

KEMA SEAL RECONSIDERED

Reintegration of KEMA area into the urban
fabric of Arnhem

Thesis MSc 4-RMIT
KEMA, Arnhem
Tutors: Ir. W.L.E.C. Meijers
Ir. F.W.A. Koopman

Nienke Sassen
1355759
November, 2012

Colofon

Nienke Sassen
1355759

Nienke Sassen -1355759

Architecture, Urbanism and Building Sciences
MSc 4 R-MIT
Studio: KEMA, Arnhem
Tutors: Ir. W.L.E.C. Meijers
Ir. F.W.A. Koopman

Illustration front page:
1_KEMA workshops

KEMA SEAL reconsidered_2

November 2012

Summary

This report contains both the research design, and the evaluation of the final design for the redevelopment of the KEMA area, the subject of my graduation studio. This is an old industrial area in the West of the city of Arnhem. Since this terrain is largely vacated, a hole in the structures that together form the urban fabric of Arnhem is made. To solve this problem redevelopment of the area is needed.

This research is aimed at the development of the KEMA Area while having the following desired effects, the KEMA terrain will:

- reinforce the values of Arnhem;
- be of service to the surrounding residential areas;
- maintain its characteristic cultural historical values.

There are however some restrictions that must be taken into account, while redesigning the area. These restrictions include aspects like the tenants security of tenure and the legislation for heritage development.

In order to realize a design that fulfills the requirements as mentioned above, the following research questions need to be addressed:

- How could the KEMA terrain merge with the surrounding residential areas, while reinforcing the functionality of the urban fabric of Arnhem?

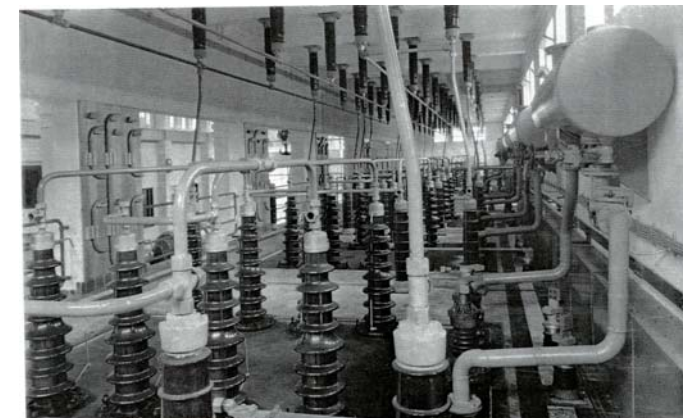
- What are the core values of a myth-school and how can they be translated into architecture?

The research will be conducted in five phases:

1. Analysis: During this phase research is conducted by following the interpretive-historical strategy (Groat & Wang, 2002) to determine the characteristics of the site and its objects during time. During this phase the theoretical framework of this research will also be developed;
2. Master plan: During this phase the focus will be on the designing of a masterplan as a possible solution for the stated problems, based on the results from conducted case studies;
3. Preliminary design: In this phase a chosen structure will be redeveloped by following the 'reflection in action' strategy of Schön (2009);
4. Definitive design: During this phase the final plans for the design will be made. A symbioses will have to be found between all scale levels of the building and its environment. This will also be done by following Schön's 'reflection in action' strategy (2009);
5. Evaluation phase: This phase will consist of a critical reflection on the design project, following Schön's 'reflection on action' strategy (2009).

Nienke Sassen -1355759

The reflection will give an evaluation of the different steps taken during my graduation project. This will supply an insight into which steps actually led to results. Also will this reflection give an overview of the underlying arguments for my interventions, by means of the evaluation of my design attitude. Finally I will give an answer to the stated research questions.

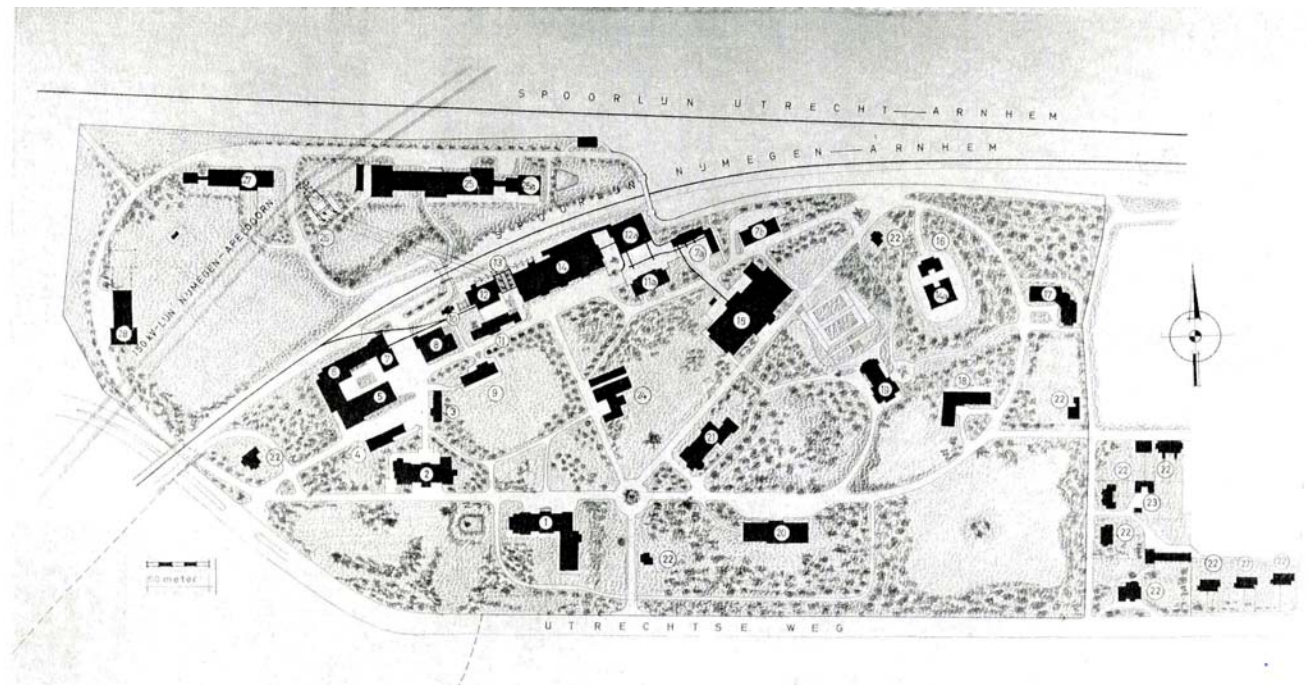


2_KEMAtransformator

Table of content

Nienke Sassen -1355759

Colofon	2
Summary	3
Introduction and personal motivation	5
Subject and context	6
Problem definition	7
Problem statement	7
Aims of research	7
Research questions	7
Sub research questions	8
Methodology	9
Societal and scientific relevance	11
Ethical considerations	12
Reflection	13
Literature and illustrations	22
Literature	22
Illustrations	22
Planning Graduation year 2012-2013	23



4_Historic map KEMA area

1_Introduction and personal motivation

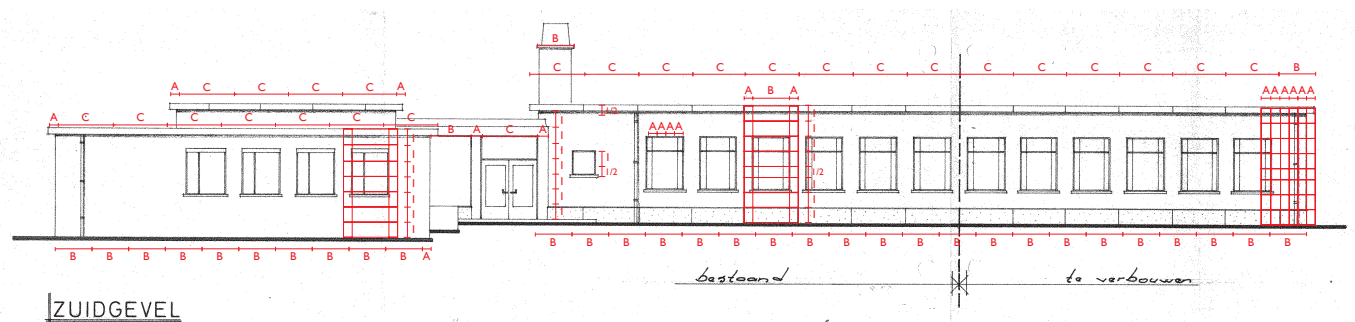
Nienke Sassen -1355759

Creativity has always been my strong suit. I really love to draw and paint, basically everything that enables you to make something tangible. The wish to become an architect arose at high school when we had to design a building as an art class assignment, for which I made a football stadium. I really liked the idea that with my creations I could help shape society.

After studying architecture for several years I created an interest in renovations. Mostly because of the good craftsmanship with which the buildings of the old days are made, containing beautiful detailing that now a days is unaffordable. I find it a privilege to work with these structures. Therefore I always try to find a symbioses between the old building and my own addition and let each enhance the qualities of the other.

What in particular was of interest to me when choosing for the KEMA project in Arnhem, was the architecture of the buildings. Much attention was paid to the detailing and the composition of the facades. These small scale brick structures form together several ensembles, which are merged into the landscape. The principles with which the landscape is designed are derived from the English landscape architecture and give the terrain the feeling of a little oasis in the city of Arnhem

In this report an overview of the research design for my graduation studio will be given. The subject of this research is the KEMA area in Arnhem. As this terrain will be vacated during the coming years, the need for redevelopment arose. In this report will be indicated how research can be conducted to be able to redevelop this area. While conducting this research insight is gained into the possible ways the KEMA terrain can be used to reinforce the values of Arnhem, how the area can be of service to the surrounding residential areas and maintain its characteristic cultural historical values.



3_Composition facade

2_Subject and context

For this graduation studio we must direct our sight at the city of Arnhem. The foundation of this city in the sixth or seventh century is due to its strategic position adjacent to the river Rhine. This area formed an important connection both over land, as over water, between Utrecht and Amsterdam and Germany (Lavooij, 2009). The city of Arnhem is surrounded by differentiated rural areas, whereas the Northern barrier is formed by the hillsides of the Veluwe. The Southern border however slopes down into the beddings of the river Rhine. Not only these green surroundings, but also the many walkways and gardens make Arnhem since long an attractive city for many tourists (Studiecommissie voor het stadsplan Arnhem, 1953).

On the far West border of the city of Arnhem, enclosed between the railway track and the river Rhine can the former KEMA area be found. This business park accommodating industrial buildings and offices related to the energy industry is the subject of my graduation studio. The terrain is divided into four different parts by the railway track and two main roads, the Utrechtseweg and Onderlangs. The four areas are called 'De Brink', 'Mariëndal', 'De Hes' and 'De Rosandepolder'.

The starting point of the development of the KEMA terrain was the cultivation of the Brink and Mariëndal in the year 1936 on the residuals of estate 'Den Brink'. Here brick industrial structures were made in the setting of the English landscape

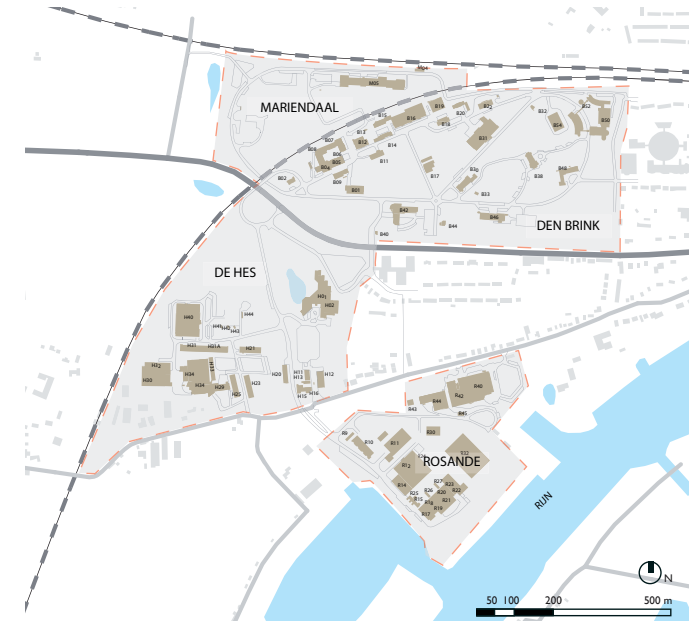
architecture, with many trees and green meadows. Not only industrial buildings were erected however, also some facilities to serve those who worked there were made, like dwellings, a cafeteria and a tennis court. In the years that followed the terrain was extended with the development of 'De Hes' and 'De Rosandepolder'. These buildings were made in a more contemporary style, without the touch of the English landscape architecture. The green however, is still present in the green meadows and the brook in 'De Hes' and the views on the river in 'De Rosandepolder'.

The aim of the research conducted to be able to redevelop the KEMA area, is to develop an architectural approach that is not only suited to deal with the specific problems of this project, but one that will also provide support in future redevelopment assignments. As in the future this research project could function as a case study and show what the results are of this specific design attitude.

Nienke Sassen -1355759



5_Location KEMA area



6_KEMA area

3_Problem definition

Problem statement

Nowadays most businesses have left the KEMA area. For the departments of KEMA and TenneT that remain new headquarters will be built on the terrain. As a result of this there is a high amount of vacancy among the buildings on the terrain. This is both a problem for the owner of the land, TCN, and the city of Arnhem. For TCN this is mostly a financial problem as they miss the wages coming from the rental of the buildings. For the city of Arnhem this will lead to the malfunctioning of the urban fabric in this area. As a desolated area is out of use, it forms a hole in the existing structures that together give shape to the urban fabric. This makes that both TCN and the city of Arnhem are in favor of the redevelopment of the KEMA area.

For this redevelopment however, some restrictions are of affect. On the one hand there are still some tenants working on the terrain. These tenants have certain rights and expectations, like their security of tenure, that have to be taken into account.

Moreover, there are several monuments on the terrain. These monuments do not contain only buildings, but also works of art and trees. Dealing with these monuments is subjected to severe legislation.

Further do all the structures on the terrain present certain cultural historical values that must be maintained. As they provide future generati-

ons with information about the way past societies were organized.

I also listed my own boundary conditions and demands to which I want this terrain to answer.

The KEMA terrain will have to:

- Reinforce the values of Arnhem;
- Function as a link in the urban fabric;
- Function in this fabric for a long time;
- Maintain its cultural historical value;

Aims of research

This research is aimed at the development of the KEMA Area while having the following desired effects, the KEMA terrain will:

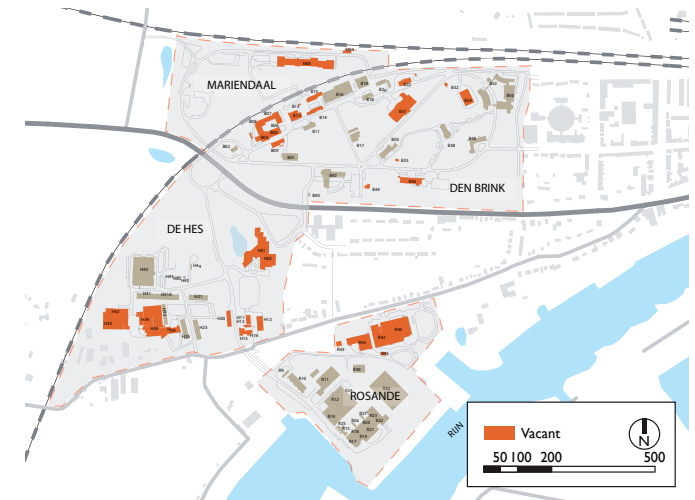
- reinforce the values of Arnhem;
- be of service to the surrounding residential areas;
- maintain its characteristic cultural historical values.

Research questions

In order to realise a design that fulfills the requirements as mentioned above and to be able to make well-considered decisions if certain requirements turn out to be contradictive, we need to address the following research question:

- How could the KEMA terrain merge with the surrounding residential areas, while reinforcing the functionality of the urban fabric of Arnhem and the identity of the city?

Nienke Sassen -1355759



7_Vacant buildings

3_Problem definition

- What are the core values of a mytyl-school and how can they be translated into architecture?

Sub research questions

The sub research questions are each divided to a specific topic.

Integration:

- What are the characteristics (spatial and cultural) of Arnhem?
- What functions are needed on the scale of the city of Arnhem to create interaction with the KEMA terrain?
- What functions are needed on the scale of the surrounding neighborhoods to interact with the KEMA terrain?
- What type of users are currently crossing the KEMA terrain as an entry/exit to Arnhem and how do these users differ from/match with the residents of the surrounding residential areas?

Symbioses public-private:

- How can the private office and industrial buildings still function in a public park?

Cultural historical value:

- Which buildings contribute to the cultural historical value of the site?
- To what extend can these buildings be altered without losing their cultural histo-

KEMA SEAL reconsidered_8

rical value?

- Which buildings do not contribute to this cultural historical value?
- To what extend can/must the buildings of both categories be altered to make them suitable for a new function?
- How can the new functions adopt to and enhance the characteristics of the buildings?
- How can possible new interventions to existing structures, needed to facilitate new functions, adopt to and enhance the characteristics of these buildings?

Nienke Sassen -1355759



8_Possible connections between KEMA area and surroundings

November 2012

4_Methodology

To be able to conduct the research needed for this graduation project a combined research strategy is chosen (Groat & Wang, 2002). This means that during the design process various research strategies will be used. The design process can be divided into five phases:

1. Analysis:
During this phase research is conducted by following the interpretive-historical strategy (Groat & Wang, 2002) to determine the characteristics of the site and its objects during time. To this end verbal and visual analyses will be conducted on three different scale levels. First the context of the site will be analysed to be able to determine the position of the site in the urban fabric of the city of Arnhem. This will be followed by an analysis of the objects on the terrain to determine their architectonic characteristics. The third scale level of these analyses will focus on building technology aspects, like the detailing and construction methods with which these buildings are erected. This way it will be possible to understand fully how these objects functioned. These analyses will be grounded on findings derived from literature search and observations on site.
As a theoretical framework, the following themes are considered:
 - o the historical background of the KEMA terrain and influences of this

- o background on its current design
 - o the economical and cultural values of the area
 - o political backgrounds with respect to the desired development of Arnhem
 - o theories on redevelopment of industrial areas;
2. Master plan:
During this phase the focus will be on designing a masterplan as a possible solution for the stated problems. Case studies will be done to discover what means and typologies can be used that have the desired effect;
 3. Preliminary design:
In this phase the focus scales down to one object and its direct surroundings. The focus of this phase is on the redevelopment of the building and its function for the area. For this aim the program and the typology of the building will be defined. To be able to keep an open mind and find different solutions for the problems I will encounter, I will use in this phase the 'reflection in action' strategy (Schön, 2009). By reflecting on my actions during the design process, will I be able to be critical about the applied methods and improve the design (process) where needed;
 4. Definitive design:
During this phase the final plans for the

Strategy

Tactic

1_ Interpretive-Historical

Verbal/visual analyses of the site, the objects and detailing/materialisation

2_ Case study

-Verbal/visual analyses of a specific site, object and detailing/materialisation
-Comparison with this graduation project

3_ Reflection in action

Evaluation taken steps to improve design process during the project

4_ Reflection on action

Evaluation taken steps to improve design process after the project

9_Applied research strategies

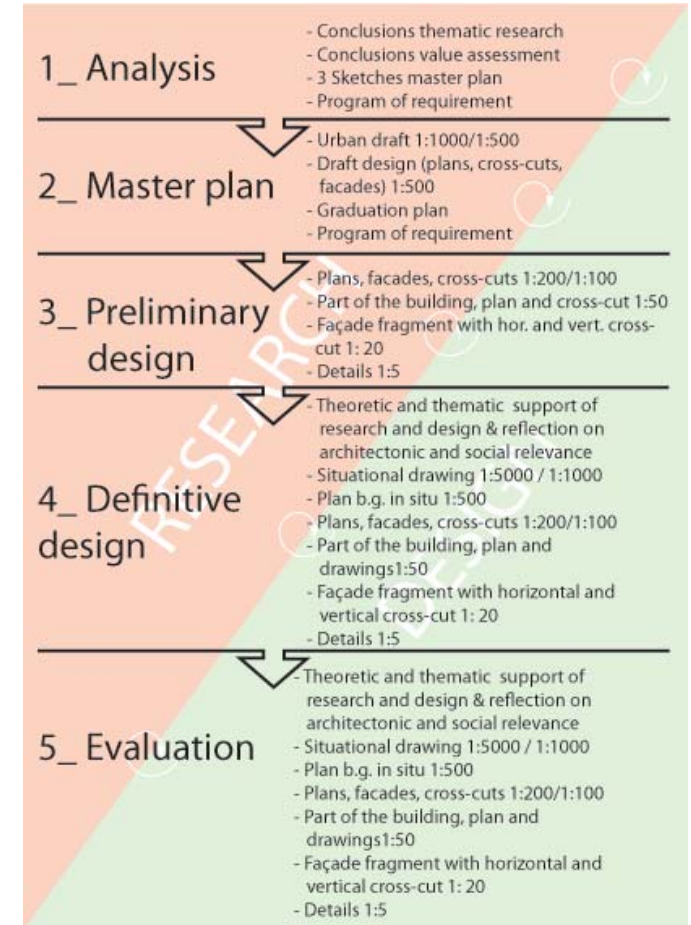
4_Methodology

design will be made. A symbioses will have to be found between all scale levels of the building and its environment. This will also be done by following Schön's 'reflection in action' strategy (2009);

5. Evaluation phase:

To gain insight into the level that the design is a solution to the stated problem, the design will be evaluated by reflection. By reflecting on the actions taken during the process that led to the designed products, it will be possible to determine which actions led to useful results, and what actions did not have the desired effect (Schön, 2009). The conclusions of this reflection could help improve my design method and skills.

Nienke Sassen -1355759



10_Overview process and products

5_Societal and scientific relevance

Nienke Sassen -1355759

This graduation project is relevant to society as it does not concern just the redevelopment of a former industrial area, but will influence the value of the whole city of Arnhem and its surroundings. Moreover, the fact that two-thirds of all forthcoming building tasks in the Netherlands will be about redevelopment makes this a hot topic (Coenen, 2006). This research project could function as a case study for possible solutions for the redevelopment of industrial areas. In redevelopment there are many design attitudes possible, one can choose to create a large contrast with the existing structures, while another architect would look for symbioses between the old and new. As this research project will also represent a possible design attitude, insight can be gained by studying the end-result, what effects this attitude had and if these are desirable.

maintaining the architectural values of yore, while improving the objects to the standards of today. Accurate documentation of the current state and the planned research and innovations will prevent important historical and scientific data from getting lost.

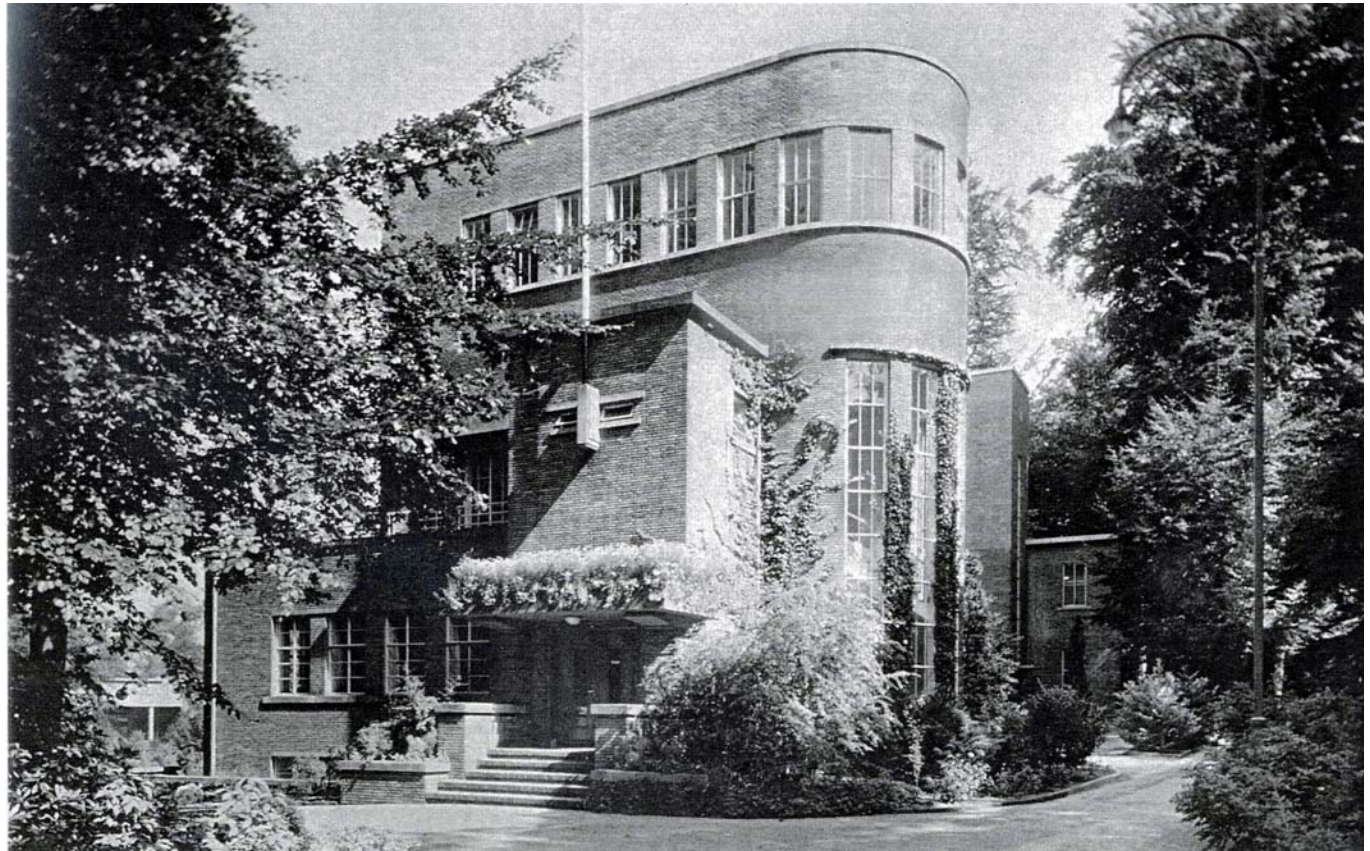
This project is of scientific relevance, because it shows how old structures can be updated to contemporary requirements. These updates vary from topics like functional adaptability, load bearing structures, to climate design, to fire safety regulations. This project will also contribute to the quest for more sustainable solutions in the building industry. Not only will it show how existing structures and materials can be recycled, but also solutions will be sought to make the current climate design of the old structures more sustainable. So are many objects now supplied with single glazing and are lacking any means of isolation. Balance will have to be sought between

6_Ethical considerations

Nienke Sassen -1355759

During this graduation project there are some ethical aspects that might arise:

- *How to redevelop existing structures?*
Although the thorough analyses I will be doing to find out the characteristics of Arnhem and the KEMA area, I will still be designing from an outsiders point of view and make changes to the everyday living environment of the residents. These people have many memories attached to the structures in this area. Too many changes to these structures might have the result that the residents are alienated from their surroundings, as they cannot longer identify themselves with it;
- *How to find balance between the personal interest of the client (money) and the public interest (safe and good living conditions)?*
During this design process the economic feasibility of the project might sometimes be contradictive to the spatial needs needed to improve the living quality of the area. It is important then to keep the interests of all parties involved in mind. Compromises are allowed, as long as they are balanced and all parties chip in.



11_Propaganda building

7_Reflection

By means of this reflection I will evaluate the different steps taken during my graduation project. This will supply an insight into which steps actually led to results. Also will this reflection give an overview of the underlying arguments for my interventions, by means of the evaluation of my design attitude. Finally I will give an answer to the stated research questions.

Process

My design process can be divided into different steps, namely analysis, research, designing and reflection. In this chapter I will give an explanation of the different steps and the related dilemmas.

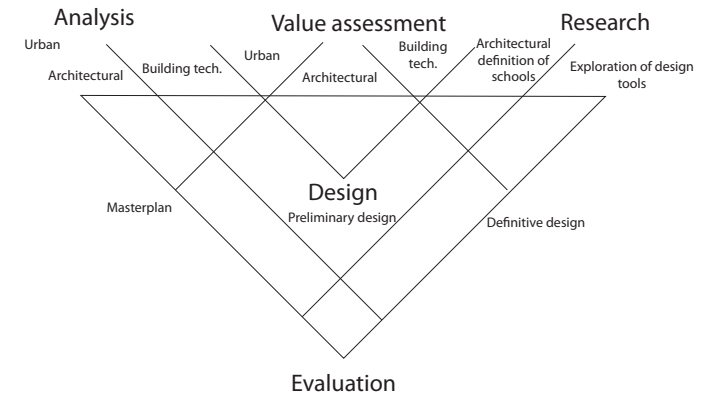
The first quarter of the year was assigned to the analysis of the existing situation and structures. This analysis was made on different scale levels, varying from an urban scale, to architectural, to building-technological. The urban analysis on the scale of the city provided me with insights into the most important characteristics of Arnhem. Based on the urban analysis it can be said that Arnhem originally derived its right of existence from the connection the city offers between the large cities of Utrecht and Amsterdam with Germany (Lavooij, 2009). Arnhem however, is also since long valued as a popular residential area, because of the green environment the proximity of the Veluwe and the river Rhine offer (Studiecommissie voor het stadsplan Arnhem, 1953).

KEMA SEAL reconsidered_13

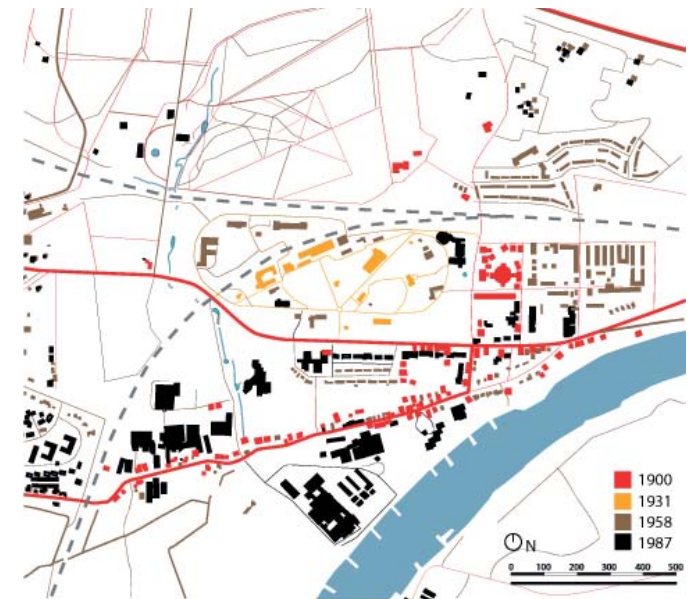
The green character of the city also supplies a just environment for the many care facilities of Arnhem, like the revalidation clinic of Groot Klimmendaal and the area 'het Dorp', where disabled people live. To maintain the green character of the city the industry was only tolerated on the outskirts, resulting in two industrial areas alongside the river Rhine, one on the East side of the city and one on the West, the former KEMA terrain. The KEMA area is crossed by one of the radial routes coming from the center ring, which together form the main principle of the disclosure of the city.

The most important aspect of the analysis of the KEMA terrain itself, was the historical development of the area, as this explained why the various areas differ from each other. The KEMA terrain was namely developed in different phases and started with the industrial development of Den Brink in 1936, on the residuals of the eponymous estate. The area was set up in the style of the English landscape architecture, which resulted in a green park with a very low density of structures, connected by meandering roads. Mariëndal was developed next in the same style. However, when the activities expanded to the river Rhine the rules of the English landscaping were abandoned. This resulted in a strong differentiation between the various areas, although nature is still present in De Hes and Rosande, because of the Klingelbeek and the river Rhine.

Nienke Sassen -1355759



12_Design process



13_Historical evolution KEMA terrain

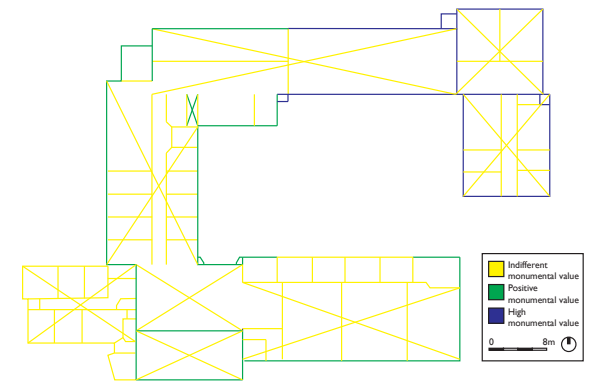
7_Reflection

Then the objects on the terrain were analysed, on both an architectural and a building technological level. By making these analyses it was possible to determine which aspects of the building were most valuable for its character and architectural style, and which aspects contribute less to this. On Den Brink and Mariëndal the structures were made in the same architectural style, the Haagse School. This similarity in style resulted in a coherent ensemble of structures with the same architectonic characteristics, e.g. horizontally orientated structures made of brick, in a special KEMA size, with cantilevering roofs. To maintain the ensemble, it was important to respect these characteristics. On De Hes and Rosande more contemporary styles were used with a mix of materials, with a loss of coherence as a result.

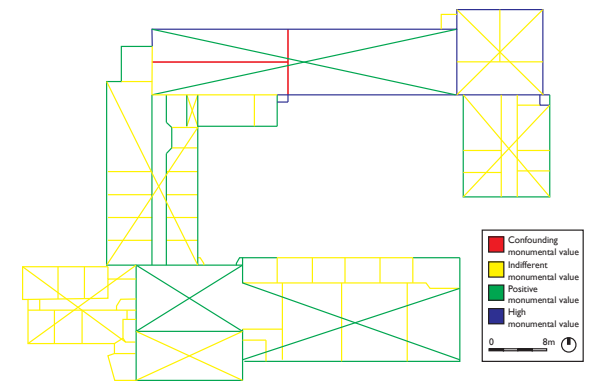
The findings of these analyses were then translated into a value assessment, made according to the guidelines described in the 'Richtlijnen bouwhistorisch onderzoek' (Hendriks and van der Hoeve (red.), 2009). The value assessment was also made on the different scale levels that were distinguished for the analysis. While making the value assessment I discovered that the difficulty of a value assessment lies in the fact that there are many perspectives on which you can base your decisions. For my value assessment I distinguished two perspectives: one focussed on the cultural historical aspects and the other on the spatial qualities. On an urban scale level the value assessment was pretty unambiguous, the English

landscape design of Den Brink and Mariëndal was given a high value from both perspectives, as well as the 'Zoetenlab-ensemble', formed by a group of buildings that were both functionally as spatially strong connected. The architectonic and building-technological value assessment was focussed on just the workshop building, since this was the building that I was going to redesign. Over time this building endured a lot of changes. The original structure was assigned the highest cultural historical value, as this has the nicest detailing. The younger the building parts get, the more pragmatic they were designed, resulting in a lower cultural historical value. These spaces were however, interesting from a perspective that focuses on the spatial qualities, as they were large, open spaces with high ceilings. Had I not looked from different perspectives, these spaces might not have been appreciated to their full value and interesting design opportunity's could have been unconsciously discarded.

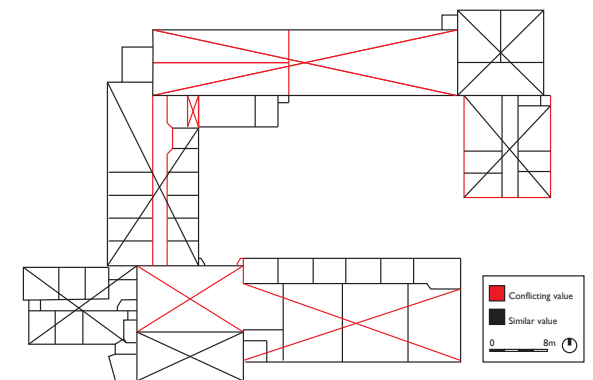
Nienke Sassen -1355759



Workshop building: cultural historical value assessment



Workshop building: spatial value assessment



Workshop building: conflicting values
14_Value assessment

November 2012

7_Reflection

Nienke Sassen -1355759

Then a masterplan was made, based on the findings of the analyses and the value assessment. During the design however I found out that the way spaces and structures function will not be fully discovered by purely analyzing behind a computer, you have to visit and experience a site in person to feel what interventions are needed. One of the interventions we designed for our masterplan was a result of one of my own experiences. When I visited the project location I always came from the station by bike. One time however I had occupations elsewhere in the Northern part of Arnhem, after that I wanted to go by car to the KEMA terrain. This could have been a connection in a straight line, however the train track formed an insurmountable obstruction so I had to travel a lot further. This brought the idea to my mind that it would be wise to investigate whether a new connection between the Western part above the railway track with that below was justified. With this anecdote I want to illustrate the importance of visiting a site on different times, on different ways, from different directions. Only then will you be able to grasp the way the urban fabric of this specific location functions.

After this followed research to define the exact program that was chosen for the redesign of one of the buildings. Both the choice for the program as the building were based on personal preferences. So did I choose for the workshop building, because of the courtyard and the opportunities this offered for a design. The choice for a mytyl-

school was a result of the wish to make use of the protective atmosphere the terrain offers.



15_Masterplan

November 2012

7_Reflection

My design for the mytylschool was strongly influenced by two types of research. The first type was research after the specific characteristics of schools. The objective of this first type of research was to determine what schools are in terms of architecture. Concluded from the research can be said that schools used to be very rigid structures made of brick with an enclosed character, nowadays the rigidity is replaced by flexibility. This change can also be seen in the development of the floorplan of schools in general, where they started out as just one classroom, they can nowadays be summarized within three typologies, namely the corridor-, hall- and pavilion-typology, where the hall-typology contains the most flexibility. Overlay lies in the fact that schools are supplied with a square, for the children to play on. Also is the most important building brick of a school still the classroom (Oase, 2007). For a mytylschool however, more specialistic demands have to be taken into account as well. Summarized can be said that a mytylschool should have a clear organization, small classes and wide corridors (Stedenbouw, 1998 & 2006).

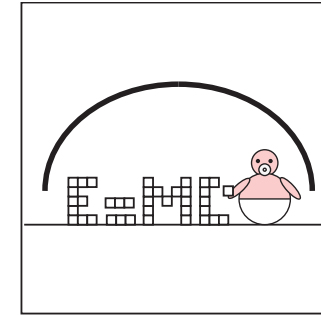
I also looked at some of the most influential educational ideas of different centuries. So started Rousseau in the 18th century that a school should offer a safe environment where a child is enabled to learn on its own. A tutor should only be present to repress environmental influences and internal urges (Dekker, 2006). This vision is translated into the materialisation of the design.

A brick walls form a protective shield around the courtyard, which is made of softer materials, like wood and glass. Montessori distinguished the following tenets when training defective children: train the pupil to be independent of others with regard to the ordinary practices of life and appeal to the senses rather than the intellect. The interior design is made according to this vision. The choice of colors and materials was based on what effect they have on humans.

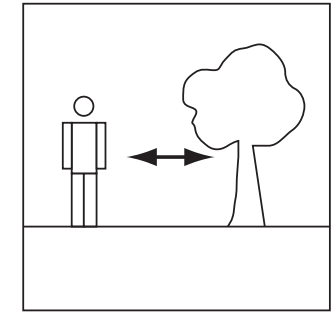
Froebel emphasized the importance of a relation with nature, this way turning a school in a kind of utopia for the children (Dudek, 1996). To this list I also want to add the ideas of Herman Hertzberger. Although he is not an expert on the educational level, he has a lot of experience in creating spaces for children, resulting from his practice as an architect. Hertzberger claims that schools are paradoxical: on the one hand they should provide protection so they can explore and develop themselves. On the other hand should there be dangers to prepare the children for the real world. The relation the building has with its context is derived from these last two visions. On the one hand the building is crossed by a kind of street which strongly relates the building to the boulevard, which represents the dangerous and dynamic city, on the other is also a relation sought with the peaceful and static park by making the building part of a route.

To complete this literature study I also visited

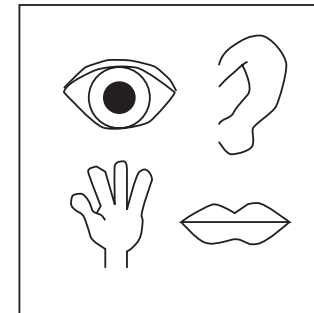
Nienke Sassen -1355759



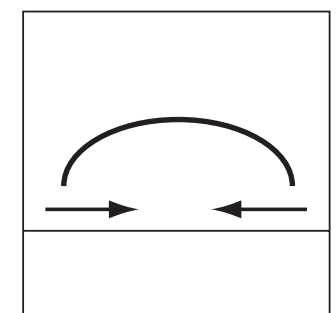
Rousseau: Safe environment enables the child to learn on its own



Froebel: relation with nature

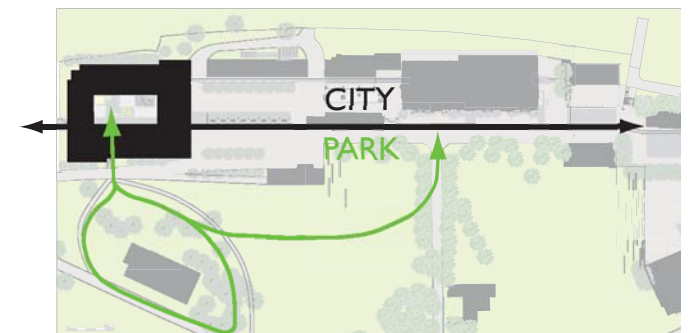


Montessori: appeal to the senses



Hertzberger: protection & danger under one roof

16_Results of research



17_Relation with context

7_Reflection

some mytyschools and conducted interviews, to experience for my own how such a school functions in practice. The schools I visited and the people I spoke to are:

- Mytyschool Ariane de Ranitz in Utrecht (mr. D. Visser, director, and mrs. P. Posthuma, teacher);
- Mytyschool de Regenboog in Haarlem (mr. L. Vergoossen, facility director);
- S. Teunis (children's physiotherapist).

These visits made clear that there is a strong difference between theory and practice. Both are important to be studied, before a design is made. Where theory offers a good summary of the facts, practice shows how things are actually used. The findings of this research resulted in the program of requirements, but also the main outlines of the design.

The second type of research was more directed at the exploration of possible design tools and learning from other architects how to use those. As I made my design following the research by design method, this research was continuously performed on different topics which were determined by the design. By doing exercises in which I tried to make designs in the way a specific architect would do I enabled myself to broaden my vision and enhance my personal frame of reference. So this research was not only very much of influence on this design, but also on my design method in general. This research was both conducted by

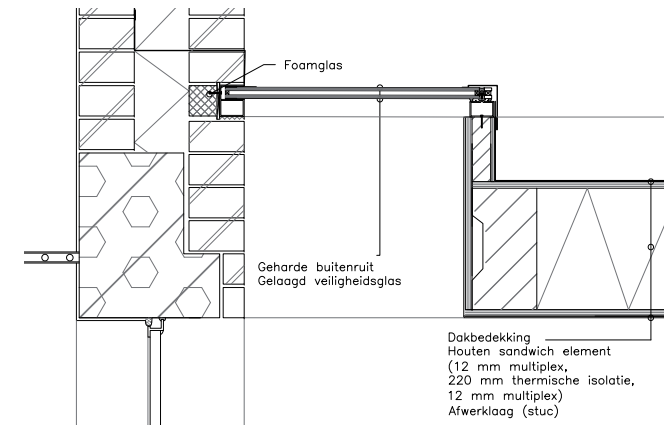
means of a literature search, but also by consults with professionals. So did I visit an industrial designer who has a lot of experience in the field of school designs (mrs. H. Kamphuis) to help me with my interior design. She showed me her method of designing. It was very insightful to learn a different way of designing. Where the method we learn at the faculty of Architecture is mainly about analyzing facts, like the existing structure and the program that has to be realized, she performs a thorough analysis of the actual user, this way expanding your own one-sided vision of how buildings will be used to a more broadened perspective on all the possible uses.

Design attitude:

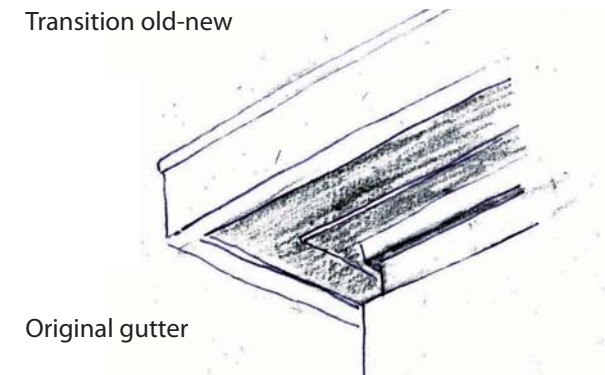
A very important part of the design task was to determine an appropriate design attitude towards the redesign of an existing structure. This is very important, since this attitude determines for a very large part the rules for your design. Since for every building project the choice to be either conservative or to strive for a conflict is possible, but the final design in both cases will be completely different.

For my design I wanted to create a clear distinction between the old and the new, like Temminck Groll found important as to prevent falsifying of artistic or historic evidence (1973). Therefore I chose to show the new added layers. So is the largest intervention, the new added circulation space, made in a separate volume. This is empha-

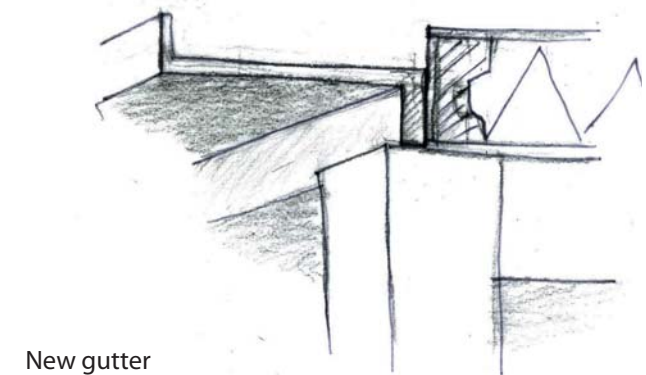
Nienke Sassen -1355759



Transition old-new



Original gutter



New gutter

18_Roof detailing

November 2012

7_Reflection

sized by the way daylight enters via the rooflights.

Where on the one hand I wanted to show what I added new, I also found it important to create a coherent whole. Therefore are the measurements of my new design derived from the original structure. An idea I shared with my predecessors, who added to this building. I did not however make an exact duplicate, the most important characteristics were transformed into a more modern version. As an example the gutter detail can be named. The most important characteristic of the original gutter was the way shadows are cast on the façade by the collaboration between the cantilevering roof and the exceptional position of the upper row of bricks. Since in my design the patio is surrounded by an arcade, the façade only exists out of a row of columns. These columns are positioned slightly in front of the beams as a reference to the row of bricks that was set back in the original facade. The measurements of the cantilevering concrete gutter are translated into the new aluminum gutter.

For my design I put the building through an intensive transformation. I felt allowed to do so, since the building had already undergone a lot of changes over time. The original volume was even multiplied two and a half times. Most earlier additions were made with facades in the same style as the original structure, however with less consideration to the detailing. This made that the facades share the same characteristics, whereas

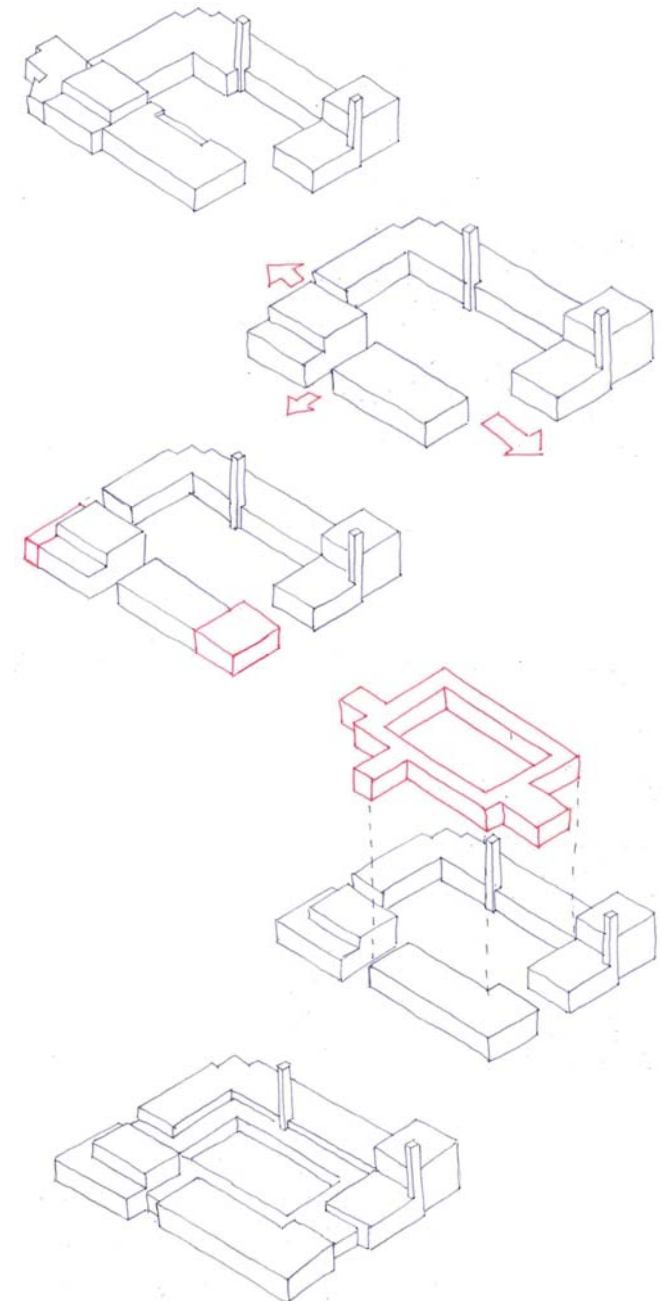
the organization on the inside was made purely pragmatic. This resulted in an inconsistent and ill-structured floor plan. Since consistency is very important for the future users of the building, my interventions were mostly directed at creating a clear structure inside the building. During this process a large part of the building got altered to be able to introduce the new structure. However, I wanted to use as much of the original structure as possible, to show the story of the building. Therefore I re-used most of the original load-bearing structure. This attitude however, resulted in a lot of criticism. Not entirely without reason, since I demolished walls, but made new ones almost exactly on the same spot. Was it impossible to reach the same goal, while using the original structure? I surely thought a lot about this question, in the end however I decided to put the emphasis on getting a well-structured building instead of maintaining a lot of the original building, as this would be most beneficial to the future users.

Answer to research question:

For the redesign of the KEMA area I stated two research questions. One on a large scale and one on the scale of the chosen building.

“How could the KEMA terrain merge with the surrounding residential areas, while reinforcing the functionality of the urban fabric of Arnhem and the identity of the city?”

Nienke Sassen -1355759



7_Reflection

Nienke Sassen -1355759

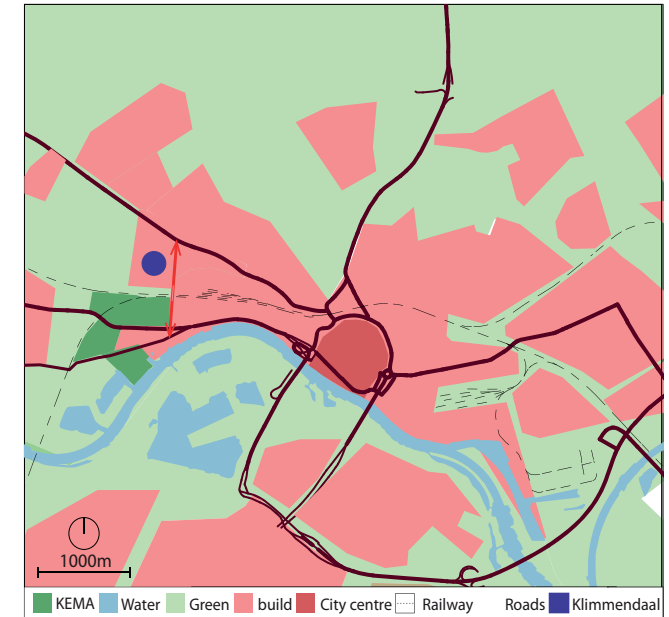
This question will be answered in small steps at the time. First the merging part. For our masterplan we determined that it was not desirable to open the whole KEMA area up to its surroundings, as there are still some business related activities there that need a high level of privacy. As these practices are concentrated on de Hes and Rosande we kept these parts of the area as they were. Den Brink and Mariëndal are made open to the public, by removing the fences and introducing public functions, like the mytyschool and an urban sports facility. The introduction of dwellings in Den Brink also contributes to the new public character. The scale and formation of these dwellings are designed in such a way that they reflect the structures of the surrounding neighborhood, this way softening the hard boundary between the KEMA terrain and the surrounding residential areas.

When doing the urban analysis we discovered that the two Western radial roads coming from the center ring of Arnhem were not very well linked. As a solution to this problem we introduced a bridge in our masterplan to improve the connection between the area above the railway with the area below. This intervention, transcending the boundaries of the KEMA area, will be beneficial for the mobility of the whole Western part of Arnhem. This intervention can therefore be considered an improvement of the functionality of the urban fabric.

KEMA SEAL reconsidered_19

The identity of Arnhem for me was determined both by the nature that is very tangibly present all over the city and the many care facilities. So I have tried to match these aspects by maintaining, and even improving, the green character of the KEMA terrain. So is the density of the structures only slightly increased. Also did we ban all cars to the outskirts of the terrain. Only the ring road is accessible by car, solely bikes and pedestrians are allowed on the little roads that meander through the terrain. The only exception is made for the busses that transport the children of the mytyschool. So two times a day the square in front of the school will be used by the busses to park. The public functions that will be located on the terrain will be health and care related. So will the boulevard house of course my mytyschool, but also an urban sports facility and a meditation center. By connecting to the functions and characteristics of Arnhem that were most distinct to me I have tried to make the KEMA terrain an addition to the character of Arnhem.

A side note however has to be made, since there are many other aspects that also contribute to the character of Arnhem, like the importance that is assigned to art, fashion and energy.



20_Intervention L-scale

November 2012

7_Reflection

“What are the core values of a mytyschool and how can they be translated into architecture?”

The key values of a mytyschool as defined after doing the research were solidarity and self-support. I have chosen these two core values as these were most tangible during my visits to the different mytyschools. On both schools all adults knew the children by name and lend them a hand when needed. This resulted in the feeling that the school was one large family, where the children really could be themselves. Although teachers always stood ready to be of assistance to the children, it was also very important that the children got prepared for the ‘real’ world. Many lessons and therapy sessions were directed at learning them to be self-supporting and being capable of coping with their handicap. In this way they are trained in things which are everyday affairs for most people and which are done without second thought, like opening a door, or picking things up from the floor.

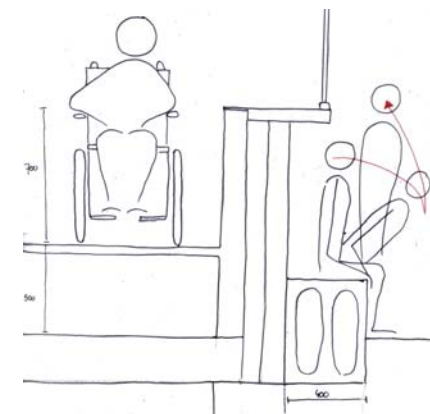
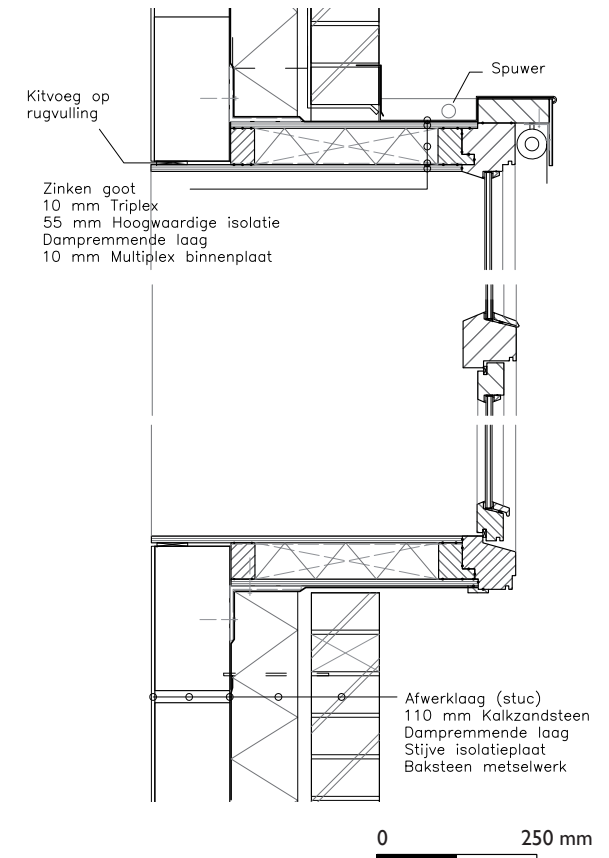
With my design I wanted to create the opportunity for the children to learn on their own in a place that feels safe. To realize this in my design I first stated the starting points for my design and then translated them into design tools. With these tools I made my interior design. The most important challenge while designing, was finding ways to deal with the different types of disabilities of the children. There were of course the practical aspects like that there could not be any

doorsteps. But also the more intangible aspects like how the children perceive their surroundings. I share the vision of Montessori that these children can best be addressed via their senses (Dudek, 1996). This was therefore the most important starting point for my design. For instance, the choice of the colors was based on the effect they have on people. For each space I defined which character was required. Then a color scheme was designed according to these requirements. Also materials were chosen on how they feel and sound. So were the corridors made of natural stone, a smooth material on which one can easily move. The guiding handrail on the other hand was made of wood, a material that feels warm to the touch.

I have tried to make my building not only the facilitator of activities, but also to be activating in itself, by challenging the children to actually use the possibilities the building offers. As an example the new brick facades can be named: although they resemble the original design in measurements, I transformed them in such a way that more possible uses occurred. So were the windows positioned outside the façade in cantilevering window frames, which can be used by the children to put their own work on display for the outside world. This is something Hertzberger finds very important for children in order to express their identity (Hertzberger, 1988). The plinth was given more volume, so the children outside can sit on it.

By offering the children a building that can be

Nienke Sassen -1355759



21_Detailing window frame

November 2012

7_Reflection

used in different ways, they gain more self-consciousness about the way they function in this world. This can be a contribution to their degree of self-support.

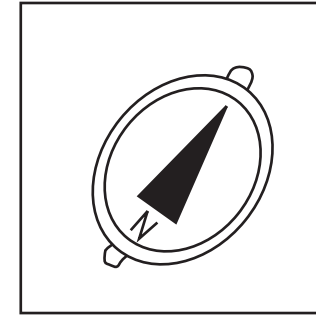
The importance I assign to increasing the self-supportiveness of the children is in line with an important educational innovation nowadays in the Dutch society is called 'the new learning'. This concept refers to a new educational vision which focuses on the applicability of lessons to real life situations. Dexterities that are educated are the ability to collaborate and self-support, this way enhancing the ability of the children to assess which acquired skill or solution should be deployed in what situation (Simons, 2007). The pedagogical task relates generally to the personal development of the talents of pupils (Onstenk, 2005).

Recommendations:

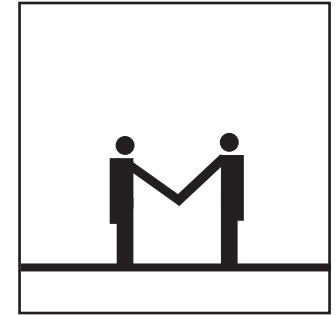
During my process the emphasis lay on the implementation of the determined core values of a mytylschool. For other architects who want to design a mytylschool, I would like to make the following recommendations to enable them to determine which values have to be implemented in their design:

- First, visit a mytylschool (preferable a couple), and observe the future users of the building. This supplies you with a good overview of how a mytylschool functions and the positive

- and negative aspects of the current building.
- Then investigate how these users experience their surroundings. This is important, not only because of the obvious differences related to their disability, but also because the eye level of these children differs a lot from that from an adult.
- At last, do a literature search to see what others have already found out before you, so you can contribute to this knowlegde, rather than exploring everything on your own.



Self-support



Solidarity

22_Key values mytylschool



23_Impression mytylschool

Literature and illustrations

Nienke Sassen -1355759

Literature

Coenen, J., 2006. *The art of blending*. Inaugural lecture, 19 April 2006.

Dekker, R., 2006. *Burgerschap en deugd, volksopvoeding in de 19e eeuw*. Hilversum: Uitgeverij Verloren.

Dudek, M. 1996 *Kindergarten architecture*. London: E & FN Spon

Eeden, H. van den, 1998. *Tilburg: verzonken bomen en lage hagen; zorgonderwijscomplex eist plaats op*. Stedenbouw, vol. 549, May.

Faber, B., 2006. *Schoolgebouw houdt rust in de tent*. Stedenbouw, vol. 641, September.

Groat, L. and Wang, D., 2002. *Architectural research methods*. New York: John Wiley & Sons, Inc.

Hendriks, L. and Hoeve, J. van der, (red.), 2009. *Richtlijnen bouwhistorisch onderzoek, lezen en analyseren van cultuurhistorisch erfgoed*. Westpoort: Mart.Spruijt bv.

Hertzberger, H., 1988. *Uitnodigende vorm*. Amsterdam: Kaal Boek.

Lavooij, W., 1990. *Twee eeuwen bouwen aan Arnhem, de stedenbouwkundige ontwikkeling van de stad*. Zutphen: de Walburg pers.

Meurs, M. van, et al., 2004. *Arnhem in de twintigste eeuw*. Utrecht: Matrijs.

Oase, 2007, vol. 72.

Onstenk, J., 2005. *Geïntegreerd pedagogisch leren handelen, een uitdaging voor opleiding en professionalisering van leraren*. Amstelveen: Hogeschool INHOLLAND.

Simons, R.J., 2007. Interviewed by Hagers, M. *Interview prof. Simons, 'uitvinder' van het nieuwe leren*. (24 November 2007) NRC Handelsblad.

Schön (2009). *The reflective practitioner; how professionals think in action*. London: Ashgate.

Studiecommissie voor het stadsplan Arnhem, 1953. *Arnhems stadsplan; rapport van de Studiecommissie voor het stadsplan Arnhem*. Arnhem: Gouda Quint/ Brouwer.

Temminck Groll, C.L., 2006. *Een introductie voor de restauratie*. Delft: Uitgeverij Waltman.

Illustrations

1_ *KEMA seal*, modification by author, 2012. Original source: Wikipedia, 2010. KEMA-KEUR. nl.wikipedia.org/wiki/KEMA-KEUR [18-03-12].

2_ *KEMAtransformator*, KEMA-archive.

14_ *Value assessment*, made by author, 2012.

15_ *Masterplan*, made by author, 2012.

16_ *Results of research*, made by author, 2012.

17_ *Relation with context*, made by author, 2012.

18_ *Roof detailing*, made by author, 2012.

19_ *Transformation of building*, made by author, 2012.

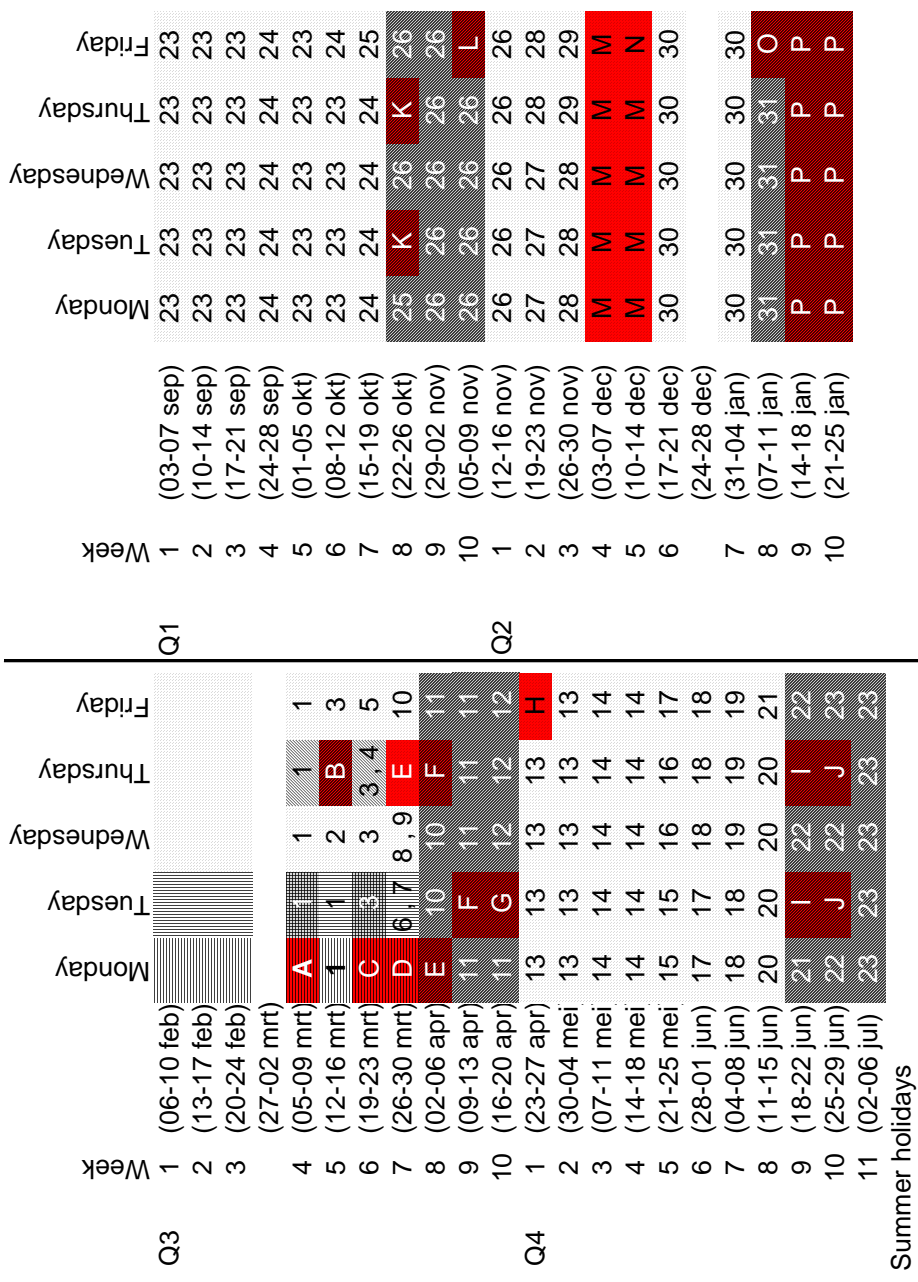
20_ *Intervention L-scale*, made by author, 2012.

21_ *Detailing window frame*, made by author, 2012.

22_ *Key values mytylschool*, made by author, 2012.

23_ *Impression mytylschool*, made by author, 2012.

Planning Graduation year 2012-2013



Legend:

- ? Activity (numbered)
- Deadline (letter)
- ▨ Lecture TP/Studio
- ▩ Lecture HD/Studio
- ▧ Lecture HD+TP/Studio
- ▤ Arnhem
- ▦ Studio
- ▥ Studio/Arnhem

Activity number	Description	Goal
1	Architectural analysis: Analysing building proportions, materials etc.	Gain insight into the characteristics of used typologies
2	Make presentation architectural analysis	Make conclusions insightful
3	Building technology analysis: Analysing load-bearing structures, climate design etc.	Gain insight into the structures of the building
4	Make presentation building technology analysis	Make conclusions insightful
5	Make draft P1	Gain insight into the definition

			and the objectives of the project
6	Make value assessment		Gain insight into the structures/objects that add to the cultural historical value
7	Define programme of requirement		Gain insight into what functions could serve the area to solve the problem stated in the TP
8	Make proposal sketches urban design		Find possible solutions for the problem stated in the TP
9	Make P1 presentation		Make conclusions insightful
10	Make P1 booklet, improve products after comments P1		Make conclusions insightful
11	Make final TP		Gain insight into the definition and the objectives of the project
12	Make essay HD		Gain insight into my own opinion as an architect towards HD
13	Research/analysis case studies (SWOT)		Gain insight into what already has been done in comparable situations
14	Make draft master plan: plans		Structuring the required program in 2D
15	Make draft master plan: sections		Structuring the required program in 3D
16	Make draft master plan: impressions		Gain insight into the possible perception on its future users
17	Research/analysis existing examples of chosen typology		Gain insight into what already has been invented
18	Make draft building design: floorplans and sections		Structuring the required program in 3D
19	Research possible materialisation		Gain insight into what already has been invented
20	Make draft building design: facades and details		Determining the texture of the building and its representation on the outset
21	Make presentation P2		Make conclusions insightful
22	Make P2 booklet, improve products after comments P2		Make conclusions insightful
23	Improve building plans and sections, reconsider its function in the area		Structuring the required program in 3D
24	Improve façades and detailing		Determining the texture of the building and its representation on the outset
25	Make presentation P3		Make conclusions insightful
26	Improve work after comments P3		Structuring the story and its representation
27	Reflect on process		Gain insight into my own way of working
28	Make research report		Make conclusions insightful
29	Make presentation P4		Make conclusions insightful

30	Improve work after comments P4	Structuring the story and its representation
31	Make presentation P5	Make conclusions insightful

Deadline	Description	Products
A	Urban analysis presentation	Powerpoint max 5 slides
B	Architectural analysis presentation	Powerpoint max 7 slides
C	Hand-in architectural analysis booklet	Booklet, max 3 pages
D	Building technology analysis presentation	Powerpoint max 5 slides
E	P1	<ul style="list-style-type: none"> • Conclusions thematic research • Conclusions value assessment • 3 Sketches urban masterplan • Programme of requirement
F	Hand-in P1 booklet	Booklet, max 15 pages
G	Hand-in final TP	Report, max 20 pages
H	Deadline subscription P2	
I	P2	<ul style="list-style-type: none"> • Urban draft 1:1000/1:500 • Programme of requirement • Draft design (plans, cross-cuts, facades) 1:500 • Graduation plan
J	Hand-in P2 booklet	Booklet
K	P3	<ul style="list-style-type: none"> • plans, facades, cross-cuts, 1:200 /1:100 • part of the building, plan and cross-cut 1:50 • façade fragment with hor. and vert.cross-cut 1: 20 • details 1:5
L	Deadline P4 subscription	
M	P4	<ul style="list-style-type: none"> • theoretic and thematic support of research and design + reflection on architectonic and social relevance • situational drawing 1:5000 / 1:1000 • plan b.g. in situ 1:500 • plans, facades, cross-cuts 1:200 / 1:100 • part of the building, plan and drawings 1:50 • façade fragment with hor. and vert.cross-cut 1: 20 • details 1:5
N	P4 + deadline P5 subscription	
O	Hand-in work for repository	
P	P5	<ul style="list-style-type: none"> • theoretic and thematic support

		<p>of research and design + reflection on architectural and social relevance</p> <ul style="list-style-type: none">• situational drawing 1:5000 / 1:1000• plan b.g. in situ 1:500• plans, facades, cross-cuts 1:200 / 1:100• part of the building, plan and drawings 1:50• façade fragment with hor. and vert.cross-cut 1: 20• details 1:5
--	--	---