Reflection

Relation between graduation project topic, the studio topic, master track and master programme

The master track Delta Interventions is a multidisciplinary research program of the Department of Urbanism. The studio explores the possibilities to combine flood protection and water management strategies with urban design, landscape design and spatial planning. In addition, the studio develops design and planning approaches and methods which contribute to make urban delta landscapes more sustainable, attractive and adaptive (D-I, 2018). The above text is from the introduction manual of the master track Delta Interventions and explains what the focus is of this studio. There are three main categories that can be derived from this: Delta landscapes, multidisciplinary working and sustainability. My research project also has these three focuses integrated through the whole process. The 2011 tsunami hit the east coast delta region of Japan which is the area of research for this project. In order to get good understanding of the problem field and possible solutions a multidisciplinary approach is used. The five disciplines involved are Transportation, Hydraulics, Geotechnics, Water Management and Urbanism. Due to the increased amount of uncertainties in the future it is important to use a sustainable strategy that can cope with changes or unexpected events in the future. For this the Dynamic Adaptation Policy Pathway approach is used in this research project. This approach helps to develop an adaptive strategy that can cope with unexpected changes in the future and therefore, becomes more sustainable.

The relation between the methodical approach of the graduation lab and the chosen method in the developed framework

The Delta Interventions studio covers a few theories and methods to work towards a sustainable future for delta regions. A strong focus is put in the relationship of landscape and urbanizing the delta. In the case of Japan the relationship with nature is broken by the response on the tsunami which has a negative impact on the adaptive capabilities of the delta. Therefore, theories such as Dynamic Adaptation, Landscape Urbanism, Water Sensitive Design and flood risk management that are covered in the graduation lab are used in the project. The first main method that is used in the research is the Dynamic Adaptation Policy Pathway approach (DAPP). The theories and methods from the graduation lab are used in two ways. The first one is to supplement the DAPP with the theories of the graduation lab. Secondly, in order to develop the content that is put into the DAPP theories and methods such as the SWOT-analysis, system thinking and site specificity are used. The second main method is the multidisciplinary approach. Multiple disciplines form the foundation in for a recovery project after a tsunami or any other water related project. Topics such as the subsurface, evacuation strategies and tsunami mitigation measures will be discussed because of this set of disciplines. It is then the challenge to integrate the combined knowledge in a strategy. Working with experts that have views and backgrounds substantiates the decisions that are made throughout the research and increases the chances of a successful strategy. Therefore, a workshop was organized that took place in Japan with the five disciplines mentioned above. This workshop set the starting point for this thesis and was the place where Modern Urban Renewal was mentioned for the first time. Furthermore, the workshop provided a clear indication what your relation was with the other disciplines and how they could help you and how you could assist them further in the research process.

The relationship between research and design

The developed research framework proved to be a strong tool for the translation to the design. The analysis of the dynamics of Japan provided the first insights of the problem field and the ongoing trends in Japan. In addition, two important elements were found that set the first requirements to which the design should meet. The first was the strong identity that every region of Japan has, and in the case of Miyagi fisheries were an important part. Secondly, the balance between water and land that got broken by the measurements taken against the tsunami. By exploring the Miyagi prefecture through the scales, the processes of reconstruction and the physical characteristics of the prefecture were researched. Whereas the larger scale had the focus on processes that were happening in

the prefecture (potentials and threats), the lower scales put the focus on physical strengths and weaknesses. By using the SWOT analysis these findings were linked together and formed the input for the main method, the Dynamic Adaptive Policy Pathway approach. This became essentially a collection of all the research that had been done. And by choosing the most suitable pathways in order to reach the desired goal, the phasing and design components were decided. Therefore, the DAPP is a translation of the research, and the design a translation of the DAPP. When performed correctly, the goal of Modern Urban Renewal is achieved.

Transferability of the project results

Due to the fact that the outcome of the DAPP is very site specific the results of the project itself can only function as an example or inspiration for other projects. But, as mentioned in the relationship between research and design, the research results provide a clear step by step framework that can help guide a project when dealing with uncertainties. For this project a selection of methods was chosen that complement the setting of the research. With projects not related to uncertainty or a focus on a balance between land and water the choice of methods could be different. However, choosing the proper methods to strengthen the DAPP can be implemented in the framework as one of the steps to take.

Societal and scientific relevance

As sea level rises the need for protection against the water rises with it. There is an increased amount of storms and cloudburst which causes more floods. These trends caused climate change to move to the forefront of the global agenda. Therefore, it is important to plan and design delta cities in ways that increases their water resilience and tsunami mitigation capacities. This thesis project contributes to the relation between engineering, design and ecological studies in a systematic framework for reconstruction approaches.

Many studies exist in the field of urban resilience and adaptivity. However, research on how to implement these concepts in a flexible design process is still limited. The future is unpredictable and in many occasions differs from the constructed scenarios. The Dynamic Adaptive Pathway (DAPP) approach is a newly developed method to provide a systemic framework for future developments. By providing multiple timelines and actions to reach the desirable future chances that a project will succeed is greatly increased. In addition, this research explores other methods to supplement the DAPP approach in order to create a robust framework for redevelopment after a tsunami disaster.

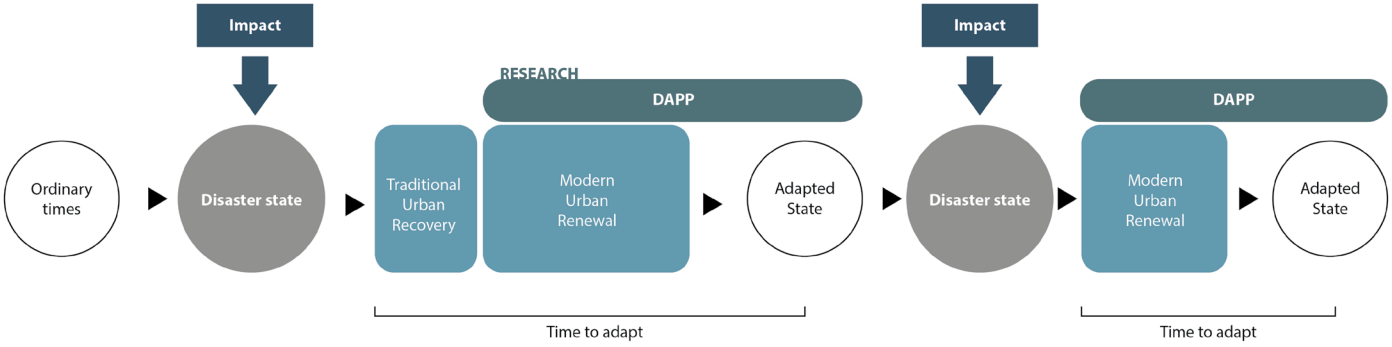

figure 1. DAPP can be used to reach MUR more effectively.author