BDC

Università degli Studi di Napoli Federico II

24

numero 2 | anno 2024

BDC

Università degli Studi di Napoli Federico II

Via Toledo, 402
80 134 Napoli
tel. + 39 081 2538659
fax + 39 081 2538649
e-mail info.bdc@unina.it
www.bdc.unina.it

Direttore Responsabile: Luigi Fusco Girard
BDC - Bollettino del Centro Calza Bini Università degli Studi di Napoli Federico II
Registrazione: Cancelleria del Tribunale di Napoli, n. 5144, 06.09.2000
BDC è pubblicato da FedOAPress (Federico II Open Access Press) e realizzato con Open Journal System

Print ISSN 1121-2918, electronic ISSN 2284-4732

Journal home page www.bdc.unina.it

BDC volume 24, issue 2, year 2024

print ISSN 1121-2918, electronic ISSN 2284-4732

Mobility for public space. Inter-City laboratories in the design for new urban capillaries

Mobilità per lo spazio pubblico. Laboratori inter-città nel progetto di nuove capillarità urbane

Adriana Bernieri[a,*]

AUTHORS & ARTICLE INFO

[a] Department of Architecture, University of Naples Federico II, Italy

* Corresponding author
email: adriana.bernieri@unina.it

ABSTRACT AND KEYWORDS

Mobility for public space
The article addresses the issue of public space design with reference to sustainable, soft, and active mobility. It outlines a line of research that explores the possibilities of applying a multidimensional vision of the very concept of mobility in the contemporary city. This, indeed, expands by intercepting the many ways in which movement takes place and generates activity in urban contexts. The field of experimentation is the city of Naples, where many intermodal nodes – significant for public transport as well as from urban point of view – have been investigated. The adopted research methodology saw a very significant phase, which is presented in the article, in the construction of a panorama of comparisons of best practices and case studies to be analysed in relation to Naples. The comparison, starting from the concept of "dynamic model" (Montaner, 2011) and ultimately understood as an inter-city laboratory, has allowed for a general reflection on the transformative possibilities for mobility design in relation to public space. This kind of study has enriched the design proposals elaborated on the city of Naples and improved the definition of an abacus of possible architectural actions for the creation of new urban capillaries.

Keywords: active mobility, public space, infrastructures, dynamic model, Naples

Mobilità per lo spazio pubblico
Recentemente L'articolo affronta il tema del progetto dello spazio pubblico in riferimento alla mobilità sostenibile, dolce e attiva, delineando una linea di ricerca che esplora le possibilità di applicazione di una visione multidimensionale del concetto stesso di mobilità nella città contemporanea. Questo, infatti, si amplia andando a intercettare le numerose modalità con cui il movimento ha luogo e genera attività nei contesti urbani. Il campo di sperimentazione è la città di Napoli, dove sono stati approfonditi alcuni nodi intermodali molto significativi dal punto di vista trasportistico nonché urbano. La metodologia adottata nella ricerca ha visto una fase molto significativa, che viene presentata nell'articolo, nella costruzione di un panorama di confronti di buone pratiche e di casi studio da analizzare in rapporto a Napoli. Il confronto, a partire dal concetto di "modello dinamico" (Montaner, 2011) e inteso in ultimo come un laboratorio inter-città, ha permesso di riflettere sulle possibilità trasformative del progetto per la mobilità in relazione allo spazio pubblico. Questo tipo di studio ha arricchito le proposte progettuali elaborate sulla città di Napoli e ha contribuito alla definizione di un abaco delle possibili azioni architettoniche per la creazione di nuove capillarità urbane.

Parole chiave: mobilità attiva, spazio pubblico, infrastrutture, modello dinamico, Napoli

1. A vision of multidimensional mobility

Designing mobility – understood not only as an infrastructural operation but above all as the definition of the spaces which are derived, created, triggered from it – is closely linked to a concept of "making space" (Emery, 2007). Freeing, reorganizing, purifying those interstices of the city that, between a bus stop and the entrance to a subway station or a parking lot, often become amorphous, dangerous places, left to practices that are not part of design choices. This action pursues the goal of making artifacts, paths, and objects – that materially occupy the urban space of mobility – coexist with people, their flows, and their daily routines: a diaphragm that can very much expand, yet more often turns out to be very narrow in areas characterized by density of collective life. For this reason, it needs a measured and reasoned design.

Starting from the reasoning related to the research *Naxpolines. Naples New Accessibility Line*[1], which dealt with the relationship between mobility and public space, both from a theoretical and an applicative perspective, the reflection conducted in this text examines the relationship between best practices, case studies and design investigation in the field of architecture and urban project.

The research focuses on the city of Naples and delves into some intermodal nodes that are very significant from a transportation point of view, but above all within the urban dynamics, because of the role they already represent in the city or because of the potential spaces into which they could be transformed. It is precisely from the nodes of subway, funicular and urban train stations (Figure 1) that public space is rethought, towards a better urban healthiness perspective. Therefore, themes of sustainable mobility such as slowness, inter-connectivity, greenways, bicycle and pedestrian paths, find wide application into the design strategies.

A significant in-depth study has been developed about some existing station areas, intended as new catalyst nodes of transformation, in reference to a very current issue that is changing the face of many cities: the relationship between mobility and the technological and energy transition. Hence, starting from a precise description of the existing conditions, design schemes are proposed in order to update the urban characteristics of the stations, incorporating and integrating the innovations into a unified urban design.

This issue is addressed by evaluating the transformative possibilities of urban spaces affected by the current transportation layout, intersecting them with other light flows, mostly pedestrian and bicycle paths, but also with the possibility of connecting green areas, parks, and public facilities, on a dual scale, neighbourhood and metropolitan.

In the context of contemporary urban design, a priority aspect for the redevelopment of urban nodes has to be considered, especially for those related to sustainable infrastructure and soft mobility. Acting on public space as a "performer" of urban health allows places to take on multiple meanings in a much more dynamic and responsive network perspective. The infrastructures, indeed, and therefore the nodes that characterize them and that let them – as abstract lines – meet with the city, are no longer assimilated to straight or semi-straight lines yet become segments of variable section thicknesses. They can be now conceived as "living" filaments in which urban movement takes place in all its multiple and different dynamisms, even involving the means of transport themselves, as real places of city exchange.

Density, continuity, and inclusion consequently represent three characteristics of fundamental importance for urban health infrastructure design. In a potential scenario, this could completely alter the very conception of infrastructure and mobility, as well as of the ways in which movement takes place and generates activity in urban contexts. In addition to this, especially when related to movement and urban connections, "green" opportunities in the city can be multiple, according

to the perspective for which a broader vision of the project can restore, through the quality of public space, also a greater quality of life[2].
Given these premises, a first level of the investigation has initially been conducted through an exploration of exemplary processes that deal with activating and rethinking places of mobility in other cities. The study proves to be extraordinarily fertile for experimentation on Naples, in order to create a multidimensional and more contemporary vision of mobility.

Figure 1. *Naxpolines*'s research areas of design investigation

Source: Drawing by P. Miano and A. Bernieri

2. Exemplary processes: between best practices and case studies

As is often the case in design research (Toppetti, Ferretti, 2020), at an early stage of investigation, cities and projects have been identified as best practices, according to their planning and programming of urban and architectural transformations, in relation to a perspective of multidimensional mobility.
From a methodological point of view, this has also opened up a reflection on this kind of comparison. By outlining positive and negative aspects of a project, within a given context with its own dynamics and complexities, it acts as an argument, even much more effective than theoretical ones, within the possibilities of transformation of these places in the contemporary time.
Given the differences between the considered cities – New York, Copenhagen, and

Barcelona – and Naples, about structural, morphological, cultural, and residential aspects, the reasoning tries to consider the effectiveness of some already realized strategies, in order to build an initial general panorama of possible architectural and urban design actions for mobility.
This analytical study has consequently made it possible to generalize some design issues, especially from mutually comparable conditions, and to create a vast sampling of solutions that has nothing to do with cataloguing nor with the creation of design guidelines, but is an explication of how the design for mobility – understood in a broad sense – brings into play each time the complexity of the place, making explicit the clarity of design objectives such as accessibility, quality of public space and level of intermodal transportation.

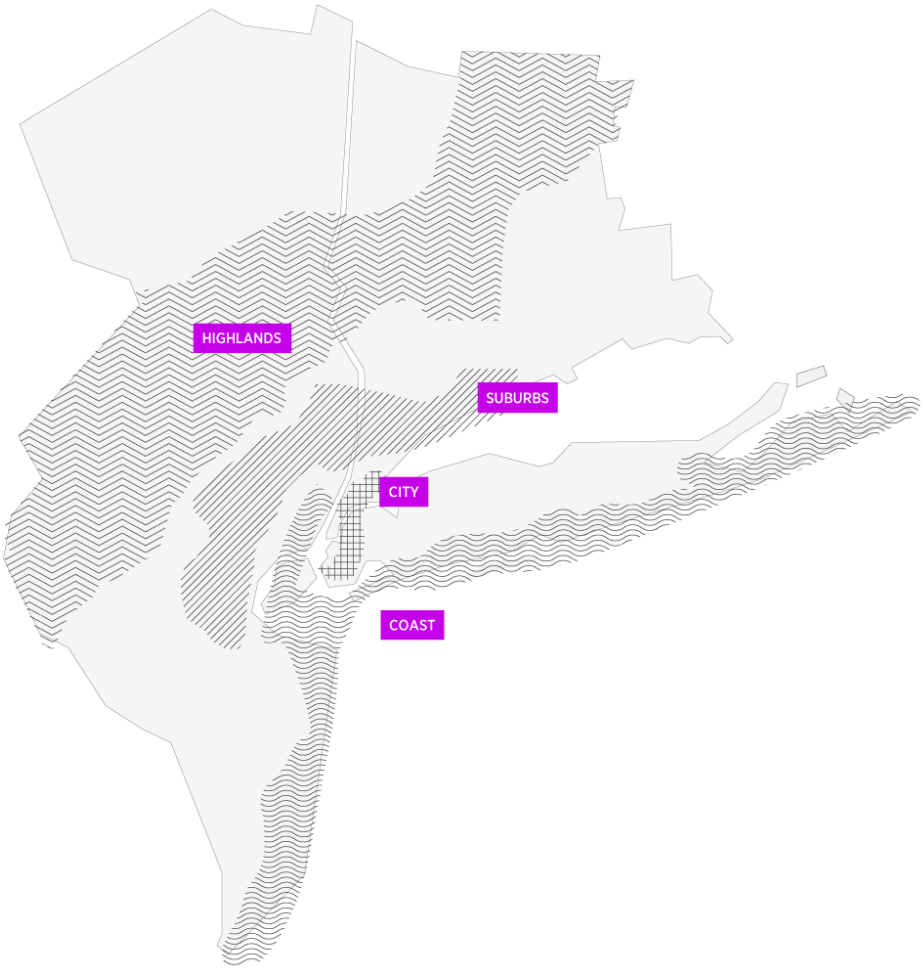
2.1 New York and the Fourth Regional Plan

In New York City, a strongly avant-garde work from a spatial planning perspective took place when, in 2017, urban design – in terms of both scalar depth but also contents – was intended as a tool for planning. That year, in fact, the Regional Plan Association (RPA) launched a design competition for architects, designers and planners "to visually demonstrate how policy changes, new investments and changing patterns of growth could transform different areas of the New York metropolitan region" (The Fourth Regional Plan, 2017). The most revolutionary aspect is the fact that the competition was intended to be an integral part of RPA's Fourth Regional Plan, the transformation program for the entire New York metropolitan region, which would have been released later on.
The regional plans for the New York metropolitan area all have a very important design tradition. At the core is the idea that the potential transformations of the area can, through design, in a factual way, be investigated, placing the instrument of territorial governance on a decidedly higher level of applicability and, more importantly, success. In the case of the Fourth Plan, the competition was named *4C/Four Corridors: Foreseeing the Region of the Future* (Figure 2). In this precise thematization there is already a strong design position: the vision of the Regional Plan, based on the concepts of health, equity, and sustainability, is entrusted to four "corridors", lines – generating spaces – of connection, specifically identified in the Coast, City, Suburbs, and Highlands macro-areas. The winning projects of the competition have in different ways conjugated the corridor theme – which is indeed a way to interpret urban mobility – by transforming it into a wide-dimensioned connector, made of multiple simultaneous scales that intersect and define potential new landscapes of collective life.
In the first project, the Coast Corridor (designed by Rafi Segal and DLANDstudio) becomes a continuous filter space where soil and water mix to create places of changed habitability that can dialogue with sea level rise and climate change, besides mobility. In the City, the Triboro Corridor (designed by One Architecture and Only If) traces the line of a "hard" infrastructure, a railroad that runs through Brooklyn extending into Queens and the Bronx, not proposing the unification of these places and their urban identity, rather promoting the enhancement of their uniqueness in terms of local value. The symbols of this are the architecture of the stations, as well as the various green and recreational spaces for communities. The proposal for Suburbs (designed by WORKac) completely subverts the anatomy of current suburbs: from being cities for cars, they are reinvented as community landscapes, with completely new suburbia rhythms and lifestyles, reintroducing a more meaningful relationship with nature. Finally, for the Highlands (designed by PORT Urbanism and RANGE), the project builds upon the fundamental role this area plays

in terms of ecological balances for New York City, proposing a strategy that protects and enhances the hybridization of development, industry, and nature, not forgetting the territorial accessibility (Lewis, Nordenson, Seavitt, 2019).

With a view to defining a multidimensional type of mobility, the New York examples are significant for two reasons. The first reason is the character of inventiveness that urban design, with reference to a complex and highly contemporary issue, needs to demonstrate in trying to give experimental answers before actual solutions are truly optimized. This refers to the design competition context, for example, and the projects deriving from it. The second reason is the ability to demonstrate how the concept of a mobility corridor can become a "container" of urban issues, that appropriately expands by interweaving also with natural and ecological infrastructures, suburbs, communities.

Figure 2. The Fourth Regional Plan main concept, 2017



Source: Regional Plan Association "Four Corridors: Design Initiative for RPA's Fourth Regional Plan" – Ryan Roark, editor

2.2 Copenhagen's "public infrastructure/public space"

In the wake of the "Copenhagen school", of the studies of Jan Gehl and the more recent reflections of David Sim, the concept of "density" significantly departs from that of "crowding" to define a scenario of renewed relations of coexistence in urban communities. Experiments in multifunctional coexistence are accompanied by ground-floor openings and rediscoveries of urban voids that were initially enclosed.

Above all, a dimension of mobility that is more closely linked to the human sphere is implemented. Starting with what Sim calls "walkable buildings" – thus involving architecture in a direct way – it prefigures a system of urban connections that includes walking, bicycling, and using public transportation. "When we talk about this level of mobility, we might expect to discuss the relative benefits of different engineering and infrastructure systems, capacity, speed, and flow. However, there is another layer to mobility that is about the interface between the modes of transportation and people, and about how mobility systems, however large and complex, are integrated into the small scale of a neighbourhood street" (Sim, 2019).
A significant example in this regard is the work done by the design firm COBE, which, in recent years and through various projects at different scales, puts into practice the perspectives of the CPH 2025 Copenhagen Climate Plan, in which one of the main strategic tools concerns precisely green mobility. Among many others, the Nørreport transport node, for example, accomplishes a transformation of mobility flows into an urban project. This aspect affects every level and scale of the program, from shelters to bicycle parking areas, ultimately shaping a plastic organism in which hierarchies between vehicular traffic and slow-connected public spaces have completely reversed, finally giving spatial legitimacy to the second.
Just like this one, countless Danish practices and projects are extensively dealing with this issue, now central to the cities' overall urban transformation. This again overturns the point of view, finally achieved by the most advanced cities, about the feasibility of qualitatively effective urban projects. Not only, it also shows how the issue of mobility is really one of the few – if not the only – matter which represents an argument that can potentially be extended to the entire contemporary city.

2.3 Barcelona: from grid infrastructure to a new neighbourhood landscape

The "Barcelona Project" – which had already started in the 1980s and 2000s thanks to funding and urban transformations related to the 1992 Olympics – continued in the following years with mobility plans that were cutting-edge in terms of the level of transformability and impacts on urban issues. In particular, the *Barcelona Urban Mobility Plan 2013-2018*, like the subsequent ones, established guidelines for the city's mobility with a clear focus on liveability of urban places. The process has determined a substantial paradigm shift in the city's urban scenario. The living space of the street (with the motto "Let's fill streets with life") became the main protagonist of public dynamics, overturning the dialectic between destination and connection spaces, unitarily staging all the potential for active city life. The trigger for this process – conceptually linked to a mechanism of freedom and openness of what is defined within boundaries – is, paradoxically, the precision, rigor, and rigidity of Ildefons Cerdà's grid. A model that, like a substrate, has allowed for the rethinking and updating of its modules (Rueda, 2019), allowing the city's landscape to be reconfigured just like a freehand drawing on a squared sheet.
The main concept of the strategy became – at the necessary scale for the plan to have concrete application – *Superilles* or *Superblocks*: pedestrian oases whose redesign begins with the remodelling of the street section. Thresholds and accesses to buildings and contiguous spaces, greenery, pedestrianism as well as bicycling, urban inclusion, are all elements of a completely renewed streetscape, which also implements alternative transportation (new orthogonal bus and bicycle networks, carpools, pedestrian lanes, etc.) (AMB, 2023). Other goals include meeting European regulatory parameters of environmental quality, reducing noise and the number of accidents, and increasing pedestrian street space. The latter aspect has given rise to a very large number of interventions on public space, involving squares,

gardens, parks, boulevards, private and public streets, as well as the waterfront. This scheme indeed initiated – based also on green and biodiversity plans – a series of competitions for green axes and new hubs/plazas that were previously automobile intersections. The Eixample district was the field of first experimentation (*Superilles Barcelona*, 2021).

In the construction of a very dense network of connections, it is interesting that someway the process appears to include even the public transport lines themselves, especially those at street level such as trams and buses, intended as a unique public "mobile" space. A continuous place that extends and branches out in different shapes, pushing to completely cancel out the difference between what is space of mobility and what is space of the city.

Figure 3. Mercat de Sant Antoni by Revetlat Arquitectura, 2012-2018

Source: Ravetllat Arquitectura, Barcelona (https://ravetllatarquitectura.com). Photo by Adrià Goula

Extending little by little, the program of interventions has also actively involved the city's historical and built heritage, which has been re-evaluated, repurposed, reused, somewhat recontextualized in order to root the pre-existences in new living and collective logics of city public life. In other words, this has created a new urban typology. One example is the Superilla de Sant Antoni, where the structure of the Mercat de Sant Antoni, thanks to Revetlat Arquitectura's design (Figure 3), has been recontextualized in a surrounding renewed by new relations of urban mobility and movement. The project starts precisely from the mobility grid, discovering a formal analogy between the building and the road intersection. This gives new meaning to

the role of the historical market. The new framework, together with the most recent discoveries of the remains of Barcelona's city walls, creates a new multi-level scenario, where public space is duplicated if not tripled, and takes on different and changing characteristics.

Nevertheless, it is especially in the larger interchange nodes – central in the urban fabric and subject of several significant transformations over the past thirty years – that the role of mobility as catalyst for updated architectural design arise, thus experiencing an exponential growth of mobility demand. Plaça de Gloriès is an example in this sense (Figure 4), still undergoing transformation with the realization of project for the Parc de Gloriés designed by Agence Ter.

Figure 4. The transformation undertaken at Plaça de Gloriès in Barcelona during last decades and its strong relation with mobility

Source: Collage by the author of photos available at https://ajuntament.barcelona.cat/glories/es

In Barcelona, the concept of urban greenway is also being addressed in many other ways: first through the inter-neighbourhood scale project for Sagrera Park by West 8 Architects, with Aldayjover and RCR, elaborated in 2011, now under construction, then in more concentrated points of the city, such as in the case of the project for the elevated Gardens of Sants. This is a project signed by Sergi Godia and Ana Molino which restored a continuity of public spaces that was completely interrupted. It overlaps with an above-ground railway infrastructure, intercepting existing roads through numerous connection systems at various heights, bicycle and pedestrian accessibility ramps. The new linear park is thus configured at the highest level, as the roof of the new structure built to encompass the railway. In addition, the project reconnects the fabrics of the two neighbourhoods on either side that, with the construction of the railway barrier, had been completely separated, and connects stations of different lines of the city's subway system, thus acting also on soft and active mobility (Figures 5 and 6).

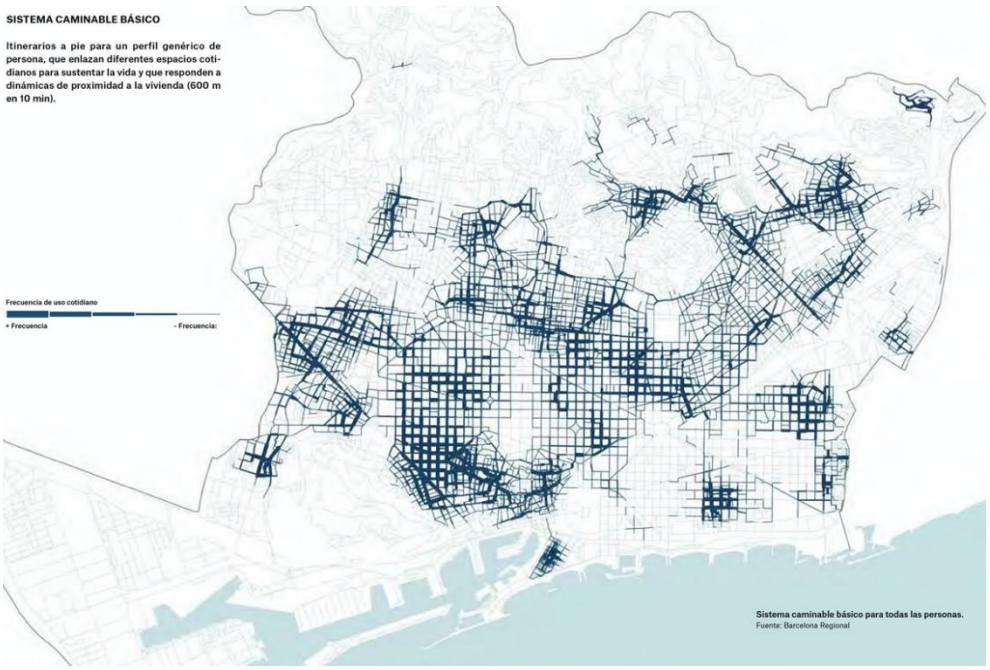
Figures 5-6. Elevated Gardens of Sants by Sergi Godia and Ana Molino

Source: Photos by the author, February 2024.

Ultimately, the process undertaken in Barcelona works at the strengthening of an existing system, in the meshes of the in-between space and refuted potentialities, at the subversion of a mechanism that has for too long seen the affirmation of the car at the expense of people and their living space in the city. A process that, starting with a city-scale infrastructure, creates the preconditions for one of a different kind, with a much more flexible and malleable definition and content, on which to create the possibilities for a more sustainable collective life.

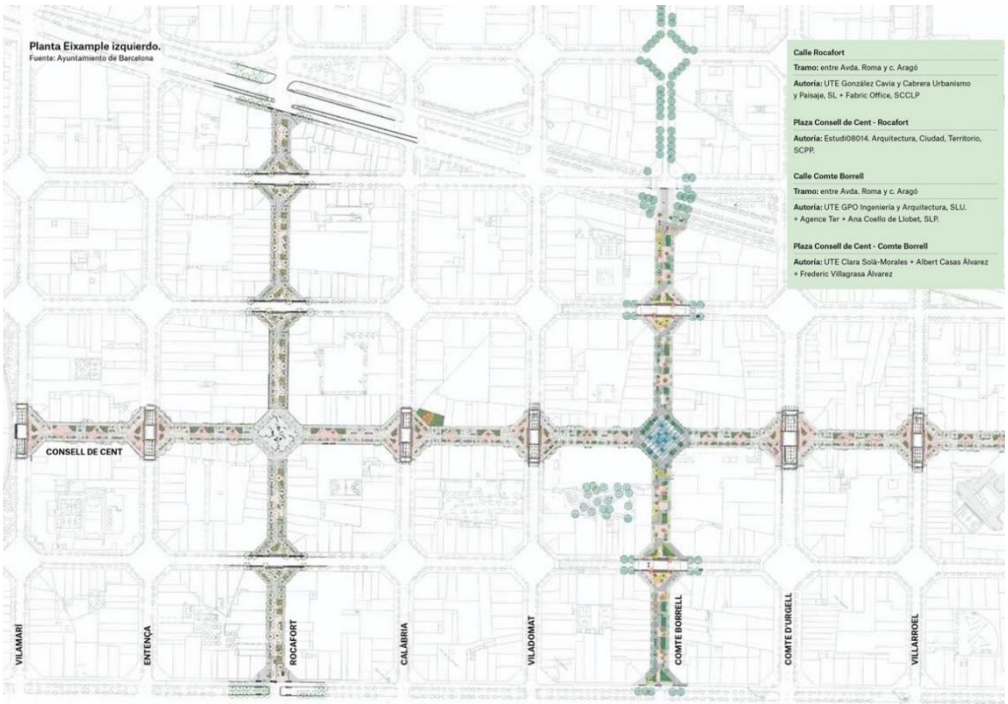
In the light of these projects, it can be claimed that one of the preeminent and winning features in the Barcelona projects concerns the level of urban capillarity (Figure 7), which can be clearly read in all the interventions that have gradually been implemented and are still being realized. A complete reversal of the street-public space figures has occurred in this sense. This is significant from two points of view. The first, in a progressive rapprochement of the community to a culture of slow mobility and public transportation, understood as the possibility of a "mobile" collective life within urban spaces. In this sense, all the strategic plans supporting the municipal agenda of transformations are pillars of a wider process, such as the 2018 *Game Plan*: on the one hand components of a governance and planning policy, on the other hand tools between city and citizens, of all ages (Montaner, 2020). The second point of view, an even more projective argument, addresses the synchronous position that mobility and urban public spaces are gradually assuming (Figure 8).

Figure 7. Urban capillarity in Barcelona



Source: "*Sistema caminable basico*" (Basic walking system): extracted from *Regenerar Barcelona: Barcelona 2015-2023*, http://hdl.handle.net/11703/129163, pp. 122-123

Figure 8. Mobility as Public Space



Source: "*Planta Eixample izquierdo*" (Plan of Eixample left): extracted from *Regenerar Barcelona: Barcelona 2015-2023*, http://hdl.handle.net/11703/129163, pp. 66-67

The gradual change of vision was also made possible by very effective public and digitally accessible information about the transformation promoted by the administration: websites but also highly detailed open access publications have been accompaning citizens through a long phase of total modification of central urban spaces, projecting them toward the profound renewal and new possibilities for

community. This was also very often supplemented by public dialogues that allowed for reflection on how certain events or transformations can also serve to increase the collective knowledge and sense of belonging and participation of citizens. Differently, it indeed represents a missed opportunity, as unfortunately happens very often.

2.4 The mobility project as a "dynamic model"

Significantly, Barcelona has not only represented a dense place for design reflection but also – and above all – for theoretical reasoning. This has the actual power to determine concrete advances in the field of disciplinary research.
In the book *Archivio crítico modelo Barcelona 1973-2004*, Josep Maria Montaner traces the trajectory that Barcelona has represented, first as a pioneer city of urban redevelopment starting with a mobility plan, then as a real scheme that has risen to model status. The evolution of the Spanish city has been conceived by areas, lines, nodes, points, etc. The way of understanding the transformation has been laboratorial, within the planning group on the one hand, with the community on the other hand, somehow defining an "empirical" type of model. "It is certain that the main drawback of the model concept is that it is closed, finished, to be copied identically, and this is very limiting. That is why we have indicated that it is better to talk about a 'next model' or a 'dynamic model'" (Montaner, Álvarez, Muxi, 2011).
The Barcelona case can be understood as a "dynamic model" as suggested to Montaner for other cities (Montaner, 2011). The "dynamic model" is a very interesting topic for design research because it poses objectives that go beyond the possible output of a research study. It can be understood as a process which advances reflections from a methodological point of view on how to approach case studies, reflecting on the ways in which a good practice can become a methodological reference and to what extent this is exportable.
Questioning the conditions that made possible the realization of those projects; reconstructing their historical-political context; abstracting principles of possible reproducibility and, conversely, identifying those of irreproducibility linked to identity elements; working on the results, in methodological and/or design terms: these are elements of a method that reasons on a cultural position even before proposing a design strategy. It evaluates the effectiveness of experimental logics and actions, according to the idea of "dynamic model".
The "dynamic model" allows the work among different cities to be reciprocally effective. This concept helps to make explicit the methodological operation carried out in the research, which takes the "dynamic model" – extrapolated from the work carried out on Barcelona – as an example, in order to bring it back to the relationship between the other cities and Naples. The shift to the architectural scale proves to be key in this sense, precisely in the possibility it presents of being able to understand the design actions at a closer and more detailed scale.

3. Back to Naples: a possible design framework on mobility

Within the framework of the design experimentations on Naples, the analysed cities played a key role of comparison in defining possible strategies and actions, despite the different scales and variability of the issues. Although the clear structural, morphological, dimensional differences between the three cities studied, as well as between them and the case-study city of the research, each of the processes described shares certain characteristics. Whether it be geographical conditions or processual

similarities, the selected examples more closely relate to the scale of urban and architectural intervention. This topic specifically arises the possibility to propose parallels and derive certain practices. The operation of exploring virtuous mechanisms was indeed a vital part in the construction of the hypotheses of strategies and actions for Naples, as a new conception of infrastructure and public space.

The described projects, at the different scales of intervention and strategy, all demonstrate how the concept of infrastructure can, today, be of very broad interpretation and precisely for this reason assume great centrality in the disciplines and practices of design. Losing a mono-disciplinary definition by virtue of what it generates and for which it is generated, mobility ultimately embodied the space of living. Furthermore, as in the case of Barcelona, it also significantly contributes, through the implementation of architectural interventions, to increase the collective culture of public space.

Therefore, precisely in the last case considered the comparison is even: between the cities of Naples and Barcelona, two realities that in different ways assume mobility as a characterizing element within their urban layout and recent urban history. Two cities, comparable to each other on dimensional, morphological, social levels, from which similarities and differences emerge in the design of public space related to mobility, especially from the point of view of the premises, policies and management of transformation, the latter very much linked to its public narrative.

In this context and especially in relation to Naples, Barcelona is taken as a paradigmatic case for two reasons. The first relates to the urban transformations that have taken place, especially starting from a rethinking of its mobility, both in terms of (infra-)structure and contents: these dealing with the level of involvement of public facilities and served, connected, and rediscovered spaces, starting from the lines of mobility. The second reason examines the exportability of the model, that is, the possibility of tracing the entire operation back to a guiding principle that, from an urban planning point of view, directs most of the choices: the contemporary reinterpretation of Ildefons Cerdà's nineteenth-century grid, in the confirmation and someway in the exaltation of a very precise morphological model, historicized and therefore de facto heritage, on which to rework and through which to rediscover new community logics. In the journey back to the project for Naples, capillarity becomes the real goal and at the same time the measure and criterion by which to set (ex-ante) or evaluate (ex-post) an urban project.

3.1 An abacus of sustainable mobility actions

The nodes of Naples' stations have been explored in depth by trying to reverse the urban issues into the architectural vision. This begins with a careful survey of the existing state of the places. The territorial morphology and the elements of mobility were also analysed through a historical perspective, considering the transformations realized over the years as well as those planned but not yet or no longer realized. This first brought out a panorama of existing, disused, or potential connective elements – therefore including ramps, stairs, elevators – that play or could play an urban role far beyond the punctuality of their architectural form.

For this reason, a reading of the discontinuities in the urban system, as a whole, has highlighted numerous negative aspects, such as: the frequency of vertical differences in elevation and inaccessibility, often due to complex orography but also to privatization, abandonment and degradation; the lack of connections and permeability, whereby neighbouring and bordering areas often find themselves configured as boundaries of each other or separated by significant infrastructural barriers; the absence of internal mobility alternative to cars in specialized, very large

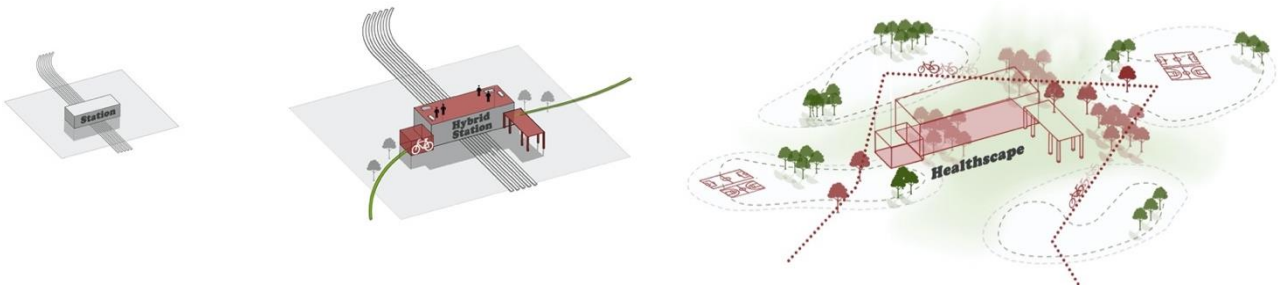
areas (such as hospital complex, university campus, etc.); the presence of impenetrable fences and perimeters, with concentrated and not distributed entrances; the isolation of stations and the non-existence of continuous flows, which also result as a discontinuity in crossing the city; the abandonment and degradation of entire unconnected urban areas.

Already in the "Piano delle 100 stazioni" (2003) the issue of accessibility was centrally posed, proposing, from the circular transportation areal with a radius of 500 meters, an additional areal geometrically undefined yet relating to the geomorphological characteristics of the place. The bordered area measures the reachability of places in the vicinity of the station in a maximum time of about 8 minutes. Thus, in 2003, through this plan, a first significant response was given about a more effective way of assessing accessibility. Nevertheless, this is not applicable everywhere in a technical way or as a mathematical formula, due to crossing and permeability difficulties in many areas of the municipal territory.

Since then, some actions have been undertaken, but others have remained planned ambitions. The contemporary framework of the city of Naples sees a situation in which there are 60 cars per 100 inhabitants and a significant number of road accidents, many of which are related to cycle-pedestrian safety. The demand for public transport is slowly rising after 2020[3]. It would therefore seem like a good time to encourage its use through interventions that aim to improve the quality of urban spaces in a more integrated way.

In the conducted research, the design actions start from the stations that urgently need to be reorganized and contextualized also through the rediscovery of a better liveability of the adjacent tissues. From these "nodes", an opportunity is triggered to extend the intervention of regeneration and re-appropriation of other urban spaces. Thus, a method is proposed: a method which intends to be more immersed in the dynamics of city life and space utilization, bringing back into play the hidden potential of the city fabric. In this sense, possible spatial transformations of hinge and filter places can be triggered, with great design potential, according to a perspective of gradually expanding the space of stations and other connectors (Miano, 2020) (Figure 9).

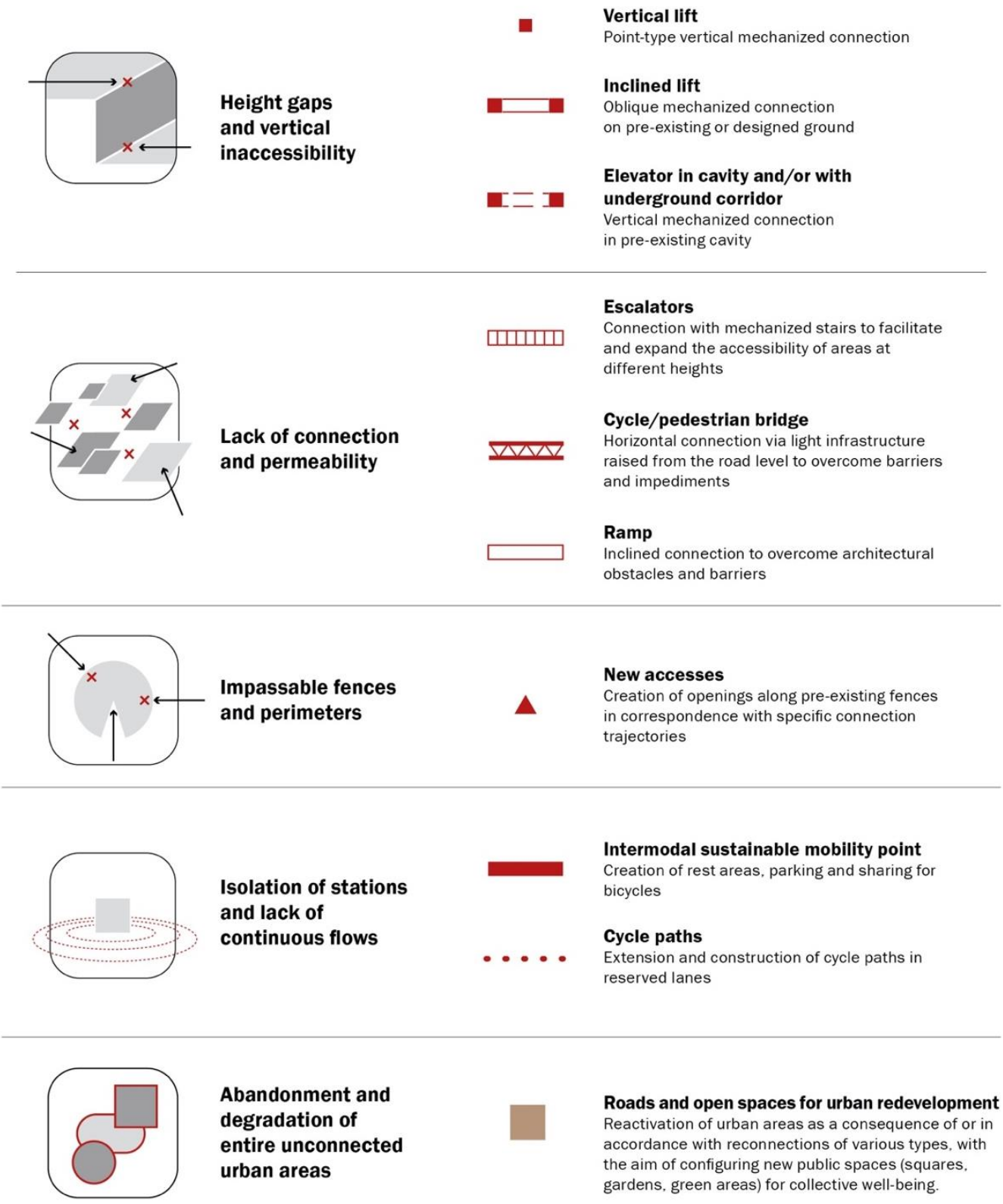
Figure 9. The gradual transformation of the station area as a hybrid building towards a healthy space



Source: Drawing by P. Miano and A. Bernieri, from *Naxpolines* research

By starting from these considerations, the aim of the study is to suggest an implementation of accessibility, through the insertion of punctual and/or linear devices (vertical, sloped, cavity elevators; escalators, ramps, and bicycle-pedestrian bridges; parking and cycle stations; etc.): an abacus of urban and architectural actions for sustainable mobility (Figure 10).

Figure 10. Abacus of sustainable mobility actions



Source: Image by the author, from *Naxpolines* research

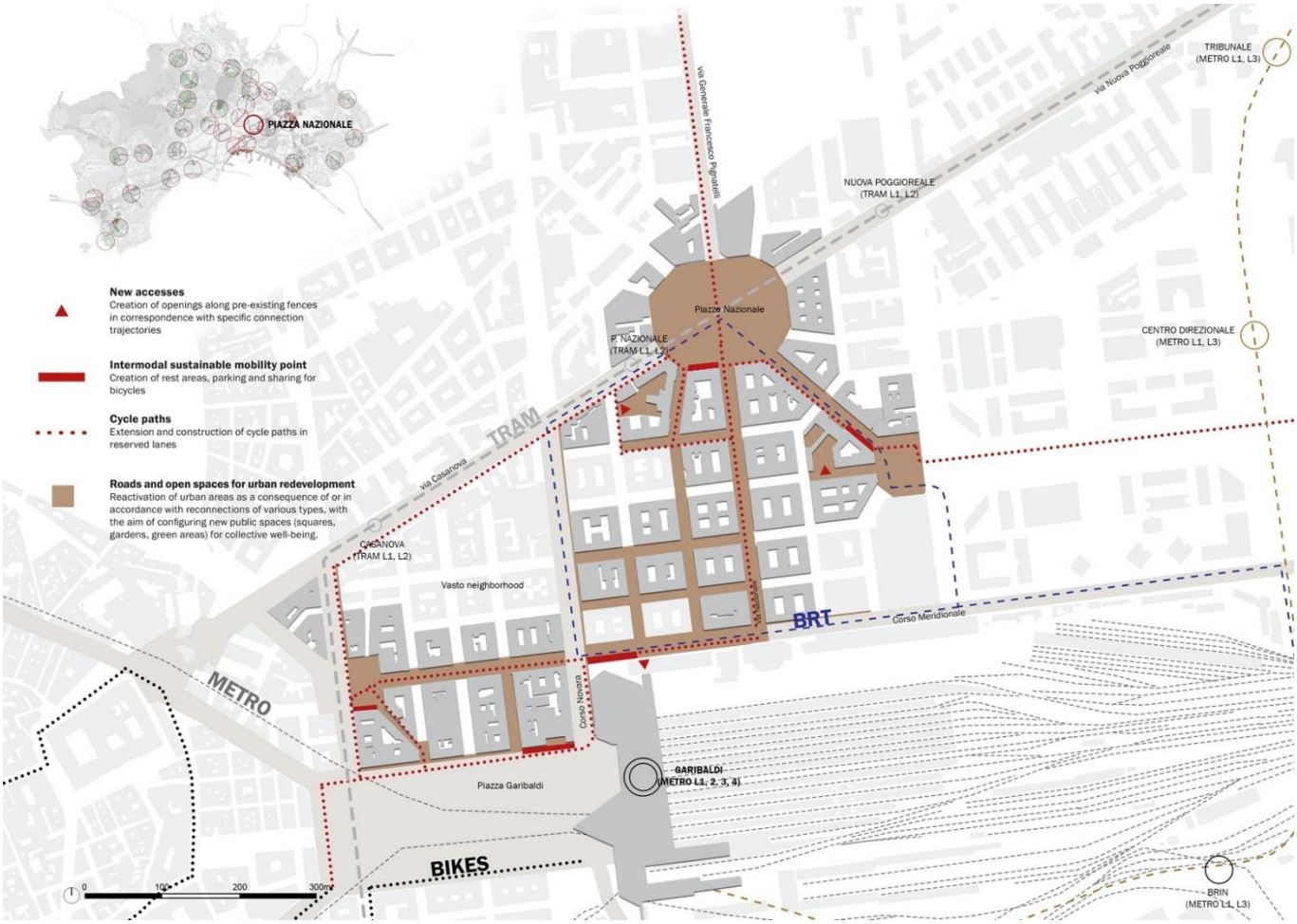
In summary, the final vision would present, for each node, a new landscape of the street, completely reconstituted from the perspective of sustainable mobility and care

for public space. The combination of these scenarios returns an overall design of a large-scale tensioning among the various nodes, finally offering a different view of the entire city.

3.2 Piazza Nazionale and the Vasto district

The area including Piazza Garibaldi and its neighbourhood, particularly the Vasto district, Piazza Nazionale and Piazza Salerno, today lacks the necessary and adequate infrastructure to manage the urban flows generated by the Central Station and its surroundings. It also appears lacking in suitable public spaces. Low-quality green spaces often coincide with some sort of squares, which are actually more akin to traffic dividers and very often are also parking lots or a roof for underground parking complex – as with the multi-story parking lot in Piazza Nazionale and Piazza Garibaldi, part of Dominique Perrault's larger urban project, designed and realised between 2004 and 2015.

Figure 11. A widespread and capillary urban park in Vasto district



Source: Drawing by the author, from *Naxpolines* research

From the perspective of sustainable mobility and for the purpose of rethinking public space, Piazza Nazionale represents a crucial point as it will be crossed by the future BRT to East Naples. Moreover, the entire Vasto neighbourhood symbolises a very interesting parallel with Barcelona's Eixample, by immediately starting from morphological and typological similarities that the two neighbourhoods share. Indeed, the entire area potentially represents a starting point and a strategy trigger

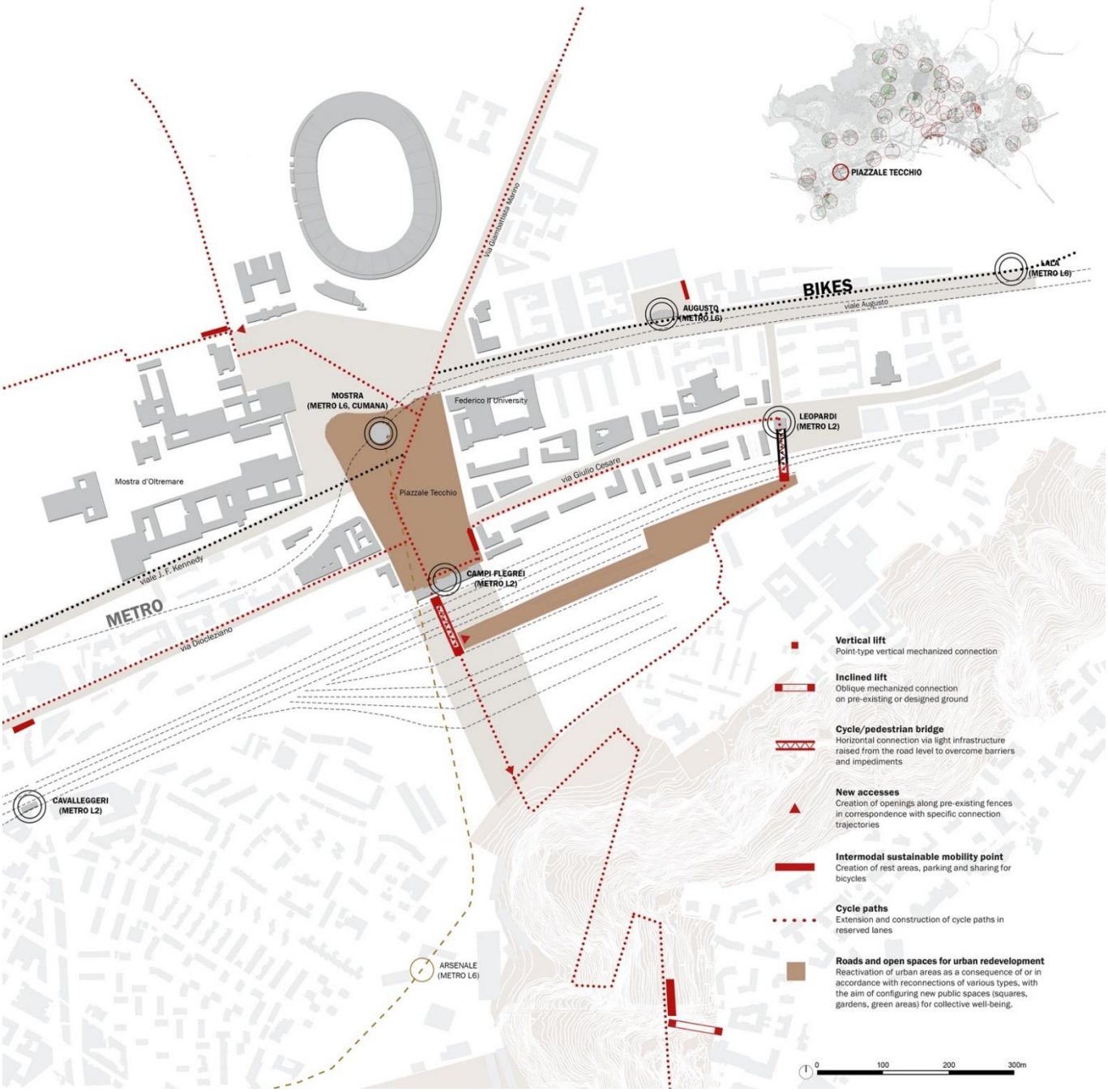
for reconnecting existing infrastructure by upgrading public spaces and managing urban flows with a view to sustainable mobility.
In this sense, the project proposal envisages the creation of a widespread and capillary urban park that merges with the existing infrastructure network, extending the concept of road – understood as a system that does not only transports yet connects – to that of urban park (Figure 11). The strategic actions aimed at achieving this objective are: the creation of a public space suitable for interchange with sustainable mobility, where in addition to the already existing lines or in planning, soft mobility and bicycle-pedestrian mobility should be enhanced through the creation of bicycle stations, stop areas, etc.; the pedestrianization of an increasing number of minor streets in the Vasto district to be equipped as linear public spaces; the involvement of existing open spaces in the configuration of a complex system with a variable section intersecting existing public buildings and thresholds.

3.2 Piazzale Tecchio

In the large urban void of Piazzale Tecchio, in the heart of the Fuorigrotta district, the Mostra (line 6 and Cumana train) and Campi Flegrei (line 2) stations are located, effectively configuring the square as an important interchange node. The relevance of the node on a metropolitan scale is also confirmed by the numerous urban centralities, such as, the city Stadium, the conference and exhibition centre Mostra d'Oltremare, the Departments of Engineering of Federico II University.
The absence of an effective, continuous, public space network provides a counterbalance. In fact, the facilities are isolated, enclosed within impassable fences and totally disconnected from each other due to a system of urban voids that in many places are in a state of decay and neglect. Pedestrian intersections with vehicular traffic are also large and disorganized.
At the same time, despite a disorienting system of open spaces that lengthens distances and routes, the network of bicycle paths has been implemented and Fuorigrotta appears as the most active area in the city from this point of view. The morphology of this piece of the city, in fact, allows mobility to be experienced on the flat while benefiting from large green areas, some in direct continuity, such as the Mostra's gardens, others in proximity, such as the Posillipo hill. Also, this area and in particular Piazzale Tecchio node will in future gain further when the Bagnoli Park, on the west side, finally takes shape.
The coexistence between a remarkable yet inescapable vehicular mobility and the presence of large open spaces with a strong urban potential allows the design of Piazzale Tecchio to come closer to that of Plaça de Gloriès in Barcelona, in a configuration that sees the possibility of increasing trees precisely at the road axes and opening a public space further north. Here, in the case of Naples, between the Mostra, the University and the Stadium, the real public space for city use could be obtained, also by restoring a more breathable space for the public facilities. Finally, in the southern part, where in the Spanish city is concentrated the node of metro exchange but also the Museum of Disseny, similarly for the Campi Flegrei station of Line 2 design actions could be tested so that it could accommodate new programs. Becoming more attractive through the inclusion of cultural and commercial activities, and quality spaces for the community, yet above all in the enhancement of devices related to sustainable mobility already active in this area of the city, the Campi Flegrei station could assume a solider role in a new urban vision for Piazzale Tecchio and the whole city (Figure 12).
For this purpose, the proposed actions are: the redevelopment of Piazzale Tecchio by integrating the public space with community areas; the interchange between

sustainable mobility systems; the redefinition of the square in close continuity with the stations and new connections; the rethinking of the Campi Flegrei station of Line 2 as a new urban attractor.

Figure 12. Capillary pedestrian space from the green node in Piazzale Tecchio



Source: Drawing by the author, from *Naxpolines* research

3.2 Mergellina

The Mergellina area of Naples is an exchange node, with two major rail public transport lines: line 2 and line 6. These are supplemented by city bus stops.
The "Piano delle 100 stazioni" envisioned the construction of a mechanized path with vertical development to allow the ascent to the adjacent Posillipo hill. One of the programmatic points of the City Sustainable Mobility Plan also aims to consider the Mergellina station as a gateway not only to the port area and the waterfront but

also to the Posillipo Hill.

The Mergellina station is located near to this geographic elevation, right next to a considerable slope. Furthermore, on the other sides, the building is squeezed between two major busy roads: Corso Vittorio Emanuele and via Piedigrotta. Despite the proximity, the Vergiliano Park and the Crypta Neapolitana in Piedigrotta do not establish any relationship with the station. On the contrary, the presence of the railway tracks, although elevated above the street level, increases accessibility problems to the park.

Figure 13. Mergellina station's terrace: capillary accessibility

Source: Drawing by the author, from *Naxpolines* research

Just as in the project for Sants in Barcelona, the highest level of the station – in this case occupied by the tracks but still offering a very large free surface – can be completely rethought as a linear park, reconnecting multiple heights and different neighborhoods. In addition, the new reconfigured public surface would provide a reconnection to the Vergiliano Park and the Crypta Neapolitana, at similar heights as those of the platforms (Figure 13).

In this way, the design strategy focuses, ultimately, on the possibility of creating a new system of connections and spaces that branch off from the station forecourt – which currently represent the only station's public space – absolutely lacking services in a contemporary view of sustainable mobility. It is therefore proposed to reconfigure the entire western edge of the station area, by involving the spaces around the tracks of metro line 2 as a new station's terrace. In summary, the project actions are: the design of the strip area that runs parallel to the tracks as new public

space; the creation of a new vertical elevator system to the Posillipo neighborhood and a connecting walkway to Parco Vergiliano in Piedigrotta, which in this way would be directly accessible from the Mergellina station; the involvement of the ramps of Sant'Antonio in the new mobility system up to the belvedere terrace.

4. Inter-city laboratories

The studied project proposals are the result of a design research that is based on two main aspects. On the one hand, the importance of an in-depth comprehension of the current characteristics of places. On the other hand, the comparison with other realities. These two are both fundamental moments for the advancement of arguments and reflections in a design research perspective.

Indeed, the project feeds on these parallels between places and cities, establishing a dialectic of ideative exchange according to which what revealed to be a good practice somewhere can become a projective vision in another place. Methodological and design issues thus come to intertwine, as in the "dynamic model" theory, promoting an evolution of both: this is the possibility of establishing proper inter-city laboratories that, on particularly challenging contemporary issues such as urban design for mobility, need to build a constant and enduring dialogue. In this way, projects, policies, and strategies for the renewal of public space in relation to mobility are built on a very solid cognitive and evaluative base and benefit from aspects, considerations and points of view that can increase exponentially in number and over time.

Cross urban readings of different places yet presenting similar urgencies and conditions to be addressed – just as is the case with sustainable mobility that is changing the face of so many cities around the world – promote joint reflections and design solutions that can be compared or even derived if not transposed from one place to another. For this reason, the design proposals in Naples move from certain parallels found with the city of Barcelona. Through reflecting on the rooting possibilities of those solutions, contextualising them to the issues of the place, the proposals are modified in their morphological, dimensional, and structural characteristics, and generate new scenarios. This could represent the basis for future research development perspectives, in terms of economic and participatory evaluation of the contexts involved.

Ultimately, the research seeks in these terms to pose the theme of mobility not only as a renewal of urban design understood in traditional terms, but also as a field for its methodological experimentation, precisely because of the variety and multiplicity of questions it raises in the contemporary time. Designing public space for urban mobility thus offers the possibility for an attentive and necessary reflection. Overcoming the idea that city can be spontaneously experienced everywhere, the public space, and therefore space of mobility in a broader sense, has to be structured in each of its expansions (as nodes) and connections (as lines) so that the capillary city can eventually take shape.

Notes

1. Research Agreement between the Department of Architecture University of Naples Federico II and TECNOSISTEM SpA engineering & technology "Nuove forme di accessibilità alla rete di trasporto della città di Napoli in riferimento alle più aggiornate realizzazioni sul tema nel panorama internazionale" (2018-2020, PI P. Miano).
2. For a more in-depth study of the concept of "urban health", particularly related to the topic of mobility, see the publication Capuano, A. (2020). *Streetscape. Strade vitali, reti*

della mobilità sostenibile, vie verdi, Quodlibet, Macerata. The publication is one of the outcomes of the PRIN 2015 research *The City as a Cure and the Care of the City* (www.curacitta.it).

3. Updated data about traffic and car accidents in Naples are taken from *Napoli 2030*, an extract of the national survey *Città2030* conducted by Legambiente within the Clean Cities Campaign, from February to March 2024. The data about the public transport demand is taken from the *Tavole mobilità urbana*, part of *Ambiente Urbano anno 2022* survey by Istat.

Funding
The research received funding through the Research Agreement previously mentioned, and continued within the PON "Green" R&I 2014-2020.

Originality
The authors declare that this manuscript is original, has not been published before and is not currently being considered for publication elsewhere, in English or any other language. The manuscript has been read and approved by all named authors and there are no other persons who satisfied the criteria for authorship but are not listed. The authors also declare to have obtained the permission to reproduce in this manuscript any text, illustrations, charts, tables, photographs, or other material from previously published sources (journals, books, websites, etc).

Use of generative AI and AI-assisted technologies
The authors declare that they did not use AI and AI-assisted technologies in the writing of the manuscript; this declaration only refers to the writing process, and not to the use of AI tools to analyse and draw insights from data as part of the research process. They also did not use AI or AI-assisted tools to create or alter images and this may include enhancing, obscuring, moving, removing, or introducing a specific feature within an image or figure, or eliminating any information present in the original.

References

Alfano, G., Naso, V., Buccaro, A. (2000). *La metropolitana di Napoli: nuovi spazi per la mobilità e la cultura*. Electa, Napoli.
AMB. (2023). *Public Space in Metropolitan Barcelona. Interventions and Conversations 2018-2022*. Actar Publishers, Barcelona.
Capuano, A. (2020). *Streetscape. Strade vitali, reti della mobilità sostenibile, vie verdi*. Quodlibet, Macerata.
Center for Active Design. (2010). *Active Design Guidelines: Promoting Physical Activity and Health in Design*, City of New York.
Emery, N. (2007). *Progettare, costruire, curare. Per una deontologia dell'architettura*. Casagrande, Bellinzona.
Gehl, J. (2010). *Cities for People*. Island Press, Washington.
Lewis, P., Nordenson, G., Seavitt, C. (2019). *Four Corridors. Design Initiative for RPA's Fourth Regional Plan*. Hatje Cantz, Berlin.
Miano, P. (2020). *Healthscape. Nodi di salubrità, attrattori urbani, architetture per la cura*. Quodlibet, Macerata.
Montaner, J. M. (2020). *Política y arquitectura. Por un urbanismo de lo común y ecofeminista*, Gustavo Gili, Barcelona.
Montaner, J. M., Álvarez, F., Muxi, Z. (2011). *Archivo crìtico modelo Barcelona 1973-2004*, Ajuntament de Barcelona, Barcelona.
Pla de Mobilitat Urbana de Barcelona PMU 2013-2018, Ajuntament de Barcelona.
Rueda, S. (2019). Per una pianificazione ecosistemica della città. In M. Vanore, M. Triches (2019), *Del prendersi cura. Abitare la città-paesaggio*. Quodlibet, Macerata.
Sim, D. (2019). *Soft City. Building Density for Everyday Life*. Island Press, Washington DC.
Superilles Barcelona. (2021). Ajuntament de Barcelona.
The Fourth Regional Plan. Making the Region Work for All of Us. (2017). Executive Summary.
Toppetti, F., Ferretti, L. V. (2020). *La cura delle città. Politiche e progetti*, Quodlibet, Macerata 2020.