

Residual spaces and adaptive urban landscapes. New regenerative scenarios in the Turin area

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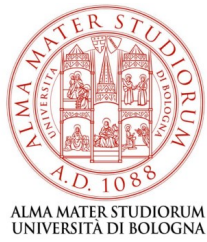
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CHANCES.  
PRACTICES, SPACES AND BUILDINGS IN CITIES'  
TRANSFORMATION.

Curator: Prof. Arch. Annalisa Trentin



ALMA MATER STUDIORUM  
UNIVERSITÀ DI BOLOGNA



International Conference, 24<sup>th</sup> October 2019

CHANCES was an international conference that aimed to explore, from a multidisciplinary perspective, the fragile but continuous urban transformation through the effective contribution of culture, nature and technology.

The conference wanted to provide a deeper understanding of urban transformations' research and practices, focusing on the use, re-use, design, renovation and innovative governance and management of public spaces, urban commons and buildings.

The organizing committee believes that these thoughts will largely contribute to shape and increase sustainable design, construction and planning in constant cities' transformation.

The selected contributions were built on reflections and studies concerning current or historical approaches that are changing or drastically changed the cities we lived in.

The Conference has been organised by the PhD in Architecture and Design Cultures -  
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## CHANCES

Practices, spaces  
and buildings  
in cities' transformation

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## TRACK 2 / SPACES

*Public spaces and urban commons play a fundamental role in cities' transformation and regeneration. Culture, nature, and technology can strongly contribute to increase the social, environmental and economic value of urban public spaces.*

*This section introduces contributions about strategies, plans and practices for the use, re-use, transformation and regeneration of public spaces. This track will welcome inputs from the past, the present and the future of public spaces potential, functions and uses.*



## RESIDUAL SPACES AND ADAPTIVE URBAN LANDSCAPES NEW REGENERATIVE SCENARIOS IN THE TURIN AREA

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### Abstract

Nowadays, metropolitan urban contexts are called to adapt “to a new urban issue” (Secchi, 2011), a complexity of external factors – growth of population, climate, environmental, economic and social changes - that determine a state of vulnerability and fragility of their living conditions. In this framework it is necessary to investigate transformation strategies towards more sustainable cities, which can find in its widespread and multi-scalar open space a device for resilient and regenerative solutions.

The research context is the city of Turin, where the recognition of the regenerative value of urban “wastes” (Lynch, 1990), result of post-industrial planning and dismissal processes, is today crucial to reassemble the fragmented morphologic structure towards an adaptive change. Understanding how this legacy could be re-interpreted, as a heritage of the future, is one of the challenges that this research aims to investigate, trying to delineate a methodological framework for a new resilient urban metabolism.

The use of “Mapping” as an interpretative and representative instrument of those emerging urban dynamics, wants to reveal the vulnerabilities and opportunities, and to investigate a taxonomy of overlays to reveal possible geographies, suggesting alternative strategies. The aim is the production of a dynamic cartographic framework, functional to new design visions necessary to manage the uncertainty of future impacts on the city and society (Russo, 2014). Starting from the action of Mapping, the design of a dynamic and experimental open space of the city, where technological and environmental solution coexist, aims to give a systemic answer, to that “inverse city” (Viganò, 1999). The definition of adaptive design scenarios, from an ecological network, able to infiltrate the consolidated city, to a new urban narrative capable to rethink the importance of designing residual spaces, is the operative approach to re-consider Nature element for the ability to preserve that precious urban porosity that outlines the urban well-being and therefore of human life (Gehl, 2013).

### Keywords

*Urban resilience, sustainable regeneration, ecological networks*

### 1. *The decline of the city: towards new urban approaches*

The current awareness of having to interpret the rapid evolution of emerging contemporary phenomena and the impossibility of globally governing the transformations, leads the international debate towards the constant search for new methodological paradigms - approaches that know how to read and govern this change in progress.

The cities, called to face different challenges (climatic, environmental, economic and social), require new transformative approaches that give them a new resilient capacity. The present urban decay, conscious of its causes, must equip itself with a knowledge more and more multilayers, bringing out a city with multiple temporal levels and spatial

stratifications. This continuous transformative process includes the city of Turin, field of experimentation of the following research, heir in these 25 years of a radical, physical and symbolic change of the whole urban structure, from the obsolete Fordist identity of “company town”<sup>1</sup> (Dansero, 1993) towards a new post-Fordist vision.

Despite the past scenario of metamorphosis of a cycle in phase of exhaustion, the changing of a series of assumptions and conditions - such as the prolonged crisis of the economic model and the triggering of new climatic, environmental and social emergencies - shows the rise of new “urban issues” to be dealt with.

Today the city needs new reflections on the urban agenda in search of future visions and models of development, the definition of “new centralities”

<sup>1</sup> “One company town” is the definition given in the 1970s in Turin, corresponding not only in the Fordist organization of the factory, but also in the amount of surface occupied by

industrial sites, which corresponds to about half of its territory.

and new infrastructural, settlement and landscape structures, more aware of the limited resources.

Far from the past expansive logic of urban development and from the great architectural and infrastructural signs, we are witnessing the flowering of a new season of urban planning and urban design, towards new approaches more concerned with existing and emerging environmental, territorial and social issues. Itineraries aimed at experimenting and drafting processes, no longer static and definitive, but dynamic, interactive, shared, flexible and interdisciplinary, which are able to reinterpret in an innovative way the new issues of sustainable urban regeneration.

The need to rethink models of partial urban development, not exhaustive, but integrated and procedural, has therefore contributed to the loss of the usual urban-landscape dichotomy. This led to the flourishing of new transversal disciplines, among which the Landscape Urbanism (Waldheim, 1996; Clementi, 2012) and the Ecological Urbanism (Mostafavi, 2010)<sup>2</sup>, which try to tackle the incursion of environmental issues among the new urban emergencies.

Due to the increasingly urbanized future<sup>3</sup> and the worsening of climatic-environmental uncertainty situations, the cities are - and will be - the greatest cause and vulnerability to risks.

Infrastructural and climatic issues that frequently affect even the metropolitan city of Turin (Figure 1), due to its morphological and topographic shape, with a dense and compact territory almost entirely flat, crossed by four rivers<sup>4</sup> and compressed to the west by the alpine chain and to the east by the hill. These specific geographical conditions, together with global climate change, make the urban environment particularly vulnerable to phenomena such as hydrogeological and thermal risk, and air pollution.<sup>5</sup>



Fig 1: view of Turin from the Basilica of Superga.  
Source: Jum Hart

It is no longer possible to rely on a linear, one-way and resource consuming urban metabolism. A more articulated metabolism should therefore be outlined, allowing life to that complex territorial ecosystem proper to the living city-system.

Risks management and of climate, socio-economic, environmental and landscape changes, are taking place in the current global scenario, determining innovative adaptive actions and transformations in the territorial systems. This concept of resilience - which in recent decades has known multiple definitions in different disciplines, from engineering, psychology, to ecology (Holling, 1973) up to being introduced in urban planning - risks today the loss of value of the meaning itself.

<sup>2</sup> Design techniques coming from ecology and landscape, which influence planning, urban planning and architectural design towards the definition of new parameters to re-think urban space.

<sup>3</sup> The population growth forecasts in urban areas are set to increase, reaching 68% in 2050 (report "World Urbanization prospects 2018"), compared to current 55%.

<sup>4</sup> The municipal territory is crossed from south to north by the Po river, and by three other tributaries: the Stura, Dora Riparia and Sangone streams.

<sup>5</sup> Increasingly frequent heavy rainfall and water bombs are a real threat to the hydraulic and river networks of the Turin

area, exacerbated in 1994, 2000 and 2016 with the flooding of some parts of its rivers.

Turin is in fact the first Italian city for soil consumption with 65% of waterproof soil (followed by Naples and Milan) (ISPRA, 2016) and with a constant increase of the average value of temperature causing high problems in terms of urban heat island, especially in the summer periods of the last years (from 2015 to today) The geographical position, unfavourable to the circulation of winds does not facilitate (help) the removal of air pollution - considered the worst city in Italy for the annual average concentration and with the highest number of fine dust exceedances PM10 in 2018 (Cnr, Kyoto Club, 2019)

Within this framework, there is a new concept of “evolutionary resilience” (Davoudi, 2012) that challenges the whole idea of balance, based on the idea that urban-territorial systems can change, adapt and transform over time with or without external disturbance (Scheffer 2009). According to this, the theory supports the definition of complex adaptive urban processes, in which interdependent relationships are developed between the anthropic, cultural and natural sphere, thus operating at multiple scale and timeframes.

In relation to spatial planning, therefore, resilience is generally interpreted “not as a fixed asset, but as a continuous changing process” (Davoudi, 2012); a collective value, capable of triggering a new operating system in the city.

Therefore, the evolution of the concept of resilience leads towards eco-systemic urban project, incremental and flexible, in which adaptive strategies and tactics coexist, operating in a multi-scale, multi-dimensional and multi-criteria approach, to reduce the vulnerability of the environment.

It is a matter of thinking to decentralized projects able to operate on those fragments of the urban and agricultural landscape, on the districts in functional recycling, on the residual soils, on the participatory social realities and on the micro-productive activities in ferment (Carta, Lino, 2015).

## **2. The regenerative potential of residual spaces**

Contemporary cities are vibrant organisms of places and communities, actors and viewers, nature and technology, where the fragile relationship between people and environment determines their balance. In these multi-scalar and multi-layer structures the question is how and where this resilient regeneration can find opportunities and potential.

Over the past decades, the built context has usually been the focus of urban expansion policies, while the pervasive space of public soil has long been forgotten and threatened by public indifference. Years of urban planning focused on indicators and indexes have put attention on functionality, ignoring the role, involvement and importance of human scale. The space for pedestrians has gradually become the space for cars, parking, industries and asphalt, impersonal places of nobody. From the middle of the past century cities have started to no longer be built for people (Gehl, 2010).

But despite this lack of concern, it is now more and more clear the potential of this heritage in the definition of a new urban and human quality. Cities, as well as people, recently started to reclaim their stolen public spaces, conscious of their importance in increasing the social, environmental and economic interactions. Building spaces for people is the key for healthy, safe, vibrant and sustainable cities (Gehl, 2010), and finding places for the coexistence of these factors is now one of the urgent issues these contemporary cities are struggling with.

### **2.1 Finding spaces in post-industrial cities**

In the metropolitan cities that grew up under the pressure of the industrial revolution, like Turin, memory and heritage become an expression of the recent past. Here, the processes of de-industrialisation led to the appearance of abandoned places and wastes, spaces now disused and yet imprinted in the collective memory, symbols of an identity that is both social and morphological. They become the manifesto of a past that leaves its traces in the present, and that under the push of urban renewal, become a potential material for future developments.

Starting from the loss of its Fordist identity, Turin has seen, since the '70s the abandon of 10 million square meters of industrial districts in its metropolitan area, and only 6 million of them have been transformed, while 4 million were in 2016 still waiting for re-use processes (Rapporto Rota, 2016).

The development of the transformation process of the past twenty-five years, often carried out in a non-linear way, has mainly affected the capacity of the consolidated structure to work together with the surrounding open space.

The result is a lack of public services, a reduced functional mix and the emergence of multi-dimensional resulting spaces. This condition has disadvantaged the creation of a sense of identity (Derossi, 2016) and of belonging in Turin citizens.

The different causes and the different times of dismissal processes outlined an archipelago of physical, morphological and dimensional heterogeneous “wastes”, widespread both in the consolidated city and in the peripheral areas (Figure 2) This pervasive and silent phenomenon escaped for a long time the interpretations of the professional community, as well as the traditional cartographies, unable to capture the changes and decays of urban



**Fig. 2:** Photographic survey of the "Urban waste" of the city of Turin.  
Source: authors' photos and database of "Images of Change" of the Polytechnic of Turin.

material. Interest has been demonstrated by the work of photographers, writers and artists, who were able to understand its cultural and regenerative value as elements that could drive urban development.

These voids have always posed «complex questions to the urban design, which always with difficulty faces the open space (whether public or private), on which architecture, mobility and landscape are linked» (Iaconi, 2015).

The renewed interest in minor or "ordinary" architecture can bring back to the center of the discussion the reuse, no longer of the building component, but of public open spaces.

This "drosscape"<sup>6</sup> (Berger, 2006) solicits multi-scalar recycle strategies, capable of interpreting criticisms, but especially transformation opportunities, to construct innovative and sustainable landscapes, within ecological frameworks. Oriented to a new urban planning vision, focused on the establishment of a necessary urban metabolism, these wastes represent one of the most fertile spaces for the city regeneration; a latent and pervasive resource capable of triggering systemic connections to the macro and micro-scale. It is about making operational the theme of the "Reverse City" (Viganò, 1999), which involves an awareness of the high potential value of the urban void, and its high environmental, economic and

social resources, as the main actor to rethink the landscape of cities (Gasparrini, 2015).

## 2.2 Revealing urban geographies through the Mapping method

From this theoretical and ideological framework, this paper intends to investigate the role of the neglected residual space as an opportunity to define a new sustainable and resilient development for a critical portion of the city of Turin.

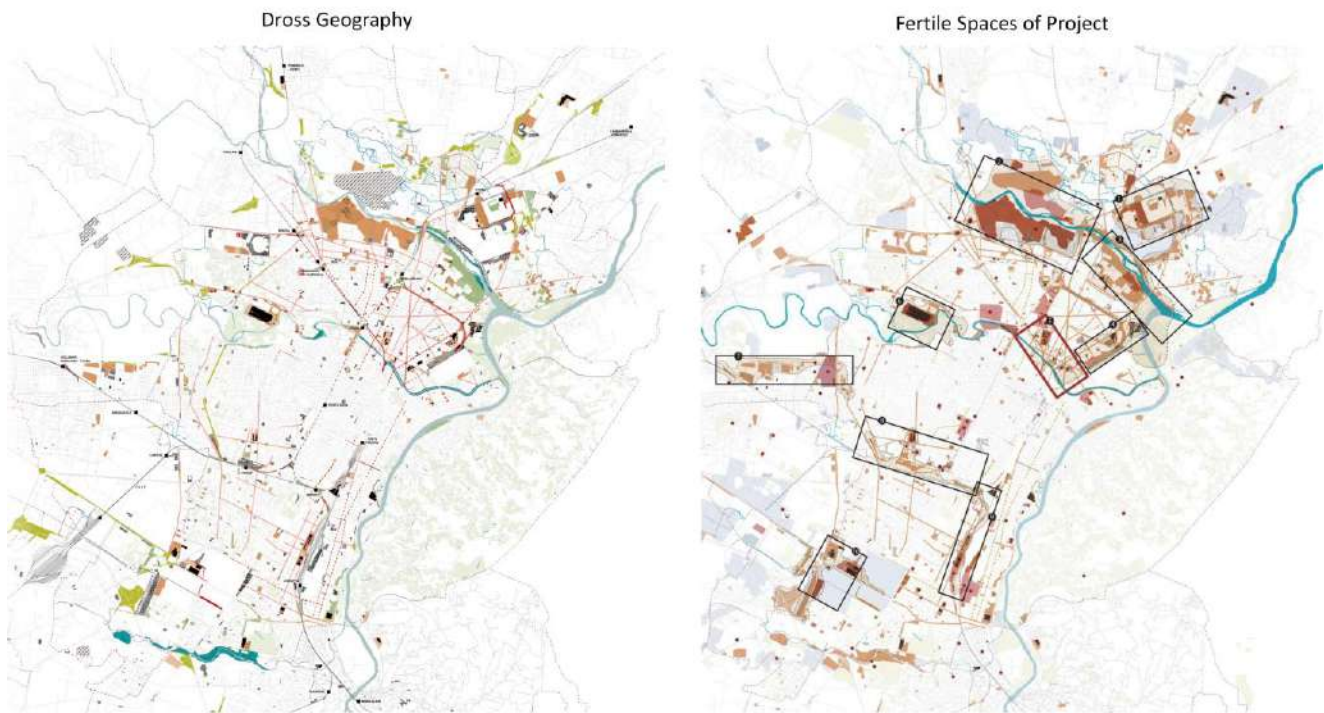
The research started from the identification of the city's residual, abandoned, and neglected spaces - a preliminary and necessary condition to re-interpret their regenerative value as a potential material to reconnect at a macro and micro scale the urban context - providing at the same time the design solutions able to face the environmental and social challenges that constantly stress the city.

"Mapping" became the methodological instrument through which reading and exploring different times and spatial stratifications, revealing the continuous transformation stories. Among these, urban voids, abandoned building and lots, marginal edges, degraded green areas, but also parking lots and non-designed avenues, become the elements of the newly portrayed "Dross Geography" of Turin.<sup>7</sup>

<sup>6</sup> Drosscape is just one of the different portraits given by international literature, aiming to reconsider this forgotten layer. The potential value of these neglected areas is first recognized by Kevin Lynch at the beginning of the 90's in his book "Wasting Away", giving the definition as «what is worth nothing or has no use for human purposes; loss, neglect, decline, separation and death». This research led to new interdisciplinary studies, aiming to define new theories and denominations, to understand and identify them within urban fabric. New taxonomies emerge: from terrain vagues of Solà-Morales, to the land stocks of Maddalena Ferretti, as

well as other attempts trying to interpret the different nature of the different urban voids.

<sup>7</sup> For the analysis, support and mapping of the physical and hidden city it has been used the G.I.S. (Geographic Information System), based on the use of a multi thematic computer database capable of translating into geographic information data of various nature and type, returning them in numerical and vector format. The information archive created was the result of data collection, their hierarchy, thematization and implementation.



**Fig. 3:** Maps of the “Dross Geography”, representative of the taxonomy of Residual Soils in the urban context of Turin, and the “Geography of the Project’s Fertile Spaces”, where a coexistence of risks, opportunities and leftovers outline the priority areas of intervention. Source: elaboration of the authors on cartographic bases and database of the city of Turin.

As awaiting elements, this emerged geography has to be overlapped with the recognition of the already existing potentialities and criticisms of the urban framework, essential to define the most fertile macro-areas among the entire city of Turin. (Figure 3) In these areas, a coexistence of positive and negative realities lead to a more effective and successful design vision.

Therefore, the methodological framework proposed aims to reinterpret in a holistic approach, a cartographic exploration of the city’s resources in terms of hydrography, infrastructures, ecology and transformations, together with an attempt to spatialise the city’s behaviour to the conditions connected to climate change (hydrogeological and thermal risk, soil and air quality).

«The intent is to explore how these layers relate, and how the convergences and divergences of their potential suggest a place for design. Ultimately, it does not want to define any singular vision, but the primary objective is to pull out the threads and plots that allow a more interesting appreciation of the change of space» (Massey, 2005).

### **3. The ecological dimension recovery of the open space: the Aurora district in Turin**

The limit of what has been proposed and mapped up lies precisely in that strategic urban and theoretical vision, sometimes not very practical and operative, of those interpretative reasonings of the various adaptation plans. The research tries to make concrete those logics, innovating the usual practices through the design experimentation, up to the detail scale, of a significant urban area.

Contemporary cities, like Turin, reveal cyclically the same decadent conditions, at different design scales. Today more than ever, in highly urbanized and saturated contexts, where preserving the land consumption and urban porosity, minute spaces relate to different interlocutors in search of new management actions, redefinition and reorganization of places and territories as a whole.

Punctual and diversified actions - and no longer programming processes - systemic in their relationship, are therefore necessary. Depending on this need and in the desire to tackle climatic and spatial emergencies according to an integrated and multi-scale approach, one quadrant of urban



**Fig. 4:** Photographic investigation of the residual spaces of the Aurora district, separated from the city center by river Dora.  
Source: authors' photos.

character is distinguished between the different identified priority areas, north of the historical center of Turin.

The nearby presence of the city center, the limit on one sides of Dora Riparia river, the heterogeneous morphological tissue, climatic risks and the fertility of residual soils, define the regenerative potential of this Aurora district. (Figure 5) An area where stratifications of places of historical-cultural interests and of post-industrial importance<sup>8</sup> interweave with a multicultural mixitè of colors and smells, of markets with retrò charm (Porta Palazzo and Balon) that make "alive" Borgo Dora.

In this scenario, apparently socially alive, conflicting and unresolved situations of disposal and degradation - such us the sediment of the Torino - Ceres railway trench and a prevalence of impressive industrial buildings (like OGM-Officine Grandi Motori) - become the elements of a pervasive and silent "Drosscape" in the neighborhood. (Figure 4) Although, in the past they have played an important industrial role, they have been decontextualized by successive urban changes.

The area, analysed according to this critical view, is proposed as a regenerative opportunity of a new infrastructural hinge between the center and the first periphery, which, using the pre-existences, re-establishes new ecologically and socially functional networks. On the widespread and capillary spaces of this transformative residual legacy, a texture of punctual design solutions is distinguished, in response to the ascertained climatic and environmental criticalities.



**Fig. 5:** The three Maps illustrating the synthesis of Resources, the spatialization of Climate Risks and the taxonomy of Residual Soils alongside the River Dora Riparia and in the Aurora District.

This variety of microspaces, to which corresponds an equal range of solutions, guides the need to structure an Abacus of Nature Based Solutions<sup>9</sup>, dynamic and operative, which allows to

<sup>8</sup> Historically, in the early twentieth century, the village was characterized by an identifying manufacturing past, marked by ancient canalizations for the functioning of textile and tanning production activities, typical of that industrialization phase. Nowadays it is readable sinuous course of the alleys still present, such as the Canale del Molassi.

<sup>9</sup> Abacus composed of an archipelago of solutions and tactics - 16 actions for the Blue Infrastructure, 21 actions for Green Infrastructure and 8 for interventions on anthropized soils - able to move within those neglected spaces. Local solution, however systemic in relation to the identified risk conditions, in which the nature component is

establish new eco-systemic, multi-scale and multicriteria scenarios.

The multiplicity of actions represents, as a whole, a new strategic network capable of defining, in the short and long term, the connectivity through public spaces and infrastructural networks, expanding and proposing themselves as the potential of a new vision of contemporary territory. Green and blue infrastructures become new elements structuring the urban public space, in which the plurality of widespread tactics can give response to the territorial, environmental and social needs of the contemporary city. (Figure 6)

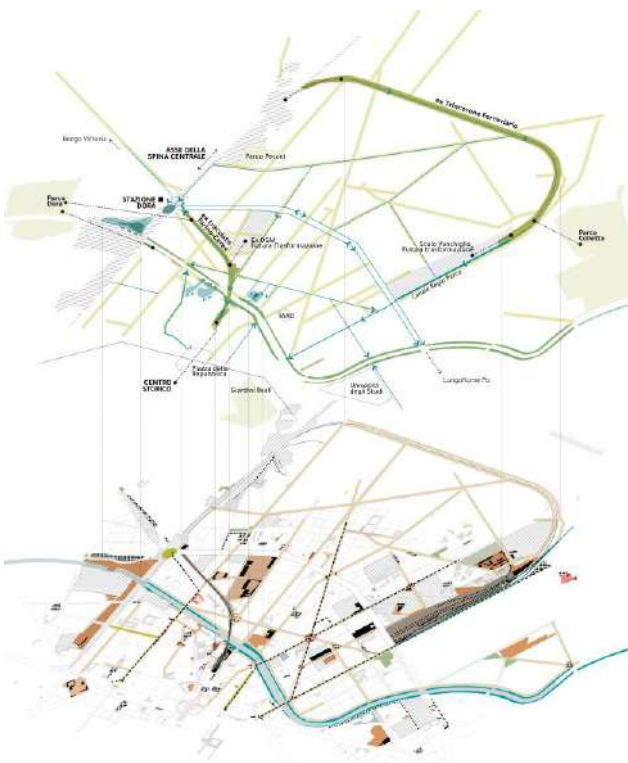


Fig. 6: Relationship between the Dross Geography and the strategic vision of the Aurora district, where the implementation of green and blue networks defines its new ecological scenario

#### 4. Spaces and scenarios of adaptive urban landscapes

What has been so far illustrated is an attempt to show how sustainable urban transformations and regenerations cannot today be separated on the one hand from the increasingly pressing climate-environmental issues; on the other, from a cyclical

considered the *fil rouge* for the re-signification of those spaces in an adaptive perspective. There are multiple linear, punctual and areal actions, declined at (to the) different scales, urban and extra-urban,

decaying condition, which offers the city reserve places potentially useful for a new transformative development. Such contexts become possibilities of enrichment for the city, in which to experiment new approaches and design, as well as a conscious integration between humankind, technology and nature, making public space the protagonist of the environmental, ecological and social revenge of the cities of tomorrow.

The intent of the explored path is, therefore, to demonstrate how a methodological process starting from the knowledge of the city in its “inverse” (Viganò, 1999), recognizes in integrated and systemic solutions a real urban drawing. This not only defines new strategic goals of ecological regeneration, but also «a network of new spaces and equipment, public and for public use, capable of making the “functional mix” and landscape more dense and vital, and to propose an overall use of the urban space» (Terracciano, De Marco, 2016).

A new urban narrative should therefore start with the will to deeply understand the realities, the different emergencies and the constant motivation to interpret and adapt to them.

The attempt made for the Aurora district in Turin shows the willingness to explore a Masterplan (Figure 7) which, more than a solution, aims to be a scenario -one among others- of possible regeneration of this urban wound. Memory, ecology, functionality and fruition are the compositional matrix of its places and uses.

River Dora, with its un-designed and not practicable banks, together with the cut left in consolidated context by the old Torino-Ceres railways, represent the two missed occasions in the definition of a new local identity and a new external quality. Their continuous and connective potential allows both to work at an urban scale, but also to incorporate the minute and porous spaces widespread all around them.

The recovery of the river corridor passes through section enlargements, natural lowered areas and flooding zones, aiming to raise the capacity of the river to face the extreme weather conditions that in having a river to live, admire and benefit by locals, on which spaces to sit, walk and meet are integrated into the morphological design of the new banks.

that interconnected penetrate the urban system, crossing it, outlining new forms of landscape and ecological, economic and social quality

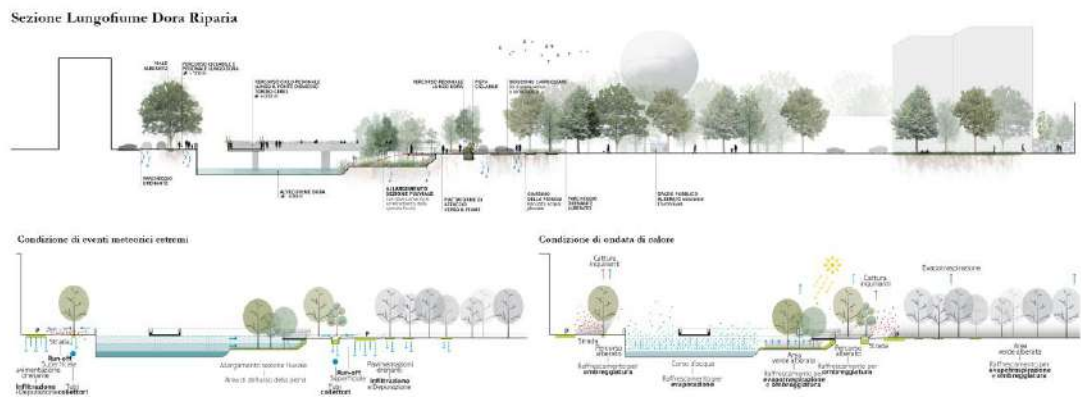
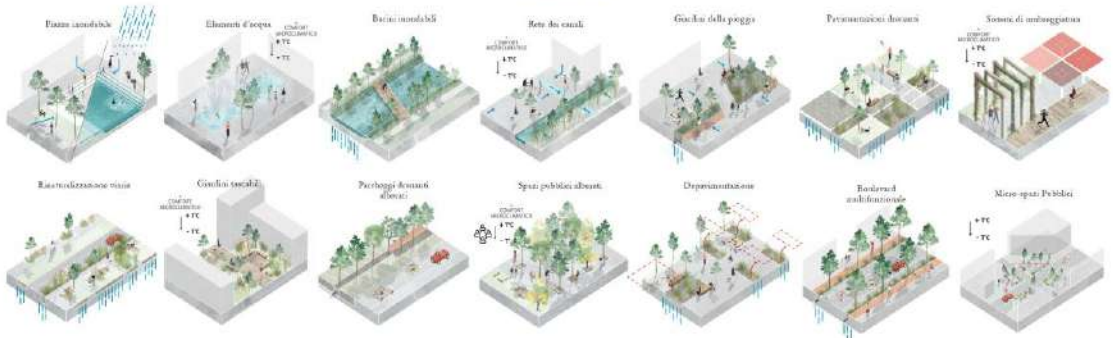
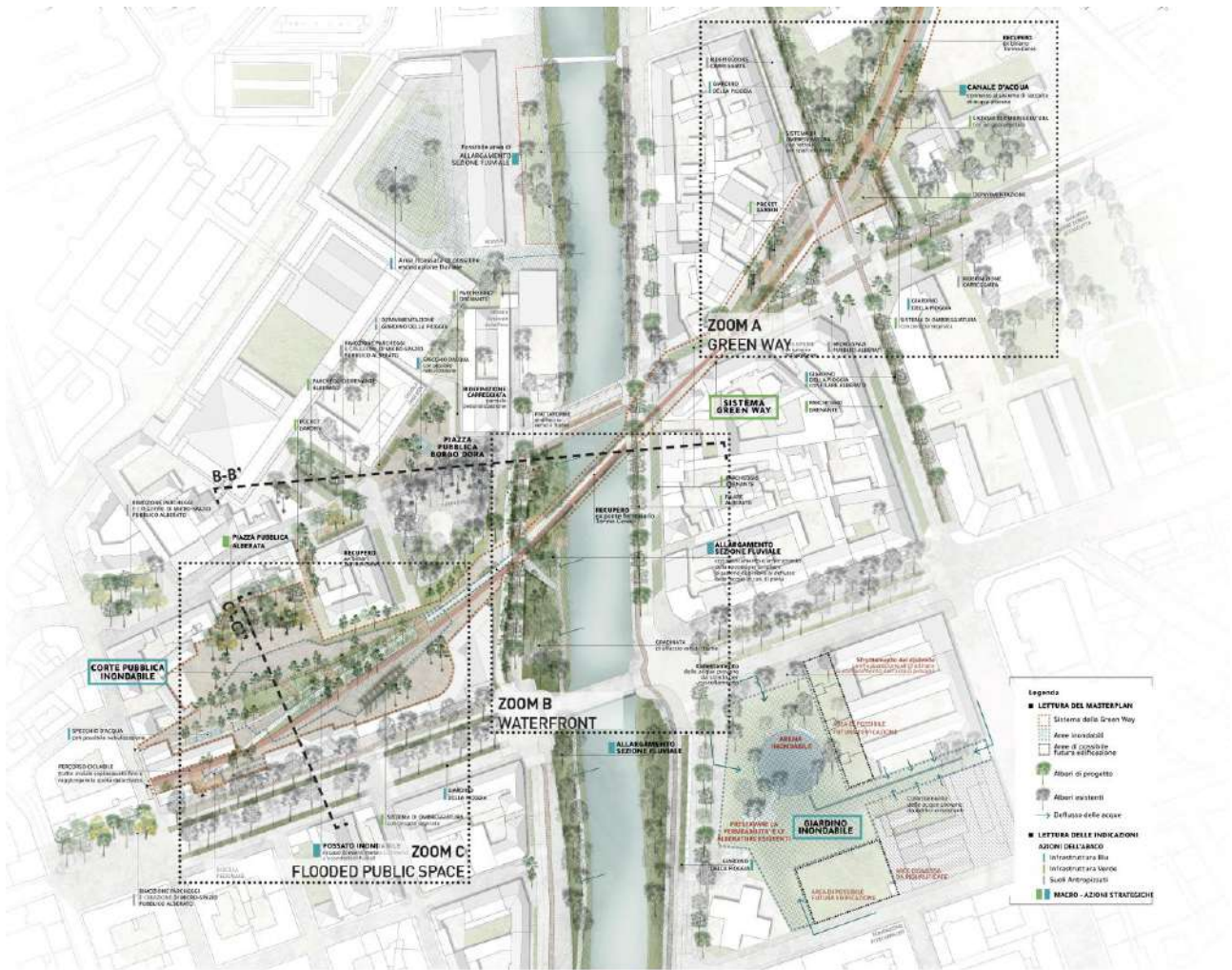


Fig. 7: Masterplan of the scenario proposed, composed by the systemic use of an Abacus of different blue and green actions and tactics, narrated through plants, figurative and functional sections representing the behaviour at possible climatic risk conditions.

The dismissed railway tracks of the Torino-Ceres line, the second large scratch of the area, appear as the linking path between the old historic center and the recent vast linear regeneration intervention of the “Spina”<sup>10</sup>. The recovery of the tracks and the pertinent nearby area, materializes through the definition of a pedestrian and bike path, accompanied by an artificial canal, and where a sequence of public open spaces, recreational and resting places, and naturalistic corners define the morphology of the new GreenWay. As a response to the hydrogeological risk of the area, the canal takes advantage of the natural configuration and depression of the soil, collecting storm and rain water and conducting it to a final water basin. As many other cases spread all over the world, this mixture of soft and hard surfaces, slow and fast motion, water and nature, demonstrate as history, memory and innovation can strongly be effective.

The slow mobility paths of the GreenWay continue until crossing the river in the railway’s original bridge, and ending in the third intervention site, focused in the inner courtyard of the former Porta Milano Station<sup>11</sup>. The space of the yard is structured by the existing rail tracks, which in the proposed scenario become the elements through which define a new morphology at different altitudes. The area, in fact, shows a light depression towards the river standing on the north of its boundary that, if accentuated, define the role of the inner part of the yard as a floodable square. A series of increasingly lowered strips, ending with a floodable ditch, define the space of the collected water in extreme events, remaining, for the rest of the time, a new public square where installing functions, hosting events and connecting with the existing green network of the city.

These design occasions, in response to multiple and diverse boundary conditions, try to find harmony in a common drawing. In this proposed ecological infrastructure, recurrent minute actions, joined by broader ones, outline the new role of this connected spaces as a new structural element of the city identity.

«It is in the public space that the city can try to reconnect with the geography of the place and with

the soil, finding harmony with the climate and nature» (Dalnoky).

#### 4.1 From spaces to common places for people

As before stated, the research aimed to define a possible scenario: a radical innovative vision for this area, intending to offer inputs and suggestions dominated by nature but also by structural signs.

But urban regeneration is not just a physical issue: it is a matter of achieving an always changing balance between quality, sustainability, preservation and fruition. City’s spaces should be able to adapt to the external physical challenges, but also to the social and societal needs, to the understanding and implementation of visitors, users and stakeholders in an integrated management process, to provide the proper services and comfort. In order to achieve this purpose, participatory processes and community engagement are needed and essentials to set common goals and methods, to define a shared path embracing from the co-design to the co-maintenance actions.

Configure a design project of a public space that is able to respond to contemporary and future environmental and climatic pressures, according to the principles of “evolutionary resilience” –flexible, adaptive, incremental– necessarily translates into the art of designing spaces for and of the community. Shared liveability should be the ultimate goal of any urban regeneration project, in its static or changing condition, which finds in the open space of the city the connective and dilative material through which offering itself. In well-designed contemporary cities, “spaces” become “places”, real urban commons for the population. As a result, urban planners should not be scared to design the void with another void, where the full is not the built, but the social interaction, the fruition, the place of technological, natural and social interaction. This is what cities needs and wait for their achievement of a new urban - and therefore human - quality.

<sup>10</sup> a new main axis for mobility, the so-called «Spina centrale», a linear centrality made possible through the burial of the railway tracks. It is now a long north-south

urban boulevard, which tries to “sew up” the east and west districts of the former railway trench.

<sup>11</sup> Historically born in 1868 as head station, locomotive deposit of the Turin-Cirié line (later Turin-Ceres).

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