

REFLECTION

14. PRODUCT PROCESS & PLANNING

In this chapter will be reflected on the results of the research and design in this graduation project, considering the process, planning and product. The aim is to see to what extent the used approach worked, understand the 'how and why' and to learn from this.

14.1 STUDIO & SUBJECT

The first aspect to consider is the relationship between the theme of the graduation studio and the subject chosen within this framework.

Heritage & Architecture is concerned with preservation and renewal in existing architecture. The studio approaches research and design on all levels of scale ranging from the use of materials and technology, through the reuse and redesign of a building complex, to the development of landscape and urban structure. In which will be focused to translate cultural historic and technological information into a design.

In the Studio Heritage & Architecture Rotterdam Harbour Heritage, the ambition is to reach for a smart design for adaptive re-use of existing building complexes in the harbour areas of Rotterdam.

The studio is concerned with the actual question of a new phase of development of some specific harbour areas, through intervention. These harbour areas will change considerably, because of the vacant and new contextual identities that will be repositioned in the urban infra-structure. They have changed already by the departure of

several industries. The theme for research is the significance and essence of the building complex and the water and within this, the tolerance for change.

It is exactly dealing with existing architecture and the question of a new phase of development that resulted in the object of this graduation project. By taking these existing building complexes to the future, also the question of sustainability needs to be considered. Even more when involving the location of the subject, an old port area in development in a city with a fierce history and where innovation is celebrated.

The building Fenix II is one of the existing building complexes and is located on Katendrecht. This in origin port warehouse and its nearby environment are subject of this graduation studio between history and future.

14.2 METHOD

The method chosen in this graduation project is similar to the approach of the studio Heritage and Architecture. Architectural reuse of buildings is a design by research and research by design.

During this graduation project specific research is done on the development of an approach to combine transformation and sustainability in architecture. This can be done by developing two toolboxes during the first phase: one for transformation architecture and one for integrated sustainability. In the next phase (research by design) the two need to be combined in the design.

This process of developing a toolbox for transformation architecture is in line with the by the studio purposed approach. Here will be started with research into the history and an analysis of the past, present and future on different scale levels. Both will form the basis for the value assessment.

Usually the essential qualities of the selected building and the individual starting points for the design dictate the program of demands and the outlines for the following research by design. But in this project also the toolbox for integrated sustainability was made and used to dictate the outlines of the next phase. This was done by researching the goal that could be worked towards and analysing the characteristics of the local environment that have impact on the climate design or energy use of the building. Together this formed a set of boundaries to work within the design.

The research by design phase starts with identifying the essence of the ambition for the subject. This forms the research questions for which a solution has to be developed in the design.

To come up with solutions, reference projects were studied and excursions were undertaken. The two toolboxes developed in the first part functioned as set of preconditions.

Variants were tested in sketches, 2D drawings and virtual as well as physical 3D models. They were examined and the best solution resulted in the purposed design.

Remarkable is that, as in any design process, the design in this project is a purposed solution and will not be the only way of answering the design question. It is the outcome of the research process walked through during this graduation project. It is at this moment and within this time frame a worth knowing answer.

Note: By choosing a route other than usual, combining heritage with sustainability as an ambition from the start of the project, also the path to follow had to be considered. Therefore, the process was not self-evident and went with trial and error. Looking back, the toolbox for integrated sustainability that was developed in the first phase of the project, has become significantly less comprehensive than that for transformation. This may be due to the influence of the running process in the studio heritage and architecture. In a subsequent research project, a more convenient balance should be found.

14.3 RELATION TO WIDER SOCIAL CONTEXT

The theme of this graduation project responds to one of the current issues in society. Nowadays the urge of building sustainable is obvious. In order to give the planet to next generations it is necessary to come up with new solutions. On the other hand transformation of buildings is one of the main emergent topics in contemporary architecture. It's about finding 'an appropriate balance between the old and the new.' Most of the built environment in the future shall be the same as now. Transformation therefore will be the theme in architecture of the coming years.

So it can be stated that sustainability and transformation are two distinctive trends in contemporary architecture. In contrast to what is happening now, it is necessary to combine them. The reason for this is that the world will be left empty handed when new buildings can be built sustainable but the demand is in the existing stock. In this way this graduation project is an example solution for the theme in architecture of the coming years.

Moreover, the project is contributing to the development of an approach for combining architecture and sustainability. This can be used and further developed in the future.

Last, interesting in this project is that at the site two total different solutions are purposed for two comparable buildings with the same history. The design of Mei Architects is totally different from the design purposed in this project.

This not only shows that designing is a process that can have multiple solutions. Especially it

illustrates the importance of good research and a value assessment. In order to investigated the tolerance for change as basis for the design.

14.4 RESEARCH AND DESIGN

The strong predetermined direction of research resulted in a research question. From there multiple sub questions were formulated. This made possible to better understand the main question and to frame it. The research has had a strong influence on the whole approach of the design. The formulated ambition can be found in the result on all scale levels.

Research

The research question stated was: *How to transform a heritage building into a sustainable building while conserving its characteristics?*

The sub questions asked are:

What is a sustainable building and related to that, what is transformation?

How to combine sustainability and transformation in architecture?

What have been and are the characteristics of the existing building complex and its surroundings?

Before these questions could be answered, a subject was chosen. As described in section 12.1, Fenix II is one of the existing building complexes within the theme of the studio and moreover positioned at the centre between history and future. Therefore this building is an interesting subject for this research.

Altogether could be concluded that Fenix II is a remnant of a quite impressive, and for the time it was build, distinctive building for the environment as well as for the port of Rotterdam.

The changes during time are strongly related to another important occurrence in the city's memory, WWII. This building has always been surrounded by movement and activity during its whole period of use. But, it became vacant when the port moved towards the west.

Besides the history, also the future for Fenix II was researched by investigating the meaning of a sustainable building. The goal was phrased to try to close the cycles of energy, water, material and food within the scope of the project.

Translation into design | Looking at the research question, the history of the building and the current situation, the guiding theme 'energy' was chosen. At this phase in the process all the outcomes of the research together formed the basis for the direction of the design. While different aspects of energy were strongly present in the past and appear to be important and relevant in the future, it is absent in the current situation. So the new design for Fenix II needs to give this building energy again.

Design | In the design phase was researched what aspects of energy were related to this project and relevant for the design and building. At the same time, an attempt to find a balance between the cultural value of the existing and the new that needs to be added.

Energy in appearance means that in the exterior the old is emphasized at the small scale street side by opening concrete façade again, bringing back the strong rhythm and provide space for movement and interaction around this facade. While at the large scale water side, a strong gesture is made by adding a rolling shape over

the building. Hereby a connection is made with the movement of the water as well as a reaction on the force of the high rise around the Rijnhaven. Going inside, wide open spaces are filled with horizontal light, and characterized by the heavy and rough concrete structure which offers space for interaction. In the core of the building the new water side facade dives into vides that bring skylight from above and change the darkest areas of the building in oasis of light and green. Around these vides more softer and enclosed areas are placed which provide a platform for creativity. At the roof the transparent rolling structure of the new facade as well as the structure of the existing building are combined into a green landscape.

Energy also has to do with the function of the building. Here is tried to create a place for the residents of Katendrecht again as well as reintroduce a connection between the two Fenix buildings. Fenix II will be a place where people get energy from sports, making or enjoying visual art and the production and consumption of food.

Energy is also a technical story. The added facade also functions as a greenhouse, shaft and buffer zone and contains building integrated PV so the required energy can be generated in the building. The roof garden will play a role in the water buffer capacity and rainwater collection so less tap water is needed and or waste is going to the sewage. Energy in building material is considered by using reused, recyclable or renewable materials as much as possible. And last, the production and consumption of food are integrated in the architectural design and the way the building is used. This makes that Fenix II can contribute about 30% of the vegetable need of Katendrecht.

The goal of all that is designed and researched, is to be able to answer my research question. By developing this design with energy as guiding theme, at the same time an answer is given to the research questions. It conserves and elaborates on the character of the building and succeeds to close a the main part of the four cycles. In the end, heritage and sustainability are integrated in the design that transforms Fenix II into an energizing warehouse for the inhabitants of Katendrecht and the city of Rotterdam.

Note: Where during the first phase of this project the heritage aspect prevailed during the research, the design focused more on the sustainability aspect of this project. Finding a balance between both is one of the challenges during a research like this. The value assessment and the framework of transformation function as foundation for the heritage design. In this project, sometimes not enough attention has been paid to this important tool.

