Reflection on the graduation work:

Into the climate

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1. The relationship between research and design.

I was always fascinated by the connection between architecture and local climate. In each place in the world there is a different climate which leads to various transformations of architecture to make the living in it pleasant. For this reason, my graduation project interest focused on the exploration of bioclimatic architecture, more precisely, on principles of it learned from vernacular architecture from which bioclimatic evolved through thousands of years.

As the location for the graduation project I have chosen Bandung, Indonesia. I found the tropical climate, which is significantly different from the European context, quite challenging and interesting to explore.

The research paper was based on exploring the bioclimatic characteristics in vernacular architecture in four climate zones: hot-humid, hot-dry, continental and cold. This led to a creation of comparison table between different climates and bioclimatic principles. The research not only opened my mind for looking for natural, low-tech solutions to deal with the climate, helped with the aspects of hot-humid climate, which is in Bandung, Indonesia, but also showed the disadvantages as well as possibilities of mixing the principles between the climates.

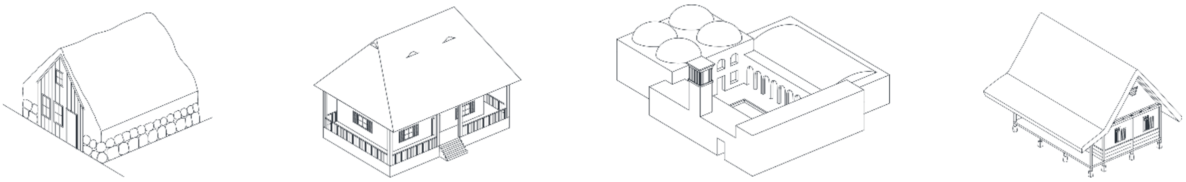

Image 1: Typical vernacular houses from four climate zones: cold, continental, hot-dry, hot-humid

Moreover, the trip to Bandung, seeing and exploring the climate so different form European, gave me a whole new view on building in tropical climate. In traditional architecture people build permeable structures, open to the world, but still protected from the sunlight and flood. Nevertheless, with the colonization and globalization the shift in the building construction can be seen. As Simon Velez describes the architecture in tropical countries: " ... construction in concrete as conceived in the third world produces cavernous spaces: a cave has a stone floor, stone walls and a stone roof. We do not come from caves, we are dwellers, we come from the trees and we are men of the treetops, even if we do now live in caves. Current architecture follows an exaggerated and unhealthy regimen. It is totally carnivorous. The state of nature demands that we come back to a more balanced, more vegetarian state ... ". The origins of traditional living are connected to the trees rather than in the caves. “Caves” arrived from the colder countries as the new techniques of building for developing countries. Despite the fact that the architecture in tropical countries was already developed in its own specific way, people accepted and took the new inventions for granted.

After the research on bioclimatic architecture in different climates I decided to focus in my graduation design on reinventing the traditional ways of living not only in architectural and structural level but also in social and crating a sustainable environment for living, so important in Cigondewah, where the inhabitants are mixed between local residents and migrant workers, the living conditions are not healthy, and people have got limited amount of money.

For this reason, apart from the main research on bioclimatic design I created a second one about how to implement sustainable solutions to the graduation location – Cigondewah. This included not only gaining solar energy and creating biogas but mainly focused on the water circulation, so important in the country where there is not enough fresh water, while the rainy season last half a year. This led to solutions like rain water harvesting, water purification through constructed wetlands and storm water management.

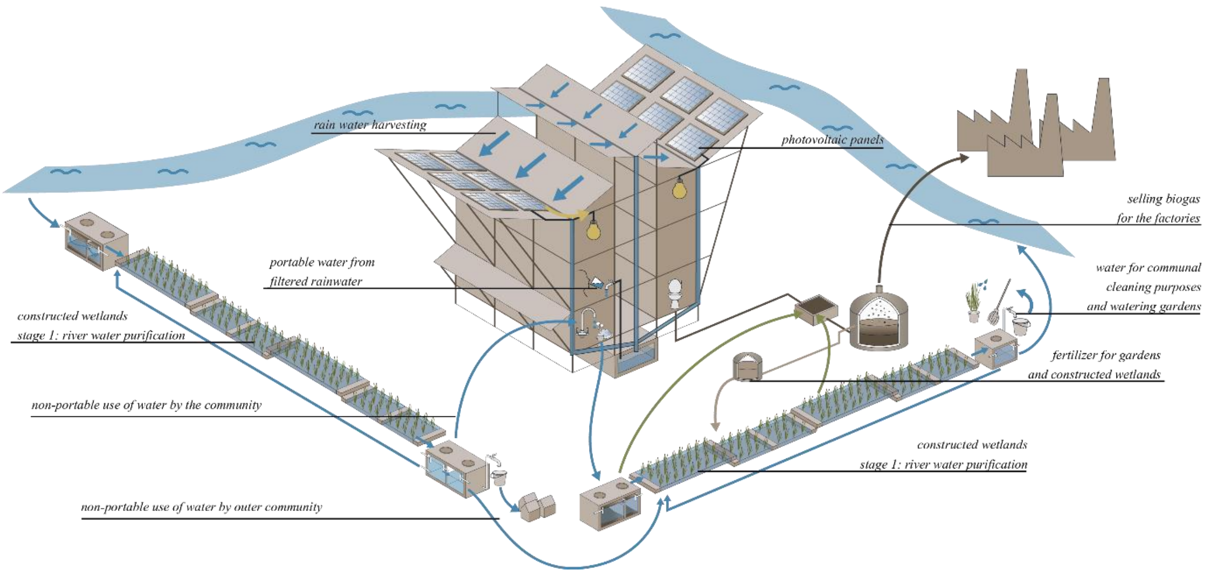

Image 2: Scheme of sustainable solutions applied in Cigondewah: rainwater harvesting, river water purification, grey water purification, harvesting solar energy and biogas

2. The relation between the graduation lab theme and the location/object

I have chosen AE studio because it deals with the real problems and real solutions. First of all, researching on bioclimatic architecture leads to many solutions which needs to be applied in technical and not theoretical way. Shaping of the building according to the local climate is one of the most important elements to provide comfort living. Sun position throughout the day and the year, rainfall, changing wind direction and variations in temperatures are all significant in the way inhabitants fell in different times of the day. Moreover, layout of the floorplans and use of the building materials and techniques affects the inside comfort as well. In this case a very technical and analytical approach is needed with which the solutions will be proved to be working in the future.

I have chosen Cigondewah, Bandung as my location as I found it quite challenging to work with. Not only the climate differs significantly comparing to European but also the location as a kampung – low-income workers and families lives together on a small, off-the-grid area. To create project which is able to exist, there is a need for the solutions which are cheap and easy to make by local people. Nowadays, most of the projects are based on concrete walls and slabs. However, exploring the new techniques and possibilities of bamboo can bring way better results to this climate. I found it quite challenging to find and design in details the wall and floor panels which would be made on site with local, natural materials and assembled by the local people.

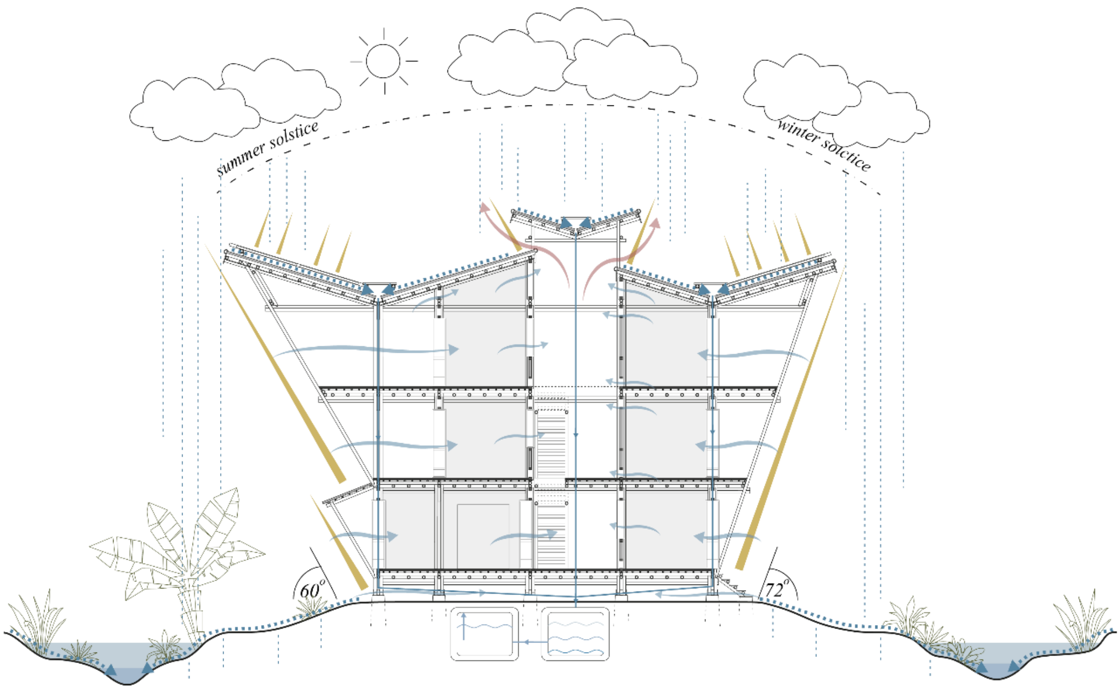

Image 3: Shaping the building according to the local climate

Moreover, as I also mentioned before, I decided to implement the sustainable solutions to the architecture and urban plan. This required another research based on plethora of calculations to design the right sizes of the appliances and provide enough resources for the inhabitants.

3. The relationship between the methodical line of approach to the graduation lab with the project

During the first week of the graduation we had to present our technical fascination. This was quite easy for me as I already knew that I would like to focus on the bioclimatic design. Nevertheless, bioclimatic architecture is a wide topic varies depending on the location. This brought to me some problems as at the beginning I was considering North of Europe, where the climate is cold and severe, as my graduation location. Nevertheless, no possibility of choosing that location led me to select Indonesia – completely the opposite climate conditions. In the research paper I decided to focus on vernacular architecture of four different climate zones, finding their similarities and differences. In the first weeks I was struggling, did not understand the topic, until we had a trip to Indonesia and all my thoughts and way of thinking about design changed diametrically. This was a huge leap in my graduation project. Seeing the location in real life brought me more ideas not only on the building itself but also on its surrounding. After coming back, I decided to focus only on Cigondewah and its climate as it had enough real problems to solve.

Nevertheless, coming months withdraw me from the location for a while as we needed to finish our research paper – in my situation focused on four different climates. I am very glad about what I have learned from the research. Nevertheless, in my opinion the focus on the research paper by the studio was too big in the first semester. There was no part of researching and designing at the same time. This led that most of the students ended up with a very extended research papers, but almost no design at all.

During second semester, I did not only implement bioclimatic solutions into my project but also found out that there are more things around this topic then I researched, like building materials, low-tech way of assembling the construction, layout of the floorplans and even the surrounding around the building is important.

In my opinion the development of my work is not consistent with the graduation lab methodology, however both ways can bring the positive results at the end.

4. The relationship between the project and the wider social context

As my graduation project I decided to create a dwelling as it is not only the building where people spend most of their time, and the comfort in it is very important, but also because it is a place where more families meet and help each other. Nowadays, more and more often the relationship between neighbours disappear and they do not know who lives next door. Lack of interest and no infrastructure to interact creates from even an interesting project an empty island with people closed behind their doors. As I visited Indonesia I found something which I knew from the past - interaction between neighbours. People were collaborating to achieve better living, while co-housing was quite common, especially in Cigondewah were the workers and families live under one roof. I decided to keep this beautiful relation and create an architecture which will allow them to flourish that relationships by creating co-housing with common- and work-spaces in the houses and meeting areas around the development. What I found missing in the society was lack of sustainable way of thinking and reusing the resources. Moreover, sharing the same resources and taking care of them joins the community together. For this reason, the whole urban plan is a set of sustainable solutions for living, required collaboration to work. The 'heart' of the whole system is a water collection place where people not only can meet but also receive the result of their work – clean water able to use for the cleaning purposes, enough to share also with the outer community living nearby.