

Landscape Urbanism between esthetics and design: redefining key concepts for an ethics of designing.

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1. Introduction and state of the art

Inspired by a philosophy of the landscape as a "visible constellation" and a "network of material and immaterial connections" (Venturi Ferriolo, 2006), and considering the etymology of infrastructure as a "preparatory substrate" that supports economic, socio-cultural, and environmental development (Perrotti, 2015), this study explores the intersection between the "Landscape Urbanism" aesthetics and design practice.

Our approach is based on a main philosophical contributions, i.e the visualization of the landscape in the form of a "weave of relations" (Venturi Ferriolo, 2006), an image suggesting a sense experience rather than a univocal definition of the term "landscape". This *relational connotation* of landscape underlines the manifold interwoven strands existing in the landscape weave, rather than a simple cohabitation of elements. This way of thinking about the landscape is explicitly derived from German philosopher Ute Guzzoni's *landscape thinking* (*landschaftliches denken*).

In the first chapter, *Landschaften*, of the 1990 essay *Wege im Denken: Versuch mit und ohne Heidegger*, the author identifies the essence of the landscape in the "manifold contemporaneity of spatial and temporal relations between things" (*dinge*) and, as a consequence, she introduces the metaphor of *constellation* (Guzzoni, 1990; Perrotti, 2022).

Taking as a starting point the definition of mutable multiplicity of relations, Guzzoni describes the landscape in terms of *constellation of the visible* (or *constellation of connections*) and underlines the possibility of looking at the landscape as *one, sole, precise and complete* in all its elements, just by virtue of the relations between them. The philosopher subsequently introduces the metaphor of *concrete constellation* and tackles the issue of the relationships between the Individual and the Universal in the landscape, between the entirety of the constellation and every single element that composes it. As a result of the combined action of the Particulars that form the Universal, the concrete constellation is the image of the *landscape universality*: it entails a dialogue between the parts and different connections between them. These specific connections therefore determine the uniqueness of the combined action - the *jeu d'ensemble* - established between the various elements of the constellation. Furthermore, Guzzoni underlines that this concrete constellation is neither stable for eternity nor sharply delimited, because of the mutability of the relations between

the Particulars in the Universal (Guzzoni, 1990).

In the frame of our research, the interest of studying these two main philosophical approaches to the *aesthetic* perception of the landscape lies in the possibility of crossing this theoretical state-of-the-art with some specific contributions to contemporary landscape architecture theory and practice, inspired by “metabolic” approaches a defined in contemporary research on the “urban metabolism” applied to urban planning (Chaker, Berezowska-Azzag et Perrotti, 2021 ; Scialpi et Perrotti, 2022). *Infrastructure* is the conceptual instrument adopted by this research to operate a methodological approach comprising both philosophy and landscape architecture: *infrastructure* as an *object* of landscape practice and, at the same time, as a meaning-rich *concept* in the theoretical speculation accompanying the contemporary urban and territorial transformational processes (Perrotti, 2015).

The reason for choosing *infrastructure* as a conceptual bridge between aesthetic-philosophical approaches and landscape design strategies lies in the above-mentioned *relational connotation* assigned to the landscape and in the reflexion on the role of the inner connexions established between the elements of the landscape constellation.

If we take as a starting point the literal definition of infrastructure, as for example provided in the renowned Italian *Lexicon of Architecture and Urban Study*, published in 1968 and edited by Paolo Portoghesi, we consider infrastructure as an intervention carried out by the human being on his territory, with the aim of *supporting economic and political structures*, and therefore *necessary to human relational existence*. Going beyond this etymological definition, *infrastructure* is a fundamental concept within North-American *Landscape Urbanism* theory and design strategy, as it constitutes one of the five *general themes* charted out by James Corner in his theoretical manifesto *Landscape Urbanism* (Corner, 2003).

First of all, the importance of infrastructures within the Landscape Urbanism practice depends on the way these designers consider the emergent metropolis as a *living ecology*, in the sense of “a thick, living mat of accumulated patches and layered systems, with no singular authority or control.” In paying attention to the processes and dynamic structures that generate the complex development of the city, Landscape Urbanism theory and practice engenders a new way of considering infrastructures, as an essential component of the *dynamic, open-ended matrix* forming the urban territory.

In addition to the conventional definition of infrastructure in landscape terms, as a *preparatory substrate that conditions ground for consequent uses*, and in urban planning terms, as the material and immaterial systems that *support and instigate the development of the city*, Corner proposes a new approach to interpretation and practice of infrastructural systems. They may be considered as a *catalyst* factor that the landscape and urban designer orchestrates to implant new potentials in the urban *field*, the *horizontal surface* that *organizes, collects, distributes and condenses* all the forces operating upon it.

When operating in this dynamic framework, *infrastructural catalysts* perform, produce and *exfoliate effects* in the urban horizontal matrices. That is the reason why the Landscape Urbanism designer attributes a prominent role to infrastructures, as he pays special attention to the effects engendered by new forms and materials in the urban landscape, rather than just considering the stylistic modes of expression inherent to the geometry lexicon (Perrotti, 2014). In virtue of these characteristics and in the operative framework of the Landscape Urbanism *surface strategy*, infrastructure may be considered as a working model for the whole urban landscape, as the horizontal matrices, which compose the urban living ecology,

function as infrastructures because they establish new conditions for the future development of the city (Otero Peña, Perrotti et Mohareb, 2022; Perrotti, 2020).

A relevant example for the application of this way of designing the contemporary metropolis by the potentials of the *infrastructural catalysts* can be found in the work of American architect Stan Allen, formerly the director, together with James Corner, of Field Operations landscape design office. As he points out in his 1999 essay *Infrastructural Urbanism* (Allen, 1999), infrastructure acts as a *scaffold for a complex series of events not anticipated by the architect* and, in more general terms, as a conceptual and operational instrument for urban and territorial design. He lays down seven propositions to establish an Infrastructural Urbanism strategy that he has implemented practically and experimentally in his recent urban projects, such as the Taichung Gateway Park in Taiwan.

In the first proposition, Allen resumes the point of view elaborated within his Landscape Urbanism practice with James Corner and underlines the capacity of infrastructure to prepare the ground and create conditions for future urban development, through geography (*infrastructure's medium*). The six subsequent propositions serve to describe infrastructure's main characteristics and role within urban design, as for example its being *flexible*, in space and time, *anticipatory*, and able to recognize the *collective nature of the city*, moving towards a *collective enunciation*, rather than getting stuck in *self-referentiality* or fixing an *individual expression*. Focusing, like Corner, on the importance of the dynamic *effects* that they engendered, rather than on the static forms that they assume, Allen distinguishes between two kinds of effects produced by infrastructures and apt to influence the *field conditions*: the *capillary effects of scales*, generated by a great number of small elements that compose the infrastructural network, and the *effect of synergy*, that originate where there is convergence and interchange between different systems in the network.

The last two propositions represent Allen's most original contribution to the theoretical speculation and the design practice of landscape architecture, as they state a specific role for infrastructures within the architectural approach to urbanism. On the one hand, they precisely delineate "specific architectural elements within specific limits" and, on the other hand, they organize the flow of energy and resources on a site, as they "create the conditions necessary to respond to incremental adjustments in resource availability and modify the status of inhabitation in response to changing environmental conditions" (Allen, 2009).

It is in this specific sense that Allen intends to describe infrastructural systems as *artificial ecologies*, and he demonstrates this inherent capacity of infrastructures in the design process for the reuse of the former Taichung Municipal Airport site. The project proposes a new synthesis of park and city, and the 240-hectare newly designed urban quarter, with its central parkway, is composed of mixed functions and uses whose future and progressive development is supported by a dynamic intricacy of *natural, artificial and social ecologies* (such as green reserves, roads and railway networks, park amenities).

2. Hypothesis and methodological approach

In the light of the Landscape Urbanism way of thinking and operating with infrastructures, and taking into account the *relational connotation* that Venturi Ferriolo and Guzzoni ascribe to the landscape constellation, we can formulate the fundamental hypothesis proposed by this research. This is based on the possibility of assigning to the landscape an "infrastructural

dimension”; through its demonstration the urban landscape would acquire the same dynamic connotation inherent to *infrastructural catalysts*. Moreover, the study of this infrastructural dimension highlights the emergence of an ontological characteristic of the landscape, which may be defined in terms of a multi-polar network formed by a complex weave of the physical and phenomenal relationships existing between its components: this web of connections accords the landscape a meaningful and coherent wholeness.

This reading leads to a visualization of the landscape entity in the form of a network that collects within it and interconnects multiple nodes and at the same time establishes relations that are neither isomorphic nor isotropic between its elements. The landscape fabric is therefore based not on a multi-polar homogeneous structure, in which the poles are linked together by relations of the same kind and the same nature, but on a network of *hetero-referential objects*, *objets chevelus* or *quasi-objects*, between which bonds of different types and forms are established.

The first definition that we propose to describe the elements of the landscape complex weave derives from the theoretical work of the French engineer, architect, and historian of science and art, Antoine Picon. In his 1998 text *La ville territoire des cyborgs*, he refers to the contemporary technology landscape as a network of relationships between *quasi-objects* rather than individuals, which acquire a certain value solely *in relation with the site* and *in connection with each other*. Picon refers explicitly to French sociologist Bruno Latour, who in his essays *Nous n'avons jammais été modernes* (1991), and later on in *Politiques de la nature* (1999), proposes a definition of *quasi-objects* (or *objets chevelus* – *ruffled objects* -) directly deriving from the speculative work of Michel Serres (1982). Latour describes the quasi-object as an object with neither sharp boundaries nor separation between a hard-core and their environment. A quasi-object looks like *ruffled beings*, with a large number of connexions, *tentacles* or *pseudopods* linking it, in different and various ways, together with other similar objects. The quasi-objects, in contraposition to the full-objects, are inextricably interconnected with their environment and the other quasi-objects that surround them: they therefore acquire a meaningful wholeness precisely by virtue of the relations with their universe to which they belong.

Thanks to the intermediation of these various philosophical and sociological approaches to landscape interpretation, by the study of the inner relations between its interrelated elements, we can explore the above-mentioned hypothesis concerning the possibility of assigning to the landscape an *infrastructural dimension*.

This idea leads to the definition of a *landscape (as) infrastructure*, which is at the same time a way of thinking about the urban landscape and an operating approach to urban planning, that we may deem “sustainable” as it takes account synergically of the economic, social and environmental dimensions of urban development (Brundtland Report, 1987).

To provide our personal definition of the *landscape-infrastructure* we intend first of all to confront ourselves with an approach to urban planning, a design strategy application, named *landscape as infrastructure* by its leading proponents (Bélanger, 2009). Increasingly adopted within the territorial planning process in contemporary North-American metropolitan contexts, this methodology pursues the investigations of recent decades into the field of landscape as the “locus of intellectual, ecological and economic change of significance” (Bélanger, 2010a).

The experimental work carried out by the Landscape Infrastructure Lab of the Center of Landscape Research at the John H. Daniels Faculty of Architecture, Landscape and Design (University of Toronto) within the evolving regional context of the Great Lake Regions, represents a relevant example of this new kind of method and model of large-scale, long-range design.

The reason for analysing such a complex urban environment is that this transboundary North American region has recently been challenging the *laissez-faire* dogma of neo-liberalist economics, Fordist forms of civil engineering, and Euclidean planning policies that characterised the last century (Berger and Waldheim, 2008).

As outlined in the 2009 text manifesto *Landscape as Infrastructure* by Canadian landscape architect and urban planner Pierre Bélanger, co-director of the Landscape Infrastructure Lab since 2006 and of the design research organization OPSYS based in Boston, the need for a more appropriate consideration of infrastructures in North American contemporary landscape lies in the important logistical, economic and ecological transformations begun in the second half of the 20th Century. The considerable *legacy of industrial production, infrastructural decay, and pollutants on the contemporary landscape* (Kirkwood, 2001) makes it necessary to re-evaluate the role of infrastructures within the disciplinary debate about territorial management, planning and design, and thus liberate knowledge and practice from the “tyranny” of the *specialized and technocratic disciplines* (civil engineering and urban planning).

Bélanger’s analysis takes particular account of the paradigmatic example of two specific urban environments in the geo-political region of the Rust Belt, Flint (Michigan) and Youngstown (Ohio), which have both been affected by an extensive deindustrialisation program, originating in the post-industrial fallout of the early 1980s: *industrial de-corporation, land undevelopment, population unemployment and deurbanization* have been the major consequences of this period of *global outsourcing* (Friedman, 2005) and *plant relocations* in North-America.

The reason for analysing these Flint and Youngstown urban environments is that they provide a significant example of two quite opposite and complementary political approaches to managing the shrinkage process affecting post-industrial cities. While Flint’s political administration engaged in a high-budget regeneration project, trying – without success – to invest in the tourist sector and thus convert and regenerate the post-industrial landscape of General Motors installations, the former steel town of Youngstown has, since 2006, been pursuing a socio-economic and ecological *smart* urban recovery strategy. Working towards a protracted shrinkage of the city rather than an increase in its former prosperity, the city mayor Jay Williams introduced a new approach to urban management and financial investment, involving the basic *landscape infrastructure* as the basis of the regeneration program. The capitalization on high vacancy rates and under-used public spaces, caused by the general deurbanization process prompted by the local administration, represents the major challenge for this *smart* and sustainable strategy, which aims at “an overall downsizing of the city by razing derelict buildings, cutting off oversized or unnecessary infrastructure, banking vacant land, and rezoning heavy industrial districts.” (Bélanger, 2009). Pursuing the dual objectives of economic performance and ecological durability, the application of planning strategies that address the multi-dimensional and complex processes of the shrinking cities urban systems in the North American Rust Belt, may be considered a key practice of the *landscape-as-infrastructure* approach within the contemporary international

scenario. Working, on the one hand, on the decentralization of the traditional urban structure and, on the other hand, on the de-engineering of infrastructures practice through landscape design, the landscape-as-infrastructure approach presented by Bélanger is based on three analyses of three *contemporary streams of development*: urban ecology, bio-industries and economies of waste.

During recent decades, the widespread of the discipline of landscape ecology within the scientific framework of territorial analysis and planning (Perrotti, 2012) has contributed to a more correct understanding of the endogenous and exogenous processes as part of wider ecological systems, that are not isolated and strictly interrelated with the urbanization process, and, in some cases, interpreted through the concept of “ecosystem service” (Cardenas Mamani et Perrotti, 2022).

Beside the contribution of this knowledge field, another important base for the establishment of the landscape-as-infrastructure design approach emerges from an analysis of the progressively increasing role of bio-industry within the evolving context of North-American economy. As they mark the transition from the historical trend of non-renewable hydrocarbon importation and exploitation, different types of bio-industries (greenhouses, composting facilities, bio-fuel and biomass plants, etc.) are increasingly characterising the landscape composition, as well as the economic and ecological evolution of the contemporary Rust Belt urban environment. They lead the transition of the post-industrial, de-urbanized landscape toward a new model of sustainable growth centred on a more strategic use of regional water, food and energy sources. Finally, Bélanger (2009) identifies in the *closing of the material loop* established by the economy of waste management the third fundamental stage of a landscape-based strategy underpinning a more balanced model of urban economic regeneration and site redevelopment: working on the economic and ecological synergies between public and private agencies, the end of dependence on landfilling, solving the problem of site contamination and, at the same time, facing the challenge of financial and employment revitalization of post-industrial sites.

The reason for analysing the effects of the application of the three streams of development to the regional Rust Belt urban environment is that a successful approach to regional management must be founded on the synergic integration of the different systems occurring in the process of provision and distribution of resources, as pursued by *landscape-as-infrastructure* design strategy. As Bélanger pointed out in his text, referring to Stan Allen’s above-mentioned work of 1999, “achieving greater economies and ecologies of scale, these urban-regional operations can be considered self-generated and self-maintaining. At this precise moment – when these landscape operations are essential- they became infrastructural” (Belanger, 2009, 89-91).

Another example of the application of the same innovative approach to urban planning, taking into account the three above-mentioned streams of development, can be seen in the Landscape Infrastructure Lab research work on mapping, analysing and interpreting the various concurrent events within the contemporary urban watershed regions in the USA and Canada national contexts. Involved in a relevant transformation process, as a result of “resource mining, population pressure and geopolitical conflict” (Bélanger, 2010b), these transboundary urban regions are a dynamic scenario for the experimentation of new strategies for economic regeneration, land use distribution and site redevelopment opportunities. Taking into account the nascent reciprocity between ecology, economy and

energy in contemporary public works, the landscape infrastructure approach considers the watershed as a “constructed ecology” (Bélanger, 2009). Through this innovative concept, it is possible to stress the inextricable connection between urban systems and a range of biophysical systems (hydrology, geology, climate) that, in their turn, precondition modes of production. In this sense, watershed may be considered an irreducible structural element of urban systems, in other words, a basic infrastructure which is able to support the synergetic development of economic, ecological, as well as socio-cultural aspects of urban evolution.

3. From Aesthetics to Ethics, through Design

After having analysed different kinds of projects and design methodologies that have emerged within the speculative and professional framework of North American Landscape Urbanism, we come back to the fundamental hypothesis proposed in the introduction of this paper, in order to compare the suggestions arising from the *landscape constellation* metaphor with the results of our analysis of the *landscape infrastructure* approach. This comparison neatly leads us back to the idea mooted above of considering landscape itself as an infrastructure, by the evaluation of a prominent landscape property that we have named *infrastructural dimension*.

In this sense we intend to elaborate our personal contribution to the contemporary international debate concerning the scientific and interdisciplinary issue of “landscape as infrastructure”. In fact, our evaluation of the *infrastructural dimension* derives from the idea of considering the landscape in terms of its capacity to create a connective support structure (etymologically, an *infrastructure*) for different types of ecological, socio-economic and cultural interrelated components – a *concrete constellation*, in Guzzoni’s terms - hence by its potential of acting as a spatial and temporal *infrastructural catalyst* – in Landscape Urbanism’s design vocabulary.

This idea represents our entry point into contemporary reading of landscape as an infrastructure, and may be enriched by a dual evaluation of two relevant and dynamic landscape characteristics, namely *connectivity* and *heterogeneity*. The first property reveals the inner essence of landscape as its capacity to be and to construct a connexions network between different material and immaterial - geographical and cultural – elements, as well as between each element and the wholeness, while the second refers to the heterogeneous condition inherent to landscape, a status in constant dynamic auto-regeneration - thanks to the integration of ever new components -, which French landscape architect Bernard Lassus describes as *more welcoming* than homogeneity (Lassus, 2001).

As a way of thinking about the landscape and a strategy approach to operate within it, *landscape-as-infrastructure* is thus founded in our analysis of the acknowledgment of the infrastructural dimension of landscape.

This philosophically-rooted position is substantially close to the points of view of a number of practitioners and academics, landscape architects and theoreticians, who gathered at the 2008 symposium *Landscape Infrastructure - Emerging Practices, Paradigms & Technologies Reshaping the Contemporary Urban Landscape*, held at University of Toronto, John H. Daniels Faculty of Architecture, Landscape and Design, organized by the Center of Landscape Research and directed by Pierre Bélanger. With the dual purpose of re-discussing the conventional role of infrastructures in the future of 21st century urban regions and, complementarily, of repositioning landscape as *a complex, instrumental system of essential*

services, resources and processes that underpins contemporary urban economies, the symposium was the occasion for the presentation of a number of papers concerning the emergence of a *landscape infrastructure* approach within the North American and European scientific debate on ecological, engineering as well as cultural entry points to landscape design. Comparing emerging practices, paradigms and technologies of contemporary landscape architecture, the different speakers agreed on the importance of shared research into the possibility of a more holistic, synthetic and efficient combination of ecological, economic and cultural issues in contemporary metropolitan regions. The landscape infrastructure *medium* thus reveals its potential to deal with the complexity of this interrelated weave of problematic aspects of contemporary urban living, and, at the same time, sets a new intellectual scenario for the emergency of a new theoretic and operational vision of landscape itself.

A central question has been raised by practitioners and thinkers at the *Landscape Infrastructure* symposium discussions and presentations - as a key issue in their scientific and professional activity - about the role of landscape in developing new infrastructures and the aptitude of landscape design to interrelate (just as contemporary infrastructural projects aim to do) social and ecological issues with highly sought-after technical and logistical solutions. These considerations assume special and exceptional value if contextualized in a professional milieu where the Landscape Urbanism approach has paved the way for a new approach to urban and architectural design and planning, where landscape architecture becomes the primary discipline establishing technical instruments and conceptual paradigms for city-making, and landscape becomes a *medium of urban order* for contemporary urbanism (Perrotti, 2014). That is through the prism of Landscape Urbanism design experiences and theoretical position that we can finally return to our main scientific *problématique* – to use the words of landscape architect and urban planner Gerdo Aquino, director of the SWA Group and co-founder with Ying-Yu Hung of the Infrastructure Research Initiative at SWA (I.R.I.S.). Introducing a recent work on infrastructural projects of SWA landscape architecture practice, aptly entitled *Landscape Infrastructure. Case Studies by SWA*, and reporting the Toronto *Landscape Infrastructures* symposium speculative results, Aquino raises the question of the possibility of considering landscape an infrastructure, as it “acts as a kind of conveyance or distribution network capable of moving people and supporting variety of living systems” (Aquino 2011).

The contemporary issue of *landscape infrastructure* seems, however, to have already intrigued the previous generation of landscape scholars. Landscape architect and academic Julia Czerniak, project manager with CLEAR of two infrastructural projects for the Rust-Belt shrinking city of Syracuse (New York), the Syracuse Connective Corridor and the Onondaga Green Creek – both presented in *Landscape Infrastructure* symposium - recalls for example that, in his renowned 1984 *Discovering the Vernacular Landscape*, the American cultural geographer John B. Jackson already introduced the definition of landscape as “infrastructure, or background for our collective existence” (Jackson, 1984).

Jackson’s image of *background* suggests a final consideration of landscape as a complex apparatus that enables and sustains the coexistence of historical and present living of human beings and ecological systems and, at the same time, instigates the future development of these *interwoven strands of relations*.

In the light of an *ethical* approach to landscape design, in the etymological sense of ethics as a discipline which studies the relationships between man and the environment in which he

lives, *landscape infrastructure* may represent a promising operational strategy, a new conceptual framework and, above all, a working *connective structure* to cross the cultural divide between contemporary philosophy and professional practice.

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