Graduation Plan

Master of Science Architecture, Urbanism & Building Sciences

Graduation Plan: All tracks

Submit your Graduation Plan to the Board of Examiners (Examencommissie-BK@tudelft.nl), Mentors and Delegate of the Board of Examiners one week before P2 at the latest.

The graduation plan consists of at least the following data/segments:

Personal information	
Name	**Sophia Tasseron**
Student number	5400929

Studio		
Name / Theme	Flowscapes: Resilient Coastal Landscapes	
Main mentor	Steffen Nijhuis	Landscape Architecture
Second mentor	Claudiu Forgaci	Urbanism
Argumentation of choice of the studio	This studio allows me to dive deep into a specific landscape with structural issues and work it out through the basin scale towards a local project. This coincides with my fascination of the landscape as a complex socio-ecological system and the interrelations between these aspects.	

Graduation project	
Title of the graduation project	**Against the current: the impact of a river island. Regenerating the middle stream of the Danube river system in Vojvodina, Novi sad.**
Goal	
Location:	Danube basin: Serbia, region of Vojvodina, the city of Novi Sad Local project: River island Kamenička Ada, Novi sad
The posed problem,	The Danube river basin, Europe's second largest, contains nineteen countries and makes its way from Germany towards the Black sea, a journey along diverse foothills and plains. In the middle stream of the basin, the river flows through the region Vojvodina of Serbia which is part of the Pannonian plain (EC, 2009). This fertile region consists 90% of agriculture and is known as the breadbasket of Europe. As a result of the agricultural practice in the former floodplains of the river, little space is left for the Danube to flow and its riparian zone to develop (ICPDR, 2009). Furthermore, urban establishment and expansion close to the river has led to a polluted and chopped up system with cut-off floodplains (Harries, 2020). Important dynamic river processes, such as erosion, sedimentation and occasional floodings are undermined in these areas, resulting in deteriorating ecological

quality and a static environment (See figure 1: landscape change through history). The formerly wild, braided river with characteristic braid bars and side channels has been mostly tamed by embankments to protect the urban areas. Despite the embankments acting as protection for the urban area, its present form mostly acts as an obstacle in the water system and the floodplain barely has recreational function and interaction with the city.

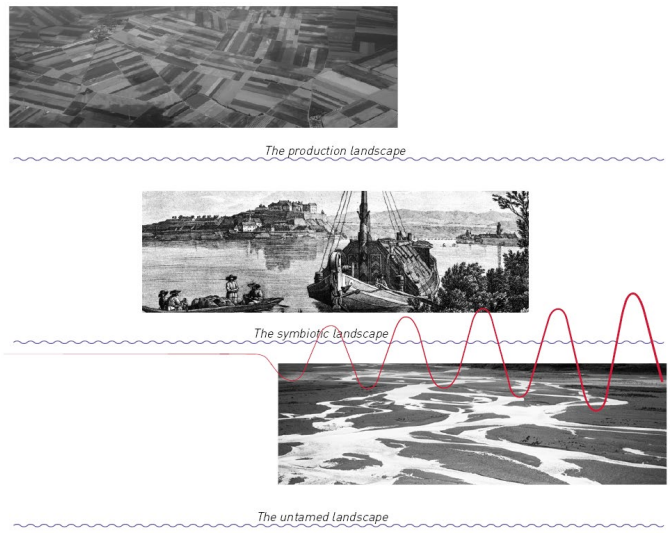

Figure 1: Schematic view of landscape changes and its dynamics

To summarize, the current landscape structure is inflexible and does not follow the logic of the landscape. The inflexibility is especially clear during extreme circumstances, such as events of heavy precipitation leading to floods in the urban area of Novi sad because of lack of space for the river. In contrast, in the agricultural inland extreme dry periods lead to crop loss and a crisis for fresh water (UNDP, 2022).

The Vojvodina region and the city of Novi sad is in need of radical change and a landscape approach for (socio-ecological) inclusive development. This graduation project focuses on four main issues which are caused by human interference and what the contribution of a landscape approach could be to this: 1) the loss of the braided river system with riparian buffer, 2) unbalanced fresh water availability, 3) excessive wastewater discharge into the river system and 4) segregation of the local citizens and the river system. Because the braided river is still partly intact, opportunity lies to apply a landscape approach in Novi sad by development of the river island Kamenička Ada, to regenerate the water, ecology and human connection with the river.

Research questions and	Research objective: To develop a landscape-based regeneration strategy for the Danube at Novi Sad and to demonstrate the potential of a landscape approach for designing a social-ecological inclusive and floodproof island, Kamenička Ada. Sub Questions: Context, Understanding 1. How did the Danube River landscape and Novi Sad develop over time and affect each other, and what are the challenges and potentials for Kamenička Ada as part of the river and city? Design strategies and principles, generic 2. What landscape architecture design strategies and principles are suitable for regenerating the Danube River landscape and facilitating inclusive spatial development of Kamenička Ada? Design application 3. How can these design strategies and principles be applied to protect and develop the Danube River landscape at Novi Sad and Kamenička Ada therein? Reflection, Conclusion 4. What are the lessons taken from a landscape approach in general for the (Vojvodina) area?
design assignment in which these result.	1) A long-term explorative strategy for the Danube river system in the Vojvodina region and specifically the municipality of Novi sad, focused on resolving the earlier mentioned structural landscape issues. 2) A detailed design for a local project, the former river island of Kamenička Ada, focusing on inclusive development for a potential flood-proof, social and ecological Novi sad.

Process

Method description

The four earlier mentioned research questions are and will be answered by using different methods. In figure 2 on the next page, the structure of the methodology is shown, with the expected results. In figure 3, the graduation process through time is visually shown. After that, each research question is briefly discussed with the methods used.

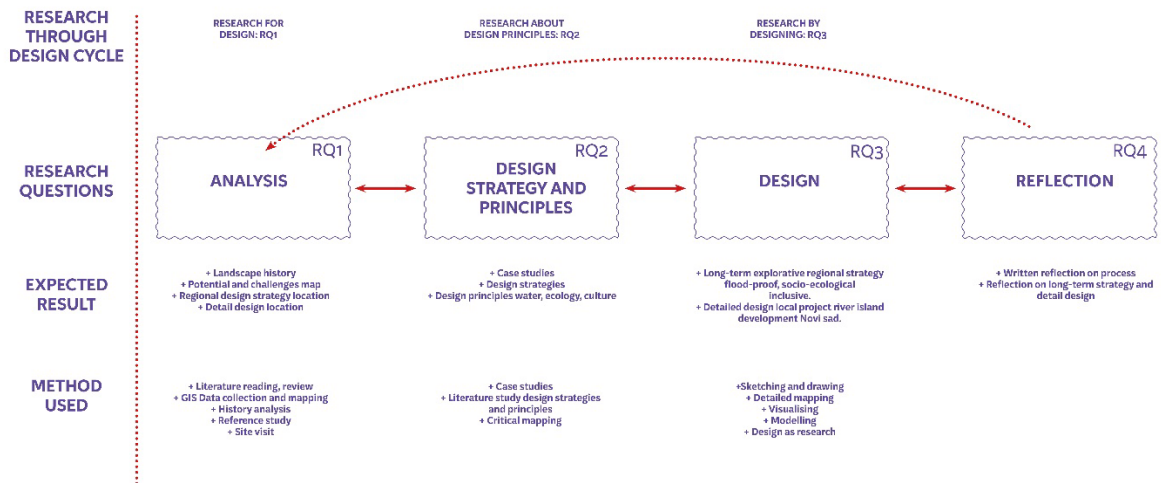

Figure 2: Methodological structure with research questions, methods and expected outcome

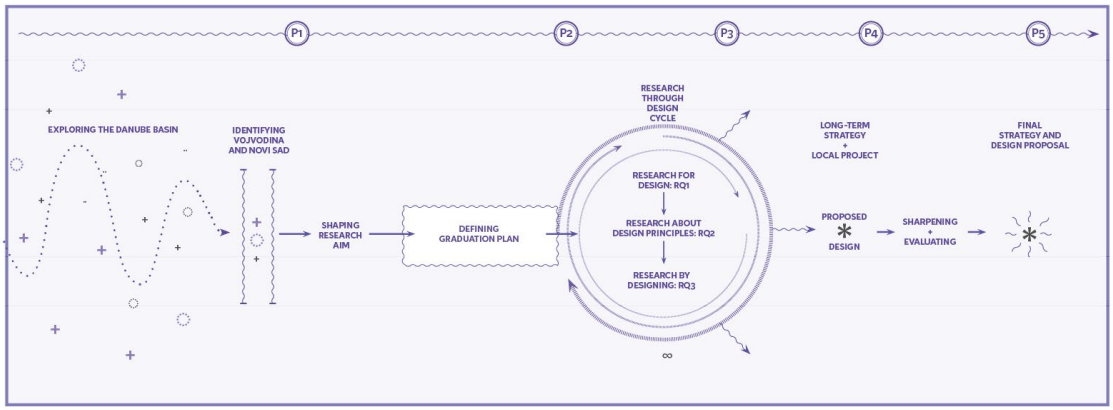

Figure 3: Visual graphic of graduation process through time

Sub Question 1. How did the Danube River landscape and Novi Sad develop over time and affect each other, and what are the challenges and potentials for Kamenička Ada as part of the river and city?

For the first sub-question, the goal is to understand the river landscape formation of the Vojvodina region and the socio-ecological processes taking place in it. The second part of the question refers to identified challenges related to this river landscape and what the potentials of the system are to apply a landscape approach. The main research method to do this is analyzing through **literature study and mapping/axonometric studies.** Aim is to understand the specific character of the river through time and what role human interference has played in changes of this character.

Sub Question 2. What landscape architecture design strategies and principles are suitable for regenerating the Danube River landscape and facilitating inclusive spatial development of Kamenička Ada?

For the second sub-question, the goal is to research and identify suitable design strategies and principles for 1) the development of a resilient Danube in the long-term and 2) a flood-proof, social and ecological development of Kamenička Ada as part of the regeneration of the river. For this question, a **literature study** of the historical practices on and around the intact river system are important (cultural history). Also, a literature study of landscape ecology principles for riparian systems, interconnections between a watershed and the definition of resiliency is needed to answer this question. For more suitable principles and strategies, exploration of **case studies** of other river island projects in urban context is needed.

Sub Question 3. How can these design strategies and principles be applied to protect and develop the Danube River landscape at Novi Sad and Kamenička Ada therein?

The goal of the third sub-question is to implement the results of the sub-question two on the design site. The potential strategies and principles are tested by designing in the form of **mapping, sketching, drawing, modelling (design thinking)**. The research method to answer this question is visualized in figure 3, as the **Research by design** part in the **Research through design cycle.** The design will go through the cycle multiple times to test if it correlates with the earlier steps of the cycle.

Sub Question 4. What are the lessons taken from a landscape approach in general for the (Vojvodina) area?

The last sub-question is related to the reflection on the research. The main question or objective will be answered in the end as a result of the summary of the sub-questions. This question reflects on this process and looks at the lessons for the area in general and for Novi sad, but also for possible gaps in the research.

Literature and general practical references

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Reflection

1. What is the relation between your graduation (project) topic, the studio topic (if applicable), your master track (A,U,BT,LA,MBE), and your master programme (MSc AUBS)?

The Studio Topic is Resilient Coastal Landscapes (RCL).

The RCL lab is about understanding and approaching the landscape in a holistic manner, looking into the innerworkings of it, discovering the logic and identifying the current challenges. By understanding an area from a landscape perspective, the potentials that lie within become clear and how these potentials can be used for spatial development. Spatial development in this sense is thinking about the long-term development of the system and how it can become strong and resilient to extreme circumstances. But, spatial development is also setting the tone for a short-term local project serving as an example for change. The combination of these two aspects of landscape development are the goal of my research project; to develop a landscape-based regeneration strategy for the Danube at Novi Sad and to demonstrate the potential of a landscape approach for designing a social-ecological inclusive and floodproof island, Kamenička Ada.

The Master track is Landscape Architecture (LA).

In my perspective, the current landscape is the result of complex socio-ecological processes that are bonded in a never-ending cycle of time. A healthy landscape should be balanced between enough space for the natural processes and enough space for the cultural processes. What we mostly see it that, due to enormous growth of the world population, expansion of cities and infrastructure the cultural processes become more dominant and leave too little space for the natural processes. As a result, the nature 'fights back', cities become flooded, the inland becomes dry and the people become threatened: the natural balance is disturbed. This topic of disturbance, unbalanced, unlogic human ways of dealing with the landscape lie at the basis of our study as landscape architectural students. It is the crucial part where landscape architects acknowledge the disturbance, analyse the history of the landscape to find traces of times of balance, and to use design thinking and methods to bring back these principles in the modern landscape for a stronger framework and inclusive, positive development of the landscape. This is what the aim is for the graduation project, to design for positive change and to restore as far as possible the space for the natural processes.

2. What is the relevance of your graduation work in the larger social, professional and scientific framework.

In Serbia, the country of my graduation project, there is little knowledge on the use of a landscape perspective and how to deal with the river system in multifunctional way, as in good for recreational purposes, but also good for the ecology and the river itself. The people of Serbia come from a history of agricultural practices and are dependent on the fresh water of the river, since there is less availibity of irrigation systems. Therefore in events of floodings or extreme droughts, the cities and the farmers are impacted heavily.

In the professional field, the municipality of Novi Sad is currently working on the development of the river island Kamenička Ada, which is my local design area. The municipality has a more

traditional view on dealing with this river island, which is damaging to the river system and the ecological value of the island. The inhabitants of Novi sad have also protested against the current ideas and river policy of the municipality. The result of this graduation project serves as a more ecologically based alternative proposal for the municipality. Goal is to help them think in a different way, and be able to integrate a more holistic, landscape way of thinking. By visiting the area and presenting the alternative project to the municipality, a first step into the professional field is taken.

The relevance of my scientific framework is to serve as an example of integration a watershed approach, systematic thinking about the river system with resilience theory and the landscape approach. The outcome could be a practical example of setting the tone for a long-term strategy in a region, and showing how this is applicable in a local project.