Observation och deduktion

Observation and deduction

Johan Lange
Handledare/ Supervisor
Ulrika Knagenhielm-Karlsson
Veronica Bröderman-Skeppe
Examinator/ Examiner
Per Franson

Examensarbete inom arkitektur, avancerad nivå 30 hp
Degree Project in Architecture, Second Level 30 credits
07 juni 2018
My project is a student housing complex at the Stockholm university campus.

In my writing my thesis booklet, my initial plan for a project was more of a visual idea of a really dense student housing complex, with lots of different shapes and a mix of finished and unfinished models. I first thought of it as a more of an aesthetic idea. I wanted to just build models without any real thought of the final project. This was also how I then started out the project, but as time has passed it has become more and more concrete and more technical and has finally landed in this system-oriented student housing complex.

So, the starting point was the design of the individual housing units. I wanted to experiment with different ways of spatially organizing a 20 square meter student apartment, trying to accommodate different needs and preferences among people.

So the first part of the project I spent building and designing these individual units. Each unit have the same floor area and basic necessities, like a bathroom, kitchen, bed and study area. But they each have individual themes and shapes. Some are long and narrow some are tall, some are curved, some have a private small courtyard, others are more open and outwards facing, but they are all 20 square meters. I’ve also drawn a few two-bedroom apartments that are 35 square meters each.

As the midcentury was approaching I needed to think of a way of organizing the units together, in my booklet I had researched grids, reading texts from Rosalind Krauss and Archizoom, I liked the idea of using a grid to create a platform for these different shapes to meet. So in this initial proposal, the units were put together into one big cluster without streets or hierarchies. I was seeking to create varied and unexpected in-between spaces among the units. Putting them close enough together to form interesting spaces but far apart enough to avoid creating unpleasant corridors or spaces that might feel unsafe.

After the midcentury I continued doing research and continued reading about the No-stop city by Archizoom. Their expand ing and continuous grid without clear indoor/outdoor separations inspired me to think of the plasticity that a regular grid can offer. However, I think that Archizooms vision was perhaps more rhetorical than realistic and so I’ve sought to create a system that works in practice and that is more local.

The second reference I studied was the architectural competition for the Stockholm University campus in 1961. The competition was won by Henning Larsen. His radical proposal included raising the campus on top of a concrete deck that would cover the entire site, separating the vehicle traffic below from the walking students above. Larsen's proposal was never built due to economic reasons. What interested me in this competition was the brief more than the proposals. They asked for a campus that was changeable and able to adapt to evolving ways of teaching and of using the university. This aspect of the competition was something I wanted to hold on to. I believe that the university environment and the spirit of education and research make my project a good fit for this location for that reason.

The third reference I studied was the Metabolist movement and the Nagakin Capsule Tower in particular. The Metabolist movement failed to realize its vision; in my view its party because it was overly complex and miscalculated the individual resident's needs and preferences. In the Nagakin capsule tower, to my knowledge, non-of the capsules were moved or transported to another location and the building has remained stagnant since its inception. In my project I’ve sought to enable more changeability by reducing the technical complexity and by having the inhabitants input inform the layout in a continuous feedback loop.

In the starting configuration, the units are organized in groups of 6-8 with one two-bedroom apartment in each group. The units form a courtyard at the center of each group, where a moveable "vårdträd" is also positioned together with some chairs and tables for social gatherings.

Between each group, a column and row are left empty to enable transportation and to create an easy way of orienting yourself and navigating the area. The units are sometimes stacked on top of each other and sometimes they are free-standing. By creating these subgroups of units in the layout I have sought to replicate the idea of shared student corridor, where each unit shares a kitchen. Here, the units are instead centered on the shared semi open courtyards. I have also sought to keep the sort of cluttered atmosphere from the initial configuration but have tried to make it more navigable and a bit more predictable.

The units would be owned by Stockholm Student Housing and would be rented out to the applier with the most queue-days. Together with qualitative data from the inhabitants through forms and other feedback, this quantitative data can be used to try out different configurations and constellations to optimize or enhance the layout of the complex.

So this is how the technical system works. The grid runs underground and contains infrastructure for the units such as water, electricity and drainage. Each crossing in the grid forms a node that is a potential connection-point for a unit. The nodes can be extended upwards, enabling the stacking of units. Each unit is plugged in the grid via a type of cord or pipe that looks like this, that attaches to the bottom slab of each unit.

The units are made with a sheet metal frames running parallel in rows and columns, forming strong connection points that enables the potential stacking. The frames are insulated and then covered in corrugated steel cladding in white and blue. The benefits of using a steel structure are its strength to weight ratio, its potential for customization and its ease of assembly.

Steel is also quite environmentally friendly in that can be melted down and recycled hundreds of times with any loss of material quality, it’s also chemically inert and does not emit any substances.

When working with these small and custom-made shapes it’s also a cost effective material.

So in conclusion, I have sought to create a housing complex that is more local, concrete and realistic than No-stop city, that's more economically viable than the winning proposal by Henning Larsen in 1961 and that is less technically complex and more in tuned with the needs of the inhabitants than the Nagakin capsule tower. I think that the simplicity of the nodes and connection points, the strength and customization of the steel frame structure, and the feedback from the inhabitants achieves this goal.
Photos of the site in April.
Starting the project, I had no references in mind other than a picture of Archizooms no-stop city that I had seen at the Chicago architecture biennale during our study trip in the fall of 2017. I was intrigued by what I saw as a very free and almost irrational approach to architecture, where play and experiment seemed to be the leading ideas. I had wanted to create a very dense student housing complex and I now realized that as an architect, I don’t always have to make perfect technical sense. Instead I could engage in play and work with a vision and see where it leads me.

After coming home from Chicago my tutors encouraged me to study Archizoom further. I became interested in the flexibility of the grid that they proposed. In their view the infinite grid would take the place of cities and roads and combine all architecture into a single space where people live and work. While I may not agree with this vision of the future, I see potential in the use of a grid as a arbitor of flexibility rather than being the end product. A structure that enables a second layer of change and flexibility rather than being an all encompassing entity on its own.

During the midcrit, I was asked about the 1961 competition for the Stockholm University Campus. Up to this point I had no realized there had been such a competition, so after the midcrit I started researching it. I became interested in the concept and of the demands of the competition and also studied the winning proposal by Henning Larsen, that unfortunately was not built due to economical restraints.

Larsen’s radical proposal included raising the entire campus on top of a concrete platform, separating the vehicle traffic below from the walking traffic above. I enjoyed the idea of separating the two, enabling for a larger degree of freedom on top of the platform, when parking and cars no longer where something to take into consideration.

The competition called for flexibility and the ability to adapt to evolving ways of studying and teaching that would take place on campus. That the facilities would be able to accommodate changing teaching methods. This type of flexibility became something I wanted to use in the housing complex.

The third reference I looked at was the metabolist movement, and the Nagakin Capsule Tower in particular. One thing that interested me about the metabolist movement are analyzing the reasons why it failed. In my view, part of the reason it failed to gain ground and work as intended was that it was perhaps too visionary and destroyed by the technical details that were not fully realized. Removing the capsules from the tower and placing them into a different tower would be quite an ordeal and the reasons for the movement might not have been strong enough to justify this rather advanced manoeuver.

In my project I have sought to simplify the technical aspects, making movement and change more effortless and hopefully more likely. By creating a system that doesn’t rely on advanced technical equipment, I think the idea of flexibility becomes more viable and realistic.
Watercut sheet metal frames cross and form strong intersection-points that enable the stacking of units. Interior cladding sheets. Exterior corrugated sheet metal clad. This particular unit has loadbearing pillars that support the unit and raises sheet metal. 20 mm thick cellfoam insulation is cut into custom pieces for each unit and inserted in the gaps formed by the loadbearing frames. The cord supplying the top unit with pipes. Fitted into a 150 x 150 mm insulated pipe. The bottom layer of insulation also holds the attachment for the supply cord and distribution of water pipes. Lightweight white metal staircases are added where units are stacked. Nodes that connect to the underlying grid where units can be placed and supplied with water, sewage and electricity. 160 cm below ground the unit creates 20 m² squares where each crossing point is a potential connection point to an above unit.
Diagramatic plan of current layout, showing figure-ground relations.
Current layout. The units are organized in groups of 5-8 that form a small courtyard around a tree. Between each group there are empty grid spaces to be used for communication and transportation throughout the complex.

In this layout, the units are arranged in a row-house like fashion, without any stacking. This provides a complex that is more easily navigated but that perhaps lack space efficiency and variety in shared outdoor spaces. In this layout, fewer units were able to be fitted into the lot.

In this fourth layout. The units are positioned closely along three edges of the site, forming a big semi open courtyard to the south, placing the units this closely enables fewer but larger shared spaces to be made.

In this third layout, the houses are stacked up to four houses high and are positioned more closely to each other. This is very space efficient and creates a large number of complex small in-between spaces. Aspects such as fire safety and other comfort-related parameters may suffer as a consequence of this.
This is the cord that connects the underground grid to the above houses, supplying them with drainage, fresh water, electricity etc. Also showing three attachment concepts for the bottom slab.