Graduation Plan + Reflection

Watering Dry Landscapes

A design for a climate adaptive moraine landscape near Nijmegen which facilitates a symbiotic relationship between multispecies and the non-living environment

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Argumentation of choice for the lab

The 21th century, or Anthropocene, is the epoch in which humans have a serious impact on their environment. In this world dominated by humans, we nowadays face problems such as drought and biodiversity loss as the consequence of human activities. With my graduation project I aim to contribute to a more resilient future and establish a symbiotic relationship between flora, fauna and humans. The graduation lab Urban Ecology and Ecocities focuses on understanding of the interaction between multispecies and the non-living environment. The goal is to improve the quality of life and design sustainable urban spaces where humans and nature coexist, or so called 'ecocities'. It not only focuses on improving the biodiversity of a place, it also aims to have a positive effect on other aspects such as climate adaptation. The lab fits perfectly with my interests and for this reason I chose to do my graduation within this lab.

Graduation project

Title

Watering Dry Landscapes
A design for a climate adaptive moraine landscape near Nijmegen which facilities a symbiotic relationship between multispecies and the non-living environment

Goal

Location

Moraine landscape near Nijmegen, the Netherlands

The posed problem

The Netherlands is confronted with drought more and more frequently. Two of the four climate scenarios predict that summers will become drier and extreme weather such as drought will occur longer and more often. Drought is a serious problem for multiple reasons. First of all it concerns large areas. Secondly it can take long before the effects are noticeable. Finally, the longer it lasts, the longer the soil and water system needs to recover.

In the Netherlands the high sandy grounds are the most vulnerable to drought. In comparison with the low-lying peat and clay grounds, it is not possible to supplement water from the rivers. Because supply from external sources is not an option, the sandy ground are completely dependent on rainfall which makes them more vulnerable.

Humans strengthen the water shortage during drought as a result of spatial planning and water use. The current spatial planning of the landscape and water system ensures a fast discharge during wet periods in order to prevent water nuisance or flooding. So despite the fact that the Netherlands has become averagely wetter over the years, it still faces water shortages because the water is no longer available during dry periods. Furthermore the extraction of surface and groundwater for agriculture, industries and drinkwater companies increase the water shortage further during drought.

Furthermore humans cause desiccation. Desiccation is a consistent damage to nature as a result of structural diminishing of the groundwater level in combination with a reduction of the amount of seepage in groundwater dependent nature. Desiccation is mainly the impact of the modification of the water system to fit the land use requirements': drainage for agriculture (60%), groundwater extraction for drinking water, industry and irrigation (30%) and other factors such as the amount of pavement (10%). So for nature the effects of drought come on top of the desiccation it endures consistently, whereas the quality of nature is already declining rapidly.

In what way can the landscape be used and adjusted to achieve a climate adaptive landscape for the moraine of Nijmegen and provide enrichment of the local ecosystem?

Research question

1. How does the soil-water system of the moraine work?

Subquestions

2. How to increase the water availability in the landscape?

3. What is the current status of the local ecosystem?

4. Which landscape elements provide both ecological enrichment and create added value for humans?

The drought challenge asks for a different look at the dutch spatial planning and use of the landscape. The required spatial adaptation will be used as an opportunity to enrich the ecosystem of the moraine. The design assignment aims to enhance the spatial quality, with a symbiotic relationship between multi species as condition. In this way the design becomes something to enjoy and at the same time educates people how to deal with their environment differently, which eventually creates added value for people.

Design assignment in which this result

Process

Method description

The focus of the design research is to understand the site and its threats and values. The research by design will focus on finding a set of design strategies which contribute to both a climate-adaptive moraine landscape as an enrichment of the local ecosystem.

1. Collecting data and site analysis
To understand the landscape, the current situation and the problems related to drought the site is facing.

2. Site visit
To understand the site I design for. Understanding is essential for a design which is imbedded and site-specific.

3. Literature review
Literature will provide build up knowledge from earlier research for the development of design strategies.

4. Case study
To gain knowledge of existing designs, strategies etc. in order to work with and or build upon this knowledge.

5. Consulting experts
Contacting the waterboard Rivierenland to gain knowledge on the current problems they facing and their vision for the water system of the region.

6. Policy study
In order to understand the concerns from the different actors. This helps to come to a solution in which all actors are represented.

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Reflection

One of the lessons I learned during my master's is that the landscape architect designs for humans, flora and fauna, the landscape itself and the client. Given this inner essential part, the landscape architect functions as a spokesman for the silent users of the landscape in the domain of the built environment. In comparison to the other departments within the greater field, landscape architecture inherently goes beyond the prevalent interests of humans. The landscape architect acts as an agent of the landscape, which is now a more urgent matter than ever concerning the age we live in.

Because landscapes deteriorate. The oceans are full with plastic, the atmosphere full of CO2 and there is a great extinction of species. The present age, the Antropocene or so called Age of Humans, thanks its name to the increasing influence humans have on both earth and atmosphere which has become irreversible. The consequences for the world happen at an ever-increasing pace. They show that the time has come to adapt our way of living and take responsibility. Because the other side of this story of destructing, indicates the ability to change and turn these processes. Working in the domain of the built environment and spatial planning means I can have direct influence. As a landscape architect I want to utilize my position so I can contribute to this livable future.

I chose drought as the topic of my graduation thesis because it is a good example of how we as humans cause deterioration of the landscape. Climate change makes us realize that the present spatial planning in the Netherlands no longer suffices. The beauty of the water issue is that it unites the different parties which normally stand against each other, through the common interests with water. This made the design objective more interesting. Furthermore, I am a Dutch person. Water is an essential part of our relation with the landscape. Because I find the relation between humans and the landscape so important, it was an obvious theme for me to work with.

I started my graduation thesis with the question: 'What is the quality of life?'. As a response, I told the anecdote of a pale, sick fish which was neglected at the pet store. When a girl takes the fish home, it heals and after some time and care it transforms into a beautiful red fish. The fish represents our world, our landscapes and the environments we live in. I have a strong desire to heal the deterioration we cause. Change can start with little things and with the right conditions perhaps lead to unexpected advantages.

Quality of life means to me an environment in which multispecies are provided with their needs and co-exist. I aim to take this a step further with providing symbiotic relationships. The lab Urban Ecology and Ecocities provided the framework to work with this and aims to establish sustainable designs with coexistence.

However, I can't determine what people should do or behave. But what I can do is guide people. In my design, the wooded banks are a nice example of my vision. The wooded banks help us to position ourselves in the landscape. Right now humans have a prominent position, so is the case in forest Groesbeek. The current pathway structure makes it possible to cross the whole forest. Through the implementation of the wooded banks, the movement becomes more limited and guided. As a result, some places become more quiet which is beneficial for flora and fauna.

Looking back at my personal process, I realize I have the tendency to have a negative image of humans. I still carry the opinion that we live in an unbalanced world. However my graduation has helped me to establish a more positive outlook on people. Lo-TEK showed me beautiful examples of symbioses between humans and landscapes. The wooded bank is a local landscape element which I could relate to some of the discussed cultural systems Lo-TEK puts forward.

During the process I struggled with the degree of intervention of my design. First I strongly had the feeling to let nature take its course. In the Netherlands everything is planned until the last square meter. I found it interesting how I could provide more unexpected developments in my design. In the end, I didn't pay enough attention to this aspect. But I know I want to continue researching this in my future career. Instead, I developed another interest through Lo-TEK. The implementation of simple interventions which cause symbiotic relationships while minimizing disturbance.

At the end I zoomed in on forest Groesbeek located at the top of the moraine landscape. The graduation thesis has the aim to design for a climate adaptive landscape. It focuses on drought and takes water nuisance into consideration, but pays no attention to heat because this is mainly a problem within cities. However, the implementation of the design can have an indirect positive influence on cities in terms of heat.