Research Paper

Restoring the Porosity of Naples

A community-based design approach

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Abstract

This paper explores how restoring the porosity of the urban environment can set the bases for a community-based approach that encompasses all phases of design process, from analysis to the proposal. The study uses the case of East Coast of Naples, with a focus on the Case Nuove and Mercato del Ferro areas, the first districts to be built outside the former walls of the city, and their relationship with the Mercato, the historical neighbourhood that was developed behind the city walls. The three are institutionally one administrative entity and share an increasing lack of porosity that manifests itself in visible and invisible barriers, problematic social issues, and low quality of the urban environment. Building on spatial analysis, urban design exploration and stakeholders' analysis, the paper sheds light on how to provide a spatially just alternative for the inhabitants of East Naples by restoring porosity.

The design proposals presented in the paper, build on an analysis of the power structures among stakeholders and a study of the uses and appropriation practices by the residents and different communities. This has been achieved by understanding how to assess porosity and inform the design. Echoing Paola Viganò's work, the paper identifies different qualities of porosity, namely (1) porosity of material, that is how the block, the main material of the urban environment, is composed and relates to the street space; (2) the porosity of fragment, referring to the visible and invisible barriers in the area, that may have been the result of historical traumatic events; and (3) the diagnosis of the social issues that are affecting the health of the local communities. These were explored through a combination of insights from urban morphology, urban sociology and environmental psychology. On site observations and interviews allowed for identifying several micro-histories and collect information about what is invisible in the area, painting a more diverse and complex picture of the socio-spatial fabric of the area than expected, often overlooked in planning and urban design practice. Thus, this study highlights the need for developing place-based approaches that revolve around the people's experience of urban space and bridge the gap between professionals and the everyday reality of the citizens, bringing the interest of the communities back to the core of the design and restore the Porous City.

Keywords

Porosity, Socio-spatial segregation, Place-based approach, Naples, Community



1. Introduction

1.1. Research motivation

Even if global inequality has declined over the past three decades, domestic income inequality has risen in many countries—particularly in advanced economies—and reached historical highs in others (WCR, 2020). At the same time, despite a decrease in fossil fuel CO2 emissions of approximately 5.6% in 2020 due to restrictions related to the COVID-19 pandemic, the increase in atmospheric concentration of CO2 from 2019 to 2020 was higher than the average annual growth rate over the decade before, with the year 2021 registering a global mean temperature of 1.1 °C above estimated pre-industrial averages (Talaas, 2020). We are witnessing the unfolding the threefold crisis of the Anthropocene: a crisis of ecology, economy and politics (Purdy, 2015).

The extent and interconnectedness of these emergencies require global coordination at different scales and, unfortunately, since the financial crisis of 2008, we have witnessed a weakening of the institutions of the Eurozone, a rise in authoritarianism and escapism from politics. Many already underlying economic and social criticalities got strengthened by a reduction in the public expenditure that followed the crisis and, regardless of the recommendations of the OECD, international and internal territorial inequality raised. In the Mediterranean region, for instance, continental and national policies have favoured macroeconomic stability over the national welfare with the subsequent concentration of resources in cities that are more integrated in the global network and present a stronger private sector, such as Capitals.

Consequentially, cities have grown more unequal, exacerbating socio-spatial segregation, deterioration of the public goods and reduced accessibility to facilities and services for marginalized social groups. In recent years streets in Europe have been the setting of a fight to change the city in order to change our society (Harvey, 2012). As argued by Bernardo Secchi (Secchi, 2013), in fact, inequality among citizens cannot and should not be seen separately from the urban environment. Factors as access to services, quality of housing and street space, position and population density contribute to the disparity among social groups and individuals. In other words, a loss of porosity in the city.

The paper explores how restoring the porosity of the urban environment can set the bases for a community-based approach that encompasses all phases of design process, from analysis to the proposal and it is laid out as following: (1) definition of porosity; (2) presentation of the case study; (3) description of research methodology; (4) findings and proposal; (5) conclusion.

2. Study case







City scale

East Coast scale

Districts' scale

Figure 1. The case study at the three different scales. Source: Enrico Corvi.

The study focuses on the case of East Coast of Naples, in Italy. The area extends from the historical centre towards south and, according to the institutional limits, it is comprised by the districts of Mercato, San Lorenzo, Vicaria, Poggioreale, the Industrial Zone, Ponticelli, Barra and San Giovanni a Teduccio. In this stretch the historical city begins its transition to the industrial districts.

Within this area, the lower scale of analysis has regarded the Case Nuove and Mercato del Ferro, the first districts to be built outside the former walls of the city, and their relationship with the Mercato (fig. 2), the historical neighbourhood that grew behind the city walls. The three are institutionally one administrative entity (Mercato) and share an increasing lack of porosity that manifests itself in visible and invisible barriers, social criticalities, and low quality of the urban environment.





Figure 2. (Left) Locals shopping at the market in Via Lavinai, in the Mercato district; (Right) Via Manzo in the Case Nuove. Source: Enrico Corvi.

The Mercato and the Case Nuove are separated by the Corso Garibaldi and the terminal station of the Circumvesuviana line, while their whole southern limit is constituted by the arterial road of Via Marina and the fences of the port area.

Their contemporary history begins with *the restructuring of Naples* of 1885: from that date, the city began its expansion towards east in the, not anymore existing, Borgo Loreto, the marshy delta of the Sebeto river and the, at the time separate, town of San Giovanni a Teduccio. These *bad lands* (Secchi, 2006) were at the time necessary for the construction of warehouses and fabrics, and the accommodation of the rural immigrants moving to the city. For many, these districts constituted the access to the urban social network and it retained this function even when the deindustrialization took over the initial motivation of their existence. In fact, in the last thirty years, due to its location, low housing value, and demographic decline, the area has been inhabited by new immigrant communities, from the Middle East, Sub-Saharan Africa and China. Yet, the lack of access to facilities, poor housing conditions, low property value and population change transformed these lands into enclaves for the lowincome classes and those who are excluded by the society (Grahame Shane, 2005).

Upon these considerations, the research focused on the complexity of governance and communities' identity in the area, asking the following research question:

Through what means can Eastern Naples provide a spatially just alternative for its citizens?

Which simultaneously needed an answer to the theoretical question:

What does Porosity consist of?



Figure 3. Piazza Mercato. Source: Enrico Corvi

3. Unpacking Porosity

3.1. Origins of the concept

As porous as its stone is the architecture. Building and action interpenetrates in the courtyards, arcades, and stairways. In everything they preserve the scope to become theatre of the new, unforeseen constellations. No situation appears intended forever, no figure asserts "thus and not otherwise". (Benjamin, Lacis, 1925)

The image of Porosity was first used by Walter Benjamin and Asja Lacis when they visited Naples in 1925. It is borrowed from the natural sciences, to which it is the measure of the void in a material, and it echoes the description of the city given by Norberg-Schulz in its seminal work of 1979, of how the inhabitants of the city of the Gulf are one thing with its landscape and architecture (1979). A city where everything is ephemeral and the spaces are reinterpreted on the occasion and needs of every social group, often colliding and interpenetrating each other. In fact, where modern cities of the 20th century grew on the intimate conquer of the social life and rationalization of the resources of the city (Ascher, 2004), in Naples, to say it with Walter Benjamin and Asja Lacis, existing is a collective matter.

The image of Porosity over time exerted a particular fascination on the mind of researchers in urban studies. Most noticeably, Secchi and Viganò built up on the theme, explaining how porosity does not only concern



the material quality of the buildings but rather more the different ways through which different city users appropriate the space (Secchi & Viganò, 2009).

Yet, porosity is not a static condition: it is related to different phenomena that can modify the way urban space reacts, over time, to practices, movement, pressure and abandonment. For this reason, porosity greatly differs depending on the cultural context, land use and property. Depending on the contingencies, an excess of porosity may have undesired externalities on the life of citizens: the space may be too promiscuous and not allow for the correct unrolling of daily routines. However, a complete lack of porosity may be the symptom of visible or invisible barriers, that could lead to segregation of communities. Yet, a porous city is a heterogeneous and dense urban environment and depending on its granularity and context it can allow for diverse activities to take place in proximity to each other, thus allowing different actors to share their everyday life and contribute together to the making of the city.

3.2. Porosity and diversity

By allowing diversity to take place, a porous city can foster urban vitality. A close-grained diversity of uses and classes maximizes social and economic interactions (Greenberg, 1995), thus enabling kinship network, the system of formal and informal relationships that make up an extended family, to be active and thriving. The clustering of uses not only provides "constant mutual support" (Jacobs, 1961), in which everybody contributes to the production of a safer environment but also a more resilient social structure. In her work, Emily Talen supports diversity in socially mixed neighbourhoods with four main arguments (Talen, 2008):

- Variety and choice foster a greater number and array of human interactions resulting in place vitality.
- The proximity of different activities sustains the economic health and resilience of an area.
- Heterogeneity and density can impact the everyday life of citizens and their pattern of consumption.
- It strengthens social equity by providing a wider access to the resources of the city and creates the proper conditions to build tolerance and cultural exchange.

Yet, designing and being respectful of the diversity of an area requires the understanding of power structures among stakeholders, local actors and, most of all, it involves the study of how residents and communities use and appropriate the space. That's the reason why understanding how to measure porosity can be crucial for our practice.

3.3. Measuring porosity

Recurring to the writings by Paola Viganò it has been possible to de-construct the quality of porosity of the urban environment in its components (2012): namely (1) porosity of material, that is how the block, the main material of the urban environment, is composed and relates to the street space; (2) the porosity of fragment, referring to the visible and invisible barriers in the area, that may have been the result of historical traumatic events; and (3) the diagnosis of the social issues that are affecting the health of the local communities. These were explored through a combination of insights from urban morphology, urban sociology and environmental psychology (fig.1): building on spatial analysis and stakeholders' analysis, the research aimed at understanding the relationship of power and property among the actors and stakeholders in the area, as well as the residents' experience of the space.



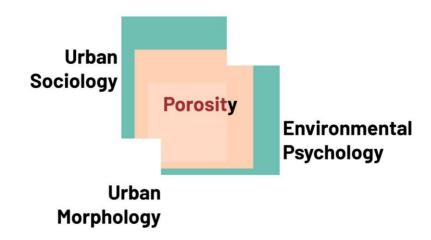


Figure 4. The triad of knowledge fields that composes the study of Porosity. Source: Enrico Corvi.

4. Research Methodology

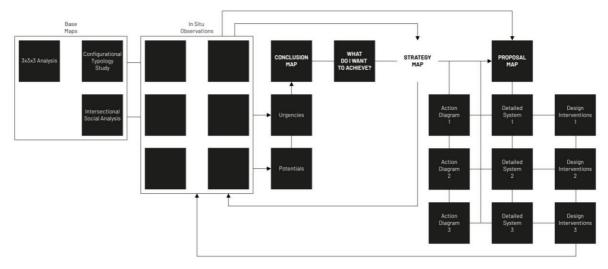


Figure 5. Methodology scheme. Source: Enrico Corvi.

The research strategy has been carried out in two distinct but intertwined phases (fig.5):

- The design research, which consisted in the study of the site and the context through the development of proper interpretative tools and deduction of design principles.
- The research by design, whose focus was the testing of solutions to arrive to the draft of a proposal.

4.1. Plan analysis

The plan analysis of the area consisted in a layer analysis through the Dutch method of deconstruction of it in its environmental, occupation and mobility components. The interpretation of the relationship between these three layers gives us an indication of which are the most evident dynamics that influence the current conformation of the city, and it has been enriched with the analysis of the spatial integration of the street



network of Naples, the mapping of the dwellings' foundation and the mapping of the main social indicators (fig. 6).







Figure 6. From left to right: Spatian integration with 800m radius; buildings' construction year; unemployment rate in Naples. Data source: OSM; ISTAT. Maps: Enrico Corvi.

At that point, it was necessary to deepen the study of the urban morphology and social composition of the east coast of the city, as the first impacts the experience of the city, while the citizens with their everyday life participate to the production of it.

4.2. Urban morphology

Due to the scale of the area and different granularity of the data, it has been deemed proper to conduct the analysis in terms of physical density measures and not direct buildings' typology. There is no universally shared definition of density (Berghauser Pont & Haupt, 2009), nonetheless it is possible to deduct one measure from the other. Important are, instead, the boundaries of the base units of analysis, since an exceeding variety of dimensions can distort the information from the data. For these reasons, it has been regarded insufficient to rely solely on one parameter and it has been opted to run a clustering analysis of six indicators that could return simultaneously population and dwelling density, land use intensity, coverage, building height, spaciousness:

- A: the area of the blocks since different areas allow for different configurations of plots and subdivisions.
- FSI: Floor Space Index, the ratio between the gross floor area and the area of the block, calculated as: FSI=GFA/A
- GSI: Ground Space Index, index of land coverage by the building, calculated: Buildings' Area/ Block's Area
- OSR: the Open Space Ratio, relationship between unbuilt space and total built surface. It is calculated: OSR= (1 - GSI)/FSI
- L: Layer, it is the average height of the buildings. It is calculated: L=FSI/GSI
- Number of Dwellings/Ha for each block: the last factor taken in consideration to have an indication on the granularity of the block and return an image of the number and dimensions of the buildings.

4.3. Social grouping

For how delicate the social diversity of a porous city is, it has been opted for an intersectional framework of analysis. This acknowledges that individuals in a society belong to infinite possible interrelated and overlapping categories and that the often-imposed definitions cannot describe the everyday struggle resulting from the intersection of those (Crenshaw, 1998).

Because of this, for the analysis of the area, it has been experimented with a clustering process of six indicators: (1) Major age groups; (2) Percentage of female population; (3) Percentage of residents born in a foreign country; (4) Major education groups; (5) Average number of family members; (6) Unemployment rate.

These have been retrieved from the georeferenced data of the latest census held by the Italian National Institute of Statistics (ISTAT) and then been processed through the statistical software SPSS so to determine six groups that are defined a combination of those features.

As a final step, the six identified groups have been correlated with the six types of urban blocks detected in the morphological analysis, thus having an informed view of the environment of each group (fig. 7).

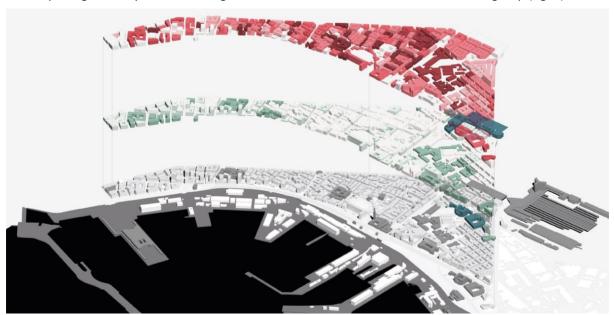


Figure 7. Overlay of the morphologic types of the blocks and the social groups. Source: Enrico Corvi.

4.4. Study of porosity

Structural analyses are incapable of describing patterns of appropriation of space, as only direct experience really can (Lefebvre, 1979). This led to the review of works of Secchi and Viganò (Secchi & Viganò, 2003-07, 2008) to define which tools could grasp the everyday condition of the residents of the site. These resulted being video-investigation, photo-documentation, interviews with local actors and stakeholders, hand drawing of cognitive maps and comparative analyses of the streets' sections, applied in various sessions of fieldwork over six months culminating into: (1) Mapping the communities and their micro-histories; (2) Study of the relationship between the ground activities in the plinths of the buildings and the use of the street space; (3) Analysis of the stakeholders and power relationships.

4.5. Communities and their stories

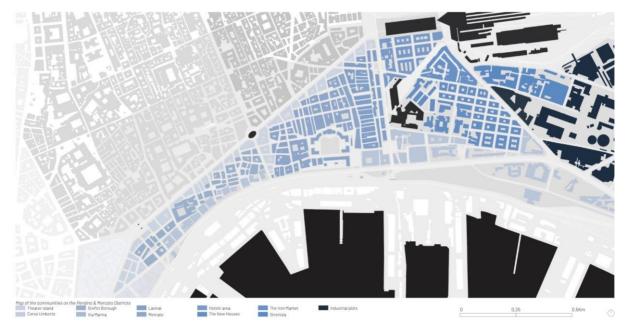


Figure 8. Map of the communities of the Mercato and Pendino districts. Source: Enrico Corvi

Despite presenting a morphologically continuous urban tissue they recognize themselves into diverse communities (fig. 8). These are not based on religious or ethnic identity, as they are rather more related to the place and history. Understanding the traits of the communities has been achieved through bibliographic research, such as the mapping done by the municipality itself, as well as interviews and talks with local actors (fig. 9). At this juncture, it has been crucial to frame the information derived from these sessions as micro-histories, a descriptive tool that wants to give dignity to the lives and experience of the locals. Their use takes inspiration from the work of Carlo Ginzburg as they complement or oppose the most common narrative of official historiography (1994).

For instance, from the interviews emerged that the residents of the Case Nuove and Mercato del Ferro don't consider themselves as part of the historical Naples, but rather as the inhabitants of the first periphery. Residents of the Mercato, contrarily, feel part of the history of Naples, as places such as Piazza Mercato and the Chiesa del Carmine have always been important for the history of the city and life of its residents. However, both communities on the right and left of Corso Garibaldi consider the comb shaped area adjacent to the Lavinai as a *Bronx*. Yet among the communities there is no conflict as they share most of the social problematics and dynamics.

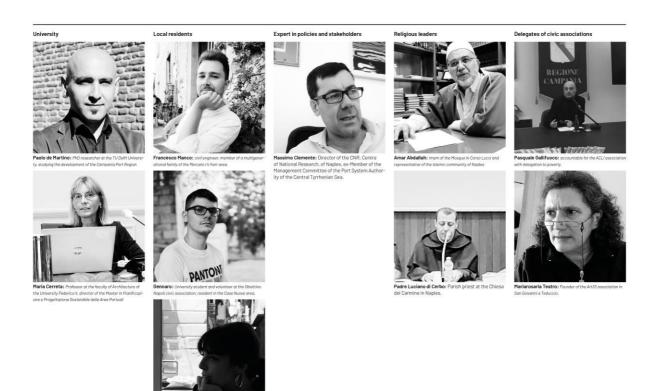


Figure 9. Actors and stakeholders interviewed in the research.

4.6. Comparative study

The second aspect that needed to be analysed was understanding how residents and communities live this urban environment, starting from which activities take place at the ground floors of the buildings and how permeable are these to the public space. This has been done through a comparative study between the neighbourhoods of Mercato and Case Nuove – Mercato del Ferro.

The first noticeable thing has been acknowledging the decrease in the mix of uses that happens with the trespassing of the Lavinai area and the Corso Garibaldi, in the Case Nuove: in these sectors the plinth of the building is mostly destined to the residential use. Nonetheless, with most of the houses presenting cramped locales, many buildings don't have blind facades allowing for the resident families' lives to happen in the street (fig. 10).

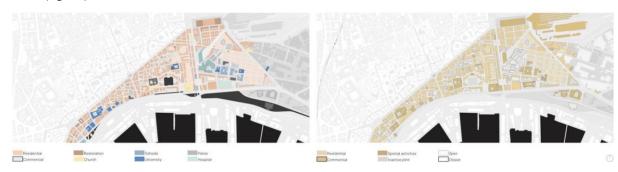


Figure 10. Mapping of the use (left) and permeability (right) of the plinths. Source: Enrico Corvi.

This consideration led to the mapping of how people use the public space. Interestingly, that has not always reflected what takes place in the surrounding buildings, as people often use places that are relevant to them or the community as gathering points (fig. 10).

The use of the public space for almost every possible activity of the residents without it properly adapting to it leads to phenomena of informal appropriation of the space. This varies from the semi-fixed appropriation of the street by the market vendors on determinate days of the week, to the cantilevering and tunnelling of alleys through the construction of unauthorized balconies, to the closing of sidewalks and backstreets to create terraces in front of the houses and private parking spots (Dovey; OostrumIshita; Chatterjee; Shafique, 2020).

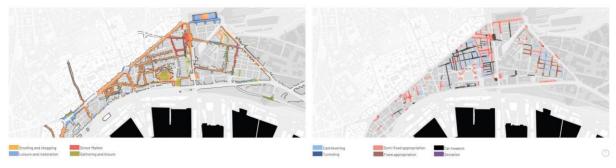


Figure 11. Mapping of the use (left) and permeability (right) of the plinths. Source: Enrico Corvi.

4.7. Stakeholders mapping and analysis

The stakeholder analysis comprised three steps: (1) Mapping of their position in the area; (2) Drafting of the relationships among them; (3) Understanding of which may be their area of influence (fig. 12).

By interviewing actors and researchers in governance structures, it has been possible to determine not only the usual behaviour of the main stakeholders, but also their path dependency, namely their historical tendency and their commitment to act in certain ways because of their consolidated beliefs and values (Arrow, 2004).

This allowed to detect what interests, problems, goals, resources, replaceability and criticality the main stakeholders have and characterize them accordingly to the definitions given by Murray-Webster and Simon (2006): the residents resulted being *acquaintances*, because despite the low power and not being conscious of their economic interest, have a high attitude; the civic associations and the Islamic community can be considered *friends*, that can help in the engagement with the residents; the market vendors and commercial activities can be considered *time bombs*, having high attitude, medium power and low interest in change; a strong institution as the Catholic Church can be instead seen as a *sleeping giant* that can back or hinder a proposal. Private developers, with not much power, interest and attitude, in this moment represent a tripwire with high leverage on a municipality with budget issues; lastly, the municipality has to be seen as the main possible saboteur, lacking in attitude and presenting a high inertia towards change (De Martino, 2020).

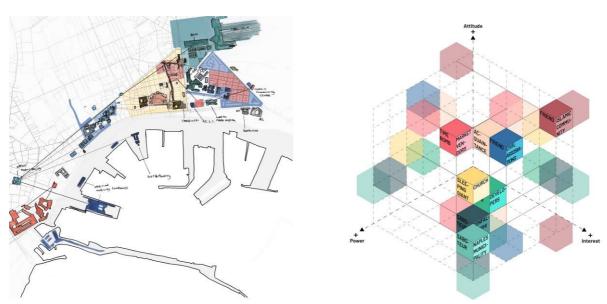


Fig ure 12. Mapping and analysis of the stakeholders. Source: Enrico Corvi.

5. Findings and proposal

5.1. Emerging structure

The comparative study and the interviews led to the understanding of the invisible structure of the urban tissue. Streets that present an elevate mix of uses, where people from the area and surrounding districts meet and interact, can be considered as main streets, such as Corso and piazza Garibaldi and Corso Umberto (Griffiths, Vaughan, Haklay, & Jones, 2008). By contrast, it has emerged that other highly integrated streets such as via Duomo, via Marina and Corso Lucci, while having the same potential, are now perceived as barriers and are seldomly frequented. Secondary streets instead revealed to host relevant functions for the everyday life of the residents, such as schools, churches and distinctive commercial activities, while backstreets work as an extension of the private space of their houses, hosting uses that are important for the individuals, such as car parking and enclosed gathering spaces.

Regardless of its importance in the everyday practice of the citizens, this street structure doesn't show noticeable changes in its cross-section, as instead appears to put in connection various relevant community and city places. Nonetheless, differences in the plinth activities and permeability, topology, origin and history indicate three main subsystems emerging (fig.13):

- The internal routes, that constitute the arteries of the residents' life and links the hubs of the communities.
- The transversal connections that connect the upper part of the city to the port.
- The front of the city toward the port on Via Marina.



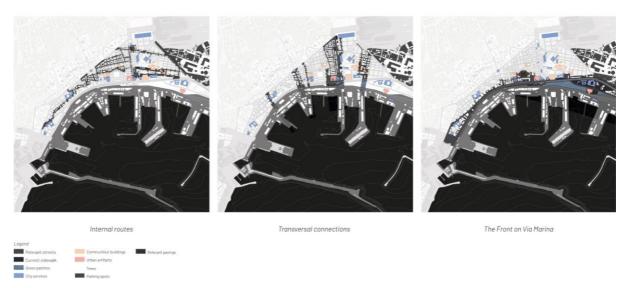


Figure 13. Emerging structure of the area. Source: Enrico Corvi

5.2. Proposal

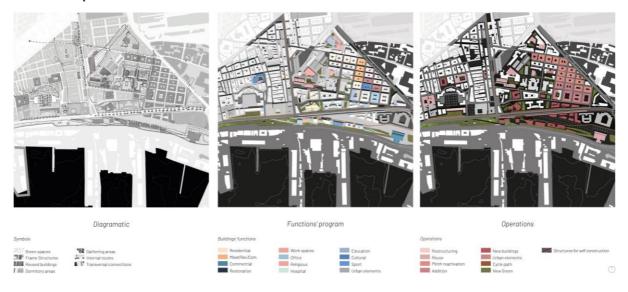


Figure 14. From left to right: Diagrammatic map of the strategy; proposed program; proposed operations. Source: Enrico Corvi.

The emerged structure served first as base for the diagram strategic actions and then the proposal of a program and the relative key operations to implement it (fig. 14). These were divided in three main strategies related to the porosity components and respective issues, that have then been expanded upon with relative design interventions and policies that could refer to desired engagement strategies and create a connection between the problematics of the people and stakeholders (Fig. 15).

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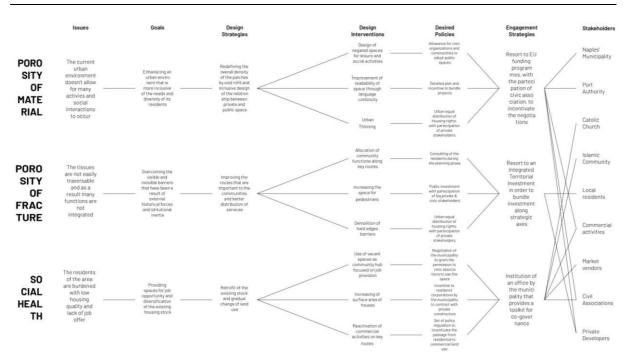


Figure 15. Scheme of the connection between the theoretical components and the proposal. Source: Enrico Corvi

5.3. **Design strategies**



Figure 16. The three design strategies. Source: Enrico Corvi

The three design strategies (fig. 16) have been drafted separately and elaborated upon in sets of basic interventions that could be easily prompted by desired policies (fig. 17). They consist of:

Porosity of fragment: following the reading of the urban morphology of the area, the strategy focuses on incrementing the surface area of the current houses and diversifying the stock, through partial, complete demolition and expansion of existing buildings.

- Porosity of fracture: having identified the barriers that have formed as result of historical
 processes, the proposal aims at reinforcing the community internal routes, through the removal
 of hard barriers and infiltration of green and public space to allow for new connections and places
 to gather. In accordance with that, the strategy would reuse and implement community relevant
 functions along the identified main routes. The strategy would work accordingly to the use that
 residents make of the space and strengthen their identity.
- Social health: along with low housing quality and the lack of public space for leisure and other
 activities, respectively tackled by first and second strategy, the most compelling issues for residents
 are school dropout and lack of employment. It is, then, proposed to reactivate the encountered
 vacant buildings and convert them into work hubs with training courses. Providing the applicants
 with the space and skills necessary for various tradesmanship, these spaces can later be converted
 and progress with the growth of the local population. Additionally, the restructuring of main routes
 has been thought in combination with structures for selfconstruction and partial reactivation of
 commercial activities.



Figure 17. Design interventions and desired policies. Source: Enrico Corvi

5.4. Engagement strategies and desired policies

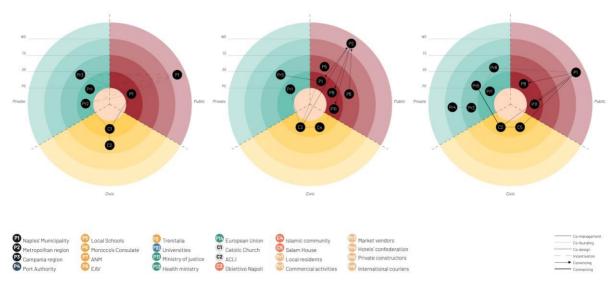


Figure 18. Stakeholders' agreements. Source: Enrico Corvi



Having as a base the proposal and the necessary interventions, the study lastly focused on finding the right stakeholders' agreements (fig. 18) and engagement strategies that could support the proposals:

- Porosity of fragment: to prevent uncontrolled gentrification, the transformation of the buildings is proposed to be discussed with the residents and buildings' administrations so to develop tools and incentives for them to carry out the change themselves. As of the writing, the Italian government, along the Next Generation EU plan, has instituted incentives for the retrofit of buildings. These are here proposed to be coordinated with the institution of an office by the municipality with the scope of informing and discussing with the population a strategy, ensuring that the capital is spent in the interest of the local communities. Along that, the municipality should rework its zoning plan, and incentivize the switch from residential to commercial use of ground floor locales, trough tax deduction and request of permits. Yet other measures are necessary to incentivize the financial participation of local private and commercial activities. One such measure would be stimulating residents to form cooperatives and co-own the locales.
- Porosity of fracture: to improve the communities' routes, it is proposed to implement an Integrated
 Territorial Investment for Deprived Neighbourhoods to make sure that the interventions on the
 public space receive the right funding. After drafting the strategy plan with the participation, at
 least, of the critical stakeholders, the municipality in accordance with the local communities should
 agree on an implementation plan that bundles interventions and financing in several steps.
- Social health: to reuse the vacant buildings according to the strategy, it is proposed to institute a
 co-governance office by the municipality that would manage with the direct participation of the
 civic organizations the leasing of the spaces to private commercial activities. The reference is the
 integrated toolbox provided by the municipality of Lisbon (Urbact,2017) to incentivize the
 cocreation of economic activities by privates and civic associations.

6. Conclusion

The study highlights how urban morphology and sociology by themselves are not capable of returning the dynamics that elapse between residents and space. While, when reduced to numbers, the criticalities that afflict the many marginalized communities of Naples seem comparable, the reality of the built environment and the characteristics of the many social groups differ greatly. In this sense, the study highlights the need for developing place-based approaches that revolve around the people's experience of urban space and bridge the gap between professionals and the everyday reality of the citizens.

With this scope, the research recurred to porosity initially as a framework, indicating which image of the city was pursued, afterward as a tool of analysis and lastly as a guide for the design proposal. The challenge has been extracting the concept from the realm of the stylistic devices and make it into a tool that can serve designers in the design research and research by design phases. Often, in our practice, inclusive design is hindered by the inability of planners and designers to communicate with residents and translate what is learnt from them in design. The methodology here proposed instead may bridge the gap between professionals and citizens, by suggesting a process that allows everybody involved to trace their position, responsibilities and interests. As designers we find the meaning of our knowledge in its practical consequences. Yet, when we talk about spatial justice we are reminded of our agency in society, our role as advocates of the city, that is *urbs* and *civitas*.



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