Re-architecture of Industrial Heritage

Chiara Bonsignori, Jouke Post, Ana Pereira Roders

ABSTRACT

Industrial heritage consists of remains of industrial culture, which are of historical, technological, social, architectural and scientific value. To conserve and to study these symbols of past human activities is very important for current and future generations.

This paper focuses on four industrial buildings, in The Netherlands; that will be redesigned by a group of MSc. students, at Eindhoven University of Technology, with an open building strategy. One of the four buildings - Het Veem - was specially selected as case study to be presented in this paper, nevertheless these are preliminary results. The factual results shall be presented in the conference.

The MSc. Design studio takes place, parallel to a wider research, focusing on the development of a design process support system, named RE-ARCHITECTURE. The students will make use of this support system to analyse, evaluate and redesign the buildings, without diminishing its value as cultural heritage.

Keywords: Industrial Heritage, Rehabilitation, Open Building, Flexibility, Re-Architecture

Contribution:
The contribution to the CIB 2007 congress ‘Construction for development’ is to alert for the importance of Industrial Heritage, its study and preservation. Plus, it provides the preliminary results of an accurate assessment developed, by making use of RE-ARCHITECTURE.
1. INTRODUCTION

History is not only about battles, wars, deals and constitutions, but also about the evolution of human settlements, their daily activities, their living environment, their traditions, their working conditions, etc. Especially, the related universe of their working environment is considerably relevant, as in many aspects represents more than one generation of people that spent a substantial part of their lives within those environments.

Representing recent history, industrial heritage as the famous “Tate Modern”, in London- Great Britain; “Il Lingotto”, in Turin-Italy and the “Emscher Park”, in Duisburg-Germany are remarkable examples of such working environments of our world cultural heritage. They represent not only their contemporary generations, as they reflect in their reuse and/or possible changes of use, the priorities of their present generations and degree of consciousness regarding future generations.

Anywhere in the world, Industrial heritage can be found, in most cities, countries and continents. Some are more important than others, but they are often fundamental for the development of their environment. Mostly, the industrial heritage is small in scale; but when compared and framed in their surroundings, they are obviously remarkable buildings.

These buildings are, undeniably, a tangible heritage of the 19th century, reflecting the industrial boom and consequent economical growth, increasing processes, etc… A crucial base of our current world economy.

The Netherlands are one of the many European countries where, during the Industrial Revolution, a considerable number of factories and industries were founded. Moreover, this country is deeply related to the water element. Probably due to its geographical characteristics mostly surrounded by the North Sea and crossed by several rivers and canals.

For these reasons and others, it is not difficult to find interesting examples of industrial heritage, when observing Dutch cities close to the coast and/or in the neighbours of the city harbour.

This research has been done in two of the biggest and most important cities of The Netherlands: Amsterdam and Rotterdam. Our analysis focused on two harbour buildings in each city (Figure 1.1-1.4), built between the end of XIX century and the first twenty years of XX century.

In Amsterdam the two buildings are “Het Veem” complex (van Diemenstraat 410-412) and “NDSM werf” (Neveritaweg 15). In Rotterdam the two buildings are the “Schiecentrale” complex (Lloydstraat 5) and the “Graansilo” (Maashaven zz 2).

Figure 1.1 Het Veem, Amsterdam   Figure 1.2 NDSM, Amsterdam
All these buildings have the same environment, due to the fact that they are located in neighbours of the city harbour and are directly related to naval and yard activities. Moreover they have a common shape, based on a simple structure, made of big free spaces and used to stock and deposit materials.

Such buildings – and their environment – are not static artefacts and during times of social and technical improving, adjustments are needed in some measure to maintain those buildings attractive, safe and useful.

2. BACKGROUND

For purposes of research and fulfilling Municipal interests, a group of MSc. students is designing the rehabilitation of these four complexes, at the Eindhoven University of Technology, The Netherlands. The students, supported by a design process support system, named RE-ARCHITECTURE (Pereira Roders, 2006), will be motivated to implement the Open Building strategy in their rehabilitation design developments.

Interesting researches have been developed focusing on the Open Building strategy. John Habraken (1961) defined it as a strategy based on the organization of the process of designing and building on environmental levels. Accordingly, the theorised levels are: the urban level (tissue); support level (base building); infill level (fit out) and furniture level (furnishings).

Stephen Kendal (1999) continued to research on this topic. As he later states: «The Open Building approach uses a design method and a new logistics strategy using fit-out kits. The developer asks for bids only for a “serviced shell” or “base building” and then he gets a finished building complete in every part. …The base building establishes the kind of lifestyle and quality of services that the buyer needs to know before deciding if the location is interesting. But the inside of the units will be empty and ready to be filled in» (Kendal, 2005).

The base building normally includes the building's primary structure; the building envelope (roof and facade) in whole or part; public circulation
and fire egress (lobbies, corridors, elevators and public stairs); and primary mechanical and supply systems (electricity, heating and air conditioning, water supply, gas, etc.) up to the point of contact with individual occupant spaces.

Stewart Brand (1994) introduced the evolution of the concept of levels, with the “shearing layers of change”. Accordingly, a building is composed by several lifespan layers, each one changing constant and differently. The site is eternal and the structure lasts the lifetime of the building, while the other layers cannot remain the same for a so long time: skin and services last around 15-20 years, space plan can last around 3 years and stuff only months or weeks.

The common feature of these theories is their dynamic way of thinking about the building and its environment. People, uses, needs, economies, etc., they all change over time and the only way the building has to remain of interest (active) is to change together with them and be adaptive. Thinking a building with an open building strategy and inherent flexible approaches makes interventions, e.g. rehabilitation easier and better.
3. METHOD

RE-ARCHITECTURE is a design process support system, developed in a doctoral research by Ana Pereira Roders (2006) that provides to the designer the technical knowledge and the tools to develop a lifespan conscious design.

It consists of two main design phases: a pre-design phase, where the existing building is inventoried, surveyed and evaluated; and a design phase, where the design developments are simulated and later evaluated.

The design process support system is still only available in a trial version, which the MSc. Students will be allowed to use during their design developments.

Even if the MSc. Students will have the four buildings as case studies (earlier presented); for the purpose of this paper and to make the evaluation system acquainted, only the preliminary results of one of the four buildings, Het Veem, will be further described in the following chapters.

4. CASE STUDY: HET VEEM COMPLEX, AMSTERDAM

The period 1813-1940 is marked by economic recovery and, from 1870 onwards, by expansion. This development was primarily the result of the Industrial Revolution, which triggered off a "New Golden Age" for Amsterdam. At the end of the XIX century, the city ventured into the area beyond the "Singelgracht" and expanded itself around the harbour and the canals.

The analysed building belongs to this increase and technical upheaval period. It was built in 1898 for the "Nederlandse Veem Compagnie", which needed a deposit to stock luxury goods (coffee, cocoa, tea, tobacco) from the Dutch colonies.

![Figure 4.1 Respectively façade north and west in 1901](image)

The building joins a particular view on the harbor and a strategic position in the city. It is situated beside the River IJ, between the old dockland and the modern harbor in the West and is only one and a half kilometers far away from the Central Station.
The building was used as warehouse until 1978, after then was abandoned for three years until a group of riots decided to enter and squatter it.

The structure got a simple rectangular form with a cover made of brick walls and the inside carrying structure made of iron columns and wooden beams. This constructive system allows the building to embrace the open building strategies, as it has a considerable amount of open space.

Figure 4.2 Het Veem, internal view of the second floor (before and after rehabilitation)

This 10,000 m2 warehouse was an ideal place, because it offered that big low-priced space (not offered by the city) which people had been looking for, to do their personal activities. Now the building provides accommodation for approximately eighty small companies and artist’s studios, an art gallery and a theatre plus café.

The function of the old industrial building radically changed, but the new project has been developed respecting its story and cultural values. This is due to the capability and sensibility of those who developed a complete master plan and understood the building’s historical importance as a piece of industrial heritage.

It was beneficial to work with a closely linked team of architects, builders and artists, who did not sought it in its status of “cost-free” container of cheap workspace, but as architectural quality, identity and character that justified every care and effort.

Analysis

The buildings of the case study were in accordance with the guidelines and tools provided in RE-ARCHITECTURE. The purpose was to discover differences between the situation before rehabilitation (1980, pre-design) and after rehabilitation (2006, design).

The first analysis was the Environment Assessment (EA), considering both natural (Figure 4.3) and unnatural (Figure 4.4) elements. This kind of surveying can be very useful to understand what changes can be brought and in which way it is possible improve the conditions of the building’s environment.
In our sample, the results obtained after the analysis, synthesis and the environment assessment, clearly show how much attention should be paid in a future rehabilitation, to the water element.

Figure 4.3 Environment assessment, unnatural elements (table and spider scheme)

By making the Significance Assessment (Figure 4.5), it is possible to evaluate the cultural values: social, economic, political, historic, aesthetical, scientific, age and ecological.

In our case study, the spider scheme clearly shows how, all the cultural values, especially the aesthetical, social and cultural ones, increased after the rehabilitation.

Now the building has high values of flexibility and adaptability but its general value is higher because it also has an extra historical-cultural value.

At the same time, with the same evaluation system, it is possible to analyse immediately how, increasing the building values, the risk that it could be destroyed and replaced by a new one are reduced.
Finally, by making the Condition assessment (Figure 4.6) it is possible to assess in which conditions is the building. It is possible also to compare the consequences of restoration intervention and the benefits regarding the building’s state of conservation. After the rehabilitation, some values as the performance, the cost and the lifespan are higher than before, as expected.

**5. CONCLUSIONS**

The assessment made with this method was very useful to make a complete evaluation of the building and its both realities: before and after intervention. It allows the designer to understand what the problems are and to which degree they are present.

At the end, the designer/architect will have all the instruments and the information to make the best choices and he can compare the advantages and disadvantages that his design proposal brings to the building.

His intervention will not be arbitrary but justified and motivated by these preceding studies.

As referenced earlier in the abstract, this paper has showed only some preliminary assessment results, while the final results of the MSc. students are the ones that are going to be presented in the conference.
6. REFERENCES


