REFLECTION

This section is the reflection on the graduation project- ‘Return, Keep & Interweave: An adaptive landscape infrastructure system’. The project explored long- term landscape based solutions to increase the adaptation towards Climate Change for the low-lying flooding zone in Miami-Dade County through flood impact mitigation and environment enhancement. The research by design process and design proposals will be evaluated through 1) how it is related to the ‘Flowscapes’ studio, 2) the academically used methods, 3) its contribution and limitations.

The ‘Flowscapes’ studio and the graduation project

The studio FLOWSCAPES explores infrastructure as a type of landscape and landscape as a type of infrastructure (cf. Strang, 1996). Urban landscape infrastructures are seen as a design concept, considering them as armatures for urban development and for facilitating functional, social and ecological interactions. While ‘Flowscapes’ could serve as an impetus to develop the concept of landscape infrastructure into a more comprehensive form of urban landscape architecture which addresses the complex webs of relationships constituting the urban landscape. The flows are movements/processes and the scapes are the spatial entities (e.g. territories). With movement and flows at the core, landscape infrastructures facilitate aesthetic, functional, social and ecological relationships between natural and human systems (Nijhuis & Jauslin, 2015, p.23).

The graduation project is under the guiding of “Flowscapses” concept. The main challenge of this project is climate change related issues like seal level rise, storm surges, tidal flooding and etc. With the understanding that these natural processes can’t be prevented, the low-lying flooding zone in Miami Dade calls for long-term adaptation solutions, requiring the adjustments of natural and human systems through time which are translated into flood impact mitigation and environment enhancement. In order to achieve this goal, I started my research by design process by defining the possibility of the public spaces as they have both spatial values and social values addressing the considerations of flows and scapes. In this thesis, public space refers to infrastructures like highways and vehicle roads; parks like sports parks, vegetated parks, mobile home parks and other parks; vacant land, and limited-use open spaces. These potentials can be used as a condition to build up the landscape infrastructure system which facilitates functional, social and ecological relationships between natural and human systems, focusing on both flooding risk management and improvement of the living environment by bringing spatial-social-ecological values. The main interventions here are transforming public spaces and building up the landscape infrastructure system. This design approach can be seen as the translation from theory to practice corresponding to the concept of ‘Flowscapes’ studio.

The research and design methodology

The ‘Design by research’ and ‘Research by design’ approaches provided by the “Flowscapses” studio helped me to formulate the structure of this graduation project. The design-by-research process took place in the understanding of the studying area at first. This leads to the problem statement which later shapes and frames the focus of this graduation project. Then based on the desk studies of analyzing the existing situation and reading relevant theories, the hypothesis was proposed to respond the focus - how to achieve the goal of climate change adaptation. In addition, during the visit of the site, the observations, the interviews and questionnaires, the workshop in Miami University and the discussions with local urban planners also provided more insights and values to this research process. After this, the study of precedent projects gave me inspirations for establishing the first set of principles for the design decisions.

While the research-by-design process took over when I implemented the principles in the design phases by testing if they are suitable for the specific context. Having in mind that climate change adaptation requires perceiving the landscape infrastructure system as a process which has impacts on different levels of scales, the design framework is formulated from the perspectives of landscape as scale continuum and landscape as process. These two perspectives provided me the base notions to develop methods for the design by research process and as a return these methods were brought back to the research phases for analyzing the site in terms of a deeper understanding.

The multi-layered method was used as a tool to identify the potentials of the public spaces which can be transformed into specific layers building up the structure of the landscape infrastructure system. The analysis and design through scales method helped me to understand the landscape infrastructure system as a parcel with components which effects the low-lying flooding zone as a whole but also allows multiple functions act individually. The scenario approach was employed for simulating the hypothetical results of the design interventions by presenting the adaptation capability and the improvements on spatial, social and ecological aspects, with the thought that the landscape infrastructure system is not stable but a dynamic process changing through time.

Contribution and limitations

Miami-Dade County and the local municipalities have been working for decades to reduce the impact of sea level rise and flooding events. The existing adaptation plans for coastal regions in the world often focus on solutions from the viewpoint of a particular sector, such as preventing flood damage by building dams or preventing loss of biodiversity by developing ecological networks. However, these solutions are not suitable for the vulnerable low-lying urban area which has specific geographical features and complex urban context. The long-term solutions for this area call for on-the-ground implementation of adaptation measures that integrate natural and human processes. The design interventions should be considered from a mixed-perspective providing different values for multiple purposes. Hence, this graduation project can be regarded as a pilot project to test on how the goal of climate change adaptation can be achieved by building up a landscape infrastructure system which is effective from the perspectives of spatial-social-ecological quality and the flood risk management.

However, when I looked back to the research objectives I put in the beginning, I found that the predicted results of the design interventions couldn’t really handle the situation when extreme flooding happens after 2060 as there is no enough space to accommodate the water. With this awareness, the water management strategies aiming for flood impact mitigation have two phases which are the period from now on till 2060 and the period after. The measures applied for the period before 2060 is to create spaces for flooding and the period after is about how to treat the flooding water. Even with these limitations, the design proposals could still bring spatial-social-ecological values to improve the living environment that contribute to the adaptation of climate change.

To conclude, I hope the expected outputs of this thesis -the strategies, principles and ideas could provide the insight of using landscape as infrastructure and infrastructure as landscape to deal with the challenges brought by climate change and raise attentions and discussions for the vulnerable inland low-lying areas not only in Miami-Dade but also in other parts of the world.