TU Delft

LECTURE SERIES

LANDSCAPE-BASED URBANISM

SESSION CHAIR: STEFFEN NIJHUIS

GREEN CITIES EUROPE

The first of three lectures on Designing Green Cities took place at the Faculty of Architecture and Built Environment at Delft University of Technology on 29 September 2022.

After being welcomed by **Dick van Gameren**, dean of the Faculty of Architecture and The Built Environment, **Steffen Nijhuis**, research Leader at the department of Urbanism, introduces the topic of landscape-based urbanism.

With more and more people living in cities, basic urban infrastructure is under pressure. Combined with more frequent and extreme weather events linked to global climate change, cities are becoming increasingly vulnerable. Making cities, especially coastal ones, more resilient to these environmental hazards is one of the biggest challenges for city governments and urban planners.

One of the guiding principles should be to (re)design cities with landscape in mind. An inter- and transdisciplinary design approach that uses an understanding of the landscape system and its social and ecological processes (ecological planning) as a basis for sustainable urban development. This is called landscape urbanism. It is an inter- and transdisciplinary approach that looks at the geography and history of place, its ecological, cultural and social systems. Landscape urbanism considers longer- and short-term perspectives. It is about creating knowledge together with all stakeholders to find ways to make use of the landscape and these systems. And using the knowledge of the natural and urban systems to form a vision and make it tangible through design explorations. It is not a new approach. In the 19th century, there was already an awareness of the importance of spatial planning in a watershed for the drylands.

Next speaker is **Anne Whiston Spirn**, an award-winning author, landscape architect, photographer, teacher and scholar. She is working as a professor of Landscape Architecture and Planning at the Massachusetts Institute of Technology. Since 1987, Spirn has directed the West Philadelphia Landscape Project, an action research program integrating research, teaching and community service.

In her lecture 'Cultivating the Granite Garden: Reflections on 38 Years of Action Research', Spirn reflects on her groundbreaking book The Granite Garden, published in 1986, and the years of research since. The Granite Garden describes nature in the city and what the city might look like if it were designed in concert with natural processes, rather than ignoring or even opposing them. It was published at a time when most landscape designers were working with new cities and suburbs. Nothing was actually happening in the old cities.

In 1987 Spirn started the 'Reclaiming Common Ground' project in Boston, where she worked at the time without help or funding from the city to put her theory into practice. She researched vacant urban land in inner-city neighbourhoods. In some of these neighbourhoods, there was a lot of open, abandoned land. An important discovery was the strong relation between buried floodplains and vacant land. Boston has a combined sanitary and storm sewer system, which overflowes into rivers and streams after heavy rainfall and produces a flow that exceeds the capacity of sewage treatment plants. This led to subsiding ground beneath the houses that were built on these buried rivers and streams. Ultimately, due to health and safety threats for the residents, these houses had to be demolished. Nothing was done with the vacant land. Spirn: ' "Reclaiming Common Ground" demonstrated these lands could be restored as landscape infrastructure, designed to carry and detain stormwater, in order to protect houses from flooding, to serve as a framework around which to rebuild the community, and to solve the regional water quality problem of combined sewer overflows. (From her book 'Ten Projects', 2018, p. 23)

She did her research using the Action Research approach. This is an iterative process of action and reflection, where you identify a problem, opportunity or hypothesis. From that you take an action to resolve, exploit or explore. Thereafter you evaluate and reflect on the result and almost instantly formulate another action in response, and so on.

In 1987 she took her ideas, approach and knowledge through research to West Philadelphia, where the same problems occurred as in Boston: former rivers were put in sewers and buried, leading to vacant and derelict land in the inner-city. This project 'The West Philadelphia Landscape Plan: A Framework for Action' started in 1987 and is still ongoing. Using the Action Research approach, Spirn and her team developed teaching programmes for the plan that would become part of lectures in local schools. In this way, young people would become aware of the landscape in their neighbourhood. They would learn about the importance of rainwater retention and designing with the landscape.

The redevelopments made the area an attractive place for investors and wealthier people at the beginning of the 21st century, leading to the phenomenon of green gentrification. Because this was not what the plan was about, a new programme called 'Holding Ground' started in 2017, focusing on keeping the original people in their homes. Because that is also a responsibility of urban planning and landscape architecture. 'We are not just facilitators; we don't just solve problems. We also have to consider the impact of our designs on the people already living in the area.'

The following lecture, 'From Nature-Based Solutions to Nature-Based Systems' is by **Nadya Nilina**, strategic planner and project leader at Felixx Landscape Architects & Planners. Nadya focuses on projects that deal with climate adaptation, environmental resilience and social equity. One of their recent projects is 'A Catalogue of Nature-Based Solutions for Urban Resilience'.

A shift is needed from thinking in solutions to a single problem to a much more integrated approach. Indeed, environmental disasters occur simultaneously around the world: drought, heat, floods, storms. They occur all at once, not one at a time, and their effects extend beyond the affected area. For instance, low water levels can lead to fish kills, merchant ships unable to sail, soil shrinkage. So when (re)designing a city or neighbourhood, it is not enough to address just one of the environmental problems. You also have to consider the effect of your design outside the area.

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Shifting to nature-based solutions requires different design tools. It requires an integrated approach, at every scale, locally and globally. Unfortunately, awareness often grows after a disaster. For example, after storm Sandy hit New York in 2012, the city government realised that it had not taken climate change such as flooding into account in its planning and landscaping. They realised that their city, like all cities, was built on a natural basis.

As is well known, the Netherlands is a country that takes its landscape into account. We have taken an artificial approach to land (controlling nature) to create fixed systems. We have created artificial landscapes, such as dykes, canals and polders. In recent years, there has been a shift towards more nature-based solutions: working with nature rather than against it. With this shift, we are trying to create resilient systems.

Because that is what NBS are all about. The use a set of structural and non-structural interventions that protect, manage, restore or create natural or nature-based features. Alongside other benefits, NBS can reduce the impact of natural hazards in cities, such as flooding, erosion, landslides, drought and extreme heat.

Nilina: 'When you start a landscape design project, it is essential to research the regional landscape; what is going on, are there mountains, rivers, sea, etc.? And how do those affect the project? From there, zoom in on the city, the neighbourhoods, the streets. And meanwhile, always keep in mind the context of the place, the scale and the budget.'

As an example, Nilina describes a project in China, a coastal city that needed to be protected from high water and flooding after heavy rains. There were several existing systems the designers had to take into account: a marine ecosystem, a lagoon, the urban ecosystem, wetlands and mountains. They opted for a triple dike strategy that not only stops the tides from the sea (resilience and protection), but also retains rainwater flowing down from the mountains behind the city (buffer). The dykes are also public spaces, such as promenades and roads.

At the end of her lecture Nilina introduces the online Catalogue of Nature-Based Solutions for Urban Resilience', a Felixx-project sponsored by the World Bank. The catalogue is a database on nature-based solutions for urban application. It provides designers, planners and policymakers with guidance, real-world examples that illustrate how NBS approaches have worked, and technical assistance to help identify potentially nature-based investments that help cities address resilience challenges. (Link)

Last speaker is **Rik de Visser**, director-owner of Vista Landscape and Urban Planning. De Visser is an award-winning landscape architect and landscape scientist with a particular focus on the development of Dutch landscape architecture in relation to the land consolidation that transformed large tracts of land after WWII. In 1997, he published his book 'Half a century of landscape architecture'. In 2021, he won the Dutch Design Award 2021 with his contribution to the development of the Marker Wadden.

In his lecture 'Why soil and water are indispensable sources of inspiration for urban planning', he reflects on the importance of knowing the history of a landscape and describes three ways of dealing with its physical geographical conditions. The first is to integrate the conditions into the design (adaptation), the second is to negate them (ignorance, replacement) and the third is to interfere with them (interaction).

Good examples of integration are the reclamation of land in Walcheren in 1944 and De Poel-Heinkeszand in 1967 (both coastal tidal areas in the Dutch province of Zeeland) to make them usable again for agriculture. The new designs were based on the natural landscape with creeks and streams and flooded land.

An example of ignoring the landscape is the neighbourhood Bijlmer. Originally, the Bijlmermeer, a polder landscape and very watery, was located here. The Bijlmermeer polder was drained to develop the Bijlmermeer neighbourhood. The entire landscape was buried under a thick layer of sand. The design for the flats and outdoor space was based on Corbusier's ideas. De Visser: 'This project didn't work out. When you are there, you can be anywhere. The area has no identity, no connection to the original landscape in that region.

One project that interacted with the existing physical-geographical conditions was the urban design for the town of Kethel, near Schiedam. The guiding principle for this plan was the structure of the soil in that area. Before that, a thorough survey had been carried out to map the soil types. The landscape designer, the well-known landscape architect Bijhouwer, stated afterwards that this nature-based design made the result look different from what designers would have planned.

Another example of interference, interaction with existing conditions, is the Marker Wadden project in the IJsselmeer. De Visser and his team had to start from scratch (there was only water) and mirrored the existing landscape; of the sea, the dunes and the land behind. The wind guided the final shape of the new islands. As a result, the Marker Wadden have a natural connection to the surrounding landscape; a good example of water-based landscape architecture.