

Dimensiones del paisaje a través de los lentes de la práctica de la infraestructura del paisaje

Dimensions of landscape through the lens of landscape infrastructure practice

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Resumen

El “boom del paisaje”, puesto de manifiesto durante la última década en muchas disciplinas, ha definido las perspectivas de la arquitectura paisajista, convirtiendo el paisaje en un concepto y un instrumento útil para la planificación urbana. Una de las tendencias persistentes en la arquitectura del paisaje hoy en día puede denominarse “el paisaje como infraestructura” tanto como “la infraestructura como paisaje”. A través de la lente de esta práctica emergente y su significado amplificado se puede trazar esta transformación en el significado del paisaje: desde un “paisaje pastoral” y una superficie geográfica “natural” hasta una idea de paisaje como un todo integrado y continuo entre el hombre y la naturaleza; evolucionando, constantemente ‘en construcción’ y espacio productivo, que crea múltiples beneficios para el bien de las personas y del medio ambiente.

Palabras clave

Palabras clave: paisaje, infraestructura, productividad, planificación urbana.

Abstract

‘Landscape boom’, evident during the last decade in many disciplines, defined the prospects for landscape architecture bringing landscape as a concept and a useful instrument for urban planning. One of the persistent trends in landscape architecture today is landscape infrastructure practice which can be considered both ‘landscape as infrastructure’ and ‘infrastructure as landscape’. Through the lens of this emerging practice and its duplicate meaning the shift in landscape meaning can be traced: from a “pastoral scenery” and ‘natural’ geographic surface, to idea of landscape as an integrated, a continuous whole of man and nature; evolving, constantly ‘under construction’, and productive space, that creates multiple benefits for the good of people and environment.

Keywords

Key words: landscape, infrastructure, productivity, urban planning.

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Introduction: Why landscape is important today?

“Landscape research can now holistically address major issues in the social and physical transformation of land, space and environment, and in past, present and future, relevant for addressing the challenges. [...] Thus enriched, landscape research can offer itself as a fundamental, integrated research field for studying perceptions as well as materiality, culture as well as nature and longterm historic transformations as well as present states”.

Strategic Initiative of European Science Foundation
“Landscape in a Changing World” (2010)

As the “Landscape in a Changing World” report states, the major challenges which the 21st century society is facing are deeply embedded in landscape: climate change, energy needs, water and food security, urbanization issues, such as urban and rural transformation, post-industrial development, increasing mobility, demographic changes, to name a few [1]. During the last decade the notion ‘landscape’ has been largely ‘denaturalized’, conceptualized and as a result has overcome its purely geographical meaning for the broader interdisciplinary discourse. Landscape today appears to be not just a good metaphor for common use like atmosphere or climate, but rather a helpful concept for the modern world in its attempts to renew lost connections between cities and nature, people and environment while dealing with the global issues. Its effectiveness is being proved, for example, by popular landscape urbanism practice. Landscape is now widely understood to be the result of the action and interaction of natural and human processes [2]. As simultaneously natural and cultural space, landscape seems to be very prospective for ecologists, urbanists, architects and landscape architects as well as historians and sociologists, with respect to its ability to cross the disciplinary borders and to merge humanities, natural and applied sciences. For instance, anthropologist Tim Ingold (1993) finds landscape a common field for archeology and anthropology: “The landscape tells – or rather is – a story. It enfolds the lives and times of predecessors who, over the generations, have moved around in it and played their part in its formation” [3, p.152]. And geographer Denis Cosgrove (2004) sees landscape to be extremely useful to link historical and geographical science as soon as “historians reconnect with questions of space and spatiality, recognizing that *where* events occur contributes a great deal toward understanding *how* and *why* they occur” [4, p.69].

The changes in the meaning of landscape dramatically influence landscape architecture discipline. Traditionally scenic and pleasing, practice of landscape architecture recombines now with its productive, infrastructural and transformative capacities. It becomes an “art of the survival” as Kongjian Yu (2006) says, essential in our urbanized, global, and industrialized era. He sees the landscape architecture strength in overcoming association with gardening, and instead declaring its origins in the survival skills of our ancestors, “who had to endure a changeable environment, ensuring a safe place away from floods and enemies, while surviving by leveling the land, planting and irrigating crops, and saving water and other resources for sustaining the family and the people” [5]. If perceived this way, landscape architecture true significance unfolds on a bigger scale, and this is illustrated perfectly well with the first official landscape architect’s – Frederic Law Olmsted – professional duties: according to Charles Waldheim (2013), “the first appointment of a landscape architect in America was not for the design of a park, pleasure ground, or public garden. The new professional was first commissioned with the planning of northern Manhattan. In this context the landscape architect was originally conceived as a professional responsible for divining the shape of the city itself, rather than pastoral exceptions to it” [6].

ANNA VIAZOVSKADimensiones del paisaje
a través de los lentes
de la práctica de la
infraestructura del paisajeDimensions of landscape
through the lens of
landscape infrastructure
practice

Landscape architects confront today the consequences of the years of industrial development and ecological degradation; they learn how to work on the big scales and with the complex processes. Post-industrial waterfronts development, river restoration and river basins management, planning for sea-level rise and stormwater flooding, biodiversity support, urban 'sprawl' and 'shrinking', and lots of other, are the important concerns of landscape architecture today, and the ability to deal with such challenges is the guarantee of the significant role the discipline is to play in forthcoming years.

The task of the current paper is to observe the approaches to the infrastructural aspect of landscape, which can be further used to find possibilities and develop methodologies of integration of landscape infrastructure in urban planning.

Landscape infrastructure: facets of practice

Naturally, the kind of landscape practice with striking operational qualities needed a name to define and confirm itself. The suitable notion 'landscape infrastructure' was found. Its first widespread appearance happened on the same name symposium held at the University of Toronto in 2008. The basic points of the discussion were on the infrastructure as a key for a vibrant and functional city of 21st century, and on landscape as a "complex, instrumental system of essential services, resources, and processes that underpins contemporary urban economies and acts as a kind of performative hybrid infrastructure" [7]. The topic has been developing rapidly since then, and now there are a numerous papers, books, professional offices and educational studios, which focus on landscape infrastructure.

A word-combination 'landscape infrastructure', in fact, has a duplicate meaning. On the one hand, it is 'infrastructure as landscape' when "non-biologic, non-dynamic, and non-adaptive" material of city's infrastructure is considered a constructed landscape. On the other hand, landscape as "non-mechanical, non-linear and non-stable media of living systems" is acknowledged as infrastructure [8]. These approaches can be illustrated with a various projects, both historical and contemporary.

Engineering infrastructural systems of cities and regions, such as roads, railways, dams, pipelines, are built into urban environment and can represent themselves a type of artificial landscape. When they do not respond to certain basic processes of the site, ugly and degraded environments appear, such as spaces under the transport overpasses or along the railway routes. Otherwise, infrastructure can originate from local processes and conditions; can influence the emergence of connected urban tissue and activate new functions and activities. One of the most interesting examples of the kind Alex Wall (1999) refers to in his writing. He describes, that at the northern Paris there were territories with a radial planning structure that provided connections with a city center but almost entirely separated the 'sector' communities. In the mid-1990s, the Bureau des Paysages developed a project for a tangential boulevard and a trolley line with public spaces beaded on it, and Sunday markets located nearby. This has encouraged citizens from different communities to communicate more and thus has lessened the marginalization and segregation of certain ethnic groups: "the tramline is, literally, a link that provides a coherent system across an otherwise fragmented field. It comprises three series: the material of the surface; the vegetation structure of hedges, trees and plantings; and furnishings. Organized in different configurations, the families of surface, vegetation, and furnishings produce a contrapuntal effects in relation to the ugly irregularity of the surrounding fabric. The integrity and continuity of these elements produce not only an image of public space, but also the necessary environmental conditions to support public activities" [9, p. 240]. There are a lot of cases which aim is to interweave various and often conflicting processes and flows, systems and spaces, existent on site, into an active and functional constructed landscape that guarantees



a) Queens Plaza, New York, by Margie Ruddick Landscape, 2011;

b) Buffalo Bayou Promenade, Houston, TX by SWA Group, 2006.

safety and allows interaction. For instance, project for the Queens Plaza in New York helped to transform typical 'non-place' in the middle of the tight transportation node, with a three subway lines and two elevated routes, into environment, friendly to pedestrians and bicyclists. Architects of Margie Ruddick Landscape has woven the threads of infrastructure, street, park, and neighborhood routes into complex hybrid whole with the porous boundaries so one can be directed into and through it via five or six different pathways [10].

The other example is the Buffalo Bayou Promenade in Houston, TX by SWA Group. It has successfully converted a derelict river valley under an urban freeway into a beautiful, comfortable public space and simultaneously a useful flood defense system. Moreover, the place itself was a physical edge that divided the midtown from downtown; a new park helped to activate the border zone, and created new 'cross-border' pedestrian connections as well.

There are also changes in the way of streets and roads are seen: not just as corridors for primarily vehicle movement, but as integrated spaces of publicity and commerce, that safeguard the movement and activity of different types of users. This practice is called 'streetscaping' which analogy to landscape gives understanding of a street as integrated environment with various types of processes and connections.

As for 'landscape as infrastructure' aspect of the phenomenon, evidently, the infrastructural capacity of landscape has been known and used for centuries. There are dozens examples worldwide: Egyptian 'basin irrigation' systems, Asian terraced landscapes, Dutch polders, Mexican chinampas – floating agrarian islands – to name a few. In Ancient Egypt to support the agrarian productivity and land fertility the 'basin irrigation' was used. It was spatially complex system of dams and canals which made a little pressure on the environment because worked in accordance to the natural hydrological cycles. Just before the annual flooding, workers dug series of short canals through the high Nile's banks to let the water flow to basins, from which it was directed to agrarian fields. When silt, the best Egyptian fertilizer, accumulated on the ground, water has been directed back to the river washing the salt out of the soil on her way. Silt which was covering the land held moisture long enough for the crops to grow up. Agrarian production was quite effective even at the times of political decay in Egypt, and the infrastructural landscape operated properly until the middle 19th century when the Aswan Dam was constructed.

The other example is man-made terraced landscapes on steep slopes of the mountain hills in South-Eastern Asia – China, India, The Philippines, and Vietnam. Terraces effectively retain rain water providing appropriate conditions for rice to grow. Besides, terraced landscape regulates the surface flow and prevents landslides. The most



a) terraced rice fields in Thailand;

b) polder landscape of the Netherlands, photo by Edward Burtynsky, 2011.

known European example, Dutch polders are the basic spatial form and *genius loci* of the national territory. They are a visible result of a collaboration of man and nature, based on understanding of natural processes, and on ability to direct and manage those processes. Till now Dutchmen are very sensitive to environmental changes that can threaten safety of their land, such as climate changes, sea level rise and anomalous rains and draughts. To be prepared to possible futures, Dutch government have implemented the national planning strategy of accurate 'de-polderization' named "Room for the River". Its purpose is in creating an effective flood defense, while using soft landscape methods: creating natural floodplains, reservoirs, islands and additional channels to hold water.

To sum up, the historical man-made infrastructural landscape operated as irrigation, flood protection, and food production systems; they contributed into local economy and influenced the formation of cultural and national identity. In order to create an infrastructural landscape, man has collaborated with nature; instead of conquering, he has carefully constructed it. Natural resources, processes and cycles, such as seasonal raining and flooding and special local conditions were taken into account and used for the good of the economies and people. As a result, infrastructural performance of landscape becomes distinctive cultural feature and a basis for local identity, *genius loci* and, in some cases, organizational matrix for a future planning structure. These principals are important now, when humanity is awakening after the 'man over nature' period, and is looking for setting harmonic relations with the environment.

Three dimensions of 'landscape'

Landscape infrastructure projects represent an apparent shift in 'landscape' meaning which is also evident in broader disciplinary context. It has not been a while, since landscape was basically interpreted both geographically as a natural earth's surface defined by the specific combination of relief, climate, soils, flora and fauna, and pictorially as a view of the land, generally countryside, as well as the artistic representation of that view. Scenic meaning of landscape originates from English landscape painting focused on depicting a visually appealing lands. This genre was extremely popular among the landlords who sought to record their freshly assumed property, as the land market was replacing the feudal rights at the dawn of the capitalistic era [4, p.61]. And it wasn't until the last two decades, when the almost forgotten roots of 'landscape' term were recovered thankfully to the work of prominent researchers, J.B. Jackson (1984), K. Olwig (1996, 2002), D. Cosgrove (2004), A.J. Adams (1994) and others. The evolution of landscape notion is truly fascinating. Originally holding strong legal and territorial senses, German word *landshaft* is still used for indication of the particular lands in Northern Europe. Olwig (1996) admits that Dutch administrative territory of a *landskaber* differed from the other lands called *amter* because of its more independent development in relation to the other districts and internally, because the population



One spot of the 'Room for the River' program: waterfront of river Waal in Nijmegen city. The existing dike is to be moved 350 m inland; an ancillary channel is to be dug in order to give the river more room which will create an elongated island.

possessed a greater right to self-determination and to participation in the judicial process and in government [8, p. 631]. The explanation of such a deep rooting on a certain territories Cosgrove and Olwig find in the geographical position of these lands. Low lying territories, marshes, bogs and islands particularly on the border of the Danish kingdom and the German states have been "marginal to the interests of monarchs and aristocrats whose wealth and power depended upon the control, ownership and taxation of more fertile and accessible territories" [4, p.60]. Consequently, the favorable conditions for strengthening the local autonomies emerged. By example of the Netherlands, A.J. Adams explains the important processes that occurred. On those territories, the peasants who possessed the land they worked on as a class numerically exceeded the number of the nobility, the church and the urban bourgeoisie. The inhabitants owned the land because no one from outside wanted it, thus the extensive feudal system of attaching peasants to the land and to the noble masters has not emerged. The land was a product of a life and a common work of its people. The borders of the 'land' were defined by the customary law, the set of customs and traditions that were accumulated through the ages; each of those was the result of the slow adaptation to the place, to its local topography, weather and soil and to the people. "No group sets out to create a landscape – J.B. Jackson admits – what it sets out to do is to create a community and the landscape as its visible manifestation is simply the by-product of people working and living" [12, p.12]. It has logically led to the visual distinction of one landscape from another, but the scenic aspect by no means was defining for the 'landscape' in the original German sense [4, p. 60-61]. It happened exactly in the Northern Europe, particularly on the lands of Flanders and Holland, where local landscape gave a start to the genre of painting. The object of the Northern European landscape art was landscape in its full original sense which was so much more than simply scenery. As Olwig writes, "landscape was imbued with meanings, etched by custom in the land, that were at the heart of the major political, legal and cultural issues of the time. It was at the center of the process by which members of the non-noble estates of emerging national bodies sought to establish cultural identities as active, politically engaged and patriotic citizens" [11, p. 635]. The more detailed observation on this point is given in A.J. Adams (1994) writing. What is critical is that 'imported' to England, genre has lost its inherent symbolic meaning. The key transformation of the notion's sense, that influenced its further use, happened. Landscape instead of the cultural and territorial construction, where community and the land they cultivated created the integrated unity, became a visually appealing countryside view perceived from a distance. Hence, people and the result of their work were separated from landscape. For a long time since, 'human component' has been recognized an external factor that changed landscape's 'natural' state and not an organic part of it. At least this viewpoint is true for the Soviet geographical tradition, which is rather influential on the Post-Soviet territories, including Ukraine. Interesting that in the mid-19th century in the Russian Empire when the landscape studies within geography were developing, description of landscape was more or less close to its

ANNA VIAZOVSKADimensiones del paisaje
a través de los lentes
de la práctica de la
infraestructura del paisajeDimensions of landscape
through the lens of
landscape infrastructure
practice

original meaning. Scientists V. Dokuchaev and L. Berg acknowledged landscape as an inseparable unity of society and nature where the character of relief, climate, flora and fauna, inhabitants and their culture were a one harmonic whole. However, after geographical science split up into physical and economic, such definition stayed in usage only by marginal school of 'joint geography' whose representatives found it inexpedient to consider the society only as an external factor that influences nature, because the man is a part of nature and cannot overcome its scopes. While changing nature, man is changing. Humanity was considered not only the side in 'nature-culture' relationship, but the result of it as well. The last years' critique of the dualistic thinking explored by Karl Benediktsson (2007) destabilizes the 'naturalness' of nature and draws out its intricate sociality, and Denis Cosgrove (2004) acknowledges as well the capacity of landscape to 'naturalize' what is deeply cultural. Therefore, nature-culture or urban-rural contradictions, as well as many others, are seem to become ineffective or even destructive in postmodern times.

Anyway, the consequences of 'separation' of men from landscape are still very well evident in urban planning. There is a quite common opinion that vegetated places in the city with water and picturesque relief are 'landscapes', and the built environments are nothing of the kind. This contradiction complicates the setting of contacts between ecology and urban planning. It is necessary to recognize the man and the physical products of his cultural and economic activity to be a natural part of landscape in order to comprehend the integrity of urban tissue and its intrinsic connections with the broader environment. "Landscape is not a natural feature of the environment but a synthetic space, a man-made system of spaces, superimposed on the face of the land", as J.B. Jackson writes [12, p.8].

All environments are landscapes with a different balance of anthropogenic and natural components; cities are the same landscapes as countryside or natural reserves. This statement is one of the standpoints of landscape urbanism theory. Today we do not see a city as an object with definitive measures, like the city in middle-ages; we see a complex urban reality, characterized by horizontal sprawl and rapid change, and by the processes of deindustrialization, decentralization, decreasing urban density and automobilization, as Charles Waldheim (2006) points out [14]. Thus there is a need in new planning approaches and they are found today in a landscape concept.

The spatial integrity, 'totality' is one of the quite common ideas of landscape today, but not the only one. The other side, useful in urban planning today, is the landscape's dynamic qualities – the ability to change and evolve over time. "Landscape in a changing world" report admits that landscape is dynamic, living and changeable; its development is a social process as well as a result of the long-term natural and human processes of the past. Tim Ingold writes: "landscape is never complete, neither 'built' nor 'unbuilt', it is perpetually under construction" [3, p. 162]. So the landscape urbanism idea of 'open-endedness' which proposes the constant process as a result of the planning work can be more easily accepted by landscape architects as they used to deal with the living matter that changes over time. Uncertainty or vagueness is typically landscape feature, it shows that there is always something unknown, unexpected and mysterious hidden, that largely influences its esthetic qualities. Changeability of landscape is a result of the existent processes that create its physical structure. Current tendencies in landscape planning disciplines are quite focused on examining, using and managing of such processes. For instance, in projects of 'structured ecologies', as Chris Reed (2010) calls it, architects work directly with the processes of dynamic ecologies, explore the mechanisms of "how the plants grow, behave, and adapt; the performance requirements of wildlife habitats; the movement and dynamics of the various waters present in a landscape" [13, p. 326].



a) new skyscrapers proposed for New York are attached to the Central Park;



b) elevated park High Line by Field Operations and Diller Scofidio+Renfro attracted numerous new developments.

Besides, when talking of changeability of landscape we must also assume its strong catalytic influence on the development of surrounding territories. It's a well-known acupuncture effect when a local regeneration or a creation of amenity can start the wave of positive alterations nearby. The historical example is a New-York Central Park. At the beginning of its construction the surrounding territory has been a complete bog far out of the city borders, but in a very short time became the most vibrant and expensive land at the heart of the fast growing metropolis. Central Park continues to attract the luxury super high-rise development, the fact of which has a strong public resonance though, because of the threat of overshadowing the park territory.

A more positive example is the High Line Park that provoked fast development of a post-industrial downtown of New York, as well as assisted for public connections and local neighborhood well-being. The construction of rather numerous units for housing and hotels, as a result of the transformation of the derelict site and emerged strong public popularity, appears to be an appealing model for a city development in the times of economic downturn that a lot of municipalities struggle to implement.

Third important feature of landscape lays in its productivity. The ability for productive functioning is drawing attention of the architects today. Productive landscapes are much more self-organized and able to sustain their development than traditional landscapes with picturesque compositions but whose beauty is largely dependent on human maintenance. Useful products of such landscapes vary from classical agriculture to water, soil and air cleaning, improving of biodiversity and formation of ecosystems. Besides, James Corner (2006) admits that productivity can be poetic as well as pragmatic, when assisting the new esthetic effects for the emergence of sensory and meaningful environment [15]. Productive landscape is the most commonly understood as an open space that functions in economically and ecologically effective way. In Wageningen University in the Netherlands there is a studio of landscape machines which is a result of the lasting interest of students in making projects and conceptualizations of the living landscapes with the productive qualities. Landscape machines according to Paul Roncken (2011) are experimental projects that combine the characteristics of a 'machine' (predictable, product-oriented, and effective) and of an ecosystem: "they must be referred to as machines because of their productivity, yet they are neither machines with fixed parts that only produce one thing repetitively nor are they made of metals and plastics and suchlike materials. They are made of landscape features and are driven by landscape processes, and in the meantime they produce a multitude of food products, natural biotopes, clean air, and soil and so on. They might resemble parts of the Dutch landscape, which could be considered a giant laboratory to test various interventions that relate to the control of water" [16, p.72].

The idea of landscape as an integrated, evolving and productive space corresponds with another landscape urbanism cornerstone: the declared shift from closed object to

ANNA VIAZOVSKADimensiones del paisaje
a través de los lentes
de la práctica de la
infraestructura del paisajeDimensions of landscape
through the lens of
landscape infrastructure
practice

fields or 'places' that are fragments of the urban environment, dynamic and dependent on natural and social processes. It can be also referred to as an infrastructure.

Conclusion

Though the distinction between 'landscape as infrastructure' and 'infrastructure as landscape' in some cases can be ephemeral, is it still possible to generalize character features in both facets of landscape infrastructure practice. 'Infrastructure as landscape' stands out as a part of the broader concept for 'city as landscape', which puts landscape model as more appropriate to understand a postmodern city than built form model. Tim Turner writes; "in these plural times, the day of the singular town plan has surely passed away. The city of the future will be an infinite series of landscapes: psychological and physical, urban and rural, flowing apart and together" [17, p.v]. Thus, 'infrastructure as landscape' projects drive the development of methodology, instruments and techniques for landscape model of planning, while 'landscape as infrastructure' projects are more about the traditional objects of landscape planning such as parks or plazas but always with operational, active, productive functions. These qualities present them as multifunctional infrastructure, simultaneously engineering – for flood defense or stormwater management; ecological, which enhances biodiversity and ecosystem development, enables the river functioning in a natural way, etc.; social – for the urban environment quality and to make visible the natural processes and flows, which are usually hidden under in pipes, under the ground, and out of city. If 'infrastructure as landscape' struggle to connect existing fragmented territory, look for the harmonic operation of diverse processes and users, and develops new methods and approaches to do so, when 'landscape as infrastructure' seem to be more about creating new planning patterns and typologies. There are blue-green infrastructures and ecological networks that provide the ecological stability and connectivity, and have a great potential to regulate city development. There are beautiful landscapes on top of landfills that 'digest' the traces of human consumption; public orchards and gardens; flood parks and constructed wetlands, stormwater boulevards, water squares and rain gardens. They vary in scale and type of functioning, whether their purpose is to gather, transfer, retain or filter stormwater runoff; to revitalize river valley or clean soil; to provide food safety or flood defense; or even to give a way to more deep planning integration in order to achieve a new type of urban environment: flexible through time, resilient to change.

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