Reflection Paper

ARCHITECTURAL ENGINEERING, HARVEST BK STUDIO 2019/2020

'' Revitalising Parkstad, a linear park with a circular approach''

Student
Kim Hooiveld (4303148)

Tutors
Annebregje Snijders
Paddy Tomessen
Jos de Krieger

Introduction about the project

‘Revitalising Parkstad’’ is an architectural strategy that demonstrates how Parkstad can make use of its environmental deficit of the past to shape its future. After closing the mines Parkstad is now suffering from shrinkage, unemployment and fragmentation. Besides that there is the problem of upcoming mine water that forms a problem regarding the ground water quality. In order to tackle these issues Parkstad is working as a corporation of eight municipalities to improve the liveability by stimulating tourism that will simultaneously boost the economy of Parkstad. Similar to the linear economy of the coal mining industry, the economic and social growth that will come with improving touristic attractions are strongly accompanied by an increasing amount of waste, causing unnecessary losses of materials and energy. In order to maintain the population and the increasing amount of visitors in Parkstad, there has to be a change in the relationship between people, energy and the environment. To ensure a sustainable future, an urgent increase is required in energy generated through local available and renewable sources, like geothermal energy from mine water, and circular waste streams.

I tried to understand the current situation of Parkstad, the problems and how they relate. By generating an overview of the input and output on energy, water and materials of the urban metabolism of Parkstad Limburg, a strategy was proposed to improve the resource efficiency to become a circular economy. The most important component of this strategy is the central park situated at the former Oranje Nassau IV mine where mine water is purified. Here tourists are able to experience how the flows of ENERGY, WATER and MATERIALS come together. The mine water treatment park has three functional levels: the technical buildings, connecting heat and water infrastructures and as a storage and distribution facility, to serve the local heat network, as a public meeting point with recreational and educational facilities to host public activities, and as a symbol for Parkstad as a region of energy and circular economy. They learn about circularity that is partly constructed in cooperation and participation with inhabitants. The aim of this reflection paper is to formulate a short explanation of my choice of research and design methods.

Aspect 1 the relationship between research and design.

By doing the research I was able to understand the relation between the consumption of resources and the production of products and wastes and learn to design in such a way that local resources are optimally seized before an demand is posed upon other areas. The research helped to evaluate my project context and to assess the performance characteristics. This ensured to work in a way that I discovered relevant issues that I want to discuss during my graduation project in order to develop new systems that help to improve the urban metabolism of Parkstad and its identity.

Besides that it was necessary to explore the existing qualities and describing the essential characteristics and weaknesses of the region before I started the design process. By creating symbiotic systems that simultaneously increase the resource efficiency and incorporate the spatial characteristics, a sustainable solution is therefore found for the whole region. The knowledge that was gained from this research as well as interviews with the inhabitants functioned as a guiding theme for the design and formulated a program of requirements to improve resource efficiency in Parkstad.

Aspect 2 the relationship between your graduation (project) topic, the studio topic (if applicable), your master track (A,U,BT,LA,MBE), and your master programme (MSc AUBS).

Similar to Architectural Engineering, my graduation project aims to bring spatial, functional, social and technical developments together. I realized that the industrialized day of today would need more of operate methods and techniques rather than just creative expressions. The role of the architect within a project team is now more crucial than ever. I decided to graduate in the field of Architectural Engineering because I firmly believe that the architect must respect and interact with its local environment and incorporate techniques for a circular economy design.

Having this ambition in mind, the Harvest studio gives me the freedom to explore how to use the energy transition as a handle for a renewed and healthy and circular living environment. In

combination with the spatial potential from the area itself, I get the chance to design solutions that strengthen the social activity, economy and its spatial identity as well as the resource efficiency.

Aspect 3 Elaboration on research method and approach chosen by the student in relation to the graduation studio methodical line of inquiry, reflecting thereby upon the scientific relevance of the work.

The urban metabolism and flow approach are adopted to provide an effective way to gain information on energy efficiency, recycling of materials and waste management characteristics of the urban system of Parkstad. A primary accounting method to understand the urban metabolism processes is a Material Flow Analysis. This method generates understanding of the inflows, outflows, and accumulations of the amount of energy, water and material in the urban system. Moreover it provides the disaggregation of data and relatively quick way to characterize the dynamics of the urban metabolism.

Because these studies tend no neglect the element of space and the qualitative characteristics of the landscape I tried to understand the potentials as well. Energy Potential Mapping supports the insight into the spatial distribution of energy in particular and facilitate a built environment that more effectively seizes local energy opportunities before requiring import from elsewhere. All these maps joined together formed a useful tool in the process of planning by visualizing all local energy potentials. By doing this the most suitable location could be determined for redevelopment.

In my opinion multiple research approaches are necessary to give a deeper meaning to the design. I was inspired by the incorporation of the subsurface within the design process and social practice as a nuanced architectural attitude towards the public. These two aspects are integrated in my context-led research as well to empower the uniqueness of the site of studying.

Aspect 4 Elaboration on the relationship between the graduation project and the wider social, professional and scientific framework, touching upon the transferability of the project results.

To this day designer, both landscape architects as architects, do not perceive the urban metabolism approach as altering their practice, but as a tool to reveal additional information.[1] The same issue applies for the subsurface within spatial design. According to Hooijmejer (2014) designers are not considering the sub-surface in their work while the sub-surface presents opportunities in terms of solutions for flooding and decentralized energy systems. Because the lack of spatial planning for the subsurface, it is becoming increasingly important to work across disciplines.

But there is more than working across disciplines. We as architects should be part in society as well. We are not just shapers of buildings, but invariably public space and its realm as well. In my opinion there are two attitudes towards the public that can inspire contemporary architectural discourse and practice. The first is the activist, who fights for spatial justice and is engaged with the reality of the community. He is not complied with the traditional role of the architect as craftsman anymore.[2] The second type of role towards architecture is the facilitator, who engages inhabitants to realize a project. A good example of the facilitator-approach is the project of Renzo Piano and Peter Rice. In their design for the Mobile Workshop, a temporary structure in the center of ancients towns to facilitate a platform for discussions, they worked together with inhabitants on issues of information, education, planning and construction to show the inhabitants new techniques that are available.[3] In this graduation project I would see me as a facilitator.

Aspect 5 Discuss the ethical issues and dilemmas you may have encountered in (i) doing the research, (ii, if applicable) elaborating the design and (iii) potential applications of the results in practice.

One of the drawbacks of applying these methods is that this quantitative and scientific model of the urban metabolism might disconnect design from the everyday users and needs of the city. The

1. Pistoni, R., Bonin, S. (2017). Urban metabolism planning and designing approaches between quantitative analysis and urban landscape. City, Territory and Architecture, 4 (20), 8
2. Avermate, T. *The Architect and the Public: Empowering People in Postwar Architecture Culture*. HUNCH14, 59.
3. Mein, M. (1983). *Design Analysis for Collective Spaces. Piazzas and contradas in Siena.* Department of Architecture, Brussels, 31.

technical approaches of Material Flow Analysis and Energy Potential Mapping do not take into account the uniqueness of the site and its past. Therefore I try to incorporate these in the research as well to provide a coherent and renewed productive urban landscape which is in line with the desires of the inhabitants. As a result, the social consequences of functional spatial revolutions are included in the design process. The fields of design will influence each other and lead to new types of space and materialization in both architecture and landscape architecture. To anticipate the future and understand the urban metabolism, existing qualities also need to be explored. Reflecting on what there was and describing what historical event structured it, new functions can be concealed. Moreover due to the mining past, the subsurface has a high potential to generate renewable energy. Therefore I also integrated the subsurface in the MFA and Energy Potential Mapping to make use of the existing and local resources. Because I can't tackle all three themes at the same time, my mentor Anne recommended me to think about phasing and find one guiding theme as the main function that will in the end will facilitate a development of other functions.

Another disadvantage of my research was the fact that it did not provide any architectural and spatial tools for the design. In line with the ambition to restore the lost identity of Parkstad and to reuse buildings in order to reduce demolition waste, I decided to work with the old structure of the buildings and try to bring back the historical layers of the past. In combination with the flow approach I tried to visualize the streams in- and outside the buildings by making them part of the architecture. Therefore the design is an investigation of using industry as a driver of public & social space and making infrastructure between one and another visible.