

Flowscapes

Design studio for landscape infrastructures

STEFFEN NIJHUIS

ASSISTANT PROFESSOR LANDSCAPE ARCHITECTURE, TU DELFT

DANIEL JAUSLIN

LECTURER / RESEARCHER LANDSCAPE ARCHITECTURE, TU DELFT

The newly established Flowscapes studio addresses relevant sociocultural, ecological and technological issues from the perspective of spatial planning and design. Urbanization, ecological crisis and climate change are complex problems that only can be addressed transdisciplinary and from an international perspective – in particular regarding environmental issues and sustainability. While the technical challenges are considerable, the spatial and cultural challenges are by far the largest. Therefore, a new understanding of space-time condition of landscape – and its potential for change – offers promising opportunities to find new solutions to these problems. In order to redeem control over the processes that shape the built environment and its contemporary landscapes a fundamental review of the agency of landscape architecture design is required (Steenbergen et al., 2009).

Flowscapes is the graduation lab of the Master track Landscape Architecture. It is also open to students of other design disciplines and suitable for students with special interest for landscape architecture. Ecologically motivated architects or urbanists can give shape to their interests within the academic framework, while working in relatively small groups. The core of the graduation lab is a referred design studio, supported by complementary courses (Nijhuis et al., 2012). The design studio is concerned with the spatial design of new topographies by integrating programs into the 'genius of place' and – with regard to landscape development – the continuation of spatial quality and cultural identity. These designerly explorations require a multi-layered understanding of landscape: its spatial structure, history, context, as well as the ecological, economic and social processes involved. In this approach visual thinking and communication are considered to be crucial. Drawings, mappings and models

are used to reveal and create relationships, explore and elaborate landscape systems – in terms of geometry, quantity, velocity, force, trajectory – and for critical reflection. In this article we introduce the design studio and provide some background regarding the theme.

• Landscape Infrastructures

The design studio explores the infrastructure as a type of landscape and the landscape as a type of infrastructure (cf. Strang, 1996). It is focused on landscape architectonic design of transportation, green and water infrastructures. These landscape infrastructures are considered armatures for urban and rural development. With movement and flows at the core, landscape infrastructures facilitate aesthetic, functional, social and ecological relationships between natural and human systems. Through multidisciplinary design-based case studies at different scale levels the studio seeks for a better understanding of the dynamic



between landscape processes and typo-morphological aspects; here interpreted as flowscapes.

Infrastructures are understood as “constructed facilities and natural features that shelter and support most human activities – buildings of all types, communications, energy generation and distribution, green spaces, transportation of all modes, water resources, and waste treatment and management” (PERSI, 2012). Landscape on the other hand is defined as: “an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors” (Council of Europe, 2000). As such, the current understanding describes infrastructure as the human impetus to alter the natural environment, while landscapes are described as the inadvertent resultants. The hybridization of the two concepts, landscape and infrastructure, seeks to redefine both notions into a more integral design assignment where goals and means converge – resulting in landscape infrastructures that serve multiple ends.

In this view multi-functionality, connectivity, integration, long term strategies, communicative and social-inclusive design processes are key principles for spatial planning and design, to provide for more volatile forms of urban landscape architecture. The emphasises of ‘flowscapes’ is on the interaction of humans with their environment – connecting people to landscapes – directing urban development, biodiversity and the relation between ‘flows’ and ‘scapes’.

• **Transportation, green and water infrastructures**

Landscape architecture design practices can fulfil several roles in developing landscape infrastructures. We have defined three ‘lenses’ as starting point for designerly explorations.

(1) Transportation infrastructures: technical systems which facilitate different modes of transportation, energy supply, waste treatment and information dissemination (telecommunications). Obviously it includes vehicular, rail, and air systems, as well as ports and waterways. But also energy systems (oil, gas, nuclear, wind), their transformation to produce energy, and their distribution are important elements (power lines, pipelines). When we consider these utilitarian systems as landscape infrastructures they become entities of multiple-use and integration where technical, aesthetic and social values blend. These multi-modal transportation systems affect the public space in different degrees. Typical operations of landscape architects in this context are: planning, allocation and design of roads, rail, harbours, waste treatment plants, wind power plants (figure 1), traffic mitigation measures and recreational facilities for travellers.

(2) Green infrastructures: interconnected green space networks that maintain and develop natural ecosystem values and provide associated social, economic and aesthetic benefits to humans. Much of the foundation draws on the 19th century planning principles of regional metropolitan park systems. Useful for landscape planning and design is the concept of land mosaics consisting of green patches, corridors and matrices (Forman, 1995). Green space structures can act

as organizational structures for metropolitan areas, providing space for nature development, leisure/recreation, urban agriculture and cultural heritage – food and energy supply are becoming increasingly important. Typical operations of landscape architects include: landscape planning and design of (urban) green spaces and structures urban ecology, development of urban agriculture, terrestrial nature development and protecting heritage landscapes.

(3) Water infrastructures: consists of what is planned, designed and constructed to manage water and riparian zones. Important issues here are coastal and river management – including river modifications, seawalls and floodgates – as well as the use of beach nourishment, sand dune stabilization, development of flood forests and coastal/estuarine wetlands. It includes major flood control systems (dikes, levees, major pumping stations and floodgates), drainage systems (storm sewers, ditches), major irrigation systems (fresh water reservoirs, irrigation canals), and also, sewage collection and disposal of waste water. Important operations of landscape architects are: landscape planning and design of flood defences, river modification, aquatic nature development, fresh water supply, water fronts and waste water treatment plants.

While acknowledged in their differences amongst the three types of landscape infrastructure, it is important to understand their relationships and to address them integrally via design research and research-by-design (Nijhuis and Bobbink, 2012). The research inquiry and design thinking are systematically combined in a journey of discovery, where the design is the vehicle to draw up hypotheses of possible spatial futures.

• **Spatial framework: Rhine-Danube corridor**

The studio is framed around the Rhine-Danube corridor, integrating and defining Europe between the North Sea and the Black Sea. The Danube River Basin collects water from territories of nineteen countries and it forms the international boundary of eight of these. The Rhine Basin connects nine countries. The Rhine is also the primary artery of one of the most important economic regions (about 1750 billion US\$ GDP) of Europe and is characterized by large crowded urban areas which harbors about 58 million inhabitants. Since 1992 the Rhine and Danube are hydrologically connected via the Rhine-Main-Danube Canal, thereby creating a Trans-European waterway offering spatial, ecological and economic opportunities, as well as threats.

Along the Rhine-Danube various projects have been selected based on their strategic and integral nature. They have the potentiality to become a case study for design explorations in landscape architecture. These projects epitomize the struggle of the 21st century: to realign the spatial development of our global society in better harmony with the global ecology. Some of them are part of important project portfolio’s such as the ‘TEN-T’ (European Commission, 2012) or ‘MIRT’ (Government of the Netherlands, 2012). By choice, or inspiration from such projects, students can formulate their

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own thesis. This requires selection of an adequate site and scale of intervention within the theme and geographically related to the Rhine-Danube. The landscape architecture design challenge here is found at the intersection of debates about spatial quality, economic growth, green networks, habitat, biodiversity, urban development, flooding, urban water management, urban agriculture, drainage/irrigation, energy production, and a lot more pressing issues of high socio-political significance.

address emerging questions in treating infrastructure as landscape in our living environment. Landscape architecture design tools to be developed within this studio will let us approach landscape as infrastructure in a discourse that is highly relevant to our time. We are confident that the studio will train students to make a difference as spatial designers of our fast evolving world, and to take a unique integrating position in the dynamic professional field.

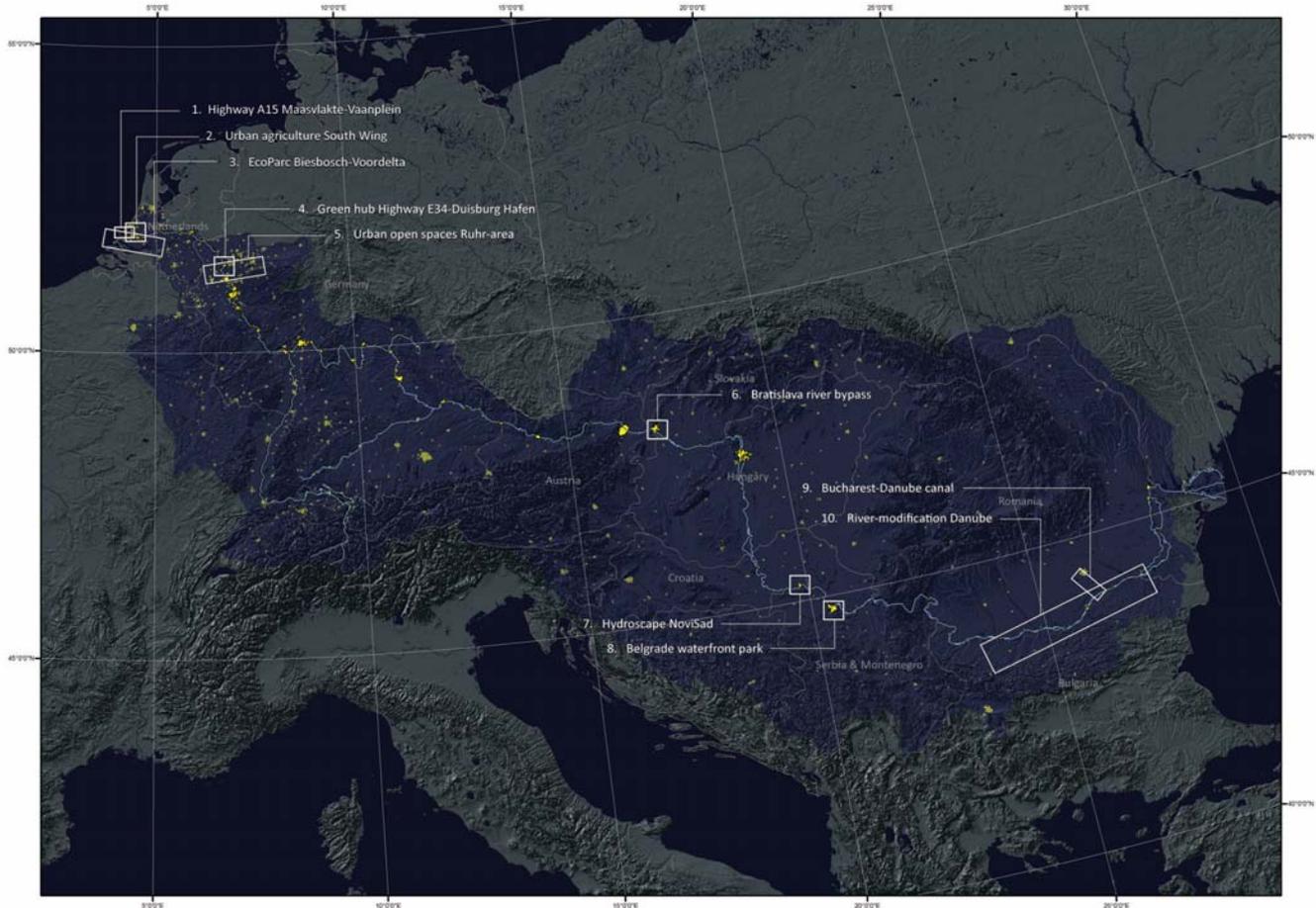


Figure 2. Ten potential projects in the Rhine-Danube Corridor for exploration of transportation-, green- and water-infrastructure © S. Nijhuis, TU Delft, 2012

The studio invites students to develop thesis that critically engage in this pressing contemporary challenge. Until 2020 1 trillion Euros (1.000.000.000.000 EUR) has been budgeted for the development of European Infrastructure (European Commission, 2011). The urgency for landscape architecture in the next few years is to formulate a position and design strategies, that rethink the infrastructural paradigm for the 21st century now – to make these huge investments a truly valuable contribution to our future living environment.

• Perspectives

Today infrastructure projects have a key role in global policy. This fact leads to large-scale economical commitment of national, international and global collaborations. We believe that the European landscape with its tradition and potential deserves our best efforts in contextual and spatial design. In a time of reconsideration and reflection of the European integration – fostered by financial issues – it is astonishing how large and uncontroversial projects ‘go through’ without much questioning. To take a critical position with our design studio as a whole is no mere academic exercise but a true research contribution. New disciplinary developments need to be made to

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