Reflection

Kampung Air

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1. Relationship between research and design

For my research I analyzed the existing aquaponic system in kampung Kandri in Semarang to see how it can be adjusted to fit the needs of kampung Melayu. I looked at the positive effects it created, but also its flaws and possible improvements. The research question formulated for the research paper was: "How can the aquaponic system in kampung Kandri be improved in a way that it fulfills the needs of kampung Melayu?"

The research focused on the social, economic, spatial, climatic and water related needs of kampung Melayu and how this aquaponic system could be altered to fit these needs. This information got combined into a scheme based on the original aquaponic system with multiple alterations added as a possibility (see figure 1). This scheme would form the base of my design project in which kampung Melayu would be redesigned around an aquaponic system, creating as many benefits from the system as possible.

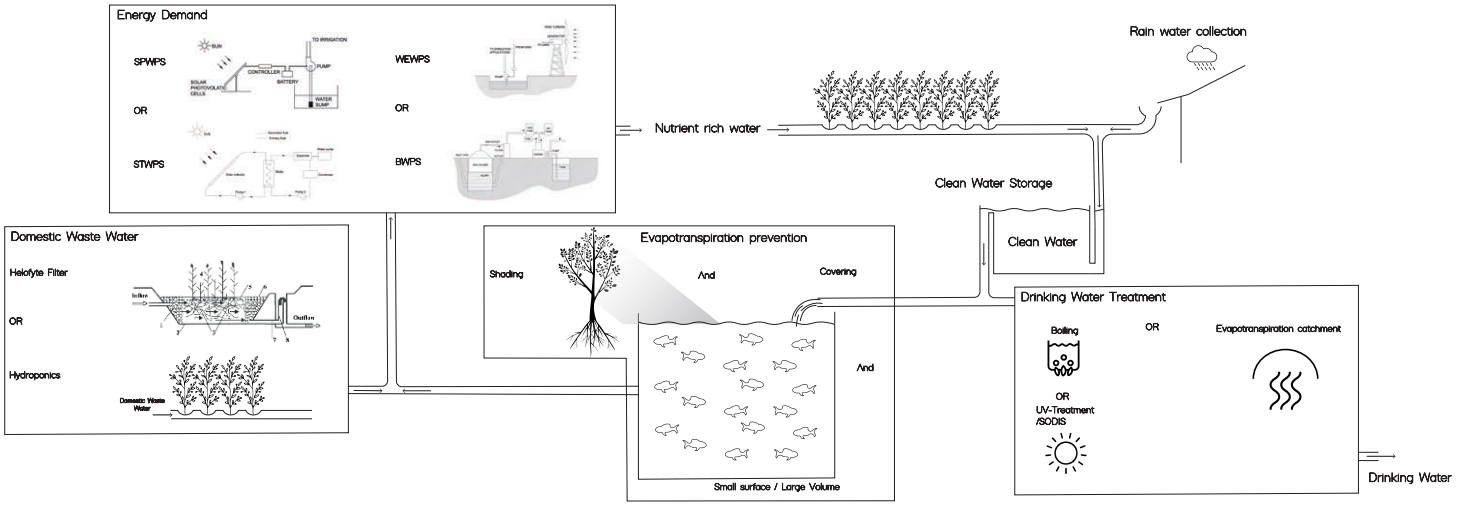

Figure 1 Diagram of possible improvements for an aquaponic system

In the rest of the design phase a lot of more subjects would have to be researched to get this system in place and get all the benefits out of it. For every study I conducted, I used almost always the same approach. Firstly, setting requirements for what is needed for the design. Secondly, determining the options and thirdly, making a choice. With almost always as fourth step, improving the choice to fit to the design and get the best possible result. This happened for instance for my roof. I wanted to create a ventilation system with my roof which would suck out the air at a certain point, based on a solar chimney principle. I created two options. A quite literal solar chimney and a curved roof. The location was for both options adjustable but based on the amount of ventilation the curved roof was chosen. After this choice the roof was improved by picking the right materials based on the weight, amount of heat transferred and amount of heat it can store. This was again a study on its own.

To conclude, the relationship between research and design is a relationship in which firstly, the design was based on a longer and more extensive research and secondly the design is improved by smaller research-based studies.

2. Relationship between my graduation project, the studio topic, master track and my master program

My graduation focuses on creating an improved social, economic, spatial, climatic and water-related situation for the future inhabitants of kampung Melayu by implementing an aquaponic system

The studio focuses on how to revitalize the former colonial city center of Semarang into an inclusive, thriving and healthy environment for working, living and leisure taking the specific water-related challenges and the rich culture of the city into account. My project relates to the studio topic by addressing the water-related challenges with the aquaponic system. The design is carried out by looking at the historic context of kampung Melayu and its place as a commercial and trading zone and trying to use the aquaponic system as a trigger to revive this place as a commercial and trading zone.

The master track aE focusses on finding innovative and inspiring architectural solutions for environmental and societal issues. My project relates to this by using the potential of an aquaponic system to deal with the issue of land subsidence and flooding, but also on the harsh economic situation and the lack of a proper social structure in kampung Melayu. The aquaponic basin is made in a way that it can sink with the rest of the land, with only the need to maintain the roads to prevent flooding from the river. The aquaponic system is in its core a way to produce fruit, vegetables and fish. By making sure production is high, food can be prepared and sold to secure an income for the inhabitants. The necessity to perform maintenance on the system and the larger scale of it, makes it necessary to work together. This way the social structure of the neighbourhood can be improved, creating more social cohesion.

In relationship to the architecture track, the project focuses on the spatial aspects, functional aspects, material and technical aspects, contextual aspects and social/cultural aspects of the implementation of the aquaponic system.

It touches the spatial aspects by looking at how a neighbourhood is formed on top of water and how the buildings relate with it and each other. The functional aspects are touched by how the shophouse combines the function of a shop with that of living. Material was chosen based on its weight because it needed to float, but also on its availability and price to make the project more feasible within the lower-income context. The context is addressed by an extensive historical research to see how kampung Melayu was created and by basing the design goal on this. The social and cultural aspects where addressed by looking at vernacular architecture for the roof and the typology itself as well as by looking at the RW/RT social structures and facilitating this in the design.

3. Relationship between my research method and approach in relation to the graduation studio methodical line of inquiry

The studio started with finding presenting your fascination based on a technique, the context and program. My fascination started with flooding issues relating with land subsidence, tidal floods and heavy rainfall. This fascination stayed in a way, but due to the excursion it changed to the direction of possibilities of an aquaponic system for coping with flooding issues as well as socio-economic issues.

This fascination turned into a research paper which was concluded with a diagram explaining the possible improvements as shown in figure 1. This diagram was used as the basis of how to implement the aquaponic system within the design. The design is for a larger part directly based on the research as is in line with the graduation study methodology.

4. Relationship between the graduation project and the wider social, professional and scientific framework

The project focusses on the implementation of an aquaponic system and the benefits it can bring to social, economic, spatial, climatic and water related issues. How this is implemented is rather specific for the project, but certain solutions and results can be used in a wider framework.

The design revolves a lot on the fact that the neighbourhood floats on top of its basin. With the current state of climate change taken in mind, a lot of areas in the world are facing the same water-related issues as Semarang does. This project shows how the water can be integrated into the neighbourhood and can be transformed into an economic engine of the neighbourhood.

Currently a lot of designs are based on keeping the water out. What we don"t see is that the water can offer a lot of possibilities on a social, economic, spatial and climatic scale. This project adds a new perspective of looking at water problems by using the water to create new design opportunities. This includes using the water for cooling the air for the ventilation, using the water to create a greener environment, using the water to house fishes for economic gain and letting the water treatment be part of the public space.

5. Ethical issues and dilemmas encountered

When visiting another country, you"ll experience that there are differences in culture, preferences and believes compared to those of your own. Dealing with those differences can cause ethical issues and dilemmas. One of the issues I encountered was dealing with the cultural preference of housing, which caused problems for the building material and connection to solid ground. For my design I had to make the choice in either very expensive houses on piles or more affordable houses which would float. My project was supposed to be lower-income housing. This meant that piling would not be possible, and I would have to create floating houses.

The type of house the inhabitants of Semarang prefer is one which is directly connected to solid ground and constructed with stone-like materials. In my design I would have to respond to the preference of the future inhabitants. My solution for the material was to use a high-quality wooden material, to compromise to the preference of a hard and strong material. My solution for floatation was to make sure that there would always be a connection between the houses and land. The entrances of the shops and some of the houses are directly connected to land. This way I could compromise between what was necessary and what was preferred.

The second issue was related to dealing with the heritage in the form of the buildings in kampung Melayu. A lot of them are abandoned and beyond saving. However, a lot of the buildings have historical value. To deal with this, I tried to integrate the buildings that could be saved within the project. Being saved can be either saved for an unknown period, but also being saved for as long as they stay above water.

For instance, in my project I tried to keep the mosque intact as it is one of the oldest buildings in Melayu. It has a history as a lighthouse, a Dutch trading office and after that a mosque. The building is one of a kind and is directly related to the identity of Melayu. The second reason for keeping it is that it is the last social structure which is still intact in Melayu. It still serves as the mosque of the neighbourhood.

Still more than 80 % of the buildings in the kampung will have to be demolished due to the fact that they are beyond saving. In my approach I tried to keep certain buildings to maintain whatever what is left of the neighbourhood.