

Remaking "Nature"

An Ecological Transition Towards A Sustainable Landscape

P5 Reflection

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Reflection

1. Reflecting on the Research and Design Process

In order for this methodology to be applicable in other contexts, the process of the thesis could be concluded as a series of steps:

- Analysis of drivers of change: external and internal drive
- Analysis of the landscape system through scales
- Clarifying the goal of transformation
- Identifying the area of intervention
- Developing design framework
- Design implementation: drawing up possible spatial interventions

In the following sections, the approaches that were used within the thesis will be reflected on, while outlining the constraints, lessons learned and how it could be improved.

Application of Layer Model

The Layer Model is developed by Hoog, Sijmons and Verschuuren (1998) as a conceptual framework to guide Dutch spatial policy, which was based on the triple layer model by Ian McHarg (1969). This model contains three layers: the natural subsoil layer (changing over the course of centuries), the network layer (changing over the course of 50-100 years) and the occupation layer (changing over the course of 25-50 years) (dRO Amsterdam 1996; Hoog, Sijmons en Verschuuren 1998).

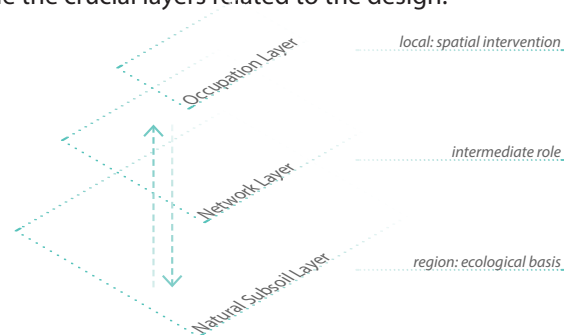
The "layer model" is used as a theory in this study to understand the context of the EAA. During the application, there is a gap between the changing time

described in the layer model theory and the frequency of change observed. The soil layer is usually regarded as the layer with the slowest frequency of change. In this case, the altitude of the soil which refers to the peat in the EAA has actually experienced the fastest speed of subsiding due to drainage over the course of decades. On the other hand, the historic buildings like the sugarcane mills which are part of the most flexible layer, occupation layer, are in reality being preserved for centuries.

The natural layers are highly intervened in by infrastructures and occupation layers due to human interventions, especially under the context of climate change, and they are undergoing tremendous changes at a radical speed.

When applying the layer model as a theoretical framework, the awareness of the discrepancy between theory and reality would make it more beneficial to understand the contemporary landscape as a system and the interaction between different factors.

Moreover, the transferability of this method requires the clarification of the research goal and the goal of the intervention. In this research and design, these layers are interpreted as the 5 layers of hydrology, geology, ecology, agriculture and recreation. When applied to other contexts, the layer model needs to be tailored to define the crucial layers related to the design.



Synthesis of Multi-disciplinary Knowledge

Transforming part of the agricultural fields to make way for nature, water and recreation is a comprehensive task which requires the synthesis of multi-disciplinary knowledge of spatial planning and design, water management, hydrology, ecology, geomorphology, agricultural sciences etc. The literature review was planned as the main method in this thesis to grasp the knowledge. This process consumed lots of time, especially when trying to understand totally unfamiliar disciplines. This situation also occurred when the purpose of reading certain literature was not clearly defined, effort was wasted on reading literature that was not directly related to the research topic. If the goal of the research is clarified at the beginning, part of the time could be used to proceed into the stage of design implementation earlier. This would mean that the quality of space could be explored more in depth.

Combining literature review with the discussion with fellows and professors from various fields of study, with clearly defined question to inquiry, would help to bridge the knowledge gap and grasping the multi-disciplinary knowledge in an intelligible way. It would also contribute to improve the efficiency of research and design.

Data Collection and Synthesis

Data collection is an important process to inquiry the context and test the hypothesis. Most of the data for the project was collected by myself through literature review and inquiry into the GIS database. There are many researches going on around the Everglades and the EAA. This is beneficial for gathering information, however at

the same time making it difficult to align the data. The data sometimes differed among various sources. For example, the current height data of the EAA is crucial for the design intervention, but there is no consistent height data between different scales. Therefore, certain decisions to select, combine and translate the data into maps, and make assumptions in order to continue the research and design are important.

Scenario planning

At the beginning of the thesis, It was intended to develop scenarios. However, the scenario planning was left aside due to lack of knowledge of both scenario building and the relation of scenario building to spatial design. After getting deeper into the research and design, the need for scenario building is realized, since building the scenario helps to predict the possible future and understand the constraints and drive of the area development.

Research by Design & Design with Research

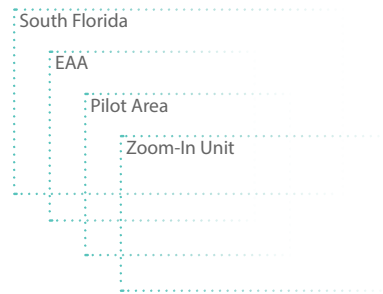
The research and design are systematically combined within the thesis in a way that the design is the vehicle to draw up hypotheses in attempting to research the possible future.

The division of research and design into two stages of working could help structure the process of the thesis and improve efficiency, while the awareness regarding research and design as a holistic approach is important. The design process is similar to the research process in that it requires careful consideration, arguing, and thinking. There are often new questions pumping out during the design implementation that requires a returning to a former step to further complete the

analysis. The order of research and design is usually not linear. Realizing this will help to accept this “detour” and reduce the frustration of making this repetition. To reduce the chance of repeating procedures and improve efficiency, the key is to draw conclusions of the findings at each step and move forward.

Landscape Design Through scales

In order to address the challenge of ecological crisis and its related spatial and cultural challenges, it is crucial to understand that the landscape is a continuum across scales, and it is crucial to design through scales.



For example, the environmental issues at the regional scale have an impact on the local scale. At the same time, a specific spatial intervention like the opening of the canal contributing to the water storage is connected to the broader context. It requires the designer to not only analyze and understand the biotic, abiotic and anthropogenic conditions required for ecological restoration, but also to clearly identify what related physical change will be implemented.

2. Uncertainty over Societal Preference for Ecosystem Restoration

The thesis proposes a new alternative future for transforming the agricultural land. However, realizing the design vision of the inherent trade-off in agricultural benefits for environmental value in practice remains an empirical question, reflecting uncertainty over societal preference for ecosystem restoration, especially if the results are not immediately tangible. The government of Florida has been investing billions of dollars to restore the South Florida ecosystem (CERP), which is a crucial external factor to drive the transformation. The great news is that a larger amount of wading birds returned to the Everglades in 2018 than any other year in the last 80 years, with more than 140,000 nests found, the most since counting began in 1995, compared with an average of around 40,000 a year in the past decade. The number of wading birds is an indicator of the health of the Everglades. To some extent, this return demonstrates the effectiveness of the restoration plan.

If this approach is transferred into other areas where the central government does not owe much power, the transformation of agricultural area requires a close cooperation of farmers, who are the internal stakeholders. The design proposal involves the consideration of livelihood. In the case of the EAA, the rotation of crops, developing recreation and tourism industry are proposed as the alternative livelihood to the sugarcane industry. However, the feasibility of this approach still needs to be tested and explored by comparing the economic benefits of the proposed industry with sugarcane industry.

Furthermore, the mindset of prioritizing economic development and continuation of developing large

structural infrastructure to mitigate the following ecological degradation issues is insufficient and unsustainable. The benefits of returning the agricultural field back to nature include the recovery of the economic benefits that were lost due to the degradation of the environment are more realized in the future. The spatial design can be a model of inculcating values to gradually change the mindset.

3. Relevance to the Flowscapes Studio

This graduation project is conducted in the studio Flowscapes. The studio Flowscapes explores infrastructure as a type of landscape and landscape as a type of infrastructure (cf. Strang, 1996). The explanation found in the studio guide that “the hybridisation of the two concepts is sought to redefine infrastructure beyond its strictly utilitarian definition, while allowing landscape design to gain operative force in territorial transformation processes. The studio aims to develop innovative spatial armatures that guide urban and rural development and represent their civic and cultural significance” (Flowscapes, 2018).

In relevance with this studio, this project can be one of the research and design case studies that demonstrates a fundamental review of the agency of landscape architectonic design:

- It highlights that landscape is regarded as a process rather than as a product. The project of transforming of agricultural land into wetland plays a role as a long-term and open-ended strategy, as in setting up the conditions for ecological restoration, which refers to the adaptation of water and topography in the case.

- Moreover, ecological, economic and experiential entities are integrated into the landscape during the transformation processes.
- This thesis addresses that the extremely large interventions like the restoration of the regional ecosystem is interrelated with very small interventions like the designing of the berm profile at the transformed agricultural land.
- The newly generated landscapes in the EAA function as a resilient hybrid infrastructure to constantly deliver ecological, social and aesthetic value.

4. Scientific Relevance

Having started with the comparison of water management systems between Netherlands and Florida, the graduation project establishes a critical reflection on the traditional water management system and related problems as a representation of the current relationship between human and nature - the anthropogenic impacts on earth. Through the research and design in the Everglades agricultural area, the thesis is geared by an ecological and ethical thinking towards an innovative future vision - a transition towards a more ecologically balanced system.

This ecological transition in the case of the Everglades agricultural area indicates an ecological turn in the way the water management could be transformed facing future climate change challenges and ongoing degradation of ecosystems. Furthermore, the outcome of this project shows possibilities of landscape architecture design which could play an important role to guide sustainable development, taking ecological, social and

economic issues into consideration, and could also be applied in other agricultural lands facing a similar complexity of challenges.

5. A Personal Evaluation: Lessons Learned & Problem Encountered

Emphasis on the technical solution

I was fascinated by the water management system in South Florida and its impact on the Everglades. The thesis started with the research from a technical and ecological perspective. A lot of effort and time were put into understanding the water system of South Florida, and finding the technical solution for the Everglades Restoration. The old version of the design was mainly around the technical and ecological aspect, such as the selection of the vegetation used in the bioremediation process.

Gradual process of grasping spatial and experiential aspect

After many discussions with tutors, reflecting on my design and studying other landscape cases, I gradually realized the weak part of my project: the spatial and experiential aspect. Now I understand that thinking about the experience of the built space is the task of every spatial designer. This requires a different perspective which is oriented on human/user experience.

This spatial and experiential aspect was gradually grasped in the late stage of the thesis development. This obstacle was mainly caused by the lack of the awareness. If it had been realized at the beginning, many detours

through the thesis development would have been avoided, and much time would have been saved.

An integrated approach

During the two years' study at faculty of architecture I observed that what architecture and landscape students highlight in their projects is usually experience and programme oriented, and not so much the technical solution addressing the environmental degradation issue. In contrast, the spatial experience is usually not the perspective of hydraulic engineering students. For example, a hydraulic engineering student's focus would be on the dimension and capacity of a dike but not on the spatial experience of it.

I think a successful project needs both perspectives. In practice, the restoration of wetland is usually a multidisciplinary project which involves experts in different fields. The modern trend in education is to train the student to have the expertise to perform more specific tasks, while resulting in the lack of capacity to integrate and synthesize.

This thesis explores an integrated approach for the wetland restoration in the agricultural field, which is the result of thinking from different perspectives and integration of multi-disciplinary knowledge.

Lessons learned

Through the whole process of the thesis, large amounts of knowledge about the Everglades ecosystem and water management in agriculture field are gained.

My personal interests and strengths are in integrating the different knowledge and developing a systematic approach. However, I am still somewhat weak in generating expressive form of the space. I am grateful that I got the chance to realize it and sharpen my spatial design skills throughout the thesis.

Colvin (2010) has written in his book that: "A study of figure skaters found that sub-elite skaters spent lots of time working on the jumps they could already do, while skaters at the highest levels spent more time on the jumps they couldn't do, the kind that ultimately win Olympic medals and that involve lots of falling down before they're mastered. "

The thesis for me is not a final product but an open learning process. The key is to keep trying and practicing. I would tell myself: never be afraid of failing, that is where you start to get stronger. When I looked back at the designs that I made and the reports I wrote half a year ago, I laughed at myself for how underdeveloped they were. I think that is the most apparent evidence of how much and how fast I learned in this year.