A2. Dinámicas Urbanas y Territoriales: Metabolismo, Desigualdades Sociales, Resiliencia y Regeneración
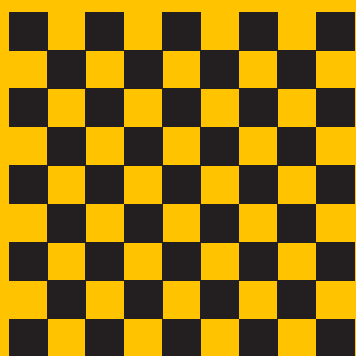
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VOLUMEN 3
A2. Dinámicas urbanas y territoriales: Metabolismo, desigualdades dociales, resiliencia y regeneración

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The Resili(g)ence of contemporary cities

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Abstract:

The complexity of contemporary cities requires new tools for the Urban Resilience: old approaches based on the "defensive control" and corrective contingency responses, are replaced by "synergy policies" addressed through preventive, adaptable and reversible actions.

In this framework, the term *Resili(g)ence* proposes to combine "Intelligent" values (information, knowledge, anticipation, projection and adaptation) and "Resilient" valences (resistance and recycling, reaction and recovery, renovation and adaptation) in a new responsive and reactive condition, sensory, *sensorized* and sensitive, at time.

In the context of a new *Resili(g)ent* approach this new sensibility must take in consideration six resilient main topics (water, earth, fire, air, land-use, eco-systems and communities) referring them to a more complex and crossed network of six possible strategic fields of investigation and prospection (Mapping/Managing – Planning/ Landing – Designing/Socializing), which, interconnected, configure also the framework of multiple innovative experiences and integrated approaches today, infra-, intra-, intro-, eco-, info-… and trans- structural and systemic at time. The *3 IN* combination "information (trended) + interaction (threaded) + integration (tended)" announces new dynamics of urban planning aimed at advanced interdisciplinary research, oriented to a strategic integration of operating systems and to a holistic view of its multiple dimensions (patrimonial, sensorial, environmental, cultural and social) in new scenarios not only associated with pure informational management (Smart Cities), but also to its network systematic and to its strategic-planning projection (Intelligent Cities). All this, in the same terms of exploration that are defining a new and emerging Advanced Urbanism linked with the KA-AU Project (Knowledge Alliance for Advanced Urbanism), associated to the European Erasmus Project (2015-2018). The contribution proposes a reflection on this new *Resili(g)ent* approach and on how it influences and modifies urban dynamics and morphology, going beyond the conventional – and conventioned – term of "Resilience" as a rational adaptation to environmental stress to conceive it in a more complex way, with a new eco-, socio- and info- urban-territorial (and cultural) dimension, passing from an space-territory understood (to all scales) as a *relational landscape-scenario* to a new *interactive (land & far)scape-scenario.*

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Introduction

Since the end of XX centuries cities have faced radical transformations. Our trading, coexistence and living spaces changed in their definition and configuration, becoming both real and virtual, formal and informal, dense and irregular. The ancient disciplinary paradigms, governed by the old tools of zoning and formal planning, have shown their limits against the constant progress unpredictable, complex and changing.

Contemporary complexity requires new tools for the Urban Resilience: old approaches based on the "defensive control" and corrective contingency responses, are replaced by "synergy policies" addressed through preventive proactive, adaptable and reversible actions, which combine ancient "scenarios of emergency" (risk areas) with new "emergent scenarios" (areas of opportunity). New *proactive* and *reactive* responses must work in a hybrid field: on one hand, prevention and mitigation of conflicts and risks through the interconnection and registry of systematized data (simulated or real-time), on other hand programming of planning interventions, divided into urban systems and global territories (Gausa, 2003).

A new conceptual approach is needed, related with the topic Advanced Urbanism and its possible declination with the term Resilience, the other substantive topic associated, today, to the big mutations of our contemporary spaces of live and relation. The implicit challenge in this assemblage is the increasing capacity to explore the new potentials of the "Intelligent" dimension associated to our "informational time" (responsive, reactive and adaptable) crossing them with the needs of more "resilient" scenarios (resistant, flexible, reactive and adaptable also). This new *Resili(g)ent* condition will be able to combine intelligent and resilient cities, contexts, environments and landscapes (Gausa, 2020).

1. Scenario.

1.1 Advanced Urbanism and Intelligent cities.

The approach of the Advanced Urbanism paradigm comes from the innovatory combination between the terms information, interaction and integration – understood in all its dimensions, spatial, environmental, technological and cultural (Gausa, et al., 2003).

In this advanced approach the notion of information is related with the capacity to manage complex programs, parameters and environmental indicators and with the increasing digital and computational capacity. It is possible to describe it as a new Informational Urbanism, able to process, measure and optimise data in new anti-typological and open systemic approaches, linked with a new urban intelligence understood as a new relational (and informational) capacity (reactive, responsive and strategic). [Fig.1]

It is not only a multi-tool-Urbanism, linked with new technologies (Smart) but a Synergic and Empathic Urbanism (both terms need to be combined) associate to new analytic and multi-scalar researches in the fields of urban prospection, environment, social integration and bottom-up and networked processes; it is specific connected with the capacity to launch new strategic and integrative gazes (and methodologies), which are capable to work with complex, irregular and evolutionary territories (Gausa 2016).

The place where we can find the most obvious manifestation of all these changes is the city. Our contemporary habitats are organism constantly re-informed by continuous operations of action, reaction and adjustment between material and immaterial realities.

The huge amount of data that we produce everyday can be used to improve the resilience of our cities and territories. The knowledge made available by processing data, if properly used, can make us more responsive to change and able to adapt more quickly to the opportunities and pitfalls of the complex multi-experiential space in which we orient ourselves. Whether crowdsourced data, generated by citizens, or detected by sensors, the data could be useful tools for urban strategies and planning, above all they can assume an important role within decision-making and risk management processes, favouring the development of resilient systems (Klein, Koenig, Schmitt 2017). These dynamics construct a new global framework – more complex and plural – not only in the definition of the city itself but also for a projective interpretation of the cities in the territory: a multi-city or pluri-city (poli-polis) is defined, connected inside a multiple network of infrastructures and intra-structures, landscapes and in-between-landscapes, density nodes and exchange cores, with relational and differential vocation, integrated and balanced at the same time, in a poly-territory that would no longer be manifested as a "single place" but as a "place of places", a multiple set of dynamic scenarios of relationship and interaction (Gausa 2000). Those structures of variable

geometry today express their definitely dynamic condition and require a new integrated and relational interpretation; with the capacity to articulate new visions, new schemes, and, therefore, new connections between old and new polycentric structures implicit in this new complex system of independent and interdependent "sets and nets" at a time, where strata and layers intersect and overlap (Ascher 1995). [*Fig.1*]

Great new challenges, in this exchange scenario, needs the definition of possible "multinter" strategies (multilevel and internetworked, multi-urban and inter-territorial); that obliges urbanists and architects to contemplate some of the great transversal themes of the new urban-territorial agendas raising different strategic issues. In these spheres of reflection and research, some of the urban redefinition works are set out to envisage new "operational logics" aimed at favouring strategic and integrated systems of action between city, architecture, infrastructure and landscape (Nel.lo, 2001). Tensions and deficits—social and spatial—climate and environmental changes, ask for new strategies, resilient and integrated at the same time, for our life and relationship scenarios beyond the old paradigms of the discipline (Gausa, Ricci 2014).
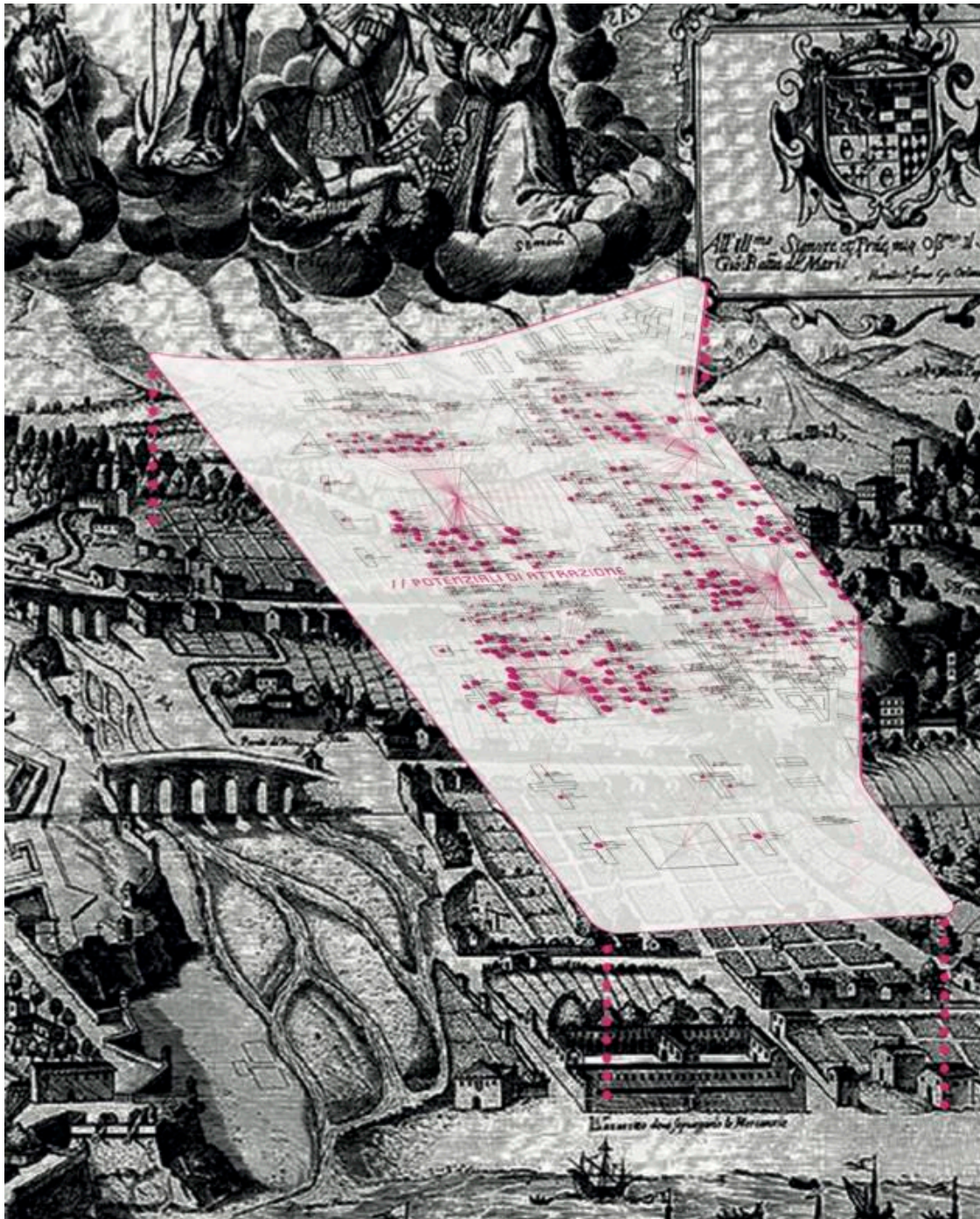
Fig.1. Attractors Diagram of Genova Foce district. Luca Muratorio thesis, edited on: A.Baratta, 1637.

1.2 Resilient and Resili(g)ent cities.

In materials, science resilience is the property of some materials to maintain their structure or to regain its original shape after being subjected to crushing or deformation (Harvey, 1985). In psychology, instead, it describes the ability of people to cope with stressful or traumatic events and reorganize their lives facing difficulties. The international partnership 100 Resilient Cities describe them as living urban contexts with capacities to absorb (and redirect) shocks and stresses, weaknesses and threats, in their social, economic, and technical structures (and infrastructures), being able to maintain essentially their own functional, environmental and sociocultural conditions, values, and identities[1].

Urban resilience is intended, therefore, as the capacity of a system, a city, a community, to cope with situations of shock or continuous stress, not only overcoming them but learning from such events. Information, gathering and processing capabilities are opportunities to improve this process; have memory and possibilities of comparison with past data, gives the system the knowledge for monitoring data, and consequently to learn and grow.

1.2.1 Intelligence: INT. key-factors.

Enlarging these definitions is possible to understand the term Intelligence from the Latin term *Intelligentia* – from *Inteligere, Intus* (between) and Legere (to try, to choose, to select) as the capacity "to choose between". Intelligence has been defined in many different ways including as one's capacity for logic, understanding, self-awareness, learning, emotional knowledge, planning creativity and problem solving, etc. Intelligence can be more generally described as the ability to process and analyse information and retain/synthesize it as knowledge to be applied towards adaptive behaviours within an environment or context.

We can talk, in this sense, of 5 Key Parameters (INT) associated to the term Intelligence.

INT.1– Processing capacity (analytical and conceptual)

INT.2– Adaptive capacity (evolutionary, flexible, reversible)

INT.3– Transversal capacity (connective and strategic)

INT.4– Operational capacity (reactive, dispositive)

INT.5– Relational capacity (emotional, empathic and interactive)

+ INT.6– Projective capacity (setting up capability > propositional, proactive, creative, innovative)

1.2.2 Resilience: RS. key factors.

The term Resilience from Latin *Resiliens* – present participle of *Resilire* "to rebound, recoil," from re "back" + *salire* "to jump, leap" – calls to "the ability [of a system] to cope with change":

– the power or ability to return to the original form, position, etc., after being bent, compressed, or stretched; elasticity (TOPOLOGY)

– the ability to recover readily from illness, depression, adversity, or the like; buoyancy.

We can talk, in this sense, of 5 Key Parameters (RS) associated to the term Resilience.

RS.1– Anticipation

RS.2– Adaptation

RS.3– Integration

RS.4– Resistance (Endurance)

RS.5– Recuperation (Resetting)

+ RS.6– Future (Self)projection/Affirmation > IT.6

1.2.3 Resilience + Intelligence (Resiligence):

It is significant the evidence that the terms resilience and intelligence can be explicitly combined - in every one of his capacities - to multiply its potentials of answer – and synergy – to the environment... and with the environment.

We can talk of:

RS.INT1 > RS.1: Anticipation, linked to INT.1: processing capacity (analytical and conceptual)

RS.INT2 > RS.2: Adaptation, linked to INT.2: adaptive capacity (evolutionary, flexible, reversible)

RS.INT3 > RS.3: Integration, linked to INT.3: transversal capacity (connective and strategic)

RS.INT4 > RS.4: Resistance (Endurance), linked to INT.4: operational capacity (reactive, dispositive)

RS.INT5 > RS.5: Recuperation (Resetting) linked to INT.5: relational capacity (emotional, empathic, interactive)

RS.INT5 > RS.5: Future (Self)Projection & Affirmation, linked to INT.6: projective capacity (setting up capability > propositional, proactive, creative, innovative)

The application of the new information and recording capacities, orientated not only to the optimisation of our urban management and engagement but to new complex and integrated environmental answers talks about this *resili(g)ent* condition, open to evolutionary and adaptable scenarios and designs (Andriani, C., Gausa, M., Fagnoni, R. 2017; Canessa 2020).

In this sense, the GIC-Lab-UNIGE territorial research laboratory has been investigating various prospective situations and approaches to the landscape-territorial implications of this *Resili(g)ent* new condition, both at the level of the new multi-urban and geo-urban nature of the city (*Total Goa,* 2015) as in

its most touristic and transversal or more agri-cultural, agro-urban decline (*AC+ Agro-Cities, Agri-Cultures*, 2018). But also in its application to large territories of "rescue" and "re-information" (of urban and territorial reactivation) such as that of some courses of water and river margins, often in a peri-urban nature and not always in the best central conditions and that, however, today they possess a strong polarizing capacity at the level of the new metropolitan – but also *meta-politan* and *poly-politan* – scales.

In this new scales of the *n-cities* the social dimension (like that of the cities themselves) is diversified and made more complex by being able, increasingly, to combine diverse situations of stimulation and risk, fiction and reality, fascination and criticism, sensorisation and sensibility, at the same time.

In these last two situations, which focus this text, the term *Resili(g)gence* becomes more and more necessarily, either at the *physical-informational* level (in the first case) or at the virtual-informational level (in the second).

2. The resili(g)ent role of water and territorial infrastructures.

A new approach to resilient urban design, is also related to territorial infrastructures and urban water management, a field today essential for urban security and planning. Defence from flooding and the water management is not only a necessity but also an opportunity to regenerate and reactivate urban areas with particular attention to social aspects and quality of life. From this approach, new collective spaces have born (such as the famous water square project Benthemplein in Rotterdam, or the *Berges du Rhône* reactivation in Lyon) that are both tools to face hydrogeological and alluvial issues and active human devices for the management and integration of territorial, urban and interactive systems.

The capacity of integrating hydrogeological risk solutions with the definition of a high quality of public space, can develop an add value in the field of ecology, recreation, creating new communities and active and interactive social environments; where by interactive place is meant an active and reactive social place, capable of creating interaction, exchanges and reactions between people and the urban space that surrounds them and among the people themselves (Iaac, 2017).

The river is identified as a condenser of all those elements and new rules that contribute to urban regeneration (Gausa 2015), an excellent example of a place where a resilient and multiscale approach can favour the integration between different complex systems. The banks of the rivers are in fact spaces for mediation and integration between the river territorial ecosystem and the anthropic urban system. Those places are characterized by flexibility, dictated by the temporality of the river ecosystem, and require a multi-scalar and temporal approach, which takes into account the temporality and variability linked to a natural ecosystem; finally they also need adaptable solutions, capable of coping with the potential change in environmental conditions influenced by climate change.

The GicLab research group, has studied the *resili(g)ent* approach to territorial and multi-scalar strategies on different levels, together with the KA-AU Project (Knowledge Alliance for Advanced Urbanism, the European Erasmus Project 2015-2018)[2] and in several workshops and university laboratories. The research identified the peripheral rivers areas as new *resili(g)ent* opportunities for contemporary multi-cities: places that have the opportunity to become new polarities and urban attractors, and to connect ecological, urban and social systems and infrastructures.

Strategies for territories located at the limit between the urban fabric, the infrastructure networks and nature have to be approached and developed in the direction of both a resilient, environmental attention and also an innovative vocation, re-thinking it with a strategic redefinition, as a new urban-landscape pole with the use of new active and interactive key-operations. A more open and multidisciplinary approach is needed: an approach that is not afraid to confront with different realities, integrating the project in a complex process of strategic analysis, prevision and programming.

In the macro-region of Latin Arch, different metropolitan areas have face the need to develope solutions and strategies for the reactivation and integration of urban rivers as new active landscapes. Barcelona, Nice and Genoa can be paradigmatic cases: really different one from each other, for the approach and the history, the three cities had (or still have today) to face hydrogeological risk and heavy flooding problems, due to strong and sometimes wild urbanization of the river valleys.

2.1 The mediterranean metropolitan areas of Barcellona and Nice and the Besós and Paillon Rivers.

The cities of Nice and Barcelona developed strategies and projects for the integration and reactivation of the rivers that cross their metropolitan areas: the Besòs river in the eastern part of Barcelona and the Paillon, that runs in the city centre of Nice. Both water courses are typical river of the Mediterranean coast, with a water catchment area relatively small and torrential character. Both of them have been heavy canalized, modified and compromised by human action on the territory and have faced a path of recovery and redevelopment between the end of 1980 and the beginning of 2000, that led them to be new polarities in the metropolitan territory.

The Besòs was marked by profound environmental degradation in the second half of the twentieth century, after its canalization in 1975 and the urban and infrastructural occupation of territories that were part of the flood plain (Martín-Vide, 2015). From the early 1980s, local associations began to address the problem of water quality, and finally, in 1996 the recovery project was approved by the European Union. In April 1999, the first phase of the project ended with the inauguration of the urban park area and wetlands and in 2004, the last stretch was inaugurated, for a total of 26 hectares of urban park (Alarcón, Montlleó, 2011). The first objectives of the project were linked to the restoration of the natural qualities of the river; specifically, the project aimed to improve the purification system; it introduced wetlands for tertiary treatment along the flood plain and improved the hydraulic capacity of the river. Inflatable barriers to pool water in the surface have been installed, and deflated in case of adverse circumstances, to not offer resistance to the water (Huertas et al., 2006). In the lower section of the river an urban park was introduced, with cycling paths and areas for recreational activities; to evacuate people and closing the access to the park, in flooding emergences a monitoring and alarm system was installed. The project not only was able to rehabilitate one of the most polluted rivers in Europe, but managed to create a large and active public space in an area among the most depressed (the most suffocated by infrastructure development and most in need of green areas) of the entire metropolitan area of Barcelona. The operation had such relevance that was able to trigger long-term processes of development and strengthening of a collective conscience: the Consorci Besòs continues in its activities and has developed in 2017 an agenda that brings together 4 different municipalities and 98 neighbourhoods.

The urban area of Nice is crossed by the Paillon river, a water course with a torrential character, whose floods are known to be fast and intense (SIP, 2016). The river, as the Besòs, has faced heavy artificialization: the final 11.5 km of it are totally artificial, and the last 3 completely covered. The first section of the river was covered in 1868 and the roofing work ended in 1972, following the construction of Place Masséna. The best known part of the redevelopment path of the Nice river system is certainly the Promenade du Paillon, a project, opened in 2013, which has stitched up a series of fragmented and abandoned spaces above the river site, recreating a large urban park, with a sequence of different spaces, with a particular sensitivity in bringing water back to the surface, through the presence of interactive fountains and ponds, useful for cooling the area but also symbolic memory of the river below (Meeres, 2013). The project and strategies on the Paillon had the capacity of building together new design and innovative project with a wider strategical and multilevel approach, creating a new active public space. The linear park project, by Christine and Michael Péna, is only the culmination of a much broader process, managed through a Paillon River Contract signed for the first time in 2010. In particular, the Contrat de Rivière du Paillons, which involves 45 subjects, including public institutions and the 20 municipalities of the basin (Perini, Sabbion, 2016) has several objectives, including protection against floods, the restoration of landscape values, improvement of water quality, conservation of river biodiversity and social reactivation.

While the Besòs case shows the impact of the participation of local communities in the request of action and planning, the case of the Paillon and the Nice metropolitan area represents the success of a top-to-down planning which, through instruments of agreement between the national government and local authorities, addresses the hydrogeological problem of floods and the protection of ecological aspects, maintaining a great attention to the social and community values of the river infrastructure.

2.2 The metropolitan area of Genoa and lower Val Polcevera.

The territory of Genoa has been studied for years by the research group GicLab and among all the territories, the area of Val Polcevera, [*Fig.2*] located in the west side of Genoa, has been the focus of several laboratories and degree projects. The common view of all these strategies and projects is the identification of the need of a profound reconsideration of the current situation in the direction of both a resilient, environmental attention and also an innovative vocation.

The city of Genoa, due to her complex geography and sometimes difficult structure, has learned to face changes and unlikely situations, always taking advantage of its strong resilient component.

After the tragic collapse of the Morandi viaduct, on August 14, 2018, the Polcevera area became suddenly the centre of national and international discussion, with the launch of an international competition for the "under the bridge" area.

Fig.2. Torrente Polcevera. The river that crosses the valley is characterized by long periods of water shortage and heavy flows, associated with flooding risk.

The Urbanism and Landscape Laboratory of 2018, led by Manuel Gausa together with Adriana Ghersi, have been dedicated to this urgent topic, wanting to highlight and remind that the issue of the Polcevera territory was not only "to build the new bridge" but "to create bridges", in a complex and fragmented infrastructural and urban landscape. The objective ranged from the analysis, reading and interpretation of the complex reality of Val Polcevera itself to its future projection, in an holistic vision of global definition that lies beyond the great viaduct: creation and development connections and interconnections, intersections and crossings, actions and interactions in a territory that presents an accumulation of unresolved tensions; in which the coexistence of infrastructure, residence and geography has always been characterized by the addition of parallel fronts, sometimes mutually indifferent, sometimes (often) dialectically conflicting.

Based on this previous strategic view, the challenge was about (and still it is):

- to consolidate, to extend and to expand the future park-walk along the river (to design and project) through a strategic sequences of surfaces "in fuse" conceived as new operative landscapes (active greens) where to combine green spaces, architecture and functional programs of social exchange and cultural public areas.

- to mean a whole series of sectors (indicated with different frames) connected to the main bridges, and called to be rethought in terms of mixed programming (Landscape-housing, new production, river open

longitudinal and transversal re-naturalized areas, ludic and sportive scenarios, generative and interactive – in social and environmental terms – smart public spaces, etc.)

- to recover and/or recycle disused structures, with new production and/or living activities.

- to expand the leisure, trade and innovative production sector, in mixed structures where the recovery of old industrial facilities can be integrated and combined with the respect for the identity and domestic life of existing neighbourhoods, the resilient landscape approach to the environment and an important commitment to qualitative planning, both methodologically and expressively and formally.

- to reinform Val Polcevera as a new reference pole of Genoa in which to combine innovative development and social and urban self-esteem. [*Fig.3 and 4*]

The valleys of Genoa are complex territories that are used to face hydrogeological issues, flooding risk and infrastructural compression, but for all these reasons they are also place of fertile development of tools to collect and process data and map the level of risk in real time that needs the exploration of new types of cartography, and mapping diagrams.

The new *lineal-networked* prospective schema (and the operational landscape associated to it) permits to interweave and to mesh the multi-polarities of the site, creating new transversal connections and bridges (real and conceptual) and going beyond the reconstruction of the fall Morandi Bridge; enlarging the own margins of the Polcevera river to create new elastic meanders and operational "bags-parks" in the majority of the urban obsolete industrial and railway areas. New active scenarios that serve as derived collector reservoirs and "water-parks" in case of alluvions and floods and can be combined with concentrated, mixed and diversified programs of habitats, dwellings and services in their own borders.

These diversity of situations and answers in a systemic organization (oriented and adapted at time, meshed and differential, able to integrate *sets* and *nets, sets* and *mets*) is related also with the new challenges of a multi-society more and more interconnected and *identitary*, collective and individual, at time, and who will be able to experiment and to accept but at the same time to co-generate and to co-induce new efficient and sensitive answers for our more complex, rich and conflictive period.

The pandemic situation experienced by the entire planet today is the most extreme paradigm of multiple situations of risk and stress due to health or due to the lack of qualitative conditions that exist on a global scale. A reflection on the socio-cultural and socio-urban impact of such conditions, in which high technology, creative capacity, strategic vision and individual powerlessness are mixed (not always in the best or most efficient way), is therefore necessary from the own perspective of these possible resilient and intelligent condition that articulates this text.
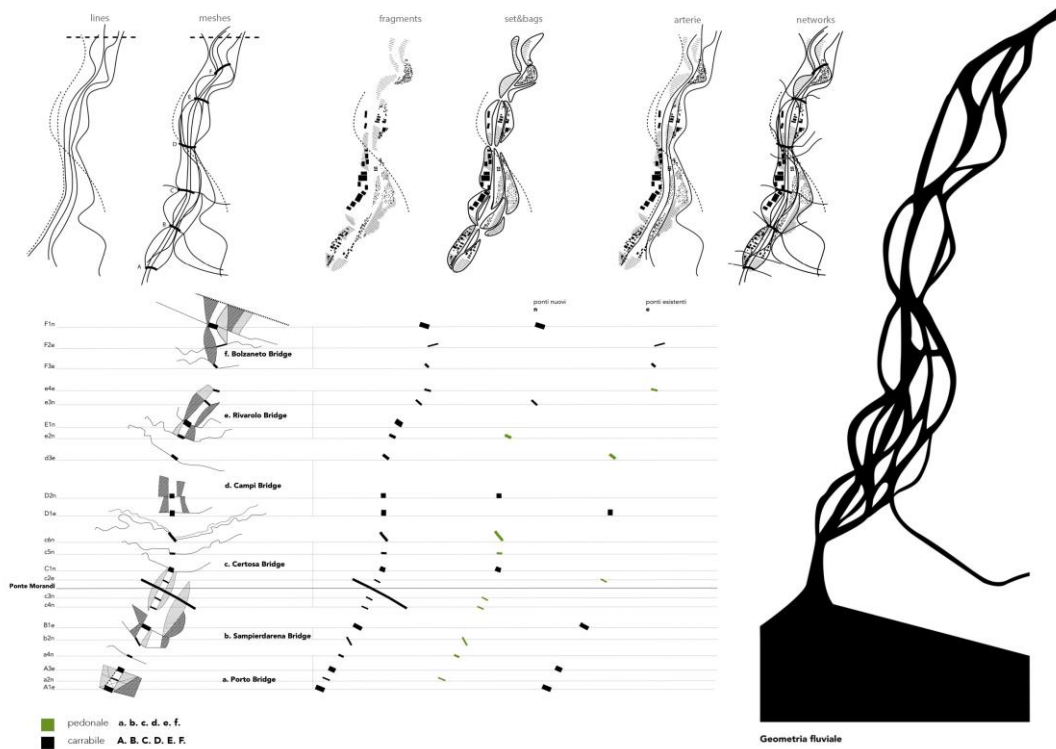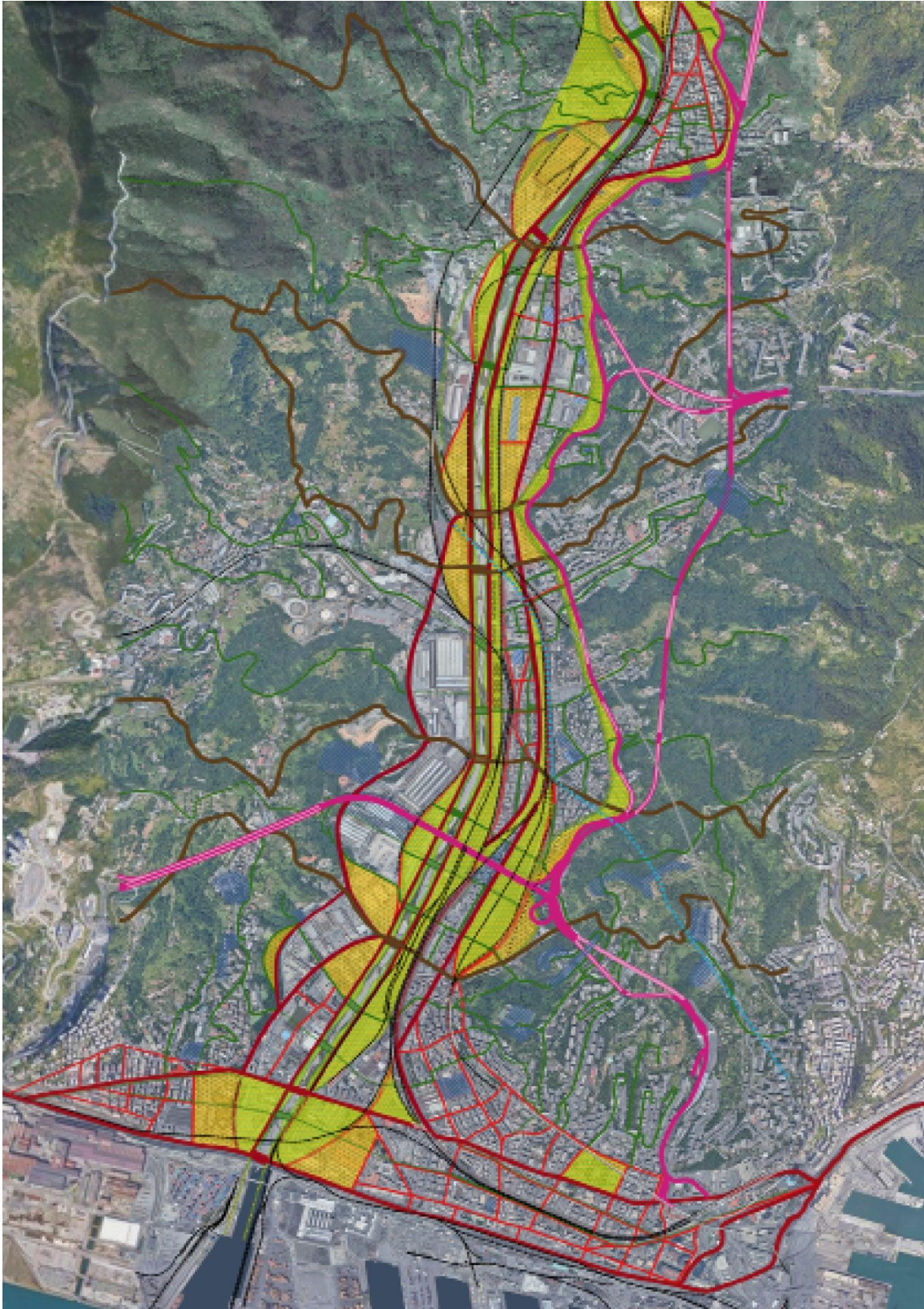
Fig.4. Strategic view for Val Polcevera territory, Urbanism and Landscape Laboratory, 2018. The new lineal River landscape enlarge its own margins to create new elastic operational and meander "bags-parks" in the urban obsolete industrial and railway areas that serve as collector reservoirs and "water-parks" in case of alluvions.

3. Resili(g)ence social approach in a pandemic era. Is the collective space synthesized or expanded?

3.1 Space lived always "offline" and a virtual space lived always "on line"

Which urban geography is born from the synthesis of a physical space lived always "offline" and a virtual space lived always "on line"?
In particular, what urban dimensions develop when the city and its community have to adapt quickly to unforeseen crisis and emergency scenarios? Beyond the urban dimension, what is the synthesis between the physical world and the virtual world? We could talk about a fourth dimension, a dimension in which we are hyper-connected in several virtual places at the same time, projecting our spatial image on a mental level into dimensions perceived and imagined as a whole through a screen. We are in front of a pc screen with a user connected on the other side, while we receive a message or email on our smartphone and so the user with us connected through x platform... the city behind us, as well as our home or office dimension only partially perceived, no more than the screen and that very thin dimension in front of our eyes. We are in no physical place but in many places imagined at the same time, sometimes not even imagined. Neutral. Hybrid.
So, what is the hybrid space that is generated from what the city anthropologist Alberto Corsin Jiménez calls inter – and intra – community networks within our society (MacNeil, 2018)?
How much can urban planning, starting from the interpenetration of these virtual networks in the physical world, sponsor the growth of a conscious community in redesigning the territory according to the needs of each individual?
The look of urban planning today is increasingly oriented to the social dynamics of the physical-emotional and virtual fabrics of urban space. The discipline increasingly focuses on connections, discontinuities, relationships and syntaxes within the city, promoting a continuous interaction between temporary inhabitants, resident communities and temporary communities born on social, interconnected and extended beyond the geographical limits of a neighbourhood. Citizens, in fact, on socials share their social concerns. A rapid exchange that, in the daily dimension, allows to overcome physical-spatial limits with a simple gesture. There is a split between physical and emotional action. A split more similar to a dissociation that, deeply affecting the movements within the city, generates new urban traces. "The right to the city is not merely a right of access to what already exists, but a right to change it." (Harvey, 2013)

3.2 City's actions in the Pandemic Context

How does one reinvent the city and the spatial dynamics within it when it finds itself inserted in a pandemic context that is not only national but global? Which parts of the city immediately decay in their being experienced as spaces by the community? What other spaces, on the other hand, generally undervalued, become emerging in a context of prevention and security? Which parts of the city resist and which do not? How should urban planning and architecture approach the problem? What will be the ethical role of the designer in rethinking the design of a space that includes social distancing in compliance with safety standards without distancing the users on a physical and psychological level?
The global community has found itself having to give answers to these questions quickly and unexpectedly.
Think of a pandemic. It is December 31 when the health authorities of the Chinese city of Wuhan report abnormal pneumonia cases. At the beginning of January 2020, the city had found dozens of cases and hundreds of infected people had been frequenting the Huanan Seafood Wholesale Market in the city itself.
At the end of February, the virus from China spread rapidly in Europe and in the rest of the world.
On March 11, 2020 the World Health Organization (WHO) declared that the international outbreak of new coronavirus SARS-CoV-2 infection can be considered a pandemic.
It is the beginning of an emergency situation in which not only the individual regions have to rethink themselves, but also the citizens as individuals and as a community.
The social and technological infrastructure has proven to be the immediate response to many imminent problems.

It has occurred through digital and interactive tools such as open data the process of civic hacking to find alternative and creative solutions to emergencies and times of crisis quickly.

It is in the resilience to this aggression that the city is rediscovering itself in its dimension of collaborative and strategic strength, in the dynamics of resilience demonstrated to deal with the virus. A virus that affects our dimension on three levels. In the first instance the virus attacked the individual dimension.

Each individual, becoming a potential vehicle for the spread of the virus, was called upon to protect himself and the other by keeping a distance of at least one metre. A safety distance that will probably in the future increasingly be a measure of accessibility to be respected and taken into account when designing public and private spaces.

In the second instance, the virus has affected socially: isolating everyone from the others on a physical level, forcing the citizen to isolation, to physical separation. The pandemic has brought to light our relationships hyperconnected in the digital world, weak and difficult in the physical sphere. This reflection, projecting itself on our way of living space and the city, is projected into a re-evaluation of public space, nature and the countryside. This phenomenon linked to technological exasperation is bringing everyone back to a re-evaluation of the physical and urban environment, to a reflection on the relationship and human contact, to an analysis of both the public space and the domestic dimension.

Houses are in fact regaining a frequentation whose memory was lost, everyone is trying to build daily relationships with spaces and objects (La Pietra, 2020), but at the same time it is a space that expands outwards for a contact and confrontation with the physical, spatial and relational pre pandemic world. The world we knew until recently.

In the second instance socially. The digital dimension, pre pandemic in many cases filled a physical distance with a single person, a group of people, their country of origin and their community, often recreating digitally a domestic dimension. Today, during pandemic the social dimension also focuses on the dimension of escape from the domestic dimension, a reverse movement to a physical-spatial and psychological lockdown. An encroachment. Just think of all the entertainment activities born on digital and aimed at making up for the lack of a physical meeting space: schools, sports and play facilities, theatres, museums, meeting places in general. The new public space, physical and three-dimensional, is replaced by an event born on the web where more people interact together on a platform such as Skype, Zomm, Houseparty ec... [*Fig.5*]

Fig.5. A man wearing a face mask while having a video call.

A dimension that derives and becomes a spokesman for the rediscovery of a civic and community value: each citizen, as a potential vehicle of contagion, has been called to respect a personal and collective protection. In this regard is very current the hashtag #*stayathome*, in order to protect people from going out, this underlines how much the home dimension is a contemporary theme.

Ultimately, the virus has structurally mobilised the urban system of tertiary services. Let us focus on the hospital and school system. At the health and school level, the whole international community has been mobilized to find immediate answers. Scientific knowledge, technological knowledge, the network, many disciplines have exposed their ethics by becoming part of an active network of exchanges and immediate solutions to imminent problems. Industry 4.0 also played a key role in the Covid affair. Just think of the hospital in Chiari, in the province of Brescia, where the community witnessed one of the most incredible stories of innovation and solidarity. The fab labs in the area, in fact, put themselves at the service of the hospital to print in 3d the emergency valves necessary for the respiratory masks.

While much attention has been paid to the health and economic-financial dimension, less attention has been paid to the social-relational dimension: to the cutting of the network linked to social relations and human exchanges that take place on the street and not only online.

On the same level the Covid-19 has also revolutionized the world of school education in a short time.

Schools had to reform a new and accessible educational system in a short time, but in a short time problems related to distance learning emerged, including the absence of real contact and the lack of a cultural and peer-to-peer comparison between students and the consequent increase in differences between pupils related to accessibility. The school, in the future, will have to rethink a new form of resilience and solution: online lessons cannot be the only answer.

It needs to widen the gap between those who can do it independently and those without school and study assistance risk falling behind. These are the differences between those at home who have a computer, unlimited giga and a parent in smart working and those who can only see what the school sends in the evening on their parents' smartphones.

Basically, in the emergency we are experiencing, the pc helps us to be less alone but it cannot replace the curiosity and the desire for relationship insists in our human nature.

The relationship is an integral part of the learning process and the problem cannot be contained. The current contingency means that the online network and mode can temporarily compensate for the physical presence and relationship. For this to happen there cannot be a mute passage of exercises from the book and a frontal lesson without interaction: technological tools must also "strive" to open up to the relationship, for example by offering the possibility of interactive rooms, virtual classrooms where children and young people can talk to each other and with teachers, ask questions, build together.

3.3 Time and micro-macro social scale as two future parameters for designing the future city: connected and resilient.

The spread of viral forms such as the one we are experiencing introduces an extra element of complexity: a virus undermines the very nature of life in the city, which is based on exchange, proximity, mixing, close cohabitation between people. We don't know what cities will be like, but we do know that two creative leaps will be required. [*Fig.6*]

The first has more to do with time than space. We are used to thinking in a one-dimensional way about cities. Now we have to be able to think about places and people's behaviours much more in relation to time. If the virus continues to be part of our lives over the next few years, we will not all be able to stay at home indefinitely.

Secondly, we will have to rethink the relationship between the macro and micro local scales. Let us think about the political proposal of Anne Hidalgo, Mayor of Paris: Ville du quart d'heure.

A quarter of an hour is the unit of measure of her project, which she imagines rethinking the city around services and functions that can be reached by citizens on foot or by bicycle within that time. It brings the city back to its dimension of islands and communities of solidarity.

We will therefore be asked to rethink the city in relation to time, travel time and mobility in space and how will this time and mobility relate to the micro-macro social scale?

Taking into account that "The risk is not the catastrophe, but the anticipation of the catastrophe. It is not a personal anticipation, but a social construction that allows to act in time so that the catastrophe does not happen.

Fig.6 Calgary empty streets during Covid-19, April 2020.

This is why it is important to understand that our society, globalized and complex, is by definition a society of risk". "We must develop a common awareness of risk. We will be more united and more united, if we all find ourselves linked to one another, across borders, religions, languages and cultures, not by fear but by a common awareness of risk. In one way or another, risk produces a community of destiny and perhaps even a new global public space" (Beck, 2020, 2).

So, what will be the solutions to the pandemic problems proposed by the current society that Ulrick Becket calls the "risk society"?

How much will the answers given to an unexpected problem such as a pandemic know in advance how to deal with a subsequent pandemic by shaping its gnoseology without rethinking a new and total redesign?

In the future, it will be necessary to take into account the fact that human interaction and relationship on a physical level are irreplaceable on a platform. Technology is capable of shaping an accessible, interactive but in many ways limited and limiting web space. The web is the medium, not the end.

This operation favours the involvement and conscious growth of the community which, developing public value through the regeneration of spaces and social regeneration, makes its way between urban policies in a fully active way.

It is also on this point that we will have to reflect on resilience, on civil action oriented towards subsidiarity, on active citizenship that develops values of solidarity in the physical dimension of the city by facilitating the process with the help of networks, not by replacing them with civil value.

A community that adapts to the contingent situation without losing attention to the other and that is manifest in the design of a new space that is able to recreate in a network the participatory and active dimension of the individual and citizen, involving him in the process of urban co-design so that he feels an active part of the city taking full rights and duties of the citizen. This guarantees the individual, the community and the urban reality what is called the principle of co-responsibility. In which the decision is not taken by those who have the power to do so, but we take it together listening in the first instance to who is capable, to who is competent, who's fighting on the front lines.

A form of resilience that is able to manifest itself in the co-designing of networks and new services accessible especially to those with reduced mobility.

The emergency is telling us that we must learn to deal with complex problems and changes, through the logic of complexity. Abandoning bureaucratic, vertical, rigid, bureaucratic systems of government and management and building from this experience of pandemic, systems capable of allowing themselves to be invested by the emergency and to govern it without being overwhelmed by it, but obtaining from it the necessary information to rethink and re-design the future. In this way, the observation of the relationships and psychological reactions of the community that emerged from the study of social and open source and user friendly technologies can increasingly be a marker for community participation in the design of a space and an urban context.

4. Conclusions

Human interactions expanded on online platforms: we live in two parallel and interconnected realities daily. The possibilities of Information Technology and data production and analysis are changing and influencing our behaviours, the way we live, and consequently, the way we experience and design our cities; at the same time global issues – such us climate changes and the last Covid-19 virus – are challenging us every day, as citizens and as planners and architects. In this context, resili(g)ent approaches, that connects together new technologies and adaptable strategies, offers the opportunity to rethink our cities and our environment in a more dynamic and flexible direction.

The space of our new *resili(g)ent cities* will have (has, in fact, right now) the capacity to change and adapts according transformations of contemporary society; this process includes all the dimensions, from the domestic, to the neighbourhood, from the urban to the territorial approaches.

The exploration of a new positive (synergistic-strategic) mediation to define our habitats, but also of a new sensitive interaction (empathic or eco-empathic) to face increasingly complex scenarios, marks today many of the tastings produced in a time that multiplies, in turn, those inertia associated with global deficit situations related with conflicts and threats, linked to critical geopolitical (and geo-economic) changes, but

also, naturally, with climate change and its devastating effects on the most vulnerable populations. The informational capacity of the age of connective and productive (de-localized) interchange has increased the plural complexity (rich, varied, diverse) of the scenarios and relationships, but also, it has contributed to increase the entropic effects in the land-use of soil and the progressive inequality between realities and communities and, therefore, the appearance of a new type of *disotropia* not only physical but also socio-economic (and cultural) that can only be addressed from a new type of of logics and governance more sensitive to holistic, equitable and empathic visions (*empathiCities*, Gausa, 2015).

The appearance of a new type of sensitivity and social action linked to an architecture of the energetically and ecologically 'self-sufficient' (Guallart, 2012), but also of the immediate, of the instantaneous, of the un-postponable or *impostergable* (Larach and Vera, 2017) is marking the interest of the new generations, involved with this collective sensitivity, responsible and responsive at the same time. Processes of self-generation, co-production, participation or intervention, tend to combine operations and installations in possible sharing spaces, urban reactivation and collective exchange and affirmation. In this sense, the new formulation and planning strategies do not always require a technological apparatus to define direct and complex answers – favouring, in spite of, the research of shared process (co-produced, co-generated) and favouring, at time, a new "eco-mediation" aimed at elaborating and re-elaborating our relational environments, translating them into new kind of "advanced" approaches [*Fig.7*].

Hence the importance for the term *Resili(g)ence* but also the *3IN* associated to it (Information, Interaction and Integration) to favour not a new hyper-connected and hyper-productive slavery but of a positive exchange between environment, society, culture and information, in relation to a new and more sustainable development, not only as ethical and socio-economic responsibility but also as a creative and coherent consequence of the informational and relational revolution today in progress (Rifkin, 2014).
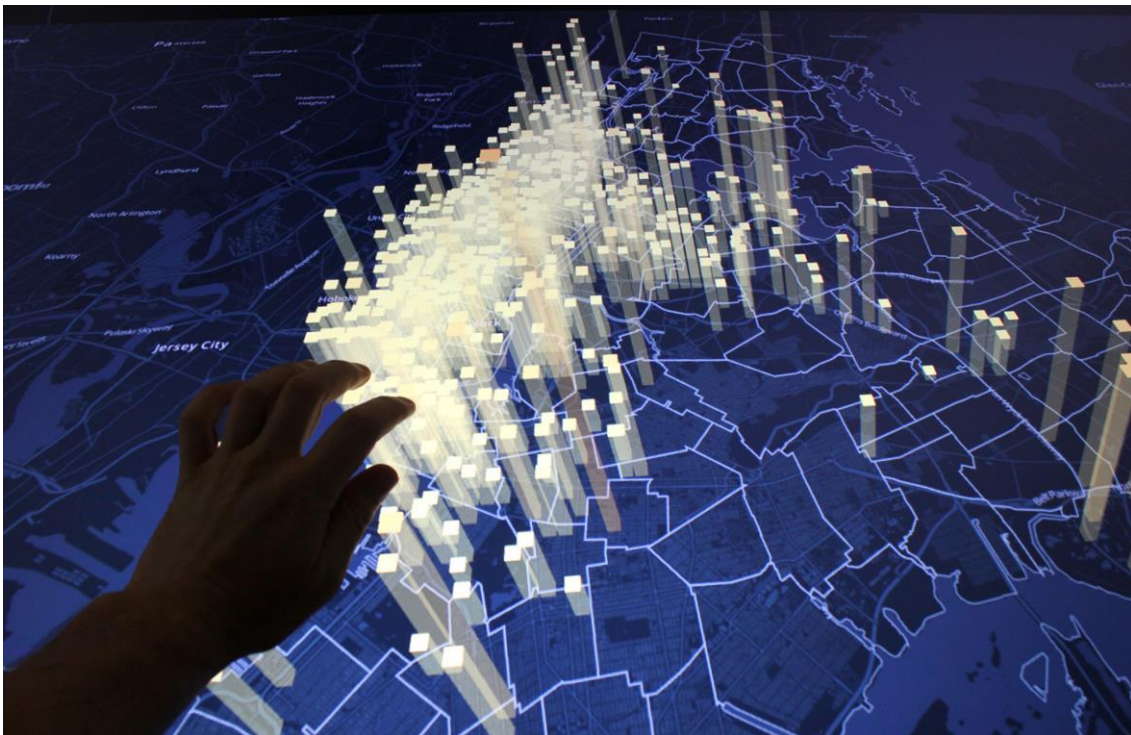

Fig.7 Carlo Ratti, MIT-2015. *Informational dynamic SENSE CITY Maps.*

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Note
1. Definition available at: www.100resilientcities.org
2. http://ka-au.net/