Floating to health

Reflection paper

A modular solution for Healthcare and self dependance for low-income rural areas in West-Bengal, India
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I signed up for the Architectural Engineering Graduation Studio because I have a fascination with researching, designing and building specialized structures with natural materials. Most "high-tech" structural design is done with unsustainable materials since steel and concrete are very measurable materials that have been documented so well that it is the safe choice to design with. I however experience structures and buildings of natural materials as more comforting and aesthetically pleasing. Out of interest in this area I wanted to create a lightweight structure with "low-tech" natural materials.

I started researching flooding events all over the world to find out what the main issues were when areas get periodically flooded. During the formulation of the research scope, I decided to locate my project in West-Bengal, India. The Southern half of West-Bengal is an extensive delta area, two major rivers make their way to the sea here, the Ganges and the Hooghly. I picked this region because it is together with Bangladesh, the most consistently flooded region in the world. With no real idea or knowledge about this region I researched flooding events and specified on flooding in the region of West-Bengal and related areas in India. This research was conducted through literature and talks with humanitarian organizations such as the Red Cross and Doctors without borders. Conclusion from this research was that healthcare was a main issue with heavy floods. India also has a staggering shortage of healthcare professionals in rural areas. So these findings gave a purpose to the design and a programmatic idea.

The concept was to create a floating hospital that would be immune to the floods and could operate throughout the monsoon season. Before the P2, the research focused on the current situation and health facilities available in the area, resulting in the conclusion that there is no need for another hospital. Since doctors are very scarce in the area, there would be no staff to operate. Which immediately lead to the second research part into why there was such a shortage of healthcare professionals in these regions.

Conclusions led to the understanding that there is no financial capacity to keep trained professionals in the rural areas and the lack of decent facilities is troublesome for the very few that did decide to stay.

The lack of Top-down coordination made it incredibly important that this project would be community driven and focused on supplying self-reliance in the region. Which changed the focus of the research to a more permanent construction technique with vernacular roots to the rural area of India.
The period after the P2 I struggled a lot with getting started on the design process. I researched different building techniques, vernacular principles and climatic approaches but I was lacking the argumentation and conceptual approach as of how I could value different options against each other. I had to make choices on different design elements but with no bigger picture in mind, the choices led to different elements without any real coherence.

In hindsight I should have spent more time during the research period finding a goal or conceptual idea to which I could strive and narrow down the research. I postponed the exact determination of the project scope and design inspiration till my P2 because I had the notion that keeping my options open and not pinning myself down on a design, would lead to a more realistic and socially responsible.

As I found out, this is not the case for me. Keeping all options open leads to indecision and without a clear notion of the direction I want to go my motivation drops. A good lesson to take with me for the next time I will spent a year on a project!

The theme of the graduation lab is if technology is the answer, what is the question? Since I started my masters I wanted to apply my skill and focus on areas that lack the financial and educational prospects to create better solutions for day to day problems.

Not just a design in context of the first world but also a design in a context where people can hugele benefit from small improvements. The danger of large-scale flooding is increasing due to global warming and sea levels rising. This led to the idea of a floating solution for areas that have no means to use infrastructural adjustments. Designing floating lightweight structures is in essence also a technological challenge, the combination between technological design and a architectural approach creates an interdisciplinary field for problem solving.

The Studio aims to find solutions for problems and the ‘Make’ direction of the studio always demands a search for a wider social context to relate the design to.
3 Relationship between methodical line of approach of the graduation lab and the method chosen by the student.

The methodical line of approach from the graduation lab is focused on a technical fascination on which you write your research paper. I have not followed this methodical line since I mostly conducted my research into the needs of flood-prone areas. So I started with the problem I wanted to solve and found a technical approach later. I think this has been making it very hard for me to start designing. Since my research mostly focused on context and conceptual ideas, the switch to a spatial design proved very hard.

Personally I was also struggling very much with conducting research and design in an environment I had not experienced. I had to base most of my findings and conclusion purely on literature research and second hand experiences. I think a location visit would have helped me a lot.

4 Relationship between the project and the wider social context

Low-income areas are subject to an increasing amount of natural disasters mainly caused by global warming. Especially vulnerable parts in the world as South-East Asia and in particular areas around the Bay of Bengal are poor regions that do not have the means to cope with these problems as we do in Holland for example. Large infrastructural projects are not possible because of the lack of funding. So avoiding flooding is not possible but it is possible to provide communities with suitable solutions that can relieve the stress that is put on their lives. As such is a floating health clinic creating self-reliance.

The set-up of the project is to create a product that can be build by communities and inexperienced people. In such a way this design is meant to be build and owned by local builders, creating jobs and creating a sense of responsibility for the building. For time to come the clinic will provide health care for many communities in the region.

5 Discuss the ethical issues and dilemmas you may have

During the research phase I was motivated to start looking into shelter designs and temporary structures as an idea for a floating hospital. But although there are countless of examples for shelter designs these never get built or used. They also focus on the concept of a humanitarian organization coming in and helping out for a short period of time where afterwards these shelters are abandoned.

I think this is a shame and instead of designing shelter like structures I think the focus should be a lot more on community design, in what way can you make and apply a design that is long lasting for a community and can be
6 Research questions during project

Research question
What is needed for the Ghatal area in West Bengal to be self-dependent in case of the health care facilities?

Sub-questions
What are the effects of flooding?
What are programmatic requirements for a mobile health clinic?
How to create an off-the-grid permanent health care clinic?

What are the local facilities already offered in Ghatal?
What are the coping mechanisms with floods in the Ghatal area?
What building materials and styles are used in the region?

I think the building technology that I apply is not vernacular and also contains elements of pre-fabricated structures but is focused on the possibility for local contractors to build it. This would create the Ikea effect where local inhabitants will feel more likely to maintain and integrate the building into their daily life.

The design in the end has a modularity to it so it can function as many different programmatic functions, the basis stays the same and will be an addition throughout the region for communities in need of clinics and medical knowledge.

built and owned by locals. Something they can replicate themselves instead of having pre-fabricated structures that are dropped off. I myself was very tempted to head into the direction of shelter design but steered away from that as soon as I started to figure out that it was not a solution but just a way to treat a symptom.

This is the road to health centre to access the school and the immunization facility. We have stopped sending our children during high tides since Cyclone Aila.