The Thread of Landscape Thinking in China: from the Legacy of West Lake to Ecological Civilization in the 21st Century

El hilo del pensamiento paisajero en China: del Lago del Oeste a la civilización ecológica en el siglo XXI

中国的景观思维: 从西湖的遗产到21世纪的生态文明

Abstract: The civilizing component of the landscape in China justifies the development of this article, why the reading of nature through a cosmology and cultural construction of the landscape for
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centuries, represents a very significant differential contribution to the reading of nature and man in Western civilization. This text confronts the cultural construct of the landscape in the history of Chinese civilization and the character of green space as a regenerating, balanced, and transforming instrument for cities with serious deficits and environmental problems in the 21st century. We identified the need to connect the distinctive cultural legacy of the landscape of Chinese civilization and the contemporary landscape narrative that emphasize its instrumental value as infrastructure and ecological services. Case studies, West Lake, and two contemporary urban regeneration projects, Xuhui Runway Park and Houtan Urban Park in Shanghai. Western Lake and its surroundings in Hangzhou are a historic reference for their landscape values, to which their physical geography, literary identity, and spatial readability contribute.

Key Words: landscape architecture; China; 'sponge city'; bioremediation; urban regeneration; ecological civilization.

1. Introduction

The civilizing component of the landscape in China justifies the development of this article, why the reading of nature through a cosmology and cultural construction of the landscape for centuries, represents a very significant differential contribution to the reading of nature and man in
Western civilization. In China, the concept of landscape as words, in poetry, painting and gardens, will appear twelve centuries before according to Agustin Berque (Berque, 1995). This text confronts the cultural construct of the landscape in the history of Chinese civilization and the character of green space as an instrument for regenerating, balancing and transforming cities with serious deficits and environmental problems in the 21st century.

We identify a lack of continuity in the narratives that construct the landscape between both temporal moments. The contribution of landscape in poetry and painting shapes the origin of landscape thinking and is a distinctive contribution to Chinese civilization. We identified the need to connect the distinctive cultural legacy of the landscape of Chinese civilization and the contemporary landscape narrative that emphasizes its instrumental value as infrastructure and ecological services.

The case studies of West Lake and two contemporary urban regeneration projects, Xuhui Runway Park and Houtan Urban Park in Shanghai. Western Lake and its surroundings in Hangzhou are a historical reference for their landscape values, to which their physical geography, literary identity, and spatial readability contribute. Xuhui Runway and Houtan Parks in Shanghai are urban projects where the reconstruction of local ecosystems and natural processes are instruments at the service of public space and its social use.

2. Theoretical Framework

Agustin Berque and his work provide the foundations of the birth of the concept of landscape and are essential to understanding the bodies of thought in East and West that give rise to a distinctive vision of the landscape and the different historical moments in that this construction appears specifically in China and in Europe (Berque, 1995), and that it relates to the birth of a ‘landscape thought’, which in the case of China will be extended in the East to Japan and Korea later. Javier Maderuelo (2010), along the line of Berque claims the participation of art and culture in shaping the concept of landscape and as mechanisms of work of the various elements that build a territory.¹

The recovery of the health of the urban environment and its capacity for regeneration considers the concept of ‘resilience’ as an attitude for

urban recovery, which the pioneering ecologist Aldo Leopold (1887-1948) used in relation to the capacity of self-regeneration of natural systems.\(^2\) The concept of the ‘sponge city theory’, and the study of urban water systems create a turning point in the design and ecological planning of cities. But the basis for this transformation dates back to 1997, when Kongjian Yu and his team began to focus their efforts on the study of urban water systems. They used the concept of a sponge to describe the flood control capability of natural systems, noting that “Natural wetlands along rivers can function as sponges to retain water during floods and recharge water during drought” (Yu, 2016). In 2001, Yu and his colleagues proposed “Ten strategies for building urban ecological infrastructure”, which was an early and systematic discussion of the ecological management of rainwater (Yu, Li & Chao, 2001). These strategies emphasize the construction of urban ecological infrastructures to safeguard ecosystem services, two of which are directly related to the urban ecological management of rainwater, that is, the maintenance and restoration of natural forms of rivers and coasts and protect and restore wetland systems.\(^3\)

3. The Landscape in Chinese Civilization

The civilizing component of the landscape in China is configured through its own cosmology and as a cultural construction. The landscape represents a very significant differential contribution to the value of nature and landscape in Western civilization.

Historically, Chinese civilization has sublimated nature with a spiritual and ethical component, which is manifested mainly through painting and poetry. These are two classical disciplines in the classical Confucian formation, whose borders are diffused due to their intimate relationship with calligraphy and painting.

Painting and poetry do not describe a natural territory but rather describe sublime landscapes, where the painter and poet project a mood and a reading of the world. As the Spanish geographer Manuel de Terán puts it: in order for the country or territory to become a landscape, it is necessary to weave its diverse elements. The work that causes a territory to become a landscape must be sought beyond what mother nature offers

\(^2\) This concept is also used in other disciplines such as material behaviour, engineering, catastrophic assistance, military defence, ecology or psychology.

\(^3\) See the introduction to the origin of this concept in the text: ‘Sponge City’ Theory and Practice by Kongji Yu and his Team in: https://www.turenscape.com/topic/en/spongecity/index.html
us, beyond its mere physical union of rocks or rivers, it must be sought in culture and art (Maderuelo, 2008).

According to Agustín Berque the landscape is not in the gaze of objects, but in the relationship, we establish with our environment and the development of our own landscape thinking. Berque identifies that the reality of the landscape was born at a time in history (Berque, 2009). And the birth, to the extent that we can date it with documents, occurs in China (Berque, 2009). Berque establishes a set of criteria that allow recognizing the birth of the landscape: 1. an oral or written literature that sings the beauty of the places, 2. recreational gardens, 3. architecture planned with beautiful views, 4. paintings that represent the environment, 5. one or more words describing the landscape and 6. an explicit reflection on ‘the landscape’.4

The birth of the landscape concept that meets all these criteria occurred in China around 440 BC with the work ‘Introduction to landscape painting’ by Zong Bing (375-443). The written formulation of the ‘shanshui’ landscape concept translated as mountain and water is generated almost a century earlier on the occasion of the ‘Lanting banquet’ (Berque, 2009) which took place during the Western Zhou dynasty (1122-770), one of the most relevant literary festivals, which brought together the group of writers who wrote 41 poems compiled by the great calligrapher Wang Zizhi (303-361).

In parallel, the elements of nature in the landscape find their material metaphor in the design of the private gardens of the residences of intellectuals and high-ranking officials in the cities. The design of these gardens’ projects with the use, location, and relationship of its elements - water, rocks, pavilions, paths, paths, views... a code that translates a complete vision of the relationship of man and the cosmos, and also personal ethics in the face of life’s difficulties (Berque 2009). No element and its location is random within the enclosure enclosed by the garden’s high walls, and its contemplation with the senses and the spirit. It is precisely the high-ranking illustrated officials, trained in the disciplines of poetry and calligraphy, who are the authors of some of the best poetic works, where landscape and its subjective perception play an essential role as a transmitting mechanism.

4 Various words refer to the qualities of the landscape; shanshui uses mountain and water characters; fengjing evokes the atmosphere of the landscape; fengguang and guangjing will allude to the luminosity of the landscape; jingxiang a landscape shapes; fengzhi and jingse to the attraction it exerts.
The poetry and painting of the Tang (618-906) and Song (960-1279) dynasties are the best reflections of the participation of the landscape in the construction of the worldview of civilization. We, therefore, understand the civilizing component of the landscape that expresses the phenomenological concept of ‘mèdiance’ exposed by Agustin Berque, which gives the landscape a specific, cultural, social, and subjective value with its own identity. In Chinese culture, the landscape has participated in a distinctive social construction (Berque, 1995).

It is no coincidence that Hangzhou has historically artificially shaped its landscape and surroundings. The West Lake is an artificial construction in the semi-swampy region of the Qiantang River basin, with lots of underground water and whose historic city was crossed by numerous canals, currently disappeared.

Source: Hangzhou Historical Atlas.

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5 This is a drawing of the West Lake and surrounding areas with the causeways Bai and Su in 1735, the thirteenth year of the reign of the Yongzheng, Qing dynasty.
4. West Lake and the Construction of an Urban Identity

The West Lake has been a carefully shaped element over time. Its boundaries, small islands, scenic views, pavilions, pagodas, trails, and routes result from this careful design that coexists and is integrated into harmony. The various interventions and modifications of West Lake in the time that had a direct relation with the development of the success of the local agricultural activity have not prevented its landscape has constructed an imaginary geography that has characterized the identity of the city for centuries.

The trails and elevated bridges that run over the lake, which are distinctive of its geography, are the design of high-ranking illustrated officials. During the Tang dynasty, a prominent governor and poet, Bai Juyi (772-846) sanitized and rebuilt the dikes and designed the route of the first elevated path, the Bai trail, which was to characterize the perception of the lake landscape and its environment since then. Also, during the Song dynasty, another governor, poet, and intellectual, known as Su Dongpo - Su Shi (1037-1101) - designed another of these routes with lands that were obtained from the drainage and sanitation of the lake, the 2.6 km long took its name.

The resulting landscape has built a circular ritual route that allows a perceptual experience of the lake and its preserved natural environment. Over time, it has been praised and described as the epitome of landscape beauty.

The descriptive poetry of the lake, its surroundings, and its perception contributed to the creation of an imaginary geography of the city that has remained in the popular imagination despite the different traumatic episodes of the destruction of the city or deterioration of the lake and its surroundings. As during the construction in the interior of the city of the Manchu garrison, during the Qing dynasty (1644-1912), or the destruction and fire due to the Taiping rebellion (1850-1864 ). Su Shi’s poem is eloquent as a source of inspiration:

‘Drinking by the Lake: Clear Sky at First, then Rain’
‘Yin hushang chu qing hou yu’ 饮湖上初晴后雨
Su Shi

The shimmer of light on the water is the play of sunny skies,
The blur of color across the hills is richer still in rain.
If you wish to compare the lake in the West to the Lady of the West,
Lightly powdered or thickly smeared the fancy is just as apt.
The demolition of the city walls, which visually and physically limited the city’s contiguity with the lake shore from 1912, with the first Municipality of the Republic, allowed the construction of a set of five linear parks according to the concept of modern equipment for the city and contributed to the consolidation of the set of trails that allows its circular route and its consolidation as a cultural landscape.

From this period, West Lake’s cultural landscape was consolidated, and with the arrival of the Shanghai-Hangzhou railway line in 1912, it became one of the city’s main assets, parallel to tourism development. The post-reformist period of 1979 recovered the importance of cultural landscapes as economic drivers of cities linked to their historical identity. In 1983 the State Council named Hangzhou a famous historical and cultural city and a national tourist and scenic city. In 1984, the Executive Office of the State Council nominated Hangzhou, as a tourist center of Southeast China and top international tourist city. In 2011, the West Lake area and its surroundings were recognized on the UNESCO World Heritage list.

It is relevant as the set of natural elements that make up this cultural landscape also build a map of the visual form of the city core that facilitates its readability and the construction of a mental image of this, as described by Kevin Lynch (Lynch, 1960).

View of the West lake from the east bank (Source: Maria José Masnou)
5. The Open Space of the City and the Climatic Emergency

It is evident that the variable and intensified climate cycles caused by climate change are conditioning many cities, mainly those located in socio-economic vulnerable zones added to its potential to suffer multiple natural hazards due to their seismic location, heavy seasonal rains, tropical cyclones, typhoons, floods or droughts that challenge the formulation of urban planning and design that contemplates solutions that allow facing...
these events, unforeseen events that happen sequentially or that often coincide.

The report of the ‘Intergovernmental Panel on Climate Change’ (IPCC, 2020), reflects all the complexity of the impact of climate change on the planet. In his synthesis of the state of the planet to policymakers begins the report describing that, since the pre-industrial period, the temperature of the air on the earth’s surface has increased almost twice as much as the global average temperature. Climate change, global warming and the frequency of extreme events, sometimes alternating - heat waves, droughts, intense storms, and floods - have had an adverse impact on food security and terrestrial ecosystems, and have contributed to desertification and land degradation in many regions.  

Urban planning and design must include the paradigm of climate emergency in the material configuration of the open space system. Green space systems as ecological infrastructure are a solution contemplated in urban regions’ conceptual plans.

China’s geographical location in the highly vulnerable Asia-Pacific region has been affected by the profile described above. In fact, some of the stories of its founding mythology rest on the legend of the control of the waters of the rivers through great hydraulic works carried out by the great emperor Yu, China is a hydraulic civilization as established by Fernandez-Armesto (Fernandez-Armesto, 2001).

China has been subjected to earthquakes, climatic alterations, cyclones, seasonal torrential rains, and large floods throughout its history, caused by the large rivers Yangtze and Yellow and the tributaries that articulate its difficult geography. These events have caused significant human and material losses. Therefore, we find in some urban design and landscape architecture projects a solid and conscious environmental discourse on the need to rethink the cycle of water or the creation of green lungs. Green and blue infrastructures are very efficient instruments in the form of a system of natural spaces, urban and river parks, or green corridors.

The development of new urban areas or the transformation of large pieces of open and green spaces for mixed-use has allowed proposals of great interest and size, including drainage solutions, and collection and recycling of water, such as those proposed by ‘sponge city’ theory and the

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6 IPCC-2020 special report on climate change, desertification, land degradation, sustainable land management, food security and greenhouse gas flows in terrestrial ecosystems.
use of geo-design. However, these projects do not represent widespread trends. Often the plans incorporate environmental discourse simply as an instrument that legitimizes large urbanization operations, as we have discussed above, and helps certify large urban projects. In China, the administrative categories and the situation in urban ranking create significant socio-environmental inequalities in cities' ability to address the climate emergency and their mitigation capacity. But it is the commitment at the United Nations Assembly of President Xi Jingping - in September 2020 to achieve zero carbon emissions by 2060, which advances a systemic change for the future, which is specified in structural measures and detailed in the fourteenth document of the Five-Year Plan (2021-2025) adopted on 11 March 2021. According to some analysts (Merics, 2021), this document marks a turning point from the quantitative growth of previous plans to a new stage of development more introspective and focused on qualitative development objectives. And where political governance should facilitate its implementation at the national level.

The adaptation, mitigation, and resilience of each specific urban environment will be essential to address the impact of urban change on cities. Numerous important landscaping and landscape urbanism studies are providing efficient and integrated solutions in large urban projects, and some theories, such as the ‘sponge city,’ are references.

6. Landscape Architecture as a Discipline and Regenerative Instrument in the 21st Century

In the 21st century, paradoxically, it is the narrative of nature as an ecological asset to support more sustainable cities and as an instrument for urban improvement and recovery of post-industrial areas, which underlies the practice of the discipline of landscape architecture. The discipline of landscape architecture and landscape urbanism, defended by James Corner, has allowed a perspective reflection on the value and contribution of landscape in the processes of urbanisation, transformation and conversion of land in urban areas. Urban design, in its formulation, can become an ‘interface’ between people and nature, as said by James Corner in his commentary on the New York High Line designed with landscape architects Diller Scofidio and Renfro in 2004.

The intense and dynamic processes of urbanisation in China have offered the opportunity for a formidable development of these disciplines. In Chinese cities, the vision of international teams and local professionals trained in American and European universities' best landscape architecture
schools has allowed an analytical vision of the relationship between city and landscape and the need for its recovery as a balancing asset of cities and territory.

Mainly with the transfer of knowledge on urbanism and design from the West to the East, in the first decade of the 21st century the Anglo-Saxon formulation of landscape architecture has been incorporated in China (Waldheim, 2016). Among these professionals, the work of a local landscape studio that marks a line of work, Turenscape led by Yu Konji, is pioneering and a benchmark. Yu Kongji trained as a PhD in the ‘Design Program’ at Harward University (1992) (Waldheim, 2016) and was the first landscape architect to open a private studio in China. He has also been the editor of the Chinese National Security Plan (2007-2008), where he integrated rigorous planning methodologies from his training and American work, the language of Forman to analyze the complex matrices of the landscape, GIS digital instruments and techniques, associated with the ‘Lab for Computer Graphics’ and the concept of ‘Game Theory’ (Waldheim, 2016).

According to some authors (Waldheim, 2016), the ecologically informed spatial practice of urbanism and design is finding in China a fertile field of implementation due to a unique combination of a pyramidal political structure, centralized decision-making, an openness to the scientific and technological conception that characterizes political-administrative planning and governance, as well as a wide field of experimentation in urbanization processes.

The discipline of landscape architecture frequently blurs the lines separating the practice of ecological urbanism. Many projects are already working with dynamic, relational digital models that aim to calibrate ecological processes more rigorously in their relationship with the city’s shape (Waldheim, 2016). The nature of green spaces in cities is intimately related to the opportunities opened up by the growth dynamics of new urban areas. A growth based on the extension of urban centers, growth of districts, cities, and towns, or conversion of rural land into urban land, all in the same municipal administrative unit. This situation entails a situation of fragmentation and lack of warp - structural, functional, and scalar- of the various urban and urban-rural fabrics that make up the administrative unit of the municipalities.

The role of green areas in the urban structure is diverse, they can be part of a complementary project of an urban area in the form of an urban park, for example, in new university campuses, technology parks or new residential areas, or function as green infrastructures, but also as engines of urban regeneration. Green areas can constitute a mechanism...
for recovering singular elements of physical geography, such as fluvial spaces, maritime fronts, wetlands, and hills, and transforming rural spaces for the city. They may also have a structural management character, for example, by connecting urban areas or at the regional level. The processes of transformation and regeneration of cities have often incorporated post-industrial soils, brownfields, or destroyed natural ecosystems that in the future will be recycled for new productive and urban functions. Its recovery through mechanisms that ensure environmental safety and human health is present as an intervention criterion. The goal of these new-plant green landscapes often incorporates the goal of recovering or reinventing natural systems. For this reason, the projects that materialize them are often of a certain urban and territorial scale.

7. Urban Design and Ecological Imperative of the Xuhui Runway and Houtan Park in Shanghai

Water management and control through water infrastructure have been a permanent concern in a country where it has historically been a problem due to its excess or defect. Bio-regions with opposite characteristics and a strongly anthropized territory shape China’s physical geography. Water problems are several and important: supply deficits mostly in the northern regions and how climate variability affects the Indian and Pacific monsoon rains, and aquifer pollution, and the shortage of drinking water. To this situation, the impact of climate change that has changed seasonal weather patterns and is manifested in the frequency and intensity of tropical storms, typhoons, floods and droughts has been added as an aggravating factor in recent decades. Therefore, the criteria for intervention and design of green spaces include strategies for adaptation, mitigation, and resilience to this scenario. As a determining factor, they contemplate incorporating water cycle management in all designs.

The Xuhui Runway Park is an urban regeneration project that recovers the area of the former civil airport of Longhua in Shanghai in a central area of the city for public use. The project is the result of an international competition that was awarded to the firm Sasaki Associates. Both urban projects share an ecological vision, standard bioremediation tools and the social function of public space. The urban design of the Xuhui Runway

7 Ver el artículo: ‘Pollution exacerbates China’s water scarcity and its regional inequality’ https://www.nature.com/articles/s41467-020-14532-5
Park considers sustainability and resilience practices in the project’s lines, which favor the restoration of natural ecosystems, soil recovery, and the design and management of water cycle processes (regulation of floods, retention of rainwater, capture by permeable pavements, construction of rainwater ponds, treatment by phytosanitary, reuse...). The design of this system also supports plant and animal species that are compatible with the conditions of these artificial wetlands.

One of the priorities of this space is the social use of this public space for community life, environmental education, and leisure. The project’s priority objectives and narrative prevail in the construction of various natural habitats, which introduce various species and trees of the region and change with the seasons. The project also considers the seasonal effect of rain gardens, which include water cycle processes and their ecosystems. This city’s green space works as a sink for CO2 and buffers the city’s ‘heat islands’. The concept of reducing, recycling and reusing materials is present in the construction solutions of the pavements - which reuse pieces of the old runway’s concrete pavement and the use of recyclable materials such as bamboo for banks and walkways or of local origin. Design solutions overlap different layers of social, functional and sustainable solutions, integrating them into an ecological urban design with its own language.

Houtan Park aims to restore a degraded Huangpu river strip of 1.7 km long and 14 hectares for Shanghai Expo 210, and its subsequent use as a public park for leisure. The first challenge was to restore the degraded environment. The site was a wasteland filled with industrial waste from an existing shipyard and metallurgist, both on the surface and buried. A challenge was to propose a solution to regulate the flow fluctuations - with a peak of 6.5m- and daily tides experienced by the Huangpu River, one of the most polluted in the nation. For this purpose, a wetland system is designed that purifies and treats contaminated water, through different levels of ponds and waterfalls with plant species that contribute to water treatment, and this water can be re-used. The terraces allude to the agricultural past of the place and the use of the terraces in Chinese agriculture. The set of terraces and paths is a solution to the transition of the existing slope, ending the park’s boundaries with the river through a breakwater that incorporates a local habitat that prevents erosion.

Wetland crops and plants were selected to create urban agriculture that would allow people to witness seasonal changes: golden flowers in spring, splendid sunflowers in summer, the fragrance of ripe rice in autumn, and green clover in winter. It provides a world-class educational opportunity for people to learn about farming within the city. The area’s industrial past...
is incorporated as part of the park’s post-industrial identity by recycling materials and elements from the past such as large steel plates that build pavements, walkways or singular elements that frame views, build rest areas or constitute visual landmarks for visitors. These industrial artifacts framed in bamboo forests, Chinese sequoias, or different locations build a powerful post-industrial aesthetic.

8. Reflections on Landscape, Nature, and Ecology from the Past to the Present

The ecological imperative and sustainability narrative is present in numerous theoretical discourses of urban plans or designs that plan a green infrastructural system, regenerate an area, or design an urban park. In parallel, some urban plans and designs include an aesthetic-metaphorical discourse that uses cultural, formal or symbolic references characteristic of the Sino-order heritage (Masnou, 2021). This is the case of the Qianjiang CBD Master Plan in Hangzhou, with the conceptual design of ‘The axis of the Cultural Wave’ alluding to the tremendous seasonal wave that rises yearly by the Qiantang River. This option underlies the need to construct the identity and legibility of the place embedded into the narrative.

It is worth highlighting Professor Yu Kongjian’s differential and personal narrative. His family peasant background in Zhejiang province makes his claim to incorporate ancestral Chinese wisdom of natural solutions in water management and natural habitat (Yu, 2016). Finally, on the regional scale, the narrative of the ecological imperative manifests in the conceptual schemes of the master plans, which establish the development of the spatial structure through organizational diagrams of belts, axes, corridors, or green areas. These constitute green and blue systems of metropolitan areas that are highly important for tackling the impact of extreme climate events through mitigation and adaptation solutions.

The principal attitudes that characterize the narrative of landscape and nature build two different systems of thought; contemporary China proposes the need for an integrated socio-ecological system with an essential instrumental orientation, while classical thought constructs a cultural-natural system with a relevant ethical aesthetic and cosmological component. The differences between the two are reflected in the following contrast between the vision of the contemporary landscape and the classical vision: (1) a dynamic attitude to a passive attitude; (2) a social approach to an individual approach; (3) adaptation versus contemplation; (4) resilience
versus sublimation; (5) the reinvention of natural ecosystems versus the subjective reproduction of natural environments.

We understand that the integration of an identity and cultural memory linked to the landscape, and valid for many centuries in contemporary urban design and landscape architecture, remains an essential challenge of urban projects, and that will constitute a differential asset, which will add to the instrumental, ecological and scientific approach of landscape architecture and current urban design. Might the legacy of the past cosmological vision, the yin-yang fundamental rationale and the formal and material use of some of its elements be included in future landscape designs? We have seen that the need for this integration is already present in the aesthetic-metaphorical character of some descriptive narratives of urban plans and designs. However, more than this approach is needed to link the two visions of nature and landscape in the past and present, and we ask ourselves what will connect them.

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