

Reflection Paper

Student Karlijn Besse (4297415)
Chair of Architectural Engineering, "Harvest BK"
Thesis "Rehabilitating the Anthropocene"

Introduction

During the process of my graduation project I searched for a spatial and functional symbiosis between technical and social artifacts within the polluted and industrialised area of Shell-Pernis in the port of Rotterdam. Shell-Pernis accommodates one of the largest oil companies world wide and is of the biggest CO2 emitters. The exhausting activities of the Royal Dutch Shell leave their traces both worldwide as in the direct environment of the region. This is resulting in heavily contaminated soils and subsoils, large areas of heat stress and a substantial amount of GHG emissions in the air. For these reasons my research has focused on the area of Shell-Pernis (Vondelingenplaat), an important node in both the historical and current times of fossil resource provision and transition. In order to meet the demands of a sustainable future on a local and global level, the aim for my graduation project was to give a holistic proposal for sustainable rehabilitation of the location of Shell-Pernis during the resource transition.

Today, climate change and energy transition are well discussed topics, thus it has become obvious that one can no longer accept the energy landscapes to be the aftermath of our every day life. To keep these energy landscapes at bay from mankind and nature, the production industry has been camouflaged, grouped, dispersed, isolated, diluted and dismissed.¹ These statements have led to the design objective of my graduation project: Diminish this demarcation between industry, nature and mankind in the Port of Rotterdam by architectural and terrestrial design. In order to achieve this objective I questioned myself whether a future world can be developed wherein industry, mankind and nature understand each other and co-exist in a symbiosis instead of in separate worlds? Can I, as an architect, take responsibility to support this transition by projection planning and provocative design?

¹ Pasqualetti, Martin J. "Reading the changing energy landscape." *Sustainable energy landscapes: Designing, planning, and development* 7, no. 11 (2012).

Research by Design or Design by Research

As form follows function, to me, design follows research. And for research it is not about getting the right answer but more importantly asking the right question which leads to a relevant discussion or debate. The constant interplay between sciences, architectural research and design processes have caused a continual feedback to the design questions which were established in the first weeks of the program. The design objective and the research question were adjusted and adapted according to the outcome of the research and the relevance of the outcome regarding to the site-specific needs. An example of this can directly be related to the moment where I first formulated my problem statements. Researching maps and data on quantitative information about the Netherlands, I found that considering GHG emissions, the region of Rotterdam is most predominant polluted and according to further literature research this is due to the industrial activities within the Port of Rotterdam. However, as I explored further literature and data on the Port of Rotterdam, the environmental status quo and the companies that are part of the energy landscape in the harbour, it was found that the GHG emissions is a so called wicked problem that I could not solve within the scope of my project or discipline. At this moment an important shift took place where I chose to focus on the problems of ground pollution and the provision of energy.

These first findings led to my thematic research that I have conducted in the first period of the past year, in which addressed the vital components for greener alternatives in the resource production and consumption and solutions for the rehabilitation of heavily contaminated and degraded soils. The biggest challenge for me during this research was to clearly determine system boundaries, as every problem on every scale lead to another in this particular area. The combination of socio-economic, environmental and spatial issues were interconnected and therefore felt never ending. Following on the above, I'd like to emphasize on the importance of guarding the amount of information that is of importance to conduct *any* research. Therefore, in my opinion the design phase should have started earlier and the thematic research phase should have been completed likewise. During the period following up on the thematic research, the research by design phase can be fully entered. Where spatial analyses and exploration play a major role for the outcome of the form and unity of the architectural design.

The MSc Track of Architectural engineering is renowned for innovation and its research for solutions on environmental and societal issues. My personal interest as well as my graduation topic seamlessly connect to the focus and approach of this track. This naturally expressed itself in the final design, which offers a solution for environmental issues and technological design questions whilst creating multiple value for the (built) environment. Subsequently, the studio topic of harvest gave me the opportunity to integrate my broad interest for sustainability and environmental design with landscape architecture. To me, the fairly unexplored field of landscape architecture, opened up new opportunities on how to create impact using the direct natural environment in a technical setting. This led to a multi-scalar design in which I strived for the theoretical framework, the program and the practical implementation to be all directly connected to its surrounding habitat.

As the methodical line of inquiry of the AE graduation studio comprehends an extensive amount of time for research, the studio felt like I belong here as I see myself more as a rationalist than an empiricist. My approach is in merely of my design processes deductive and based on theoretical frameworks and research. The downside of the freedom that we got for exploring and researching in unknown disciplines and topics, is again, that I am able to lose myself in the sea of information. This I also observed in my choice to explore the field of Landscape design during my graduation, at points in time it was difficult where to decide that this part was rather finished and the more technical and designing of the building should start.

Relevance

As discussed in my research methodology paper I find myself to advocate for environmental reform and the promotion of change in a period where climate change tops the lists of the political debate. During my research I found that the area I am designing in purely accommodates services of economic interest. Shell-Pernis is currently in no direction designed for people to be in or to live in, it is a monofunctional industrial area where the industrial artefacts rise far beyond human scale. With my goal to diminish the demarcation between industry, mankind and nature, I requested myself to design on a human scale as well to create a space where nature can thrive once again. Here I use my professional skills to represent the disempowered and neglected nature to obtain spatial justice in the contaminating energy landscape of Shell-Pernis. Currently, Shell-Pernis is the start of a darker place of Rotterdam wherefor most people shut their eyes.

My vision of Shell-Pernis as drawn on the map shows a rather unrealistic image, however the building blocks that are designed in order to get to this vision have a higher potential to be experimented with under the current socio-economic circumstances. The strategy that encapsulates the bioremediation techniques could be tested on a small scale experiments beginning with a few square meters. The development of a biorefinery is likewise not impossible to be realised within the coming years as the issues of environmental challenges are emerging, the per capita demand is increasing and finite stocks are decreasing. However, the fact that an actual designer will be involved by the civil process of developing a biorefinery is less likely. The final topic I'd like to discuss is the industrial heritage that will emerge as the energy transition proceeds, whilst this scenario will probably not happen in the next few years, the fact that Shell-Pernis will play a large role in the industrial heritage of petroleum landscapes is certain.

Next Phase

As slowly pieces are falling together, in my opinion, a few steps are still ought to be made. I find that my concept, my position towards the project and the debate that I would like raise are well established. The design principles and building blocks for the design are likewise well researched and connect in a satisfying way to the concept, however in the outcome of the spatial design there are still a number of issues to be resolved. These last steps will be necessary in order to create a coherent story that can be convincingly narrated to the wider public. As the power of a project, in my opinion, lies in the technical detailing of the concept throughout all scales, I find that on the smallest scale (1:5/1:1) the concept is not yet fully integrated to a rewarding proportion. Yet the last few weeks are there to discover what the necessities are to communicate my thoughts through the multi-scalar design. An additional challenge to overcome, due to the current crisis we are finding ourselves in, is whether to focus on a physical model or elaborating on a 3D model.