MASTER

The conversion of the Schellens factory into a bathhouse

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Jos Beekhuijzen
Graduation Project
The Conversion of the Schellens Factory into a Bathhouse
Preface

In September 2004 I set about work on a major revitalisation project, which would hopefully, upon termination, result in my graduation. Under the expert guidance of Professor Hana Cisar, the project entitled The Conversion of the Schellens Factory into a Bathhouse turned out to be a very appropriate one for me. Most interestingly I was in the right environment to examine themes such as revitalisation, typology, bathing tradition, materialisation and integral design.

In addition to Professor Hana Cisar, my project brief was approved and supported by Professors Husnu Yegenoglu and Frans van Herwijnen. I would like to thank them all for supervising the development of this project and for allowing me to present my ideas, whilst benefiting from their great insight. I’ll end this introductory note by thanking my parents, who have supported me in every possible way throughout my years of study.

Jos Beekhuijzen
Eindhoven, October 2005
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1. Introduction

This report explains my graduation project. The assignment was to apply the function of a hammam and/or bathhouse in the existing building of the Schellens Factory, in Eindhoven.

Together with the other students in the atelier, I carried out an analysis of the Schellens Factory, of its urban context and of bathing traditions in general; this research can be found on the interactive CD-presentation.

The following chapters outline the individual work that I've done. I will explain the position that I took considering the assignment, which is based on the analyses and personal conviction. The typologies that I applied are the result of this position and form the backbone of the project.

My commission was set by:

Prof. Hana Cisar dipl. arch. ETH Architecture
Prof. ir. Frans van Herwijnen Structural Design

dipl. ing. Husnu Yegenoglu Architecture
2. Position regarding intervention with old buildings

Reference

'Souto de Moura, reasoning on Bouro, asks himself why and with what criteria he should choose to revive one of the many ages present in the ruin and concludes that only the age that he is really competent to deal with is the present.'

In Portugal I was fascinated when visiting Eduardo Souto de Moura’s conversion of the Santa Maria do Bouro Monastery into a hotel. Previously I only used to see clear contrasts in conversion projects. Souto de Moura intervenes in ruins with a different method. In his many conversion projects it is hard to tell where the pre-existing part ends and where the new begins.

Too many times have I seen the new as new and the old as old, as if it is a trend of this time. Contrasts are made to draw attention and ultimately to be published. Building analogies to the pre-existing is often seen as traditional and historical however it is precisely the analogy and continuity in Souto de Moura’s projects that form the great and unique atmosphere that enriches them.

’He does not seek to camouflage and conceal the new needs but invents a system made up of a few necessary ordering elements capable of instituting a rule compatible with the others already present in the building.’

Souto de Moura rejects the consolidation of the ruin; he doesn’t try to reconstruct a certain period of the monastery, but instead adds new materials, uses, forms and functions. New elements such as doors, ceilings and furniture can be well distinguished from the original ensemble, but together they breathe an atmosphere that fits this luxurious hotel.

Existing walls are manipulated and continued in such a way that you cannot tell if they have always been like that or not. New walls are executed with the same traditional stone and most of the stone comes from the site and its surroundings. When it comes to details and proportions of windows however, you tend to notice a contemporary feel that doesn’t strike you upon first sight.

The interest lies in using the existing fabric to create something new. In Souto de Moura’s sense call it an exercise in construction using existing stones: intervening in old buildings doesn’t imply concealment, or a striking appearance of the added fabric. Old and new layers have to recognize each other’s qualities and not overrule them. Revitalisation is a coexisting of old and new fabric, working together as one and breathing an atmosphere that enriches the project.
3 Urban Design

3a The Urban Fabric

The Schellens Factory is located in Eindhoven, directly on the southern bank of the Dommel River, facing the binnenstad (the inner part of town). One can easily notice the difference in urban functions between the north and south of the Dommel River. The part in the north shows the binnenstad, enclosed by through-traffic, the inner-ring of Eindhoven. This part is mainly accessible by pedestrians who are there to shop, stroll around or visit the many bars. South of the Dommel River, moving away from the city centre, more and more housing is distributed amongst the commercial buildings and entire residential areas are beginning to emerge.

The site is quite isolated, surrounded by two through-traffic roads, a small street which has an alley- appearance, and the Bleekweg, the street parallel to the Dommel. Cars and bikes dominate the adjacent streets; most pedestrians are there to get to a destination further away from the site, as for the cars and bikes.

The adjacent urban fabric on the southern bank of the Dommel consists of commercial units that are positioned parallel to the street, creating an interior, private or semi-public space. I placed and kept units parallel to the Vestdijk and Bleekweg, following the curved form of the Vestdijk and maintaining a face of the Schellens site towards the Dommel. Analogous to the surroundings I maintained the closed appearance of the site, but still made it accessible with relatively small openings.
3b The Site

The terrain of the Schellens factory has a very dense composition of different types of buildings, with a small courtyard in the centre and a larger square at the back which serves as a car park for Schellens employees and visitors of the Mandarin Hotel.

The idea to preserve the isolated appearance of the site is motivated by the program: housing and especially a bathhouse needn’t attract randomly wandering pedestrians. These types of venue are destinations where people go expressly.

Excavation of the site

The challenge is to use existing buildings in order to create a composition and atmosphere that is appropriate to the new program. Buildings that were hidden to the public throughout history can in this way now be utilised. The hidden industry that has always been so close to the city centre will finally be aired to the public. The same buildings are removed and new ones are added to form a clearer layout of the site. The removal of buildings is, aside from reasons of composition, also based on historical and architectural reasons.

The existing patio of the Schellens factory gives the idea of an island in the city; it is a silent place in a very built-up area. To consolidate this quality I created four squares that can be reached through both existing gates and new openings. Each of the squares benefits from its own unique atmosphere, surrounded by previously existing and newly designed buildings. Two squares are connected with a passage through one of the remaining factory halls, the washhouse.

Located between two new housing blocks and connecting the former office and monument, the remaining hall will be the central element on the site, which will function as a bicycle park for the residents, a swimming pool and a communal dining room for students.

Sequence

Between two important existing gates one can follow a linear public route that passes all the existing and planned public buildings on the site. This public route can already be seen as the start for the bathing sequence, giving visitors the feeling of moving away from the busy city centre.

Between the Bleekweg and the Vestdijk one can follow a semi-public route that will link the entrances of the housing, the bicycle parking and the supply for shops.

Approach

The entrance of the bathhouse will be found at the heart of the site, accessible by narrow alleys that support the feeling of going to another world. This type of approach is based on two old bathing typologies. To visit a Balneae (a small Roman Bathhouse), one had to walk through an alley before arriving at a patio which was used as a palaestra (place for wrestling). Here, one would enter the bathhouse. In the Islamic world the hammam entrances are often situated in the alleys. I combined these two types of design and applied them at the Schellens site. In this way the entrances are not streaming out onto the busy street in a commercial way; hence the approach to the bathhouse already forms part of the tranquil setting.
1. Hotel Mandarin, 102 rooms
2. Fitness, 420 m²
3. Parking Garage, 60 Parking Places
4. Hammam, 770 m²
5. Bathhouse 2860 m²
6. 29 Apartments of 44 m²,
   1 Commercial Space of 115 m²
7. 35 Studentrooms of 20 m²,
   1 Communal Dining Room of 160 m²
8. 9 Apartments of 78 m²,
   4 Commercial Spaces of 78 m²
4 Design of Bathhouse & Hammam

Why a bathhouse and a Hammam?

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<th>Medium</th>
<th>Sequence</th>
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<td>Yes</td>
<td>Steam</td>
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<tr>
<td>Bathhouse</td>
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<td>Baths &amp; Steam</td>
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People in the Eindhoven region have to go to Utrecht, Amsterdam or The Hague to visit a hammam. Many of these hammams are not gender segregated and are equipped with mud baths or solar studios; they should be called spas or body treatment centres. A good hammam, based on the original typology, in the city centre of Eindhoven would be visited intensively by regular customers.

In the Eindhoven region one can already find several bathhouses but these are always very commercial, offering all the possible body treatments available, but never really going back to the basics of bathing, and people's fascination for water. This unique Bathhouse creation will also be tempting to visit for people staying in the Mandarin and Dorinth Hotel, situated respectively next to and some 300 meters from the Schellens site. What's more, couples, families, nudists or groups of friends will be able to enjoy bathing in an industrial but aesthetically stimulating environment.

The two types of bathhouses are basically different when it comes to male and female segregation. In the hammam men and women bath separately, in the bathhouse they can bath together. Contrary to the hammam the bathhouse has a whole series of baths.
The Hammam

The hammam is situated in the weaving mill with the northern lights roof. Part of the hall is substituted to create a satisfying end to the rhythm of the northern lights roof. The roof is the external expression of zenithal light and the roof's angular construction forms the facade. From the exterior the hammam is identified as one autonomous building with a closed facade. The interior of the hammam is characterised by a segregating wall and volumes that are placed in the open space, offering a sequence.

Sequence

The sequence of the hammam is dictated by the increase of temperature and ritual steps of cleansing. Contradictory to a basic hammam one is not obliged to move through the spaces; from a circulation zone one can observe the typical rituals that characterise each space. This zone is experienced best at the domed belly-stone room where one can completely walk around the space, making the belly stone an even more central object.

Zenithal Light

"With zenithal light, interior spaces are endowed with a luminous, private and independent atmosphere. These spaces are detached from the exterior and tend to resemble wells, caverns or underground spaces."²

The hammam is an introverted building, lit through domes. Small holes and intense sunlight provide beams of light and the idea of a starry sky. The northern lights roof is an industrial roof type, originally designed in order for factories to benefit fully from daylight when electricity was scarce or expensive, with windows orientated to the north.

The hammam will be characterized by the combination of these two types of zenithal light. The whole hammam is lit from the glass roof, providing a uniform northern lighting. A domed space is placed and connected partly to the roof, orientated towards the south. The belly-stone room will be lit with an intense beam of light, entering the humid space. The Woodland chapel of Erik Gunnar Asplund illustrates the combination of two types of roofs, and the dialectics between interior and exterior.

Segregation of the Sexes

Currently there exists a hammam in Amsterdam that is not divided into men and women. It is also a place where you can have a mud bath, use a sun bed, and have a fruit cocktail. These are places where commercial values rule out typology.

I applied the segregation of sexes strictly from the old typology that the hammam portrays. It may seem to be a banal choice, but I think there is no need to transform the hammam in the direction of the western bathhouse. The hammam is meant to be sexually segregated. It’s a social place where women meet women and men meet men. It’s a place where Muslims come for religious reasons, for cleansing, for spiritual as well as physical purification.

In Morocco and Turkey you see that women’s hammams are smaller than men’s, but in this project they cover the same size. Whilst we are seeking to maintain all relevant principles of an Islamic hammam, there is no need to create a smaller hammam for women when the project is set in the middle of a Western city, open to customers of all faiths.
4b Bathhouse

**Present Qualities**

The remaining buildings on the site have different atmospheres, but are all characterized by an industrial past. Large windows in facades and roofs light the open space, built on a clear structure of columns, beams and rafters. The rough surface of the concrete structure and brick walls is also part of the industrial atmosphere that the building breathe.

The building that’s declared a monument will give place to a large part of the bathhouse. Compared to the rest of the site, the building’s staircase is the only element that does not show industrial roughness. It is the most striking part of the building and was clearly constructed to impress the visiting people, with its glass floors, yellow tiles and decorative patterns on the walls and handrails.

The most unique quality however, doesn’t come from architectonic characteristics like lighting, spatiality or materiality. Moreover it is the historical traces that the building has left behind over time; this is a uniqueness that cannot be created, more so it is forged by time. The patina that is seen on columns, glass and walls traces the history of the Schellens Factory. Its layers throughout time will be combined with a new layer and form a truly unique bathhouse.

**Loft**

The intervention is based on the typology of the loft. A loft is an industrial open space with tall windows that is converted to an apartment. Original materials show the industrial aesthetics and new volumes create a different sensation of spatiality. The remaining space will be used for circulating between them and experiencing the building.

**Integral System**

A design system is applied that follows the typology of the loft. It integrates structural, building-physical and architectural aspects in three steps:

1. Place volumes on the grid of the existing structure.
   - These volumes become served spaces.
   - The concrete volumes contain baths; the wooden volumes contain saunas and massage rooms.
   - Each volume has its own atmosphere and building physical autonomy.

2. Place hollow columns over the original columns to support the concrete volumes:
   - The slender columns transform partly into massive columns.
   - The original grid of columns and beams is kept and followed.
   - It creates an architectural dialogue between massiveness and slenderness.

3. Draw a louveres line that:
   - Creates and materialises the circulation space.
   - Filters sunlight coming in from the original windows.
   - Is a veil when the louveres are open, not hiding the industrial aesthetics and creating privacy towards the exterior.
   - Is a partition wall when the louveres are closed, creating adjacent serving spaces such as showers and toilets.
   - Provides the desired large installation space for plumbing, heating, cooling, ventilation, etc.
   - Provides a cavity space at the facade, solving the condensation problem with hot air.
Circulation Space

I created a large circulation space in order to show off some of the building's best qualities; the structure, grid and spatiality. It is completely flanked by wooden louvers that materialise the circulation space, creating cohesion over the diversity between different volumes and the existing fabric.

The wide path is not merely a link; it provides social control and plenty of personal space. People can pass each other everywhere, without having to be afraid of touching one another. The large circulation space will be used as a space for activities that cannot be planned or dictated, but more spontaneous actions, like resting, pausing, meeting, having a look around, etc.

Dialogues

'The way in which a civilization integrates bathing into its daily life, as well as the type of bathing it prefers, yields an insight into the inner nature of that period (1). The idea of leisure implies a concern for matters that lie outside our practical values. The intensity of life can be only tasted and fully appreciated when rhythmic pulls of activity and leisure doing and not doing- are able to operate as two strongly magnetic poles.' 2

This quotation by Sigfried Giedion implies an importance of dialogues in bathhouses. Two extremes can be experienced most intensively when they are both present. Taking this idea in account, the implantation of something new in an existing building creates these kinds of dialogues automatically. Next to the dialogue between new and old, there will be dialogues between:

- Space of moving and Space of staying
- Artificial and Natural light
- Wet and Dry surfaces
- Interior and Exterior
- Men and Woman
- Massiveness and Slenderness
- Smoothness and Roughness
- Veil and Wall

Sensorial House

In line with providing dialogues, the bathhouse should become a sense-invoking place, where all the five sense organs will be stimulated: the nose, eyes, ears, skin and tongue. The bathhouse will become a place where differences can be smelt, seen, heard, felt and tasted. The system of placing served spaces, materialized in different volumes, offers a sensual sequence: Each area benefits from a different atmosphere in terms of herbal odours, (zenithal) lighting, acoustics, surface of material and temperature of water. Even the sense of taste has its place in the restaurant.

Nudity will expose visitors to surfaces of materials in a very intense way. The dialogue between smoothness and roughness will have a large influence on the sense of feeling. Rough concrete and brickwork is present, the volumes of the baths will be materialised in polished concrete. A great benefit is the low permeability that the concrete gets when polished; it causes less pollution and better quality in the humid environment. The floor of the circulation space will be materialised in wood; entering a concrete volume one will notice the difference under ones bare feet.
Ground Floor 1:200 - Proposal

First Floor 1:200 - Proposal

1. toilets 2. showers 3. attendance 4. resting space 5. sauna 120°C 6. shower and toilet disabled people 7. exterior cold plunge 12 C 8. bar
1. wooden louver, 50 x 150 mm
2. polished concrete wall, 200 mm
3. existing column, 320 x 320 mm
4. wooden planks 150 x 22 mm
5. threshold 22 x 65 mm, on steel T-profile
6. polished concrete floor, 150 mm
7. existing concrete floor construction
8. existing column 320 x 320 mm
9. hollow concrete column, polished, 870 x 870 mm
10. pool-floor of concrete volume, 300 mm
Details

1. steel louver support
2. wooden louver, 150 x 50 mm
3. steel cable φ 8 mm, every 2 meters
4. wooden louver, 150 x 50 mm, closed
5. steel angle positioner
6. steel suspension system, with chemical anchor
7. wooden planks 150 x 22 mm
8. cavity heating ø 150 mm
9. steel suspension system
5 Structural Design

The different buildings of the Schellens factory that will be converted into the bathhouse and the hammam all have a very clear structure. During the process of the design I respected and consolidated this clarity, as it is one of the factory’s best qualities.

Structural Design of the Bathhouse

‘For architecture to happen, the materiality of the construction and the abstract idea behind the project must coincide, not rule out each other.’

In chapter four I explained the design system that integrates architecture, building physics and structural design. I will now explain the structural design that forms an important part of the appearance in the bathhouse.

The monumental building has a minimal-designed column and beam structure, combined with a facade consisting of columns and beams as well. The building is characterized by its slenderness. Respecting this quality I placed new volumes just within the grid of the existing structure; therefore a minimal amount of structural elements will be harmed and thus the original grid is followed.

In principle only the floor areas are removed, where baths, materialized in concrete will be lowered through; beams of the existing building surround these volumes. For bearing the heavy concrete and water, huge reinforce concrete columns are constructed around the existing slender columns. The illusion is then made that the slender columns are strengthened.

The reinforced concrete of the columns leads the forces from the baths above, downwards towards the foundations. Each column is a-centrally loaded which means it has to be founded a-centrally. Spliced injection piles are placed in such a way that the column is perfectly distributed when bearing down its forces.

Interventions in the other buildings

The building that contained the employee’s canteen has the same structural principle as the monument itself, but has a roof with a large span, creating a relatively large open space. Within this section, partitioned walls are removed and the system of volumes and louvers is applied. Only saunas are placed on the first floor, materialized in wooden units, which means no structural design measures need be taken.

The present washhouse, with its original zenithal lighting, has eight wooden rafters that support the saddle roof. The primary feature for this hall will be a swimming pool, as an endpoint of the bathhouse sequence. The concrete bath will be built inside the hall, constructed at ground level.

The weaving mill with its northern lights roof is supported by steel beams and its uniquely designed columns. As an architectural and compositional intervention, the part at the side of the Vestdijk will be demolished. This only concerns the facade and roof as the steel beams that are supported by the beautifully designed columns will remain. The beams will also be supported by the new facade at the Vestdijk. The remaining beams and new facade will support the new roof, which will create improved aesthetics at the end of the angular construction of the northern lights design. Volumes that function as the different spaces in the sequence of the hammam will be placed inside of this hall, built at ground level.

Cross Section

- Forces existing structure
- Forces new structure
Structural Design

First Floor

- Existing Structure
- New Structure
- Structural Elements under Floor
Structural Design

Longitudinal Section

Forces existing structure

Forces new structure
Structural Design

Existing Column 320 x 320 mm
Foam 75 mm
Reinforced Concrete 200 mm

Foundation Principle

Detail 01
1:10
Structural Design

Detail 02
1:10

- Existing Column 320 x 320 mm
- Foam 75 mm
- Reinforced Concrete 200 mm
- Wooden Planks 25 x 250 mm
- Floor Insulation 50 mm
- New Floor 150 mm
- Existing Floor 150 mm
- Existing Foundation 200 mm
- Spliced Injection Pile Ø 200 mm

Existing Foundation 200 mm

0 20 100 cm
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