



## Proceedings of the Resilient Cities 2013 congress

**Session: Resilience into planning: Focus on Europe, floods, and blue-green landscapes**

### **Resilient Landscapes.**

**From spontaneous adaptation to a post-industrial planned multi-scalar resilience**

Verde, A.

#### **Abstract:**

Today's world cities are particularly exposed to suffer from different kinds of risks, originated principally by population growth, climate change, energy scarcity and processes of decay of post-industrial contaminated areas. At the moment, no global solutions have been given to improve the vulnerability of our cities. Therefore specific territorial restructuring interventions are necessary to contrast the external stresses that our cities are about to face in the next decades.

Resilience, meant as the capability of a urban environment to absorb external shocks and to grant water, food and energy supply, should be applied to territorial restructuring policies to attain "sustainability" at a global scale, "health" at a local scale and "well-being" at a proximal one.

Landscape, being dynamic, flexible and multiscalar, can act as the device capable to allow the territory to find continuous adjustments in front of variable dynamics (social, economic, environmental, etc.), and results in the interface among the three scales above, becoming an active agent for urban reclamation. The perspective of this presentation fits in "Landscape Urbanism" approach.

These criteria allow us to redefine, in a resilient landscape-centered perspective, those urban standards which date back to the modernist period, founded on "wildfire expansion" of urban settlements and on "car-based" policies which now result inadequate, if applied to present contexts.

#### **Keywords:**

Landscape Urbanism, Resilience, Territorial restructuring, Blue & Green networks, Urban standards

## **Resilient Landscapes. From spontaneous adaptation to a post-industrial planned multi-scalar resilience**

The research I illustrated at the 4th Resilient Cities Forum in Bonn has been only recently started up, under the coordination of Senior Scientist Elena Cogato Lanza, and carried out at the Conservation and Construction Laboratory of EPFL – École Polytechnique Fédérale de Lausanne in Switzerland.

Today's world cities are particularly exposed to suffer from different kinds of risks, which can be listed as below (ICLEI, 2012):

- Population growth and geographical polarization: in 2050, 75% of global population (about 9 billion of inhabitants) will live in urban environments. This growth appears to be unsustainable at the current absorption capacity of the planet, principally causing a significant imbalance in the management of natural resources that, in turn, will cause social and political problems (ICLEI, 2012);
- Climate change: severe "category 5" weather events have increased tenfold. In 2011 natural disasters caused \$ 362 billion damages, whilst human disasters only \$ 8 billion (ICLEI, 2012);
- Energy scarcity: if the global demand rises because of the constant population growth and the striking industrialization of undeveloped countries, energy supply will not be able to guarantee an equal energy distribution, causing soaring energy prices that will create social disparities (Applegath, 2012);
- Governance: the debt-laden does not permit the modernization of urban infrastructures through an adequate territorial maintenance that would prevent our cities from environmental catastrophes (Applegath, 2012);
- Environmental degradations: global economic, technological transformations and the arrival of the informational society changed industry production and products, causing closures and bankruptcies of a lot of industries. What remains are exploited and contaminated areas.

Trying to responding to contemporary urban risks is for us the principal actual possibility of restructuring urban habitats in the perspective of 21<sup>st</sup> century city model of post-Kyoto protocol. Thus we first considered how the positivist development of modernist city, focused on zoning theory principles, deeply marked territorial management and urban planning choices in the latest 50 years, contributing to blue and green networks degradation, triggering a negative retroactive process from local scale to global one.

Actually, the Athens Charter's (1933) urban vision based on a monofunctional subdivision of the 4 principal people's activities (work, live, move, have leisure) led to engineering and scarcely flexible strategies in territorial management, which resulted shortly adaptive in front

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of external shocks and changes. Even the compensatory vision of human presence and human activities on the territory derives from a monofunctional and quantitative vision of green, parking and public equipment areas (Figure 1).

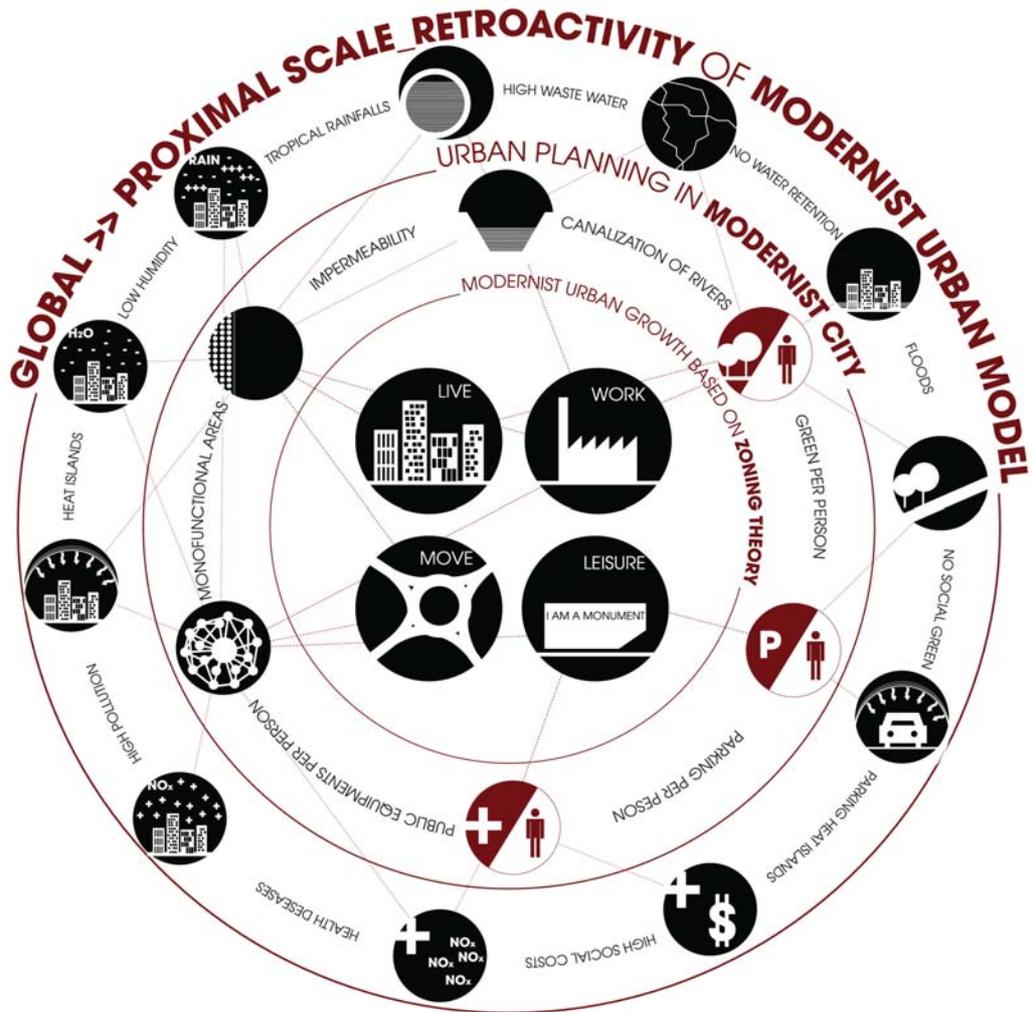


Figure 1

No doubt the modernist urban simplification is based on efficiency criteria, applicable through technical standards which define monofunctional and quantitative areas. Its scale of action is abstract and sets no limits because urban standards are ideally applied in a continuously growing urban system leading to a further land occupation and new infrastructures (Figure 2).

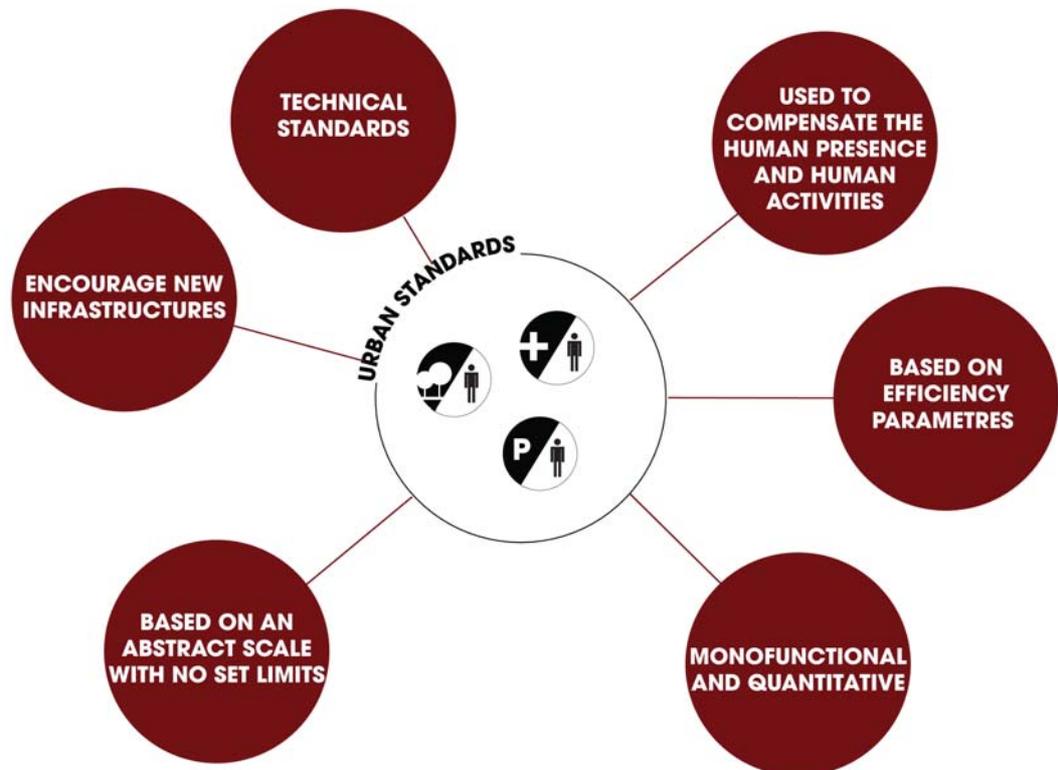


Figure 2

Latest urban best practices (Vitoria-Gasteiz, Copenhagen, Lodz, MARE project) highlight a new trend in territorial management, which supports the idea of reestablishing blue and green networks' cycles inside the territorial scale of urban habitat. As a matter of fact, concepts such as biodiversity, soft mobility, flood detence, waterways resulted so very frequent and common to every case study. The strategies and objectives proposed resulted inscribable under socio-ecological categories which permit to measure the health of a territory, where for healthy situation we mean the one which presents multiple socio-ecological functions at the same time: well-being, mobility, culture and identity, natural cycles and smart green growth (Figure 3).

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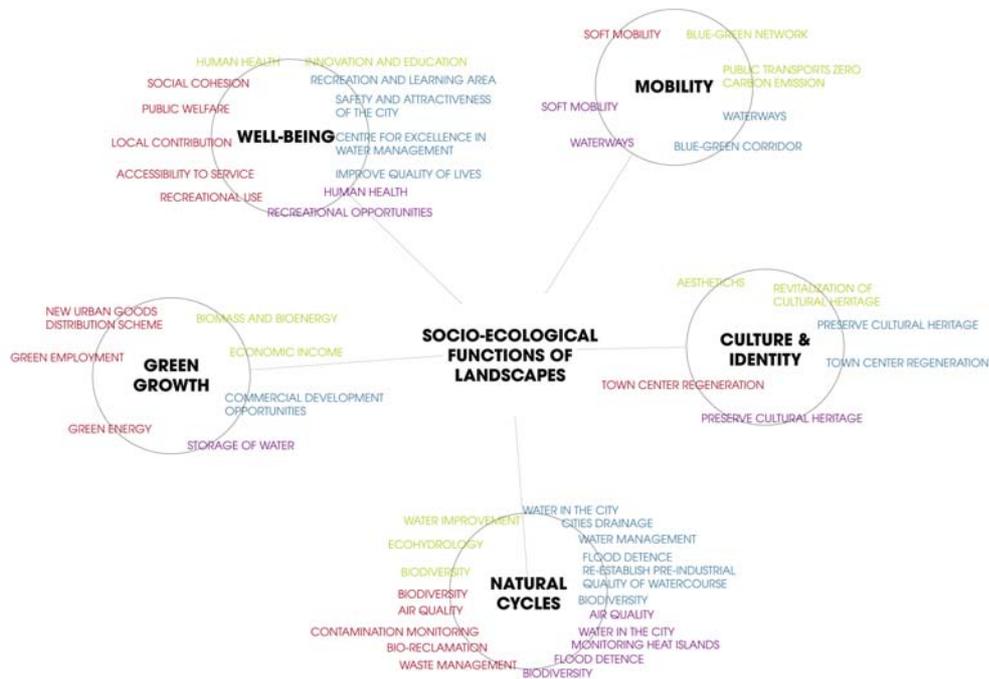


Figure 3

In the latest decades with the advent of internet and with space-time contraction, the subdivision of human activities no longer describes correctly the relation between society-economy-territories. One lives and works in the same spaces or one lives and daily works hundreds of kilometers away. So compensatory vision of human presence on territory proposed by modernist planning results unhinged and has to be rethought (Figure 4).

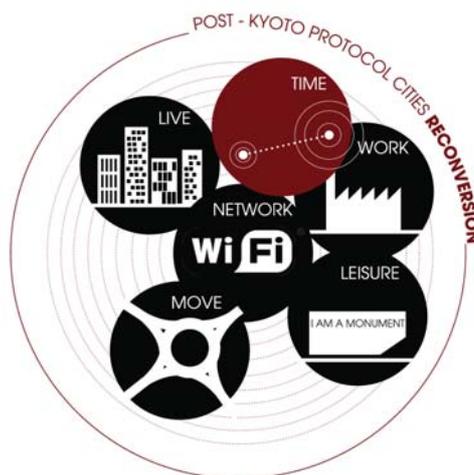


Figure 4

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Keeping all this in mind, the research proposes *Landscape Urbanism* as the possible activity able to supply us with the adequate visions for restructuring the territories of cities in contemporary socio-economic context.

It is worthwhile remembering that Landscape Urbanism is a discipline, officially born in the USA in 1997 (Landscape Urbanism Symposium and Exhibition, April 1997, Graham Foundation, Chicago), which places landscape and its ecological component at the very center of the planning for restructuring of territories (Corner, 1999).

*Landscape's* intrinsic interdisciplinarity and its multiscalar characteristics allow it to be a very flexible, evolving instrument, capable of reacting to external stresses. Thus, it can become the item to be constructed in the city, the element which can frame urban habitat in a more flexible and deliberate way both at a large scale and at a proximal one. (Gausa, 2006).

Thanks to its cross-eyed look, Landscape Urbanism permits to hold together at the same time different disciplines and different scales, simultaneously intervening on territorial vision and on urban quality scale (Desvigne, 2012). As a fundamental characteristic, Landscape Urbanism defines itself as a *process* and not as a *plan*, a characteristic that allows Landscape Urbanism to insert the *time* factor as an evolving, dynamic, flexible design element (Repishti, 2012).

At the beginning of '90s, Andrea Branzi, considered a precursor of Landscape Urbanism, critically argued that urban development and urban standards inadequately answered to "new liquid economy" based territories and to their relation with society. So his criticism brings to a provocative proposal to review urban standards' meaning no longer according to the canonical classification based on urban functions of human activities, but according to the energy regime of "territorial bands" (Branzi, 2006).

Branzi's "weak urbanization model" includes reversibility and crossability concepts, typical of agriculture, both for public spaces and for flexible and almost seasonal functional programmes of the built environment (*Figure 5*). The model incorporates energy and food production within a new urbanity which plans highly technologized large agricultural parks as a response to new relations between society-economy-territories (Branzi, 2006).

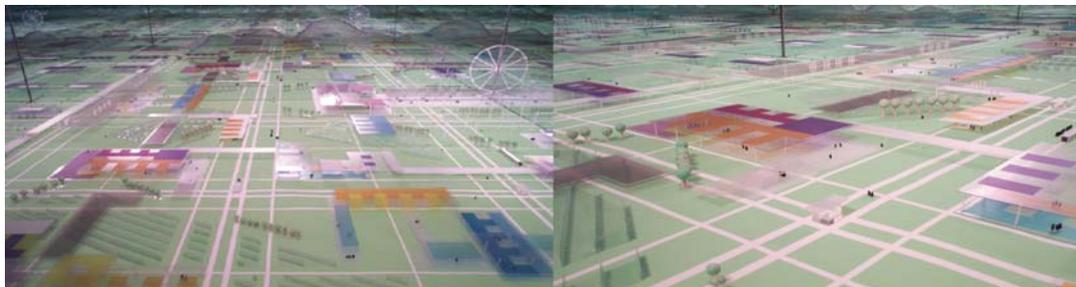


Figure 5 - "Territory for the new economy" Andrea Branzi, Strijp Philips, Eindhoven, The Netherlands, 1999-2000

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A very interesting example of how Landscape Urbanism can restructure territories simultaneously acting to multiple scales is offered by the experience of LIN group (Finn Geipel + Giulia Andi) inside the international consultation for Paris agglomeration in 2009. The research group proposes to restructure Parisian metropolitan territories through a *multipolar city vision* at a territorial scale, we mean through the recognition and the strengthening of existing poles (dense city), by trying down them in a huge green lung (soft city) which provides a diffuse network of soft mobility (Geipel and Andi, 2009) (*Figure 6*).

### TERRITORIAL VISION



// DENSE CITY: STRENGTHENING THE EXISTING POLES  
 // SOFT CITY: MAKING THE SPRAWL CITY A GREEN LUNG

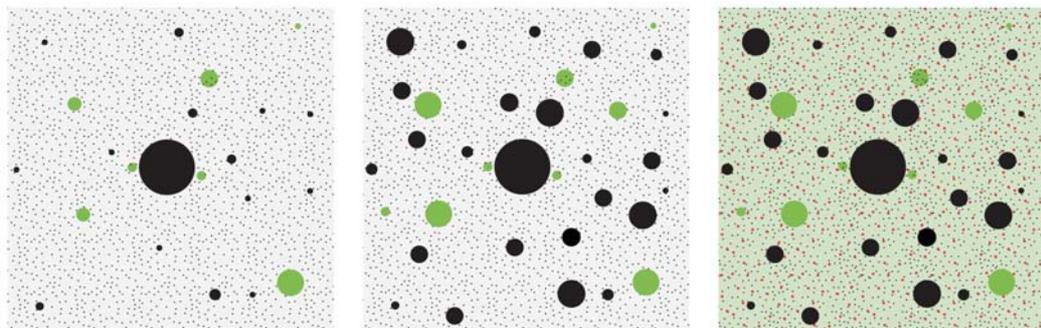


Figure 6 – “The Multipolar city vision” Finn Geipel + Giulia Andi, Métropole Douce. Hypothèses sur le paysage post-Kyoto

The *multipolar city vision* can also be applied, in a smaller scale, to mobility network, so that marginal industrial areas, huge heat islands, can be reinserted within the urban metabolism transforming them in *multimodal parks*, a sort of huge green areas where big multimodal parking are concentrated, and where it is possible to accede to widespread soft mobility network, while serving the soft city to connect the densified poles (Geipel and Andi, 2009) (*Figure 7*).

MARGINAL INDUSTRIAL AREAS



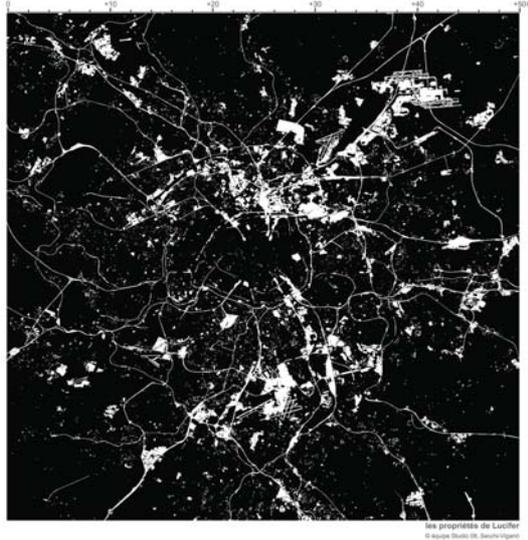
MULTIMODAL PARK



Figure 7 - "The multimodal park" Finn Geipel + Giulia Andi, Métropole Douce. Hypothèses sur le paysage post-Kyoto

Still examining Paris, Studio 09 – Secchi-Viganò promotes a *porous city vision* for Paris' territorial restructuring. The analysis of Parisian territory finds, in its residual areas, in its infrastructures and in high river flooding risk areas, its great opportunity to give back porosity to Paris metropolitan region, ecologically, accessibility and hydrological safety speaking (Secchi and Viganò, 2011) (Figure 8).

ABANDONED AND MARGINAL AREAS



FLOODABLE RISK AREAS



Figure 8 – "Porosity" Secchi, B. and Viganò, P., La ville poreuse. Un projet pour le Grand Paris et la métropole de l'après-Kyoto

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The *soft shrinking* proposal gives a response at a proximal scale to the porous city territorial vision, looking for de-densifying impermeable and not-crossable territories, reinserting within them a new porosity given by a new blue and green network which permit to connect city to its natural elements. Thus community is given back the access to its ecological and cultural heritage, by using a new network of parks as urban connections, as a porous element for hydrological safety and as daily leisure public spaces (Secchi and Viganò, 2011) (Figure 9).

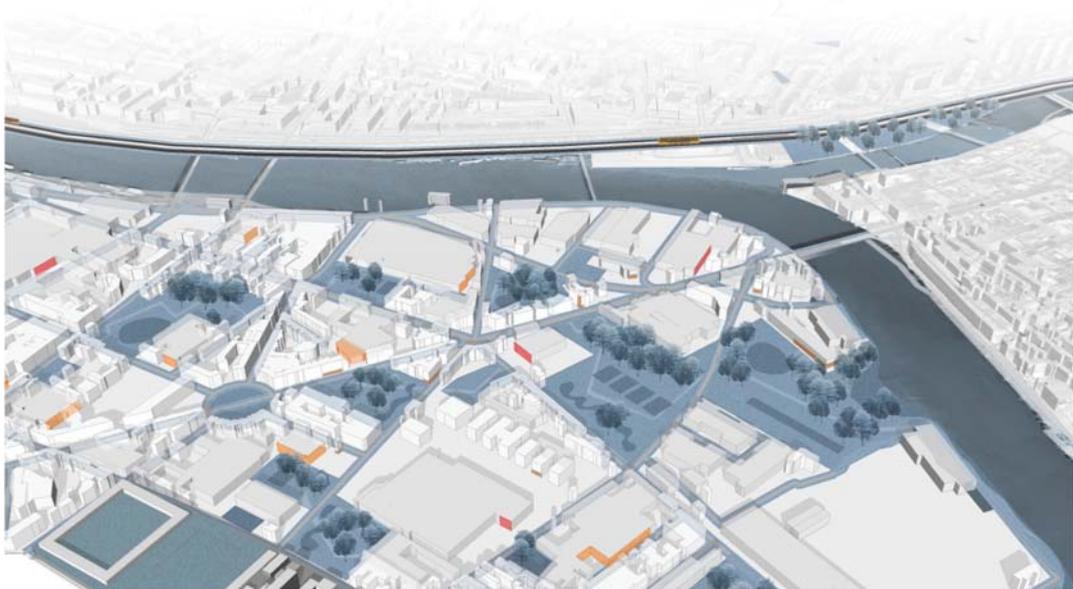


Figure 9 - "Soft shrinking" Secchi, B. and Viganò, P., La ville poreuse. Un projet pour le Grand Paris et la métropole de l'après-Kyoto

If it is true that Landscape Urbanism acts simultaneously in a multiscale centered-way on the territorial vision and on daily living spaces, it is valuable now to imagine some scenarios where Landscape Urbanism could contribute to evolve urban standards concept in a resilient-centered way.

For *urban resilience*, ICLEI means "the capacity and ability of a community to withstand stress, survive, adapt, bounce back from crisis or disasters and rapidly move on" (ICLEI, 2010). It is useful to enlarge this concept keeping in mind two interesting definitions of resilience in ecology field: resilience as "the time required for an ecosystem to return to an equilibrium or steady-state following a perturbation" (Holling, 1973), and as "the capacity of a system to absorb disturbance and reorganize while undergoing changes so as to still retain essentially the same function, structure, identity and feedbacks" (Walker, 2004).

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In the light of previous definitions, the basic concept of the compensation of the presence of man and his activities in the territory in the post-Kyoto city should contribute to define daily living infrastructures, which include nature, as *Resilient Landscapes*. They permit to insert within the urban metabolism the management of new cycles which better respond to external urban shocks. So Resilient landscapes will be featured by rhythms of elasticity (being self-regulating, dynamic and evolving), retroactivity (being multiscalar, incremental and cumulative) and socio-ecological multifunctionality (being adaptive, qualitative and re-cyclable) (*Figure 10*).

Resilient landscapes will be defined by qualitative criteria and no longer by quantitative ones, allowing the creation of multifunctional landscapes which - first - will act as environmental monitoring of the health of territories, - secondly - will intervene for marginal and contaminated urban reclamation through dynamic logic of incentives (and no longer through technical standards), - thirdly - will contribute to break urban heat islands encouraging ecological corridors which will permit to reinsert urban habitat in its territorial biotope scale, overcoming the limitations of abstract administrative boundaries (*Figure 11*).

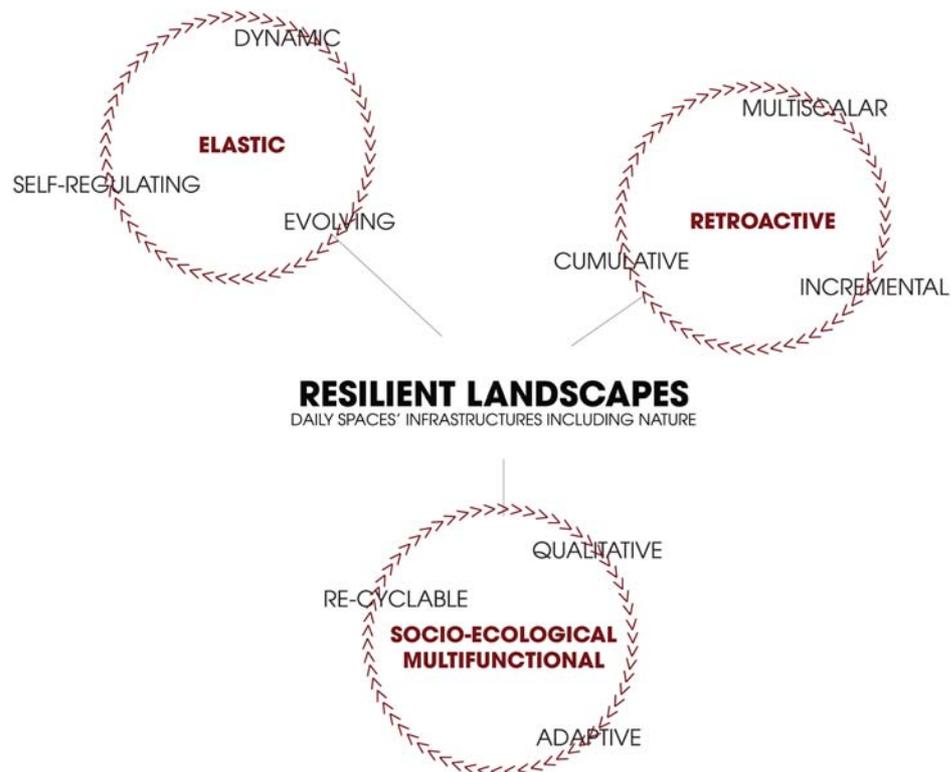


Figure 10 – “Resilient Landscapes’ cycles” Verde, A.

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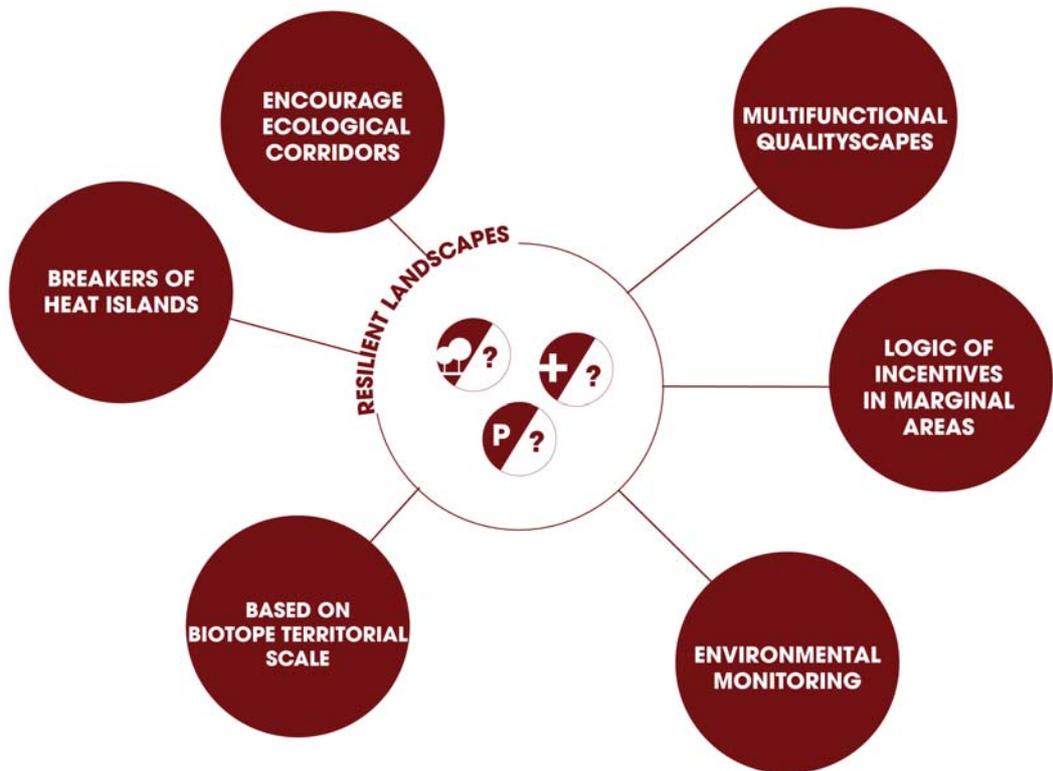


Figure 11 – “Resilient Landscapes’ urban standards renovation” Verde, A.

Recently, I had the opportunity to test some of my previous reasonings with WATERisLAND project. The project proposal bounds to restructure a contaminated area at high risk of flooding in the suburbs of Paris. The urban regeneration of the area cannot avoid the reclamation of contaminated soil. The choice of proposing the use of an ecological remediation based on phytoextraction requires a longer time period but lower costs. This temporal aspect allows us to think about creating a temporary ecological reclamation park that permits to give back the area to the community being able to enjoy it. The promotion of the application of soft remediation practices can become the criterion used to grant building rights that can lead urbanity inside the area (Figure 12).

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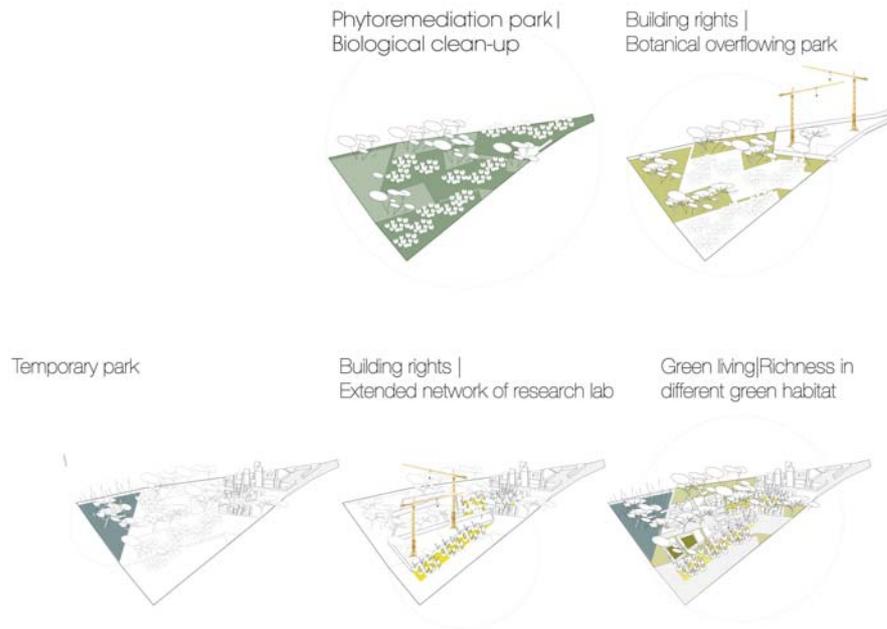


Figure 12 – “From soft remediation practices to building rights” Verde, A. et al., European 11 - WATERisLAND, Neuilly-sur-Marne, France, 2011

The hydraulic engineering works necessary to deal with the risks of flooding of the area become on their own public spaces for the everyday life of neighborhood: a large floodable park that provides, in case of necessity, the hydrological security for the urban islands, making flood a safe urban event more than a risk (Figure 13-14).



Figure 13 - “Floodable park” Verde, A. et al., European 11 – WATERisLAND, Neuilly-sur-Marne, France, 2011

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Figure 14 - "Urban event" Verde, A. et al., European 11 - WATERisLAND, Neully-sur-Marne, France, 2011

To conclude, I would like to evoke, only as an inspiration model, the case of Shibam in Yemen. This unique example shows us how men's spontaneous adaptive consciousness to natural conditions and climatic context has naturally led to the definition of a regulatory machine consisting of landscape devices and territorial planning decisions which allow livability at the scale of proximity (Figure 15).



Figure 15 – Shibam, Yemen, Google maps

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For example, the typological choice of tower buildings permits to shade each other, to keep constantly in shadow public spaces, to optimize, night and day, the energy performance through compactness of the urban complex, and, through the force of gravity, to convey water outward to irrigate and create a green and productive pillow that feeds and at the meantime mitigates the temperature, allowing a constant cooling within the city and finding a climatic balance that allows the population to live in this context since 1500 (*Figure 18*). All that stands as an integrated system of landscape choices and manmade artifacts that give quality to urban spaces, holding together different scales at the same time, which sounds very similar to a spontaneous Landscape Urbanism application.



*Figure 16 – Shibam, Yemen, Google*

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## **Bio:**

*Alberto Verde* (Bologna, Italy, 1982), architect, studied at the Catholic University of Cordoba – Faculty of Urbanism and Architecture (Argentina) and at the University of Ferrara – Faculty of Architecture (Italy), where in 2008 he obtained his Master Degree Diplome in Architecture with honors. From 2010, he is teaching assistant and research assistant at the University of Ferrara in urbanism and landscape disciplines. In 2012, he has been invited by the Master of Advanced Studies in Landscape Architecture of the Catholic University of Cordoba in Argentina to illustrate “Resilient Landscapes” approach for territorial restructuring of urban habitats. From 2012 up to now, he is lecturer at the École Polytechnique Fédérale de Lausanne in Switzerland in the frame of the Master course “UEJ Territoire et paysage”. In parallel, he works as an architect and from 2013 he works in an architectural office near Lausanne where he follows projects at the architectural and urban scale.

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## **Attachments:**

*Figure 1 – Verde, A., 2013*

*Figure 2 – Verde, A., 2013*

*Figure 3 – Verde, A., 2013*

*Figure 4 – Verde, A., 2013*

*Figure 5 – Branzi, A., “Territory for the new economy” Strijp Philips, Eindhoven, The Netherlands, 1999-2000*

*Figure 6 – Geipel, F. and Andi, G., “The Multipolar city vision”, in Métropole Douce. Hypothèses sur le paysage post-Kyoto*

*Figure 7 – Geipel, F. and Andi, G., “The multimodal park”, in Métropole Douce. Hypothèses sur le paysage post-Kyoto*

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*Figure 11 – Verde, A., 2013*

*Figure 12 – Verde, A. et al., “From soft remediation practices to building rights”, European 11 - WATERisLAND, Neuilly-sur-Marne, France, 2011*

*Figure 13 – Verde, A. et al., “Floodable park”, European 11 - WATERisLAND, Neuilly-sur-Marne, France, 2011*

*Figure 14 – Verde, A. et al., “Urban event”, European 11 - WATERisLAND, Neuilly-sur-Marne, France, 2011*

*Figure 15 – Shibam, Yemen, Google Maps*

*Figure 16 – Shibam, Yemen, Google*

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