



Lecture series Designing Green Cities 2023

1. Landscape-based urbanism

The first of three lectures on Designing Green Cities took place at the Faculty of Architecture and The Built Environment at Delft University of Technology on 28 September 2023.

Prof. dr. Steffen Nijhuis, research leader at the department of Urbanism at Delft University of Technology, introduces the topic of landscape-based urbanism in his speech 'Shaping urban environments with natural and social-cultural processes'. One of the guiding principles should be to (re)design cities with the landscape first in mind, not the economy. He describes landscape-based urbanism as an inter- and transdisciplinary design approach that uses an understanding of the landscape system and its social and ecological processes as the basis for sustainable urban development. This approach considers the geography and history of a place, its ecological, cultural and social systems.

It is a knowledge based design. Landscape urbanism takes into account long-term and short-term perspectives. It is about creating knowledge together with all of the stakeholders to find ways to make use of the landscape and these systems. By using and sharing the knowledge of the natural and urban systems a vision can be formed and made tangible through design explorations. For designing along the lines of landscape-based urbanism you have to think big in terms of scale and ideas, co-create with stakeholders, learn from other people. Professor Nijhuis likes to compare this approach to gardening: you create the best conditions for people and nature to thrive in.

The next to speak is **prof. Nina-Marie Lister**, director of the Ecological Design Lab at the Toronto Metropolitan University. In her speech 'Wild Ways. Landscape infrastructure: connectivity for the biophilic city' she focuses on an integrated approach for the sustainable planning, design, and implementation of crossing infrastructure to improve landscape connectivity.

Cities and animals are getting closer because cities are often located in animal habitats. Roads cross their living areas. How do we deal with future infrastructures to allow animals to regain their environments? You can think of a city as a stone environment, but also as a forest or a jungle, but with different materials and man-made. If you design in an urban environment, it is important to be able to relate to species other than humans. What can designers do? They could not only design for humans but also with care and empathy, for co-existence together and apart from wildlife, for kin, in fact designers could design for all our relations.

Professor Lister is affiliated with the ARC (Animal Road Crossing) organisation. This is an interdisciplinary partnership, working to facilitate new thinking, methods, solutions for wildlife crossing structures (see <https://arc-solutions.org>). Essential in designing a wildlife crossing is to investigate how animals live, interact and move around. The knowledge can then be incorporated into the design of a crossing, such as an ecological crossing.

This requires a lot of field research, which is done with camera traps, among other things. Monitoring is critical for a new design. What animals are using the crossing? Citizens can help with all kinds of apps to collect as much data as possible. The more information, the better the designs. Foremost, corridors should be designed for both animals and humans. It's about co-existence with respect for each other.

Next, it is important to determine the material from which the corridors can be made, and what they will look like. Much research is being done on this at the Toronto Metropolitan University. The researchers are also looking for adaptable technology. E.g. to make a super-sized wildlife corridor. As so often, this is also a matter of raising awareness among city governments, and storytelling works well in order to raise funds, among other things. Professor Lister urges landscape architects to 'already take biodiversity fully into account in their designs, not wait for government programs. 'We must act now to fight heat stress in cities, for example.'

The third presentation 'Urban biotopes: designing cities where nature and people can thrive' is given by **Martin Knuijt**, founder and director of OKRA Landscape Architects in Utrecht. His talk consists of three topics:

a. Reinventing the cities and creating healthy cities. He describes healthy cities as cities where the natural conditions are as they should be. People are happy to live in these environments. And, because half of the population lives in cities (and in the future even more), urban designers have an obligation to create healthy, pleasant living environments. Landscape architects should create a balance between a healthy environment, healthy people and healthy communities. Cities should be climate adaptive, be multimodal mobility and have vibrant public spaces.

As an example Knuijt refers to a masterplan from 2018 called 'CityLift' for the area Foreshore, in Cape town, South Africa. For this masterplan OKRA collaborated with nine partners. In Foreshore, an unfinished highway acted as a barrier between the city and the water. Looking back at the original landscape, streams of water ran from the land into the sea. All those water flows have become underground sewers or have been disconnected. The plan looked at the large water network and developed a wider plan to reconnect the water to the land: linking the mountains and sea. For that, they had to change all kinds of infrastructure, which are radical interventions. The new district also had to be reconnected to existing neighbourhoods. City and harbour were to be reconnected by removing the elevated freeways, replacing it with at ground-level road, and lifting the city grid over and above it.

b. Landscape- and nature based change. Martin Knuijt presents the ongoing project Spuikom in Vlissingen. Nature and the city of Vlissingen were not connected anymore. They had their backs to each other. This had to be brought back. The boulevard in Vlissingen was an unattractive, 'forgotten' area, which the local council did not know how to deal with. In its landscape design for a new residential area, OKRA restores the water behind the dunes. A risky intervention. The new housing area is raised so that it's further above sea level. The underground parking garage could contribute to the sea defence.

c. Creating urban biotopes. Planting thought from a forest system, which consists of seven layers: big trees, smaller trees, shrubs, climbers, herbs, flower bulbs and ground cover. Creating an urban biotope with plants you also should plant trees with different heights, choose different plant species, look at seasonal interest, design a green network, that also needs some thinning. Such as maintaining a forest. You have to take into account different conditions, such as dry or wet soils (on the dunes/along the water), locations such as coastal or forest areas, and cultural and natural environments. Planting should be tailored to these. In doing so, you also have to consider people and animals. Animals thrive under their own conditions that may vary between them.

A question was raised about the 50/50 split of native and exotic planting (when describing another project). Why this choice? Knuijt replied that you cannot opt for 100% native planting. Because what is native? Aiming for 50% native planting is already an achievement.

Georges Descombes, Professor Emeritus of Architecture at the University of Geneva and architect and landscape architect at Atelier Descombes & Rampini in Geneva, Switzerland gives the fourth and last lecture. In 'Designing a River-garden' professor Descombes takes the audience through the transformation of a canal to a river with green natural lines, over a length of 5 km. In 2001, the state of Geneva opened a competition to restore the river Aire to its original shape and meanders by destroying the canal. When they entered the competition, professor Descombes and his team wanted to preserve the canal. Because they wanted to see what effects the new waterway would have on the surrounding area. So they designed a new river, next to the canal. He refers to this project as an open-air laboratory and an ongoing experiment. The laboratory started with the design of the new riverbed. The team was aware of the useless effort of designing a fixed riverbed and also knew that a river tends to shape itself freely. Instead, they designed a pattern, a diamond-shaped diagram like in a chocolate bar, to influence the flow. The diamond pattern kept pressure on the flow so that the water accelerated and was slowed down. After a while, the pattern had disappeared and given way to natural sandbanks in the river.

The canal has been made into its own environment and still is one metre deep. It is accessible to visitors and also suitable for children. It acts as a buffer area between the river and the road next to it. It is still truly a canal but it is dry, with streams with high drops here and there and water steps. It incorporates all kinds of water elements with 'tough' materials. No attempt was made to recreate the canal. The water has been brought close to the visitor, for instance by placing concrete elements in the water. It has become a cultural landscape that contrasts with the natural look of the river next to it.