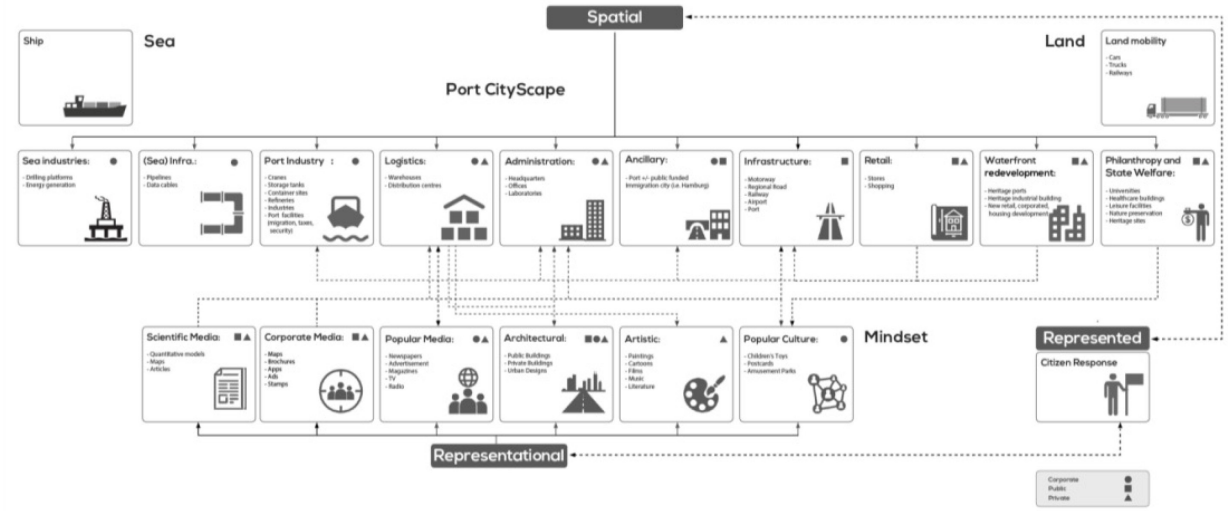

Fig. 6 – Port CityScape conceptual framework (2021).
Source: Hein, Carola. 2021. "Port City Porosity: Boundaries, Flows, and Territories." Urban Planning 6 (3): 1–9.

From an urban design perspective, Moretti, in "Beyond the Port City," illustrates the notion of portuality through the city-port threshold. In her work, the threshold is material space that carries fully recognizable features through both an architectural and institutional lens. In her writing, Moretti describes the threshold as a "border landscape [...] responsive interfaces, and [...] inclined and/or subject to change." The insightful theoretical framing and lexicon illustrated by Moretti become spatial through six case studies from European port cities, which become the empirical grounding on a much more complex scheme of aspects (physical, institutional, functional) and models (point, graft, barrier, membrane, infrastructure, filter). As of today, this work has definitely gone the furthest in spatializing how previously considered abstract terms such as "liminality" or "fluidity" are manifested in space **[Fig. 8]**.

Fig. 7 – Visualization of the concept of the sea as a common good. Source: Flatland, completed during the PortCityFutures Conference in Rotterdam (December 17–19, 2018). Source: https://www.globalheritage.nl/news/the-sea-as-a-common-good

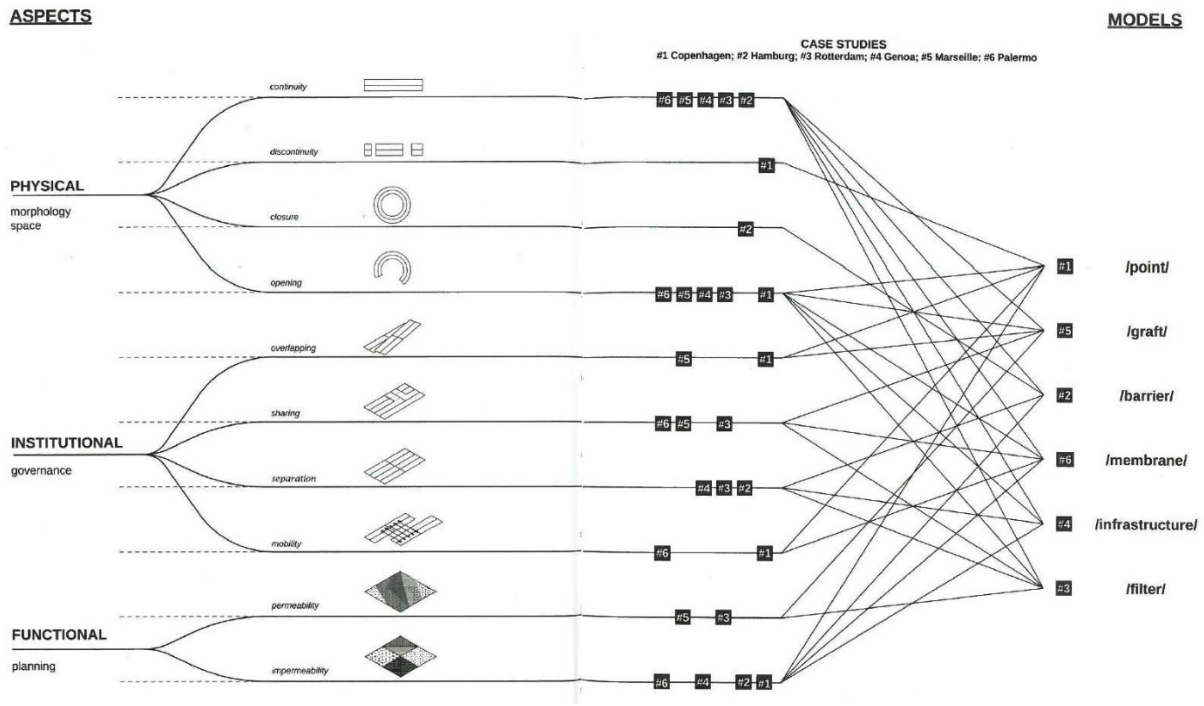

Fig. 8 – Visualization of the interpretive and design tools elaborated by Moretti (2020). Source: Moretti, Beatrice. 2020. Beyond the Port City: The Condition of Portuality and the Threshold Concept. Berlin: JOVIS.

However, what remains an unexplored opportunity is the attempt to move beyond a largely descriptive attitude toward the study of port-cities that would employ empirical and data-driven analyses to shed light on some of the concepts and theories presented in the contemporary literature. Moreover, there is a geographic limitation to Moretti's work: her book illustrates only European port cities (either facing the North Sea or the Mediterranean). Unfortunately, this geographic limitation in the (comparative) literature on port cities is still alive and well. The latest beautifully illustrated publication by Carola Hein, Yvonne van Mil, and Lucija Azman-Momirsk, "Port City Atlas. Mapping European Port City Territories: From Understanding to Design," remains both in visuals and writing heavily Europe-centered (2023).

While recognizing the fundamental importance of recent scholarly contributions in the urban planning discourse on ports and cities, these neologisms fall short of expanding a critical interpretation of waterfronts and their socio-physical evolutions. The idea of waterfront spaces as *terrains vagues* to be reimagined and repurposed remains of primary fascination to architects and designers, who often lack the spatial contextualization of their proposal and do not provide an in-depth socioeconomic grounding. In short, the existing literature on the development of waterfront spaces has provided a plethora of design-focused investigations on the physical evolution of water edges, their regional implications, their post-industrial shifts, and their transformative planning frameworks. Still, both scholars and practitioners have often failed to resist the allure of the "thin line" of water-facing development, lacking a perpendicular comprehension of the physical and socioeconomic weaving between the waterfront and its neighboring spaces.

In this regard, the work published in the past fifteen years by urban ethnographers on port cities as places of tension in the public realm between social groups—such as tourists and residents, street vendors and shop owners, migrant workers, and urban poor—has enriched the scholarly discussion on social exclusion and marginalization (Marshall 2007; Kokot et al. 2008; Mah 2014). However, when not grounded in spatial analyses and archival investigations, ethnographic methods only contribute a partial understanding of the physical and socioeconomic tensions registered in waterfront areas. This research approach risks portraying singular cases as representative of a holistic condition despite often lacking empirical evidence of how inherited physical forms or political decisions might trigger or enhance today's issues.

The overlap of different communities of users and dramatically dissimilar conditions across waterfront transects makes for enormous amounts of complexity from institutional, socioeconomic, and design perspectives.

Economic forces (real estate pressure and global trade), operational issues (industry and infrastructure), and social tensions (gentrification) all exert great pressure on the spaces between ports and inhabited cities. This highly localized tension has often altered the urban fabric along the water edge by advancing design propositions and policies fueled by imagery of modernization that benefitted certain groups at the detriment of others. As a result of large-scale masterplans deployed between the city and the water, the existing urban and social fabric lying behind linear strips of water-facing development is often masked and isolated by new physical forms that reify forms of physical segregation. In other words, the ever-shifting nature of waterfront development can lead to (un)intended consequences at the rear of waterfronts, such as the physical degradation of buildings and the social marginalization of local communities. The unintended aspect may involve employing the waterfront as a linear development strategy, primarily benefiting water-facing areas. This approach inadvertently exacerbates longstanding issues faced by communities awaiting improvements in living conditions, leaving them overshadowed by developments that cater to different audiences.

As urban design scholar and practitioner Alex Krieger (2007) wrote in an essay titled *Reflections on the Boston waterfront*, "wise waterfront planning seeks to unravel polarized visions." However, the "how" of his statement remains hard to fathom. Should port cities look for forms of urban rebranding or maintain long-lasting identities? Should authorities seek new economies or support existing maritime industries? Should local residents keep their neighborhood socioeconomic composition, or have it altered with facilities catering to tourists and newcomers? And, more broadly, should waterfronts respond to the demands of ports, global trade, and the "outside world," or to the needs of people, communities, and the "inside world" of water-facing neighborhoods?

To address these questions, historian and former diplomat Josef Konvitz (2013) offers valuable insights to situate waterfront transformations and port city modernization within complex political challenges not adequately addressed in existing scholarship. In his writing, he describes large redevelopment plans as largely influenced by major fleet owners and shipping industry actors, operating within an interplay between the interests of port cities, nation-states, and shipping industries themselves. As far as politicians strive to find solutions satisfying diverse constituencies, while experts seek best practices for complex problems requiring experimental solutions, he believes that crafting a strategy embraced by public and private sector leaders remains elusive. Despite ongoing development, port cities will continue to face significant civic and political hurdles, especially amid natural disasters and climate change. Paradoxically, while literature often addresses conflicts over better outcomes, it may not contribute effectively to broader public discourse.

1.2.2. Modernization Processes in Mediterranean Port Cities: Exploring the Transformative Dynamics within Port Neighborhoods

Mediterranean urban waterfronts have long been landscapes of innovation and emerging technologies. The introduction of new maritime infrastructures (e.g., containers, cranes, cargo ships), the transition from industrial to post-industrial settings (e.g., waterfront promenades, museums, recreation facilities), and the emergence of new building typologies (e.g., high-rises, iconic architectural landmarks) have radically modified the physical and social apparatus of water-facing neighborhoods, by altering their relation to the adjacent urban environment and triggering unprecedented tensions between residential and industrial areas. As a result of these alterations, the spatial development of waterfronts has become synonymous with visions of prosperity, exuberance, and desire for new self-images. However, the evolution of urban spaces between land and water has often emerged out of an exclusionary logic that has often reinforced, if not exacerbated, forms of marginalization and enduring inequities mediated by the built environment, political will, and technological development. In short, while urban waterfront development has acted as a catalyzer for the modernization of port cities, the resulting physical and social transformations have left their mark on cities' built environment by heightening forms of social exclusion, including displacement and hostile living conditions.

In the study of urban change and the attempt to untangle how physical forms have come to terms with processes of modernization, Mediterranean cities offer fertile ground for exploration for multiple reasons. First, the sheer quantity of ancient sites and buildings bind the past and present more closely in the Mediterranean than anywhere else. In his *Rhythmanalysis*, Lefebvre argues that historical traits persist more in the Mediterranean than elsewhere and persist with remarkable force (Lefebvre 2004). Second, the Mediterranean Basin is among Earth's most continuously inhabited regions—together with the Yellow River and Indus Valley. Situated at the crossroads of three continents, its history is characterized by a rich tapestry of cultural exchanges, trading relations, and conflicts. (Lopes and Almeida 2017); hence, the built environment of its cities provides an incredibly rich testing ground for urban planning studies aiming at testing path dependence theory and explaining how modernity takes form. Third, Mediterranean urban settlements constitute "the archetype of what the global city is today," as Hashim Sarkis (2013) wrote in a piece titled "The Sea of Scales and Segments." This latter point refers to the fact that the urban areas of this region display a "prehistory" of the city-world and "the sense that we might be in one of these cities, but we are very much aware of our belonging to a much larger entity."

To underscore the diverse nature of this "larger entity," the Mediterranean's multifaceted etymologies and semantic connotations provide specific insights into its political and cultural dimension. Ancient Romans, for example, originally called the Mediterranean Sea *Mare Magnum* ("Great Sea") or *Mare Internum* ("Internal Sea"). However, after consolidating their imperial control across the sea in the first century CE, their "Great Sea" turned into "Our Sea" (*Mare Nostrum*). According to Abulafia, the term Mediterranean is a Latin calque of the Greek μεσόγειος from μέσος (*mésos*, "in the middle") and γήινος (*geinos*, "of the Earth"): literally, a large water basin "in the middle of the Earth"(Abulafia 2014). Yet, this etymology sounds fundamentally different from our contemporary definition of an almost landlocked sea. In the classic world, in fact, the Mediterranean was considered the central part of the οἰκουμένη ("the inhabited world"). Besides these geographic and political connotations, the Mediterranean has culturally also assumed different chromatic qualities throughout centuries: for instance, the Turkish *akdenis* means the "white sea," whereas the ancient Egyptian *Wadj-wer* identifies the sea as the "Great Green." Ancient Egyptians, in fact, utilized the green color to point at the fertile fields on the Nile delta. The Turkish "White," instead, seems to belong to an Arabic Levant tradition. In Arabic, in fact, the Mediterranean (البحر الأبيض المتوسط - *al-Baḥr al-Abyaḍ al-Mutawassiṭ*) is also known as "the White Middle Sea." According to Johann Knobloch—an Austrian historian of the Eastern Mediterranean—cultures in the Levant used colors to refer to the cardinal points: black referred to the North (explaining the name the Black Sea), yellow or blue to the East, red to the South (e.g., the Red Sea), and white to the West (Knobloch 1979).

Morphological shifts frequently arise from economic development processes originating at the water's edge. In the late nineteenth century, for example, when processes of modernization were quite advanced in Northern Europe, Mediterranean cities did not embrace the 'city-industry' model and promoted a 'city-port' model. However, despite remarkable demographic growth—for example, Marseille recorded a population growth from 186,000 to 550,000 between 1856 and 1914—Mediterranean cities' social fabrics and systems of political authority were very different from their Northern European counterparts. Mediterranean cities' social fabric lacked a well-established middle class and bourgeois culture, and their plans of urban reform were mostly crafted and approved by professionals based elsewhere: for Marseille, in Paris **[Fig. 9]**; for Naples and Palermo, in Rome; for Barcelona, in Madrid; for Athens, in Germany; and for cities in Northern Africa and the Middle East, because of colonialism, mostly in Paris and London. Moreover, while traditional scholarship on colonialism in the Mediterranean has mostly engaged with *Europe – Africa* or *Europe – Middle East* dichotomies, I argue that investigating internal disparities and the geography of power within Southern Europe would contribute to a post-

colonial urban history of the Mediterranean. In general, by historicizing the intranational colonial legacy of Southern Europe, geographers and historians can make European history more globalized and Mediterraneanized at the same time (Herzfeld 1984).

Fig. 9 – Graffiti in Marseille referring to the rivalry between the port city and the capital city of Paris (*jeux de dames*) through the lens of iconic landmarks (Notre Dame de La Garde, in Marseille, and the Tour Eiffel in Paris). Photo by author (November 2021).

From an urban development perspective, Lila Leontidou, in her *The Mediterranean City in Transition*, writes that, unlike cities planned according to capitalist paradigms, the tangible outcomes of informal development are often shared by several Mediterranean cities (Leontidou 1990). Through spatial negotiation, land allocation, and adaptation, both core areas of urban development and frontiers of urban expansion were initially determined by illegal building and land occupation. When turning to the social sphere of these areas, Leontidou explains that diversifying sources of livelihood, small-scale shops, free laborers, and artisans generated solid economic resilience. This network of activities (e.g., *suq*, *casbah*) provided shop owners with some social and economic security. Similarly, in traditional social insurance systems, in the commercial districts of most Mediterranean cities, small-scale, often family-run businesses acted as a buffer to open unemployment. Gramsci's analysis of Southern Italy, for example, depicts the "family" as a primary element of the Mediterranean. Physical planning, public policies, and welfare programs appear, in fact, overwhelmed by a "familiar spontaneity," which, supported by informality and sometimes by illegality, maintained and reinforced the cohesion of society (Gramsci 1926).

In terms of spatial development, Leontidou argues that most Mediterranean cities in Southern Europe have been mistakenly compared to Northern European standards and accused of "overurbanization," "spatial parasitism," and lack of sprawling control measures (e.g., green belts). The lack of urban governance systems to control growth could also be explained through the portuality of many Southern European cities, primarily devoted to nurturing commercial relationships and expanding port infrastructures within the city and neighboring territories. According to Moretti, portuality "represents a new urbanity capable of embodying the inescapable bond that often places an entity (city or port) in co-dependence or in opposition to the other"(Moretti 2020). More generally, as explained in the previous section, the port city exists as an in-between landscape that lives in transition and eludes classifications (Berger 2006).

While Leountidou partially agrees with the urban *critique* on the lack of consolidated urban boundaries, she advances a well-articulated argument on social segregation and urban form by comparing Southern to Northern European cities. More specifically, she explains how zoning by-laws, lack of mixed-use areas, and economic rationalization have sown spatial segregation across Northern European and American cities in the mid- to late twentieth century. In response to this type of development, Leountidou portrays "vertical differentiation" as a typical Mediterranean urban pattern where the intermixture of social classes is both a cause and an effect of the proximity of residence and workplace. For instance, in Naples, Palermo, Athens, Barcelona, Tunis, and Alexandria, the ground levels of some of the most opulent palaces are still occupied by some of the poorest families in the city. This residential pattern results in a unique porous neighborliness between the upper and the lower classes.

In light of these characteristics, through this paper, I argue that Mediterranean port cities have molded alternative forms of modernization worth investigating because of their complex infrastructures (as sites of production, operational activities, and storage of goods), articulated urban governance (as *loci* of multiple policy actors); porosity of functions (as landscapes for shipbuilding, shipping industry, amenities, and tourism), and idiosyncratic urban forms of multilayered pasts. This research endeavor builds upon the recent work of anthropologist Ben-Yehoyada, whose anthropology of the Mediterranean in modern times has challenged contemporary historical and anthropological framings for "Mediterranean" and "modernity" (a "double oxymoron, as he describes it). According to Ben-Yehoyada, historians agree that the ecological unity of the colonial legacy described by Braudel is no longer a valid framing to look at the Mediterranean (Braudel 1995). Purcell, for example, affirms that the distinctiveness of the Mediterranean as a region has disappeared since the late nineteenth

century (Purcell 2002). From a political geography perspective, an examination of early-twentieth-century maritime history reveals a notable shift in perspective, wherein the Mediterranean assumes a peripheral role in relation to northwestern Europe. This altered viewpoint has engendered a characterization of the Mediterranean as an "anti-modern" realm. Abulafia further reinforces this notion, suggesting that modernity is perceived as a phenomenon imposed upon the Mediterranean (he uses the words "*coming to the Mediterranean"*) rather than emerging from within it (Abulafia 2014). In response, I propose a reconsideration of modernization from an urban planning standpoint, framing it as a politically facilitated socio-technical process that fundamentally alters urban landscapes, especially on the water edge. While the inequitable consequences of modernization have often been overlooked, the mythologized portrayal of Mediterranean port cities as bastions of cosmopolitanism and multicultural haven of tolerance shielding against the pressures of nationalism, has contributed to an uncritical sense of nostalgia. This idealized vision was shattered by the realities of nationalist movements in the twentieth century, resulting in cities like Trieste becoming Italian, Thessaloniki Greek, Alexandria Egyptian, and Izmir Turkish. Consequently, the Mediterranean has been relegated to a marginalized status as a cultural and geographical entity. This condition was further exacerbated by recent geopolitical efforts to promote *unity* through centralized power structures, such as Sarkozy's "Union for the Mediterranean" and art-led agenda in the redevelopment of Marseille's waterfront.

Given these limitations, it would be remiss to overlook the scholarly opportunity to explore how modernization has influenced the Mediterranean region. This paper is aligned with the framing proposed by Ben-Yehoyada (2017), suggesting that studies conducted within the Mediterranean offer valuable insights into transnational urban history, providing an alternative to Eurocentric, modern-centric perspectives.

In essence, despite their apparent cultural, political, and economic disparities, most Mediterranean port cities share a common thread of urban modernization: the deliberate concealment of the "unworthy" cityscape through waterfront urban design interventions. Therefore, rather than focusing solely on the evolving forms of port infrastructures, a more nuanced approach involves examining the complexities within port neighborhoods themselves. This inward-looking approach sheds light on the physical ruptures and socio-technical tensions inherent in historic cities undergoing waterfront modernization processes.

1.2.3. Navigating the Future of Port Cities Studies: Exploring Paths Forward

Studies on port cities have traditionally benefitted from theoretical frameworks belonging to three main bodies of literature: world system theory (i.e., the rise of capitalism, wealth accumulation, flows of goods), cultural geography (i.e., cosmopolitanism, migration, heritage), and urban design (i.e., waterfront regeneration, master planning, public space). Port cities, in fact, hold an inherent complexity, making them hubs of maritime and inland trade, sites of cultural encounters, and infrastructural nodes of broader global networks. While there is a plethora of studies investigating how the infrastructure of ports has played a significant role in shaping the global geography of wealth distribution (sites of accumulation), driving technological development (sites of socio-technical innovations), and permitting the removal and trade of local resources (sites of extractives economies), there is still little explored on how global processes are experienced at the local scale. More specifically, questions on how processes of modernization take form in specific spaces under institutional and socioeconomic frameworks remain mostly unsolved. Moreover, this spatial lens is often hard to grapple with because it requires in-depth longitudinal coverage of physical and socioeconomic transformations at a highly granular level. As a result of this theoretical and empirical complexity, questions revolving around the forces of modernization, their deployment, and their long-term implications regarding spatial inequality remain of fundamental importance: what institutional, technological, and sociological framing do processes of modernization require to be fully comprehended? How do spatial inequalities emerge through these processes? Whose modernization and whose inequalities do we refer to? What role does the built environment play in rooting enduring inequalities in urban environments? In this paper, I argue for the relevance of these questions and for the need to advance new theoretical framings anchored to notions of modernization and inequality to investigate how port cities evolve. This theoretical framing would encourage scholars to adopt novel interdisciplinary methodologies to measure the relationship between the built environment and spatial inequalities in coastal contexts and embrace a diachronic space-based approach to study socioeconomic transformations to imagine a more just and equitable urban future.

1.3. Theoretical Framing

Port city studies, by definition, are inherently reliant on the existence of ports and engagement with the multiscalar dimension of port-city regions (Hein and van Mil 2019). However, different scholarly lenses and theoretical perspectives on ports have greatly impacted how these idiosyncratic localities between land and water are

understood. In general, core-periphery studies in geography (Kojaku et al. 2019; T. Notteboom, Ducruet, and Langen 2016), management and supply-chain research in maritime logistics (Carbone and Martino 2003), democracy scholarship in political science (Gerring et al. 2022), urban studies in city planning and history (Hein 2021; Ramos 2021), and urban design investigations in architecture and urbanism (Moretti 2020; Carta and Ronsivalle 2016) have primarily emphasized the *outward* nature of ports as nodes of global networks and sites of innovation and design ingenuity. In other words, waterfront-focused narratives have put forward theories governing the establishment of economic power hubs (Fujita and Mori 1996), high concentration of wealth through extractive practices (Arboleda 2020; Morata et al. 2020), and localized experiences of (post)industrial uses by the water edge (Airas, Hall, and Stern 2015). The prevailing focus on the sea's expansive dimensionality and land-based maritime infrastructures has caused theoretical models in port cities research to veer towards *outward* inquiries and diminish analytical attention on *inward* socioeconomic dynamics. Moreover, this skewed perspective has been mirrored by a notable absence of spatially granular, longitudinal studies on the socio-economic impacts of design interventions, which are frequently presented in merely descriptive and non-analytical terms.

To advance a renewed and critical perspective on the spaces and communities *behind* waterfronts, I argue that port city studies should adopt a tripartite theoretical framework. This framework, which I term the "Three P's"—Power, Progress, and Poverty—offers a nuanced, *inward*-looking perspective for analyzing design interventions in port-adjacent areas. By applying this framework, future studies can dissect and understand the complex interplay of political, socio-technical, and economic forces shaping these unique urban landscapes through concepts (Power, Progress, Poverty) and their associated descriptors (Governance, Mechanisms, and Effects). More specifically, this theoretical framing is concerned with providing an overarching spatial understanding (*locations*) of how institutions of political and financial power (*governance*), along with ideals of progress and instruments of socio-technical innovations (*mechanisms*), have shaped and affected the socioeconomic apparatus of port cities (*effects*) **[Fig. 10]**.

Fig. 10 – “Behind the Waterfront” framework (high-resolution image available at this link). Source: author.

The theoretical framework introduced in this paper is primarily applicable to port cities in the Mediterranean Basin, where institutional, cultural, and urban stratifications have come to terms with processes of modernization since the nineteenth century and, often, to the rise of spatial inequality. This framework focuses on cities where port infrastructures within the historical core remain active (though its use could have changed) and where new design interventions aim not to expand or form new settlements but to modify existing urban conditions, including physical forms and community structures.

From a temporal and spatial perspective, this framework is best suited for studies limited in time that examine the planning and implementation of specific design interventions (e.g., urban incisions, water-facing highways, etc.). By identifying the spatial nature of the intervention, the framework develops through an institutional, political, and legal understanding of the plan (Power – Governance), its design and technological expedients (Progress – Mechanism), and, finally, its socioeconomic implications, especially in regard to environmental inequalities (Poverty – Effects). Given the dynamic nature of urban evolution, proposing a model to encapsulate the spatial and temporal development of port cities would be overly simplistic and is not the intention of this framework. Rather than simplifying the historical forces behind changes in port cities, the framework aims to closely examine specific urban planning initiatives through the lenses of power, progress, and poverty. It provides a structured approach to analyze how power, progress, and poverty are profoundly entangled in the formation of these initiatives, offering insights into the socioeconomic fabric of the urban landscape.

1.3.1. Locations: Taxonomy of Haussmannization

The taxonomy of design gestures provided in this framing is built upon the configurations enacted in the mid- to late nineteenth century and early twentieth century in port cities across the Mediterranean. Upon reviewing the morphological fractures experienced in the historic cores of several port cities, I have constructed a spatial taxonomy that includes six categories of design gestures: 1) boulevard parallel to the waterfront; 2) boulevard orthogonal to the waterfront; 3) étoilezation; 4) cordon sanitaire 5) tabula rasa; 3) waterfront boulevard **[Fig. 11]**. Some of these interventions are not mutually exclusive, and they could also take shape on the same site in different temporal segments. In general, the use of spatial taxonomy supports pinpointing the specific gestures at a moment in history and exploring their implications at that time and its legacy. I employ the term "Haussmannization" to signal a physical and socioeconomic restructuring related to the modernization of the urban fabric of port-adjacent neighborhoods.

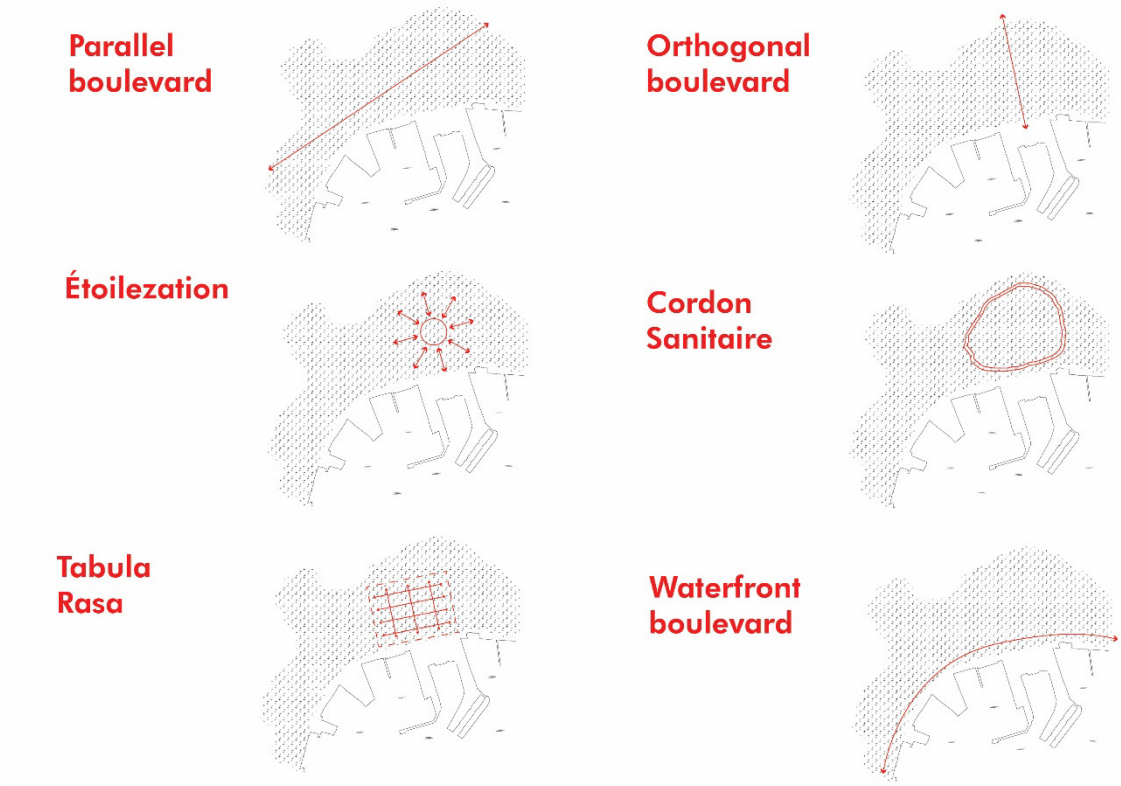

Fig. 11 – Spatial taxonomy of urban form alternations in port-adjacent neighborhoods. Source: author.

a) Parallel boulevard

The Italian cities of Naples and Palermo underwent significant urban transformations in the early years of Italian unification, with the creation of long boulevards, such as *Corso Umberto I* in Naples and *Via Roma* in Palermo, paralleling the port and slicing through millennia-old urban fabric (*sventramenti;* Italian, for eviscerations). These boulevards, often originating from railway stations, cut through dense urban areas, acting as axes of urban renewal. Similarly, *rue de la Republique* (formerly *rue Imperiale*) in Marseille (France) represents a strategic alignment parallel to the shoreline, facilitating connectivity between the city's *Vieux Port* and la *Joliette* (*percées*; French, for cuts). On the eastern shores of the Mediterranean, in today's Israel, the city of Haifa experienced a similar surgical cut planned by Patrick Geddes during the British domination of the city in the early twentieth century. Haifa's historical core was sliced by a trough road (George V Avenue) parallel to the coast to allow better mobility and access to the port (Kolodney and Kallus 2008). In a more recent time, during the Fascist regime,

Syracuse in Sicily (Italy) saw significant urban restructuring, with *Corso Matteotti* bisecting the historic center of Ortigia in the 1930s, running parallel to the *Porto Grande* (the large port).

b) Orthogonal boulevard

Via Layetana in Barcelona (Spain) runs orthogonally to the waterfront and marks a unique intervention within the old town, aiming to connect the Eixample neighborhood (planned by Ildefons Cerdà) to the port. *Via Layetana*'s ambitious project finds its smaller counterpart in the port city of Malaga, located in southern Spain, where *Calle Larios* was constructed in the late nineteenth century. This street was designed to connect the Plaza to the *Espartería* Gate, the principal entrance to the port situated on the Alameda. This location became a hub of commercial activities, and today, it is a pedestrian zone that acts as the most vibrant shopping district in the city (Andrade et al. 2021). Mirroring the urban interventions observed in Barcelona and Malaga, Alexandria's *El-Nasr* Street in Egypt also serves as a gateway to the port. In Alexandria, however, the street is much larger than its Spanish counterparts, and it still functions as a multi-lane thoroughfare within the city's historic urban landscape.

c) Étoilezation

The redevelopment of Beirut's downtown during the French mandate introduced an iconic, star-shaped district characterized by radiating boulevards. This transformation gradually relegated outdoor markets (souks) and their associated communities to areas behind the boulevards, which primarily housed administrative offices and insurance companies. The displacement of the informal markets and small businesses was inevitable during the city's *urbicide* amidst the civil war (Fregonese 2009). Additionally, the reconstruction led by Solidere further exacerbated this trend by promoting the development of high-end malls at the northern edge of the star-shaped district, encroaching upon the waterfront neighborhoods.

Beirut's redevelopment plan, centered around the *étoile*, presents an intriguing comparison to other urban interventions, such as those in Naples and Marseille. Notably, *Piazza Nicola Amore* in *Corso Umberto I* (Naples) and *Place Sadi-Carnot* (Marseille) also feature circular squares or star-shaped configurations within their urban designs. However, these examples lack the comprehensive execution observed in Beirut's plan. Specifically, the *étoile* in Marseille is constrained by two adjacent hills, which were not extensively modified to accommodate additional boulevard extensions, unlike in Beirut. In other words, at *Place Sadi-Carnot*, two of the six radiating boulevards come to an end at stone walls, which are as high as the third floor of nearby Haussmannian buildings **[Fig. 12]**.

Fig. 12 – Marseille, images of two unfinished radiating boulevards ending at stone walls revealing the dramatic topographic gaps of the city. Photos by author (November 2021).

d) Cordon Sanitaire

Cordons sanitaires, typically established as expansive greenbelts or road infrastructures, have historically been implemented in colonial settings. Their purpose was to isolate and marginalize urban districts perceived as obsolete, as well as the indigenous populations residing within these areas. This design gesture can result from deliberate political choices intended to segregate a portion of a city or as an unintended legacy of historical urban infrastructures like peri-urban medieval walls (Beverley 2011).

Tunis (Tunisia), for example, presents a highly preserved urban form in its Medina. This conservation effort, however, resulted in the Medina's isolation from the 'modern city,' characterized by regular blocks and tree-lined boulevards. The physical preservation and isolation of the old city fabric were accentuated by a widened peri-urban street tracing the medieval walls' original path.

In Casablanca (Marocco), the Avenue Hassan II, tangential to the Medina and *Place de France* serving as a pivotal economic hub, exemplifies the concept of *cordon sanitaire*. Prost's 1914 plan effectively marginalized the Medina, diminishing its role as an economic and administrative hub in favor of *Place de France* and *Place Lyautey*. Prost proposed a "radiocentric" plan that divided Casablanca into the "*ville indigène*" and the "*ville nouvelle.*" Approximately two decades before Morocco's independence, in 1936, Ecochard furthered this hierarchical logic by proposing a city expansion along the Casablanca-Fedala axis. This expansion aimed to accommodate a growing mixture of residential and industrial uses, drawing inspiration from Le Corbusier's "*cité linéaire industrielle*." The Medina was left crumbling and in poor static condition **[Fig. 13]**.

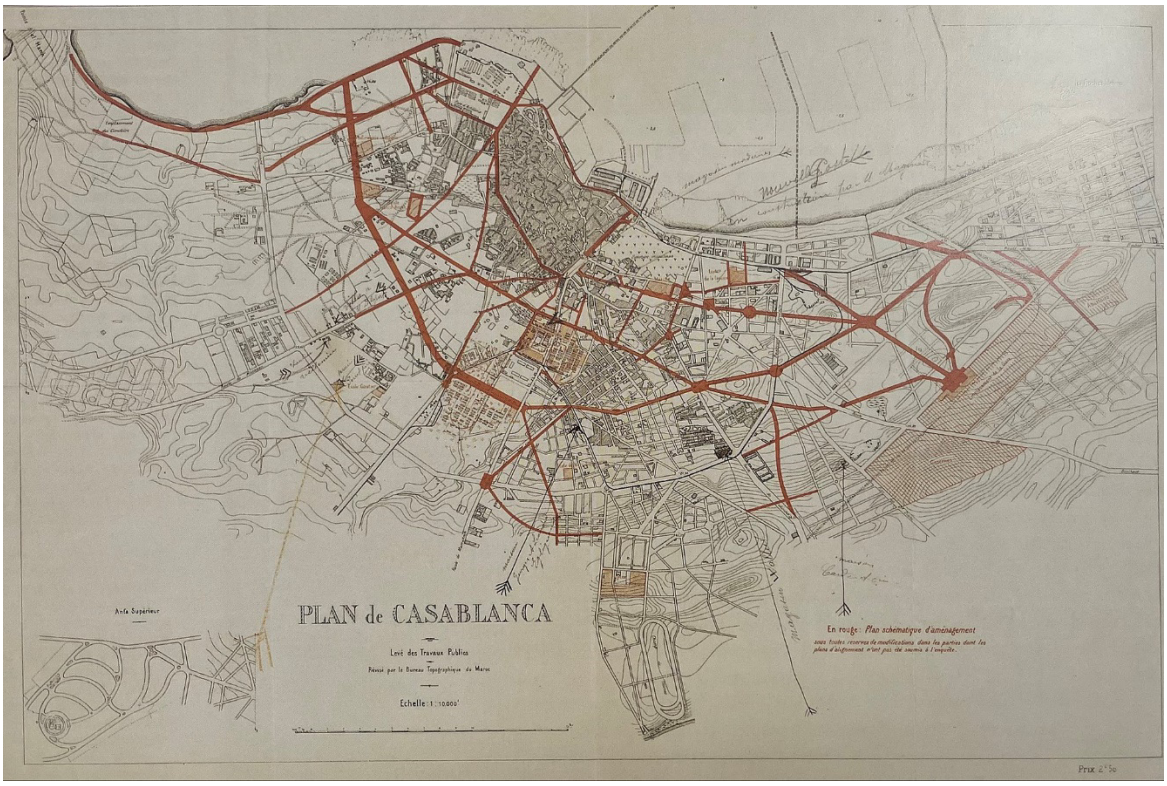

Fig. 13 – Prost's road plan for the 1917 extension and development plan of Casablanca. The medina is at the top of the map and is fully encircled by new roads. Source: Henri Prost - Cohen, Jean-Louis and Monique Eleb. Casablanca: Colonial Myths and Architectural Ventures. (Monacelli Press, 2002).

Port cities such as Valletta (Malta), Heraklion (Crete), and Famagusta (Cyprus) have preserved their medieval walls, creating a distinct separation between the historical walled city and the contemporary urban areas. These walls, though once purely demarcative, have been ingeniously repurposed to serve as venues for public spaces and amenities. In Heraklion, for instance, the bastions within the walls now host numerous sports fields, providing valuable recreational facilities accessible to the community.

e) Tabula Rasa

This type of intervention is often propelled by wars and disasters, leading to a significant obliteration of the built environment that necessitates comprehensive reconstruction efforts. Achieving a complete tabula rasa, however, is rarely possible. Displaced communities and future generations often navigate through post-trauma experiences, processes of collective healing, and the challenges of memorialization in relation to ruins.

In Marseille, during World War II, the city experienced profound destruction under the German occupation. In January 1943, the Vichy administration, in close collaboration with Nazi SS troops, forcibly removed over 20,000 residents from their homes (Crane 2004). A significant portion of the city's historic core was obliterated, with only a handful of buildings spared in what amounted to an extensive tabula rasa. Initially, a facade of buildings was left standing to conceal the extensive debris and ruin behind them; however, these structures were ultimately demolished in 1946 **[Fig. 14; Fig.15]**.

Similarly, Thessaloniki underwent a drastic transformation after a fire in 1917 completely destroyed the city's Ottoman urban fabric. In the early years of the Greek Nation, German planners were tasked with redesigning the city, opting for a grid layout. The city of Izmir (Turkey) faced a comparable fate in 1922 when a fire led to its comprehensive re-planning by Danger and Proust.

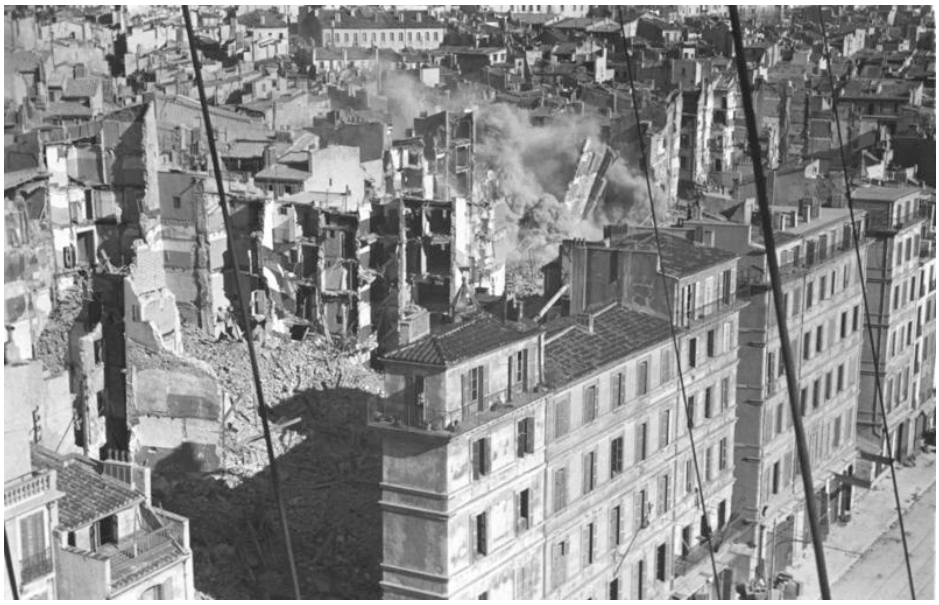

Fig. 14 – Marseille, destruction of the old port district (February 1943). Source: Propagandakompanien der Wehrmacht - Heer und Luftwaffe (Wikimedia Commons).

Fig. 15 – Marseille's Vieux Port and its post-WWII buildings, interrupted by the City Hall, which was left untouched by the German dynamite. Photo by author (November 2021).

f) Waterfront Boulevard

In response to post-WWII housing demands and driven by the expanding automotive industry, several Mediterranean cities in the 1950s and 60s opted to construct large waterfront highways: a design proposition often resulting in a physical and visual separation between city and port. Notable examples include Naples's *Via Marina*, which necessitated the demolition of its historic housing stock and paved the way for the construction of modern residential and corporate towers along the waterfront; Palermo's sequence of *Via Crispi-Via Cala-Via Foro Italico* created a lasting barrier to the waterfront; and Genoa's elevated highway (*Sopraelevata*), a product of early 1960s urban planning, now experience a growing consensus towards reimagining the urban waterfront, with proposals such as the construction of a submarine tunnel to dismantle the existing highway infrastructure.

This wave of urban transformation was not confined to Italy; Algiers (Algeria), Alexandria (Egypt), and Beirut (Lebanon), among others, experienced similar development models post-WWII. These cities implemented vast, multilane highways along their waterfronts, significantly limiting public access to the sea and, by extension, altering the social and spatial dynamics of the urban waterfront. In Algiers, for instance, the juxtaposition of modernist highways against the early-twentieth-century Haussmannian facelift, situated in front of the ancient casbah, starkly illustrates the complex layers of urban transformation witnessed by the city during its early-colonial and late-colonial time **[Fig. 16; Fig. 17]**.

Fig. 16 – Algiers waterfront (2014). Source: Wikimedia Commons.

Fig. 17 – Central Algiers waterfront (2005). Source: Damien Boilley (Wikimedia Commons).

While this list of examples is not exhaustive, it serves as a foundation for understanding the taxonomy of urban interventions within specific geographical contexts, thereby enabling a more nuanced spatial focus on their impacts and outcomes.

1.3.2. Power

The physical transformation and socioeconomic restructuring of cities are not solely governed by economic logic; they are also deeply influenced by institutional power and politics. Institutions responsible for urban and broader

territorial governance often serve as primary catalysts in the development of new urban environments, either by orchestrating them from scratch or by implementing ambitious renovation plans.

1.3.2.1. Governance Dynamics: Interplay Between Nations and Cities

Urban settlements have been sites of power for millennia. However, the establishment of nation-states and the hegemony of empires in the late nineteenth century, the wave of decolonization in the twentieth century, and the prolonged interactions with—and in some instances, subjugation by—empires in the late twentieth century have had unparalleled impacts on the physical redesign of cities. These changes in the administration of power were often marked by the designation or removal of capital city status and the rapid growth of port infrastructures linked to broader colonial endeavors and global trade (Therborn 2017).

In the nineteenth century, the notion of nationalism and nation-states became part of a global change in which processes of socio-technical modernization, rejection of forms of *ancient regime,* and the advent of global nationalism led to a radical reshaping of cities. While some nation-states, like France with Paris, redesigned their capital cities to reinforce their roles as political and cultural epicenters for global empires, other nations (mostly beyond the Mediterranean region) had to plan their capital cities from scratch (e.g., Washington DC)[2] or make existing cities (some of which were already capitals of large provinces or independent kingdom) the designated capitals of newly-formed nation-states (e.g., Athens, for Greece; Turin and Rome, for Italy). Unlike their continental urban counterparts, most Mediterranean port cities were not state capitals in the late nineteenth century and often lacked the resources to fully complete their Haussmann-inspired plans. Moreover, Mediterranean port cities witnessed radical urban transformations fueled by ideals of modernization and forces of industrialization both in colonial and non-colonial settings. Some cities, like Marseille and Barcelona, performed as hubs of international trade trajectories linking port cities to states' colonial empires; others, like Algiers, Tunis, Alexandria, and Beirut, responded to the extractive commercial and cultural logics of colonialism; and others, like Venice, Naples, Palermo, and Istanbul, carried the vanishing vestige of capital cities.

Recognizing that port cities are integral components of larger geopolitical entities shaped by national powers and their strategic interests is crucial for a nuanced spatial analysis of political power's infrastructure through design.

[2] Unlike the planning endevaours that gave rise to Washington or Brasília, the Mediterranean region largely did not witness the creation of newly designed capital cities. Ankara (Turkey) and Skopje (Macedonia) might be considered among the rare exceptions (Vale 1992).

This perspective underscores that the architecture and spatial organization of port cities, including key government and military installations, are not merely local or incidental features but are deliberately crafted to reflect and reinforce the state's political priorities and power dynamics. For instance, the relegation of port cities from capital city status often leads to a significant reorientation of their role as centers of political authority. This shift can result in a conspicuous absence of political functions, marked by the underuse of once-prominent buildings (such as royal palaces and government offices) and a decrease in job opportunities tied to the state's administrative apparatus. The frameworks Hall (1997) provided on capital city classifications and Vale (1992) illustrated the design politics of *capitalization* processes offer insightful lenses through which to view the interplay between power's manifestation in urban design and the broader process of city-building.

This discussion further illuminates the impact of overarching geopolitical trends situating Mediterranean port cities within their national political landscapes. The decline in Tripoli's prominence in Lebanon, for instance, followed Beirut's emergence as the nation's political epicenter. The severance of its economic connections with Syria post-Lebanese independence has led Tripoli to become the nation's poorest major city, compounded by governmental neglect and socioeconomic disparities. This neglect has fueled a cycle of inequality and instability, exacerbated by the influx of Syrian refugees and periodic sectarian clashes in neighborhoods such as Jabal Mohsen and Bab al-Tabbaneh. In a similar vein, while Tel Aviv witnessed an elevation in economic prominence, Haifa experienced a demotion in its role as a regional capital. The development of Ashdod as a competing port further diminished Haifa's standing, illustrating the significant influence of geopolitical strategies on the destinies of port cities.

1.3.2.2. Institutionalizing Private Sector Influence through Financing and Normative Frameworks

Understanding the evolution of port cities extends beyond charting their historical trajectories; it necessitates recognizing how these urban centers were shaped by normative frameworks, typically devised in the capital cities of national states or by colonial powers, and financial strategies that often positioned the private sector as the hegemonic force driving reconstruction and management initiatives.

Entities responsible for the implementation of modernization initiatives in port cities, through large-scale planning, operated as either full public institutions (such as those seen in the 1960s with central governments

undertaking the construction of waterfront highways or expanding ports, which required the demolition of neighborhoods for port enlargement) or as public-private partnerships (like *Società per il Risanamento* in Naples, *Solidere* in Beirut, or *Euroméditerranée* in Marseille). In Marseille, more precisely, the early twenty-first-century urban redevelopment program by *Euroméditerranée* faced heavy criticism. Scholars and activists referred to it as a substantial speculative endeavor, ostensibly of public national interest, yet masquerading under a superficial guise of sustainability and participation (Angélil and Malterre-Barthes 2022). In conclusion, while fully private entities seldom act as the sole architects of large-scale plans, they are typically integrated within public-private frameworks. Nonetheless, they often retain tenure over a significant portion of the housing stock sold in bulk that remains inaccessible for fragmented acquisition by small owners.

As the diversity of actors and the intricate interplay of stakeholders involved in the transformation of port cities become apparent, it is clear that such substantial undertakings necessitate various levels of normative apparatuses. For instance, national laws (whether ordinary, to streamline eminent domain, or extraordinary, to facilitate swift post-recovery to disaster-induced crises) play a crucial role. The application of these normative tools at the local level often falls within the purview of municipalities, which oversee the implementation aspects. Exceptions to this rule occur in the context of major infrastructural projects related to road or port expansions, where government authorities maintain control over execution.

1.3.3. Progress

In the exploration of the tension between attempts at urban transformation efforts and the inherent resistance posed by established physical and societal infrastructures, a scholar of Science, Technology, and Society, Anique Hommels, inscribes urban planning within those forms of technologies shaping cities and their socio-cultural milieu (Hommels 2008). Contrary to the notion of technological neutrality, Hommels, alongside other scholars (Williams 2020; Kurgan 2013), posits that technologies are deeply influenced by, and emergent from, the socio-political landscapes they inhabit. These technologies, imbued with power dynamics and the tangibility of physical spaces, exemplify the concept of *obduracy*. Hommels delineates this concept through its manifestation in socio-technical frameworks (*frames*), deployed technologies (*embeddedness*), and long-term shared values (*persistent traditions*).

This section narrows the STS lens to port cities, examining the mechanisms through which the intertwined forces of technology and urban development catalyze modernization processes. Central to this discourse is the notion of *embeddedness*—a relational understanding of Hommels's *obduracy* that underscores the intricacies of networked elements within port services and coastal neighborhoods. These networks, characterized by their infrastructural components such as pipelines, cables, machinery, piers, and roads, embody significant capital investments. Their deeply rooted, location-specific characteristics and pronounced path dependence not only manifest resistance to change but also illuminate an ongoing, incremental need for technological advancements. Such a dynamic underscores the significance of *embeddedness* in the spatial and economic constructs of port cities, reflecting on how these urban sites evolve and adapt within the broader framework of socio-technical systems.

The spatiality of progress in these urban locales is dissected through the lens of mechanisms of socio-technical innovation across three distinct dimensions: the water's edge, the urban streetscape (encompassing both architecture and mobility), and the subterranean infrastructure.

1.3.3.1. Technology on Water

When viewed through satellite imagery, the landscape of maritime industrial activities in port cities presents a recurring configurational motif: a system of piers and docks extending into the sea like fingers. Far from being mere physical constructs, these infrastructures are vital arteries of global commerce, enabling a broad spectrum of transportation requirements. From passenger services like ferries and cruises to the logistical handling of goods via containers to supporting industrial operations such as refineries and oil storage, these infrastructures are central to the bustling economic life of ports. Yet, waterfronts' contemporary industrial and commercial character did not emerge as a sudden manifestation. It is the result of significant technological evolutions that occurred primarily during the mid- to late nineteenth and twentieth centuries, marked by the advent of steam power and the revolutionary concept of containerization.

The emergence of steam in the nineteenth century represented a dual-faced phenomenon: it was a monumental technological achievement that drastically reduced travel times and labor requirements on vessels, yet it also ushered in a "geopolitical trauma," facilitating extractive practices and the strategic establishment of colonial global maritime hubs (Darwin 2021). Furthermore, the acceleration of global connectivity brought about by

steam power dictated the expansion of quarantine stations at ports to combat the faster spread of diseases, such as cholera, thus intertwining technological progress with public health challenges (Snowden 1995). Despite the transformative impact of steam on maritime travel, its adoption led to significant urban and waterfront modifications, particularly in accommodating the logistical demands of coal storage and larger quarantine facilities **[Fig. 18]**. However, the efficiency of port operations continued to be hampered by the time-intensive manual handling of goods, underscoring the need for further technological advancements.

The latter part of the twentieth century witnessed such advancements through containerization, which, alongside the increase in ship sizes and enhancements in cargo handling methods, necessitated the relocation of port facilities and the radical redesign of waterfronts, as explained in Hoyle's diagram (Hoyle 2000); This era saw the proliferation of warehouses and the extension of port infrastructures into reclaimed lands or landfills, driven by the need to accommodate the physical dimensions and logistical requirements of modern maritime operations **[Fig. 19]**.

Fig. 18 – Images of Naples. (Left) Maritime Health Department of Naples (*Palazzo dell' Immacolatella*), built in the eighteenth century in a strategic and isolated location in the port to supervise health matters related to the import/export activities of the port. Source: Wikimedia Commons; (Right) Today the very same building is phagocytized in the port and in the nineteenth century it was significantly expanded. The structure is now dwarfed by gigantic ferries and cargo ships. In the background, cranes, a shipyard, and the western slopes of the Vesuvius are visible. Photo by author (December 2022).

Fig. 19 – Container ship "Joseph Schulte" crosses the Bosporus in Istanbul. Source: Akgul/AFP (2023).

Containerization has dramatically reshaped the geographic and operational landscape of ports. The demand for space to stockpile and manage containers necessitated larger and more sophisticated port facilities. This shift demanded new, rapid connections by road or rail directly into the port areas, facilitating a seamless transition from sea to land transport. As Hayuth and Hilling (1992) observed, the impact of containerization extends beyond mere spatial requirements; it has imposed a disruptive role in the geography of ports, fundamentally altering their function and form. The stacking and storage of containers epitomize the spatial and organizational challenges that contemporary ports face, requiring ongoing adjustments to both infrastructure and operational strategies.

The discourse on maritime transport systems' organizational and spatial restructuring has been a prominent theme within technology-oriented literature since the 1990s. This body of work highlights the evolution of port infrastructures as a response to the dynamic demands of global trade, revealing a notable dichotomy: the pace of technological advancements frequently surpasses the capacity of existing infrastructures to adapt. A prime example of this adaptation challenge is the incident with the 'Ever Given' container ship, which obstructed the Suez Canal for six days in March 2021. This event brought to the forefront a stark inadequacy of the canal's

dimensions and its governance apparatus to accommodate the enormous scale of today's container ships. Recently, the 2024 collision of the container ship Dali with a steel and concrete bridge in Baltimore's port (USA), leading to its immediate collapse, underscores the inadequacy of mid- to late-twentieth-century infrastructure in withstanding the unforeseen challenges presented by contemporary technologies.

Yet, the narrative of technological innovation at the water's edge is not solely one of progress and adaptation. The case of Alexandria's Mahmoudieh Canal demonstrates the potential consequences of abandoning or failing to upgrade maritime infrastructure, especially in the age of climate crisis and ramping inequalities. This nineteenth-century waterway, designed to connect the port to the Nile River and dotted with mill and decaying industrial buildings, offers insights into how neglected infrastructure can impact a city's resilience and its cultural connection to the maritime realm **[Fig. 20; Fig. 21]**. The canal's potential to mitigate climatic challenges and serve as a diffused ecological infrastructure contrasts with the urban development pressures that have led to its degradation over time (Fouad, Heggy, and Weilacher 2023). This decline is deeply rooted in the broader narrative of Alexandria's urban evolution, where the encroachment of informal housing and the expansion of highway systems throughout the twentieth century progressively obstructed and degraded the waterway. Such developments signify how the port once functioned as a crucial node within a larger, intentionally designed waterway connection system seamlessly integrated into the city's historic fabric. Yet, as technological paradigms shifted and the strategic importance of Alexandria's port—and its connection to the Nile—evolved, especially in relation to the Suez Canal, the commitment to maintaining this vital waterway system waned, leading to its current state of neglect.

In summary, the evolution of technology and innovation at the water's edge encapsulates a complex interplay between global trade dynamics, urban form, environmental sustainability, and cultural heritage. As Mediterranean port cities like Alexandria confront the challenges and opportunities engendered by technological advancements, the historical and ongoing narratives of their maritime landscapes provide indispensable insights into the socio-technological mechanisms of modernization by the water.

Fig. 20 – 1890s map of Alexandria (Egypt) showing the Mahmoudieh Canal on the bottom part of the map. Source: Goad, Charles E. Insurance plan of Alexandria Egypt. London; 1898–1905. Harvard Map Collection, Harvard University.

Fig. 21 – Satellite image of contemporary Alexandria with the sinuous shape of the elevated highway, Elshohada Square Rd, inherited from the water channel of Mahmoudieh Canal. Source: author.

1.3.3.2. Streetscapes: Architecture and Mobility Between the Water and the City

Public spaces and streets along waterfronts have historically served as primary locations to stage progress and assert cultural hegemony. Notably, centers of political power, such as the Royal Palace in Naples, were strategically positioned on the water's edge, often in proximity to military installations to guard against sea incursions. Beyond their defensive roles, waterfronts have been key sites of architectural ingenuity, acting as liminal spaces bridging the active or once-active port areas with the urban core.

From an architectural perspective, in the past forty years, the most innovative design interventions in the public realm bridging water and city have often catalyzed large-scale urban regeneration. These projects harnessed the post-industrial potential of ports, leveraging the relocation of machinery and port logistics to less densely populated urban areas. The regeneration of Barcelona's *Port Vell* **[Fig. 22]** and its waterfront stands as a testament to such transformative endeavors, initiated in the 1990s following the shift of transshipment activities to the new commercial and industrial port stretching from the slopes of Montjuïc to the airport. In the context of this paper, it is pertinent to focus on the transformations of the old port (*Port Vell*) rather than delving into the plan for the *Barceloneta* and *Poble Nou*. Under the guidance of De Solà-Morales, two pivotal interventions were proposed: a new "balcony" to the city, featuring expansive outdoor public spaces with cafes and pavilions, and a lower level

designated for subterranean parking and thoroughfare traffic. De Solà-Morales's vision was to create a porous open area around the old port, integrating a system of quays that would serve as extensions of the terrestrial pedestrian pathways **[Fig. 23]**. Nevertheless, the aspirations for a comprehensive reorganization encountered governance challenges, as the Port Authority agreed only to the modifications of the piers themselves, not the broader envisioned reorganization. This juncture marked a pivotal phase in the urban regeneration of *Port Vell*, with the introduction of the American real-estate developer Enterprise Development Corporation's concept of a "fun city" on the *Moll d'Espanya*. This concept encapsulated a shopping mall ("Maremagnum"), an aquarium, and, notably, a hill constructed to facilitate vehicular access to the pier's natural cul-de-sac. This hill, however, disrupted the ambitious vision of maintaining a visual continuum between the *Barceloneta* and the waterfront extending to Parc Diagonal Mar (Meyer 1999). Kenneth Frampton critiqued this development as embodying a "Neo-Haussmannian approach," aligning with the nineteenth-century urban design principles of flow and capital, yet it obscured these elements beneath stone arches, camouflaging the concrete structure of the highway **[Fig. 24]**.

Fig. 22 – Image of the *Port Vell* with the pier of *Moll d'Espanya* and palm tree-lined *Moll de la Fusta*.
Source: Ajuntament de Barcelona.

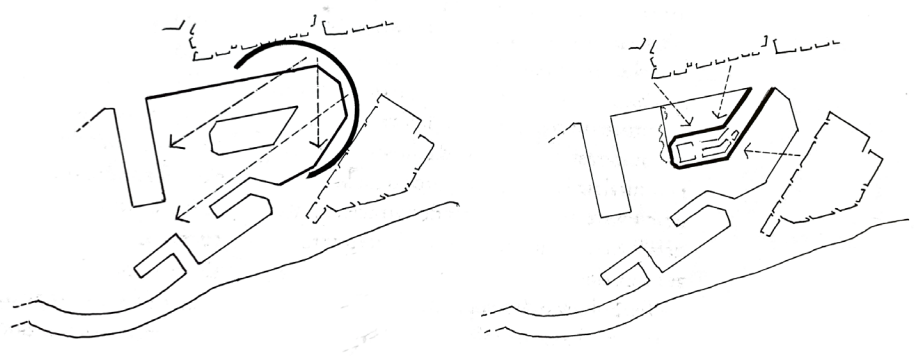

Fig. 23 – Design concept for *Port Velle*. (Left) Original concept of *Port Velle* with its emphasis on the circularity and openness of the port; (Right) *Port Velle* after completion with the central emphasis on the *Moll d'Espanya*. Source: Meyer, Han. 1999.

Fig. 24 – Image of the *Moll de la Fusta* with its subterranean highways and arched balcony overlooking the old port. Source: Wikimedia Commons.

Barcelona's waterfront transformation has become a seminal reference for urban regeneration, guiding subsequent projects like Renzo Piano's redesign of Genoa and the revitalization of Thessaloniki's waterfront by Nikiforidis and Cuomo. These interventions share a common thread in their pedestrian-focused designs, preserving the linear essence of waterfront accessibility. This approach exemplifies how urban design can integrate functionality with aesthetic appeal, enhancing public spaces while respecting historical contexts.

In situations where the broad vision of a master plan faces geographical or ownership hurdles, building-scale interventions have showcased exceptional design ingenuity and extraordinary architectural sophistication. A standout among these, within the context of late-twentieth- and early-twenty-first-century Mediterranean urban waterfronts, is the Bibliotheca Alexandrina, designed by Snøhetta. Situated along the waterfront of Alexandria, this edifice stands as a testament to the city's deeply layered historical narrative and its continued cultural significance. Conceived and realized as a modern reincarnation of the legendary Library of Alexandria, this eleven-story structure encapsulates the ambition to meld historical reverence with contemporary architectural expression. The decision to erect such a significant cultural landmark amidst a notable absence of archaeological evidence on the selected site underscores a broader cultural and political narrative. It speaks to a global fascination with the concept of the library itself—an embodiment of knowledge and enlightenment—and the process of "Egyptianization" that appeals to both Western sensibilities and local governance priorities (Butler 2016). These developments often serve broader agendas, intertwining with political narratives and geopolitical ambitions. The Bibliotheca Alexandrina is no exception, having garnered significant support from President Hosni Mubarak, highlighting its role not just as a center of learning but as a pivotal element in Egypt's political and cultural landscape **[Fig. 25]**.

The dynamics between cultural landmarks, politics, and capitalist development find poignant illustrations in several urban landscapes of Mediterranean cities, particularly Naples and Beirut. In Naples, for example, the transformation of buildings along *Via Marina* into university and office spaces speaks to a broader narrative of institutional influence and the strategic repurposing of prime urban waterfronts. Contrastingly, Beirut's waterfront presents a stark example of how global capital influences urban development, often at the expense of cultural and public access. The city has seen a surge in foreign investment in real estate, culminating in a continuous array of steel and glass luxury towers. Some luxury developments often incorporate quasi-privatized amenities that not only symbolize opulence but also directly appropriate cultural heritage, such as semi-private lobbies built around Roman baths archaeological sites **[Fig. 26]**. The integration of cultural heritage into the realm of private luxury underscores a troubling trend where invaluable historical and cultural assets are commodified, contributing to the gentrification and alteration of urban identities. It starkly delineates the divide between the elite, who enjoy privileged access to cultural heritage repurposed as amenities, and the broader population, which contends with housing affordability and quality challenges.

Fig. 25 – The Bibliotheca Alexandrina with its massive tilt disc dropping four floors below ground. The complex was built over land donated by the University of Alexandria and strongly supported by President Mubarak. Source: Modlar.com.

In sum, the evolution of water-facing streetscapes—especially between ports and urban environments—has been the key focus of urban design literature. By inscribing these water-protruded changes into more inward-looking perspectives, new considerations of the audiences and politics would emerge, going beyond a mere spatial consideration of architectural ingenuity and celebration of the progress of design.

Fig. 26 – The Roman baths in Saifi 616 - Gemmayze (Beirut). Photo by author (July 2022).

1.3.3.3. Unveiling the Invisibility of Transportation, Sewage, and Energy Conduits

Often invisible yet profoundly impactful, the dynamics beneath the ground frequently act as the primary drivers in shaping surface-level urban strategies and structures. This principle has historically guided the development of sewage infrastructure, underscoring how subterranean space utilization not only rationalizes surface interventions but also leaves a lasting imprint on contemporary urban landscapes. The establishment of sewage systems and rainwater management solutions became imperative in the late nineteenth century, particularly in low-lying, overcrowded neighborhoods amidst the prevailing challenges of cholera and other epidemics. This transformation is vividly documented in historical images from *Corso Umberto I* in Naples and *Via Layetana* in Barcelona, highlighting the extensive work undertaken.

In Naples, the "Risanamento" operation was inherently tied to the city's public health concerns, as evidenced by meticulous studies of the sewage network constructed beneath the *Corso Umberto I* and adjacent streets. Equipping the city with such a subterranean infrastructure was deemed by some as the primary objective, while others viewed it as a mechanism to facilitate socio-technological advancement in the port-adjacent neighborhoods. Since the late 1990s, the technology-rich soil of this area has been the focus of major excavation projects for the development of subway lines, which conformed to the path laid out by the "Risanamento" along *Corso Umberto*

I. After more than two decades of construction, the *Duomo* station—located in the iconic and symmetric *Piazza Nicola Amore*—was inaugurated in August 2021.

The construction of the subway in Naples draws parallels with Barcelona's *Via Layetana*, though the Spanish example boasts a richer array of subterranean infrastructures established in the early twentieth century. Historical photos and drawings of *Via Layetana* depict two tunnels designated for an underground metro alongside service tunnels for sewage and pipes, illustrating a comprehensive subterranean network. Of the six tunnels proposed in the final project, construction of the two central ones commenced on July 30, 1911, driven solely by municipal initiative despite the absence of a clear plan for their use or a company to manage their operation. To navigate these uncertainties and solidify its urban vision, the City Council unveiled a plan for the tunnels in October 1913 and sought state support for a metropolitan railway concession. This collaboration culminated in the establishment of a subway line along *Via Layetana* by 1926, thanks to La Compañía del Gran Metro, connecting *Urquinaona* station *to Jaume I* station **[Fig. 27]**.

In 2022, the City of Barcelona embarked on an ambitious renovation of *Via Layetana*'s streetscape, driven by the need to inspect the complex network of human-made cavities and the ongoing maintenance challenges associated with electricity, natural gas, and water pipelines. This comprehensive renovation is designed to update the subterranean infrastructure, broaden sidewalks, minimize lanes for private vehicles, and introduce new pedestrian areas to reflect contemporary urban mobility trends. Furthermore, the project aligns with the city's goal to enhance its green canopy, planning for the introduction of jacaranda trees in newly viable areas thanks to the subterranean modifications, including space for roots to grow. The complexity of these updates is heightened by *Via Layetana*'s role as a hub for numerous companies, insurance firms, and banks, necessitating the creation of a temporary utility network to facilitate repairs of the old cables and structures. Both the Naples and Barcelona cases underscore the concept articulated by Hommels regarding the obduracy of urban networks—how their deeply entrenched nature not only shapes but also challenges contemporary urban development.

Fig. 27 – Construction works in *Via Layetana* (1912). Source: Author unknown (Wikimedia Commons).

Subterranean sewage systems and mobility tunnels represent just a fraction of the technological infrastructure woven into the fabric of port city neighborhoods. Beyond these, in cities where the oil industry plays a pivotal role, an intricate network of both underground and aboveground tunnels for transporting oil and natural gas becomes integral to the urban infrastructure. This complex web of energy conduits benefits significantly from proximity to ports, facilitating the reception and distribution of these critical resources. However, the operation of such networks is often entangled with geopolitical complexities. In the Eastern Mediterranean, for example, disputed maritime boundaries over gas fields —such as those among Cyprus, Turkey, and Greece—add layers of complication to managing and utilizing these resources and planning land-based facilities in port areas.

Large energy facilities and storage units, like the ones in the port of Vasiliko in Cyprus, are typically situated away from major urban centers to mitigate potential environmental and health risks. Nonetheless, the proximity of refineries, such as those in Gela (southern Sicily) and Porto Marghera (Venice), to populated areas continues to

ignite debate over the ecological and health impacts of their operations. Despite these concerns, ports remain indispensable nodes in the global network of energy extraction and distribution. A prime example is the Transmed pipeline, which transports natural gas from Algeria to Sicily, making its European entry through the port city of Mazara del Vallo. This infrastructure not only underscores the strategic importance of ports in global energy flows but also illuminates the complex interplay between invisible technological ingenuity and geopolitical dynamics **[Fig. 28]**.

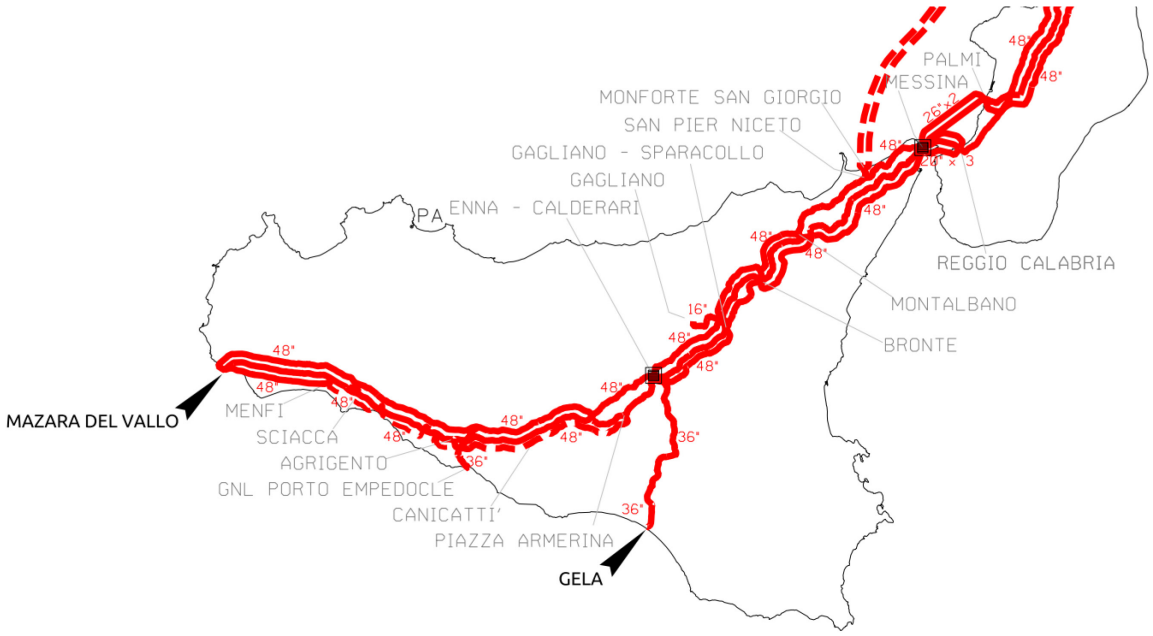

Fig. 28 – A cartographic excerpt depicting the Transmed gas pipeline's entry into Sicily at Mazara del Vallo and its subsequent distribution via the national pipeline network. Source: SNAM.

1.3.4. Poverty

Port cities frequently serve as vivid examples of economic disparity and social stratification, with the juxtaposition of wealth and poverty often most visible in their urban cores.

Historically, port cities emerged as vital nodes of commerce and labor, drawing workers to their shipyards, docks, and warehouses. In the early stages of their growth, these urban centers thrived on manual labor, but as technological advancements led to the automation of port operations, many workers found themselves displaced. This shift left those who had settled in port-adjacent neighborhoods without employment, compelling them to

remain in close proximity to the ports in hopes of finding work. Consequently, these areas became densely populated enclaves of low-income families situated at the heart of the city.

Economically, the wealth generated by port activities and related industries is often unevenly distributed, accentuating economic inequalities within these cities. Social dynamics in port cities further compound these challenges. The promise of employment and a better life in a new country attracts a diverse mix of immigrants fleeing extreme poverty and wars. However, newcomers often encounter substantial obstacles, including discrimination and integration barriers, which hinder their ability to secure quality housing and employment.

This section delves into the intricate processes of environmental inequalities that have profound impacts on the urban fabric of Mediterranean cities. It focuses on the diverse challenges related to environmental degradation, the privatization of public spaces, and the subsequent ruination and decay of once-thriving urban areas. Moreover, this discussion extends to physical and spatial inequalities that have become breeding grounds for socio-economic challenges, often overlooked or disregarded by both public authorities and private enterprises, whose priorities lie elsewhere, more precisely, on the waterfront. These challenges encompass a range of issues, including housing shortages, limited access to education, segregation of migrants and refugees, escalating criminal activities, and the erosion of vibrant street commerce. This section aims to shed light on the multifaceted nature of socioeconomic exclusion. Through a series of examples from Mediterranean cities, I seek to highlight the critical need for a comprehensive understanding of environmental and socioeconomic inequalities as intertwined elements that are the product of historical legacies and contemporary negligence.

1.3.4.1. A Sea of Crumbling Cities

In November 2018, eight people, including a mother from the Comoros and residents from Tunisia and Algeria, died when two buildings collapsed in the run-down area of Noailles in the old port area of Marseille. Data from 2021 reveals that in the historic center of Marseille, seventy-seven buildings were at risk of imminent collapse (*en péril imminent*), and 210 were in dangerous structural conditions (*en péril*) **[Fig. 29]**. Between 2019 and 2021, the city took precautions to ensure safety by installing scaffolding and installing fencing around the outdoor spaces of 156 buildings. The incredible diversity of this central yet statically perilous neighborhood reinforced how the use of Marseille as the gateway from France's colonial empire has then “brought the French empire home” and relegated it to its most poorly kept neighborhoods (McDonnell 2020). In other words, endless recycling and reshaping of colonial logics inherited from the infrastructure of the empire and of the port are still felt in the city

through its striking dissonances: on the one hand, the ongoing traumatic series of crumbling buildings (mostly killing low-income migrant communities) and on the other end the glamourous star-architect-designed landmarks and office towers of the *Euroméditerranée* **[Fig. 30]**.

Fig. 29 – A cartographic representation of the distribution of seventy-seven buildings at imminent risk of collapsing (red) and 210 in unsafe structural conditions (orange) in Marseille. Source: author. Data from Arrêtés de mise en sécurité (péril) - Marseille.fr, compiled and released by Julien Vinzent (independent journalist at Marsactu).

In April 2023, yet another case of death occurred due to poor building maintenance of the *logement insalubre* in the central Rue de Tivoli (City of Marseille 2024). Marseille, in general, has had a long problematic history of poor housing conditions: eight people were killed in a building collapse in 1981, five in an explosion in 1985, and four in a 1996 gas blast that demolished a seven-story building (The Guardian 2023). Moreover, the impact of these deteriorating building conditions is profoundly evident in the public realm. The city has taken to demarcating public spaces and sidewalks adjacent to buildings deemed structurally unsound with a *périmètre de sécurité*. This classification necessitates the deployment of support structures and concrete barriers to encircle sidewalks, ostensibly as a precautionary measure. However, this approach, coupled with delayed intervention, has led to a lasting fragmentation of the network of public spaces and sidewalks **[Fig. 31].**

Fig. 30 – Posters and banners from the street of Marseille. (Left) The skyline of new development (including the Zaha Hadid–designed tower on the waterfront) and city landmarks are pictured towering over the crumbling ruined buildings of Marseille's dense historic core; (Right) Banners calling for the renovation of the historic core while not expelling and displacing its residents. Photos by author (November 2021).

Fig. 31 – Crumbling buildings in Marseille. (Left) Concrete barriers delimiting buildings in poor static conditions and adjacent sidewalks. (Right) Administrative document signaling a building in poor static condition and the area to be secured on the street. Photos by author (November 2021).

Urban decay is not confined to Marseille alone; it is a pressing issue that many cities across the Mediterranean Basin are grappling with. The challenges of chronic disinvestment, segregation, and housing obsolescence threaten the integrity of historic districts and jeopardize the well-being of thousands of low-income communities. In Algiers's *casbah*, for example, out of 1,816 buildings currently standing, 40% are deemed to be in a critical state or in ruins, while 10% are boarded up, as reported by the National Agency for Safeguarded Sectors (ANSS). A staggering total of 373 buildings have collapsed entirely. Overpopulation exacerbates the situation, hindering conservation efforts as individuals occupy these precarious buildings in anticipation of rehousing solutions.

While in Algiers, the urban decay crisis predominantly affects eighteenth- and nineteenth-century structures that have been overshadowed by layers of Haussmannian and modernist development, Alexandria, Egypt, faces a broader spectrum of housing dilapidation that even encompasses buildings constructed as recently as the 1970s. The Arab Reporters for Investigative Journalism, a non-profit organization based in Egypt, reported that out of the 846 collapsed buildings documented between 2014 and 2020, approximately 300 were located in the city of Alexandria **[Fig. 32]**. Further, the Egyptian Central Agency for Public Mobilization and Statistics indicates that

of the approximately 14.5 million residential units in Egypt—including tower blocks, buildings, villas, and rural homes—about 100,000 are classified as irreparable and "dangerous buildings," necessitating their demolition.

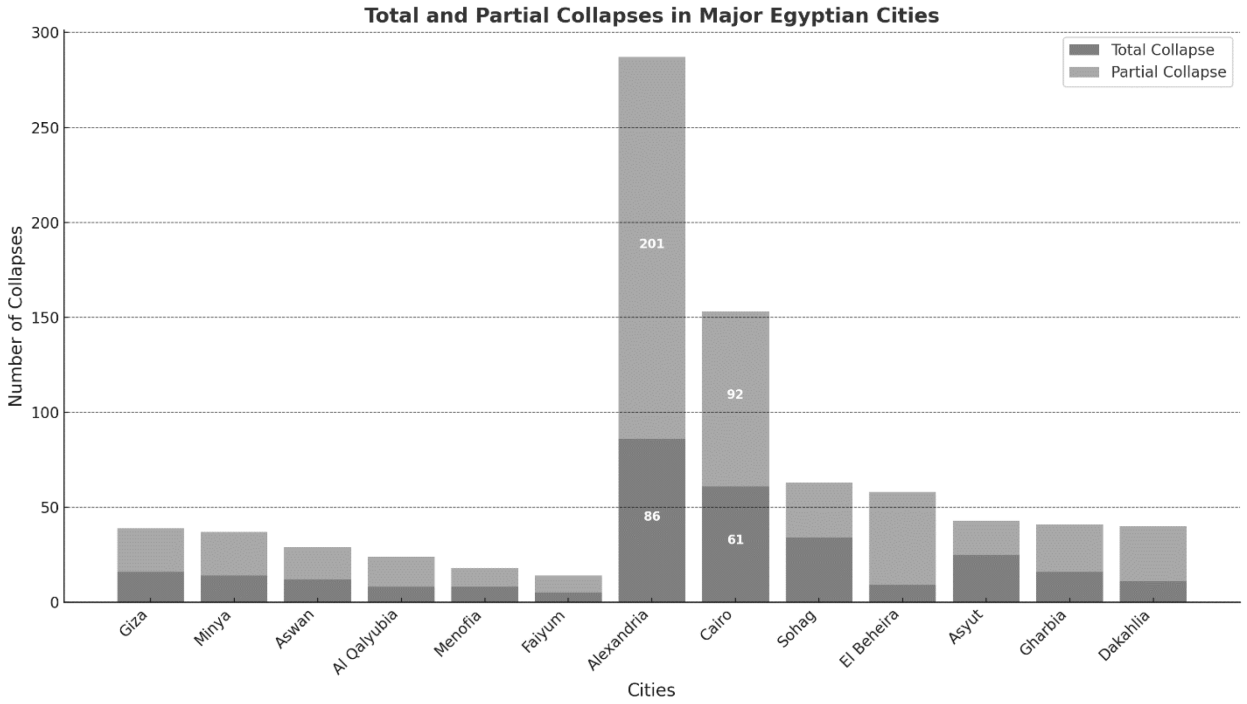

Fig. 32 – Diagram of building collapse incidents in Egypt between 2014 and 2020 according to data compiled by the Arab Reporters for Investigative Journalism (ARIJ). The port city of Alexandria ranks first for the number of total and partial collapses. Source: author. Data from Arab Reporters for Investigative Journalism (ARIJ).

1.3.4.2. Exclusionary Processes and Marginalization

The deteriorating state of the historical urban fabric in port-adjacent neighborhoods, compounded by often lax preservation regulations, exposes these areas to the risk of speculative real estate activities. This trend has been particularly noticeable in several port cities along the North African and Middle Eastern coasts, mirroring patterns observed in the 1970s in Italy, Greece (notably Thessaloniki), and Spain, where residential condominiums proliferated along the coastlines of major cities. Recent instances in cities like Barcelona and Marseille align with the broader narrative of neoliberal development strategies. The transformation of the urban landscape, a highly lucrative endeavor for developers, is not the sole challenge these cities face. The phenomenon of "touristification" is exacerbating the ongoing housing shortage as historic city centers in Barcelona and, more recently, in Palermo, Naples, and Marseille experience a relentless surge in short-term rental listings **[Fig. 33]**.

Overtourism is fundamentally altering the residential fabric and commercial dynamics of these historic cores (Ignaccolo, Zheng, and Williams 2023). Traditional small businesses catering to the needs of permanent residents are increasingly being supplanted by a proliferation of homogenized souvenir shops and clichéd food outlets tailored to the growing tourism population, often accommodated in short-term rentals. This commercial homogenization, driven by the demands of transient tourist populations, erodes the unique character and livability of these urban areas, underscoring the need for balanced development policies that safeguard the historical and social integrity of city centers (Milano, Novelli, and Cheer 2019; Loda, Bonati, and Puttilli 2020). Moreover, a recent study conducted in the city of Barcelona has highlighted significant health implications related to the pressure of tourism: permanent residents of overtouristified areas are more susceptible to chronic stress, depression, and sleep deprivation (Sánchez-Ledesma et al. 2020).

The complexity of this phenomenon has been eloquently illustrated in a recent doctoral dissertation in anthropology at UCLA based on an extended ethnographic fieldwork of the city of Palermo (Palma 2021). The author frames the ongoing touristification of the city within a complex scenario of real estate investors, low-income residents, and migrant communities. Residents with limited economic opportunities engage in the informal sector, striving to benefit from the tourism boom (e.g., repurposing of street vending stations for takeaway food and impromptu cocktail bars). Migrants, tasked with performing the city's most undervalued jobs as described by Booth and Cole (1999), are finding ways to carve out niches for themselves amidst precarious conditions while facing threats from persisting and new forms of local organized crime (e.g., traditional Sicilian mafia organizations or newly settled Nigerian gangs). Meanwhile, the urban elites, who largely view tourism as a blessing for the city (and their pockets), are divided over the vision of Palermo as an “open city” welcoming migrants versus an embellished tourism heaven requiring a complete shutdown of its ports.

In the city of Palermo, as in Naples and other southern European cities, gentrification processes and changes in the use and the form of the housing stock often happen behind those grand veils of proclaimed development constructed in water-facing neighborhoods. Gentrification and neoliberal policies are, chronologically, the last-to-arrive phenomena in contexts of alarming structural poverty. For example, the historic center of Naples faces an alarming poverty rate, where a zip code in the neighborhood of Mercato has been ranked as the lowest household income urban neighborhood in Italy (with less than €12,000 a year). The absence of education infrastructures and extremely high dropout rates across all levels of education also compound processes of socioeconomic exclusion.

Fig. 33 – Images from Barcelona's El-Raval neighborhood. (Left) Graffiti calling for more *pistas* (basketball courts) and fewer tourists; (Right) Poster from a local activist group raising awareness on the speculation of Al Raval in Barcelona. Photos by author (November 2021).

In conclusion, examining the transformation of port-adjacent neighborhoods through the notion of *behindness* reveals that national and local governance strategies, alongside design interventions, frequently resulted in the physical eclipsing of deteriorating built fabric and underserved communities. This attitude has left the urban poor living behind waterfront spaces in conditions of neglect amidst the degradation that remains untouched and hidden by facades of proclaimed urban renewal. A remarkable example of this process is offered by the city of Naples, where the late-nineteenth-century urban incision of *Corso Umberto* and the 1960s redevelopment of *Via Marina* effectively concealed an interstitial area characterized by decaying, obsolete buildings and today's home to vulnerable communities of migrants and low-income Neapolitans. This area, hidden from view by grand urban projects, suffers from high unemployment rates, peaking at 52% (2021), and an exceptionally high population density. Neighborhoods with these physical and socioeconomic conditions follow the so-called principle of less resistance: lack of tenure and fragmented ownership make local communities more prone to displacement, often perpetuated through radical changes in the urban form of cities or mediated through digital technologies (e.g., platform urbanism). Moreover, proximity to port infrastructure has had an undeniable effect on the dependency on job provision and environmental inequalities due to proximity to pollutants emitted by water-facing industrial facilities, large container vessels and passenger ships, or highly trafficked urban highways.

1.4. Conclusions

Waterfronts have served as the nodes of urban transformation for centuries and will, arguably, continue to do so (Desfor 2011). This is particularly true considering the climate crisis, as coastal cities and low-lying neighborhoods—home to approximately 3 billion people—are on the climate change frontline. Whether through *outward-projected* port infrastructures, ecological resilient projects for water's edges, or *inward-focused* urban needs, water-facing neighborhoods will continue to act as arenas of spatial tension and, hopefully, cohesion between public and private stakeholders from global, regional, and local levels (Norcliffe, Bassett, and Hoare 1996).

The framework delineated in this paper invites a critical reevaluation of how modernization processes in waterfronts and the port economy of cities have impacted the spaces and communities *behind* urban waterfronts. Examining these changes through the lenses of power (*governance schemes*), progress (*mechanisms and ideals*), and poverty (*socioeconomic effects*) ties the concept of Haussmannization to specific localities and encourages in-depth historical contextualization and a critical interpretation of spatial inequalities.

On a methodological note, the framework encourages scholars to measure cities' morphology, map socioeconomic changes over time at a granular level, and delve into the governance complexity of public and private institutions. This methodological framing reveals how reconstruction efforts, while aimed at modernization, have created spaces of exclusion, often reinforcing problematic aspects of the past. The scarcity of highly granular inequality measurements, as Savage points out, poses significant challenges to understanding these dynamics (Savage 2021). The difficulty in acquiring and interpreting spatial data, compounded by the shifts in administrative boundaries, underscores the complexity of studying spatial inequalities related to physical forms and changes in socioeconomic compositions over time. As an effort to address these analytical challenges, I have advanced a study of Naples's urban incision of the late nineteenth century to determine whether the large-scale demolition of its historic core has contributed to "locking" marginalization in contemporary Naples (paper #2 of this dissertation). Similarly, in Beirut, I have uncovered the cartographic invisibility of craftspeople throughout the multiple reconstructions of its water-facing neighborhoods with the goal of linking their presence to configurations of urban form (paper #3 of this dissertation).

This paper also calls for a new perspective on urban transformation in port cities, one that critically assesses the remaking of waterfronts and linear development in affecting the physical obsolescence of the built fabric and the marginalization of vulnerable communities. In examining the evolution of spaces *behind* Mediterranean urban waterfronts, this paper points to research directions and framings beyond the set of examples underscored in this work. Haussmannization is, in fact, a global phenomenon. The case of the San Francisco Housing Authority on the North Beach industrial waterfront with its Italianate housing project bearing the "colors and feelings of the Mediterranean" [3] (Vale 2018), the erasure of District Six in Cape Town, and the enforced displacement of its vibrant community with close links to the port (1966–1980), and the strip of office towers, malls and parking lots (1970s) separating Jeddah's crumbling *Al Balad* from the port **[Fig. 34]**.

Fig. 34 – Images of Jeddah and Cape Town. (Top) Crumbling *Al Balad* in Jeddah viewed from the rooftop of a late-nineteenth-century building; empty fields in the water-facing hills of Cape Town overlooking the port. This is the site where District Six bulldozed sites. The two sites would belong to the spatial categories of "cordon sanitaire" and "tabula rasa." Photos by author (Jeddah, April 2018; Cape Town, August 2023).

In conclusion, a human-centered longitudinal perspective on Haussmannian practices from the late nineteenth century to mid- to late twentieth century cannot prescind from introducing twenty-first-century so-called Neo-Haussmannization and Climate Haussmannization as the most recent products of Haussmanniuan progeny. More precisely, the concept of Neo-Haussmannization has been recently employed in the urban studies literature to explain how the imageries of development behind the grand boulevards of the nineteenth century and the

[3] Source from Vale's *After the Projects: Public Housing Redevelopment and the Governance of the Poorest Americans*. Housing Authority of the City and County of San Francisco, Road to the Golden Age: A Report on the First Twenty Years of Operations, 1940 to 1960

multilane urban highways of the twentieth century have morphed over time. Twenty-first-century Haussmannian forms have reincarnated into energy pipelines and conduits of information and communication (e.g., optic fibers and servers). These pathways, increasingly embedded within both the digital and the physical world, underscore the lingering trope of Haussmannian ideals on urban landscapes, albeit in forms adapted to meet the demands of contemporary urban life (Merrifield 2015). Similarly, on an environmental level, the ongoing processes of Climate Haussmannization—defined by Lamb and Khirfan (2023) as a system of "inequity-deepening interventions in the name of climate action"—serve as a stark reminder of the urgent need for methodologies that not only embrace interdisciplinary expertise but also prioritize social equity in the face of rapid urban development and climate change uncertainty.

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CHAPTER 2

THE MASKING OF INEQUITIES IN NAPLES: CONSTRUCTING THE INVISIBILITY OF THE POOR SINCE THE NINETEENTH CENTURY

Urban incisions—characterized by wide linear demolitions and boulevard-shaped reconstructions—have profoundly reconfigured cities' physical and socioeconomic landscapes since the nineteenth century. Comprehending the enduring repercussions of these often-contested interventions poses a challenging task due to the intricate choreography of institutional actors, the scarcity of longitudinal spatial datasets, and methodological shortcomings in planning history.

This paper addresses these challenges by advancing a spatial history investigation of the enduring legacy of the late-nineteenth-century urban incision (*Rettifilo*) bisecting Naples's water-facing neighborhoods. It employs computational humanities and historical GIS techniques to shed light on the design politics of masking the urban poor and the spatial inheritance of social exclusion in the spaces behind Naples's 2km-long boulevard. In this paper, I use archival administrative documents, extract urban morphology features from historical maps, and mine data from longitudinal socioeconomic records.

This research provides empirical evidence of how Naples's urban incision masked and isolated vulnerable communities and neighborhoods with precarious living conditions. It demonstrates that promised gains in public space coverage were never realized, overcrowding persisted in less visible areas, and topography was manipulated to eliminate previously-available ground-level affordable housing. Most importantly, this research exposes enduring inequities resulting from centuries-old design interventions in contemporary communities, revealing the connection between forms of linear development and socioeconomic exclusion.

2.1. Introduction

"We must disembowel Naples" (*Bisogna sventrare Napoli*). With these words of disdain, Agostino Depretis, the left-wing Prime Minister of Italy, reacted to the 1884 cholera outbreak in Naples that took thousands of lives.[1] In the name of modernity and in the interest of public health, Depretis, and its Government, with the support of the King of Italy Umberto I, issued a "Special Law for the Healing of Naples" (*Legge Speciale per il Risanamento della Citta' di Napoli – 2892/1885*). The Law provided a normative and financial apparatus to execute an unprecedented urban renewal plan (*Piano di Risanamento)* ratified by the Municipal Government and carried out by a semi-public company bearing the same name as the Special Law: *Società pel Risanamento di Napoli*.[2]

Archival records from 1889 reveal the King's most striking impressions during his 1884 visit to cholera-stricken Naples: "the enormous overcrowding of 'wretched people' in incredibly narrow places."[3] The detailed descriptions of the filthy conditions of Naples's urban spaces, together with analytical reports of sanitary engineers on the insalubrious conditions of the port-facing neighborhoods, contributed to building momentum on the urgency to "heal" (*risanare*) the city by "disemboweling" (*sventrare*) the congested urban fabric of those low-lying neighborhoods. While the notion of healing and disemboweling might appear as antithetical concepts, they were part of the same city-as-human-body lexicon and agenda. The belly, considered as an undefined mixture of food and waste or, borrowing Italianist Darby Tench's words, "a container of indigestible realities," had to be removed to guarantee good health.[4] In practical terms, to "heal" urban spaces deemed problematic and unsanitary, national

[1] On Oct.30 1884, Mayor Nicola Amore officialized the death of 12,244 people because of cholera. Archival records from the time reveal that Depretis pronounced these words right after visiting fondaci Marramarra and vico Lamie, located in the proximity of today's Piazza Bovio. See Orazio Caro, "Napoli Alla Fine Del XIX Secolo: Il Risanamento," in *L'evoluzione Igienica Di Napoli (Cenni Storici – Osservazioni e Proposte – Dati Statistici)* (Napoli: F. Gianini & figli, 1914), 40.

[2] Hereinafter, I will use the term "*Risanamento"* to identify the urban renewal plan, "*Risanamento* company" to identify the semi-public company, "'Risanamento Masking'" to identify the statical variable employed in the regression models, and "*risanamento*" to identify the ideals and urban rhetoric of healing an urban space.

[3] "Sventriamo Napoli," *Corriere Di Napoli*, June 15, 1889, Biblioteca della Società Napoletana di Storia Patria.

[4] Tench explains how Matilde Serao, the author of "The Belly of Naples," sarcastically takes Depretis's words in the most literal way (*sventrare*) to expose the real challenges of her city, largely overlooked by the "superficial descriptions" (*descrizioncelle colorite*) of Neapolitan travelogues writers of the nineteenth century. Serao writes:

> *All this rhetoric based on bays and flowering hills... All this minute and facile fragmentary literature is intended for that portion of the public that does not want to be bothered with tales of miseries. But the government should know the other side...*

Moreover, in the description of a street (Via dei Mercati), she writes about the "fetid mixture" of food and waste as a "blocked intestine":

> *It is sinuous, it twists... like an intestine... In the middle of the road, the stream is black, foul, unmoving, stagnant: it is made of lye and soap, macaroni water and soup water, a putrid mixture that putrefies.*

governments, city authorities, and engineers began an unprecedented surveyal effort to document the city's socioeconomic fabric through incredibly detailed cartographic representations, diagrams, and technical reports.

With industrial progress and the development of science—yet still under the prevalence of miasma theory[5]—epidemics were not seen as a divine curse in the nineteenth century anymore but rather as health issues that had to be addressed spatially through structural changes in overcrowded spaces with poor sanitary conditions. It should not come as a surprise that the metaphor of the human body and disease was widely used when discussing the "slum areas" in cities whose only treatment was swift extraction (*sventramento*). Boulevards, urban clearances, and large open spaces were acclaimed as "lungs" to let people "breathe" and escape the "rotten" poor housing and overcrowded courtyards. In other words, the act of "healing" urban spaces became synonymous with "cleaning," which, in turn, meant "ordering" and "controlling" the spaces prone to epidemic diseases and, often, political revolts.[6]

2.2.1. Understanding the *Rettifilo:* Forms, Politics, and Legacies

The *Corriere di Napoli*, in a June 15-16, 1889 article on the celebrations for the beginning of the *Risanamento* construction works **[Fig. 35]**, offers a succinct explanation of the plan's triple aim: 1) eradicate the *fondaci* (densely populated slums in elongated courtyards with little access to sunlight) through *1a)* the creation of a large boulevard (*Rettifilo*, straight line) and sixteen regularly shaped orthogonal streets, *1b)* the demolition of a large portion of the old city fabric and the construction of new block-wide buildings, and *1c)* the elevation of the street topography in low-lying areas; 2) de-densify the city through city expansion plans and new peripheral

See Darby Tench, "Gutting the Belly of Naples: Metaphor, Metonymy and the Auscultatory Imperative in Serao's City of Pietà," *Annali Di Italianistica* 7 (1989): 289–90.

[5] In Italy, because of the prevailing belief of the scientists' community in the miasma theory of disease, the work of Filippo Pacini, who isolated the cholera bacterium in 1854 was totally ignored. Pacini, in fact, became posthumously famous for his scientific contribution only when, 30 years later in 1884, Robert Koch became widely and erroneously credited with the discovery of the bacillus and his pioneering advancement of germ theory. See D. Lippi and E. Gotuzzo, "The Greatest Steps towards the Discovery of Vibrio Cholerae," *Clinical Microbiology and Infection* 20, no. 3 (March 2014): 191–95.

[6] Naples had a well-known reputation of being a site of major political unrests starting with the massive revolt led by fisherman Masaniello in 1647, which led to the two-year-long institution of "The Neapolitan Republic," followed by the 1799 establishment of the 5-month-long "Parthenopean Republic," and by the May 15, 1848, coup. In all these episodes, the *urban* had been fundamentally entrenched with the revolts and, even, their subsequent memorialization. *Piazza Mercato*—the largest public space in the low-lying neighborhoods of Naples—for example, was the site where all these revolts started, developed, and brutally ended with public executions and beheadings of revolutionary leaders. Moreover, Masaniello's burial in the church of Carmine was praised as a symbol of freedom during the 1799 revolt. However, when Ferdinand IV reestablished his control over the city, he ordered that Masaniello's remains be dispersed and lost forever. Today, in the church of Carmine, a marble plaque commemorates this event "as a removal motivated by political reasons of a despotic king."

neighborhoods (including areas for subsidized housing, *case economiche*); and 3) implement a brand-new sewerage system taking advantage of the topographical alterations and new building typologies.[7]


SUPPLEMENTO AL N. 165 DEL

SABATO—DOMENICA 15-16 GIUGNO 1889

corriere di NA

AI NOSTRI LETTORI

SEMESTRE L. 6

UN ANNO L. 12

LA NUOVA NAPOLI

COMM. NICOLA AMORE

LA STORIA DEL RISANAMENTO

I progetti

Il progetto del risanamento de' bassi quartieri

LA CAZZUOLA DELL'INAUGURAZIONE

IL MARTELLO DELLA PRIMA

Fig. 35 Excerpt from the Corriere di Napoli (June 15–16, 1889) with articles on the celebrations for the beginning of the *Risanamento* construction works. Source: *Società Napoletana di Storia Patria*. Photo by author (June 2022).

[7] "I Progetti," *Corriere Di Napoli*, June 15, 1889, Biblioteca della Società Napoletana di Storia Patria.

Within the physical and socioeconomic agenda of the masterplan, the *Rettifilo* acted both as an iconic representation of modernity through a renewed architectural lexicon of Haussmannian aesthetics and as a machine for socio-technical engineering. To make space for this city-wide machine, Adolfo Giambarba and Gaetano Bruno—the city-employed engineers responsible for conceiving the physical forms of the *Risanamento* plan under the leadership of Mayor Nicola Amore—advanced a series of major urban form reconfigurations. For example, existing landmarks were isolated and cleaned up from their surrounding built fabric with the intention of fitting them within extended axial views in the "railway station–stock exchange" corridor. Moreover, the obliteration of the *bassi* (ground-level dwellings) through street-leveling maneuverings and the uprooting of the *fondaci* through surgically built lines of grandiose yet thin facades would have allegedly created a conduit for the circulation of light and air into the old neighborhoods of Naples. In other words, the *Rettifilo* was designed as a vehicle for both sanitization and modernization, whose forms "functioned to absorb the old city of Naples into the body politic of the Italian nation."[8]

The *miasma-contagionist-plan*[9] of Naples was described—and even celebrated by the soon-to-be-displaced thousands of Neapolitans living in the historic city[10]—as an act of urban purification and adherence to "the morals of the population." [11] Natural elements, such as the fresh marine breeze blowing from the Tyrrhenian Sea, were brought into a narrative of urban healing, salubrity, and hygiene.[12]

> *The main road links to the intersecting streets in a typical fashion, leading towards the Marina as the primary source of ventilation for the upstream areas. This is due to the dominant offshore winds from*

[8] Andrea Bagnato, "WE MUST DISEMBOWEL NAPLES!," *AA Files*, no. 77 (2020): 39–43.

[9] Frank M. Snowden, "Rebuilding: Medicine and Politics," in *Naples in the Time of Cholera, 1884–1911*, 1st ed. (Cambridge University Press, 1995), 185–90.

[10] According to Russo (1960), chronicles from the inauguration describe enthusiastic and joyful residents crowding the streets around the piazza where the construction of the *Rettifilo* commenced. In Italian, he wrote "...traboccano dell'entusiasmo e del giubilo dell'onda immense e festante di gente, che si accalcava e straripava dalla via di Porto fino alla piazza." Giuseppe Russo, *Il Risanamento e l'ampliamento Della Città Di Napoli* (Napoli: L'Arte tipografica, 1960), p.282.

[11] Municipio Di Napoli, "Relazione Sul V Censimento Generale Della Popolazione e Sul Censimento," 1912, Biblioteca di economia, statistica e scienze sociali Paolo Conca.

[12] The olfactory descriptions provided in the official documents of the plan totally disregard the dense network of small industrial activities, such as tanneries and textile workshops, located along the coastal neighborhoods. In Naples, differently from other cities planning *ad hoc* areas to accommodate the spaces of the industrial revolution, sites of production were carved within its layered urban fabric. See Roberto D'Arienzo, "La Prima Industrializzazione e La Stratiicazione Del Corpo Urbano Plurimillenario," in *I Resti Della Citta': Napoli e La Metabolizzazione Delle Cose e Dei Luoghi (XIX e XX Secolo)* (Milano-Torino: Pearson Italia, 2019), 80–81.

the Gulf [...], which can infiltrate not only between the newly constructed buildings but also around the older ones, ultimately purifying the old city fabric.[13]

What was lacking in the invention of the *Rettifilo* and its appendage of partially executed subsidized housing stock was a much more in-depth sociological and anthropological understanding of how the quality of life of those inhabiting the spaces included in the *Risanamento* plan would have improved. The paternalistic approach to poverty and the dehumanization of the slum dwellers is palpable through the archival documents in which displaced people remain classified as numbers whose stories, jobs, and social networks are still largely unknown. The gridded neighborhood constructed on the city's eastern swamps 120 years ago with the largely failed goal of accommodating the displaced today is still referred to as Case Nuove (new housing). Paradoxically, this terminology dramatically reveals how forms of adequate housing have been long overdue in a city that still suffers from urban poverty, unemployment, and social exclusion.[14]

The city of Naples today remains in a highly liminal condition. On the one hand, it experiences a growing tourism economy boosted by a busy cruise port, star-architects have redesigned its central subway stations and public spaces around the medieval *Castel Nuovo*, and the city boasts a (temporary) pedestrianized waterfront—right below the wealthy neighborhoods of Chiaia and Vomero—with the picturesque backdrop of the Vesuvius and the Sorrento peninsula. On the other hand, the city has long been the victim of ruthless land grabbers, real estate speculators, and spatially induced exclusions, resulting in services-deprived peripheral ghettos (e.g., The Sails of Scampia, *Vele di Scampia*) and pockets of poverty[15] in the historic core with their low-cost-dwellings often in severe physical decay.[16] While a thorough examination of post-war housing policies and their effects on underserved residents at the metropolitan scale would deserve its own extended exploration, this study remains focused on Naples's water-facing neighborhoods as sites of quasi-paradoxical neighborliness of opulence and

[13] Municipio Di Napoli, "Atti Della Commissione Incaricata Di Studiare e Proporreil Piano Generale Delle Opere Di Risanamento Della Citta'," 1885, Archivio Salita Pontenuovo.

[14] Enrica Morlicchio and Enrico Pugliese, "Naples: Unemployment and Spatial Exclusion," in *Neighbourhoods of Poverty: Urban Social Exclusion and Intergration in Europe / Edited by Sako Musterd, Alan Murie, Christian Kesteloot*, ed. Sako Musterd, Alan Murie, and Christian Kesteloot (Houndmills, Basingstoke, Hampshire; New York: Palgrave Macmillan, 2006).

[15] The central zip codes of Mercato and San Lorenzo have recorded in 2022 the lowest median household annual income among Italy's urban areas (approximately, 12,500 Euro). See Claudio Mazzone, "Napoli è La Città Più Povera d'Italia: La Mappa Dei Quartieri. A San Lorenzo Il Reddito Medio Annuo è Di 12 Mila Euro," *Corriere Del Mezzogiorno*, June 8, 2023.

[16] Serena Vicari, "Naples: Urban Regeneration and Exclusion in the Italian South," *European Urban and Regional Studies* 8, no. 2 (April 2001): 103–15, https://doi.org/10.1177/096977640100800202.

neglect. Residential high-rise condos, corporate towers, and university buildings are being developed along the port coastline marked by a highly trafficked multi-lane roadway (*Via Marina*), separating the city from its port. On the inland side, behind the waterfront, a patchwork of eighteenth-century tuff-made buildings[17] persists in a series of interstitial spaces with often precarious structural conditions left untouched by multiple waves of modernization. These structures have endured behind the urban veneer of the *Rettifilo* (1889–1920), have resisted the Fascist-era redesign of Naples's waterfront (1939), and have survived ruthless real-estate maneuvering perpetuated by greed-driven developers in the 1960s, such as those masterfully illustrated in the movie "Hands Over the City" directed by Francesco Rosi (1963) **[Fig. 36; Fig. 37]**. These buildings, and, most importantly, the communities inhabiting them, are the focus of this paper: their dichotomic connotation as *loci* of housing affordability and sites of structural poverty throughout the past 140 years raises potent questions about who gains from the modernization of waterfronts and who does not **[Fig. 38]**.

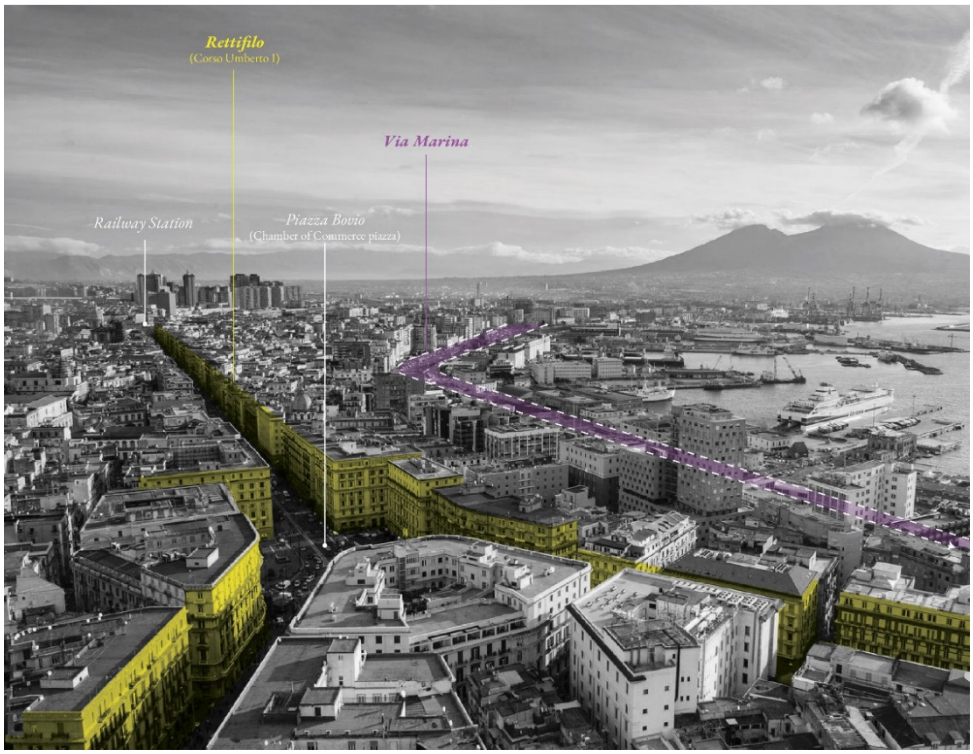


Fig. 36 – Annotated aerial view of the study area, showing the relationship between the *Rettifilo* and the waterfront. Annotated aerial view of the study area, showing the relationship between the *Rettifilo* and the waterfront. Source: author. Image by Susan Wright (National Geographic).

[17] The Neapolitan yellow tuff is the building material mostly used in historic architecture in Naples (Italy). This material is a macroporous rock of volcanic origin containing different amounts of pumice, zeolites, analcime and feldspar. See A. Colella et al., "The Neapolitan Yellow Tuff: An Outstanding Example of Heterogeneity," *Construction and Building Materials* 136 (April 2017): 361–73, https://doi.org/10.1016/j.conbuildmat.2017.01.053.

Fig. 37 – Classification of urban typologies in contemporary Naples. The map includes a series of spatial references: a) *Castel Nuovo*; b) *Piazza del Municipio*; c) *Piazza Bovio* (Chamber of Commerce); d) *Piazza Nicola Amore* (known as Piazza dei Quattro Palazzi); e) *Piazza Garibaldi* (Railway Station); f) *Piazza Mercato*; g) *Case Nuove*. Source: author.

2.2.2. *Risanamento* Revisited: Contemporary Discourses and Research Avenues

Previous scholarship on the urban history and architecture of the *Risanamento* has mostly focused on its chronological historiography, architectural forms, financial challenges, and political leadership. The seminal books of Russo[18] and Alisio[19] constitute the analytical backbone for investigating the plan through the official records

[18] Giuseppe Russo, *Il Risanamento e l'ampliamento Della Città Di Napoli* (Napoli: L'Arte tipografica, 1960).

[19] Giancarlo Alisio, *Napoli e Il Risanamento. Recupero Di Una Struttura Urbana.* (Napoli, Banco di Napoli, 1980).

of the *Risanamento* company that carried it out. While the *Rettifilo* has remained the primary element of architecturally focused literature debates, recent scholarship at the intersection of city planning, history, and sociology has started moving away from the lure of the straight line. For example, the work of Manzo has contributed to a much more refined typological understanding of the subsidized housing units built on the eastern side of the city, demonstrating how those proto-forms of public housing set up a typological example for other early-twentieth-century housing projects in Italy.[20]

Fig. 38 – Pre-nineteenth-century tuff-made buildings in precarious structural conditions. Pre-nineteenth-century tuff-made buildings in precarious structural conditions. The images were taken by the author during his site visits to the water-facing neighborhoods of Naples. Photos by author (December 2022).

On a more historical planning note, Bagnato has investigated the trope of the *Risanamento* both as an urban lexicon for Naples and as a still-operating private company located in northern Italy working on large-scale masterplan projects.[21] Environmental historian Armiero has explored the remaking of the Neapolitan waterfront through the notions of sanitization and seclusion from the sea. More specifically, his work has looked at the expulsion of those working in the maritime economy—fishers, peddlers, fishmongers, oyster-sellers—from the

[20] Elena Manzo, "Il 'Risanamento' di Napoli. Dal progetto urbano alla scala architettonica" ARCHITETTURA, CITTÀ TERRITORIO: RICERCHE E RIFLESSIONI CRITICHE, no. 1 (2018): 10.

[21] Bagnato, "WE MUST DISEMBOWEL NAPLES!," 2020.

ancient fishers' village of Santa Lucia. Nevertheless, as elucidated by the architectural historian De Seta, a comprehensive understanding of the *Risanamento* in Naples is still impeded by the limited accessibility of essential cadastral documents, hindering a thorough longitudinal spatial and socioeconomic assessment.[22] To date, a thorough analysis remains elusive. Scholars, relying on publications by Russo and Alisio, often overlook that both were financed by the *Risanamento* company and the Bank of Naples (*Banco di Napoli*), entities intrinsically tied to the project. The complexity deepens with the intricate choreography of institutional actors involved, a scarcity of granular longitudinal datasets, and methodological shortcomings, collectively thwarting a comprehensive spatial examination and perpetuating gaps in the historical knowledge of this herculean urban transformation and, most importantly, its unexplored contemporary legacy.

Through this paper, I address these challenges by uncovering the relationship between urban forms and poverty in the very heart of the city through unpublished archival documents, computational humanities tools, and urban analytics techniques. I evaluate the efficacy of urban design gestures in achieving the proclaimed erasure of urban poverty and investigate the responsibility of a lingering trope of the *Risanamento* in rooting today's socioeconomic vulnerability behind the *Rettifilo*. More specifically, this research asks two sets of questions. From an urban history lens, it asks whether the *Risanamento* succeeded in de-densifying the city and how new urban forms and altered street topography levels became functional to obliterate areas of high concentration of poverty (*fondaci*). From an urban planning lens, it asks whether there is a significant spatial relationship between the *masking* of the *Rettifilo* over its adjacent buildings and contemporary demographic density values and social disadvantage.

To answer these questions, I rely on archival records and historical maps collected across six different archives (five in Naples and one in Rome) and on-site visits conducted in 2021 and 2022 to understand the nexus between enduring urban poverty and the design of the built environment in Naples's historic core. This research analyzes the city's physical development and socioeconomic variables over time. By mining urban form data from historical maps and digitally reconstructing the physical and social fabric of the city, I bring urban analytics into conversation with archival documents to convey a more complex narrative of masterplan evaluation, spatial inequities, and environmental vulnerability. More precisely, I reveal longitudinal patterns and spatial relationships between urban morphology and socioeconomic variables and provide empirical evidence of the long-term

[22] Cesare de Seta, "Dall' Unità d'Italia alla prima guerra mondiale," in *Napoli*, Nuova ed. con l'aggiunta di un inserto di tavole a colori, Grandi opere (Roma: Laterza, 1999), 264.

consequences of city making *à la* Haussmann and its persisting trope in today's urban landscape. Its primary contribution is to unravel the intricacies of city-making *à la* Haussmann and reveal how it draped a mask of rationalized order over a supposedly outdated urban area, subtly concealing its complexities and challenges.

This research primarily engages with the scholarship on urban history and spatial inequities through a digital humanities approach. In other words, it brings advanced spatial computing techniques and historical GIS methods[23] in conversation with archival data and secondary literature on city design and inequality. On a research note, this work responds to economist Edward Glaeser's call for scholars and practitioners to study cities' urban past to glean fundamental lessons for developing world cities today.[24] Challenges related to density, traffic congestion, and public health were common in imperial Rome and industrial London, just as they are today in rapidly growing cities such as Lagos and São Paulo. On an empirical note, its findings are relevant to the contemporary discourse on *unarchiving* the city[25] and the relationship between urban history and evidence-based policymaking. From an archival research standpoint, this article is in line with the contemporary "equity turn" in archival research, particularly in the context of reassessing today's built environment in relation to systemic inequities by exposing overlooked patterns and narratives. From an urban policy perspective, this research opens up policy-relevant discussions on restorative housing policies for those whose families were expelled during multiple waves of modernization and on remedies to environmental injustices such as proximity to heavy polluting industries, relocation to flood-prone areas, and uneven exposure to extreme urban heat.

This paper is structured into six sections: in the Theoretical Framing, I situate the theoretical framework of this research within Southern Urban theory and advance a conceptual framing ("masking the city") to unravel the notion of visibility/invisibility in urban settings. In the Context section, I provide a thorough historical narration of the *Risanamento* through its planning processes, implementation phases, and heated critiques. In the Data Overview and Methodology section, I introduce the datasets and analytical techniques employed in this research. In the Analyses and Findings section, I provide an in-depth understanding of the findings of the study in regard to the plan's efficacy in erasing the spaces of poverty in early-twentieth-century Naples and its contemporary

[23] Ian N. Gregory and Richard G. Healey, "Historical GIS: Structuring, Mapping and Analysing Geographies of the Past," *Progress in Human Geography* 31, no. 5 (October 2007): 638–53, https://doi.org/10.1177/0309132507081495.

[24] Edward L. Glaeser, "What Can Developing Cities Today Learn from the Urban Past?," *Regional Science and Urban Economics*, June 2021, 103698, https://doi.org/10.1016/j.regsciurbeco.2021.103698.

[25] Swati Chattopadhyay, "Unarchiving: Toward a Practice of Negotiating the Imperial Archive," *PLATFORM* (blog), June 5, 2023, https://www.platformspace.net/home/unarchiving-toward-a-practice-of-negotiating-the-imperial-archive.

implications on enduring social disadvantages and demographic density. In the Discussion section, I situate the findings of this work in the broader historiography of the city of Naples, reflecting on the persisting trope of the "urban mask." Finally, in the Conclusions, I argue that this research deepens our contemporary understanding of endemic spatial inequities through an urban design lens. I also reflect on the legacy of the *Risanamento* as an urban imagery and design attitude lingering in contemporary approaches to regeneration strategies.

2.2. Theoretical framing

2.2.1. Seeking an Urban Theory for Southern European Cities: in the Limbo between North and South

Southern European cities have been largely overlooked by overarching urban theories, leaving them as theory-orphans. Their political economy and urban processes diverge from the capitalist industry-driven paradigms of the "Global North." However, they don't neatly align with the geographies of "Southern Urbanism" associated with the Global South despite sharing similar informal dynamics and comparable infrastructural challenges. In other words, southern European cities are not northern enough to fully embrace the mainstream wisdom of recognized urban development models and not southern enough to be wholly categorized as such. Moreover, when it comes to imperialism, several southern European cities, such as Marseille and Barcelona, operated as colonial ports of their respective national empires. This role unquestionably positioned them as active protagonists in the broader global colonial discourse. However, southern European cities' colonial legacy has come to the detriment of a more in-depth postcolonial inquiry of their urban spaces through the lenses of contemporary immigration, refugee crisis, and intra-national divides.[26]

Lila Leontidou, in the 1990s, attempted to address this theoretical *lacuna* by reflecting on alternatives to modernity in southern urban theory for southern European cities. These are cities that are "based on late industrialization, a feeble bourgeoisie, and informal laborers rather than a proletariat" (1996, p.180) and are characterized by anti-planning and informality rather than zoning and Fordist factories. Through her scholarly work, Leontidou defines southern European cities as geographical, socioeconomic, and cultural *in-between* spaces

[26] Marco Cremaschi and Laura Lieto, "Writing Southern Theory from the Global North. Notes on Informality and Regulation," *Equilibri*, no. speciale (2020): 261–80, https://doi.org/10.1406/98117.

that straddle "between development and underdevelopment." [27] When comparing southern European cities with Northern ones, Leontidou advances a well-articulated argument on social segregation and urban form. She explains how zoning by-laws, lack of mixed-use areas, and economic rationalization have sown horizontal spatial segregation across Northern cities. However, in the southern urban contexts, she portrays "vertical differentiation" as a typical Mediterranean urban pattern where the intermixture of social classes is both a cause and an effect of the proximity of workplace and residence.[28] For instance, in Naples, Palermo, Athens, and Barcelona, the ground levels of some of the most opulent palaces are still occupied by some of the poorest families in the city.[29] This residential pattern results in a unique vertical porous neighborliness between the upper and lower classes that have largely endured till today (e.g., Naples's street-level residential units known as *bassi*). Attempts to subvert this spatial structure through the insertion of new built forms provoked either the homogenization of vertical socioeconomic stratifications or proved entirely misguided (for example, leading to the reversion to forms of ground-floor residential usage in spaces originally planned for commercial purposes **[Fig. 39]**).

Fig. 39 - Late-nineteenth-century building in Naples *(Via Forcella)* where a formally planned space is informally subverted to meet the needs of residents, resulting in the creation of ground-floor residential units, arbitrary opening of balconies, and blocked-up windows. Photo by author (September 2021).

[27] Lila Leontidou, "Alternatives to Modernism in (Southern) Urban Theory: Exploring In-Between Spaces," *International Journal of Urban and Regional Research* 20, no. 2 (June 1996): 178–95, https://doi.org/10.1111/j.1468-2427.1996.tb00310.x.

[28] Lila Leontidou, *The Mediterranean City in Transition: Social Change and Urban Development*, Cambridge Human Geography (Cambridge; New York: Cambridge University Press, 1990).

[29] As the paper will explain in the following sections, street-level residential units occupied by lower class residents are still quite common in Naples' streetscapes.

Leontidou's southern urban theory framework has proved successful in filling a profound gap in the urban theory discourse while also challenging dominant Northern European imaginaries of "otherness,"[30] endemic backwardness, and "resistance to modernity"[31] for cities in southern Europe. However, the alternative approach to urban modernity in her studies lacked a transnational regional dimension. Her work was still bound by the confines dictated by European nation-states. More precisely, her empirical studies—mostly focused on Greece—have not operationalized the reconsideration of southern European cities' identity and potential beyond their own states through an encompassing Mediterranean dimension. Mediterranean studies literature[32]—while often lacking in spatiality and physical planning—provides an important framework to replace the "concept of the nation with that of the transnational region as a category of imaginary and critical understanding."[33] According to philosopher Massimo Cacciari, Naples, for example, represents a different form of European modernity centered on the Mediterranean dimension of the city.[34] He theorizes the urbanity of Naples through the notion of porosity. According to him, a porous city does not advance through neat lines but through sudden ruptures and systematic rejection of overly structured planning models.[35] These space-specific urban traits are those challenging Leontidou's southern "grand narrative." Her theoretical framework risks leveling up the inherent plurality and complexity of southern Europe, whose contradictory urban development processes and millennia-long relationships with other coastal cities in North Africa and the Middle East have shaped their own identity, maritime mindset, and urban milieu. In other words, the notion of "Mediterranean Europe" is inherently flawed. This concept, formulated in the 1980s, aimed to group together four non-contiguous states—three of which had recently emerged from dictatorship in the mid-1970s (e.g., Portugal, Spain, Greece)—as part of NATO's strategic

[30] Walter Benjamin and Asja Lacis, "Naples (1925)," in *Reflections: Essays, Aphorisms, Autobiographical Writings*, ed. P. Demetz (New York, 1978), 163–73.

[31] Stephanie Malia Hom, *The Beautiful Country: Tourism and the Impossible State of Destination Italy*, Toronto Italian Studies (Toronto: University of Toronto Press, 2015).

[32] Predrag Matvejević, *Breviario mediterraneo*, trans. Silvio Ferrari, 2a ed., 7a ristampa (Milano: Garzanti, 2004).

[33] Norma Bouchard and Valerio Ferme, "The Return of the Mediterranean in Contemporary Western Thought: Old Contexts, New Approaches," in *Italy and the Mediterranean: Words, Sounds, and Images of the Post-Cold War Era* (New York: Palgrave Macmillan US, 2013), 13, https://doi.org/10.1057/9781137343468.

[34] Massimo Cacciari, "La Città Porosa: Conversazioni Su Napoli," in *Non Potete Massacrarmi Napoli!*, ed. Claudio Velardi (Cronopio, 1992), 157–90.

[35] Ruth Glynn, "Porosity and Its Discontents: Approaching Naples in Critical Theory," *Cultural Critique* 107, no. 1 (2020): 63–98, https://doi.org/10.1353/cul.2020.0012.

reshuffling of alliances. However, this artificial construction lacks durability and coherence.[36] The problematic legacy of perpetuating this geographic discourse is the endurance of an internal *otherness* and conceptualization of *border zones* at the detriment of a Mediterranean centrality.

More than 20 years have passed since Leontidou's first scholarly contributions to "southern urban theory." However, the vast majority of global literature on postcolonial urban debates has not built on her theoretical apparatus. As Nick Dines wrote in an essay titled "From 'Southern' to 'Ordinary,'" it is quite significant that the 2014 *Routledge Handbook on Cities of the Global South*, which declares its commitment to center the twenty-first century through a "southern urban" lens just one of the fifty contributions cites Leontidou's work. Only one other contribution briefly refers to southern Europe.[37]

In light of these theoretical limitations, I situate the investigation of this paper in a broader Mediterranean framing where notions of *otherness, underdevelopment*, and *exoticization* are not only challenged but rejected through an empirical approach. From a research perspective, this paper responds to what Schindler defined as the primary reason "for why the potential of postcolonial urban scholarship remains unfulfilled." In *Towards a Paradigm of Southern Urbanism*, Schindler argues that the creativity applied to theorizing southern cities lacks a parallel development of rigorous empirical methods for on-site research. According to him, current scholarship exhibits a deficiency in methodological discussion, relying predominantly on micro-oriented qualitative approaches that generate case studies.[38] I share Schindler's perspectives and believe that the city of Naples is perfectly suited to provide the scholarly community on urban theory with specific insights on how southern cities are not frustrating "exceptions" to dominant urban models but have developed their unique forms of grappling with modernization.

[36] Nick Dines, "From 'Southern' to 'Ordinary': Conceptualizing and Contextualizing Segregation in Public Space in Southern European Cities," *Méditerranée*, no. 127 (November 1, 2016): 101–8, https://doi.org/10.4000/mediterranee.8480.

[37] Sue Parnell and Sophie Oldfield, *The Routledge Handbook on Cities of the Global South*, 1 Edition (London; New York: Routledge, Taylor & Francis Group, 2014).

[38] Seth Schindler, "Towards a Paradigm of Southern Urbanism," *City* 21, no. 1 (January 2, 2017): 47–64, https://doi.org/10.1080/13604813.2016.1263494.

2.2.2. Masking the City: Staging Prosperity and Constructing Invisibility through Urban Design

In *The Belly of Naples*, Matilde Serao—a Neapolitan journalist who documented the urban metamorphoses of her city throughout the *Risanamento*—dedicates a whole chapter to the concept of *paravento* (windshield). According to her, Naples's *Rettifilo* performs as an urban *paravento*: a physical infrastructure masking the undesirable and whatever (and, most importantly, whoever) was considered unworthy of being seen **[Fig. 40]**. She writes about the *Rettifilo* as an "urban staging" (*messa in scena urbana*) devised for a distracted and less attentive person: a space that must be experienced as a temporary and quick thoroughfare. For example, an inattentive visitor would be impressed by the grandiosity of the boulevard and the large Stock Exchange piazza (*Piazza Bovio*), imagining the city's incredible wealth. However, a much more in-depth observation of the *Rettifilo* would reveal its endemic fallacy. Behind it, there is a world of misery and poverty. It is a world that, according to her writings, even worsened throughout the execution of the *Risanamento*. When she resumed writing *The Belly of Naples*, 20 years after the beginning of construction works, in 1904, she recorded alarming overcrowding rates behind empty facades built to convey prosperity and grandiosity to visitors and to be a nicer background for the middle-class traversing the city from the railway station on its way to the wealthy neighborhoods perched on the surrounding hills. For Serao, the *Rettifilo* is ultimately an embalmed body—a precarious scenography—with a thin layer concealing a completely different reality behind it. Furthermore, keeping with the city-as-body lexicon, Serao reported that on the belly was a sort of laceration – cutting through flesh and exposing entrails teeming with life. She sarcastically wrote about how the new urban configuration of the *Rettifilo* resulted in unexpected job opportunities. Serao vividly describes the petty crimes happening along the *Rettifilo*, a space from which it is easy to disappear in the labyrinthine back-alleys behind the grandiose facades. Before the invention of the *Rettifilo*, those crimes only happened in *Via Marina* (the water-facing road connecting the port to City Hall and the middle-class hillside neighborhoods of Chiaia and Vomero).

> *"But two, three times a day, a thief launches himself onto an honest man, onto the lady, in broad daylight, in the middle of Rettifilo, among a thousand people, and snatches the watch, snatches the earrings, the robbed person shouts, the thief slips into the alley, throws himself into a narrow passage, and disappears, the astonished crowd, there are no guards, beggars shout, and one of those women of vice gives a false indication because she is perhaps a lover, friend, sister of the thief, always an accomplice [. . .]. All this happens in the magnificent street of health."* [Matilde Serao "The Belly of Naples," p. 52]

But how does an urban mask perform? First, a mask covers up. Covering something constructs a visual message conveyed through forms, patterns, sequential elements, and colors. The visual messages encoded through the forms of the *Rettifilo* in Naples perform as a mask of order and rationally planned forms. *Rettifilo*, as a name, conveys its primary feature: linearity. A line doesn't possess bidimensional qualities; it requires a dual mirrored aspect to effectively conceal a tridimensional urban space distributed on both sides. Moreover, while its purpose is to shield adjacent areas, a boulevard necessitates intersections with segments of a secondary street network. Those intersections are the spatial moments more prone to sudden involuntary peeking into the behind-spaces of the *Rettifilo*.

Fig. 40 – Repertoire of thin facades masking the city of Naples. Photos by author (September 2021, June 2022, December 2022).

To make the back alleys of the pre-nineteenth-century city "disappear" completely from any view from the *Rettifilo*, the newly planned secondary street segments intersecting the *Rettifilo* acted as a second layer of masking. This elaborate masking effort penetrates the mostly untouched urban tissue behind the *Rettifilo* through a meticulously planned system of thin curtain-buildings, often with irregular forms, constructed to hide. Some of

these buildings are so thin that they completely lack windows on their shorter edges. Others are forced into extremely thin triangular shapes, missing an edge altogether. Masks, however, are a double-edged sword when they are used to hide because of shame or conceal to protect. Perhaps this is what, in its deep roots, the *Rettifilo* incarnates. It has marginalized, excluded, isolated, and impoverished those who were not supposed to be seen. However, the act of isolating these communities has inadvertently provided them with affordable housing solutions—despite the precarious and unsafe living conditions—in the city's core **[Fig. 41]**.

Fig. 41 – Poorly maintained semi-abandoned buildings in Naples. Photos by author (September 2021).

To situate Naples's case in a broader context of the even more recent deliberate act of masking urban areas, it is relevant to reference the legacy of Jane Jacobs in Moses-shaped New York and the "dirty backyard" of the Gold Coast of Chicago. In the seminal urban planning book, *The Death and Life of Great American Cities*, Jane Jacobs uses the term *mask* in her introduction.[39] She employs this term while revoking a conversation with a female tenant in New York's East Harlem who was moved into a large public housing project—with a large rectangular lawn in between buildings—after her house was torn down. Beyond the total lack of understanding of residents' priorities denounced by Jacobs through the words of her interviewee about the lawn ("Nobody cared what we need. But the big men come and look at that grass and say 'Isn't it wonderful! Now the poor have everything!'"), Jacobs adds that "there is a quality even meaner than outright ugliness or disorder, and this meaner quality is the *dishonest mask* of pretended order, achieved by ignoring or suppressing the real order that is struggling to exist and to be

[39] Jane Jacobs, *The Death and Life of Great American Cities* (New York: Random House, 1961).

served." Jacobs's definition of a *dishonest mask* can be easily transferred to early-twentieth-century Naples, where the mask of rationalized order of the *Rettifilo* ignored the real order of struggling lives and social networks that were dismantled by the creation of a 2Km-long urban facelift.

In 1929, sociologist Harvey Zorbaugh described Chicago's Near North Side as divided into "The Gold Coast and the Slum." This definition epitomized a striking dissonance between the luxury high-rises built along the shore of Lake Michigan and their back door of slums. Zorbaugh describes the Near North Side as an "area of extremes" (it has the highest and the lowest residential values in the city), shading "from light to shadow, and from shadow to dark." The Chicago Housing Authority fully relied on Zorbaugh's spatial studies in their post-WWII "Chicago Can Build."[40] In their report, as explained by Vale in *Purging the Poorest*, Chicago was described as a city with a "dirty backyard" lying behind a thin veneer of Gold Coast prosperity materialized by an iconic diagram included in the report **[Fig. 42]**. The notion of masking, and therefore, visibility, is inherently part of what Vale defines as "design politics" of cities. In his public housing studies in the US, he demonstrates through a series of examples how the act of moving and relocating people carries deliberate symbolic and design choices. He wrote that urban renewal "is not just about clearing sites, but about clearing sights—a cleaning out of things that should not be seen."[41] To achieve this urban masking, designers have employed a plethora of built-form solutions and material messages to convey exclusionary visual messages, establish visual hierarchies, and erase stigmatized visual clues, especially those evoking an urban past deemed obsolete and morally deplorable. In other words, employing a design-politics framework to expose the forms and politics of clearing both sites and sights is central to constructing a renewed interpretation of spaces and viewsheds.

[40] Lawrence J. Vale, *Purging the Poorest: Public Housing and the Design Politics of Twice-Cleared Communities*, Historical Studies of Urban America (Chicago: University of Chicago Press, 2013).

[41] Lawrence J. Vale, "The Design Politics of Public Housing," in *Purging the Poorest: Public Housing and the Design Politics of Twice-Cleared Communities* (Chicago: Chicago University Press, 2013), 30.

Fig. 42 – The image represents Chicago's "dirty backyard" in the "Chicago Can Build" report from the Housing authority. Source: image from page 207 of Lawrence Vale's *Purging the Poorest*.

In conclusion, Naples's *Rettifilo* constitutes a rich ground of forms, configurations, and views worth unpacking through the conceptual framings of "masking" and "design politics." The 2km-long boulevard acts as a politicized epiphany of standardized order, devised to mask a seeming cacophony of architectural forms and, most importantly, people. Paradoxically, this conceptual framing fits very well the cultural context of Naples, the birthplace of the iconic carnival character *Pulcinella*. *Pulcinella* represents the simple man who tries to face all his problems with a smile and acts as a clever individual. However, behind a veil of politeness and wit, it's hard for him to be trustworthy and honest: that's why the expression *il segreto di Pulcinella* ("Pulcinella's secret") indicates a fact that was supposed to be kept secretive, but it is effectively known by everybody **[Fig. 43]**. The coexistence of contrasts embodied in Pulcinella's character re-emerges in the mid-nineteenth-century *Pagliacci* by Leoncavallo, a Neapolitan opera composer. The main character is a clown who must make the audience laugh while he weeps behind his thick makeup as a result of his wife's betrayal.

In other words, the *Rettifilo* stands not just as a space but as a narrative of Naples's cultural geography, weaving together the paradoxes of a city of striking contradictions and diversities where jaw-dropping vistas and images of waste, violence, and poverty live together in admirable proximity.[42]

Fig. 43 – Images of Pulcinella. (Left) Street photo of *Corso Umberto I* (*Rettifilo*) intersecting *Via di Porta Nolana*. In the foreground, a street vendor sells miniatures of Pulcinella. Source: author (September 2021). (Right) An 1892 illustration of Pulcinella. Source: Alice Werner and Arturo Faldi, *The humour of Italy*, (London: W. Scott Ltd., 1892).

2.3. Context

> *Naples is always a city* sui generis*, characteristic, peculiar, and above all, beautiful. In many places, it is not clean; in several, it is horribly dirty. The agglomeration of people and things in a small space is indescribable; the lack and poor quality of water are very noticeable. . . And yet, it is always enchanting, beautiful, seductive, charming [. . .].*
>
> Napoli è sempre una città *sui generis*, caratteristica, strana, e soprattutto bella. In moltissimi punti non è pulita, in parecchi è orribilmente lurida; l'agglomeramento di uomini e cose su poco spazio è indescrivibile; la mancanza e la pessima qualità dell'acqua sensibilissime ... E tuttavia, essa è sempre incantevole, bella, seducente, affascinante [...].
>
> [Un Giorno a Napoli, "Corriere della Sera," 13–14 August 1884] translated by author

[42] Massimo Rosi, *Napoli Entro e Fuori Le Mura: Le Trasformazioni Urbanistiche, Demografiche e Territoriali Di Un'antica Capitale Rimasta per Troppo Tempo Vincolata Dalle Sue Stesse Mura*, Tradizioni Italiane 26 (Roma: Newton & Compton, 2003).

The stereotypical description of Naples as a "paradise inhabited by devils" is a key example of what could be defined as the lingering trope of an old imagery regime. As explained by Benedetto Croce, the term *paradiso abitato da diavoli* was already quite popular in seventeenth- and eighteenth-century Europe. Part of its longevity is related to the persisting nature of two dominant imaginative patterns: the first one contraposes the natural beauty of the sea, the sun, the bay, and Vesuvius with the degradation of society; the second one contrasts the maritime and agricultural prosperity of the city in ancient times with its poverty in the present.[43] In both cases, the sea holds a primary role in the city's traditional iconography and urban imagery. However, on the neighborhood scale, Naples holds a unique Janus-faced relationship with its waters. The sea did not just lap at the city but penetrated its streets and public spaces across a plethora of maritime districts with rather different characteristics. In other words, the presence of the sea did not serve as a force of homogenized glory across the city's coastal neighborhoods, but it generated a dichotomous distinction between workspaces by the sea and leisure spaces by the sea. As Armiero describes in *Enclosing the Sea,* in some areas (e.g., Chiaia), the waterfront acted as an urban scenery with its promenade, parks, and views for tourists and upper-middle class residents; in other areas, the sea was the *locus* of a lower social class and economic life. This distinct and quasi-antipodal connotation is relatively new, and it vigorously emerged through the segregational logic of the *Risanamento* and the response to the 1884 cholera outbreak.[44]

2.3.1. Addressing the 1884 Cholera Outbreak through Urban Design

Paradoxically, the city that, according to the myths, was founded to honor a sea creature—the siren Parthenope, whose body was washed ashore on the coast of Naples—witnessed, arguably, one of its darkest moments because of an infectious arrival from the sea: the bacterium of cholera. In 1884, a ship from Marseille brought to Naples hundreds of Italian workers fleeing cholera in southern France, triggering an uncontrolled spread of the epidemic across the city. Scholars in the history of medicine have demonstrated how engineering innovations such as steamships and the opening of the Suez Canal contributed to shortening travel times for goods and to more frequent epidemic outbreaks. In the case of the mid-1880s cholera epidemic, the movement of French troops and ships between the naval base at Toulon and Saigon triggered the spread of the vibrion across the European

[43] Nelson Moe, "'L'Europe Finit à Naples': Representations of the Mezzogiorno in the Century before Unification," in *The View from Vesuvius* (University of California Press, 2023), 46–47.

[44] Marco Armiero, "Enclosing the Sea," *Radical History Review* 2011, no. 109 (January 1, 2011): 13–35, https://doi.org/10.1215/01636545-2010-013.

continent.[45] The 1880s cholera, however, did not only spread death and terror across Naples, but it became instrumental in legitimizing the herculean redesign of the highly densely populated city center with its water-facing neighborhoods. Approximately 88,000 people were removed from the neighborhoods of Porto, Pendino, Mercato, and Vicaria to make space for boulevards, regular blocks, and new housing typologies similar to the ones pioneered in Paris by Baron Haussmann starting in the 1850s **[Fig. 44]**.

Fig. 44 – This neighborhood map showcases central Naples' administrative layout in 1840, as illustrated in Marchese's cartographic work.[46] The area delineated with a dashed line falls administratively under Mercato. However, given the focus of this work on the alteration of the existing built environment rather than on the development of new housing (Case Nuove), I will refer to Mercato as the densely built area surrounding Piazza Mercato (solid black line).[47] Source: author.

As Snowden explained in his meticulous analysis of the politics of medicine and rebuilding, Neapolitan authorities totally disregarded other examples of urban renewal that had occurred in Italy by that time, such as

[45] Snowden, "Rebuilding: Medicine and Politics."

[46] The maps of Marchese (1804–13) were accessed by the author at the National Archives in Naples through their in-situ cartographic database system.

[47] Contemporary administrative boundaries are not employed because they are more extensive and less detailed, lacking spatial granularity. For example, according to 2001 GIS data from the Municipal Urban Planning Department of Naples (UrbaNA), the administrative area of Pendino includes the area of Mercato delimited by a solid black line in the map and the southern portion of San Lorenzo.

Milan, Turin, and Rome. The glory of a recently de-capitalized city made cities like Paris, London, Vienna, and Brussels the ideal examples to seek inspiration from. Alberto Marghieri (one of the leading strategists of the *Risanamento*) explained in a speech at the City Council that:

> *What is the point of remembering that Rome, Turin, and Milan at their own expense and under their own direction have carried out expropriations? [...] The public works projects that have been undertaken until now are of such a limited scale that it is absurd to compare them with our renewal plan.*
> [Municipio di Napoli, Atti della Consiglio Comunale di Napoli, 1887 vol. I p. 190]

Contrary to these claims of grandeur, unlike Paris under the Second Empire, the rebuilding of the *Quartieri Bassi* (low-lying neighborhoods) of Naples did not share either the comprehensiveness of Haussmann's plan or its scope. The *Risanamento*, in fact, was not undertaken for reasons of prestige, aesthetics, and political control. Nor was the overall health of the population of the former capital foremost in the minds of the reformers. The *Risanamento* occurred as a direct consequence of the epidemic of 1884, and it served as a political choice in a historical context in which a newly formed Italian state appeared to be dedicated to solving the structurally engrained issues of overcrowding of its largest city. The element that the *Risanamento plan* shared with the Parisian *grand travaux* was the Saint Simonian concept of 'productive spending' that had guided Baron Haussmann. City Hall planners invoked this concept to justify how the project would largely pay for itself by enhancing property values and creating new jobs, therefore providing the City with enough revenue to meet the costs of redeeming the construction loan with banks through an *ad hoc* created semi-public company. In his writings, Haussmann described that the theory of "productive spending:"

> *[...] enabled me to demonstrate that the city budget had been balanced without surcharges or additional taxes. The many different undertakings and the very extension of such useful work provided the means. Increased spending brought about a parallel and progressive increase in municipal revenues, just as wise sowing yields a surplus at harvest-time. This theory, although somewhat paradoxical, contains a profound truth, and it has long formed one of the chief articles of my beliefs as an economist.*[48]

The 1884 "Special Law for the Healing of Naples" can be considered a normative progeny or legal transplant of the 1852 decree of Paris, through which Baron Haussmann managed to expand the area of action of its *grand*

[48] Georges Eugène Haussmann, "Ma Première Journée a Paris," in *Memoires Du Baron Haussmann*, vol. 2 (Paris: Victor-Havard, 1890), 35–36.

travaux from private properties falling within the lines of proposed royal infrastructures (e.g., roads, canals, docks; as expressed in an 1841 Law) to all expropriation projects for the widening, straightening or formation of new streets (including remaining fragments of insalubrious constructions). The Paris example led to seminal expropriation laws in Belgium (1858, 1867), England (1890), and Italy to streamline the acquisition of private slum property in the interest of building "healthy" housing (Kostof, 1992). The 1885 law, together with Italy's 1865 "Expropriation for Works in the Public Interest" Law, provided the normative and financial framing to carry out an unprecedented urban surgery that reconfigured a large portion of the social and physical fabric of the former capital city of the Kingdom of the Two Sicilies. In other words, national laws (1885) and municipality-led technical studies (1885–1888) evolved into the creation of a semi-public company *Società pel Risanamento di Napoli,* incorporated in 1888 as a consortium of banks and real estate companies—mostly from northern Italy—whose objective was to plan, finance, execute, and manage the largest demolition and reconstruction masterplan ever completed in the Italian peninsula given the magnitude of approximately 90,000 displaced people.

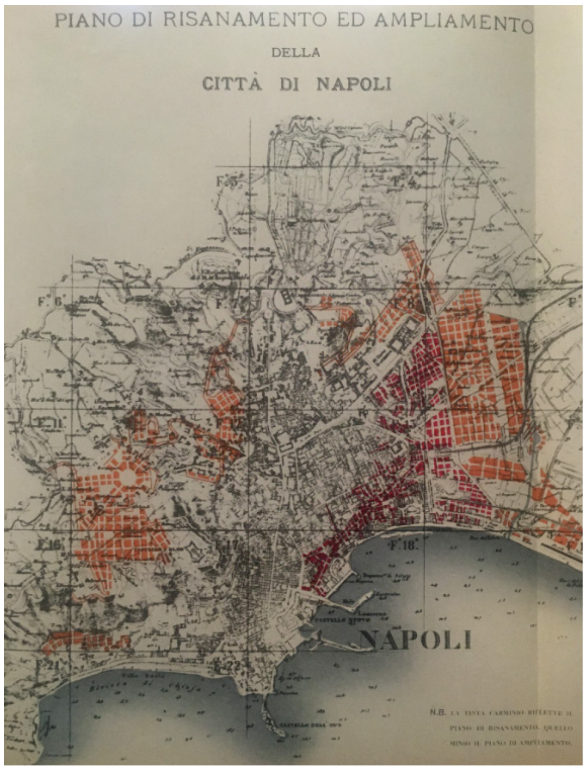


Fig. 45 – The cartographic representation illustrates the to-be-regenerated areas in red and the expansion areas in orange. On the left side of the map, the plan of the Vomero neighborhood develops around the Etoile-shaped Piazza Vanvitelli. Source: image from Giuseppe Russo, *Il Risanamento e l'ampliamento Della Città Di Napoli*, 196.

Through an incredibly detailed set of cartographic surveys, architectural drawings, implementation timelines, and meticulously calculated demographic maneuvering across the city's dense core, the *Società pel Risanamento di*

Napoli acted as the mastermind of this large urban renewal plan, and it also became the largest property owner in Naples, controlling the housing and rental market of thousands of units. While the initial geographic focus of the plan was the coastal area on the southern edge of the old city, the company soon became in charge of a large city expansion area for new middle-class neighborhoods in the northern hillside area of the city (Vomero) and a newly planned area on the northern side of the railway station (Vasto and Arenaccia) for the working class **[Fig. 45]**.

The *Risanamento* plan did not emerge in a vacuum. Its lines were heavily influenced by years of studies, hygiene reports, and technical investigations on how to redeem the city's densely populated center. Between 1861 and 1871, right after the unification of Italy, the city kept carrying out some of the urban interventions drafted and initiated under the Bourbons without formally concluding them. The quasi-perennial state of incompleteness in the city is iconically captured in an 1871 cartoon featuring a stereotypical portrayal of a British tourist. The illustration depicts the tourist with his dog, holding an umbrella, and clad in a trench coat and deerstalker cap. The foreign visitor is represented tripping over the rubble of demolished buildings and is unable to view the statues located on top of celebratory columns as streets had not yet been widened **[Fig. 46]**.

Fig. 46 – Illustrations depicting a foreign visitor tripping over the rubble of demolished buildings and unable to view the statues located on top of celebratory columns as streets had not been widened. Source: E. Colonna.[49]

[49] "The Foreigner in Naples after 10 years of progress" – E. Colonna, 1871 in Giuseppe Russo, "Le Vicende Dell'Opera Del Risanamento," in *Il Risanamento e l'ampliamento Della Città Di Napoli* (Napoli: L'Arte tipografica, 1960), 312.

According to the "Atti del Comune" (city records) [50] from February 1895, the Head of Public Works for the City of Naples (Mr. Arlotta) shared in a public hearing how the Municipal Authority had long been thinking about a "reorganizational" plan for the city. In fact, in 1871, a call for projects was launched. However, the committee of specialists considered that none of the submitted projects had successfully addressed the requirements of the call. Despite the failed competition, all submitted plans appeared to have one element in common: the construction of a thoroughfare road linking the railway station to the city center. The road was bequeathed with the expectation of improving the housing quality of the neighborhoods. According to this public speech, the failed search of 1871 followed the findings of a special investigation conducted in 1868 to explore how to improve the quality of the low-lying neighborhoods of Porto, Mercato, Vicaria, and Pendino. Moreover, all these considerations about building a new road were partially generated by the heated debate on the possibility of widening the existing iconic *Spaccanapoli* street (built on top of the *decumanus*). This idea was fully abandoned by a special 1876 committee that considered this tentative plan incapable of solving the long-term hygienic issues of the port-adjacent neighborhoods of Naples. In general, what was missing from these early plans was a more courageous effort to go beyond the planned linear road.

On February 3, 1885, as reported in the minutes from the City Council meetings, a series of engineers and urban planning specialists who had studied and, sometimes, advanced potential urban plans to "heal" the city were asked to contribute with their expertise to draft the guidelines of the *Risanamento*. Some city counselors, in fact, were skeptical of the linearity of the single boulevard. For example, De Rosenheim suggested creating a series of shorter segments following the natural arc shape of the port bay. The expected extra cost for the arched proposal and the difficulties in organizing a secondary network of perpendicular roads designed to bring the fresh breeze of the gulf into the dense city fabric led the City Council to disregard this zig-zagged proposal. Sixteen different specialists were audited by the City Council. Among the sixteen proposals, only two—Folinea's and Angelo Carrelli's—had a more modest approach toward the poor and underlined the importance of avoiding relocations. Folinea explained that he considered it not only difficult but also unjust to move people away from their own neighborhoods. A similar approach was shared by Carrelli, who clarified that most of the people the city government was trying to move out of the city center relied heavily on the maritime industry of the port of Naples, thus highlighting the risk of making the poor even poorer by displacing them.

[50] "Municipio di Napoli," atti del Comune – 6 Feb. 1885

The City Council approved the guidelines for a plan of *Risanamento* on February 11, 1885. The plan became operational in 1888. The Royal Decree of 17 March 1889 n. 6024, made it final with *interim* Mayor Ruffano—between Amore and Caracciolo.

2.3.2. Data and Cartography of the *Risanamento* Plan

> *"Create a short, direct, and comfortable communication from the City Center to the Railway Station; this work aspires to destroy as much as possible of the labyrinth of dirty and narrow alleys, and the poorest housing condition (including the well-known fondaci), tearing apart the dense urban fabric with new streets, and raising up the street level."*
>
> [Speech by Head Engineer Giambarba at Naples City Hall, 1885 Progetto per l'ampliamento della città e risanamento delle zone insalubri]

The ambition of the *Risanamento* plan was to reduce the population density of the low-lying neighborhoods from 1,600 people per hectare to 700. The way to achieve this herculean de-densification strategy was to abolish 144 streets and widen the remaining 127 segments of the street network. The street-making plan included the erasure of 56 *fondaci* (some of them with more than 1,100 residents[51]) and 521 blocks for a total of 17,000 dwellings. On a demographic note, this meant displacing 87,447 people, of which 69,198 would be removed permanently. The surplus population would be moved to a series of newly planned neighborhoods beyond the city walls, in the so-called "industrial quarter" located between the waterfront and the railway station.
According to the data, 4,693 people out of the 69,198 were classified as belonging to the *classe agiata* (upper class), 25,151 to the *classe media* (middle class), and 39,354 to the *classe povera* (lower class). Unfortunately, more granular mapping on the spatial distribution of these groups is missing **[Fig. 47]**.

[51] *Fondaco degli Incurabili* – according to the survey of Engineer Turchi had 1183 people, and 254 dwellings. It used to be located in Strada di Porto 17 (Porto).

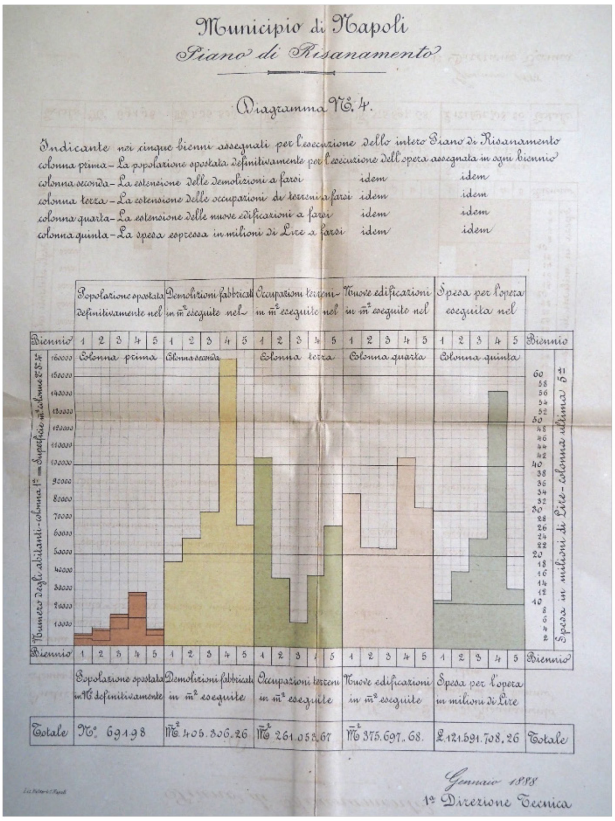


Fig. 47 – Visual diagram attached to the *Risanamento* plan (1888) explaining the projected amount of permanently displaced people (orange), sqm of demolished buildings (yellow), buildable land (green), new buildings (light red), and financial costs (turquoise) over five consecutive biennials. Source: *Archivio Storico Salita Pontenuovo,* Napoli. Photo by author (September 2021).

A major element of the reconfiguration of the city was its topographical adjustments through landfills called *colmate*. While low-lying areas tended to be all at risk of epidemic outbreaks because of their locations, there were still major differences from neighborhood to neighborhood within them. These differences depended on the distance from the underlying groundwater. At the time, planners believed in the miasma-contagionist theory, which linked cholera's spread to the dangerous air circulation between houses and the polluted, humid ground beneath. The miasma-contagionist theory belonged to a broader set of urban health theories, with some prioritizing the enhancement of local sanitary conditions over quarantine as the most effective method to prevent cholera epidemics. The German scientist Max von Pettenkofer introduced this "localist approach."[52] He compared the proximity to groundwater to sitting over a cemetery where bodies were left to decompose in shallow

[52] Max von Pettenkofer, 'Cholera', Lancet (1884, vol. 2), pp. 37–38.

graves. Drawing from localist theorists, Teodosio De Bonis in Naples[53] argued the low-lying neighborhoods would have required a 3-meter-thick insulation to protect the population from the "evil odors and deadly gases and microbes assaulting people's health." Without such protection, all of Naples would remain vulnerable to future epidemics of the lethal cholera-gas. In other words, the insulating layer of earth resulted in being aligned with the cemeterial practices: the low-lying neighborhoods had to be treated as a cemetery where ground floors had to be buried to guarantee the 3-meter distance from the high ground water table. Resurrected Naples would be built through a cemeterial building code on a cushion of insulating earth, paving-stone, and rubble from surrounding demolitions **[Fig. 48].** The *colmate* had another critical role: elevating the city to make space for the new sewer system for which engineer Gaetano Bruno was responsible and accommodating its necessary incline to ensure the whole system flowed freely. Eventually, under the reduced contract put before the council in 1894, the ability of the system to pump the waste of the *Quartieri Bassi* (low-lying neighborhoods) to the distant Bay of Gaeta would be jeopardized. Naples would once again require outfalls in the waters of the port.

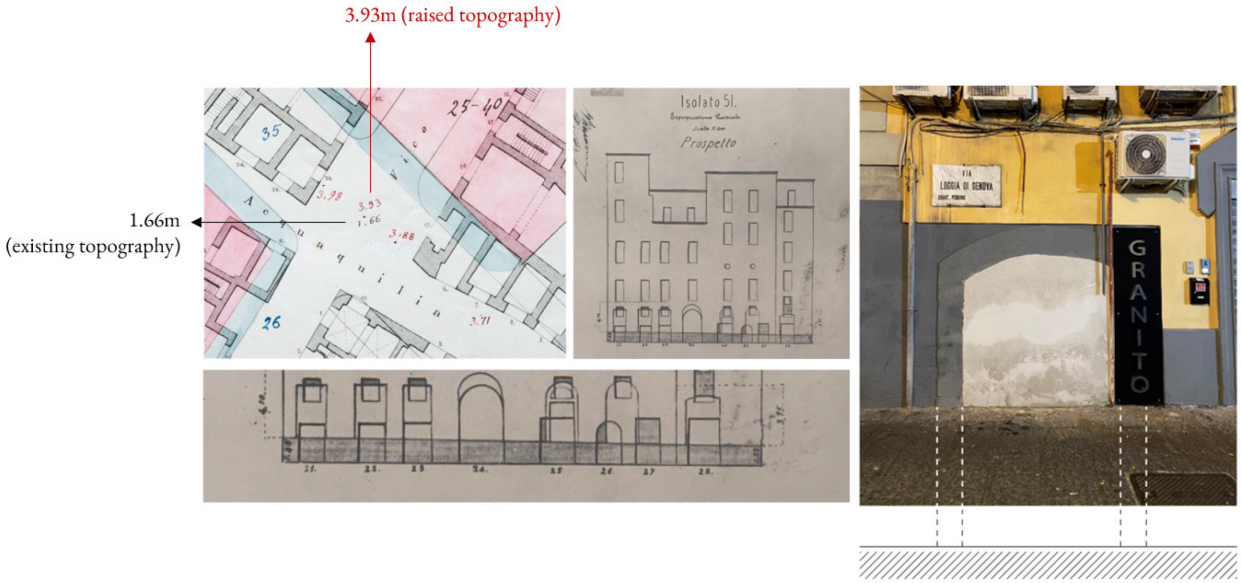


Fig. 48 – Changes in the topographic levels of Naples's historic core. – Changes in the topographic levels of Naples's historic core. (Top left) Excerpt from one of the 376 drawings (1:200, 70 x 75 cm) compiled by the *Risanamento*, where the planned built-up area is visualized in red and sidewalks in blue. The numbers in black (e.g., 1.66) signal the existing topographical level of the street in meters; the numbers in red (e.g., 3.93) illustrate the proposed raised street-level – *Archivi Municipali di Napoli*; (Top, middle. and bottom) Elevation drawing of a building located in *Calata S. Marco* block 51 (subject to partial expropriation) with its ground floor units configurations redesigned according to the proposed *colmata* – National Archives of Naples;[54] (Right) Image of a former arched entrance to a ground-level unit, indicating the approximately 1.5-meter topographic change in the Pendino neighborhood (Via Loggia di Genova). Photo by author (December 2022).

[53] Speech of 11 February 1885. Atti del consiglio comunale di Napoli, 1885, p. 39 - Archivio Storico Salita Pontenuovo, Napoli

[54] Image from: Giuseppe Russo, "L'Intervento della Regia Commissione di Inchiesta," in *Il Risanamento e l'ampliamento Della Città Di Napoli* (Napoli: L'Arte tipografica, 1960), 312.

2.3.3. The Symbolism of Authority: Chronicling the Inauguration of Construction Works

> *"And now, up with the pickaxe! Strike down! Let the malevolent germs of illness fall under the ruins and may the new currents of air and light that will stir upon them bring prosperity and health!"*[55]
>
> [Mayor Nicola Amore, June 15, 1889 – Piazza Vecchio Mercato di Porto]

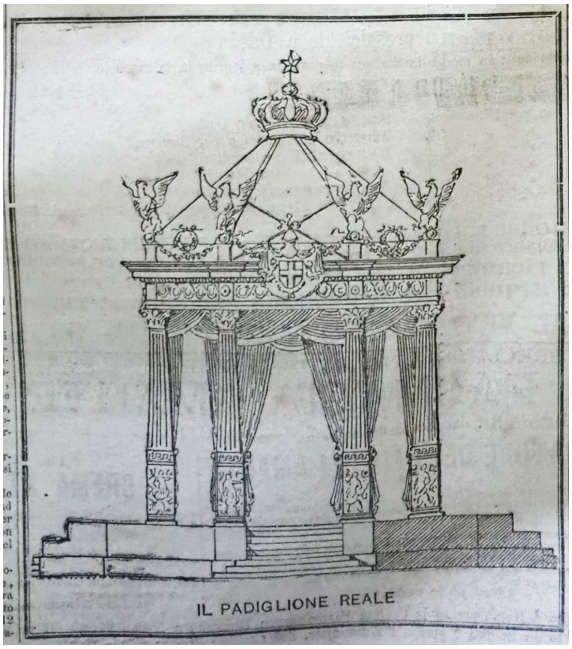
Construction works started on June 15, 1889, during a pomp-filled ceremony attended by the King. Newspaper articles from that time provide a vivid description of the nexus between political power, architecture, and symbolism on the occasion of the long-awaited redemption of the city. A temporary octagonal pavilion topped with the crown of the Savoy family was located at the center of *Piazza di Porto* (today's *Piazza della Borsa*). The eight columns of the pavilions rose majestically above basements adorned with intricate engravings and paintings featuring swimming mermaids—the legendary emblem of the city **[Fig. 49]**. A silver trowel, meticulously embellished, was crafted specifically for this momentous occasion. In its design, a poignant depiction emerged: a mermaid, symbolizing Naples, portrayed in a state of anguish, tightly clutching the shield of the Royal Family **[Fig. 50]**.

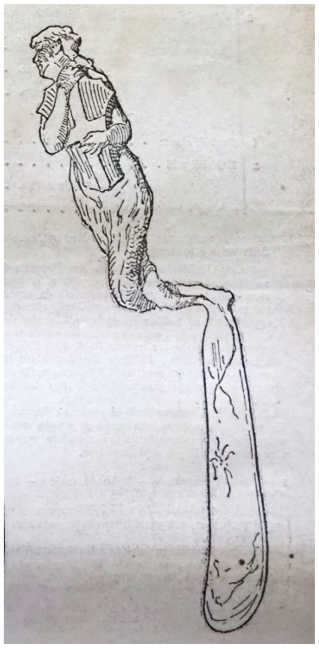
Fig. 49 – The inauguration ceremony of the construction works for the *Risanamento*.
The event occurred in Piazza di Porto on June 15, 1889. Source: L'Illustrazione Italiana.[56]

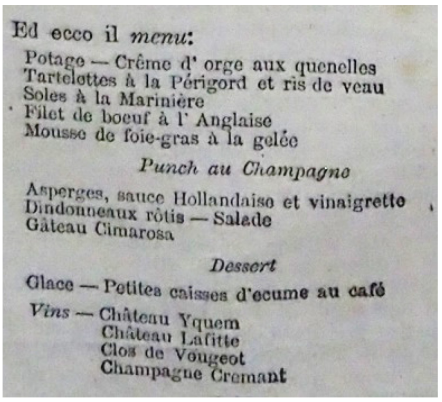
[55] Giuseppe Russo, "Oggetto e Condizioni del Contratto di Appalto," in *Il Risanamento e l'ampliamento Della Città Di Napoli* (Napoli: L'Arte tipografica, 1960), 280.

[56] Image of "L'Illustrazione Italiana" from: Giuseppe Russo, "Le Opere del Piano del Risanamento," in *Il Risanamento e l'ampliamento Della Città Di Napoli* (Napoli: L'Arte tipografica, 1960), 283.

The ceremonial hammer, shaped like a phoenix, stood as a powerful symbol, embodying the collective aspiration for the city's rebirth. Adjacent to the pavilion, a comprehensive model of the *Risanamento* plan was prominently displayed, accessible to the public via a system of ramps that provided a captivating aerial perspective. A three-hour fireworks show preceded a grand gala dinner featuring an elegantly composed French menu, attended by both the Royal Family and the influential aristocratic elite of the city. The remaining expanse of the piazza, then the sole large public space in the dense low-lying neighborhoods, was adorned with tribunes arranged in an amphitheater-like form. From this vantage point, attendees gazed upon the time-worn, dilapidated fabric of the old city. On balconies and peering from windows, local residents involuntarily became passive spectators of the plan destined to displace them without delivering adequate housing solutions. In other words, the paradoxical contradictions of Naples, once again, were fully present in its own public spaces: a quintessential urban phantasmagoria.






Ed ecco il *menu*:

Potage — Crême d' orge aux quenelles
Tartelettes à la Périgord et ris de veau
Soles à la Marinière
Filet de boeuf à l' Anglaise
Mousse de foie-gras à la gelée

Punch au Champagne

Asperges, sauce Hollandaise et vinaigrette
Dindonneaux rôtis — Salade
Gâteau Cimarosa

Dessert

Glace — Petites caisses d'ecume au café

Vins — Château Yquem
Château Lafitte
Clos de Vougeot
Champagne Cremant

Fig. 50 – Visual excerpts from the "Corriere di Napoli" (1889) of the octagonal pavilion, a silver trowel with a mermaid depicted while clutching the shield of the Savoy Royal Family, and the dinner menu.[57] Source: Società Napoletana di Storia Patria. Photos by author (June 2022).

Despite several interruptions due to corruption scandals, inquiries, banking crises, and wars, construction works intermittently continued till the 1950s. Post-World War II, additional floors were added to the existing buildings along the *Rettifilo* to generate real estate assets to repay banks' financial debts **[Fig. 51]**. New regularly shaped

[57] "La Storia Del Risanamento," *Corriere Di Napoli*, June 15, 1889.

urban blocks, a modern sewage and drinking water network, and a partially-achieved gridded system of secondary roads descending towards the port were constructed around the backbone of a 30m-wide and 1.5Km-long linear boulevard (Corso Umberto I) connecting the railway station to the newly-designed Naples Stock Exchange piazza. The *Risanamento* plan estimated the displacement of 87,447 people from their homes, with the provision of social housing falling significantly short of the demand.[58] This initiative led to the demolition of centuries-old neighborhoods and the creation of broad arteries through the intricate networks of winding streets. These changes not only transformed the physical structure of the city but also upended the way of life of tens of thousands of Neapolitans. While the plan did not include a redesign of the waterfront, the people who were impacted the most by the large project were those depending on the port economy: port workers, fishermen, fish pots makers, street vendors, small businesses working in the maritime industry, hostels, and those living in the Porto neighborhood.

Fig. 51 – Images of *Piazza Borsa* and *Corso Umberto* (*Rettifilo*) at the beginning of the twentieth century (left) and post-WWII (right). In the image from the 1950s (right), it is worth noticing the increased building height (additional two floors) and the introduction of cars.[59]

[58] Giuseppe Russo, "Lo Scopo e gli Strumenti Del Risanamento," in *Il Risanamento e l'ampliamento Della Città Di Napoli* (Napoli: L'Arte tipografica, 1960), 202.

[59] Giuseppe Russo, "Uno Sguardo agli Edifici del Risanamento," in *Il Risanamento e l'ampliamento Della Città Di Napoli* (Napoli: L'Arte tipografica, 1960), 464,465.

2.3.4. *Risanamento* Querelle: Navigating Corruption Cases and the Shortcomings of Subsidized Housing

On November 12, 1884, during a public speech in the Municipal Council, Mayor Amore announced that Naples's *fondaci,* described as "burrows for beasts" (*tane da belve),* would be forever closed and covered up with rubble and dirt. In regard to the subsidized housing to be built in the proximity of the railway station, he stressed how the proximity to swamps on the eastern side of the medieval walls should not alarm anyone because the new buildings would be built on top of empty basements purposefully designed for air circulation. Moreover, at the neighborhood scale, he shared a grand vision for the plan of the eastern part of the city where subsidized housing would have its own version of the *Rettifilo.*

> *"There will be a wide, beautiful road, shaded and oxygenated by plantings, which will run around the new neighborhood, and thus, we are sure that it will not be a dead neighborhood."* [60]
> [Mayor Nicola Amore, November 12, 1884]

As it happened, however, this major tree-lined road, "Corso Orientale," never got built. Instead, the city constructed an industrial district immediately adjacent to the subsidized housing area. Moreover, Serao contended that higher rent in the supposedly subsidized housing exacerbated overcrowding.

> *"There are two families renting the house for twenty-seven [Italian] lira, squeezing themselves, crowding into one room, sharing a small kitchen. So, farewell fresh air, farewell light, farewell hygiene! Often, a family sublets a room to students or single men, and life becomes common to both. In both scenarios, the overcrowding, close contacts, living on top of each other, inevitably lead to filth, disease, vice, corruption, and depravity."* [61]

Serao's words describe how the new buildings, originally conceived to radically improve people's living conditions, conformed no more closely to the municipal standards of hygiene than the slums they replaced. The shockingly

[60] Orazio Caro, "Napoli Alla Fine Del XIX Secolo: Il Risanamento," in *L'evoluzione Igienica Di Napoli (Cenni Storici – Osservazioni e Proposte – Dati Statistici)* (Napoli: F. Gianini & figli, 1914), 194.

[61] Matilde Serao, "Le Case Del Popolo," in *Il Ventre Di Napoli*, 2nd ed. (Napoli: Perrella, 1906), 44.

unimproved housing conditions not only remained at the center of the public debate through Naples-based newspapers, but they received national and international attention during an inquiry of the Italian government on the corrupt management of the city. A *New York Times* article from October 23, 1901, titled "The Camorra Supreme in Naples," describes an inquiry started in Rome into the administration of Naples and several aspects of the City's management, including the lagging subsidized housing.[62] The *Times* describes how this inquiry was necessary as "the Camorra secret society permeates all branches of public life, [...] no business, political or otherwise, is possible without the interference of the Camorra agents." The person who initiated the inquiry was Senator Saredo, who decried the inadequate housing in the newly built neighborhoods:

> *"a quantity of dark or poorly lighted rooms, so arranged as to make necessary the use of skylights known as vanelle. The courtyards are tiny in proportion to the height of the buildings; the latrines for the most part are located in the kitchens and lack any means of ventilation; the ground floor rooms are dark and unpaved; the roofs are irregularly built; and there are many, many other unhygienic conditions."*
> [Saredo, Relmione della R. commissione, p. 440]

The average occupancy rate was four people per room. In other words, the overcrowding that Depretis and the King had intended to abolish was merely reproduced in an environmentally vulnerable site—built on a swampy area—and through new housing typologies inspired by the *case economiche* built in Rome (Testaccio neighborhood) in 1887.[63] The new housing development of S. Maria delle Paludi (*Case Nuove*) instantly turned into unhygienic modern slums. Relocated individuals, accustomed to residing in ground-floor units that seamlessly connected with the public realm as an extension of their residential space, found themselves in 6-story apartment buildings devoid of balconies. The introduction of vertical density, unfamiliar to those used to ground-level housing, left locals feeling confined, akin to "birds in cages," [64] as their connection with the public realm underwent a significant shift. The areas of Arenaccia and Vasto, instead, evolved as sites of land speculation where very few, if any, buildings were destined to house the poor. The spatial and socioeconomic contrast between

[62] "The Camorra Supreme in Naples," *The New York Times*, October 23, 1901.

[63] Piero Quaglia, "I Tipi Di Case Economiche Adottate Dalla Società pel Risanamento Di Napoli," in *Annali Della Società Degli Ingegneri e Degli Architetti Italiani* (Roma: Tipografia Fratelli Centenari, 1889), 433–39.

[64] The image of "bird in cages" was shared with the author by Francesco Domenico Moccia, professor emeritus of planning for the University of Naples Federico II in Naples, Italy during a November 2022 interview in Naples.

middle-class neighborhoods north of the railway station (Arenaccia and Vasto) and subsidized housing neighborhoods between the port and south of the railway station (Case Nuove) emerges in Giovanni Greco's analysis of Salvatore di Giacomo's observations from the late nineteenth century. In 1893, di Giacomo published in the "Corriere di Napoli" that the Arenaccia and Vasto developments diverged significantly from the widely touted narrative of providing housing for the poor **[Fig. 52]**. In his writing, he quotes the words of an elderly resident of Vico Venafro in the Porto neighborhood, who explained why he could not afford to move to the new housing development in Arenaccia or Vasto:

> *"Are those dwellings meant for the poor, in your opinion? Are you kidding? Over there, you'll find people with pianos!"*[65]
>
> ["So' case p'e puverielle chelle llà? Voi scherzate? Là ce sta gente ca tene 'o pianefforte!"] – Corriere di Napoli, Nov.30, 1893

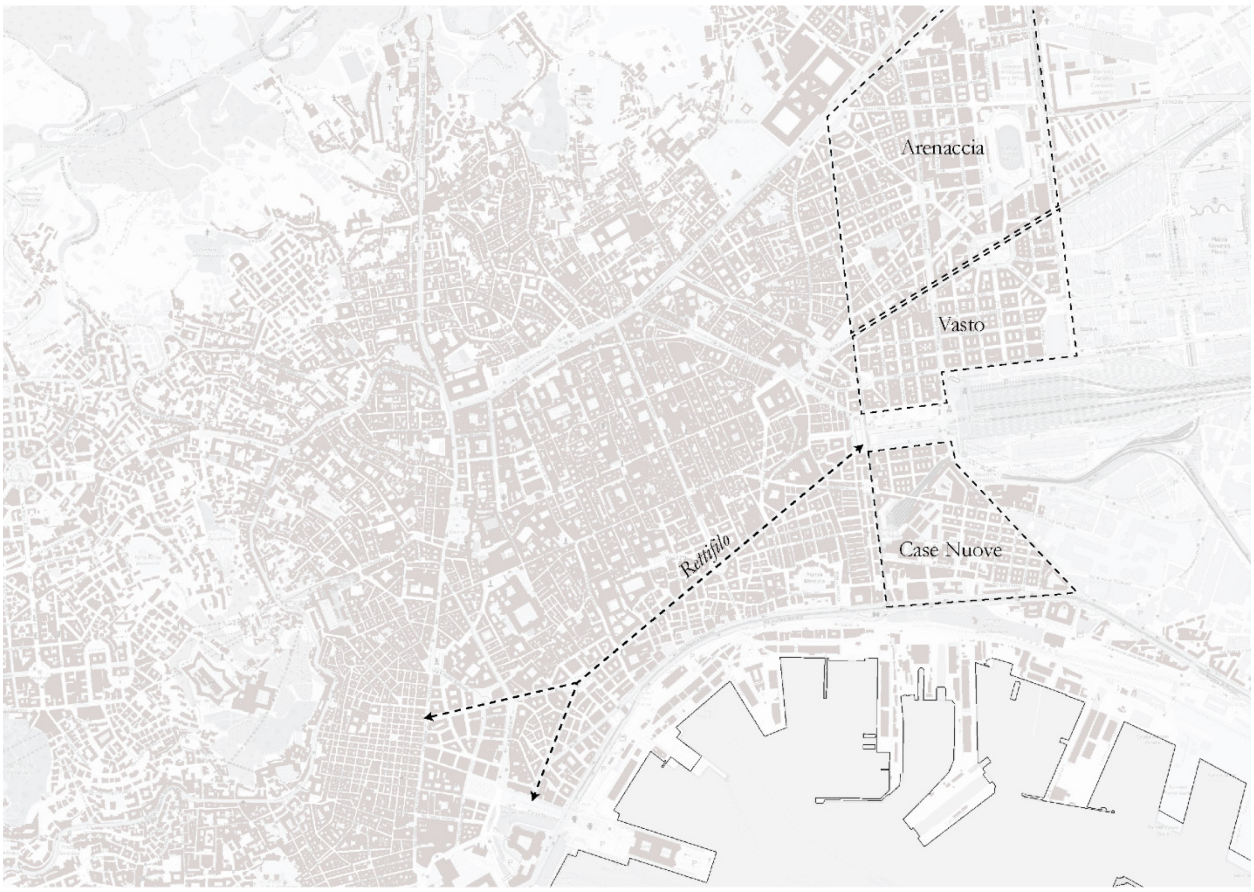


Fig. 52 – Locations of the newly built neighborhoods of Case Nuove, Vasto, and Arenaccia. Source: author.

[65] Salvatore di Giacomo, "Appendice: Scritti Giornalistici (1886–1895) - 'Il Corriere Di Napoli,' 30 Novembre - 1 Dicembre 1893," in *Gli Sfregi Di Napoli. Testi Storici e Letterari Sui Bassifondi Partenopei*, ed. Giovanni Greco (Napoli: Liguori, 2005), 189–92. The author is grateful to sociologist Francesco Ceci for the lead on this source and for providing access to the Storia Patria Archives in Naples.

– Locations of the newly built neighborhoods of Case Nuove, Vasto, and Arenaccia. Source: author.

In 1910, Italian jurist Marghieri shared his gloomy appraisal of the results of renewal in "*Intorno al problema edilizio."* By then, the Rettifilo had been built, but its double line of stone buildings served only as a curtain to conceal the squalor of the slums on either side. Marghieri wrote:

> *"With regard to housing and hygiene, a very substantial part of the city remains in dreadful condition, despite the work of demolition and reconstruction. Dark, narrow streets, teeming fondaci and filthy bassi still play host to many thousands of impoverished people. These teeming slums provide the material for macabre reports that all too accurately describe the many foci of infection. . . . Nicola Amore's marble statue still contemplates . . . urban caves, rat-holes, alleyways, tenements, and rookeries that the pickaxe never destroyed. Today, more than twenty years on, they still cause visitors to tremble in horror. Here Neapolitans live out their hard lives, or are struck down by consumption, typhoid, gastro-enteritis, and the comma-shaped bacillus.*[66]

In conclusion, the epidemic-induced nature of the *Risanamento*, together with its design politics and shifts in the geography of demographic density, emerges as a multilayered spatial history of power and poverty through herculean urban design gestures and misleadingly proclaimed housing initiatives for the poor. In disentangling the layers of Naples's urban fabric, this paper unravels the city's complex narrative through a computational humanities lens with the goal of paving the way for a more informed understanding of its past and a more equitable urban future.

2.4. Methodology and Data: Computational Humanities and Historical GIS

This study examines the urban masking of Naples's historic core and evaluates its enduring trope in the city's socioeconomic and built fabric. Through a unique combination of primary archival sources (e.g., historical maps,

[66] Marghieri's gloomy appraisal of the results of urban renewal is *Intorno al problema edilizio* pp. 9—10

census data, administrative records, newspaper articles, and technical reports), GIS-based spatial databases on built forms and building typologies, and contemporary census-tract level data on density, education, and unemployment, this work emerges as a multi-methods spatial investigation of urban configurations and resultant inequities. More specifically, this research contributes to the methodological literature on digital humanities in urban planning studies through a longitudinal analysis of urban metrics in relation to socioeconomic conditions. Given the heterogeneity of primary sources gathered across six different archives and their different media and scales of representations, the author has constructed a novel consolidated GIS-based dataset in UTM-33N **[Table 1]**. This dataset includes georeferenced historical maps, vectorized spatial features extracted from historical maps through semi-automated object extraction techniques, and georeferenced tabular data on poverty by converting location descriptions from an 1866 technical report into georeferenced points.

Table 1 – Historical and contemporary datasets employed in this research.

ARCHIVE	CONTENT
National Archives	a. Schiavone Map of Naples (1862-1879).
Municipal Archives (*sezione Pontenuovo*)	a. Cartographical Surveys on expropriation and construction projects (expropriation series: 218 pieces, construction series: 376 pieces, each piece measures 70x75 cm). b. Municipal Records on the contract between the city of Naples and the *Risanamento* company. c. Minutes of the Municipal Council from 1884 to 1889.
Urban Planning Department (UrbaNA)	a. General Urban Plan of 1939. b. GIS database (Lidar, Building Footprint, Building Typology Classification).
Società Storia Patria Archives	a. Archives of the Neapolitan newspapers "Corriere di Napoli" and "Il Mattino." b. Location of Naples's fondaci through the annotations of sanitary engineer Marino Turchi ("Sulla Igiene Pubblica della Città' di Napoli").
Library of Statistics "Paolo Conca"	a. Yearly statistical publications of the Municipality of Naples (1921–1951).
ISTAT (Istituto Centrale di Statistica)	a. Statistical records from 1881, 1911, and 1921 in regard to the overcrowding rate in the city's neighborhoods. [67]

Throughout this study, I have employed archival research techniques and urban historiography tools to harness the untapped spatial potential of primary sources. The use of GIS and urban analytics techniques to process historical data has been the key methodological component of this work. A historical GIS approach, in fact, allows

[67] The national decennial census of 1881 (the third since the unification of Italy) is the first one to record the number of rooms in each residential unit and aggregate this piece of information by neighborhood. In 1891 there was no national census; in 1901 there are no recording about the housing stock. In 1911 and 1921, ISTAT records show a variable containing the average number of rooms in housing units within each neighborhood.

for a space-specific and longitudinal investigation of the physical evolution of spaces while questioning notions of proximity and density through data sources previously unqueriable due to data formatting or limitations of analog data.

Given this study's historical and contemporary nature, I have structured my data analyses into two distinct sections: 1) the evaluation of the *Risanamento* between 1884 and 1921 and 2) its enduring legacy on the city's socioeconomic fabric in the twenty-first century. The first section advances a spatial and demographic evaluation of the impact of the *Risanamento* through the lenses of public spaces and shifting geographies of population density and wealth. The second section constructs a series of urban metrics to quantify the masking effect of the *Rettifilo* and assess any statistically relevant relationships with contemporary density values and poverty rates (measured through an *ad hoc* constructed indicator employing unemployment and education rates from 2021).

2.5. Analyses and Findings

2.5.1. Unveiling Inequities: Built Forms, Demographics, and Spaces of Altered Topography

2.5.1.1. Shifts in Built Forms and Diminishing Public Spaces

The urban design lexicon of the *Risanamento* emerges as the physical manifestation of the notions of dedensification and sanitation, both achieved through the displacement of residents, the demolition of a large portion of the dense historic city, and the creation of a system of boulevards piercing the *forma urbis*. In this radical alteration process, which building typologies and communities were primarily targeted by the plan's layout? In other words, does a spatial pattern of building types correlate with the plan's configuration? Furthermore, did the introduction of a large boulevard and wide orthogonal streets result in an increase in public space coverage for the city?

To assess the changes in built form and provision of public spaces in the city of Naples, I rely on four of the twenty-three 1:4,000 cartographic sheets compiled by cartographer Schiavoni between 1872 and 1879 (sheets: 14, 15, 19, 20). I argue that measuring the extent of public space is crucial for a quantitative evaluation of the plan, given its

rhetoric of purification and sanitation through large new roads and incisions in the considered congested urban environment.

The evaluation, aided by computational and geoprocessing techniques, is fundamental to shed light on a less documented aspect of the plan: the clearance from the street of those urban poor who used the public realm as a sort of extension of their own units. The logic of *risanamento* intended to order the public realm and, therefore, impact many of those informal workers and street vendors who relied on the public space to conduct their businesses. In other words, by fundamentally altering the city's public spaces and rearranging the configuration of the street network, the *Risanamento* company accomplished two things: they initiated the relocation of those living in those soon-to-be-bulldozed neighborhoods, and they obliterated those physical environment configurations prone to small businesses and street vending activities in a symbiotic relationship with the port. I have stitched together the high-resolution digital reproductions of these maps I acquired at the National Archives of Naples and georeferenced them in a GIS environment **[Fig. 53]**. The incredibly high resolution of the maps and their grey-scale legend on dark ivory paper, aged over time, worked quite well during the process of feature extraction. I have extracted four categories of spatial features: 1) built-up areas; 2) public spaces and outdoor spaces; 3) churches; 4) green areas and cloisters **[Fig. 54]**. These four categories are instrumental in advancing an empirical evaluation of the *Risanamento* plan, as they allow for an in-depth spatial investigation into spaces of overcrowding and the role of spatial patterns related to religious buildings, along with their adjacent green cloisters, in determining the plan's lines. In other words, measurements of the built-up area and public spaces are used to compare the conditions before and after the plan's implementation; the spatial coverage of religious buildings and green areas provides additional insights into the spatial unevenness of the plan. Given the porous nature of the city's built form and its unique system of interconnected courtyards, I have considered not only the street area but also those narrow semi-private courtyards, where people would often live on the ground floors of aristocratic palaces, as public outdoor spaces.

Fig. 53 – Schiavone's cartographic sheets stitched in a GIS environment.
Source: National Archives of Naples. Photo by author (June 2022).

Fig. 54 – Classification of urban typologies contained in the Schiavone map. Source: author.

The identification of churches and cloisters was aided by the details provided by the cartographer, who often represented the indoor architectural layout of religious buildings and the pedestrian paths and fountains located in the numerous enclosed green areas dotting the densely built city center of Naples (e.g., cloisters). Determining the extent of the built-up area proved to be slightly more complicated as I had to exclude those numerous vaulted spaces (e.g., porticos, covered passages under buildings) represented with intersecting diagonal lines; on the other hand, I had to include in the built-up area calculation indoor staircases often depicted in a light grey color similar to outdoor areas. The deliberate decision to represent the indoor areas of churches and religious buildings clearly resonated with the famous Nolli map of Rome, in which churches are represented as an extension of the public realm.

Fig. 55 – Vectorized land-use map of Naples (1872 -1879). Source: author.

The vectorization and classification of spatial features from the Schiavone map are instrumental in conveying otherwise hard-to-grasp spatial patterns and quantitative information on the urban composition of Naples's neighborhoods prior to the *Risanamento* masterplan **[Fig. 55]**. For example, the San Lorenzo neighborhood—barely impacted by the *Risanamento* plan—occupies an area of 485,796 sqm, of which 60,969 sqm are covered by green areas and cloisters (12.54%) and 24,812 sqm (5.12%) by churches. The values grow respectively to 17.95% (green areas and cloisters) and 7.91% (churches) if we calculate the overall spatial coverage of religious buildings, cloisters, and green areas as a fraction of the neighborhood land use, thus excluding its street network coverage **[Fig. 56]**. The land use percentage values in Pendino (a neighborhood highly modified by the *Risanamento*), instead, are only 11% for green areas and cloisters and 6% for churches. Similar to Pendino, other water-facing neighborhoods score quite low in terms of green areas and the presence of churches. Naples's historic core, in fact, records a higher concentration of religious buildings, such as churches and monasteries, in the high-ground areas approximately 350m from the shoreline. The vast majority of religious buildings located in densely populated, low-lying coastal areas encompass small neighborhood churches whose names and communities were deeply connected to the maritime identity of those areas (e.g., Santa Maria di Porto Salvo, San Giovanni a Mare). The

only exceptions concern large-scale religious buildings located in the immediate proximity of Piazza Mercato (e.g., Il Carmine, San Eligio Maggiore).

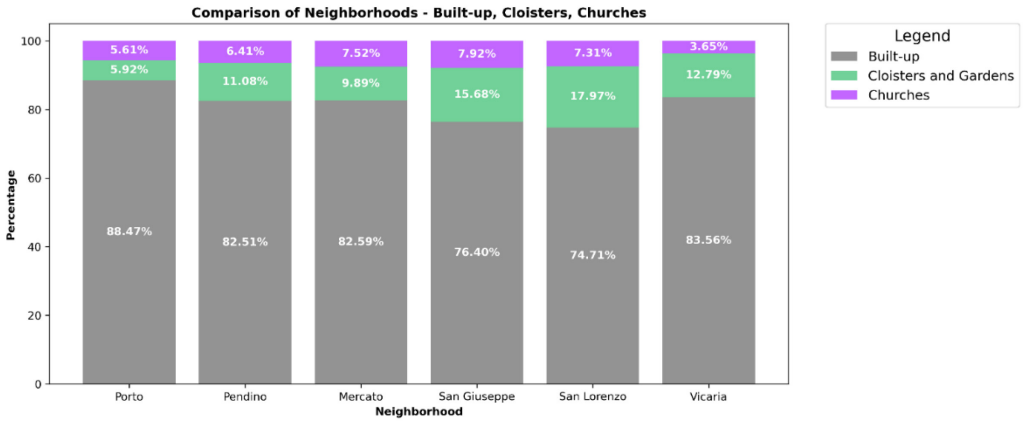


Fig. 56 – Land use distribution according to the map of 1872–1879. Source: author.

Interestingly, the neighborhoods with the highest spatial coverage of churches and cloisters are the very same neighborhoods scoring quite low in terms of public space coverage, meaning that the higher the presence of large-scale religious complexes, the less amount of space was left for residents in terms of places to conduct business or simply live in *bassi* (ground-level residential units). For example, the intricate network of public spaces in Porto and Pendino occupies 47.79% and 37.68% of their respective geographic extents **[Fig. 57]**. Mercato stands out with a notably high public space coverage of 49.85%, thanks to a large waterfront public garden facing the Gulf of Naples.

Through computationally-aided urban observations, two key findings emerge in relation to the activities conducted by the *Risanamento*: 1) the urban incision (*Rettifilo*) that sliced through Naples's historic core spatially overlaps an area devoid of large churches, with almost no cloisters (except for S. Agostino Maggiore and S. Pietro ad Aram), and features a very porous and dense small-scale residential built fabric; 2) the sanitation rhetoric of the *Risanamento*, aiming to heal the city through the marine breeze channeled into new large orthogonal streets, played a role in obliterating a form of public space rather than increasing its spatial extent. It might be assumed that the construction of large boulevards and streets would have increased provisions for public spaces. However, empirical analyses in this study demonstrate the opposite. In addition to the spatial implications, a shift in target demographic is readable in the design orientation of newly structured public spaces. While the plan ostensibly

aimed to ameliorate conditions for residents in the most impoverished neighborhoods, it ultimately allocated these spaces to the middle class, thus signifying a notable alteration in the intended beneficiaries of the design gesture.

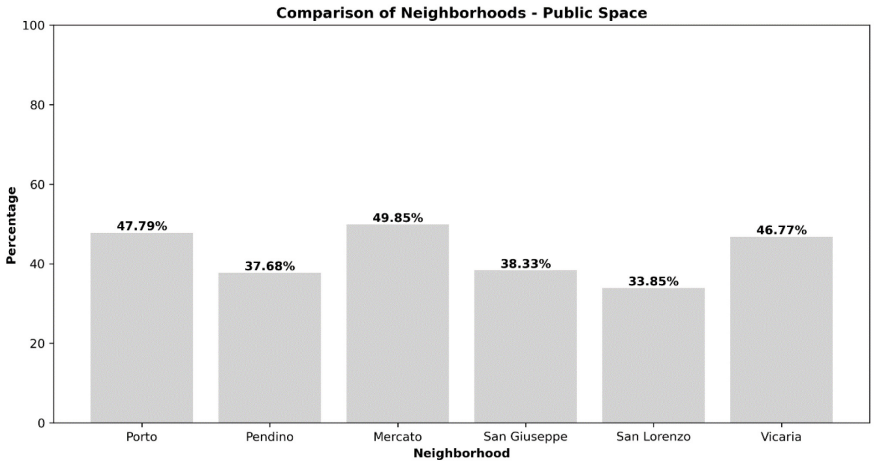


Fig. 57 – Public Space extent in 1872–1879. Image by author.

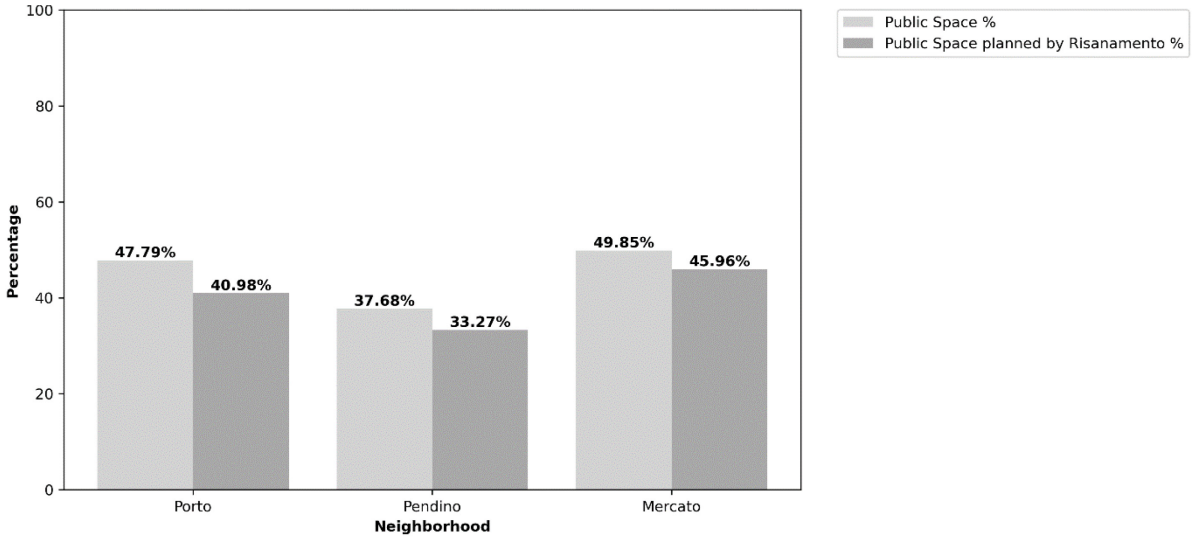


Fig. 58 – Public space extent in 1872–1879 and according to the *Risanamento* plan. Source: author.

The *Risanamento* plan resulted in a reduction of public space in all neighborhoods, with the most significant impact on Porto (from 47.79% to 40%) **[Fig. 58]**. This measurement was extracted from a GIS-based vectorization of 225 cartographic drawings (each measuring 70 x 75 cm) compiled by the *Risanamento* company and acquired by the author at the Municipal Archives **[Fig. 59]**.

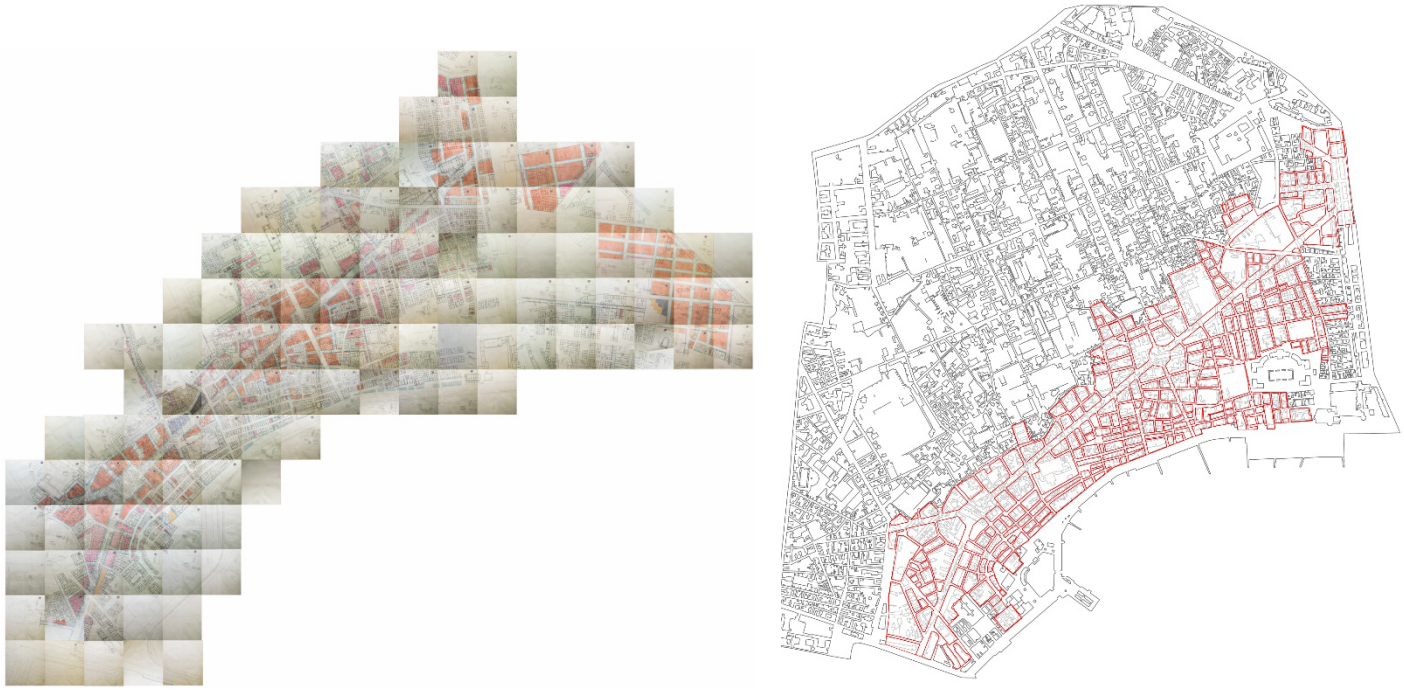


Fig. 59 – (Left) Cartographic sheets photographed in the *Archivio Storico Municipale* and digitally stitched by the author; (Right) Digital analysis of public space extent according to the *Risanamento* plan within the walled-city. Source: author.

Each sheet includes the built fabric prior to the plan represented by thin grey lines (drawn from Schiavone's map), proposed residential/office buildings (in red), sidewalks (in light blue), and public buildings (in solid grey). Quantitative spatial analyses of the *Risanamento* plan reveal a stark contradiction to its intended goal of providing Naples with an extraordinary amount of new public spaces for decongestion. Despite the portrayal of a new wide boulevard and two large piazzas as symbolic openings for the city to "breathe," the measured reality contradicts this narrative.

Rather than enhancing public space, the plan projected a concealed loss behind a veneer of rationalized order, as described by Matilde Serao. The grandiosity of specific focal points, like Piazza Nicola Amore and Piazza Borsa, masked a broader geographic implication. The redesign of block-wide buildings and the implementation of orthogonal street alignment not only eliminated physical space but also eradicated a nuanced street life, deliberately concealed behind the *Rettifilo* and its network of orthogonal streets conceived to channel the

"sanitizing" marine breeze into the city center. In essence, the plan resulted in a hidden loss rather than the proclaimed gain, emphasizing a propagandistic agenda that prioritized specific points of openness over the broader network of small public spaces and sites.

From the perspective of urban design, the transformative manipulation of the city's built form has engendered a rich and diverse lexicon of architectural forms. These forms can be classified into five overarching categories, each reflective of the intricate evolution spurred by the *Risanamento* initiative:

1. *Untouched Buildings:* Structures that managed to withstand the sweeping changes, preserving their original form amidst the urban metamorphosis.
2. *Void Areas:* Resulting from the clearance of existing buildings, these open spaces mark the absence of structures, creating pockets of emptiness in the urban fabric.
3. *Masks:* Thin, elongated structures strategically positioned to conceal the built form of the past. Typically, these structures assume a narrow profile, often consisting of one or two rooms, presenting a deceptive façade that veils the buildings behind.
4. *Totally New Buildings*: Bold architectural interventions characterized by their complete novelty. These structures, often designed with internal courtyards, occupy the entirety of a city block, signaling a departure from the pre-existing urban fabric.
5. *Shells*: Representing a layering of plasters and construction materials onto pre-existing buildings, shells emulate a late-nineteenth-century aesthetic of order and modernity. This technique serves as a visual simulation, seamlessly covering the old with the new and conveying a sense of modernity within the evolving urban landscape.

This comprehensive categorization underscores the multifaceted impact of the *Risanamento* on urban morphology, showcasing the dynamic interplay between preservation, transformation, and innovation in Naples's architectural tapestry **[Fig. 60]**.

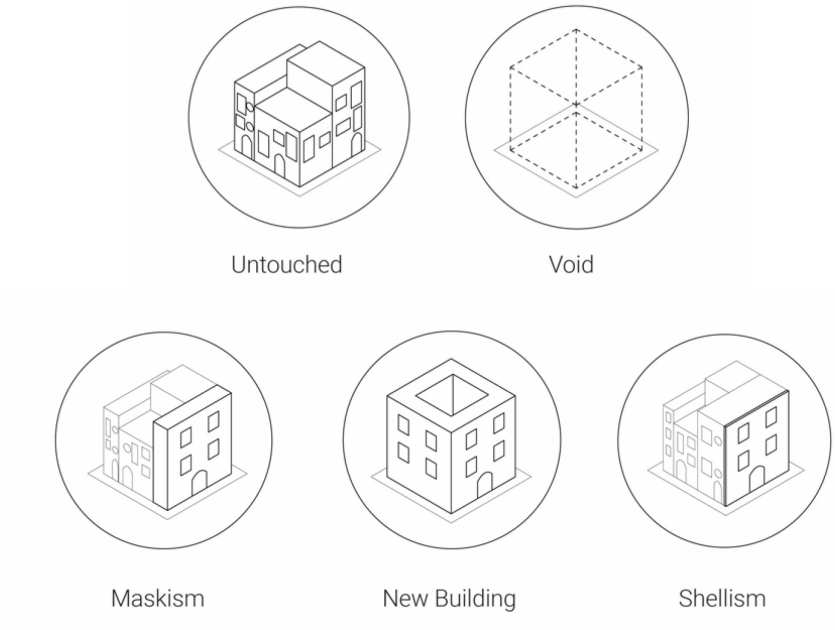


Fig. 60 – Five overarching categories of urban interventions carried out by the *Risanamento* plan. Source: author: Dila Ozberkman and author.

2.5.1.2. Shifting Geographies of Density and Overcrowding

A comprehensive evaluation of the plan also requires an in-depth examination of the shifted geography of population density prompted by the plan. Archival documents and official records from Naples's City Office and the *Risanamento* company illustrate that the plan's priority was the alteration of its built form to address overcrowding, associated with the miasma theory and epidemic medicine, contributing to the spread of diseases, including cholera. According to 1884 data from the *Risanamento* company, Porto and Pendino were identified as the neighborhoods with the highest urban density, particularly Pendino, with an exceptionally high density of 176,829 people/km^2. Porto was the second most densely populated neighborhood, with a population density of 92,110 people/ km^2. By comparing 1884 *Risanamento* data with the 1911 Italian national census, significant shifts in urban design in Porto and Pendino correlated with an approximate relocation of 85,000 people within twelve years from Porto and Pendino to Mercato. More precisely, in just twelve years after construction started in 1889, the neighborhoods of Porto and Pendino had their residential population decrease by 15,963 and 33,241 individuals, respectively. On the other hand, the Mercato neighborhood experienced an increase of almost 30,000 people. Vicaria, similarly, had its population increase from 63,359 to 96,669 individuals. This longitudinal analysis

of demographic data validates the hypothesis and ethnographic observations concerning the relocation of those whose buildings were demolished in the spaces behind the *Rettifilo* and neighborhoods left untouched by the *Risanamento*. The remaining high-ground and church-rich neighborhoods of San Giuseppe and San Lorenzo experienced minimal changes in density, indicating that the inherent absence of sufficient residential units in those areas could not accommodate the overflow of residents displaced by the *Risanamento*. These findings gain significance, particularly in the periods of 1884 and 1906.[68] Data from 1911 must consider the redrawn boundaries of Mercato and Vicaria, encompassing a larger area and population. A limitation is that these boundaries, by 1911, started including large portions of undeveloped land on the city's eastern fringe, complicating comparisons with earlier demographic conditions. Given the focus on comparing densely built areas and disregarding large undeveloped land, administrative neighborhood areas of the late nineteenth century are utilized, encompassing a densely built portion of the historic center and immediately adjacent areas accommodating new housing development during the *Risanamento* (Case Nuove, Arenaccia, Vasto). It is reasonable to assume that Mercato's density would have been higher than recorded, considering its boundaries include factories and maritime facilities along a 200m-wide and 1km-long eastern waterfront. When assessing changes in density and public space through the lens of overcrowding—the primary issue according to the *Risanamento*—it becomes evident that overcrowding was not resolved but rather geographically shifted **[Fig. 61; Fig. 62]**. Specifically, values of people per dwelling from 1881 to 1921 acquired at ISTAT headquarters in Rome reveal that Porto and Pendino experienced a decrease in the average number of people per dwelling from 5.7 and 5.9 to 5.04 (-11.54%) and 4.88 (-17.81%), respectively. In contrast, Mercato, acting as a "sponge" neighborhood, absorbing most displaced residents, saw values increase by 53.71%, from 6.0 to 9.6 people per dwelling **[Table 2]**. Mercato's value is notably higher than that of other neighborhoods, even on a people-per-room scale. In Mercato, the number of people per room in 1921 was 3.17, almost two times higher than all other neighborhoods.

[68] In this analysis I am using boundaries established in 1862. There is new boundary from a map in 1905–1906 and it seems that the population of certain neighborhoods radically changes in 1911 due to plausible of adoption of admin boundaries changes. To fix the error, mostly about Vicaria and Mercato, if compared with the tabular data from the archival document in Naples from 1921, I calculate the density in 1911 and 1921 with the admin from 1862 as, otherwise the values would have been way too little: for example Vicaria scoring 30,845 peopl/sqKm (which is what appear on the 1921 records but does not reflect the actual density of the built up area).

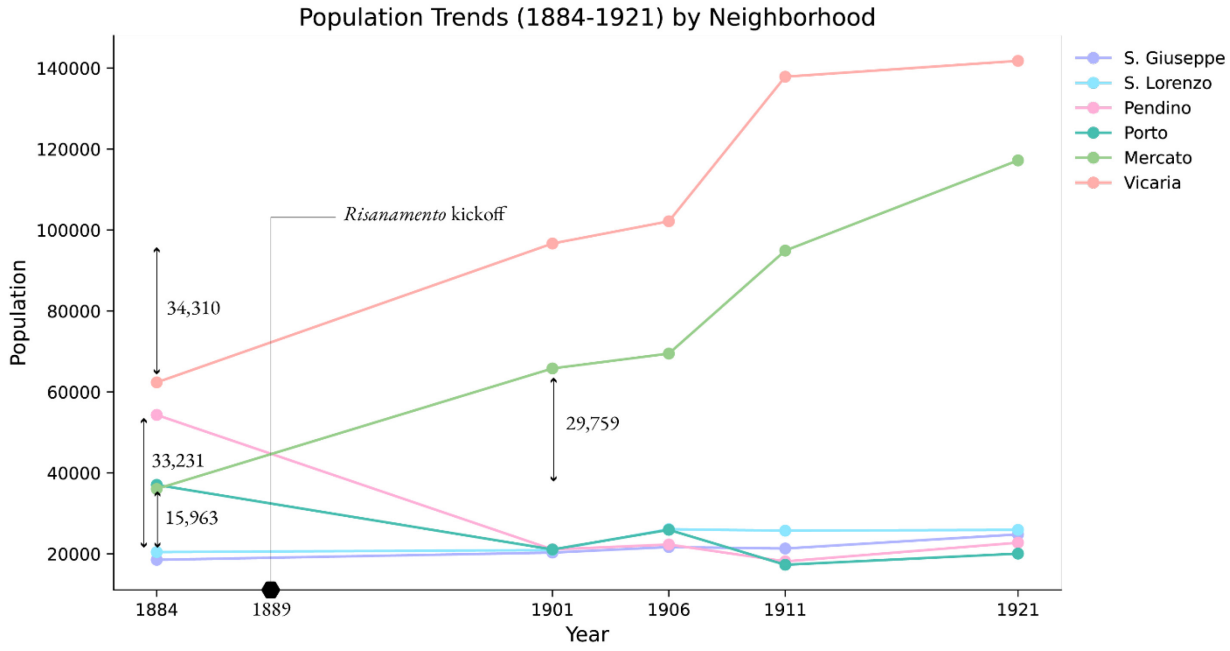


Fig. 61 – Population trends from 1884 to 1921. Source: ISTAT archives in Rome. Source: author.

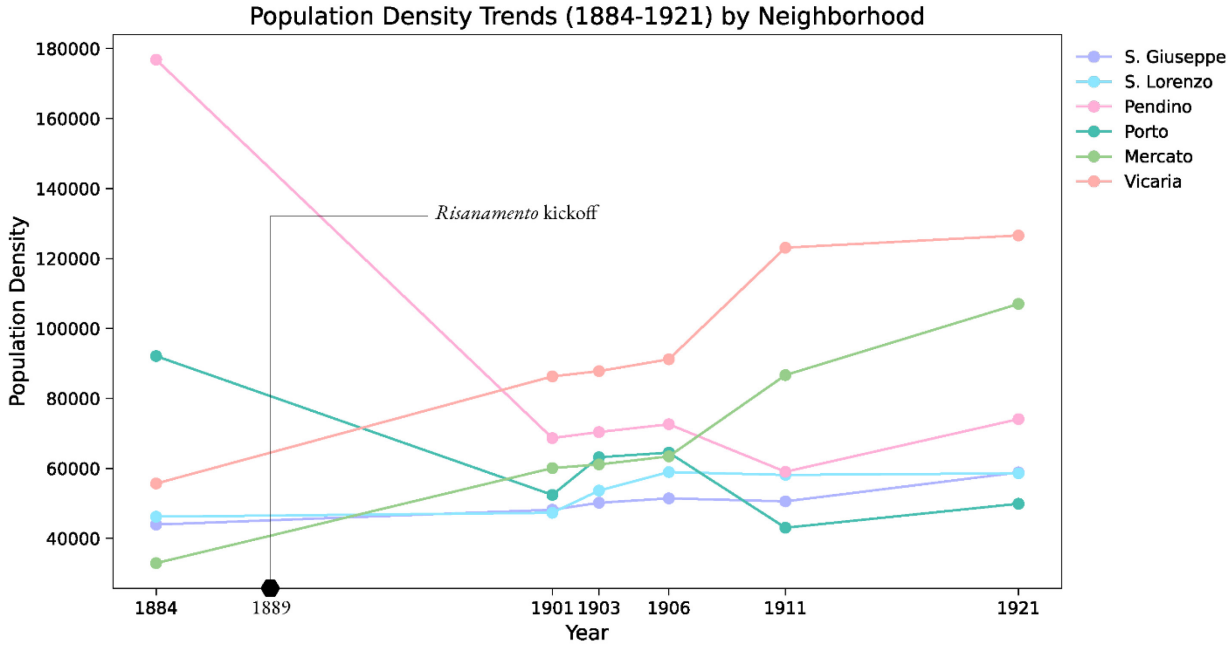


Fig. 62 – Population trends from 1884 to 1921. Source: ISTAT archives in Rome. Source: author.

Table 2 – Overcrowding records by neighborhood

Neighborhood	People/dwelling (1881)	People/dwelling (1921)	% change in people/dwelling	People/room (1921)
S. Giuseppe	5.649031512	5.887307236	4.22%	1.032195
S. Lorenzo	7.933831377	5.873839185	-25.96%	1.293577753
Pendino	5.947673428	4.888101375	-17.81%	1.106874498
Porto	5.701777778	5.043991956	-11.54%	1.187488903
Mercato	6.026304534	9.26309966	53.71%	3.177864541
Vicaria	7.540044954	7.757686837	2.89%	2.167075491

The supplemental municipal report of 1921, published through data collected every ten years by the national census (ISTAT), provides additional clarity on the types of units used as residential spaces. With a comparative benchmark in 1881, this dataset allows measurement of changes in the use of ground floor units (*bassi* and *fondaci*) over time. The data categorizes ground-floor residential units into two types: those facing streets and those facing internal semi-private courtyards. Between 1881 and 1921, during the first approximately forty years of the *Risanamento*, there is a general decreasing trend for these types of dwellings. Pendino recorded a significant decrease in ground-floor street-facing and courtyard-facing units, losing 63.77% and 67.26%, respectively. However, while decreasing trends seem shared across all neighborhoods (except for Vicaria, which in 1921 included newly developed medium/low-density areas), Mercato stands out. Mercato is the only neighborhood where a decrease in courtyard-facing units does not mirror a decrease in street-facing units. In fact, Mercato experienced an increase of 70.12% in its courtyard-facing units, supporting the initial hypothesis that 'invisibility' (being in less publicly exposed areas, such as streets) provided ground for density and residential accommodations. In other words, the more intricately hidden from the public street, the more ground-floor units were used for residential purposes. In conclusion, this empirical analysis demonstrates that the *Risanamento* failed to eradicate overcrowding in Naples. Instead, it was shifted to a less visible location **[Fig. 63]**.

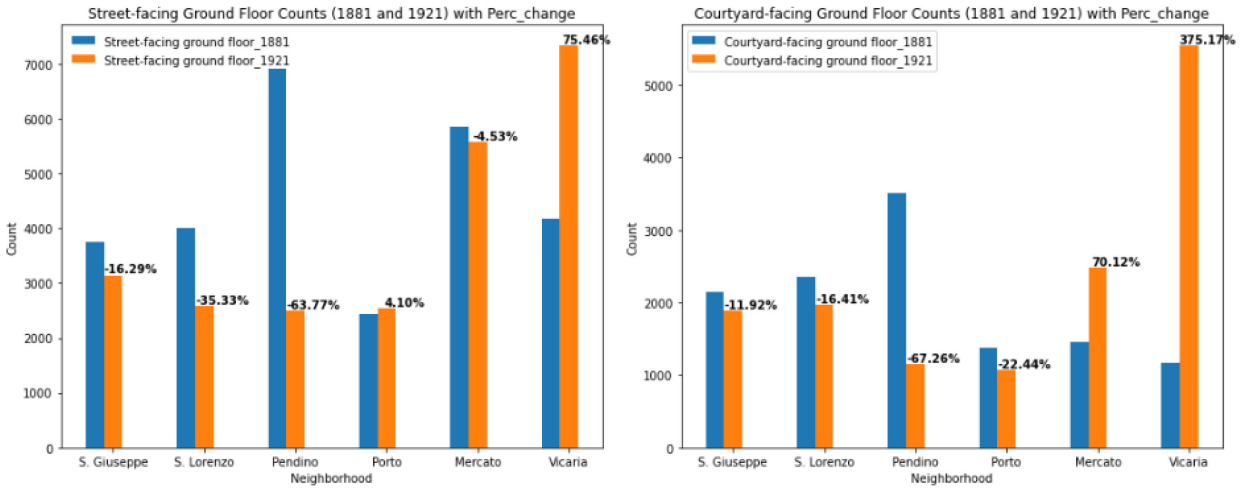


Fig. 63 – Shifts in numbers of ground floor residential units between 1881 and 1921 (left, street-facing units; right, courtyard-facing units). Source: author.

2.5.1.3. Maneuvering Topographic Changes to "Bury" the Poor

While spatial and computational analyses on the shifting geography of density and the erasure of public space paint an unmistakable picture of a city navigating enormous transformations in its built form, they fall short of conveying how urban poor were not evenly distributed along the low-lying, water-facing neighborhoods. Some might argue that the locations of densely populated pockets of poverty in narrow, dark, and unhealthy spaces known as *fondaci* determined the inclination of the *Rettifilo* and its neighboring regular blocks and orthogonal streets. The word *fondaco* comes from the Arabic *funduq*, which refers to an inn-like establishment for traveling merchants. It is a relatively common Mediterranean built form that can be found in other southern European cities like Genoa, Marseille, and Venice, as well as northern African coastal cities in the neighborhoods between the *medinas* and maritime infrastructures. In Naples, however, as time progressed, and with the emergence of larger monasteries providing shelter for travelers, the *fondaci* transitioned away from their initial purpose. They evolved into refuges and homes for the most impoverished segments of society, enduring challenging living conditions for centuries.[69]

[69] Stefano De Falco and Alberto Corbino, "Naples and Tourism: Conflicts of a Dream Realised? Analysis of a Fast-Changing Urban Landscape," *AIMS Geosciences* 9, no. 4 (2023): 754–68, https://doi.org/10.3934/geosci.2023040.

Through a meticulous georeferencing operation conducted in a GIS environment, this research has georeferenced on Schiavone's map (1872–1879), ninety-five *fondaci* whose spatial attributes were described by the sanitary engineer and former member of the municipal council, Professor Marino Turchi **[Fig. 64]**. In his study on the unhealthy conditions of Naples, Turchi constructs a detailed spatial database—with no maps—about the location of the most problematic and filthy *fondaci*. His work was published in 1868, and it served those large-scale urban projects for the low-lying neighborhoods of Naples that preceded the post-Cholera urban design competition through which Giambarba's project was selected.[70]

Turchi divides his technical reports into different sections: each section is dedicated to one of the twelve districts of Naples. Through a historical GIS approach, I have identified the *fondaci* described by Turchi in Schiavone's map, whose spatial details allowed me to represent the *fondaci* not as points but as polygons, thus allowing a more granular understanding of the narrowness and squeezeness of these. At the end of this process of database construction, I was able to locate ninety *fondaci* across the neighborhoods of Porto, Pendino, Mercato, San Giuseppe, San Lorenzo, and Vicaria **[Fig. 65]**. In addition to the georeferenced 90 *fondaci* **[Table 3]**, there were eight I was unable to locate on Schiavone's map: five of them are not identifiable on the map because they were erased in the 1870s through a spatially confined urban clearance project that affected the southern edge of Porto neighborhoods in the immediate proximity with the City Hall piazza. More specifically, the eradicated five *fondaci* were located along Via Flavio Goja, and they included the so-called *Fondaco degli Incurabili di Porto* (trans., "Fondaco of the Unhealable people of Porto"). According to Turchi, this was the most overcrowded *fondaco* in the city with 1183 people living squeezed into 254 cave-like rooms. Given the gigantic dimensions of some of the *fondaci*, it might be easier to think of them as elongated courtyards resembling the shapes of beehive-looking systems of layered rooms and stairs in semi-dark and stale conditions. The organized, neighborhood-based compilation of *fondaci* by Turchi occasionally allowed room for additional information, shedding light on some remarkable aspects of the described sites. For instance, he elaborates on *fondaci* such as *Palazzo delle Immondizie* (translated as "Garbage Building") and *Scannasorci* (*fondaco* of mice slaughters), highlighting that their names vividly depict extremely unhealthy and squalid spaces, evoking images of extraordinarily unsanitary conditions. The georeferenced database derived from Turchi's notes reveals unexpected and intriguing historical layering. Notably, the ruins of the *Palazzo delle Immondizie* are situated today directly beneath the pedestal of King

[70] Marino Turchi, *Notizie e Documenti Riguardanti Le Condizioni Igieniche Della Citta' Di Napoli* (Napoli: Tipografie del Municipio, 1868).

Vittorio Emanuele II, dominating the center of Piazza Borsa and guiding his horse toward the *Rettifilo*, named after his ancestor Umberto I. In essence, a monument to a King now stands atop the remnants of a "Garbage Building," creating a symbolic juxtaposition of royalty and refuse.

According to Turchi, the majority of *fondaci* were situated in Porto, which was initially the key neighborhood of significant demolition efforts during the *Risanamento*. Overlaying the geographical distribution of *fondaci* with the *Risanamento* plan reveals how this formidable erasing force leveled and buried an incredibly dense network of *fondaci* beneath block-size buildings. These *fondaci* were aligned nearly parallel to one another, sharing entrances along the narrow street leading to Piazza di Porto, the site of the grandiose *Risanamento* inauguration. Other large clusters of *fondaci* did not escape the clearing force of the *Risanamento* either, especially in the area of Piazza Orafi (Pendino), where the spatial configuration was preserved and relocated one block behind the Rettifilo, and in the area of S. Eligio Maggiore (Mercato). Notably, due to their distance from the *Rettifilo*, these clusters lack towering buildings burying the *fondaci*. Instead, their elongated yet dead-ended shape was transformed by converting the *fondaci* into a secondary street network, thereby "freeing" them from the constraints of poverty and allowing the breeze to circulate.

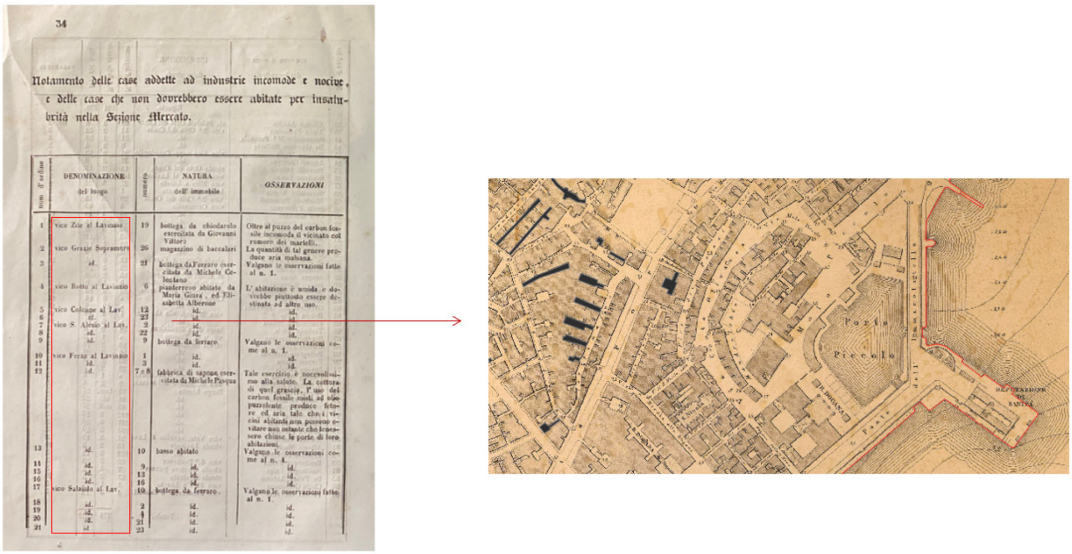


Fig. 64 – Spatializing Turchi's note into a georeferenced database of *fondaci* (black polygons). Source: *Società Napoletana di Storia Patria*. Photo by author (June 2022).

Table 3 – Number of *fondaci* by neighborhood

Neighborhood	Georeferenced *Fondaci* (1868)
S. Giuseppe	2
S. Lorenzo	4
Pendino	16
Porto	28
Mercato	18
Vicaria	22

Fig. 65 – Overlaying the forms of the *Risanamento* plan over the geolocated pockets of poverty extracted from Turchi's notes. Source: author.

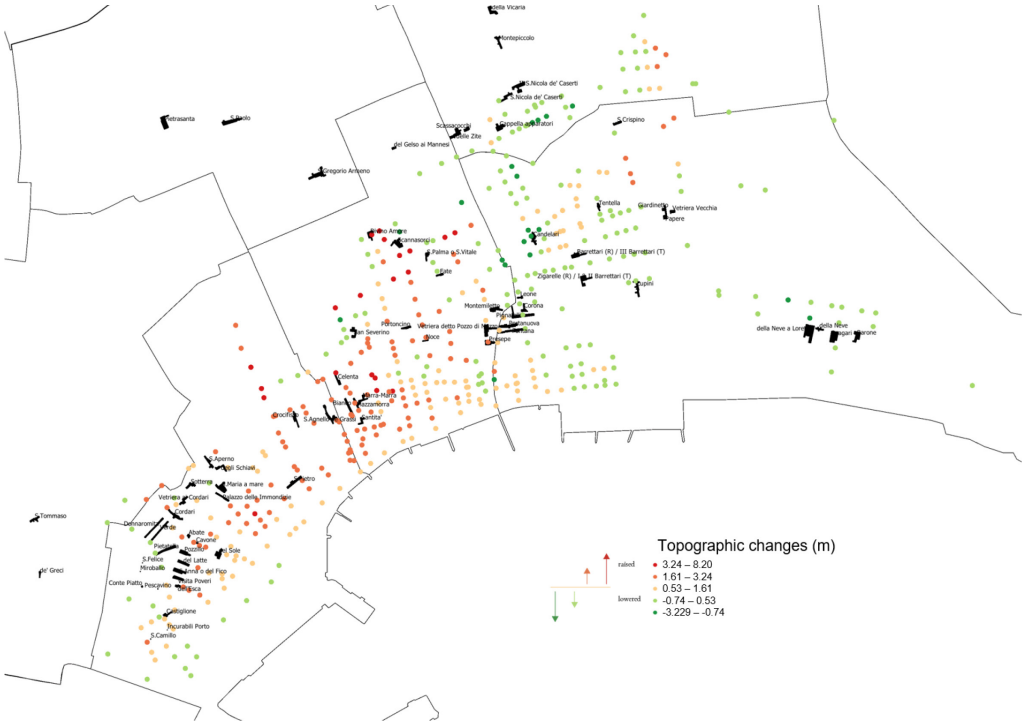


Fig. 66 – Topographic changes (red indicates raised levels, green indicates lowered levels) in relation to pockets of poverty. Source: author.

As previously indicated through the longitudinal trends of ground-level residential units, the *fondaci* were not the sole clusters of poverty erased by the *Risanamento*. Ground-floor units dispersed along the winding street network of Naples's low-lying neighborhoods exhibited similar characteristics, perhaps with the only advantage of not being as deeply squeezed into the interstitial spaces of the urban fabric as the *fondaci*. In line with miasma theory and cognizant of the stagnant, dirty water prevalent in these areas due to the relatively high-water table, the *Risanamento* employed *colmate* techniques to achieve two spatially interrelated goals: elevating the city from the water table to prevent stagnant water conducive to illness and burying the ground floors where the impoverished used to reside. In essence, the city underwent a neighborhood-wide entombment of a couple of meters, permanently submerging the ground floors through the debris of surrounding demolished buildings. Utilizing a historical GIS approach, it becomes evident how clusters of *fondaci* and the nearby *bassi* of Pendino and Porto spatially correlate with areas where the topographical ground was raised between 3 and 8 meters **[Fig. 66]**.

In conclusion, the exploration of urban incisions within the context of the *Risanamento* in Naples raises pivotal questions regarding its effectiveness in alleviating overcrowding and fulfilling the demand for adequate housing.

The inquiry into whether these interventions led to the creation of additional public spaces, particularly whether the expansive roads of the *Risanamento* targeted impoverished areas known as *fondaci*, delves into the transformative shifts in the geography of density from the late 1890s to the early 1920s. The findings underscore a triple contribution, revealing that the *Risanamento* not only failed to augment public space but, paradoxically, intensified density in partially untouched neighborhoods. This intensification was achieved through strategic topographic alterations and the elevation of street levels predominantly inhabited by the impoverished. The following section will pivot towards an empirical analysis, concentrating on the enduring impact of concealing density and poverty in contemporary urban settings. This will be accomplished through the construction of spatial regression models and the development of indicators aimed at capturing these nuanced spatial dynamics.

2.5.2. The Enduring Legacy of the "Mask": Overcrowding and Socioeconomic Exclusion

The analysis of contemporary population density in Naples unveils a pathway to comprehend its intricate relationship with the physical attributes, configurations, and ages of the built environment. One key question arises: do census tracts overshadowed by surrounding tracts with a higher average building height tend to exhibit high population density and socioeconomic exclusion? Additionally, is there a nuanced shift in density and poor socioeconomic conditions based on factors such as proximity to the *Rettifilo*, specific neighborhoods, or the predominant construction age of buildings within each tract? These inquiries delve into the complex dynamics between urban planning, architectural features, and population distribution, shedding light on the contemporary legacy of urban development.

2.5.2.1. Determining Dependent Variables: Population Density and Index of Socioeconomic Exclusion

I employ data on population density, social exclusion (e.g., unemployment, education rate), and urban form to answer these questions. The geographic area of focus for this work includes the neighborhood of San Giuseppe and the port-facing neighborhoods of Porto and Pendino **[Fig. 67]**.[71]

[71] The present-day boundaries of Pendino neighborhood are the result of a spatial combination of the early 1900s boundaries of Pendino and the eastern part of Mercato (more specifically the area between *Traversa Rua Francesca* and *Corso Garibaldi*). Given the scope of this work to capture at a granular level the relationship between socioeconomic features and the built environment, I have decided to use the

Fig. 67 – Naples's neighborhoods physically impacted by the *Rettifilo*. Source: author.

By processing a spatial join between neighborhoods of interest and ISTAT census tract data, I have obtained the number of census tracts contained in the selected neighborhoods: 446. These 446 tracts are the spatial units of the analytical work conducted in this study. However, given that some of these tracts do not contain buildings or residential units, I exclude from the dataset all tracts in which the 2021 population data released in June 2023 by ISTAT is either missing or zero. As a result of this filtering, the final number of census tracts considered in this study is 321 (there are 125 units with missing/zero population values). For the 321 spatial units of this study, I have created a population density variable by considering the 2021 population data and the spatial extent in hectares of each census tract **[Fig. 68]**. The population density map in the image below reveals peaks of more than 1,400 people/hectare in the tracts in the northeast area of Mercato (more precisely, 1,480 people per hectare in census tract "630496115851"). These are extremely high values considering that, according to the NYC Open Data portal, the high-density tracts of NYC are above 200 people per acre (approximately 500 people per hectare). The average population density of Naples in neighborhoods part of this study is 346.59 people/hectare.

early 1900s boundaries of Pendino and Mercato to better capture different neighborhood-related effects in the area by the waterfront. As a result of this spatial adjustment, the neighborhoods of interest are four: San Giuseppe, Porto, Pendino, and Mercato.

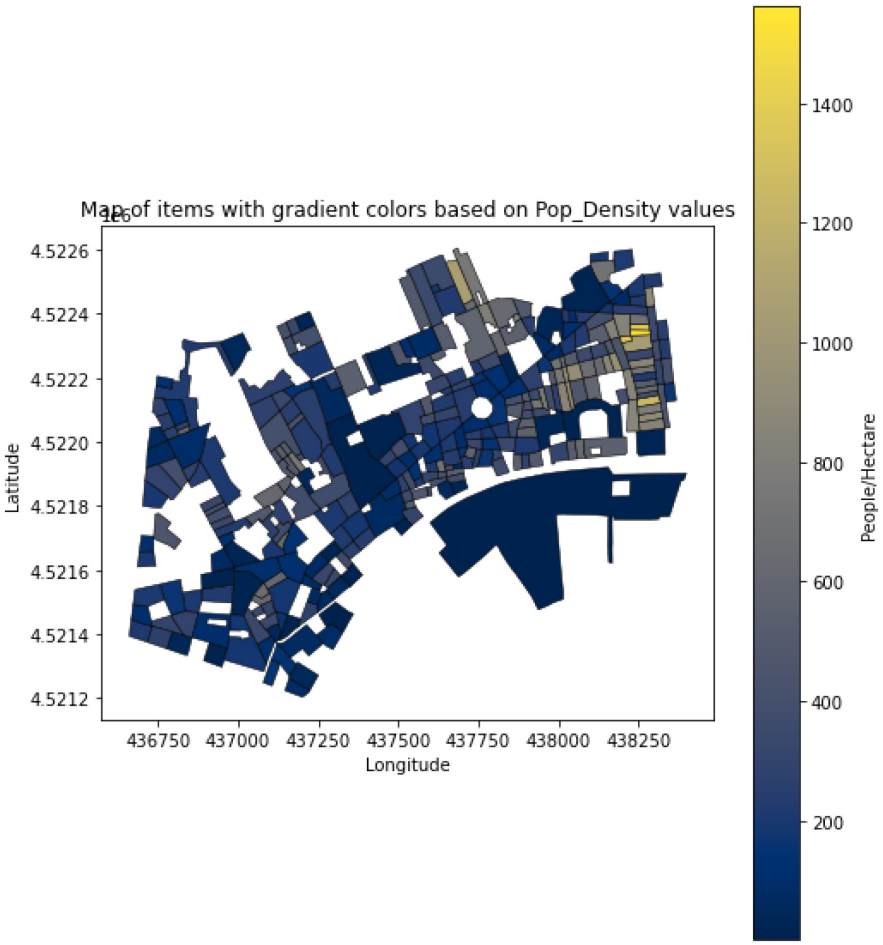


Fig. 68 – Population density values (2021). Source: author.

I have constructed a Socioeconomic Exclusion Index (SEI) that brings together unemployment and education rate 2021 values in each census tract **[Fig. 69]**. More details about the index construction process are available in the Appendix section of this paper.

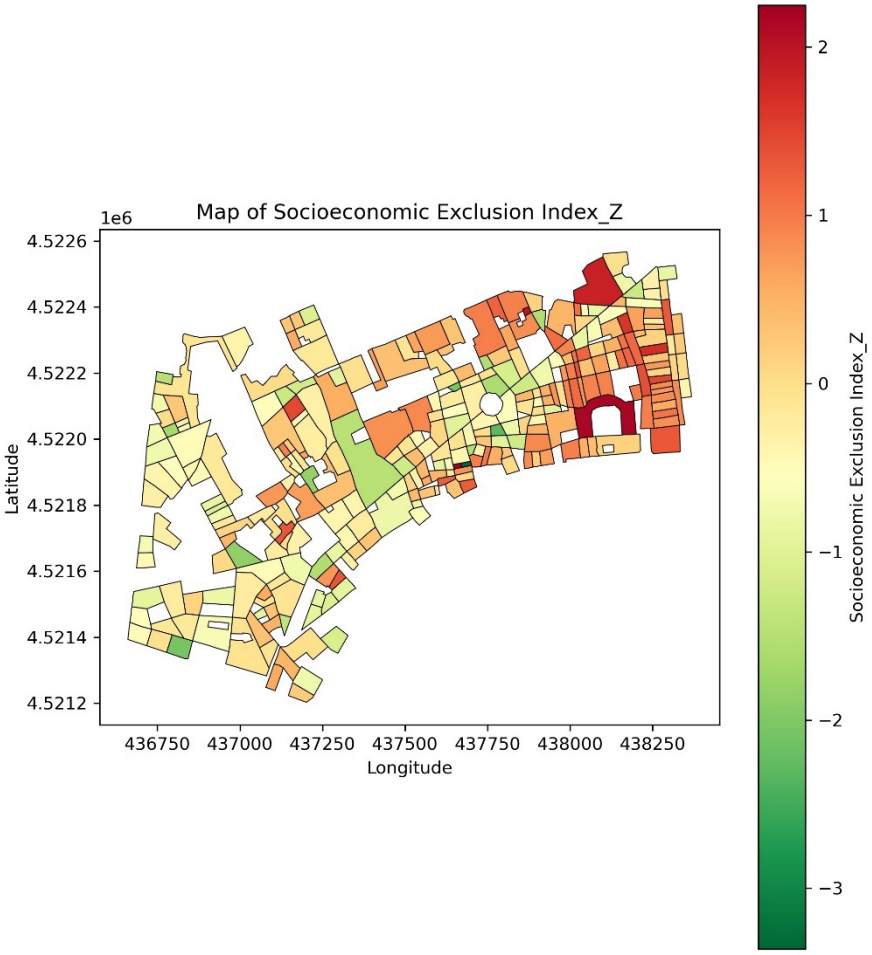


Fig. 69 – Socioeconomic Exclusion Index. Source: author.

2.5.2.2. Constructing Urban Form Parameters

As a result of the unprecedented demolitions and reconstructions that happened in the historic center of Naples, I have constructed a series of urban form parameters that aim to capture the rich diversity of forms and age at the scale of each census tract. To do so, I have worked with two different datasets: 1) a raster Lidar dataset on building height with a resolution of 1m per pixel and 2) a building footprint dataset containing categorical information on the construction age of each building. The latter dataset was constructed by the Municipality of Naples Urban Planning Office in the early 2000s to map the diversity of building typologies of the historic center at the building level. While the dataset has information about the typology of private spaces (such as courtyards, cloisters, and private gardens), I have not taken those into account in my analysis as they do not have a building height, being

mostly outdoor spaces at the street level. Relying on the spatial idiosyncrasies of the dataset, I have constructed the following variables belonging to three different categories: footprint, height, and age **[Table 4]**.

Table 4 – Built forms variables used in the regression models.

FOOTPRINT	
Building Density (BD)	building/hectare
HEIGHT	
Average Height (AH)	m
Adjacency Masking (AM)	m
***Rettifilo* Masking (RM)**	m
AGE	
Dominant Age (DA)	age
Adjacency Dominant Age (ADA)	age

2.5.2.3. Measuring the Relationship between Built Forms and Population Density

To empirically evaluate the relationship between urban form parameters and socio-demographic variables, I have constructed a series of OLS regression models that take into account numerous spatial attributes, such as density of buildings, "Building Density," average building height *in situ,* "Average Height," average height in the immediate surroundings, "Adjacency Masking," and average height along the shortest line connecting a census tract to the boulevard, "Rettifilo Masking." The variables considered in these models meet all OLS assumptions and have been tested for collinearity. In this section, I use the term "masking" to describe the physical obstruction of vision caused by the average height of built structures within a specific census tract. As discussed in earlier sections of this paper, this concept of "masking" extends beyond mere physical obstruction, drawing on the socio-cultural connotations of masks and their historical significance in spatial contexts. Specifically, I explore Adjacency Masking and Rettifilo Masking as parameters to quantify urban morphology's impact on sightlines. These parameters allow the study to assess the extent to which vision is occluded between a particular site and its neighboring areas or between a defined area and the buildings that lie between it and a main boulevard. In general, this approach integrates the measurable aspects of the urban mask with the socio-cultural and historical dimensions of the act of masking.

In the first group of models (Model I, II, III), I used the Population Density variable as the dependent one. I have run three different models to assess the role of one of the three categorical variables considered in this study in each

single regression. More specifically, Model I takes into account the neighborhood effect, Model II considers the dominant building construction age in each census tract, and Model III evaluates the relationship with the dominant building construction age in the immediate surroundings of each census tract. The number of observations in each model is 291. Each observation is a census tract with a Population Density larger than zero **[Table 5]**.

Table 5 – Regression Models I, II, III (population density as dependent variable)

	Model (I)	**Model (II)**	**Model (III)**
constant	516.6733***	569.0759***	516.6733***
	(96.2035)	(97.2107)	(96.2035)
Building fragmentation	4.2814***	4.0676***	4.2914***
	(0.5212)	(0.5408)	(0.5212)
Average weighted height	-10.4500***	-12.4093***	-10.4500***
	(3.1042)	(3.0553)	(3.1042)
Adjacency masking	-12.1127***	-12.3174***	-12.1127***
	(2.8783)	(2.7002)	(2.8783)
Rettifilo masking	13.3474***	15.6368***	13.3474***
	(3.2923)	(3.2877)	(3.2923)
Neighborhood_Pendino	-160.8517***		
	(31.3692)		
Neighborhood_Porto	-107.2677***		
	(36.7167)		
Neighborhood_San Giuseppe	-39.2811		
Dominant_Age_1800		8.4694	
		(75.6119)	
Dominant_Age_1900		-40.8459	
		(28.4673)	
Dominant_Age_2000		72.1601	
		(52.1828)	
Adjacency_Dominant_Age_1800			-110.825
			(80.0679)
Adjacency_Dominant_Age_1900			-65.4831**
			(28.5696)
Adjacency_Dominant_Age_2000			38.1198
N	291	291	291
R-squared	0.3681	0.3631	0.3681
R-squared Adj.	0.3525	0.3474	0.3525
Standard errors in parentheses. * p <.1, ** p<.05, ***p<.01			

Models I, II, and III demonstrate a series of statistically significant relationships with the variables "Building Density," "Average Height," "Adjacency Masking," and "Risanamento Masking." More specifically, in all three

models, the variable indicating the density of buildings over a built-up area (Building Density) has a positive coefficient of 4.24 for Model I, 4.07 for Model II, and 4.28 for Model III. This statistically significant positive relationship indicates that, on average, a one-unit increase in the ratio of building number to built-up area results in an approximately four people/ha increase in population density. This implies that areas with more buildings relative to the overall footprint coverage of a census tract tend to have higher population densities. In the context of the *Risanamento* and its morphological shifts, this empirical result reinforces how areas that have maintained an irregular and fragmented composition of distinct smaller buildings are still associated with higher density values than census tracts with large block-size buildings (thus low building density).

Suppose the relationship is positive between building density and population density. In that case, the models reveal an opposite situation for the variable on the average height of each census tract, weighted by built-up area. All three models show that, on average, a one-unit increase in the average building height weighted by footprint decreases population density. More specifically, the decrease in population density associated with the building height is more pronounced than the increase associated with building density. More specifically, the Average Height has a negative coefficient of -10.45 for Model I, -12.40 for Model II, and -10.45 for Model III. This suggests that census tracts with taller buildings relative to their footprint tend to have lower population densities. This finding is quite informative as it provides empirical evidence on the counter-intuitive nexus between building heights and density: lower buildings in the densely built historic center of Naples are statistically associated with higher population density values. In other words, for each meter of increased average height, there is a ten people/ha decrease in population density.

The negative relationship between population density and building heights applies to the Adjacency Masking variable, too. This finding suggests that areas with higher adjacency masking—indicating taller surrounding buildings compared to the ones whose centroids belong to the census tract of analysis—tend to have lower population densities. The coefficients of all three Models associated with the Adjacency Masking variable are approximately -12.00. More specifically, the Adjacency Masking has a negative coefficient of -12.11 for Model I, -12.31 for Model II, and -12.11 for Model III. Given that the Adjacency Masking contains both positive and negative values, it is important to clarify that an increase can occur in both negative and positive terms, for example, from -30 to -10 or 10 to 30. For example, in a census tract with a negative Adjacency Masking (which means that the buildings in the census tract of analysis are on average taller than their immediate Queen-contiguity surroundings), an increase of one meter is associated with a 12 people/ha decrease in population density. In other

words, the more masked and dwarfed by its immediate surroundings a census tract is, the lower population density it is going to have **[Fig. 70]**.

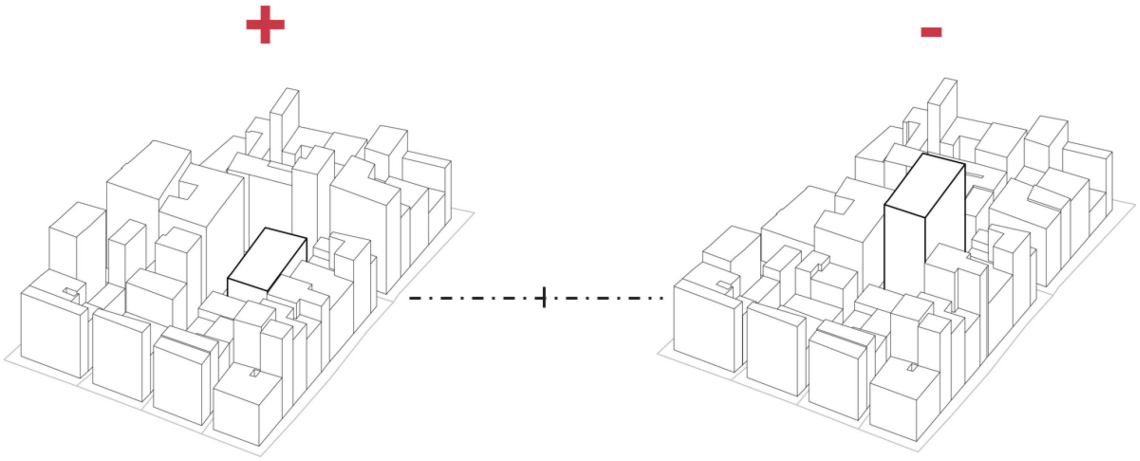


Fig. 70 – Diagram of Adjacency Masking. (Left) A positive result indicates that surrounding census tracts have average heights higher than the one object of the analysis; (Right) A negative result indicates that surrounding census tracts have average heights lower than the one object of the analysis. Diagram by Dila Ozberkman and author.

While the two last sets of findings might sound almost contradictory, upon closer inspection, they reveal some nuances about how population density varies in relationship to the average building height of a census tract itself and the heights recorded in the immediate surroundings of that tract. The first variable explains that lower buildings are associated with higher population density values; the second variable, instead, explains that buildings whose surroundings are taller are associated with lower population density values. The findings are not mutually exclusive because the second variable indicates a difference in height and not an absolute height itself. In practical terms, for example, a low building that is surrounded by much lower buildings would have a negative Adjacency Masking value as it towers over its adjacent buildings and is not masked by them. As a result of the regression model, this specific case will be associated with an increase in population density due to its endogenous condition as a low building and its adjacency-induced condition as a towering building.

Finally, the statistical relationship between the Rettifilo Masking variable and the population density empirically demonstrates the boulevard's morphological role in relation to its surroundings' demographic distribution. All regression models confirm that census tracts whose buildings are masked by the boulevard are associated with higher population rates. More precisely, the Rettifilo Masking has a positive coefficient of 13.34 for Model I, 15.63 for Model II, and 13.34 for Model III. The positive coefficients suggest that, on average, a one-unit increase in

Rettifilo Masking (which means a one-meter increase in the difference between the average height of intersecting census tracts along the shortest line linking a census tract *i* to the *Rettifilo* and the tract of analysis) results in an approximately 14 people/ha increase in population density. In conclusion, this implies that areas with higher *Rettifilo* masking, indicating a more pronounced visual occlusion between the boulevard and the census tract of analysis, tend to have higher population densities **[Fig. 71]**.

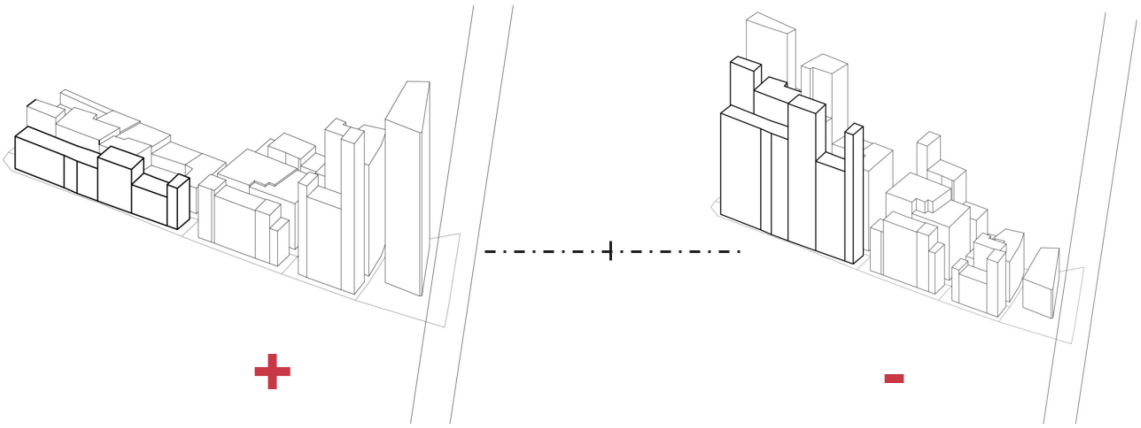


Fig. 71 – Diagram of Rettifilo Masking. (Left) A positive result indicates that the weighted distribution of building heights between the *Rettifilo* and census tract object of the analysis is higher than the average height of the census tract with thicker lines. (Right) A positive result indicates that the weighted distribution of building heights between the *Rettifilo* and census tract object of the analysis is lower than the average height of the census tract with thicker lines. Diagram by Dila Ozberkman and author.

In addition to testing statistically significant relationships for numerical variables in order to grasp informative insights on the relationship between the density of buildings, meters of building heights, and population density, the three OLS models employed in this study include three different categorical variables. While the variable identifying the dominant construction age of buildings in each census tract does not have any statistically significant relationship with the outcome variable of Model I, Model II, and Model III, it instead provides a robust statistical relationship in regard to neighborhoods and dominant construction age of surrounding census tracts. In Model I, for instance, the negative coefficients for neighborhood dummies (Pendino: -160.85, Porto: -107.26, San Giuseppe: -39.28) suggest that, on average, these neighborhoods have lower population densities compared to the reference category, Mercato. This underscores the importance of considering neighborhood characteristics in understanding population density variations across the historic center of Naples. Mercato, in fact, has a relatively higher predicted population density compared to Pendino, Porto, and San Giuseppe in Model I. Moreover, given that "Neighborhood San Giuseppe" has a p-value of 0.340, it implies that the population density difference between San Giuseppe and the reference category (Mercato) is not statistically significant. In practical terms, this suggests that the population density in San Giuseppe is not significantly different from Mercato after

accounting for other variables in the model. Model II and Model III do not have any statistically significant relationship with the outcome variable, except for the category of surrounding buildings built at the beginning of the twentieth century of Model III (Adjacency Dominant Age _ 1900 with a negative coefficient of 65.48). The effect is statistically significant at the 0.05 level.

In conclusion, the linear regression of Model I provides valuable insights into the complex interplay of building characteristics, spatial factors, and neighborhood distinctions influencing urban population density. The findings contribute to a nuanced understanding of how various physical elements conceived and implemented by masterplans of the past are correlated with the contemporary density landscape within urban environments, offering valuable implications for urban planning and development strategies.

2.5.2.4. Measuring the Relationship between Built Forms and Socioeconomic Exclusion Index (SEI)

Regarding the Socioeconomic Exclusion Index (SEI), Models I, II, and III demonstrate a series of statistically significant relationships with the urban form variables previously analyzed in the regression models aiming at predicting population density values in Naples's census tracts. More specifically, in all three models, the variable indicating the density of buildings over a built-up area (Building Density) has a positive coefficient. This statistically significant positive relationship indicates that, on average, a one-unit increase in the ratio of building number to the built-up area results in an approximately 0.004 standard deviation increase in SEI. This implies that areas with more buildings relative to the overall footprint coverage of a census tract tend to have higher SEI. The coefficient values of 0.0047 (Model I), 0.0046 (Model II), and 0.0060 (Model III), however, are relatively small. In the context of SEI's range (-3 to 2), a change of 0.004 or even 0.006 standard deviations is minor, suggesting that building density has a modest connection to socioeconomic exclusion; its impact, while present, is not substantial.

The coefficients of the Adjacency Masking and Rettifilo Masking variables across all models provide important insights into the nuanced interplay between urban form and the Socioeconomic Exclusion Index (SEI). Adjacency Masking records consistently negative coefficients, and Rettifilo Masking has positive coefficients across Models I, II, and III. Adjacency Masking is designed to capture the relative height difference between buildings in a census tract and those contained in surrounding census tracts. A negative coefficient for Adjacency Masking (-0.0184* in

Model I, -0.0363*** in Model II, -0.0345*** in Model III) indicates that an increase in the masking effect—where the central buildings are lower than their surroundings—is associated with a decrease in socioeconomic exclusion. The magnitude of the coefficients, however, becomes more significant for the Rettifilo Masking, with positive coefficients across all models (0.0295** in Model I, 0.0508*** in Model II, 0.0468*** in Model III) indicating that an increase in physical coverage from the boulevard to the tract of analysis is associated with an increase in socioeconomic exclusion. While Model II and III have higher coefficients for Rettifilo Masking, these models do not perform well at unpacking additional specifics related to the construction age of the buildings, which are not statistically significant except for early-twentieth-century buildings. In fact, by considering buildings' ages through the Dominant Age and Adjacency Dominant Age dummy variables, Model II and Model III reveal a negative statistically significant relationship between the buildings built in the early twentieth century by the *Risanamento* and SEI. This finding contributes to a more refined age-based understanding that the buildings completed during the *Risanamento* are today associated with better socioeconomic conditions than those left untouched by the large masterplan or built in the mid- to late twentieth century. Because of its statistical significance across its neighborhood dummy variables, Model I might be preferred for its performance and, most importantly, significant neighborhood-based findings **[Table 6]**.

Central to Model I is the comparison of various neighborhoods to the baseline, Mercato, revealing significant disparities in socioeconomic exclusion. The negative coefficients associated with neighborhoods Pendino, Porto, and San Giuseppe, all statistically significant, indicate lower exclusion levels than Mercato. This comparative analysis sheds light on the profound effect of localized contexts and neighborhood socioeconomic dynamics. Pendino and Porto emerge with coefficients of -0.4625*** and -0.4206***, marked by a high level of statistical significance. These values suggest that compared to Mercato, both Pendino and Porto are characterized by a lower level of socioeconomic exclusion. San Giuseppe, however, presents the most pronounced deviation from Mercato with a coefficient of -0.5202***, and it, too, bears the mark of statistical significance. This finding positions San Giuseppe as the neighborhood most distinct from Mercato in terms of mitigating socioeconomic exclusion. These neighborhood effects underscore the critical importance of localized, context-sensitive approaches in addressing urban exclusion.

In conclusion, the neighborhood-specific findings in Model I not only highlight the spatial heterogeneity of socioeconomic exclusion but also emphasize the potential for urban environments to either exacerbate or ameliorate socioeconomic conditions. More precisely, the analysis of contemporary socioeconomic exclusion

uncovers a legacy rooted in the physical planning actions to address overcrowding and poverty (e.g., altering topographic levels in poor neighborhoods and erasing ground-floor affordable dwellings).

Table 6 – Regression Models I, II, III (SEI as dependent variable)

	Model (I)	**Model (II)**	**Model (III)**
constant	0.7660**	1.0253**	0.8576**
	(0.3215)	(0.3368)	(0.3334)
Building fragmentation	0.0047**	0.0046**	0.0060***
	(0.0019)	(0.0019)	(0.0018)
Average weighted height	-0.0218**	-0.0380***	-0.0345***
	(0.0107)	(0.0106)	(0.0108)
Adjacency masking	-0.0184	-0.0363***	-0.0345***
	(0.0103)	(0.0094)	(0.0100)
Rettifilo masking	0.0295**	0.0508***	0.0468***
	(0.0115)	(0.0114)	(0.0114)
Neighborhood_Pendino	-0.4625***		
	(0.1127)		
Neighborhood_Porto	-0.4206***		
	(0.1319)		
Neighborhood_San Giuseppe	-0.5202***		
	(0.1478)		
Dominant_Age_1800		0.1171	
		(0.2620)	
Dominant_Age_1900		-0.3896***	
		(0.0986)	
Dominant_Age_2000		-0.0002	
		(0.1808)	
Adjacency_Dominant_Age_1800			0.1265
			(0.2775)
Adjacency_Dominant_Age_1900			-0.4062***
			(0.0990)
Adjacency_Dominant_Age_2000			0.1571
			(0.2326)
N	291	291	291
R-squared	0.2269	0.2187	0.2244
R-squared Adj.	0.2078	0.1994	0.2052

Standard errors in parentheses. ** p<.05, ***p<.01

These findings, alongside the methodological approach, build upon and enrich the historical GIS and digital humanities insights presented in the earlier sections of this paper. Together, they illuminate the persistent forms of spatial inequality that stem from past urban configurations. The empirical evidence provided herein lays the groundwork for developing urban development strategies informed by a comprehensive integration of socio-cultural insights, historical context, and empirical data.

2.6. Discussion

Empirical findings on the spatial relationships between the physical configuration of the built environment and socioeconomic conditions—together with the analytical measurements on the alteration of street topography, erasure of ground-level residential units, and decrease in public space—paint a comprehensive picture of what the *Risanamento* meant for the city and the people of Naples. The urban incision of a major boulevard and its meticulously organized system of orthogonal secondary streets concealed a large portion of the city and left it to structurally deteriorate behind a veil of portrayed order and prosperity. In other words, the design politics of the *Risanamento* redraw the geography of density and poverty of the city, where, instead of advancing an equitable resolution to these pressing issues, they orchestrated large-scale relocations to environmentally vulnerable areas or kept the poor in pockets of isolation behind block-size buildings for the growing middle-class. Reading the urban form of Naples and its socioeconomic restructuring over time has proven how physical forms and ideas of regeneration are also hard to overcome; they persist over time. The *Risanamento* pickaxes of the late nineteenth century started an unstoppable process of inequitable regeneration that, through altered urban viewsheds concealing pockets of poverty, have endured throughout time, perpetuating the neglect of providing better living conditions for the poor. To summarize this century-long trajectory, I argue that the notion of *Risanamento* started as a national law to heal cholera-hit Naples; it then evolved as the name of a company in charge of carrying out a major renewal project; finally, it mutated into a real estate entity exerting control over rents across a substantial portion of the city. However, most importantly, this research demonstrates that the *Risanamento* persisted through its lingering trope of regeneration strategies throughout the twentieth century (e.g., Fascist-era and 1960s redevelopment). This trope still emerges in contemporary neo-liberal city-making practices, exemplified by the transformation of the expansive apartments along the *Rettifilo* into luxury housing and short-term rentals.

During the Fascist regime (1922–1943), Naples was still quite infamous for its unhealthy living conditions and high infant mortality rate.[72] The unapproved plan of 1914 and the technical studies of 1926 led by Gustavo Giovannoni, the pioneer of the *diradamento edilizio* (cautious thinning of the building density), contributed to the 1939 plan (the first ever-approved plan since the *Risanamento*). Giovannoni, together with his de-densification strategies, outlined the importance of tying the historic core to the metropolitan dimension of a rapidly growing city. More specifically, he devoted particular attention to the definition of a series of street-widening operations in the historic core to guide the metropolitan expansion of the city. Among the most impactful ones, the widening of *Via Marina* (though fully carried through in the 1060s) stands as a testament to his metropolitan vision of infrastructural arteries. [73]

Compared to other Italian cities, the planning culture during the Fascist regime in Naples was quite underdeveloped. Most Fascist-time interventions resulted in gigantic buildings (e.g., the Post and Telegraph Office, the House of War Disabled, the Revenue Office) replacing poorly maintained buildings from the *Carità* neighborhood on the western edge of the *Rettifilo*. Moreover, the cartographic documentation from 1939 reveals how all those interstitial areas left untouched by the *Risanamento* (especially in Mercato) were labeled as "to be regenerated"[74] **[Fig. 72]**. It, therefore, seems evident that the very same urban design approach initiated in the late nineteenth century during the *Risanamento* kept shaping the development of the water-facing neighborhoods. Details from the plan show, for example, that the irregular blocks of eighteenth-century buildings between *Piazza Mercato* and *Via Marina* would have disappeared to make space for a gigantic "Casa del Fascio" (local headquarters for the National Fascist Party). While most of these interventions were not carried through because of World War II, after many years of undeclared and missing nation-wide function, it was the Fascist regime who saw in Naples and its port the new role of the city as the bridgehead to the African colonies. However, this role had a very short life, and it eventually contributed to making Naples a key target for air strikes during WWII as the epicenter of the Italian Military Fleet [75]

[72] Laura Guidi, "Napoli: Interventi Edilizi e Urbanistici Tra Le Due Guerre," in *Urbanisitica Fascista. Ricerche e Saggi Sulle Città e Il Territorio e Sulle Politiche Urbane in Italia Tra Le Due Guerre*, ed. Alberto Mioni (Milano, 1980), 123–50.

[73] Antonio Grasso, *Il Piano Regolatore: Problema Napoletano* (Napoli: Stabilimento Tipografico Giovanni Barca, 1933).

[74] These are the areas marked in black on the left-side section of the image.

[75] Christian von Oppen et al., *The Power of Past Greatness: Urban Renewal of Historic Centres in European Dictatorships*, ed. Harald Bodenschatz and Max Welch Guerra, Schriften Des Architekturmuseums Der Technischen Universität Berlin (Berlin: DOM publishers, 2021).

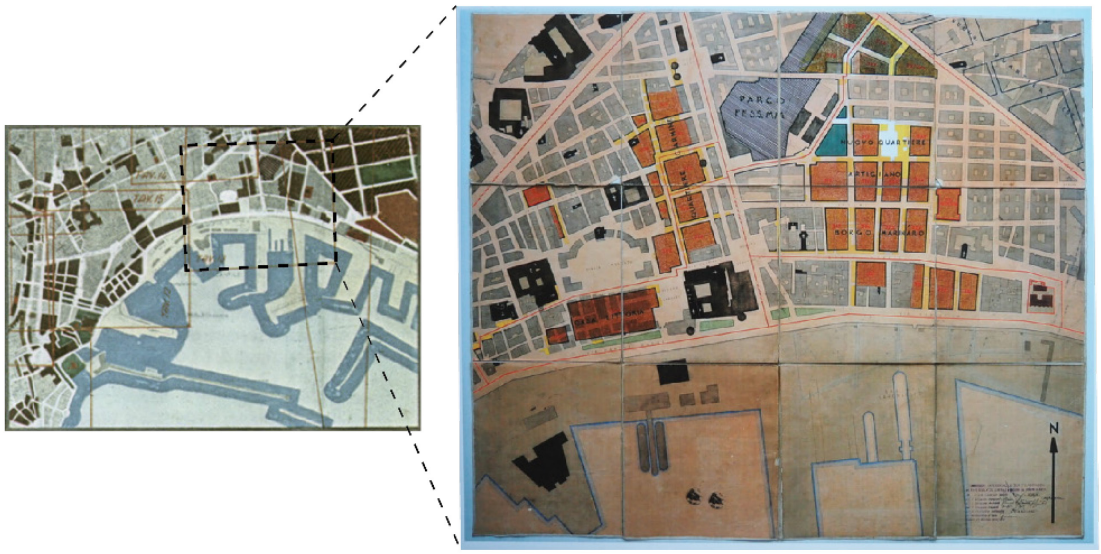


Fig. 72 – Details from the 1939 plan; on the left side, the cartographic sheet illustrating in black the areas to be regenerated in the historic core; on the right side, a more detailed map of the new interventions (orange) to erase the old fabric of the city, including the large *Casa del Fascio* in between *Via Marina* and *Piazza Mercato*. Source: Naples's Planning Department (UrbaNA). Photo by author (September 2021).

Throughout the twentieth century, especially post-WWI, the *Risanamento* stopped acting as a major urban development driver but rather exerted enormous land tenure control over the city of Naples. Thousands of tenants were paying rent to the company, whose headquarters was located in one of the four specular buildings in *Piazza Nicola Amore* (mostly known as *Piazza Quattro Palazzi*; translated into "Piazza of the Four Palaces") where the *Rettifilo* intersects *Via Duomo*. Although the *Risanamento* company did not initiate any urban development projects, the waterfront neighborhoods of Naples were eroded by another linear demolition. This time, however, the line determining the demolitions of several urban blocks was mandated by the geography of the bay, justified by the extensive destruction afflicted by WWII bombings and motivated by the escalating traffic congestion within the city and at the port facilities. That specific area of the city that had historically embraced the water and developed in symbiosis with it found itself pushed out from the waterfront and enclosed uphill by the line of the *Risanamento* and downhill by a widened *Via Nuova Marina* **[Fig. 73]**.

Fig. 73 – Images from the 50s during the construction of the water-facing highway of *Via Marina*. On the right, the large poster includes the following sentence: "You want the road; we want a home." – 1950s image of *Via Marina*. Source: *Archivio Iannello*.

The original plan for the new waterfront was signed by Luigi Cosenza, who envisioned an organically developed new zone of modern buildings with similar heights and a covered pedestrian promenade **[Fig. 74]**. However, Cosenza's plan was soon overhauled: many of the old buildings were demolished and replaced with modern structures towering disproportionately compared to the canonical dimensions of the adjacent buildings. These dichotomic juxtapositions are particularly visible in the area of *Borgo Orefici* (Palazzo Gentile) and in *Piazza Mercato*, where this iconic public space was violated by the gigantic "Ottieri Building," the emblem of private real estate speculation of that period. Built in 1958, the "Ottieri Building" takes its name from Mario Ottieri, the developer of this building and other large projects scattered throughout the city center and also served as the Head of the Construction Department for the City of Naples during the Mayor Lauro administration. The first significant denunciation is found in Francesco Rosi's 1963 film "Le mani sulla città" (Hands over the City) during the peak years of speculation **[Fig. 75]**.

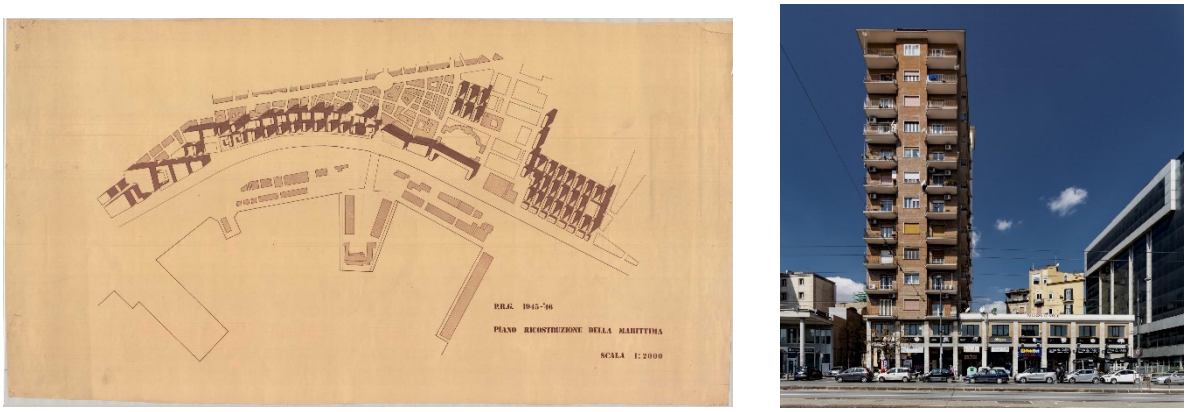


Fig. 74 – (Left) Image of the Cosenza plan. Source: Archivio Luigi Cosenza, 1946 (link); (Right) Palazzo Gentile. Source: Divisare.com (link), with images by Giuseppe Albano.

Fig. 75 – The so-called Ottieri building in Piazza Mercato. Photo by author (September 2021).

The widening of *Via Marina* and the outrageous land speculations of the 1960s marked the prelude to another significant transformation of the waterfront in the 1980s and 1990s. Over the last two decades of the twentieth century, post-modern glass buildings for banks, universities, and public authorities determined a total reconfiguration of the waterfront. This time, an urban mask of individually designed large-scale buildings—

without a shared urban vision for the area—concealed not only the buildings that survived both the *Risanamento* and the widening *Via Marina*, but it physically obstructed what Giambarba described as the "system of conduits for fresh circulations of marine breeze to heal the insalubrious city."[76] Today, in fact, the secondary network of orthogonal streets leading from the *Rettifilo* to the waterfront is obstructed by an array of towering buildings, creating unconventional, narrow passageways between built forms in a perpetual state of conflict **[Fig. 76]**.

Fig. 76 – Late-twentieth-century buildings obstructing the view of the port and the sea from the *Rettifilo*. Photo by author (December 2022).

These forms of development occurred quite violently in an area that was still recovering from the scars of the *Risanamento*. Unexpectedly, the *Risanamento* initiated a process that consistently inflicted new housing challenges on those residing in the untouched buildings behind the *paravento*. Moreover, the endless alteration of the urban blocks and building typologies since the *Risanamento* led to a reconceived understanding of the extent of Naples's historic center. More specifically, planning documents from the 1950s reveal that the portion of the city labeled as the historic core had shrunk, including only the area north of the *Rettifilo*. As a result, the stretch of buildings between the *Rettifilo* and the waterfront was left without recognition and disregarded as a non-integral part of the historic core. These designations, coupled with land speculations that diminished the neighborhood-wide cohesive compositions of its urban tissue, proved instrumental in downgrading the area from a conservation perspective. The legacy of these changes is evident in today's UNESCO Core Zone boundaries, which intricately zigzag through buildings, excluding recent developments and some surviving old buildings, making them vulnerable to future demolitions **[Fig. 77]**.

[76] "Municipio di Napoli," atti del Comune – 6 Feb. 1885

Fig. 77 – UNESCO Core Zone (red); UNESCO Buffer Zone (orange). Source: author.

In conclusion, the marginalization and isolation of the poor behind facades of development—initially facing a boulevard and later a waterfront—stands as Neapolitan *unicum*. This approach to urban regeneration has persisted over time, exposing the city to a continuous exacerbation of housing, health, and environmental challenges.

The spaces originally intended to serve as new "lungs" for the city and areas to decongest the old fabric are now congested with automobiles. The *Rettifilo* has not withstood the test of time, losing its role as an extension of the city's public space; it now accommodates two lanes of cars in opposite directions and poses safety concerns for pedestrians. Similarly, *Via Marina* functions as an urban highway, segregating the port from the rest of the city. Beyond the escalating health concerns related to traffic emissions and inadequate air circulation (especially along the *Rettifilo* boulevard), the city has failed to provide green spaces and enhance green coverage for these neighborhoods, squeezed between car arteries without any greenery. It is noteworthy that the "Villa del Popolo"—

a large public park on the waterfront near *Piazza Mercato*—was obliterated to make way for port infrastructure, and residents were never compensated with another large park, underscoring the loss of crucial greenery and communal space. Longitudinal analyses of green surfaces and public spaces reveal consistently decreasing patterns, especially in the water-facing neighborhoods of Porto, Pendino, and Mercato. More precisely, the already-low green coverage of the late nineteenth century (3.10% Porto, 6.94% Pendino, 5.12% Mercato) has kept shrinking, reaching its lowest percentage value of 2.41% in Mercato **[Fig. 78]**. These statistics, together with the spatial coverage of public spaces in 2022,[77] make the historic water-facing neighborhoods of Naples emerge as the most deprived when it comes to public spaces and pervious surfaces **[Fig. 79]**. The limited spatial coverage of public areas and green coverage underscore the urgent need for attention to enhance the quality of communal spaces in these historic districts and to make them resilient to climate stresses. As the city grapples with an escalating vulnerability to heatwaves and flash floods,[78] it is crucial to acknowledge that the neighborhoods where subsidized housing was constructed in the early twentieth century continue to face frequent flooding. Given that most housing for those displaced by the *Risanamento* was constructed on a swamp, as depicted in a historical map of Naples produced by the Duke of Noja, these areas consistently contend with water infiltration and a high-water table. This situation prompts questions about the enduring environmental vulnerability of these communities. In essence, for the past 120 years since their construction, these developments have not alleviated poverty but rather shifted it out of the historic core, placing it in a highly environmentally vulnerable area.

[77] This spatial analysis excludes the urban highway of *Via Nuova Marina* and the trafficked thoroughfare of the *Rettifilo.* More precisely, the sections of *Via Nuova Marina* in Porto, Pendino, and Mercato occupy the following spatial extent: 60,682.16 sqm (Porto), 22,284.87 sqm (Pendino), and 41,390.66 sqm (Mercato). The area occupied by the *Rettifilo* (Corso Umberto) in Porto is equal to 23,554.70 sqm, in Pendino 11,210.40 sqm, and in Mercato 16,382.88 sqm.

[78] Floods are mostly attributed to the steep topography surrounding the historic core and the uncontrolled sprawl from the 1960s and 1970s that made a large portion of Naples's peripheral areas impervious to water.

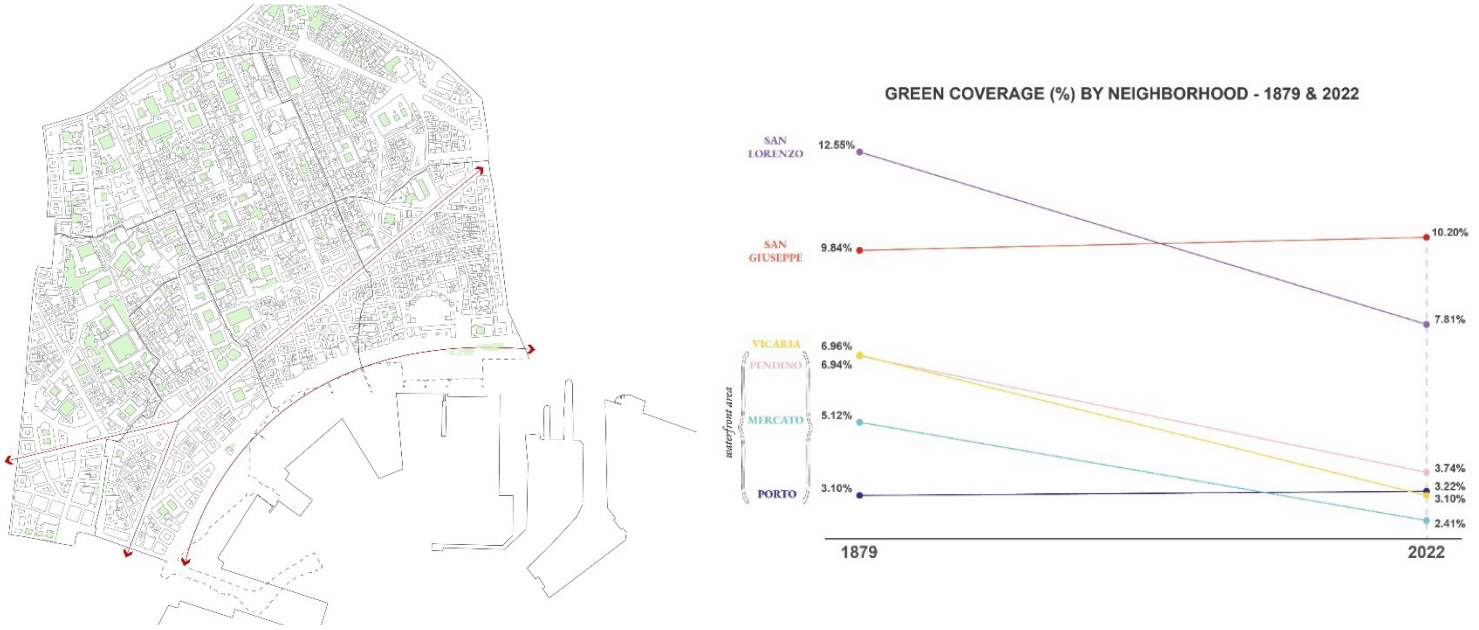


Fig. 78 – (Left) Map of green areas and major road infrastructures (*Rettifilo* and *Via Marina*); (Right) Decrease in green coverage in the historic neighborhoods of Naples. Image by author.

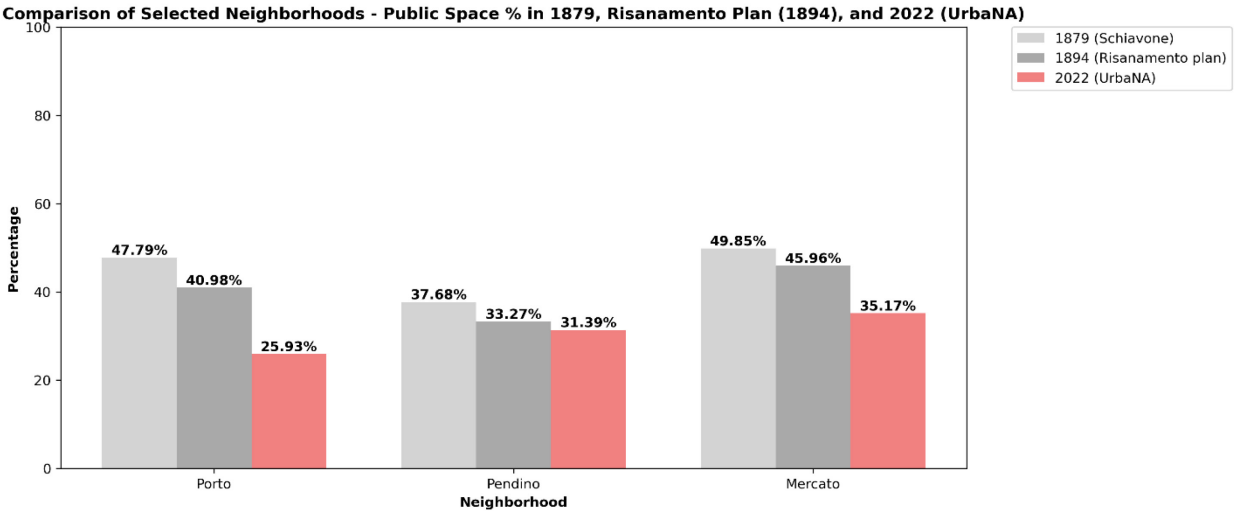


Fig. 79 – Decrease in public space coverage based on the spatial data from the Schiavone map, the Risanamento plan, and contemporary data provided by UrbaNA. Image by author.

2.7. Conclusion

Bypassed by historiography in favor of other major Italian cities, Naples is frequently seen as emblematic of the cultural and political decline in the Italian peninsula and as epitomizing the "problems" of Southern Italy. This superficial understanding has structurally hindered a more in-depth analysis of the processes of modernization and socio-technical engineering experienced by the only European port city that in the mid-nineteenth century recorded a population similar to Paris and London (approximately 400,000 people) and that today ranks among the most densely populated cities in Europe (with peaks of 32,155 persons/Km^2 in the Spanish Quarters). After losing its thousand-year-old capital-city status and experiencing a deadly cholera epidemic in 1884, the law for the *Risanamento* and, in practical terms, the *Risanamento* company engrained in the historic core an unstoppable urban development process that throughout 140 years have attempted to heal poverty and overcrowding with little success. The *Risanamento* legacy, as witnessed in the historical events and urban analytics presented in this work, transcended its initial role as a public health strategy, evolving into a powerful metaphor for inequitable urban transformation. As a result of the urban incision of the *Rettifilo*, the historic center was left in a liminal condition that has persisted throughout time. The axial facelift of *Corso Umberto I* has maintained its enduring legacy as a line of power, masking the contemporary challenges of neglect, precarious living conditions, and poverty of the historic center.

By employing computational spatial analyses on archival records and unearthing the spatial relationships between overcrowding and poverty and built forms of the past, this research has explained how and why pockets of poverty and vulnerable living conditions have endured in Naples's historic core until today. More broadly, this paper contributes to the urban history debate on the legacies of urban renewal gestures by introducing innovative mixed-methods tools to convey granular-level insights for large urban areas, mining data from archives and processing them to understand structurally endemic socioeconomic challenges. Building on this existing scholarship, through this paper, I argue that the history of *Risanamento* has been narrated to the detriment of the spatial history of the "spaces behind" the *Rettifilo* throughout the twentieth century. By historicizing these spaces behind the waterfront and the *Rettifilo*—with their dichotomic connotation as *loci* of housing affordability and sites of structural poverty—I have identified the responsibility of a lingering trope of the *Risanamento* in rooting today's socioeconomic vulnerability. More specifically, I have conducted a digitally informed evaluation of the

Risanamento and its historical evolution to situate this herculean urban development project within the contemporary challenges of housing obsolescence, precarious living conditions, and urban poverty **[Fig. 80]**.

In conclusion, the notion that a city requires "healing" through physical restructuring has endured over time, eventually becoming the predominant urban planning paradigm in several Italian cities. Through the data and analytics employed in this work, I argue that this research has relevant urban design and public policy implications. For example, the potential transformation of the *Rettifilo* into a vast, pedestrian-friendly public space adorned with ample greenery offers an opportunity to cool the city's core during heatwaves. Simultaneously, it addresses the longstanding lack of substantial access to public spaces for residents. Moreover, these findings can guide future housing policies, emphasizing reparations for families uprooted from their neighborhoods, aiming to improve their living conditions. Borrowing the iconic words of Mr. Ciro La Rosa—archivist of the Municipal Archives of Naples:

> "*...they took the cockroaches* [referring to the poor of the historic core] *and turned them into rats. They should have turned them into butterflies!*"

Fig. 80 – Graffiti behind the facades of the *Risanamento*, still using the word "*sventramento*" (disemboweling) to convey exclusionary practices in the historic core. Photo by author (September 2021).

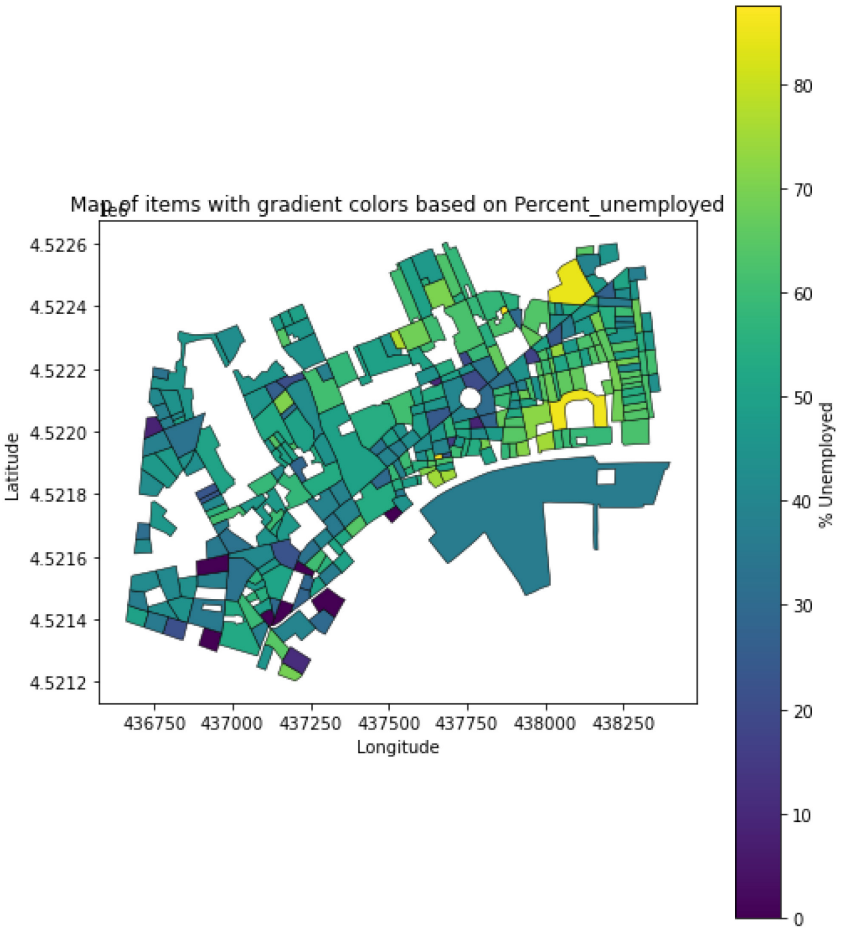
2.8. Postscript

The 140-year-old narrative of renewal and healing initiated in Naples has now resurfaced in Italy's wealthy North, where *Risanamento* keeps operating through its usual collaboration between capital, media, and political influence. In 2002, the company was divested at a price significantly below its true market value and transformed into a publicly traded company named *Risanamento SpA*. The reference to Naples was abandoned, along with all Neapolitan properties, which were sold due to the looming threat of substantial rent hikes. In 2005, the rebranded company embarked on a new development initiative named Santa Giulia, envisioned by Sir Norman Foster, situated on an industrial brownfield site on the outskirts of Milan. Fifteen years later, less than a third of the original Santa Giulia plan has come to fruition. Nevertheless, *Risanamento SpA*, now under the control of Italy's two largest banks—paradoxically in line with its foundational years with the Banco di Roma and Napoli—is making another attempt. Teaming up with Lendlease, a prominent global player in urban regeneration, the company is currently receiving bids for the development of facilities for the 2026 Winter Olympics in Milan.[79]

[79] Bagnato, "WE MUST DISEMBOWEL NAPLES!," 2020.

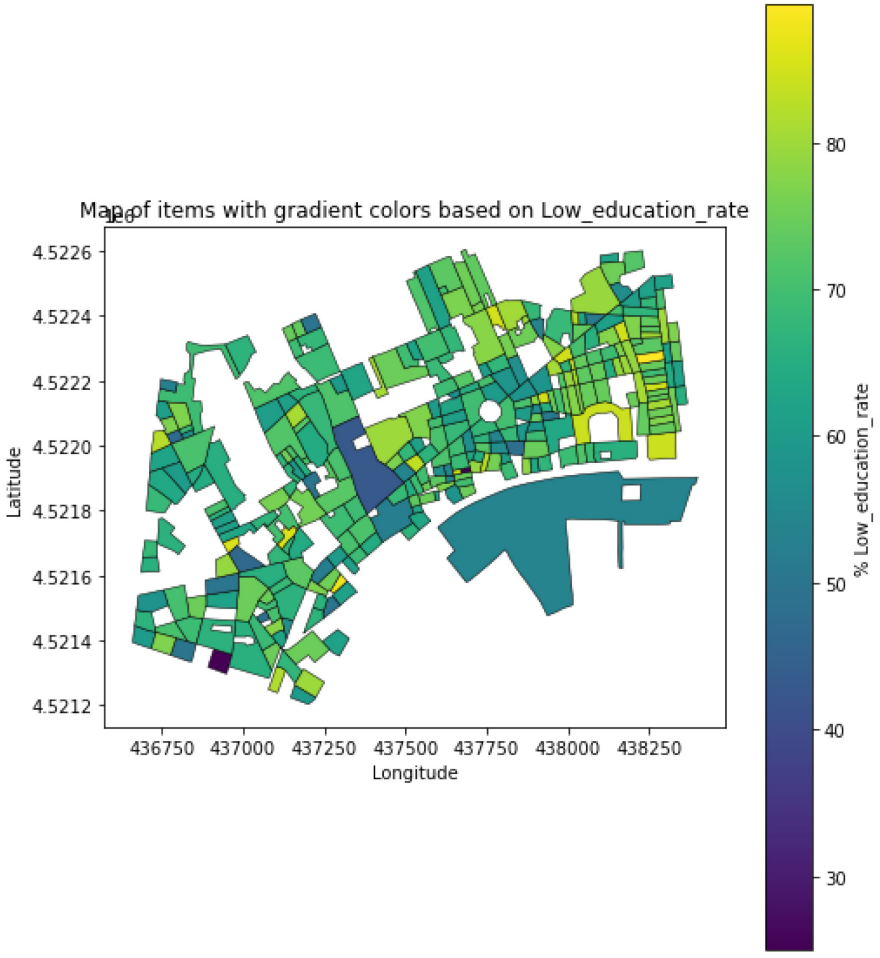
2.9. Appendix

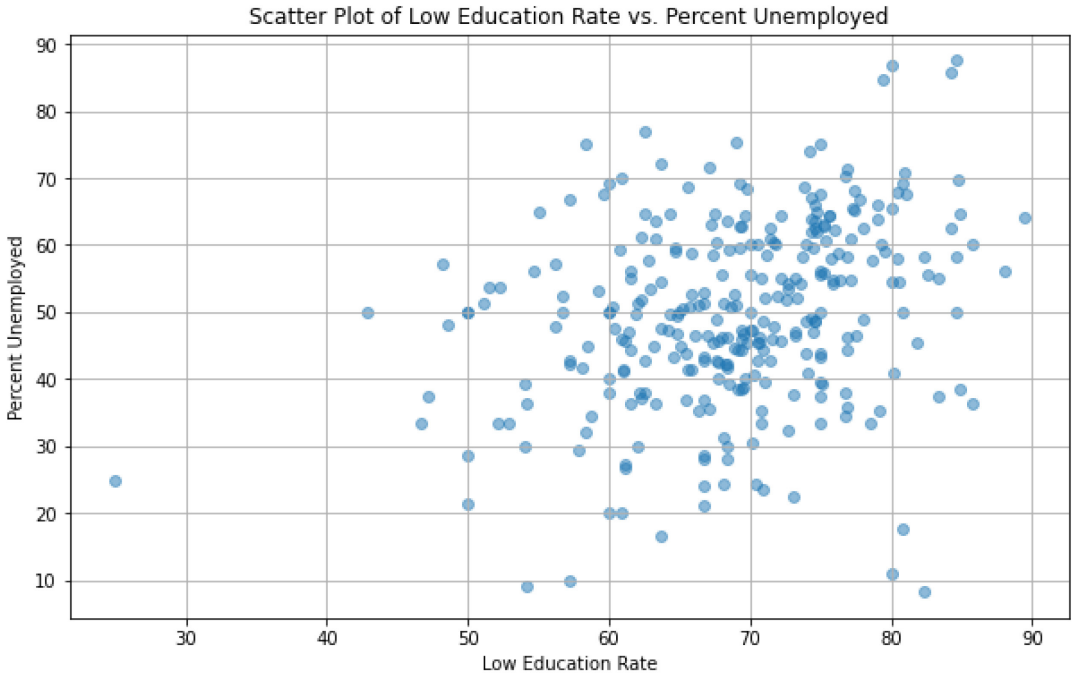
Given that the number of unemployed people per census tract is provided for the working-age population (according to OECD, working age is considered between 15 and 64 years old), I have calculated the percentage of unemployed people in each census tract after constructing an *ad hoc* variable based on the number of people in working-age.[80] The image below shows the distribution of the percentage of unemployed people in each census tract. On average, the percentage of unemployed people in this part of Naples is almost 50%. One out of two people in these five neighborhoods of Naples is unemployed. The data shows a peak of 87.5% of unemployed people for tracts mostly dominated by large monasteries and religious buildings. For example, tract 630496116141, located on the northern side of the *Rettifilo* and containing the *Basilica della Santissima Annunziata Maggiore,* has a total of twenty-six people of working age and only four officially employed people, resulting in an unemployment rate of approximately 85%.



[80] The population data grouped by age steps is recorded by ISTAT in the variables from P17 and P26 (extreme included).

Finally, I used the ISTAT data on education levels and normalized them by using population data from 9 to 74+ years old. To capture education levels in this area of Naples, I have decided to use the variable containing the number of people with a high-school level degree or professional studies certificate. According to the data, the average rate of people living in these five neighborhoods of Naples who completed their secondary education studies is only 30%. This means that 70% of residents in this area have not obtained a degree beyond their middle-school ones. For example, in census tract 630496115881 in the Mercato neighborhood, only 10.6% of its seventy-seven residents have completed their secondary education degree. In the map below, this neighborhood scores quite high (89.4%) in what I have defined as "Low Education Rate."





I have utilized the variables of unemployment and low education rates to construct a Socioeconomic Exclusion Index (SEI). The construction of composite indices to measure multifaceted concepts such as socioeconomic exclusion often necessitates a methodological approach that not only standardizes diverse variables for aggregation but also reflects the underlying distributional features of each variable. While min-max scaling linearly transforms data to a common scale (e.g., 0 to 1), it does not account for the shape of the variable's distribution. Z-score normalization, by contrast, aligns the index with the empirical distribution of each component variable, making the resulting Socioeconomic Exclusion Index not only a measure of relative standing within each variable but also a reflection of how these standings are distributed across the population. In other words, the utilization of z-scores, or standard scores, represents a better-suited normalization technique that transcends mere rescaling to account for the variability and distribution of the data. Mathematically, the z-score (Z) for an observation (x) is calculated as:

$$Z = \frac{x - \mu}{\sigma}$$

where:

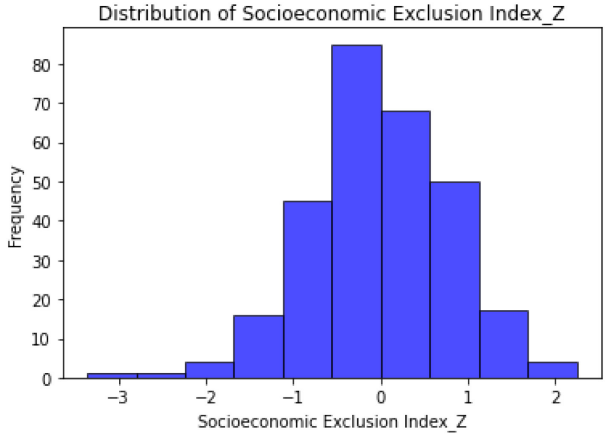
- μ is the is the mean of the variable.
- σ is its standard deviation

This transformation re-expresses each data point in terms of how many standard deviations it lies above or below the average, thereby facilitating comparison across different scales and distributions. After calculating the z-scores for the two selected variables, I have combined them to construct the Socioeconomic Exclusion Index (SEI):

$$\text{SEI}_i = \frac{\sum_{j=1}^{2} Z_{ij}}{2}$$

where:

- $\sum_{j=1}^{2} Z_{ij}$ iterates over the two variables, % of unemployment and % of low education rate, for each observation *i*.
- Z_{ij} represents the z-score of variable *j* for observation *i*, with *j=1* corresponding to % of unemployment and *j=2* corresponding to % of low education rate.



2.9.1. Built form variables

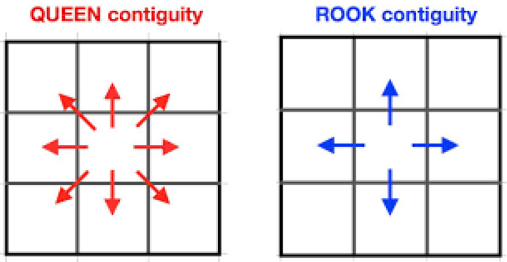
$$\text{Building Density} = \frac{\sum_{i=1}^{N} \text{Count of Buildings in Census Tract}_i}{\sum_{i=1}^{N} \text{Total Built-up Area in Census Tract}_i}$$

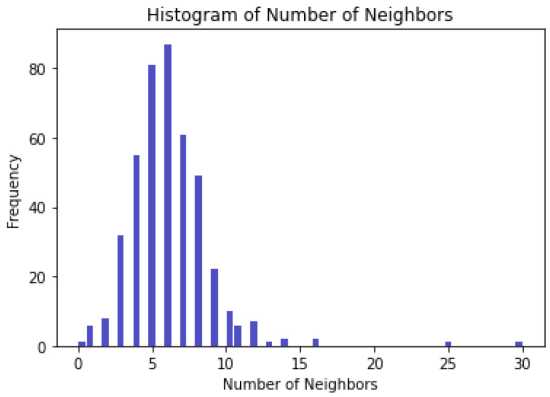
Building Density (BD) captures how fragmented the built-up area of a census tract is. In other words, it measures the density of buildings per hectare of built-up area contained in each census tract. For example, census tracts with similar built-up areas but containing two large buildings versus fifteen smaller buildings would have very different Building Density scores. The census tract with fifteen buildings, for instance, will score quite high.

Height-related attributes are extremely important for the goal of this study. The building height for each building has been extracted from the Lidar data and consolidated at the building level. More precisely, the building height is equal to the maximum pixel value contained in each building polygon. To obtain an **Average Heigh (AH)** for each census tract, I have calculated an average Building Height value weighted by the building footprints contained in each census tract in order to take into account the different spatial coverage of buildings within the same census tract.

$$\text{Average Height } = \frac{\sum_{i=1}^{N} (\text{ Building Height }_i \times \text{ Building Footprint }_i)}{\sum_{i=1}^{N} \text{ Building Footprint }_i}$$

The **Adjacency Masking** (**AM**) variable captures the entity of physical coverage caused by the average height of the neighboring census tracts. More specifically, to calculate this variable, I employ a Queen continuity weighting matrix (also known as contiguity edges corners) to consider all neighboring census tracts (including those sharing at least and edge or a single corner). In other words, if any portion of two census tracts overlap, they are considered neighbors and will be included in each other's computations. However, given that census tracts sharing a full edge are intuitively more invasive than corner-based neighborliness, especially for what concerns building height measurements, I have made sure that the corner-based weights would be equal to 0.5 of their edge-based counterparts. Using the spatial distribution of census tracts, the histogram below reveals the frequency of the number of neighbors for each census tract. Surprisingly, the histogram reveals a census tract with more than twenty-five neighbors. This is the tract following the shape of the multilane road by the port. Given that this tract does not have any demographic elements, it will not be considered in the final analysis of this work.





Having all the Queens weights based on the location of the polygons, I have applied the weights to the Average Height of each of the surrounding census tracts and returned to the tract from which the calculation was generated a new value (Adjacency Masking), equal to the difference between the sum of all surrounding Average Heights weighted by the distance Queens weights and divided by the sum of all surrounding Average Height values, and the Average Height of the census tract itself. In other words, the Adjacency Masking variable reveals how the surrounding heights of a census tract compare to the census tract itself. In essence, the Adjacency Masking variable provides insight into how the surrounding heights of a census tract compare to the census tract itself, incorporating both distance-based weighting and the nature of the adjacency (edge or corner).

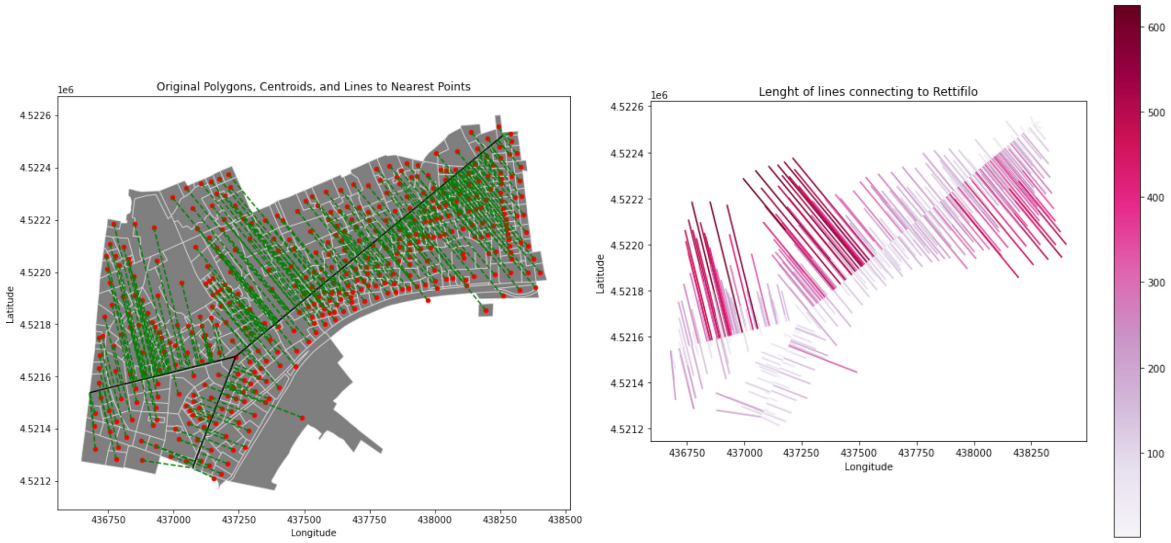
$$Adjacency\ Masking_i = \frac{\sum_{j=1}^{N} w_{ij} \cdot AH_j}{\sum_{j=1}^{N} AH_j} - AH_i$$

where:

- N is the total number of neighboring census tracts (including those sharing at least an edge or a single corner) with census tract i
- w_{ij} represents the Queens continuity weight between census tracts i and j, considering both edge and corner-based weights.
- AH_i is the Average Height of the neighboring census tract j.

The variable can be either negative or positive. Positive AM_i suggests that census tract i is surrounded by buildings with an overall height composition higher than its own Average Height. Negative AM_i suggests that census tract i is surrounded by buildings with an overall height composition lower than its own Average Height.

The **Rettifilo Masking (RM)** captures the weighted distribution of AH_i along a segment connecting the centroid of census tract i to the nearest point of the *Rettifilo*. Through this variable, I assign to each census tract a value that depends on the Average Heights of the census tracts in between a singular census tract and the *Rettifilo*. Moreover, as the heights of buildings contained in census tracts closer to the *Rettifilo* construct the windshield (*paravento*) described by Matilde Serao, I have used the distances from each census tract to the Rettifilo to calculate weights through an inverse distance function. I have applied these weights to the Average Height values of only intersecting census tract polygons and finally computed the Rettifilo Masking as the difference between the weighted Average Height along each connecting line and the Average Height of tract i.



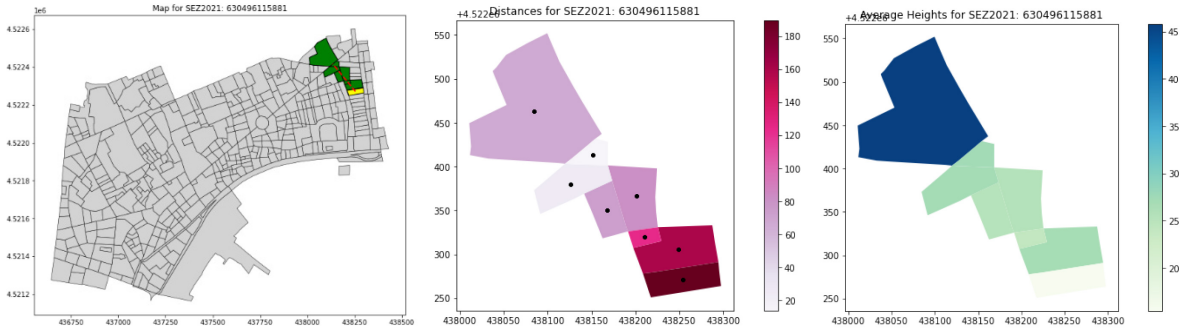
$$Rettifilo\ Masking_i = \frac{\sum_{j=1}^{M} \frac{1}{\text{distance}_j} \cdot AHi_j}{\sum_{j=1}^{M} \text{distance}_j} - AHi_i$$

where:

- M is the total number of census tracts intersected by the line connecting the centroid of census tract i to the nearest point on the *Rettifilo*;
- $distance_j$ is the distance between the centroid of intersected census tract j and the *Rettifilo*. The inverse distance weights are determined based on the distances from each census tract to the Rettifilo, with closer census tracts (therefore low distance values) having higher weights according to the Inverse Square Law or Gravity Model.
- AHi_j is the Average Height of the intersecting census tract j.

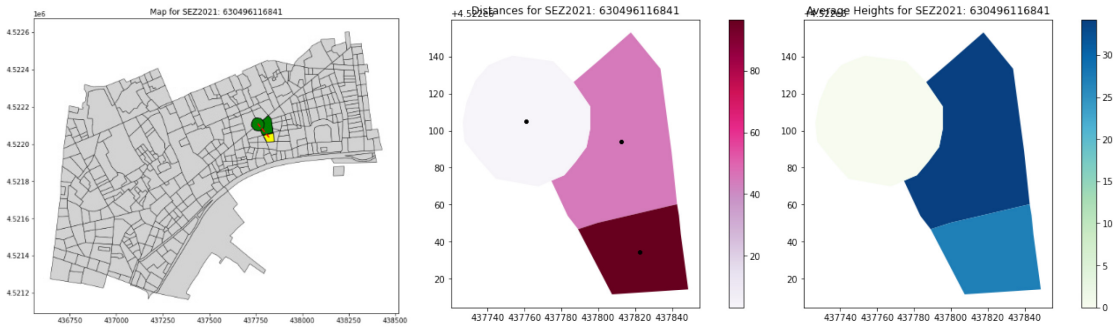
Positive RM suggests that census tract i experiences a weighted distribution of Average Height along its connecting line to the *Rettifilo* higher than its Average Height. Negative RM suggests that census tract i experiences a weighted distribution of Average Height along its connecting line to the *Rettifilo* lower than its own Average Height. The following three examples of different RM values provide additional clarification on the meaning of this variable.

RM = 12.57

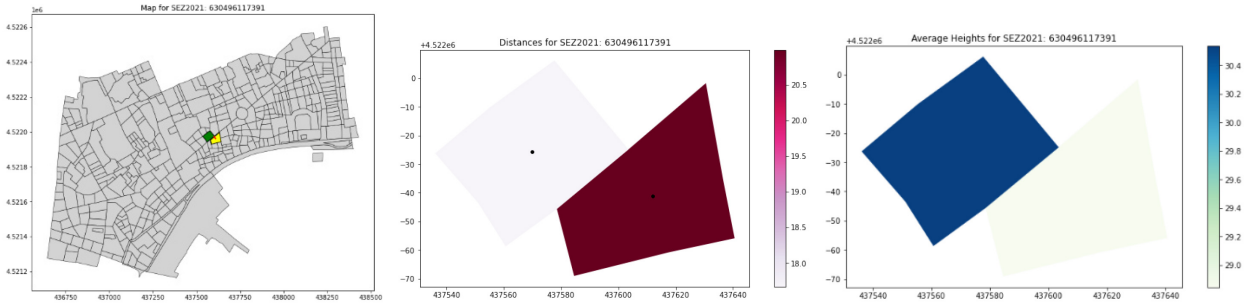


Example of tract 630496115881 with a Rettifilo Masking value of 12.57. The images above represent the location of the tract, the visualization of distance values from each tract centroid and the Rettifilo, and the distribution of Average Height along the line connecting the centroid of tract 630496115881 to the Rettifilo.

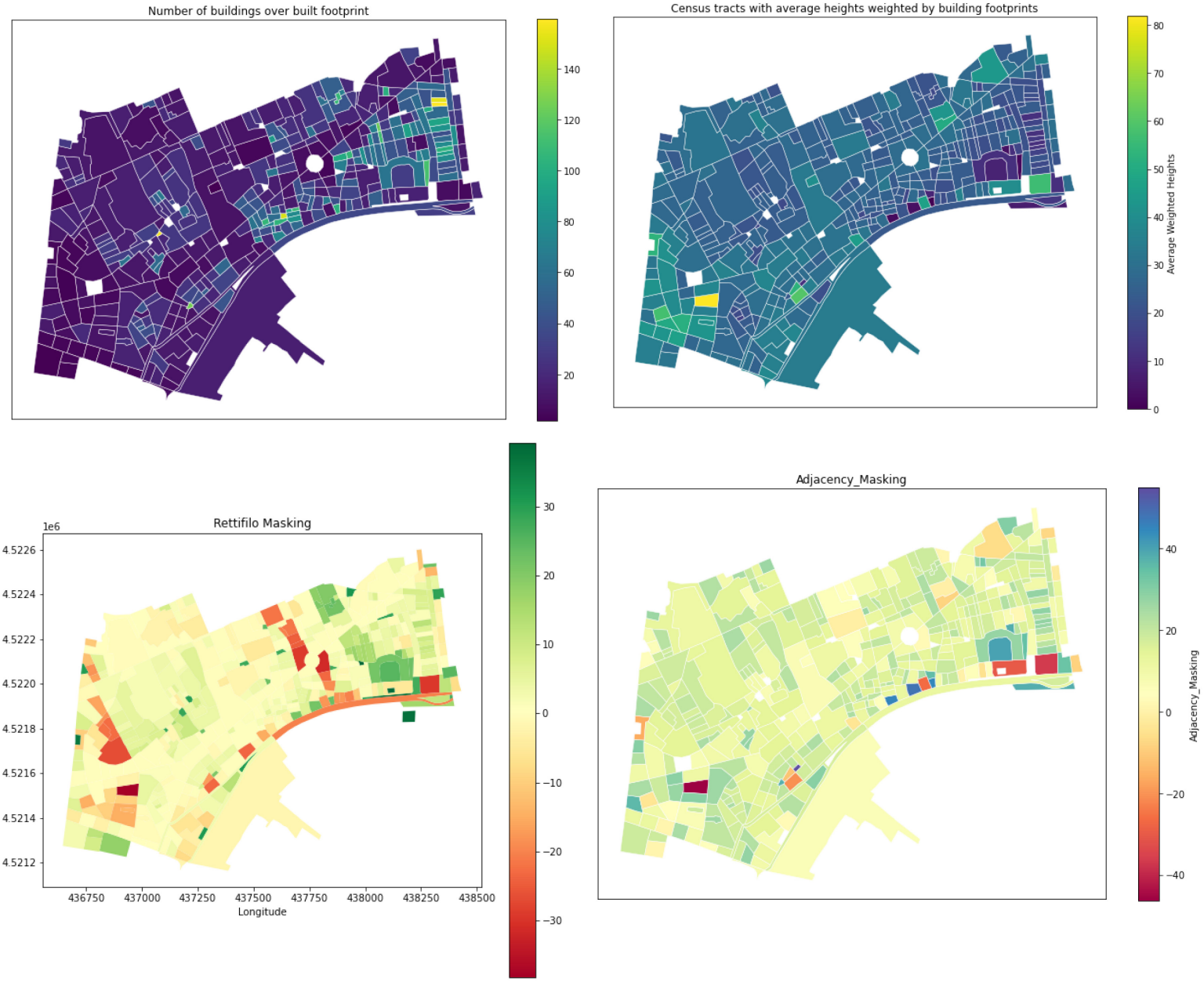
RM = -23.12



RM = 0.9



The images below summarize the spatial distribution of the following variables: a) Building Density, 2) Average Height, 3) Adjacency Masking, and 4) Rettifilo Masking.

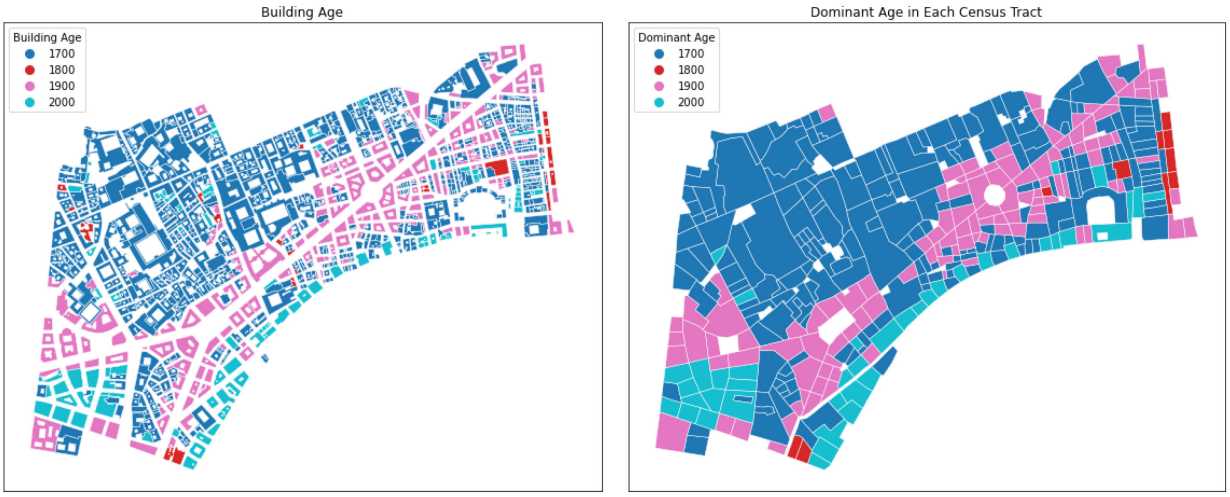


The **Age Dominant (AD)** captures the most widely represented construction age of buildings contained in a single census tract. The backbone data of this variable belongs to the *Piano Regolatore Generale* (General Urban Plan), approved by the City Council in the early 2000s. The General Urban Plan includes a building-scale study of the building typologies of Naples, which provides a series of temporal information on the time period of construction. More precisely, through the information provided in the Plan, I carried a reclassification in four categories through time-period attributes: 1) pre-nineteenth-century buildings; 2) early-nineteenth-century buildings; 3) late-nineteenth-century early-twentieth-century buildings; 4) post-1950s buildings.

$$AD = max\left(\frac{\sum_{j=1}^{M} \text{ Area belonging to age category } j}{\text{Total built-up area}}\right)$$

where:

- AD is the dominant age category.
- M represents the total number of age categories.
- The numerator is the sum of the built-up areas belonging to each age category.
- The denominator is the total built-up area.
- The *max* function selects the age category with the largest area in terms of coverage.

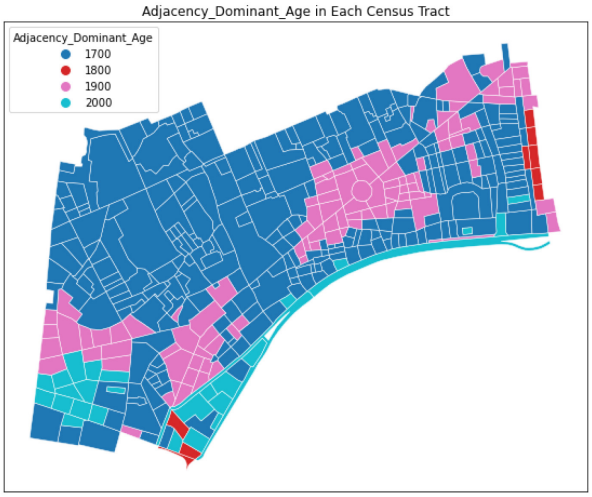


The **Adjacency Dominant Age (ADA)** calculates the dominant construction age in the Queen-continuity of each census tract. Similar to the Adjacency Masking variable, I have assigned a 0.5 weight to census tracts, establishing continuity uniquely through a corner.

$$ADA_i = max\left(\frac{\sum_{j=1}^{N} w_{ij} \cdot AD_j}{\sum_{j=1}^{N} \text{ Built-up Area of Census Tract } j}\right)$$

where:

- ADA_i is the Age Dominant Area for census tract *I;*
- *N* is the total number of neighboring census tracts (including those sharing at least an edge or a single corner) with the census tract;
- w_{ij} represents the Queens continuity weight between census tracts;
- AD *j* is the Age Dominant value for census tract *j;*
- The numerator is the sum of the Age Dominant values multiplied by the corresponding continuity weights for each neighboring census tract;
- The denominator is the total sum of built-up areas for all neighboring census tracts;
- The *max* function selects the maximum Age Dominant value among the neighboring census tracts.



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Chapter 3

EXCLUSIONARY TALES IN BEIRUT'S SPACES OF CRAFTSMANSHIP: Using historical cartography, archival ethnography, and oral history to map the evolving geography of craftspeople

Ignaccolo C., Maamari D., Anouti G., Aksamija A., Williams S. (2024)

Maps are socially constructed representations. The act of visualizing a data feature on a map conveys whether a spatial element is worth documenting or, conversely, neglecting. When it comes to documenting the cultural landscape of a city, however, data gaps on creative small businesses, such as crafts workshops, have often hindered longitudinal studies on these practices, contributing to the intangible heritage of a city.

By employing Beirut (Lebanon) as a case study, this paper advances a counter-mapping effort to unearth the spatial history of crafts workshops in Beirut's port-facing neighborhoods and situate their recurring displacements in the city's design politics. This study relies on a novel longitudinal dataset of 600 geolocated archival images of crafts workshops, urban form metrics extracted from historical maps, and interviews with craftspeople whose shops have been in business until the present.

Research findings uncover Beirut's changing terrain of craftsmanship, showcasing a significant shift in the cultural center from the city's historic core, *Al Balad*, to peripheral areas like *Bourj Hammoud*. It demonstrates that maps, archival images, and interviews are instrumental in exposing the changing cultural landscape of a city and revealing livelihood trajectories in contexts of repeated displacements induced by wars and masterplans.

3.1. Introduction

Historical cartography and archival documentation are the backbone of longitudinal studies on the physical and socioeconomic evolution of urban spaces. By employing maps and archival sources—such as photographs and public records—scholars have been constructing spatial histories about neighborhood change in cities, identifying the *loci* of development, understanding their spatial configuration, and studying the communities living in them. Maps, however, are not isolated entities; rather, they exist within specific contexts of use and purpose. Cartographic annotations and labels, for instance, serve as a visual database of objects deemed worthy of being cataloged by cartographers and, more broadly, by the political and social agencies intertwined in the mapmaking process (Akerman 2009). Given the political dimension of maps and the inevitable dependence on spatial datasets, resultant cartographic representations arise as outcomes shaped by discerning selections and conscious exclusions. In other words, looking at what spaces and communities are unrepresented on a map raises potent questions about who is excluded from city-making conversations and remains invisible during city planning processes.

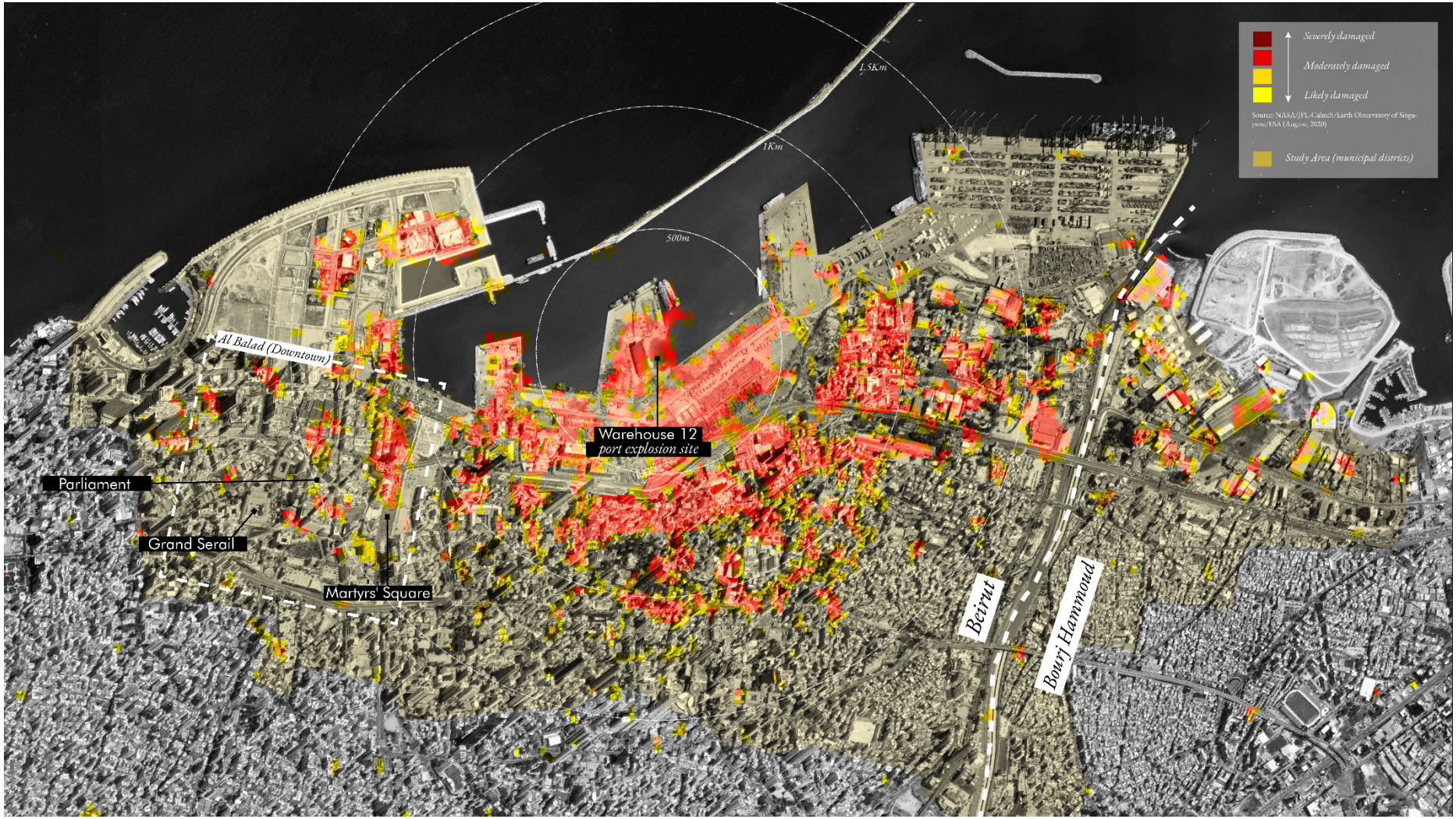
Small-scale businesses (such as craft workshops and street vendors) have historically remained undocumented in both historical cartography and official archival records. Nevertheless, they play a significant role in fostering the economic dynamism and cultural distinctiveness of the urban milieu, especially in port cities where small-businesses, often in the form of street markets, initially developed in close relationship with pier-side goods exchange. Their presence on the streets not only infuses the cityscape with palpable energy but also fosters a sense of human connection and engagement (De Munck 2019). Through their artisanal pursuits, craftspeople, for instance, keep serving as custodians of local traditions, engendering social cohesion, fostering a sense of pride through local ingenuity, and imbuing the community with profound cultural significance (Sennett 2008). Moreover, their endeavors fuel local innovation and promote diversity within the local marketplace, as craftsmanship still remains one of the primary sources of livelihood for migrants and refugees living in urban areas. However, the localization of craftspeople is contingent upon political and economic dynamics that usually emerge through the alteration of the city fabric (e.g., urban highways, residential towers within fenced compounds), neoliberal agendas (e.g., gentrification, tourism-driven development) or changes in the zoning code (Soccali & Cinà 2020).

By employing Beirut (Lebanon) as a case study, this paper uses historical cartography, archival ethnography, and interviews to reposition craftspeople and small businesses on cartographic representations of the city's urban past

with the intent of understanding the legacies of disruptive changes in the built environment in relation to its evolving socioeconomic conditions. In Beirut, in fact, the city's physical and social fabric has undergone significant, century-long transformations that have profoundly impacted the spaces in which craftspeople run their businesses, with these street-commerce impacts remaining largely unrepresented on official maps. In other words, this research focuses on the evolving geography of craftsmanship and the long-term challenges of craftspeople in relation to radical changes in city form.

The paper's spatial investigation focused on the port-facing neighborhoods of Beirut, specifically the municipal districts most affected by the destruction from the recent port explosion on August 4, 2020. By anchoring this historical investigation in a recent devastating event, this work seeks to contextualize the present-day challenges of craftspeople within the broader narrative of long-term urban transformations that have occurred in this part of the city. Throughout the city's history, in fact, Beirut's coastal neighborhoods stretching from Downtown (*Al Balad)* to the eastern banks of the Beirut River in the municipality of Bourj Hammoud have been largely remodeled, and sometimes even erased, by development *à la* Haussmann (from the late-Ottoman period in the 1910s to the end of the French Mandate in the 1930s), large-scale infrastructures (urban highways from the late 1950s to the early 1970s), wars (urban conflicts from 1975 to 1990), and extreme real estate-driven development pressure (public space privatization from the early 1990s to late 2000s) **[Fig. 81]**.

Fig. 81 – Image depicting the study area of neighborhoods facing the Beirut port, including 1) Damage categorization by NASA following the port explosion on August 4, 2020; municipal boundaries between Beirut and Bourj Hammoud; highlighted in light yellow are the municipal districts covered in this study. Source: authors. [NEXT PAGE]


1.5Km
1Km
500m
Severely damaged
Moderately damaged
Likely damaged
Source: NASA/JPL-Caltech/Larth Observatory of Singapore/ESA (August, 2020)
Study Area (municipal districts)
Al Balad (Downtown)
Warehouse 12
port explosion site
Parliament
Grand Serail
Martyrs' Square
Beirut
Bourj Hammoud

By focusing on this area and acknowledging the city's deeply rooted sectarian divisions, this study explores the spatial history of craftsmanship through the lens of predominantly Christian communities. Consequently, its findings should not be regarded as definitive but rather as an attempt to interpret the city's urban history *from below* while encouraging further research into the western, predominantly Muslim part of the city.

While many of these transformations are not unique to the study of this paper, their effects were quite heightened by the presence of major commercial districts (souks), centers of political power (e.g., the *Grand Serail* and the Parliament building), and maritime infrastructures which inevitably demanded major urban readjustments and, consequentially, impacted their neighboring areas. While cartographic evidence regarding changes in urban forms over time is clearly visible in maps, there is still little known through the analysis of maps on how urban transformations have sedimented forms of cultural and socioeconomic marginalization. More specifically, we argue that the cartographic invisibility of small creative (yet often informal) practices is endemically entrenched with the politics of invisibility enacted through urban design gestures (Piazzoni 2020). *Spatial imaginaries* that convey values of "the proper" and "the ordered" have constructed an urban aesthetic where "the unordered" is oppressed, silenced, and pushed to the margins (Lipsitz 2011). As a result of these urban planning processes and rhetoric, we ask what evidence maps can bring about the geography of dispossession of a city, especially when practices of displacement barely surface the ink of cartographic representations. What different methodological approaches could challenge the invisibility of creative-cultural practices on maps through archival ethnography and oral history? And, finally, is there any spatial relationship between the presence or absence of craftspeople and the physical transformation of Beirut?

Situated within the literature on the right to the city (Lefebvre 1996), the spatial dimension of social cartography and inequalities (Ballas et al. 2018; Vaughan 2018), and the production of invisibility regimes through built forms (Loukaitou-Sideris 1996; Munoz 2018), this paper provides a nuanced understanding of urban transformations in Beirut through the lens of craftsmanship. It establishes a spatial connection between the alteration of urban spaces, the cartographic invisibility of the communities inhabiting those altered spaces, and the voices of creative cultural practices that have experienced those changes. More specifically, this article engages with questions of cartographic representation by advancing an empirical investigation of city form evolution and the spatial inequality of urban development through the lens of craftspeople in the city of Beirut. By using historic cartography as a basis to assess the intensity of urban transformations over time, this study deploys maps not only as tools for measuring changes in urban form but also as primary devices to anchor oral histories and archival

photos to urban form configurations. This analytical process aims to shed light on the cartographic invisibility of craftspeople through spatial metrics, unexplored archival documentations, and untold spatial memoirs.

This paper is structured into six sections: in the Literature Review, this work engages with the scholarship on 1) critical cartography, through the lens of power and spatial inequalities, 2) small businesses, and 3) Beirut's urban morphological shifts; in the Data Overview section, it introduces the datasets employed in this research; in the Methodology section, it illustrates the urban form analytics, data collection strategies for archival documents, and engagement with craftspeople; in the Results section, it provides an in-depth understanding of the findings of the study by linking the insights from the semi-structured interviews and archival database to the urban form analytics; in the Conclusions, the article situates the contribution of this research withing a burgeoning scholarly debate on the spatialization of archival materials, their understanding in relation to the evolution of physical spaces, and their interpretation through oral history and cartography frameworks.

3.2. Literature review

3.2.1. Critical Cartography and the Visualization of Urban Spatial Inequalities

Prior to the conceptualization of critical cartography as a set of mapping practices and analytical methods (Allen & Queen15), cartographic endeavors had maintained an enduring allure of veracity and impartiality. By ignoring that all maps have been authored as visual products since the 1600s, cartography assumed a position of scientific neutrality (Kim 2015). Maps appeared as anonymously generated rather than purposefully crafted (Cosgrove 2005). For centuries, this long-lasting attitude towards cartography hindered an in-depth understanding of those geographies and people who were deliberately omitted or simply ignored by maps. To unbuild this enduring lineage of self-proclaimed neutrality, the Harleian agenda of cartographic studies, together with one of the leading figures in the field such as Wood, Cosgrove, and, more recently, Crampton, has been of fundamental importance to situate cartographic representations in the theoretical realm of socially constructed processes with a political dimension (Crampton 2010). Maps, in fact, have historically been the product of political agendas and have often been used by those in power to legitimize urban development projects. For instance, when maps were created within colonial settings, cartography became a tool to exert power and control over a territory (Stone 1988).

The longitudinal comprehension of physical and socioeconomic transformations is inherently reliant on the availability of spatial data. Therefore, looking at what spaces and spatial information are missing from a map provides insights into the invisibility of certain community groups during city planning processes. However, maps are often insufficient in revealing whose groups benefit from the metamorphosis of spaces, what imageries of development are manifested through city form, and, most importantly, what communities inhabit certain spaces once they are structurally altered. Behind the lines, polygons, and labels often lies a much more intricate urban history, orchestrated by those in power to alter urban spaces and experienced by those who inevitably succumbed to those transformations. Maps, in fact, are not neutral products deriving from an idealized biological inevitability of city-building processes. They have the potential to mask the deeply-rooted injustices of cities in favor of existing power structures (Martínez et al. 2016) but also to make inequalities visible. For example, this effort can be achieved by deepening the understanding of cartographic representations with auxiliary sources such as archival images and interviews of people who become essential anchoring points to navigate the complexity of urban transformations from an on-the-ground perspective. By creatively combining the study of evolving spatial traces over time with archival ethnography and oral history, maps have been reconceptualized through a processual

understanding, veering away from a representational lens of inquiry (Kitchin et al. 2013). This approach lies at the core of critical cartography, and it has paved the way for the burgeoning scholarship on processes of decolonial and indigenous mapping (Akerman 2017; Sletto et al. 2023). The entrenchment between coloniality and Cartesian cartography has been recently addressed by Zaragocin and Caretta (2021), who described it as a tool to fracture the notion of *cuerpo-territorio* ("the intimate oneness of land and body") and reveal the geographies of subalternity and ongoing colonial trauma.

Spatial analyses and digital visualizations of spatial inequality in urban areas have been receiving increasing attention since the diffusion of GIS tools and the growing availability of spatial data (Harris & Longley 2006). Such interest relates to a need to better understand and make visible spatially unequal and unjust living conditions and the processes that generate marginalization in urban settings. Participatory GIS and counter-mapping techniques have interrupted the information extraction pipeline of colonialist tradition that, for too long, has permeated the world of digital technologies (Kim 2015). Civic-tech groups and NGOs have demanded and, often, obtained more transparency from city governments on urban data management. The availability of information combined with recently developed web-based mapping tools is allowing many non-traditional urban analysts to reveal spatialized injustices and give voice to vulnerable communities. These visualizations can support civic organizations and policymakers in their struggles against spatial injustices and can be employed as tools to eradicate forms of deeply rooted injustices and to advance a more comprehensive historical understanding of how to interpret the *status quo* of cities. However, this endeavor becomes a particularly arduous task when the built environment has been affected by a series of radical transformations enacted by not only national agencies but also external entities, some of which operated according to colonial and imperialist practices. In these contexts, forms of top-down representations are not conducive to a renewed on-the-ground understanding of urban spaces often inhabited by community groups whose presence is hardly documented and whose stories rarely emerge through the ink of cartographic representations. For instance, small shop owners, craftspeople, and street vendors tend not to be adequately represented on maps, as they are often excluded from formal planning processes despite their unquestionable contribution to cities' economic vitality and cultural identity (De Munck 2019). This spatial vacuum becomes particularly problematic when attempting to construct the socioeconomic tissues of a place over time, as most cartographic representations fail to reveal the vibrancy of urban streetscapes, thus missing characterizing elements of their street commerce and workshops.

In conclusion, the possibilities of retooling cartographic investigations are of fundamental importance in shedding light on the problematic legacies of the past and, eventually, targeting *ad hoc* remedies by unearthing overlooked phenomena to gain different perspectives and construct new knowledge. We situate the scholarly endeavor of this article in the realm of "radical cartographies" (Sletto et al. 2020) as we build on the notion of "other mappings" to foreground the multiplicity and diversity of forms, processes, and voices shaping the creative cultural landscape of a city.

3.2.2. Uncovering the Spatial Nexus between Craftsmanship and the City

In her 1961 *The Death and Life of Great American Cities*, Jane Jacobs offers specific insights into the profound social trust that pervaded the sidewalks of her New York City neighborhood, Greenwich Village. More specifically, she highlights a deli owner named Joe Cornacchia as a central figure in this narrative. According to Jacobs, Mr. Cornacchia's shop exemplifies the intricate interplay within a well-formed urban street community—one that masterfully balances the elements of personal privacy alongside various degrees of social interaction and mutual confidence. The spatial dynamics described by Jacobs are not unique to New York City. Throughout history, street commerce and localized small-scale production have woven their presence into the very fabric of urban landscapes, from the Greek *agoras* to the Roman *fora*, the bustling piazzas, vibrant souks, and lively bazaars. These places have emerged as containers of both commodity exchange and sociocultural interchange, a testament to their enduring significance (Calabi 2017). Often characterized by an informal *modus operandi*, these spaces have provided a lifeline for different types of local businesses, including temporary vendors who lack the resources to engage in formal property ownership or adhere to structured rent systems. In essence, street markets have functioned as conduits of economic opportunity, granting individuals a means of earning despite the absence of substantial capital resources. More than mere conduits of trade, these bustling markets have been instrumental in fostering a sense of communal unity and in sustaining livelihoods, exemplifying their pivotal role in knitting together the social fabric of urban communities. However, given that the design of urban spaces has traditionally been deeply embedded in power relations, the pre-modern city should not be depicted as an idyllic place of inclusivity and harmony: what shops had more prestigious locations (such as street corners) than others or what types of crafts and/or produce were traded in certain parts of the city was not the result of neutral choices (Lamprakos 2014). Among the plethora of small shop typologies, the sociologist Richard Sennett celebrated the role of craftspeople in a highly influential 2008 book titled *The Craftsman*. The author, in fact, puts craftsmanship

in an anthropological perspective with the intent of rehabilitating, in theoretical terms, material culture and practical engagement with raw material over intellectual work (Sennett 2008). Sennett situates his anthropological excursus in a broader historical narrative on the relationship between craftspeople and the built environment. Instead of tracing the origins of craftsmanship's disruption to industrialization and globalization, Sennett's perspective highlights the Renaissance as the catalyst for a significant paradigm shift. This transformation marked the gradual elevation of artists, architects, and engineers to the status of intellectual figures. In contrast, craftspeople saw their status diminish and relegated to the label of "mere mechanics" (Seršić & De Munck 2023). However, their role in shaping cities extends beyond a mere historical chronicle of construction and technological progress. Craftspeople have historically held a vital position in city-building, a role that transcends material transformation. They have been delineated as professionals engaged directly with the tangible components of the urban environment, a perspective echoed by Sennett (2008).

With industrialization in the nineteenth century and its resulting spatial consequences by the turn of the century, such as the positioning of large-scale production in new, planned settlements (e.g., company towns) and the mechanization of urban ports, small-scale production in urban contexts faced new challenges. For example, the processes of port and coastline engineering reshaped the socioeconomic apparatus of water-facing neighborhoods where port workers, fishermen, and craftspeople used to reside and run their businesses. In the case of craftspeople, for instance, the emergence of new building typologies (e.g., warehouses) and transport infrastructure (e.g., port rail tracks) revolutionized access to goods, and it determined a decreasing dependency on spatial proximity between crafts workshops and piers designated for the unloading of goods and raw materials.

In the twentieth century, the emergence of urban renewal strategies and the proliferation of highways, often underpinned by top-down planning approaches, has not been without consequence for the spaces in which craftsmanship traditionally thrived. The ascendancy of car-oriented cities, with their emphasis on efficient vehicular movement, has frequently come at the cost of intricate, pedestrian-oriented spaces where craftsmanship once found its natural habitat. The bulldozing of historic neighborhoods and the reshaping of urban layouts to accommodate automobile-centric infrastructure have disrupted the delicate ecosystem within which artisanal skills flourished. As narrow streets and intimate alleyways gave way to sprawling thoroughfares and towering overpasses, the intimate interactions and cultural exchanges that nurtured craftsmanship vanished. The displacement of such organic, human-scale environments has challenged the symbiotic relationship between

craftspeople, their trade, and the vibrant urban fabric, underscoring the need for more nuanced and inclusive urban planning approaches that safeguard these valuable spaces of ingenuity and knowledge production.

Today, the urban policy debate around craftsmanship in urban settings revolves around tourism and efforts to inscribe crafts workshops within policies aiming at safeguarding intangible heritage (Karakul 2019). Tourism, in fact, can be a motivating force to regenerate training with the increasing demand for traditional crafts. While questions of memory, the problematization of nostalgia, identity-construction processes, and the *querelle* about the "authenticity" of staged cultural production are inevitably related to craftsmanship, they fall beyond the scope of this research investigation that remains focused on the use of longitudinal spatial data on craftsmanship and their relation to radical shifts in urban form.

On a theoretical level, geographers are demonstrating increasing interest in the power and relevance of crafts and artisanal practices. However, within this scholarship, very little attention has been paid to tracing the spaces of craft practices over time and place (Patchett 2017). Undoubtedly, an apparent research gap emerges at the crossroads of three groups of scholars: critical cartographers, who navigate the realms of visualization and spatial analysis of inequality; cultural geographers, vested in unraveling the spatial intricacies of knowledge dissemination and cultural production; and urban planning scholars, dedicated to unearthing the intricate physical underpinnings of urban spaces and their socioeconomic dynamics.

In light of this gap at the intersection of three bodies of literature, this paper asks: what can longitudinal data on the location of crafts workshops tell us about the evolving relationship between street commerce and urban form (Sevtsuk 2020)? What valuable insights can we uncover by examining the urban environment from the standpoint of craftspeople as they engage with urban development and civic affairs? How can a comprehensive understanding of historical narratives, particularly those reflecting the lived experience of craftspeople and significant shifts in urban structure, contribute to guiding policy makers towards more equitable and just decision-making?

In the following section, we provide a brief excursus of the urban history of Beirut to situate our study across five macro-chronological segments.

3.3. The Context of Beirut: Urban Form and Distribution of Local Businesses

Beirut's crafts reflect its people's diverse backgrounds and creative skills. While the city's urban history has been widely investigated, the ever-changing geography of craftsmanship in the city remains a largely unexplored area of scholarly inquiry. The lack of comprehensive data on the locations of crafts workshops over time makes the historicization of relocations and displacement a particularly difficult task. By delving into the complex landscape of Beirut's creative business production and its spatial history, this section examines the evolution of street commerce throughout five historical periods, namely the late Ottoman period (1840–1918), the French Mandate period (1920–1943), the Independence period (1943–1975), the Civil War (1975–1990), and the Post-war Reconstruction period (1990–onwards).

3.3.1. Late Ottoman Empire Period

During the second half of the nineteenth century, Beirut witnessed an unprecedented development of its port facilities and the introduction of the Beirut-Damascus railroad, which transformed the city into a "late-Ottoman colonial gateway" (Saliba 2000). Hindi describes the relevance of the *Tanzimat* reforms in regard to new urban regulations and construction codes for the newly designated *wilâya* (provincial capital). The *Tanzimat* decree ordered regulations and reforms spanning between 1839 and 1876, focusing on urban management and hygiene regulations (Hindi 2020) **[Fig. 82]**.

Fig. 82 – Narrow street in the Souks (1913). Source: Dr. Eugene Cottard, *Traversées Photographiques*, Le Journal du Docteur Cottard, 2017 [photographed at the Arab Image Foundation, Beirut in 2022].

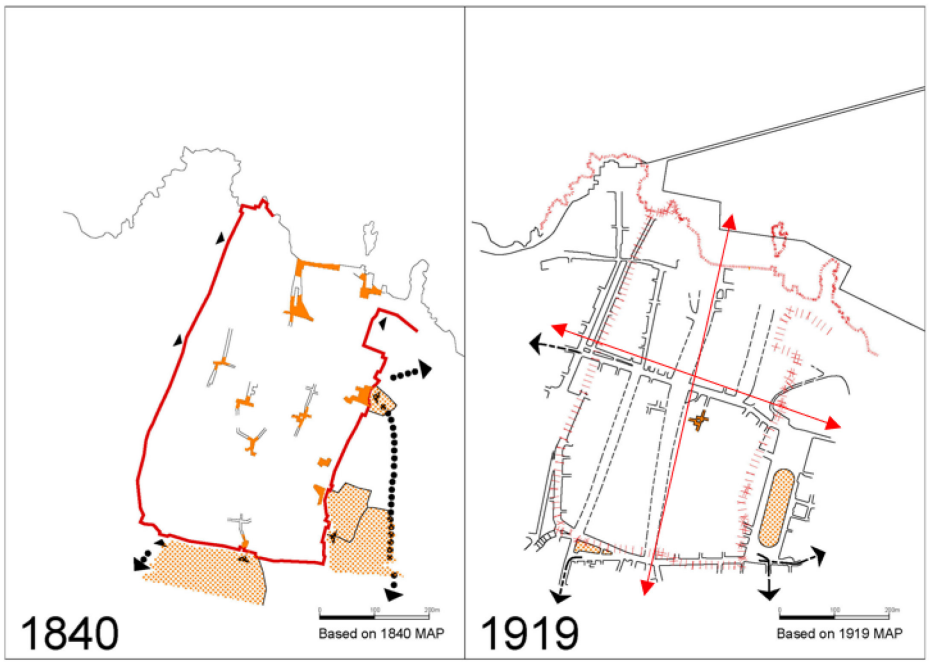


Fig. 83 – (Left) City walls in red with the *intra-muros sahat* in orange (1840); (Right) Demolished city walls and opening of today's *Rue Allenby* (North-South) and *Rue Weygand* (East-West) slicing through *Al Balad* (1919). Source: Hindi, N. (2020). "Narrating Beirut Public Spaces Westernization: An urban perspective from the late nineteenth century." Méditerranée, 131.

In the mid-nineteenth century, the souk alleyways intersected at small *sahat or public spaces* organized around fountains or coffeehouses **[Fig. 83]**. These *sahat* were sometimes even named after the trade activities that were involved, such as *Sahat al-Khoubz* ("Bread Square"), similar to Wheat and Fish Squares (De Nerval 1851). The *sahat* and souks were informal and unplanned spaces that had an undefined geometry, making them barely recognizable in cadastral maps of the time. These urban forms facilitated intimate yet lively street commerce that populated connecting open spaces through which merchants and buyers could circulate and exchange goods under the shade of their cloth awnings and bazaar-like tents.

The decision to demolish the souks was made in 1915 by Jamal Pasha, who started off by piercing the souks to ventilate the congested old city and connect it to the soon-to-be-urbanized areas beyond the city walls. These linear demolitions connected the existing *sahat* to extramural parts of the city, thus linking the east and west sides of Beirut. Additionally, the *sahat* got connected to the port through the reconfiguration of some souks (e.g., Souk al Fashkha, Souk al Tawileh, Souk al Jamil), which were partially modified by two new rectilinear wide streets (*Rue Allenby*, north-south, and *Rue Weygand*, east-west) **[Fig. 84**; **Fig. 85]** (Hanssen 1998). The destruction of the

sahat followed the reconfiguration of the souks, resulting in the city center's shift from an Arabic city to a more westernized one.

Fig. 84 - Alleys of the souks leading to a passenger pier in the old port, in the proximity of *Rue Allenby* (1905). Source: Fouad C. Debbas, *Des Photographes a Beyrouth 1840–1918*, Marval, Lebanon, 2001 [photographed at The Sursock Museum Library and Archives, Achrafieh, Beirut in 2022].

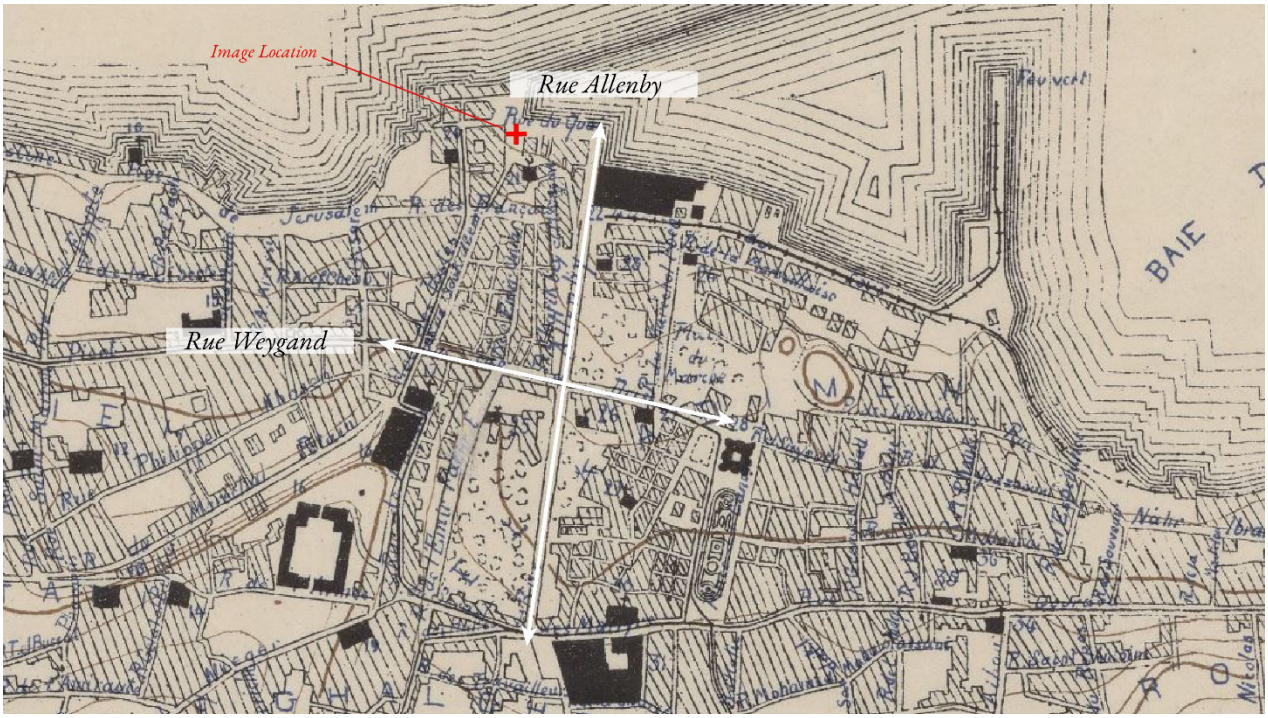


Fig. 85 - 1920 map of Beirut produced by *Armée Française du Levant (Bureau Topographique)* with annotations by authors. It includes the plausible location of Fig. 84 (marked in red). Source: Department of Plans and Maps of the National Library of France in Paris (Item GE C-5752).

3.3.2. French Mandate Period

During the French Mandate (1920–1943), Beirut witnessed significant changes in its built forms due to large-scale urban renewal projects. Instead of building a *nouvelle ville* next to the pre-Mandate one, as in the case of cities like Tripoli or Sidon, French architects and urban planners superimposed regularly shaped geometric forms over the late-Ottoman Era urban fabric of the city. In 1928, under the direction of Camille Duraffourd, the chief of the land register (cadaster) of the French Levant, the lines of Beirut's first urban renewal plan were sketched over the 1922 comprehensive map of the city elaborated by the *Bureau Topographique de l'Armée Française du Levant*. This plan included the layout of *Place de l'Étoile.* The Parisian office, *Société des Plans Régulateurs des Frères Danger* (directed by the brothers René and Raymond Danger), built upon Duraffourd's propositions to present a plan (1931–1932) that didn't propose significant alterations to the *Étoile* site. Instead, it emphasized the centrality of the star-shaped intersection through urban design gestures, including precise building alignments (El Hayek 2015) **[Fig. 86]**.

In his essay *Mapping Beirut: Toward a History of the Translation of Space from the French Mandate through the Civil War (1920–91),* Hatim El Hibri describes the two overarching projects undertaken by the French Mandate, namely the implementation of a comprehensive cadastral survey and the introduction of large-scale planning projects initiated by a central government authority (El Hibri 2009). The cadastral system served as the cartographic infrastructure to support large-scale planning initiatives, which resulted in increased policing of public spaces. El Hibri states that "the two central axes running north to south [*Rue Allenby* and *Rue Foch*] through the city center, originally put in place by the Ottoman regime, were widened and improved during the Mandate to serve the military purpose of rapidly deploying troops to protect corporate interests near the port, as well as to facilitate the circulation of people and goods into and out of the city." The regularization of the urban fabric and the extension of the city core to the periphery expanded commerce from narrow souk streets into larger avenues and squares and, most importantly, outside the *Al Balad* area in *Rue Gouread* **[Fig. 87]**.

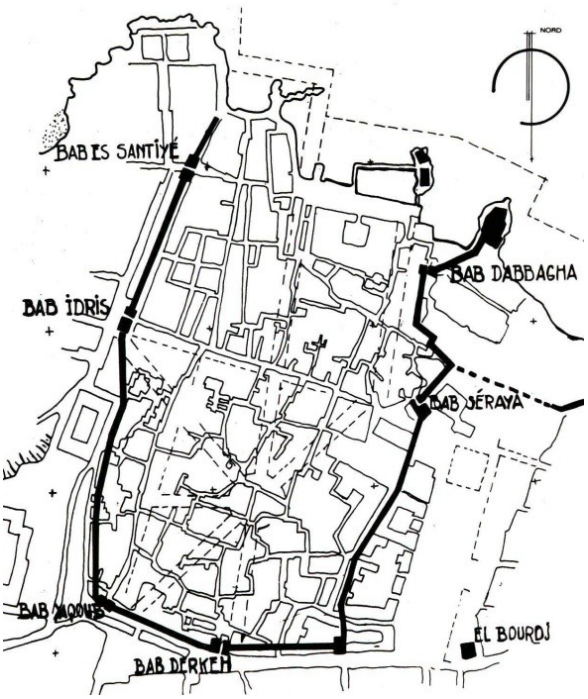


Fig. 86 – Drawing depicting the late-Ottoman street network, the medieval walls with city gates (thick black lines), and the shape of the *Étoile* in dashed lines. Source: MIT Ecochard Collection (S806531) Project Number: 70109 Beirut Development Plan Medieval gates and fortifications, drawing by Ecochard, Michel; 1943, Beirut.

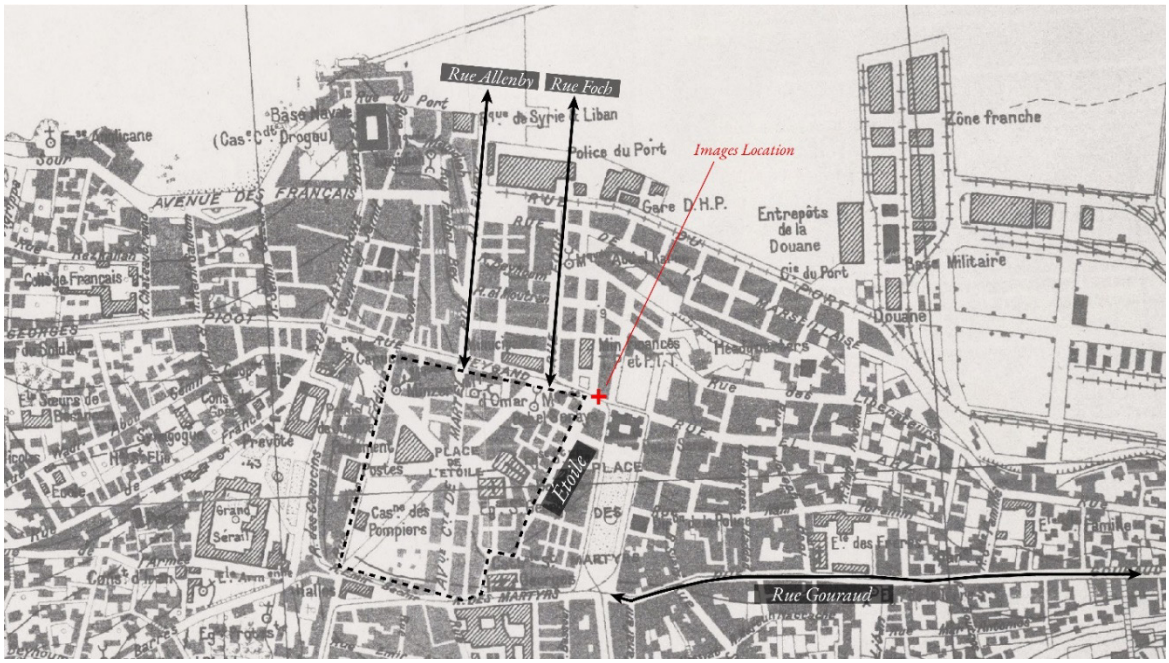


Fig. 87 - 1945 map of Beirut produced by commissioned and drawn by the French Institut Géographique National (IGN) with annotations by authors. It includes the plausible location of Fig. 88 (marked in red). Source: MIT Rotch Library (Item Map G7474.B4).

In what Saliba describes as the period of "early modernity: suburbanization/centralization" in the 1940s and 1950s, the city center and its immediate surroundings were spatially continuous with no notable breaks in the urban fabric (Saliba 2013). Gradually, as envisioned in the early-1930s studies and plans of Michelle Écochard, the downtown area complemented its office, commercial, and institutional land uses with more high-density residential apartment buildings. At the same time, the surrounding agricultural outskirts underwent a remarkable shift, evolving from an expansive low-density suburban area into a collection of distinct urban zones that showcased a wide variety of socioeconomic traits. Archival imagery indicates the shift in urban fabric density and the introduction of Mandate-era avenues that altered small-scale, informal exchanges between buyers and craftspeople yet still maintained commerce proliferation. The increase of automobile accessibility in these areas also shifted the dynamics with clientele demographics, introducing more tourists and middle-upper class visitors that filtered through the newly implemented arteries of the city center plan **[Fig. 88]**.

Fig. 88 – Images of *Rue Weygand* (1950). Source: Rayes, G., & Ingea, T. R. (2011). *Beyrouth, le centre-ville de mon père*. Les Editions de la Revue Phenicienne; [photographed at The Sursock Museum Library and Archives, Achrafieh, Beirut].

3.3.3. The Independence Period

In the post-independence period (1943–1975), Beirut became a regional hub for finance, trade, and culture. Urban planning efforts focused on accommodating the population growth, resulting in the expansion of suburbs and the construction of modern residential and commercial complexes. President Fouad Chehab came into office

in 1958 and wished to strengthen the centralized state and ease sectarian tensions through a designated zoning system and building code. From a planning standpoint, Swiss planner Ernst Egli's drafts from 1951 followed the footsteps of Écochard's early 1940s urban vision. Ernst's master plan consisted of a hierarchical street network with a coastal highway connecting the country's north and south. While the plan that was approved in 1963 (Plan for the Greater Beirut Metropolitan Area) continued to be named after Écochard, it did not resemble Écochard's original vision: it had loosely defined zoning codes for Greater Beirut and neglected infrastructural developments for emerging suburbs (Verdeil 2012).

The independence period witnessed two major urban development projects that had a massive impact on the preservation of the early modern heritage five decades later: first, the introduction of a zoning law in 1954, which created ten concentric zones of diminishing floor-to-area ratio (FAR) extending from the center of the city outward **[Fig. 89]**, and second, the creation of an infrastructural break between the city center and its periphery by superimposing the inner-city ring road around the central business district in the 1960s, bounded by *Avenue Georges Haddad* on the east side and *Rue Fakhreddine* on the west side (Mohsen et al. 2018; Saliba 2013) **[Fig. 90]**.

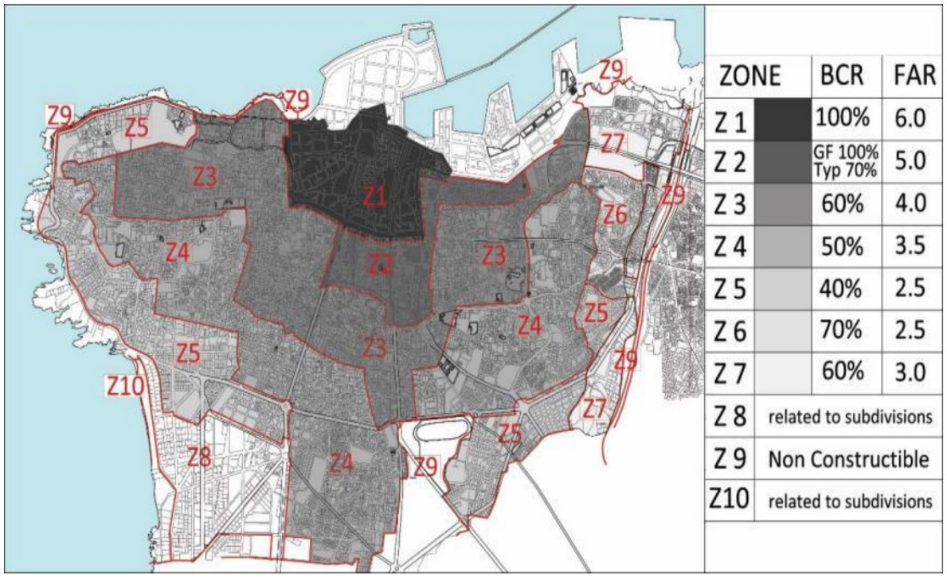


Fig. 89 – Beirut Zoning Regulation with its subdivision in ten concentric zones with different floor-to-area-ratio values. Source: Mohsen, H., Rokia R., & El-Bastawissi I. Y. (2018). "The Impact of Changes in Beirut Urban Patterns on the Microclimate: A Review of Urban Policy and Building Regulations." *Architecture and Planning Journal* 25.

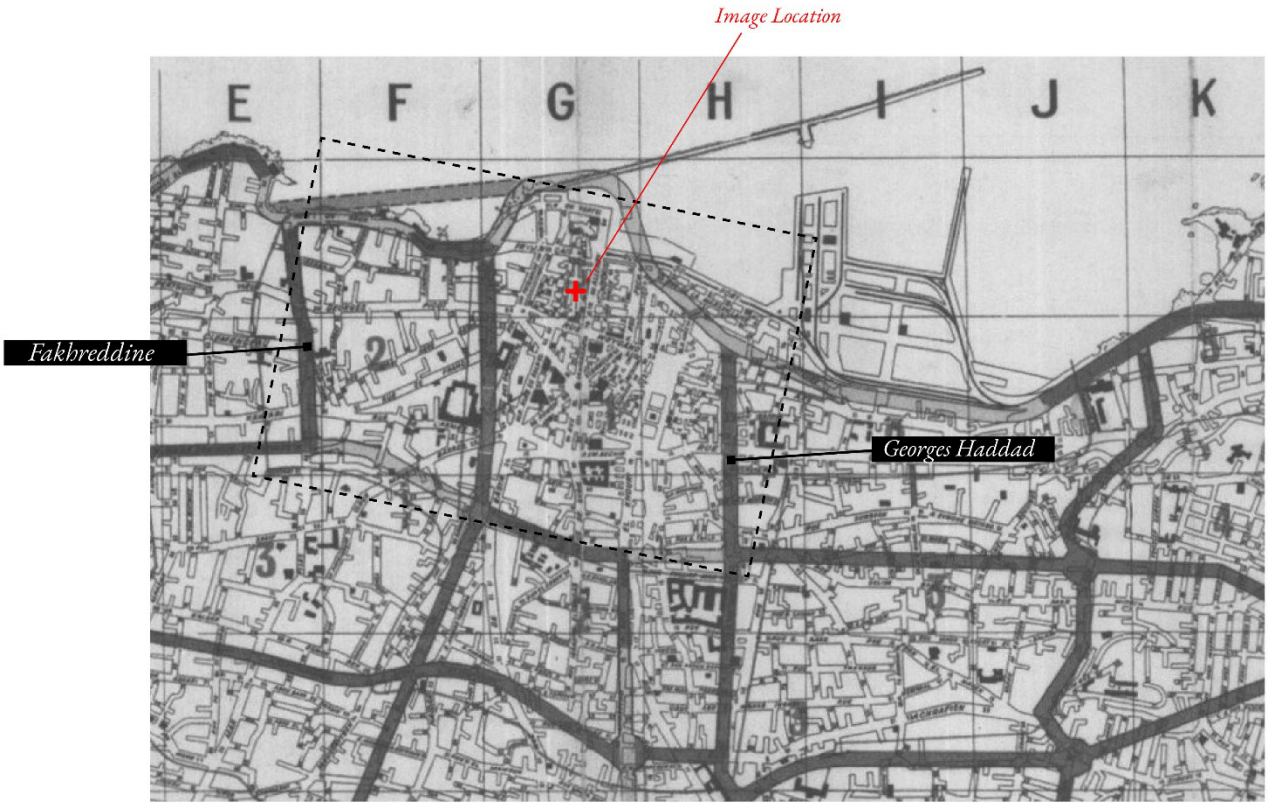


Fig. 90 – 1954 *Plan d'Urbanisme de la Ville de Beyrouth* with annotations by authors and plausible location of Fig. 91. Source: Saliba, R. (2013). "Historicizing Early Modernity — Decolonizing Heritage: Conservation Design Strategies in Postwar Beirut." *Traditional Dwellings and Settlements Review* 25 (1): 7–24.

Street commerce continued to thrive in the spaces behind the newly implemented urban highways, maintaining a connection to previous urban forms through shops in narrow streets and the souks while also expanding outside the downtown area with the new infrastructural networks **[Fig. 91]**.

Fig. 91 – Souk el Tawileh, 1960. Source: Tueni G. (1982) *Beyrouth: Souvenir-réalité* (An Nahar Arab international), Hachette; [photographed at The Sursock Museum Library and Archives, Achrafieh, Beirut].

3.3.4. Civil War Period

With the beginning of the Lebanese civil war in 1975, Beirut was already a predominantly modern city that had preserved very few traces of its Ottoman past. As such, the post-war reconstruction project carried out by Solidere— a private Real Estate Holding Company—constitutes the fourth wave of modernization to affect Beirut after the processes of socio-technical innovation that took place during the Ottoman time, the French Mandate, and the Independence period.

The Civil War inflicted severe damage on Beirut's urban landscape. The city was divided into warring factions, resulting in widespread destruction. Many historic buildings, neighborhoods, and infrastructure were heavily damaged or destroyed. The city's urban fabric suffered significant disruption, leading Beirut to symbolize the concept of "urbicide" (Fregonese 2009). While the physical infrastructure and buildings were destroyed **[Fig. 92]**, craftspeople's shops kept running their businesses from underground workshops **[Fig. 93]**. Surprisingly, as we

have discovered through the interviews of this study, the war triggered what we initially thought was a counter-intuitive economic boom for some craftspeople's businesses. This was due to the strong buying power of militia members and middle-upper-class citizens, as well as the exportation of goods. During the war, some shops managed to keep their subterranean workshops active, as Camille Tarazi from "Maison Tarazi" (a crafts and furniture business specializing in fine oriental crafts since 1862) explained to us during an interview about their shop, which remained active in the lobby and basement of Hotel Alcazar in Ain Al Mraiseh for thirteen years during the war (1975–1988). He interestingly linked the survival of the hotel, where they run their business, to the political and religious heterogeneity of their employees:

> "*During the war, we were lucky, most of the employees we worked with were from different religions and political parties. We managed to escape from Palestinian, Israeli, and Lebanese forces, [...] they weren't staying like they did in Hotel Phoenicia or Saint George. Hotel Alcazar was the least damaged between the "Battle of the Hotels" in 1975–1976; we managed to save the hotel and the shop was still there. Entrance of the shop from the lobby was closed; the service path of the shop to the basement remained open to sustain production*." [Camille Tarazi, April 2022]

Although street commerce could not take place consistently, it continued to thrive in between clashes and bombings, particularly in residential areas to which craftspeople relocated to work from home and cater to an accessible clientele.

Fig. 92 - Entrance to the souks destroyed (view from Martyrs' Square, in 1982). Source: Tueni G. (1982) *Beyrouth: Souvenir-réalité* (An Nahar Arab international), Hachette; [photographed at The Sursock Museum Library and Archives, Achrafieh, Beirut].

Fig. 93 - Worker carving into stone in Hotel Alcazar, where Maison Tarazi ran their production during the war (1987). Source: Tarazi C. (2015) *Vitrine de L'Orient: Maison Tarazi, fondee a Beyrouth en 1862–2015*, Editions de la Revue Phoenicienne.

3.3.5. Post-Civil War Period

In the post-civil war period (1990 onwards), Beirut underwent extensive reconstruction and revitalization efforts. The Lebanese government and international organizations focused on rebuilding the city's infrastructure and promoting urban development projects. Large-scale masterplans, such as the Beirut Central District (BCD), aimed to transform the war-ravaged city center into a vibrant commercial and residential area. The BCD's reconstruction involved the restoration of historic buildings and the construction of modern high-rises. In what Saliba refers to as the period of "late modernity: recentralization/segregation," Beirut witnessed the globalization of the 1980s and 1990s. Through the infrastructural boundary construction of the city's inner ring road with *Avenue Georges Haddad* to the east and the widening of *Rue Fakhereddine* to the west, the post-civil war redevelopment process demarcated the central from the peripheral districts, causing two planning systems to emerge side by side. Solidere was responsible for implementing the BCD and the downtown reconstruction (Sarkis 2005). However, outside Beirut Central District (BCD), the pre-civil war zoning was still operative, resulting in the spontaneous emergence of empty lots and the demolition-substitution of late Ottoman and French Mandate architectural elements with towering apartment complexes. In other words, while the war

triggered the destruction of the souks area, the post-war reconstruction led by Solidere assured an erasure of former ways of street commerce through the acquisition of generationally owned shops and enforcing a masterplan that did not allow for war-displaced craftspeople to return to their stores in those areas. The dispossession of small properties altered the dynamics of street commerce and introduced new built forms, like Rafael Moneo's Beirut Souks project that began construction in 1996 and was completed in 2009 **[Fig. 94]**.

Fig. 94 – Stores along vaulted alleys inside the Souks designed by Rafel Moneo (2012). Source: A.K.Khalifeh (Wikipedia Commons).

Commerce returned within the reconstructed alleys and squares of a formalized mall-like souk that could not emulate the original street dynamics of buyers and sellers. Once considered the "natural buzzing street life of the souks," the souks were replaced with organized festivals and ordered forms of events (Stanton 2009). However, areas like Bourj Hammoud and Hamra Street maintained their bustling street commerce in residential areas and narrow streets that bisect their densely populated plots **[Fig. 95]**.

Fig. 95 - Vahan Kupelian Calligrapher shop in Nor Marash (Bourj Hammoud). Source: Badguèr, Arpi Mangassarian, 2014 [photographed at Badguèr, Der Melkonian Street, Bourj Hammoud].

Today, Beirut's urban development continues to evolve. Gentrification takes hold as soaring residential skyscrapers, bustling commercial establishments, and thriving international markets emerge within the former artisanal and souks-focused heart of the city and its surrounding areas. Moreover, reconstruction efforts following the 2020 Port Explosion continue informally and gradually, leaving a major scar on street commerce and crafts businesses in general. The destruction of shops and neighborhoods that once bustled with trades people and buyers can now be, for many craftspeople, a point of no return.

3.4. Data Overview

This research employs a unique combination of three types of data sources, including historical maps of Beirut, a novel longitudinal dataset on crafts workshops compiled by the Massachusetts Institute of Technology (MIT) "Living Heritage Atlas" research team in 2021–2022, and semi-structured interviews conducted by the authors in 2023. The interviewees belong to a selected sample of eight craftspeople whose crafts workshops have been operating for most of the twentieth century (if not earlier) and are still in business today.

3.4.1. Historical Cartography of Beirut

The historical maps employed in this research are five high-resolution visual representations of Beirut from 1876 to 1984 **[Fig. 96]**:

1. The oldest map employed in this work dates back to 1876 and was dedicated to the Ottoman Sultan Abul Hamid II. The language of the labels and annotations is French, and the map has an east orientation.
   The high-resolution version of this map has been acquired through the online portal of the Department of Plans and Maps of the National Library of France in Paris (Item GE D 16879).
2. The 1920 map of Beirut employed in this study was commissioned by the French *Bureau Topographique* and prepared by the *Armée Française du Levant*. The map holds a north orientation, and it encompasses seventy-nine landmarks (mostly public and religious buildings), and it has a very early example of French street toponomy, visible in blue ink. The high-resolution version of this map has been acquired through the online portal of the Department of Plans and Maps of the National Library of France in Paris (Item GE C-5752).
2. The 1945 map was commissioned and drawn by the French *Institut Géographique National (IGN)* two years after the end of the French control over Lebanon in 1943. This cartographic representation has a north orientation and advances a much more hierarchical categorization of the street network of Beirut, introducing five classes of street segments ranging from primary streets to pedestrian paths (*sentier*). The authors of this paper have generated the high-resolution digital version of this map at MIT, where a version of this 1945 map is stored at the MIT Rotch Library (Item Map G7474.B4).
3. The 1958 map was prepared by the US Army Corps of Engineers on the occasion of the United States's first-ever combat operation in the Middle East: Operation Blue Bat. The high-resolution digital version of this map has been acquired through the online portal of the Perry-Castaneda Library (PCL) Map Collection of The University of Texas in Austin (Item Series K921 Sheet Beyrouth Editions 6-AMS).
4. The 1984 map was prepared by the UK-based "Geoprojects Ltd." in Henley-on-Thames, and the annotations are in French. This map is a monochromatic reprint of an original color-printed map.
   The authors of this paper have generated the high-resolution digital version of this map at MIT, where a version of this 1984 map is stored at the MIT Rotch Library (Item Map G7474.B4P2).

In addition to these five historical maps, the article employs a series of 2020 spatial datasets that were visualized and analyzed in a Geographic Information System (GIS) environment. More specifically, the polygonal datasets harnessed in this study include building footprints, street coverage, cadastral zone boundaries **[Fig. 97]**, and municipal district boundaries **[Fig. 98]**. As previously specified in the "Introduction" section of the paper, this work focuses on the port-facing neighborhoods of Beirut, specifically the municipal districts most affected by the destruction from the recent port explosion on August 4, 2020.[1] These spatial data were gathered and made available free of charge through the AUB Urban Lab "Beirut Built Environment Database." The GIS data features are projected in WGS 1984, UTM Zone 36N.

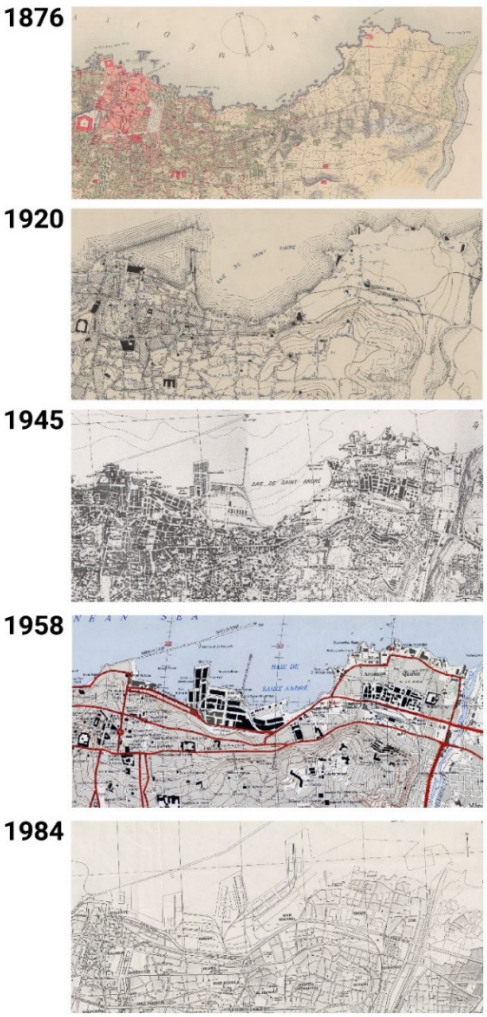


Fig. 96 - The series of Beirut historic maps employed in this research: 1876 (Loytved, J., Sruckly, "A. Map of Beirut dedicated to His Imperial Majesty Sultan Abdul Hamid II"); 1920 (Armée Française du Levant. Bureau Topographique); 1945 (Institut Géographique National); 1958 (US Army Corps of Engineers. Army Map Service), 1984 (Geoprojects U.K.).

[1] This area is marked through a red-dashed-line polygons in both Fig. 14 and Fig. 13.

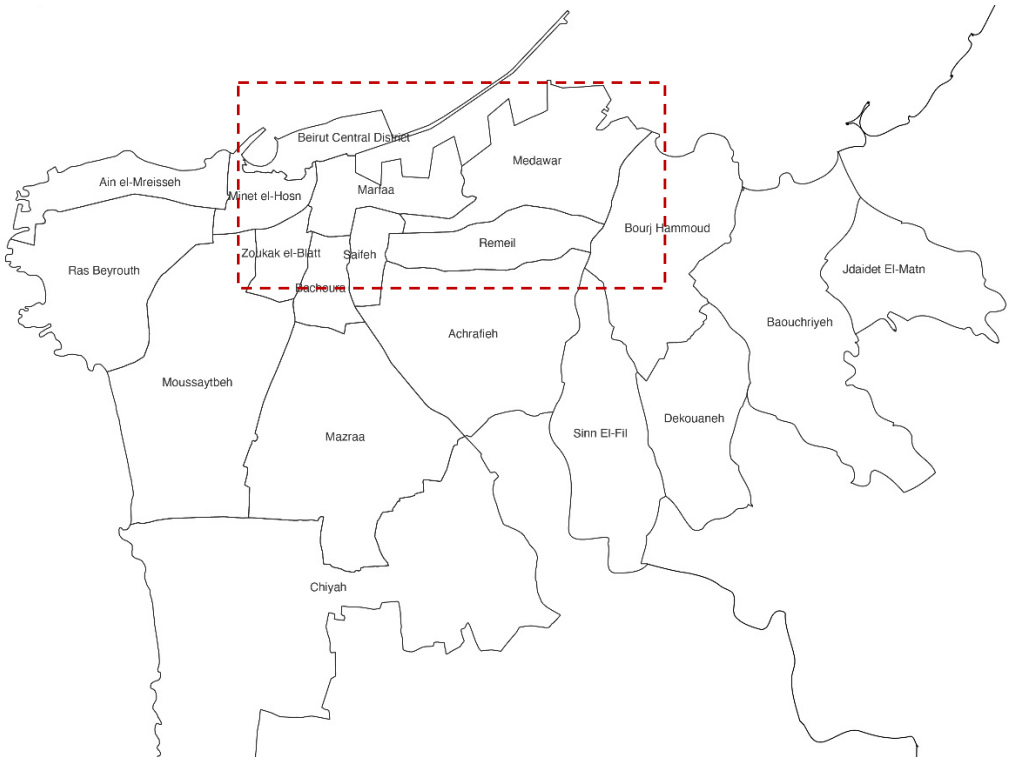


Fig. 97 - Beirut's cadastral zones. Source: authors.

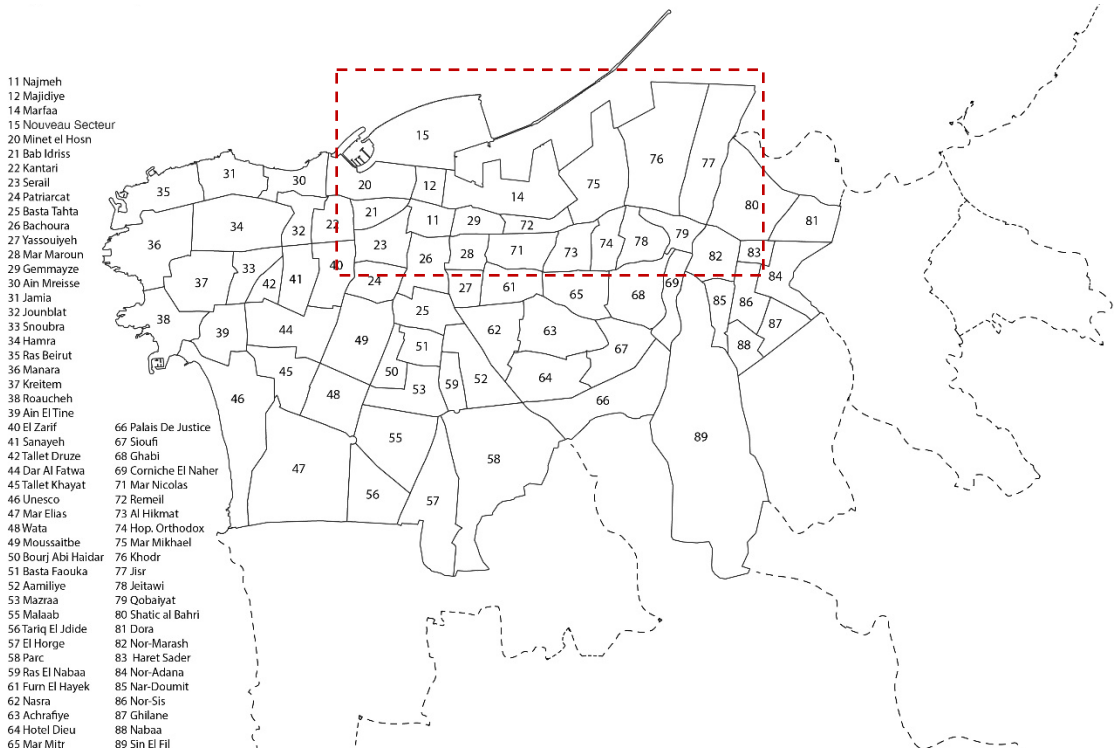


Fig. 98 - Beirut's municipal districts. Source: authors.

3.4.2. Longitudinal Dataset on Crafts Workshops in Beirut's Port-Adjacent Neighborhoods

The dataset of geolocated visual documentation on craftspeople includes 810 entries, of which 693 depict crafts workshops that existed in Beirut's port-adjacent districts between 1876 and 2010 **[Fig. 99]**. The remaining 116 entries provide a spatially accurate picture of the geography of craftsmanship in 2022, following the port blast in August 2020 **[Fig. 100]**. Moreover, fourteen crafts workshops listed in this dataset have thirty-eight visual documentation items associated with them, bringing the total number of unique workshops to 786.

The MIT "Living Heritage Atlas" research team collected, categorized, and geolocated the data points. This dataset performs as an unprecedented digital spatial history and archival ethnography effort to document at the granular level the vibrancy and diversity of Beirut's streetscapes throughout the evolution of the city **[Fig. 101]**.[2] Through images of craftspeople, their shops, and the streets where they used to run their businesses, this one-of-a-kind dataset generates an on-the-ground visual understanding of the spaces in which street commerce has existed in Beirut. This visual documentation on craftsmanship is the result of a thorough archival effort conducted at approximately twenty different institutions based in Lebanon[3] , owning a deliberate conviction in populating the internationally produced historical maps used in this study with locally sourced visual material.

Each image in this dataset has been classified according to six categories, encompassing up to nineteen different crafts disciplines. Moreover, fifty-four entries—mostly depicting streetscapes rather than individual crafts workshops—have remained unclassified to guarantee the thematic integrity of the dataset. Finally, given the well-known versatility of craftspeople in different crafts, this dataset includes visual items that can be listed in up to two distinct categories. To avoid miscalculation and preserve the actual count of visual items in the dataset, the following table **[Table 7]** treats shops belonging to two categories as contributors to half of each category they are assigned to.

[2] The "Living Heritage Atlas" dataset is available at this website: https://livingheritage.mit.edu/.

[3] The visual material gathered to construct the "Living Heritage Atlas" database includes images sourced at the following Beirut-based Institutions: American University of Beirut Libraries (AUB), Arab Image Foundation, ARAM Association pour la Recherche et l'Archivage de la Mémoire Arménienne, Aztag Armenian Newspaper, Badguèr, The Bonfils digitized photographs, the British library. Constantinos A. Doxiadis Archives, Corm Family Archives,The Fouad Debbas Collection, Haigazian University, Institut Français du Proche Orient (IFPO), L'Orient Le Jour, Lebanese American University Library (LAU), MOT Photobase, AUB Libraries Digital Collections, Archive of the Ministry of Tourism, Nor Serount, Cultural and Youth Center, HadjinNubar Library, AGBU, and Sursock Museum Library.

It is crucial to note that the visual documentation of craftsmanship gathered for this study is limited in its geographic and temporal scope. More data points are necessary to spatialize additional workshops and small businesses, especially due to the absence of a centralized dataset on the geography of craftsmanship in Beirut. Furthermore, the presence or absence of visual material could also reflect a selective desire to document particular subjects over others, influenced by an interest in visual aesthetics that may prioritize some shops over others.

From a historical photography perspective, the documentation of streetscapes and urban spaces was less common in the first half of the twentieth century compared to the mid-twentieth century. Additionally, the reduction in visual documentation during the Civil War might relate more to the actual scarcity of images rather than merely small numbers of crafts workshops. This decrease could also be due to the fact that businesses remained active in less visible yet safer areas, such as basements or domestic environments.

Table 7 – Distribution of archival visual documentation of crafts workshops and workshops on business in 2022.

Crafts workshop categories	Crafts workshops disciplines	Archival entries	Current workshops	Total
Architectural	Glass, woodwork	24	13	37
Cuisine	Food	81	4	85
Decorative	Brass, ceramics, printing, sculpture	91	18	109
Fashion	Jewelry, shoemaker, tailor	257	46	303
Functional	Brass, copper, glass, metalwork, printing	100	35	135
Furniture	Furniture, upholstery, wickerwork	58	10	68
Textiles	Embroidery, leather, tailor, tapestry	173	26	199
Unclassified	/	54	0	54
				810

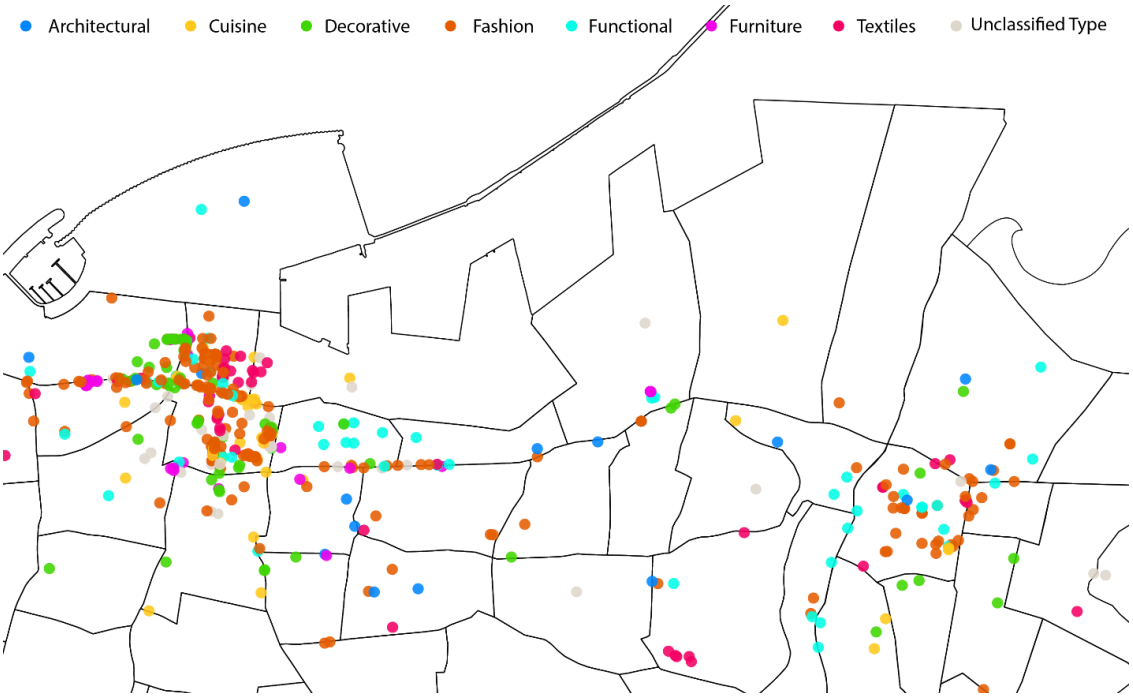


Fig. 99 - Map of the 693 archival images geolocated in Beirut and classified according to seven crafts categories. Source: authors.

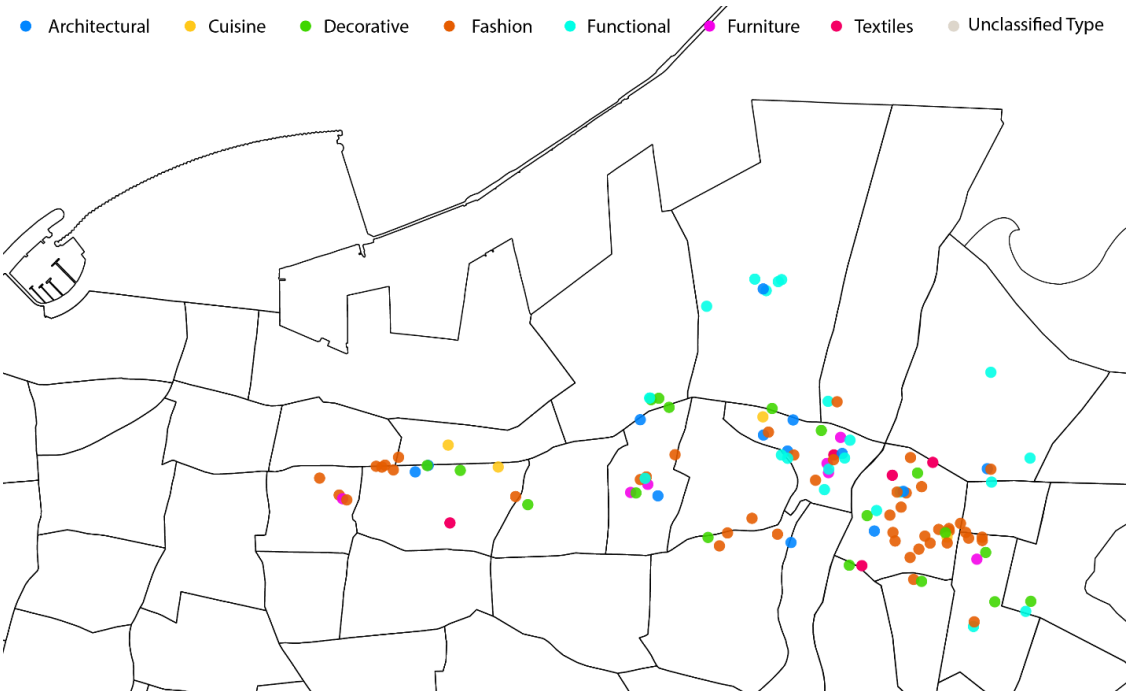


Fig. 100 - Map of 116 crafts workshops on business in 2022 and classified according to seven crafts categories. Source: authors.

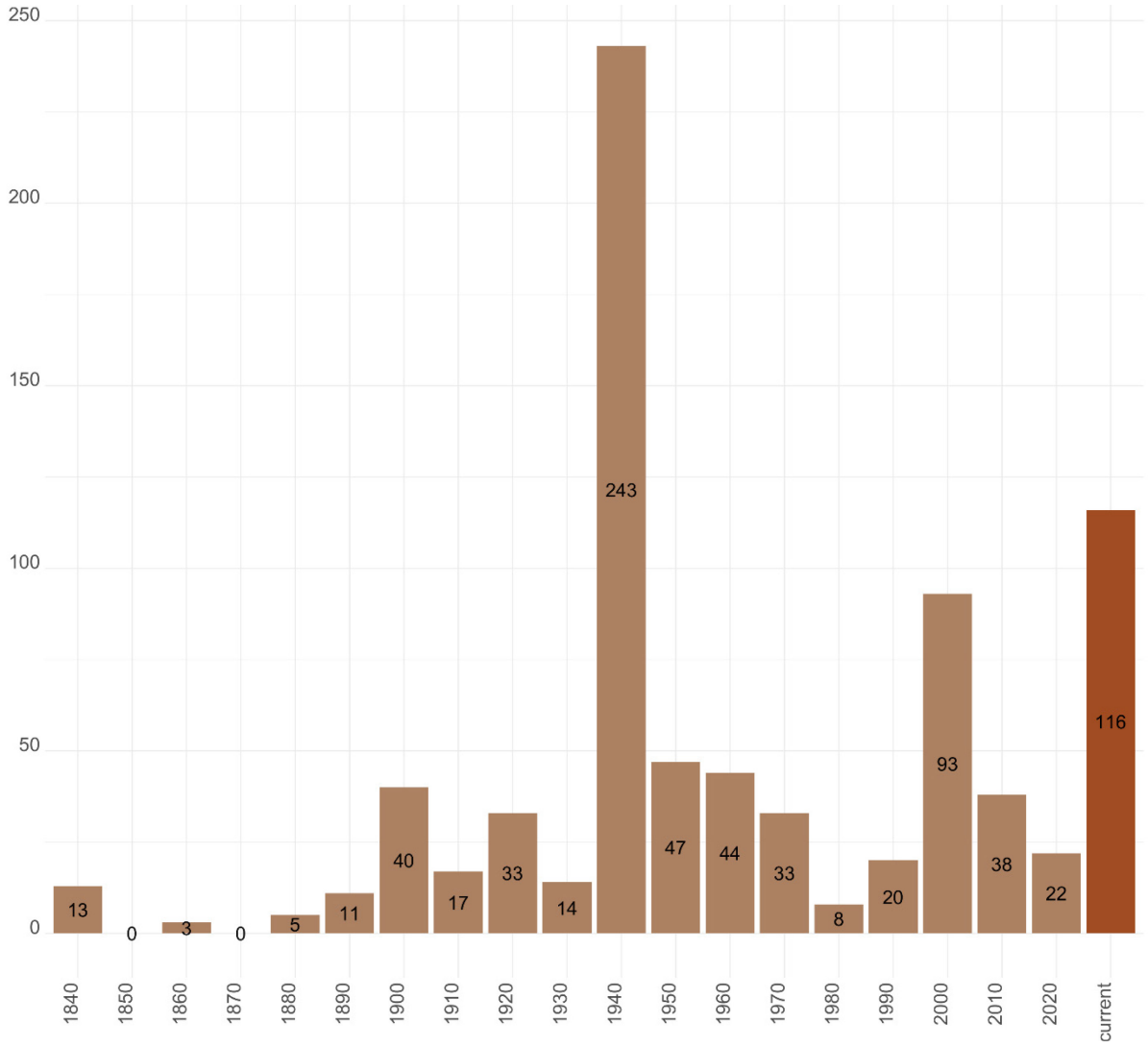


Fig. 101 – Longitudinal data coverage of craft workshops (light-brown-colored bars indicate the number of visual documentation pieces on crafts workshops from the past; the dark-brown bar indicates shops that were still open in 2022 in the study area). Source: authors.

3.4.3. Semi-Structured Interviews with Craftspeople

The eight-semi structured interviews conducted in this study include:

1. **Melkon Tchakerian**, leather tanning, from "Tchakerian Tannery," currently located in Nor Marash and in operation since the 1920s;
2. **Sevag Aprahamian**, shoemaking, from "Aprahamian Shoes," currently located in Nor Marash in Bourj Hammoud and in operation since 1957;
3. **Selim Mouzannar**, jewelry, from "Selim Mouzannar," currently located in Furn el Hayek in Achrafieh and in operation since the 1860s;
4. **Guiragos Doniguian**, printing, from "Doniguian Printing House," currently located in Mar Mikhael and in operation since 1929;
5. **Camille Tarazi**, restoration, handmade furniture, interiors, woodwork, glass, copper, mother of pearl, lighting, from "Maison Tarazi," currently located in Broummana in Mount Lebanon, and in operation since 1862;
6. **Khalil Chaftari**, shoemaking, from "Chaftari Orthopedic Shoes," currently in Mar Nkoula in Achrafieh and in operation since 1922;
7. **Rached Bohsali**, patisserie and sweets, from "Al Bohsali Sweets," currently located in Hamra Street, in operation since 1870;
8. **Wissam Houry**, horse leather and handicrafts, from "Zakour Leather and Handicrafts," currently located in Tayyouneh and in operation since 1922.

The rationale behind the selection of the mentioned interviewees is primarily a result of choosing diverse businesses that have persisted over time since their establishment in Beirut; some of them remaining in the same location, and others moving several times across the city's neighborhoods and, occasionally, even abroad. Three key factors were taken into account while narrowing down more than 110 crafts businesses to the selected eight shops: 1) the physical endurance of the shops over time; 2) the diversity of crafts; 3) the diverse locations of workshops across different neighborhoods, rendering each shop a point of insight or gateway into the stories of its neighborhood **[Fig. 102; Fig. 103]**.[4]

[4] The interviews were conducted remotely over the phone or over video conferencing platforms. However, previous in-person interactions occurred with the interviewees during data collection phase and participatory mapping occurred in Beirut in July 2022 during the "Living Heritage Atlas" data collection phase.

Fig. 102 – Locations of interviewees' workshops. Source: authors.

Fig. 103 - Beirut's 20 municipal districts, constituting the study area of this paper. Source: authors. [NEXT PAGE]


Minet El Hosn
Majidiye
Bab Idriss
Najmeh
Serail
Bachoura
Marfaa
Gemmayze
Mar Maroun
Mar Nicolas
Remeil
Al Hikmat
Hop. Orthodoxe
Mar Mikhael
Jeitawi
Khodr
Jisr
Ghabi
Corniche El Naher
Qobaiyat
Nor Marash
Shatic al Bahri
Haret Sader
Dora
Sin El Fil

3.5. Methodology

This paper employs both quantitative and qualitative research methodologies, bringing longitudinal urban form analytics on Beirut's urban development patterns in conversation with archival ethnography on craftsmanship and semi-structured interviews with eight craftspeople. The quantitative analysis enables both the detection and measurement of changes in Beirut's spatial configurations and urban development patterns. Instead, qualitative archival research and semi-structured interviews are essential to construct an on-the-ground narrative of how the craftspeople in the community experienced radical shifts in city form. In regard to the longitudinal dataset on craftsmanship, it is worth reiterating that the dataset was compiled through a snowball sampling identification process of archives and libraries containing visual documentation on craftsmanship. Therefore, the nature of the dataset remains functional in answering questions about locations and typologies of craftsmanship. However, its use is not ideal for prediction or causal inferences as its longitudinal and spatial composition is highly clustered around specific years and locations. In the results section, we provide additional information on the nature of the dataset motivating our hypotheses behind the supposedly over-representation of data points on craftsmanship in certain decades.

The units of analysis in the spatial analytics section of this paper are the Beirut municipal district. Given the spatial coverage of the datasets on craftmanship and the focus of this research in port-adjacent districts, this paper focuses on a sub-selection of twenty districts[5].

Given the profound entanglement between agencies of political power and the mapmaking process, the urban form analytics conducted in this study disregard the evolving street toponymy of Beirut and the cartographic identification of landmarks in historical maps. The cartographic analyses of the physical configuration of Beirut are oriented towards the quantification of the elements of urban form, such as street pattern, block configuration, and building footprint (Oliveira 2016). More specifically, to obtain a highly granular and measurable understanding of urban form elements over time, we have georeferenced five historic maps of Beirut in a GIS environment. Having successfully georeferenced five historical maps, each raster dataset was converted into a polygonal vector-based data source. This process entailed both "raster-to-vector" and "raster classification"

[5] Al Hikmat, Bab Idriss, Bachoura, Gemmayze, Ghabi, Haret-Sader, Hop. Orhodoxe, Khodr, Majidiye, Mar Maroun, Mar Mikhael, Mar Nicolas, Minet El-Hosn, Nejmeh, Nor-Marash, Port (Marfaa), Qobaiyat, Remeil, Serail, and Shatiq-Al-Bahri. These municipal districts belong to the following 6 cadastral zones: Minet el-Hosn, Medawar, Marfaa, Saifeh, Remeil, and Bourj Hammoud.

operations in a GIS environment, and it required some manual refinement in a CAD environment to guarantee the measurability of the features of interest in this study **[Fig. 104]**.

The longitudinal urban analyses compiled in this study focus on building footprint, unbuilt area, street area, urban block area, and distance to water. These six spatial variables are normalized by the actual land coverage at a given time in the history of the city. This normalization is necessary to consider that the extent of the city of Beirut in its port-facing neighborhoods has radically changed its form over time as a result of major land reclamation projects that have distanced the residential and commercial urban core from an increasingly engineered waterfront. These normalized spatial features are aggregated at the municipal district level and compared across the longitudinal coverage of this study. **Table 8** illustrates these variables and explains their analytical rationale.

Table 8 – List of urban metrics at the municipal district level extracted through the vectorization of historical maps

Urban Metrics	Description
Built-up area (%) *	The percentage of land within a specific area that has been developed or built upon.
Unbuilt area (%) *	The percentage of land within a specific area that has not been developed or built upon.
Street area (%)	The percentage of land within a specific area that is occupied by the street network.
Urban block density	The density of urban blocks within a specific area. It captures the fragmentation of a municipal district.
Standard deviation of urban block spatial extent	This metric captures the regularity or irregularity of urban block areas within a municipal district. For example, a municipal district with a high standard deviation identifies greater variability within the dataset.
Distance to water	This is calculated as the closest measurable distance from the geometrical centroid of a municipal district to the water edge at a given time in history.

* This metric was not available in 1954 and 1984 due to the cartographic limitations of the historical maps.

This series of urban metrics reveals the intensity and the forms of development throughout the history of Beirut in port-adjacent neighborhoods. However, urban form analyses at a given time and scale (municipal district level) are often insufficient in explaining whether the physical apparatus of a city has been stable throughout the evolution of an urban environment. Given the highly granular geographic lens of this work, this paper constructs a novel urban indicator with the intent of linking the notion of physical permanence to the presence of street commerce over time. We have constructed an urban metric named the "Urban Permanence Index" (UPI) by

employing six spatial datasets on Beirut's street network. The UPI measures, on a scale from 0 to 6, the permanence of a street segment. More specifically, this Index has a resolution of 2 m, and it was calculated through a conversion from polygonal road features to 2 m x 2 m pixels of street layers of Beirut. The more spatial overlaps are recorded in street network pixel values from different years, the higher the values of the UPI. For example, streets and public spaces that have existed in the same unaltered location in Beirut since its 1876 cartographic representation will have a UPI = 6. In other words, this measurement captures whether the street space has endured over time.

$$UPI_i = \sum_{k=i}^{n} p_{i_1} + p_{i_2} + p_{i_3} + p_{i_4} + p_{i_5} + p_{i_6}$$

where i identifies a single pixel, and p_{xi} refers to the Boolean value (either 0 or 1) of each pixel belonging to the rasterized street networks (1 = 1876; 2 = 1902; 3 = 1945; 4 = 1958; 5 = 1984; 6 = 2020) employed in this study.

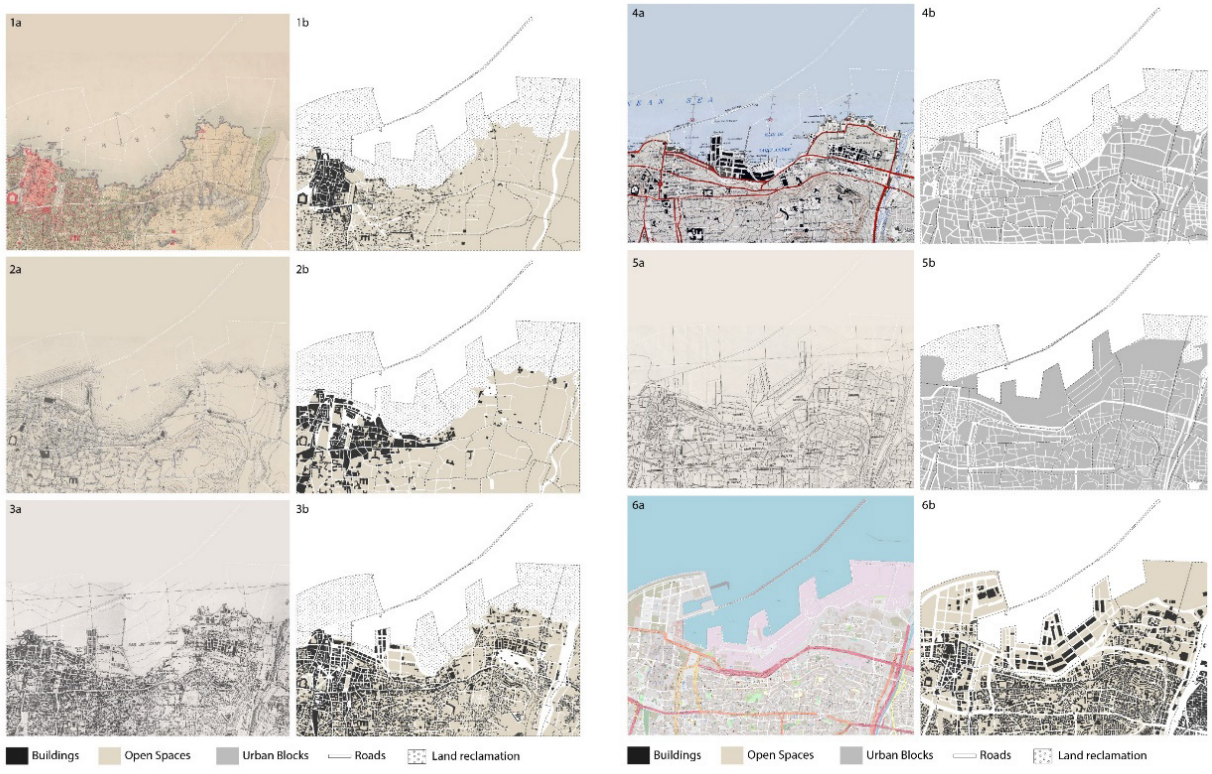


Fig. 104 – Historical cartography (left column) and extracted vector-based features from historical maps (right column): 1) 1876; 2) 1920; 3) 1945; 4) 1958; 5) 1984; 6) 2020. Source: authors.

Building on the quantitative and spatially specific urban metrics at the municipal district level, the archival ethnography material enriches the quantitative understanding of Beirut's neighborhoods' evolution with an unprecedented dataset of visual documentation on craftsmanship **[Fig. 105]**. The spatiality of the archival material allows for spatial aggregation at the municipal district level and juxtaposition with the urban form metrics. Instead of engaging with a traditional archival and ethnographic interpretation of the visual collection of craftsmanship, this paper's analytical methodologies are oriented toward quantifying archival documentation over time and space. For example, by knowing the year in which every visual documentation was produced and understanding where each image was taken, the dataset becomes a resourceful tool for reading the evolution of craftsmanship in the streets of Beirut. Moreover, given that each entry has a craft category attached to it, this archival dataset acts as a window into the measurability of crafts diversity in Beirut's neighborhood across time **[Fig. 106]**.

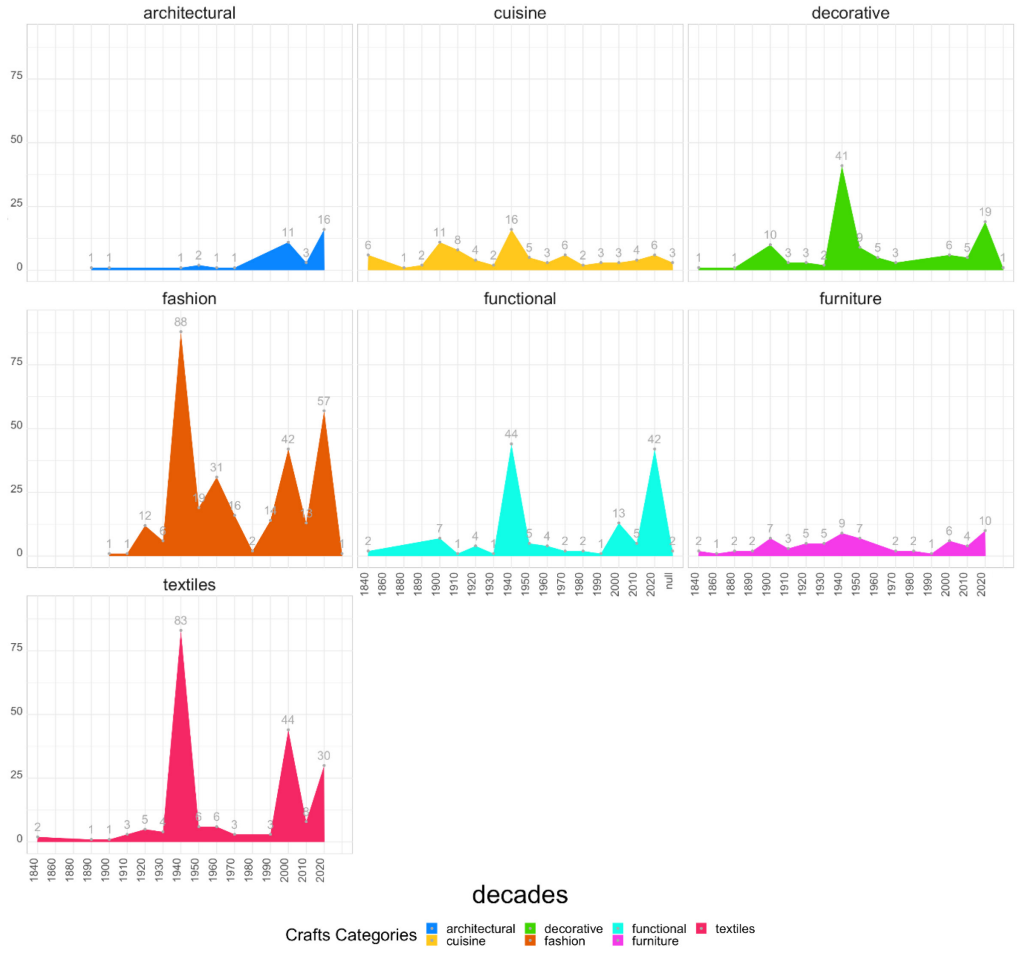


Fig. 105 – Longitudinal data coverage of visual items in crafts workshops grouped by craft categories. Source: authors.

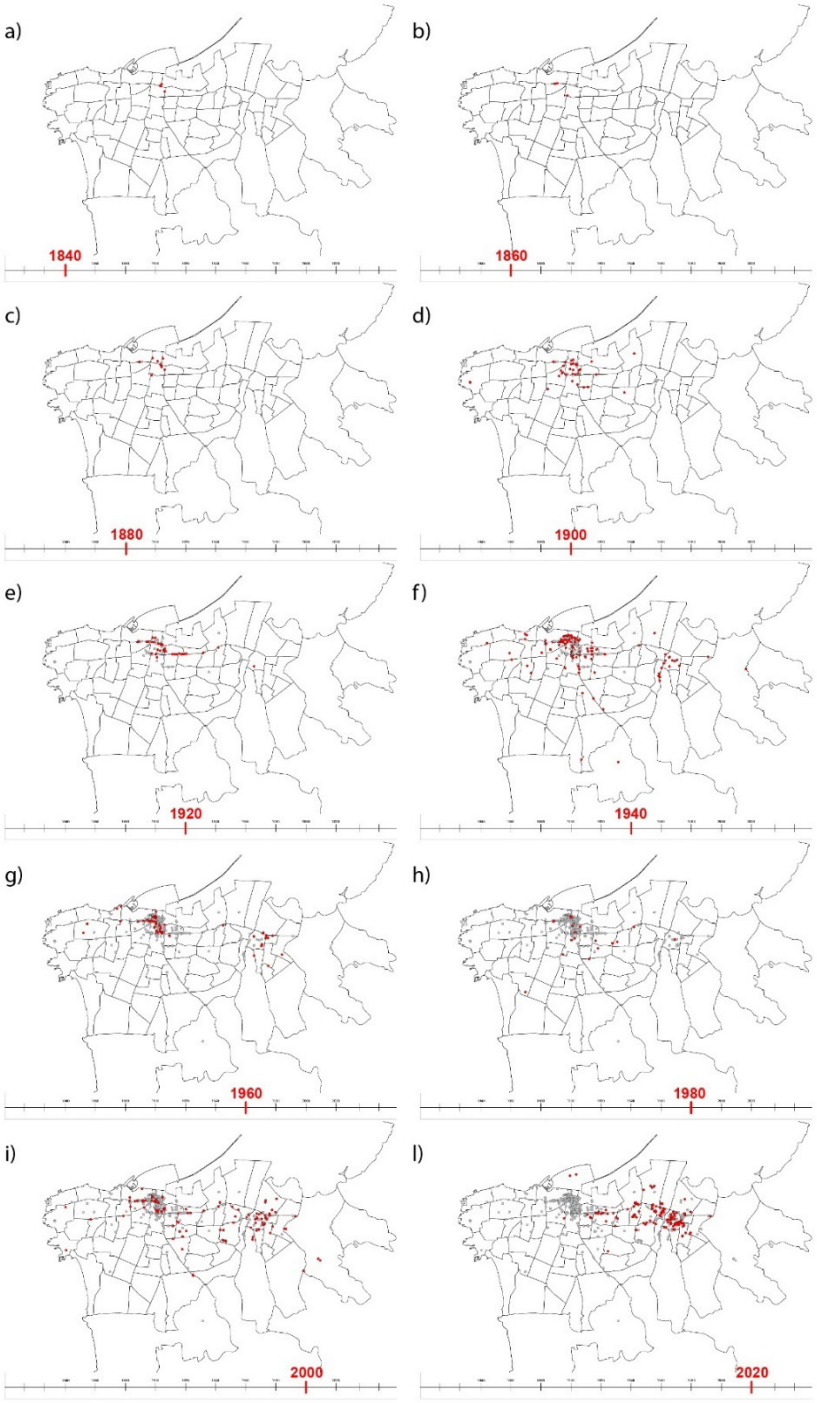


Fig. 106 – Diachronic representation of visual documentation on craftsmanship in Beirut. Source: authors.

The urban form metrics and the georeferenced archival visual items on craftsmanship are functional in providing the elements to construct a series of measurable snapshots of Beirut's urban form and its network of craftspeople. However, they fall short of addressing the second research question of this paper on the socioeconomic and political processes governing the dynamics of relocation and endurance in the space of craftspeople. To answer these questions, the authors engaged with eight interviewees belonging to the community of craftspeople. The interview code book employed to analyze the interviews focuses on 1) the relationship between space and relocation/movement, 2) space and sociodemographic factors like ethnicity and wealth, and 3) space and time. During the interviews, close attention was paid to the difference between opportunistic relocation, whereby crafts people move for other economic reasons, such as the desire to attain more customers, and relocation induced by traumatic events related to political unrest, war, socioeconomic conflicts, man-made disasters, or even pressure of real estate and land use.

3.6. Results

3.6.1. Measuring the Urban Form of Craftsmanship

The cartographic analyses, space-based classifications of archival material on craftsmanship, and semi-structured interviews sketch a 150-year-long narrative on the radical shifts in Beirut's city form and how urban configurations, socioeconomic processes, and politics have affected where, how, and in what form street commerce (specifically, craftsmanship) could exist in the streets of Beirut. The diversity of methods employed in this spatial history study situates craftspeople in a broader conceptual framework and historical discourse on the vulnerability of those communities who are often invisible to formal planning schemes and, therefore, rarely considered during the city-making process. Given that the longitudinal stability of a business is highly (yet not exclusively) dependent on the physical endurance in which a workshop exists (e.g., street patterns, urban form configuration), this paper has employed the UPI to measure at a highly granular level the permanence of the street network, relying on data from 1876 to 2020 **[Fig. 107]**.

Fig. 107 – Visualization of the Urban Permanence Index. Source: authors.

Results from the UPI analyses show a highly unclustered urban permanence in the city of Beirut. Forms of permanence are mostly noticeable in those major roads that have historically acted as corridors for commerce and trade between Beirut and Tripoli (Armenia, Gouraud, Pasteur Road). On a municipal district level, the neighborhood of Najmeh (identified in Fig. 26 through a black dashed line) scores quite high in its urban permanence. More specifically, the wide street constituting the backbone of the Haussmannian star-shaped configuration (Allenby Street) has, in some sections, a UPI = 6. This specific street segment, in fact, was implemented (through extensive demolitions) and widened throughout the late nineteenth century and early twentieth century **[Fig. 108]**. This finding is in line with the urban history literature on the late-Ottoman Era urban form transformations, which functioned as a prodromal act to the following French-mandate master planning gestures inspired by urban hygiene rationale, physical ordering, and forms of spatial control. In other words, the permanence of this linear axis towards the old port area stands as a testament to the distinct connections between two crucial nodes: the port as a site of departure and arrival of goods and the souks where goods were manufactured and sold.

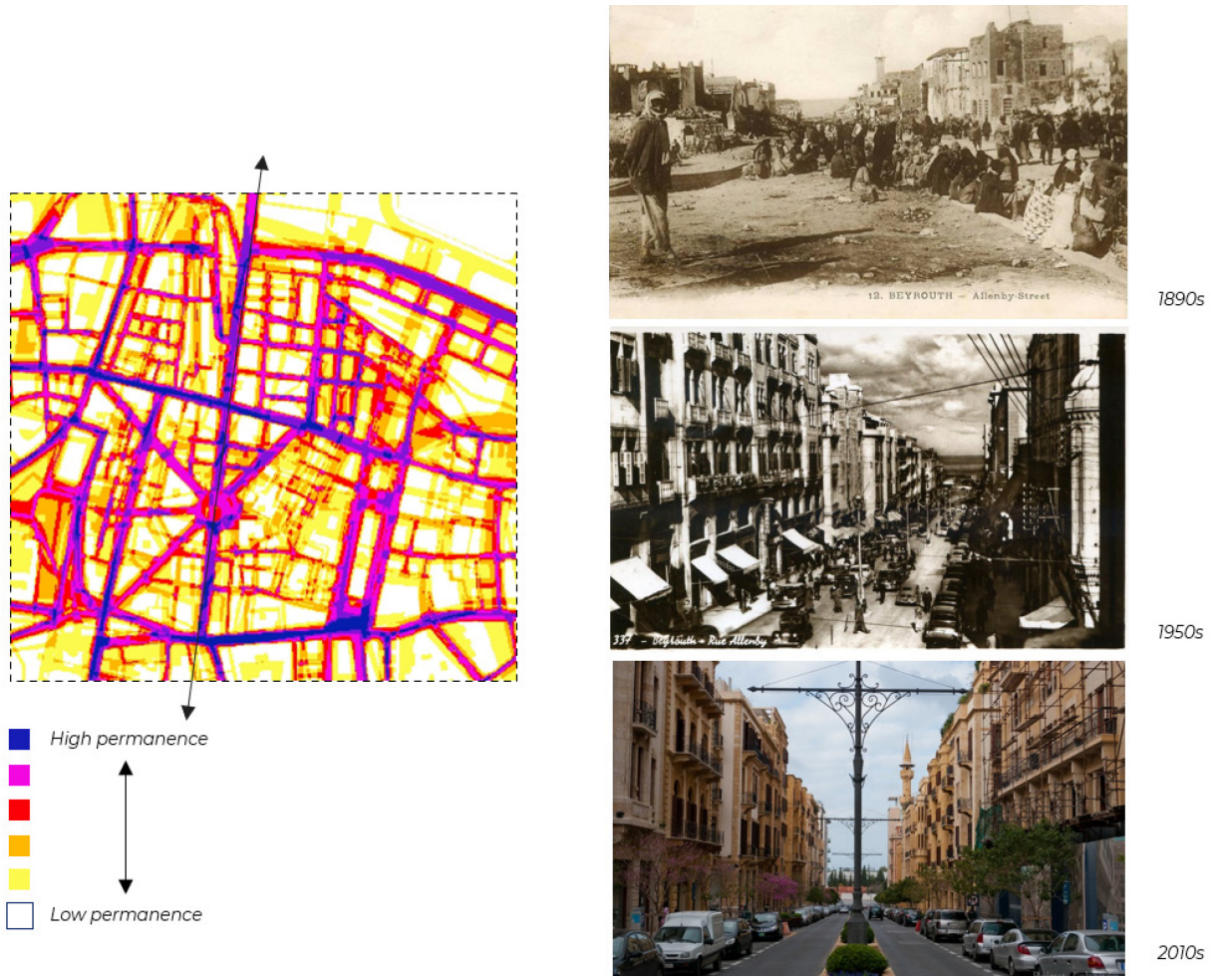


Fig. 108 – UPI diagram and images of Allenby Street with the Mediterranean Sea in the background. Sources: diagram by authors with images by "HipPostcards" - link (1890s), "Old Beirut: Preserving Beirut, One Image at a Time" - link (1950s), and Hakeem Ji – Flickr (2010s).

By focusing on Najmeh as the site of the historical souks of Beirut, two other findings emerge through the visualization of the UPI metric: 1) differently from the high permanence of the linear axis pointing towards the old port (Allenby Street and Foch Steer), and still acting as a physical armature throughout today's redesigned souks, the other diagonal axes starting from *Place de l'Étoile* have a lower degree of permanence; 2) the street network made of secondary roads and narrow alleyways populating the blocks bounded by the diagonal axes of Najmeh has an extremely low degree of permanence. The latter finding sheds light on the higher degree of changeability of the secondary street network of Najmeh (Beirut's oldest municipal district). Differently from well-preserved ancient cities where the oldest part of town shares a quasi-ubiquitous permanence in the street network as a result of imposed isolation (e.g., *casbah* of Algiers) or preservation strategies (e.g., Rome), Beirut

stands as an uncanonical case: its oldest core has maintained a high degree of permanence in its large masterplanned roads (e.g., Allenby Street); however, the secondary street network has a UPI ranging from 1-3, making it quite similar in values to street segments belonging to much more recently formed neighborhoods, including those in the eastern part of the city where the contemporary spatial layout resonates with some proto forms of refugee's settlement with dense grid layouts. Visual analyses of aerial photos and archival documentation on craftmanship provide evidence of the radical alteration of Beirut's secondary network of streets, especially during the war and the subsequent reconstruction **[Fig. 109]**.

Fig. 109 – Images of Souk el-Nouriyeh. (Left & Middle) Archival image of Souk el-Nouriyeh and aerial image of the same Souk in the 1960s. (Right) The 1985 aerial image shows the violent erasure of the Souk during the war. Source: (Left) Old Beirut Lebanon Facebook Webpage; (Middle) "Old Beirut: Preserving Beirut, One Image at a Time" - link; (Right) Medium article titled "Park to Parking: The Socio-spatial Evolution of Beirut Martyrs' Square" by Elie Saad (2020) - link.

Building on the results obtained through the UPI analytics, the juxtaposition of urban metrics with archival data on craftsmanship illustrates a much more complex narrative linking the presence of small businesses with specific urban form configuration. For example, from an urban development lens (measured through the percentage of built-up area in each municipal district over time), three types of urban growth patterns are visible through curves of development shared across groups of neighborhoods [**Fig. 110**]. The first group of neighborhoods (such as Najmeh and Majidiye) records an overall decreasing built-up area trend from 1876 to 2020, with a plateau between 1920 and 1945. This longitudinal pattern provides evidence of the incessant de-densification of the old town of Beirut: a process that started in the early twentieth century with the first urban corridor of the late-Ottoman era and continued, via path-dependence, during the French Mandate and during the much more recent master planning conducted by Solidere. The second group includes Gemmayze, Minel El Hosn, Remeil, Serail, and Bab Idriss. These neighborhoods share a bell-shaped curve, with their maximum built-up coverage (apex of the curve)

in the 1920s. The third group includes neighborhoods that have been experiencing regular linear growth in their built-up area coverage throughout the second half of the twentieth century (as they were mostly undeveloped in the early 1900s), such as Mar Nicolas, Hop. Orthdoxe, Ghabi, Mar Mikhael, and Qobaiyat.

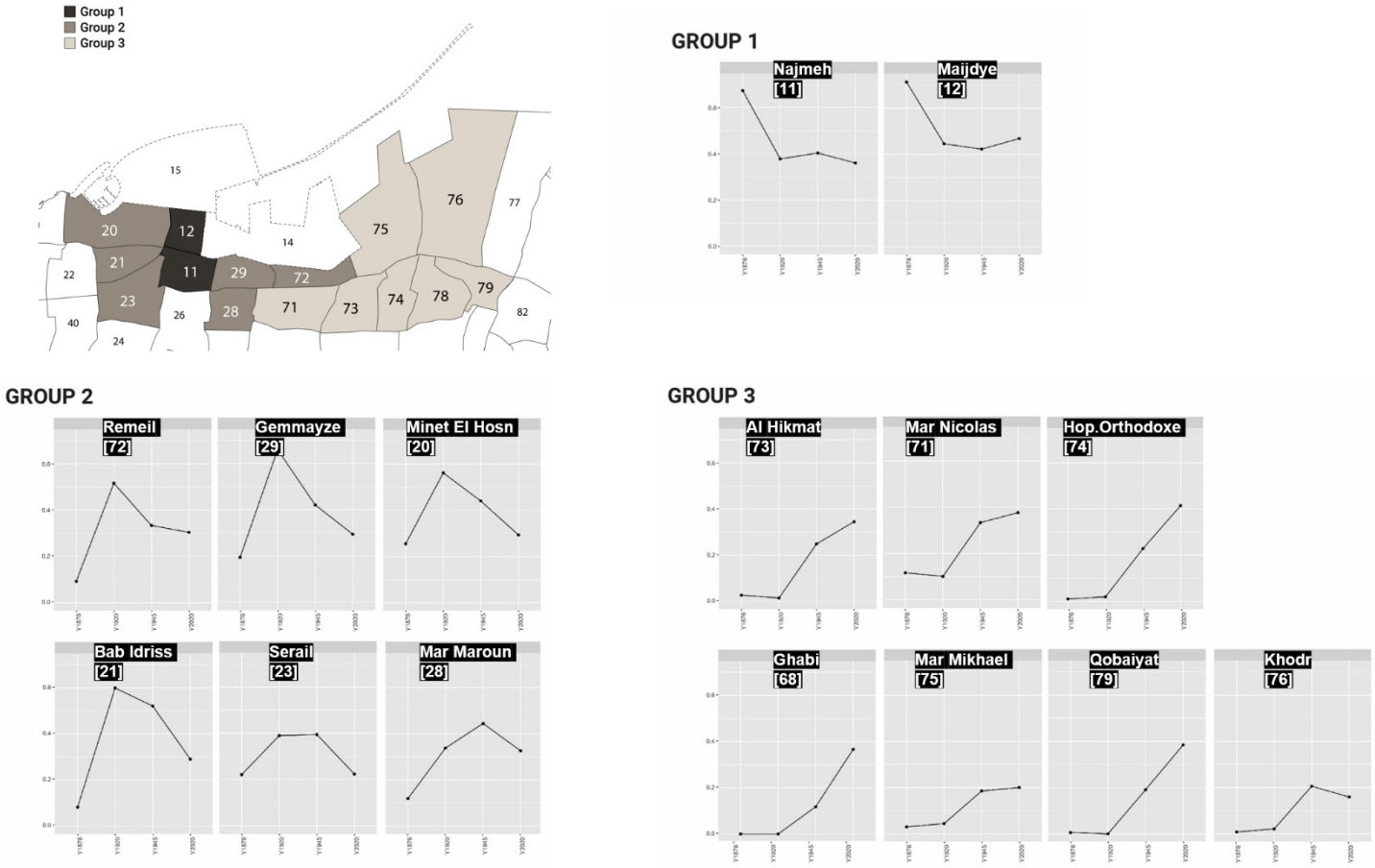


Fig. 110 – Map of municipal districts colored by groups sharing similar built-up coverage trends over time. Map of municipal districts colored by groups sharing similar built-up coverage trends over time. Trends in built-up coverage (%) by municipal districts subdivided into three groups of similar trends. Source: authors.

Through the lens of craftsmanship, we discover that the first two groups share a similar trend in the presence of visual documentations of workshops: the 1950s and, in general, post-independence years appear through the craftsmanship dataset as the years with the highest presence of recorded images of crafts workshops. There are, of course, differences in terms of absolute numbers, but the overall longitudinal trends portray an unmistakable image of the geographies of craftsmanship in Beirut: a decreasing core, formerly rich with businesses, and a growing periphery (Nor Marash, Qobaiyat) **[Fig. 111]**.

Given the intrinsic relationship between crafts workshops and the public realm, we have also explored through the metrics described in the Methods section how the street coverage, the urban block configurations, and the distance to the water have evolved over time.

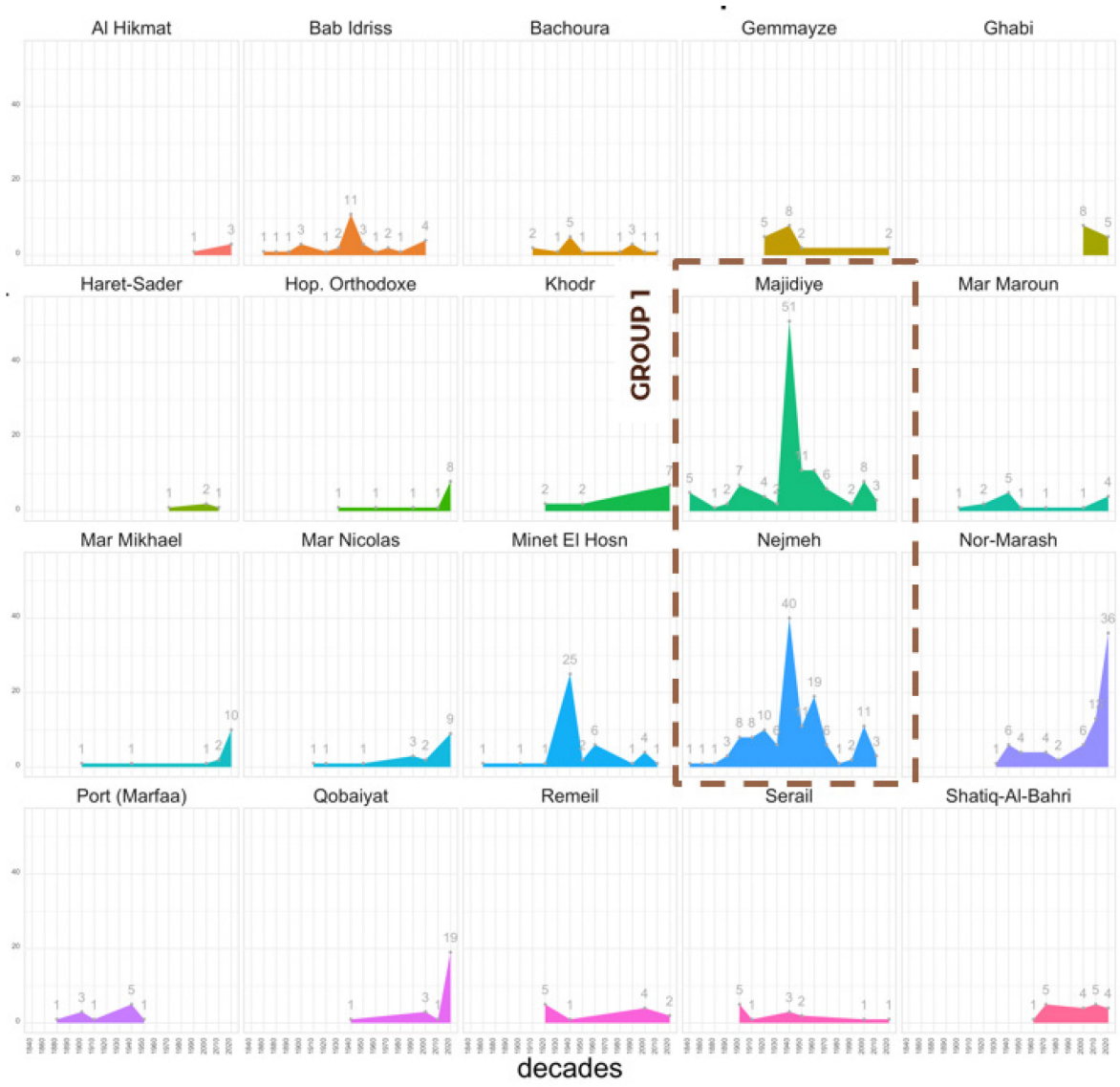


Fig. 111 – Longitudinal data coverage of crafts workshops in the municipal districts belonging to this study area. Longitudinal data coverage of crafts workshops in the municipal districts belonging to this study area. The graph highlights the peaks in visual records of craftsmanship in Beirut's *Al Balad* area (Group 1). Source: authors.

The three groups of neighborhoods identified above tend to peak in street area coverage either in the 1940s or in the late 1960s. For example, the neighborhood of Majidye had 58% of street coverage in 1945, the highest in Beirut at that specific point in history. Najmeh, instead, had stable growth till the 1960s, followed by a 13% decrease in

street areas from 50% to 37% during the early years of the Civil War. According to urban morphology literature, an increase in street coverage is negatively associated with built-up density and positively associated with the de-densification of the urban tissue. Moreover, the amount of space allocated to streets has a direct impact on the number of blocks present in each neighborhood and on their spatial variation (for example, regular blocks subdivision with urban blocks sharing similar dimensions Vs irregular blocks with highly diverse street coverage). The urban metrics on the density of blocks and the standard deviation of the block composition at each municipal district illustrate that the more recently formed neighborhoods (Nor Marash in Bourj Hammoud, Khodr, and Ghabi) have the highest standard deviation variation over time (for example Ghabi recorded a 60,000 m standard deviation in 1920 and a 15,000m standard deviation in 1958). In contrast, the neighborhoods stretching from *Al Balad* to Mar Mikhael maintained a regular flat longitudinal trajectory of blocks' standard deviation of 10,000 m. This striking divergence speaks to the different processes of urban development experienced in *Al Balad* and its neighboring water-facing districts, where the high degree of permanence (UPI) of the street network explains the flat longitudinal trajectory of the standard deviation in urban block areas.

In conclusion, the urban form metrics (both UPI and the longitudinal analyses of urban form features over time) together with the georeferenced data on craftsmanship reveal that:

1) High scores on the Urban Permanence Index (UPI = 6; 5) are spatially correlated with a contemporary presence of craftspeople on the roads historically connecting *Al Balad* to East Beirut (mostly Armenia Road). While the density of craftspeople used to be more clustered towards *Al Balad* along Gouraud in the mid-twentieth century, current data reveal a similar (yet more scattered) alignment along the extension of Gouraud (Armenia Road);
2) The high degree of street permanence (UPI = 6; 5) in Nejmeh is not correlated with a contemporary present of craftsmanship. The processes behind the land-use transformation of Nejmeh and the proximity to buildings of political power make this area quite distinct from other more generalizable patterns in the rest of the city **[Fig. 112]**;
3) Nejmeh, Majidiye, and Minet El Hosn recorded the highest number of craftspeople in the early 1950s when the three neighborhoods scored quite similarly in the density of urban blocks (respectively 26, 25, and 23 urban blocks per square kilometer);

4) Land reclamation and increase in physical distance to the waterfront—mostly resulting from new wharves and the containerization of the port—are positively associated with a decrease in number of craftspeople in the municipal districts formerly on the waterfront (Majidiye and Minet El Hosn) or in its immediate adjacency (Remeil, Mar Nicolas and Gemmayze).
5) Longitudinal data on craftsmanship aggregated by municipal districts reveal a growing number of small businesses in Nor-Marash (Bourj Hammoud) and Qobaiyat.

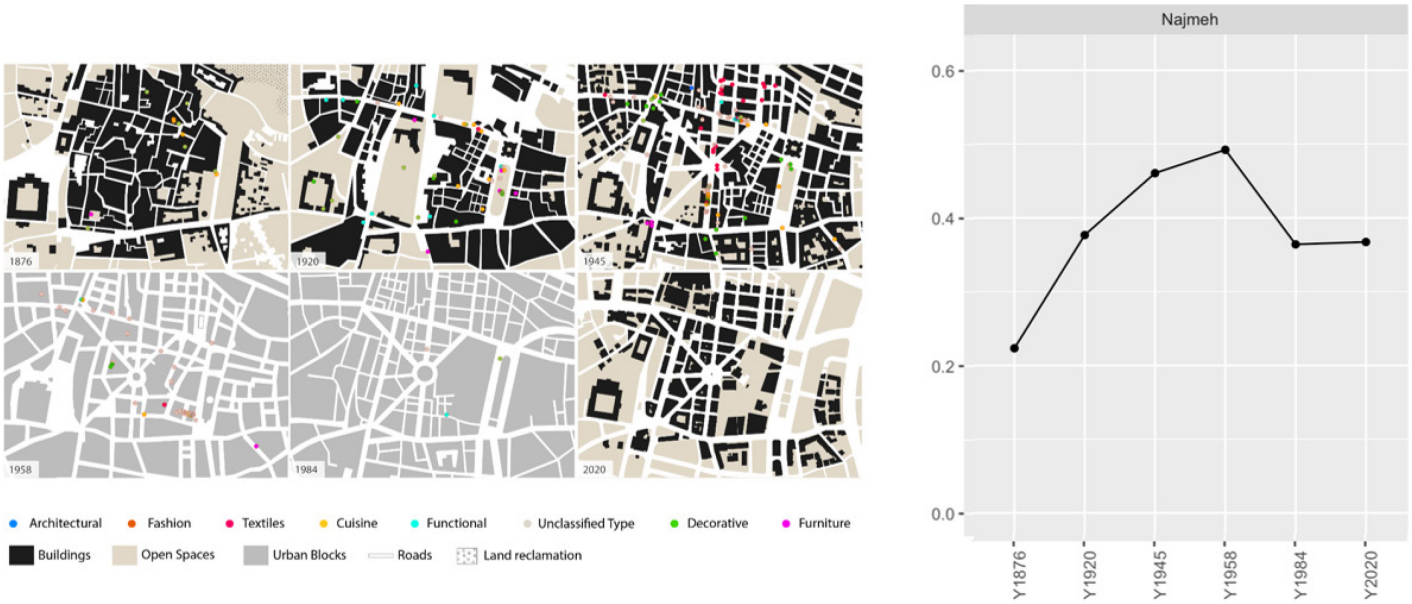


Fig. 112 – Nejmeh's urban form evolution and diachronic distribution of visual records on craftsmanship. Nejmeh's urban form evolution and diachronic distribution of visual records on craftsmanship. The graph on the right visualizes changes in Najmeh's street coverage percentage. Source: authors.

The identified negative relationship between proximity to the waterfront (more precisely, the port-equipped shoreline) and the presence of craftspeople is not uniform. Through interviews, we discovered how leisure areas on the waterfront attracted the most tourists and clientele from the 1950s through the 1970s, supporting the prosperity of local businesses.

> *"As my grandfather used to say: location, location, location! He always picked highly walkable areas [where] you have the hotels and all the tourist families, next to the waterfront."* [Camille Tarazi, April 2022]

From a production standpoint, *Al Balad* and the Souks area within it were notoriously rich in diverse, international clientele before the Civil War. At the same time, the proliferation of shrewd and talented

craftspeople in Bourj Hammoud further elevated its reputation as a popular center for crafts. While *Al Balad* primarily housed lighter production types, such as jewelry, Bourj Hammoud developed initially as a site of heavier production, with factories and machinery that could not be accommodated in the narrow alleys of the Souks. For example, Tchakerian had to be located near a water source—specifically, the Beirut River—because tanneries require the use of large volumes of water. Thus, these establishments were situated in close proximity to the river's estuary into the Mediterranean Sea, providing an alternative advantage to being located by the port in these areas.

3.6.2. Voices of Craftsmanship: Displacement, War, and Policies

Upon conducting semi-structured interviews with craftspeople from different industries, neighborhoods, and ethnic backgrounds, the ethnographic exploration conducted for this study has been instrumental in understanding the challenges of enforced relocations experienced by several craftspeople. Most importantly, it has uncovered the multifaceted geographies of displacement to which craftspeople have been forcibly subjected. The interviewees are Melkon Tchakerian from *Tchakerian Tannery* (leather tannery), Sevag Aprahamian from *Aprahamian Shoes* (shoemaking), Selim Mouzannar from *Selim Mouzannar* (jewelry), Guiragos Doniguian from *Doniguian Printing House* (printing), Camille Tarazi from *Maison Tarazi* (restoration, handmade furniture, interiors), Khalil Chaftari from *Chaftari Orthopedic Shoes* (shoemaking), Rached Bohsali from *Al Bohsali Sweets* (patisserie), and Wissam Houry from *Zakour Leather and Handicrafts* (leather crafts).

Through approximately sixty-minute-long semi-structured interviews conducted with each interviewee, we have discovered that the primary driver of relocation for these stores was the Civil War. The war forcibly displaced shop owners and their stores from areas like the Souks (Majidiye) and *Al Balad* (Nejmeh). For example, Tarazi managed to stay in Hotel Alcazar, where their craft thrived, until they moved to Broummana (on the surrounding hills of Beirut) towards the end of the war in 1988. When the war erupted in 1975, Mouzannar's shop had to relocate from the Souks area to their home in Achrafieh. Soon after, Mouzannar's father opened a store and workshop next to their house in Furn el Hayek during the war, maintaining a successful business **[Fig. 113]**

> *"My dad's shop closed at the beginning of the war, and he moved all the jewelry from the store to our house. Every time a client was getting married, he would come to our house to buy a ring. I used to see them coming to our house."* [Mouzannar, April 2022]

Mouzannar recalls how their family shop in Souk el Sagha was destroyed at the beginning of the war in 1975. Their store was then seized by Solidere in an act of enforced dispossession and negligibly compensated with a sum of $25,000. Similarly, Abrahamian describes how two stores they rented out at the end of 1973 in *Al Balad* and in Bechara el Khoury burnt down in 1975 when the war erupted. They spent many years after paying off their debts from that loss **[Fig. 114]**. Similarly, Bohsali's shop in Martyr's Square was forcibly shut down and destroyed in the war, later being replaced by Prime Minister Rafic Hariri's memorial in 2005. Today, Bohsali runs his business from Hamra Street **[Fig. 115]**.

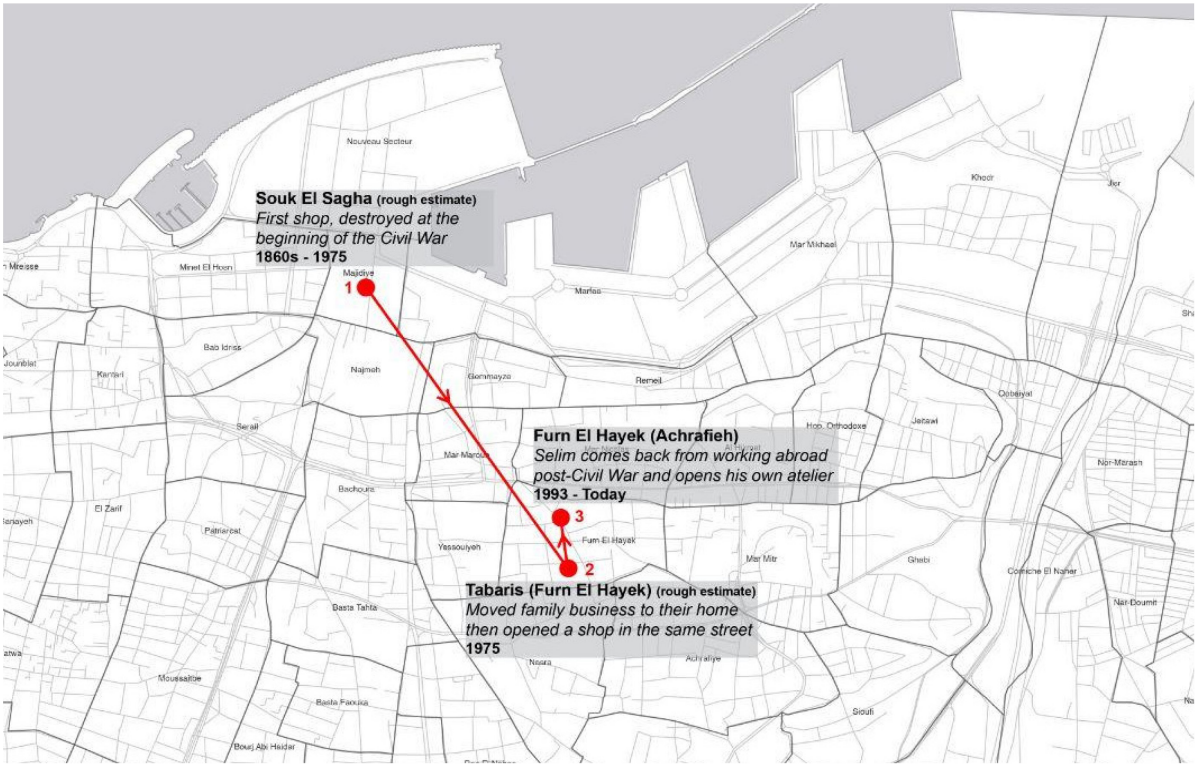


Fig. 113 – Mouzannar's relocations over time in Beirut. Source: authors.

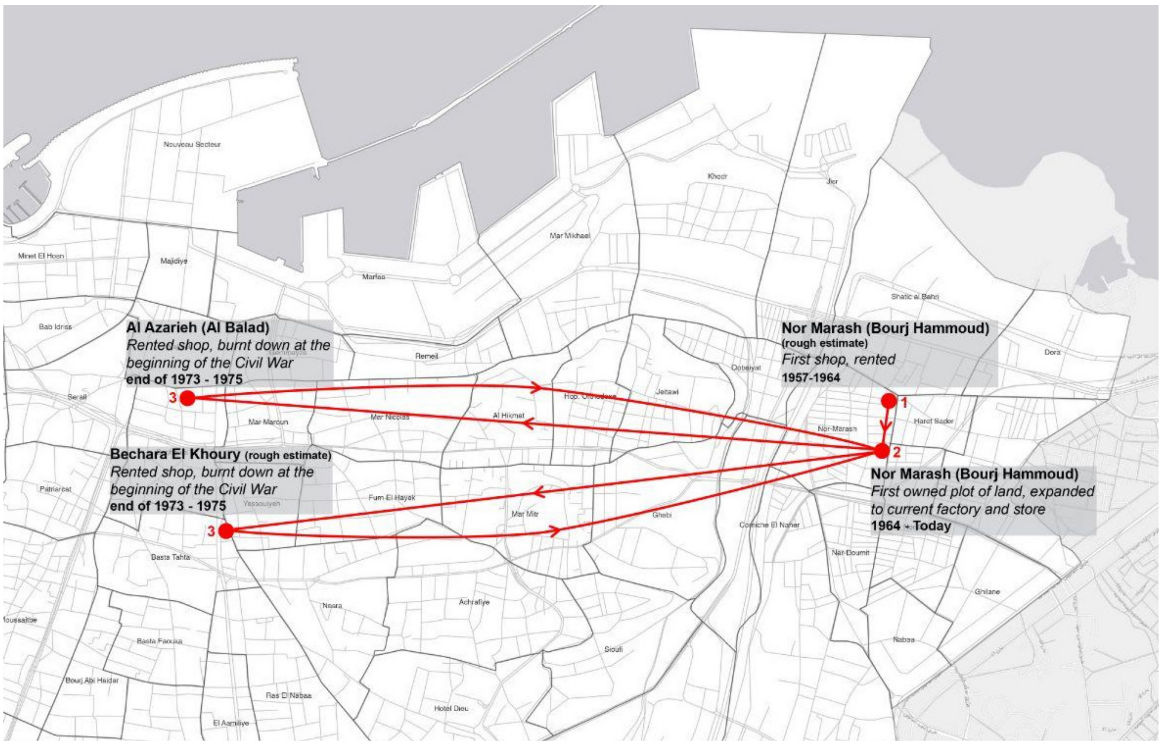


Fig. 114 – Abrahamian's relocations over time in Beirut. Source: authors.

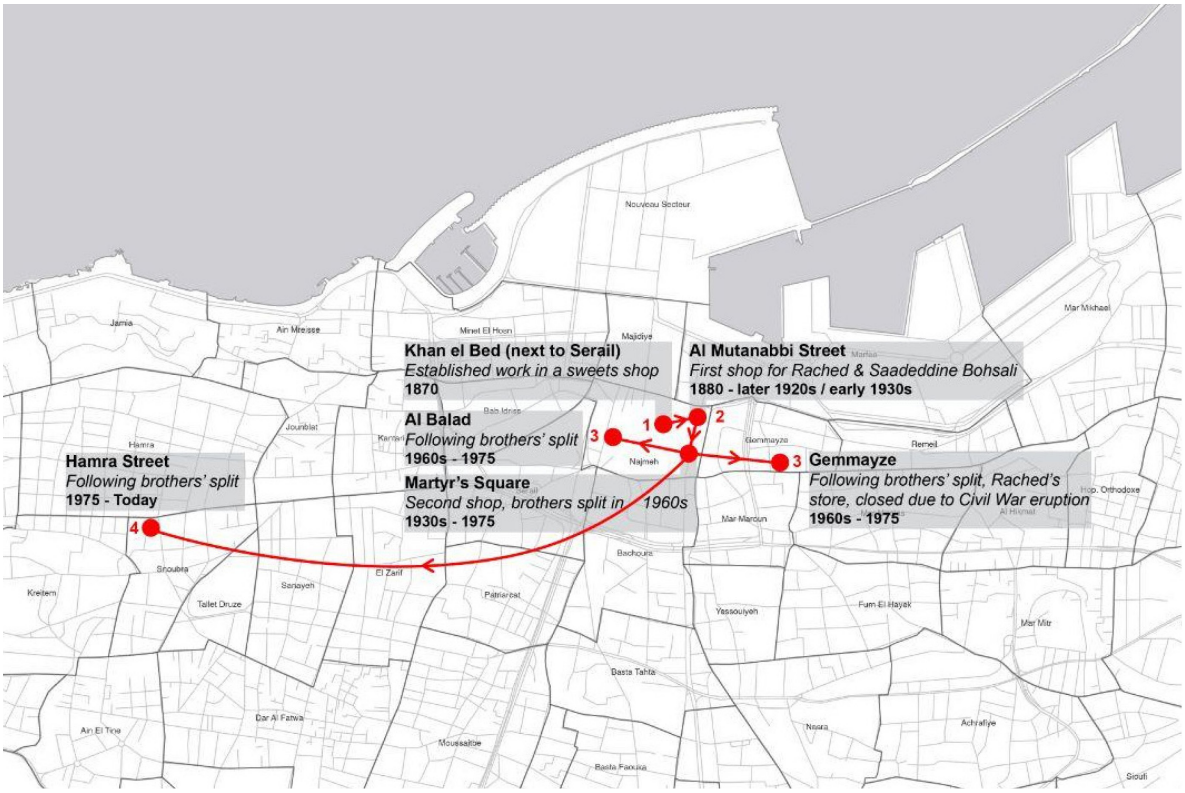


Fig. 115 – Bohsali's relocations over time in Beirut. Source: authors.

The interviewees also explained that they continued to work during the war, never having to fully shut down. Khalil Chaftari recalls how they had to intermittently close and reopen when there was too much shelling:

> *"Sometimes, we would close for a month, or two, or three. There would be bombing and shelling, and all our facades would shatter. In Achrafieh and Kaslik, the glass would break, and we'd have to restore our vitrines each time."* [Khalil Chaftari, April 2022]

While they had to restore their shop after each escalated incident, they would unfailingly carry on every time. While some of their interviewees' stores had to close their main locations at the time, most businesses were relocated elsewhere, such as the craftspeople's homes or factories and shops in other neighborhoods, facilitating the continuation of their work. This lack of interruption was coupled with an economic boom during the Civil War when war militias and upper to middle-class clients buttressed the crafts industries and expanded their profits, as described by Aprahamian. Painting a picture of this paradoxical era of wartime and economic proliferation, Mouzannar, Aprahamian, Tchakerian, Doniguian, Tarazi, and Zakour serve as examples of this puzzling duality.

Throughout their relocations across Beirut, most of the craftspeople interviewed in this study witnessed the urbanization and densification of the city over time. In line with the built coverage data, Tchakerian, while not experiencing any displacement, still witnessed changes in the Bourj Hammoud's urban form, from marshland to an incredibly dense residential area that developed around their long-lasting tannery. Tchakerian's encounters with such urban changes can be recounted through the sonic experience of the city, whereby an increase in noise levels limited their working hours and repositioned them from working blindly as a heavy industry to being conscientious of their proximity to residences.

Most recently, the 2020 port explosion caused serious damage to a majority of these stores. *Zakour Leather and Handicrafts*, which is located in Tayyouneh, approximately 4.8 km from the port, suffered serious damage. Doniguian's printing house was also affected by material damage and a sharp decrease in clientele and tourists who used to offer a great spending ability. On a similar note, Tarazi suffered from a loss of business at a time when luxury handmade interior crafts were not sought out in the reconstruction process after the explosion, leaving them with a scarcity of projects and a highly damaged atelier in Mar Mikhael.

While war and violent events may be the dominant drivers of displacement for the craftspeople's stores, more subtle factors influenced their business and, subsequently, their livelihoods. One sentiment echoed by both

Mouzannar and Tchakerian was the influence of policy on their businesses. The policy was a disruptive element in the business competition landscape, allowing foreign competitors to import products without tax or customs. Describing this competition, Tchakerian stated:

> *"In Europe and in the US, for example, [there are] policies determining quotas to import goods. You cannot import as much as you want. The government protects local industries. In Lebanon, Hariri erased these policies. [. . .] It was tough. A lot of policies didn't help the local industry. In fact, they damaged the industries. This was one of the main problems."* [Tchakerian, April 2022]

According to the Lebanese Customs Law, 85% of imported goods are exempted from or are subject to a maximum 5% duty customs. In this context, crafts in Lebanon do not benefit from any protection policy designed to support the sector. The sector is hence exposed to fierce competition from imported manufactured goods that sell at a much lower price than the locally produced crafts (Nanhoo 2020). According to Tchakerian, Syrian, Egyptian, and Turkish traders started buying and using their leather for their own crafts, so they found it unaffordable when they wanted to buy skin themselves. Both Houry and Aprahamian describe how Chinese and Turkish products are tough competition, offering cheap and mass-made shoes that negatively affect a luxury industry such as theirs. Houry reflected on this point by sharing that:

> *"Because of Chinese mass production, a lot of craftspeople and tool-sellers couldn't do much because there was cheaper competition. [. . .] For instance, I don't have a lot of leather left to produce, and I don't know where I can get more at this point."* [Houry, April 2022]

While policy and global competition have not yet driven spatial relocations within the city's government, they have affected these stores' capacity to sustain their crafts, putting those who are paying rent in a difficult position where they are exposed to more potential relocation, as well as foreboding an undesirable reality where these crafts are no longer affordable, hence their stores unsustainable and therefore prone to relocation or, at worst, closure.

3.7. Conclusions

At times of increased migrations and ramping spatial inequalities, understanding how present-day socioeconomic vulnerabilities relate to historically ingrained patterns of marginalization and exclusion is of fundamental importance to dismantle spatial injustices and amplify "the right to presence" (Sandercock & Lyssiotis 2003). Scholars, in fact, have argued that seeing and being seen can empower community groups "to reclaim, rediscover, and retheorize the practices and spaces of everyday life" (Mirzoeff 2011). This framework of visibility applies to the radical cartography effort of this paper in unearthing the spatial history of creative practices (e.g., craftspeople) in Beirut, whose presence in cartographic representations and involvement in city-making processes has been historically neglected.

By weaving longitudinal measurements of urban form parameters into an ethnographic and historical understanding of the socio-political factors determining the geography of craftsmanship in Beirut across 150 years, this research has spatialized the evolving geography of craftsmanship in relation to changes in built forms.

Research findings suggest that three pivotal moments contributed to the relocation of craftspeople. First, early redesigns of the city during the late Ottoman and French Mandate periods (1890 – 1940) initiated a process of spatial ordering, dedensification, and formalization of the public realm, aligned with urban sanitation ideals and colonial planning paradigms from the turn of the century. These spatial shifts resulted in an increased density of street commerce in the interstitial and survival spaces behind the Haussmann-style facades of early-twentieth-century boulevards, as proven by the UPI values in the secondary street network of Nejmeh and the concentration of archival images in Souk el-Nouriyeh. Second, the civil war (1975 - 1990) led to an irreversible uprooting of craftspeople and street commerce activities from the *Al Balad*. However, despite the unfathomable physical destruction of the city's downtown area, according to the interviews, the war brought a moment of temporary economic prosperity to many craftspeople operating in workshops located in less visible spaces (e.g., basements) or in the outskirts of the city, serving wealthy militia members. Third, the spatial legacy of the war and post-war reconstruction—manifested through the Solidere-led plan—exemplifies a growing privatization of the public space, resulting in an impoverished landscape of small street commerce activities.

Semi-structured interviews with craftspeople from different industries, neighborhoods, and ethnic backgrounds complement the morphological and archival findings through a human-centered approach. Most importantly,

craftspeople's voices uncover the geographies of displacement to which their businesses have been forcibly subjected. The narratives highlight the resilience of craftspeople in the face of adversities as they navigate the devastation of war, multiple relocations, and sudden changes in their clientele. More precisely, the qualitative section of this article identifies the civil war as the key factor determining craftspeople's relocations across Beirut. Moreover, the lack of present-day policies to safeguard craftsmanship appears to be a primary concern as small businesses face global competition.

Given the geographic focus of this study on a specific part of the city, we hope future research can explore the spaces of craftsmanship in informal neighborhoods and the nexus between craftsmanship and religious groups. As a result of Beirut's structural divisions across neighborhoods based on years of religious-based segregation, we hope a more in-depth work can shed light on the community of creative businesses in other parts of the city, such as western Beirut.

In conclusion, this paper provides detailed spatial insights into the relationship between craftsmanship and the urban form features that have hosted, shaped, and continue to have small-scale production in Beirut. Through morphological analyses, archival research, and oral histories, this study presents evidence of how changes in the urban fabric and the repercussions of urban conflicts have gradually displaced craftspeople from Downtown Beirut. As craftspeople confront the present-day challenges posed by the port explosion of 2020 and the ongoing economic crisis, understanding these historical dynamics is crucial for fostering more equitable and inclusive urban futures.

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