Katoenveem Reconnected: The Renovation Design of the Former Cotton Warehouse

Reflection Paper P5/ Studio Heritage and Architecture / Xihao Yi /Nr.4506995 / Jan2018

1/Introduction

The building chosen for my graduation studio is the Katoenveem(fig.1), which is an empty former warehouse, located on the north bank of the New Maas River within the historical Merwe-Vierhavens area between Schiedam and Rotterdam. As the site is planned to be a residential and urban economy area in the near future, the Katoenveem itself needs a renovation plan as a national architectural monument.

Fig.1 Location of Katoenveem

The Katoenveem in Rotterdam（Keilestraat 39）was built in 1919 for the purpose of cotton storage within a whole set of building complex for goods transportation on the pier. When the complex was complete, the cranes at both sides of the pier, the steel bridge between buildings, together with the railway tracks on in the middle of the building, has enable the building complex to collect cotton bales from both sides of the pier and redistribute them either via ships or trains. The building was shut down in 1964 due to the decay of cotton industry and had been used only partly and periodically since then.

It is clear that Katoenveem is not in its original context and has a serious dislocation of time and place, which has resulted in its current isolated and decaying status. Therefore, the research question is how to reconnect the isolated Katoenveem with its surroundings and present urban life? To answer this question, a series of interrelated research on Architecture (A), Building Technology (BT) and Culture Value (CV) was done to sustain the further renovation design. The

triangle of A-BT-CV is a comprehensive framework of the Heritage and Architecture studio that helps with the reasoning within the design by research process.

2/Research Approach

As stated above, the research consists of three parts, Architectural Research, Building Technology Research and Culture Value Assessment. Although these 3 aspects have their own emphases, there is no clear boundaries in-between them as they all account for the understanding of Katoenveem.

Architectural Research mainly focuses on the inherent architectural qualities that are specific to the building, with which we can find the spatial potentials for it. In other words, this research helps me understand what defines the architecture as it is and what it could be/should be in the future.

Building Technology Research explains how the structure, construction and installation of the building functioned as a whole, as well as their practical limits and problems. This decides what can/cannot be done with the old building matter and the relationship between the old and new.

Culture Value Assessment evaluates the culture value of both the tangible (physical matters) and intangible parts (history and atmosphere) of the building, with which I can find guidelines and inspirations for my design decisions. This assessment involved with a group evaluation using the CV Matrix and a personal interpretation of the matrix. More details of the method is elaborated in a separate CV reflection paper.

The A-BT-CV research has direct influences on the following design on almost all phases, aspects and scales, therefore he design decisions can be traced back to one or more aspects of the research.

3/Design by Research

To state the design outcome in short, the former cotton warehouse is transformed into a mixed-use public building with the core program of textile art school. In the following paragraphs this dramatic change will be explained from scratch to details in relate to the A-BT-CV research.

The city role of the future Katoenveem should be a central building of the community (see fig.2), as it is one of the oldest and monumental buildings within Merwe-Vierhavens, where plenty of housing will be built in the near future. The new masterplan has connected the building to its surroundings both function-wise and infrastructure-wise, hence the culture value of the former industrial architecture complex is embodied in this layout.

Fig2. New Masterplan and Old Aeroview

The re-programming of the building is a result of comprehensive understanding of A-BT-CV research. Firstly, the rational 10x10m grid and big skylights have the architectural potential to host programs such as libraries, galleries and other functions that need mild natural lighting, while the 5-compartment layout suggests different programs within different programs. Secondly, the vertical dimension of the structure, namely over 12m overall building height with a grid of walkways on the height of 7.9m has the capacity of 3 floors in the future. Thirdly, the history use of cotton storage becomes a source of inspiration for the new program – although cotton as an industrial product does not exist in the building anymore, it can re-occupy the building as a form of art in the future.

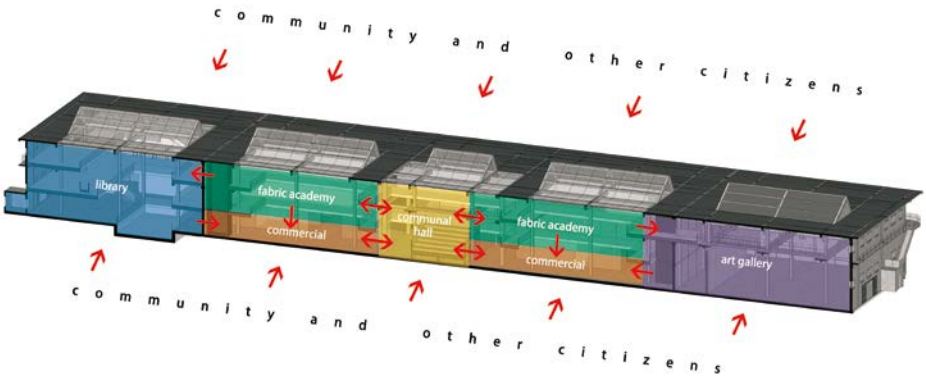

Fig.3 Program Diagram

Therefore, the core program is the textile art school named Fabric Academy, which is located in the middle part of the building and connected with a library and a gallery on either side (see fig.3). I made the ground floor more public by putting commercial space that hosts cafes, restaurants and other shops. A communal hall for all the programs is shared by all the different users. In this way, the hall, library, gallery and commercial spaces in the building can serve both

the Fabric Academy and the community. The new programs will benefit each other and stimulate the public events happen within as different kinds of people will encounter each other in the building.

Fig.4 Main Facade

The intervention of surface, structure and space is also influenced by the A-BT-CV research. I decided to open up the middle part of the building by replacing the old façade with large area of glass curtain wall to enable more daylight and sight of the public into the building (fig.4). This dramatic change of the architectural monument is justified by the Culture Value Assessment because of the similarity CV of the 5 compartments – the 2 compartments at both ends as well as the contour of the building stay almost the same as a city image so that the historical value of the complex and compartments are maintained. The original reinforced concrete structure makes it possible to make big openings to the edge of the beams and columns on the façade and the compartment walls. According to the BT research, however, the weight of the new floor cannot be place onto the old slim structure, therefore a new framework of structure is introduced in the building, parallel to the old one (fig.5). The new structure frame has very limited impact on the old one, so the Culture Value of the structure is well preserved. The space of 5 compartments has become 3 compartments, where different spatial qualities are presented within.

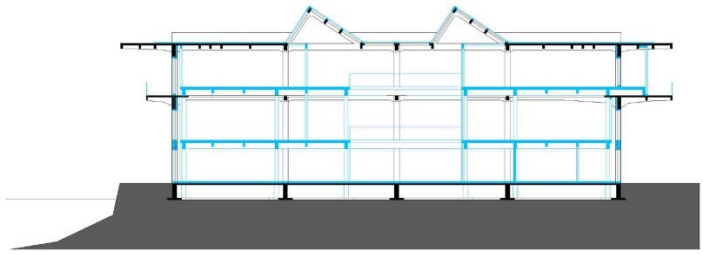

Fig.5 New (blue) and old (black) frame

Zooming-in to the details, design is still guided by research (fig.6). For instance, in order to insulate the raw concrete structure, the choice of insulating the walls on the inside and roof on the outside was made due to the Architecture and CV research. Insulating the walls inside keeps the original parts of the façade intact (except for the re-plastering on the severe damages on the surface), while the old installations under the roof are preserved by insulating the roof outside. For another, the new construction is designed to form contrast with the old interior, therefore hanged ceilings, uniformed glass curtainwalls are used to express a smooth construction alongside the rough concrete columns and beams.

4/Conclusion

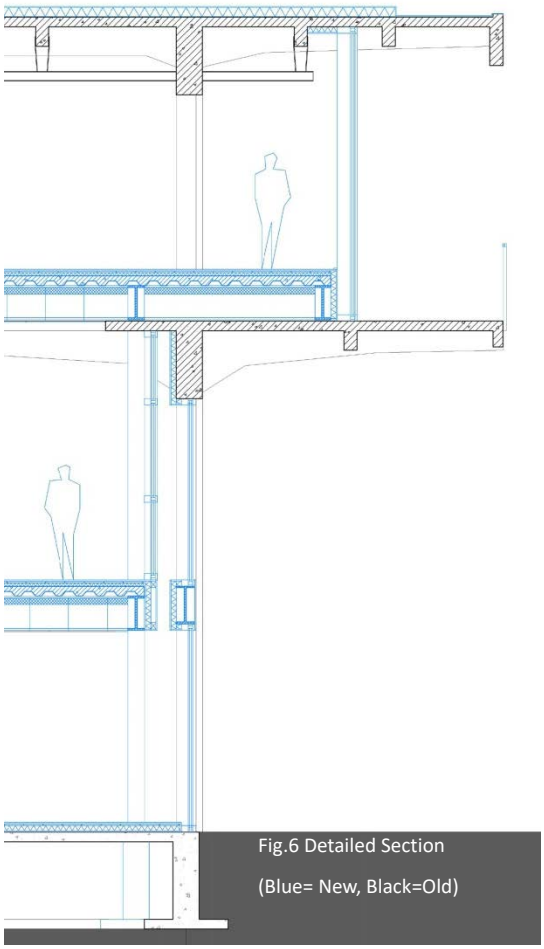

Fig.6 Detailed Section

(Blue= New, Black=Old)

The projects of Heritage and Architecture Studio always have to deal with the relationship between “old” and “new”. General but fundamental questions regarding what changes can be made to the “old” and what “new” can be added to it are unavoidable in all of the projects. When these questions come across an important architectural monument, such as the Katoenveem, more sophisticated answers are expected. This is because both the building matter and the storyline behind it are of great importance as a collective memory, while making use of it within the present/future context is also an urge request.

The A-BT-CV research framework provides the chance to understand the architecture heritage systematically and thoroughly –tangibles and intangibles, opportunities and obligations. The thinking of “design by research” is perfectly embodied in this process where almost every design decisions made can be traced back to the research. Hence it is safe to say that the design is a product of reasoning, and also a new storyline added to the old one that is likely to be accepted by the public and experts.

Needless to say, the renewal of architecture belongs to a wider social topic of sustainable development. This design by research method undoubtedly corresponds to this topic, for it finds value in the “old” and creates “new” from it. The idea of sustainability lay in not only the continuity of the physical matters, but also the intertwined storyline of the past and future.