Graduation Plan

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Studio
Studio: Architectural Engineering AE
Teachers: Mo Smit, Paddy Tomesen and Pieter Stoutjesdijk
Choice of the studio: AE intecture combines architecture and engineering by not only focusing on aesthetics but also on innovative technologies. This combination of innovation and design fascinates me and I believe this is the future for architecture. For architects having more knowledge of the technological background of the design. This studio gives future architects the skills to implement new technologies in designs.

Title
Kampong: the next level.
Problem Statement
In the large cities of Indonesia there is a rapid growth in population because of people trying to find work and build a better life in the city. Massive urbanization has created a high demand for housing and land for urban settlements. This resulted in a shortage of housing, especially considering affordable housing for the lower class. The growth of informal settlements tends to be uncontrolled and uses the limited land that is available. These informal settlements named kampons have narrow access roads and irregular, tight self-built buildings. These circumstances cause a high chance of fire spreading and others dangers like flooding's. The existing housing, especially in the dense urban areas, are often of poor quality. All this results into a crowded area, poorly built housing, the use of low-grade materials, lack of space in housing, and low quality, small urban spaces. A lot of kampons in Indonesia cannot be densified in a vertical way because of the weak construction of the buildings. These can only hold up to two levels and the second level is most of the times made of scrap materials. This is also the case in the kampong of Braga in Bandung. The kampong of Braga needs to be transformed to increase the quality of the life of the people and their homes. This can be done by using the strength of the existing community. Most of the kampons are now in poor condition, both physically and economically, but not necessarily poor socially.

Objective
The objective is to improve the overall quality of self-built housing in the Kampong of Braga in the old colonial city centre of Bandung. This can be done by implementing modularity into the existing way of building of the kampong. Thereby giving the people the opportunity to incrementally upgrade and improve their houses. Restructuring the existing urban fabric space gives opportunity to remove the poor quality existing housing and gives space to create community facilities and improved buildings. The initial build house is only the beginning of a larger housing commitment, to which improvements and additions can be made when resources allow and/or are required by the users. The residents of the kampong build over time if they can afford to expand. “Self-built housing by incremental construction seems to be the most universal process that is practised worldwide by urban low-income citizens. Affordability is the keyword to explain this phenomenon. In most cases, self-build housing is the only way to secure a home that is affordable for the lower income groups, the so-called 'incremental affordability'.”

Overall design question
How can the overall quality, strength and adaptability of the self-built housing in the kampong of Braga in the old colonial city centre of Bandung be improved?

How can modularity be implemented?
How can the current atmosphere of the kampong be maintained?
Can the kampong be densified?

Show the strength of the community in the structure.

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Thematic Research Question

How can (hybrid) modular systems be integrated into the existing buildings to increase the strength, quality, height and adaptability of self-built housing in an informal settlement?

How do they build in informal settlements?
What is Modularity?
What is Prefab?
What is the methodology of product design?
What are criteria extracted from the kampong?
How were the modular systems chosen for the research?

Methodologies

Literature study: Looking into the history of Indonesia, vernacular architecture, ways of building constructions, modularity and prefabrication.
Case studies: reference analysis: Looking at project in similar context, problems and climate.
Research by design: Testing and evaluating prototypes of modular solutions.
Design matrix: derived from the product design methodology.
Interviews: These are taken during the visit to Indonesia in the kampong of Braga.
Relevance
Because of continuing growth of the city of Bandung, improving the kampong of Braga gives opportunities in the future to increase vertically. Secondly, improving the kampong increases the quality of life of the kampong dwellers. But many other kampongs face the same problems. Therefore, this project could be implemented in more kampongs. The project can be helpful for all urban informal settlements and maybe semi-urban settlements.

There have been programmes to improve these kampongs before, for example: Kampong Improvement Program (KIP). However, this programme mainly focused on providing basic urban services, like roads, water, sanitation and education facilities. These are important problems to solve, but the programme lacks a solution for the quality of the housing. Therefore, this project looks into improving that aspect of the kampong.

Literature


Dykgman, A. Applying New Timber Technologies to a Variety of Multi-Unit Residential Typologies.


Matsumara, S. Prefabricated House-Building Systems in Japan.
