BREAKING THE BARRIER IN KOOG ZAANDIJK

p4 report
Hybrid Building AR3AUH20
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1. INTRODUCTION

§ 1.1 personal introduction

This is my graduation report for the Master of Architecture track at the Technical University of Delft. I chose to graduate at the chair of Building Typology, also called Hybrid Building.\(^1\)

In 2006 I started my Architecture study in Delft and I finished my Bachelor-diploma in 2010. For my Master of Architecture I chose the design studios ‘Dwelling – Living+’ and ‘The Why Factory – Eurohigh’. In Living+ I combined dwellings with a park and researched how they can benefit from each other, on a unique location of 500 x 80 meter in the centre of Antwerp. For Eurohigh the purpose was to create a European skyscraper that differs from North-American and Asian skyscrapers. Key-words were non-repetitive, porosity, and pixilation. The towers were designed using parametric tools. The final results were built in LEGO scale 1 to 100. Relevant for this studio to mention is that the topic of my history thesis was ‘Interventions in cultural heritage by Herzog & de Meuron’. I did an in depth study of the way Herzog & de Meuron approach their intervention projects and I compared the differences. My purpose is to use this knowledge, and the knowledge that I gathered earlier in my studies, for the coming graduation project.

In this report I will explain the problem statement of the assignment, describe which research methods I will use and most importantly, formulate the design question and the kind of design I want to make for my graduation.

§ 1.2 introduction Urban regeneration: What next?

In 2011, Henk Engel and Arnoud de Waaijer made a report, for the municipality of North-Holland, on 22 railroad station locations in the province of North-Holland.\(^2\) A selection of the report, focusing on the agglomeration known as the Zaanstreek, forms the base of the design studio ‘Urban Regeneration: What Next?’. The information in the following text is mainly based on this document.

The Zaanstreek is part of the metropolitan area of Amsterdam.

The Zaanstreek consists of the following seven station areas:

Uitgeest, Krommenie-Assendelft, Wormerveer, Koog-Zaandijk, Koog-Bloemwijk, Zaandam, Zaandam-Kogerveld

The goal of the municipality is to improve the public transport of North-Holland and the connection with Amsterdam. Important for them to know is what the share of the trains is in relation to the entire public transport system. At this moment, the use of cars is more popular than the use of trains.\(^3\) A lot of commuters live in the Zaanstreek and work in Amsterdam. The purpose is to make the train more attractive for them. The government has made plans to introduce high frequency train’s (Programma Hoog Frequent Spoervertvoer\(^4\) ) in the area, meaning that the train drives six times an hour (twelve on both directions) on each station. This metro-like concept should make the train more popular and improve the public transport system of the metropolitan area of Amsterdam.

The problem is that North-Holland has become a shrinking area, because the housing occupancy has decreased. This phenomenon started in the 1970’s and has continued since. Therefore the density of the area (the amount of dwellers pro hectare) has strongly decreased, resulting in an insufficient basis for a variety of facilities, including the railroad station.\(^3\)
Urban Regeneration: WHAT NEXT?

Figure 1.1 Zaanstreek Metropolitan Area

Source: '22 Stations Locations In Hollands Noorderkwartier'

Build area:
- < 1850
- 1850 - 1910
- 1910 - 1940
- 1940 - 1970
- 1970 - 2000
In Henk Engel’s report\textsuperscript{2} the focus lies on the station area’s 800 meter circles around the stations. This distance of 800 meter is derived from the fact that people can walk to the station within 10 minutes.

In 1970, 39\% of the people lived within the 800 meter circle of the station areas.

In 2010 only 31\% of the people were living within the 800 meter circles.\textsuperscript{2} Expansions have taken place mainly outside the 800 meter circle. Therefore the value of the stations has decreased. If nothing happens, this decrease will continue.

Therefore the areas within the 800 meter circles need to be densified and/or new stations need to be added to keep enough basis for the stations.

At least 7000 Dwellings need to be added within the 800 meter circles to get the percentage of people, covering the station, back to around 40\%.\textsuperscript{2}

The primary goal of the design studio is to research possible interventions and/or densification within the 800 meter circles in the Zaanstreek. Special attention has to be given to the presence of existing typologies and cultural heritage, which can serve as a starting point for further development of the station areas.

By all means, interventions in the station areas of the Zaanstreek have to be transformations of existing urban fabric. For the Zaanstreek it is important to preserve and re-use industrial heritage, as it plays a major role for the identity of the area.\textsuperscript{2}

\textsuperscript{2} Engel, H., de Waaijer, D. ’22 Station-slocalies in Hollands Noorderkwartier’ TU Delft 2011

\textsuperscript{§ 1.3 argumentation selection studio}

The main reason why I chose this studio is because the theme ‘urban regeneration’ is a very actual topic nowadays. The focus of the building market has changed.

Partly because of the economical crisis, and also for sustainable reasons, we hardly make new city developments anymore in the Netherlands.

At the same time we have a lot of city heritage that has problems and doesn’t cope with the living standards of nowadays anymore. There is a lot of work to do for architects in city renewal, just imagine how many areas in a city are not functioning well.

The question is how an architectural intervention in an existing urban fabric can activate the area for further developments and change the perception in a positive way.

With my graduation design I want to show that I’m capable of solving such a problem in the Zaanstreek area. With an architectural intervention, I want to activate the area and solve problems on a bigger scale.
2. PROBLEM STATEMENT

The problem statement is divided in two phases. Firstly the overall problem statement of the Zaanstreek and secondly the problem statement of the specific location.

§ 2.1 Problem statement Zaanstreek

The station areas that we have to consider are Krommenie-Assendelft, Wormerveer, Koog-Zaandijk, Koog-Bloemwijk and Zaandam Kogerveld.

We have the possibility to add two new stations, one between Krommenie-Assendelft - Uitgeest and one between Zaanland - Koog-Bloemwijk. The two hypothetical stations are called Hypothetical North (Krommenie-Assendelft - Uitgeest) and Hypothetical South (Zaanland - Koog-Bloemwijk), for convenience.

We need to find out if it is necessary to add these two stations.

In the seven station areas we have to research possible interventions and/or densification within the 800 meter circles (walk able distance within 10 minutes) around the stations.

A minimum amount of 7000 dwellings is required. The densification needs to take place within the existing urban fabric. The density of the Zaanstreek has to increase.

At this moment the Zaanstreek has several problems. The provincial road and the railroad track form a big barrier, separating the Zaanstreek in two parts, west and east. The question is how to deal with these structures and how can the barrier between west and east be solved?

With the introduction of the High Frequency train program another problem is introduced. The railroad track and the road cannot cross on the same level anymore. Otherwise there would be a constant traffic jam. An intervention is necessary in either the road or the railroad track. One of the two has to be lifted or put underground.

Another issue is the role of the industry in the Zaanstreek. There is a lot of industry in the Zaanstreek and especially the food industry is characteristic for the identity of the Zaanstreek. This industry is often situated within the 800 meter circles of the station areas. The question is how to deal with this industry, considering the future densification. Do the factories have to move? Can they stay? Are industrial buildings suitable for re-use?

Related to the industry is the problem of the living-working balance. In the presentation of an urban planner of North-Holland Hans Staller came forward, that the mix of living-working, one of the characteristics of the Zaanstreek, has problems. Factories are located next to houses without looking after the spatial qualities. How to create a high-quality mix of living and working?

We as students, have to pick a location based on the stated questions. Each individual has to formulate a design question on a chosen location.

The main question is then, How to pick a location?

§ 2.2 Problem statement station area Koog-Zaandijk

I chose to work on the station area of Koog-Zaandijk. (argumentation chapter 4.1)

This station area is characterized by the ADM Cocoa-factory on the east side of the station, sport fields (soccer and tennis) on the west side of the station, a crossing between the railroad track and the road just north of the station and the provincial road in between the station and the ADM-Cocoa factory.

Furthermore this area is known as a recreational area because of the presence of the Zaanse Schans.

This location has several problems. The provincial road and the crossing are related to the general problem statement of the Zaanstreek. The question is what to do with the provincial road and the crossing on local scale in relation to the bigger scale. An intervention needs to be done in the provincial road and the station, to open up the barrier between east and west.

The ADM-Cocoa factory, lying on the east side of station Koog-Zaandijk, founded in 1911, is one of the remaining characteristic food industries of the Zaanstreek. The factory is situated between the urban fabric of Koog aan de Zaan and Zaandijk. It is surrounded by dwellings, the Zaan river, and the railroad station Koog-Zaandijk. The factory forms a barrier within the urban fabric of the two villages.
Figure 2.1: Station areas Zaanstreek

Figure 2.2: Station area Koog-Zaandijk
and has negative environmental effects. The question is how to deal with this factory? Does it need to be moved? Is it suitable for re-use?

The area of Koog-Zaandijk also needs to be densified with dwellings, according to the studio goals. Just west of the station are the Sport-fields. How to deal with these? The sport fields are very important for the social coherence of the place. But can the sport fields stay with the future densification or do they have to move?

About 800000 tourists visit the Zaanse Schans every year. (hans staller) The station of Koog-Zaandijk doesn’t function as a representative entrance to the villages. It is for tourists not clear how to get to the Zaanse Schans from the station.

Summary problem statement + questions:

1. The ADM Cocoa-factory works as a barrier within the urban fabric. How to improve the integration with the existing urban fabric?

2. The station area of Koog-Zaandijk has to be densified with approximately 250 dwellings, according to the master plan. How to distribute the 250 dwellings and where? The sport fields and the factory have to stay.

3. New program needs to be added which supports the future densification. Which program?

4. The station of Koog-Zaandijk doesn’t serve as a representative entrance to the villages of Zaandijk and Koog aan de Zaan. How to make it representative?

5. The railroad track and the road cannot cross each other on the same level; How to solve this problem?

6. How to deal with the provincial road and the railroad track as a barrier between east and west?

§ 2.3 kind of design?

I want to make an architectural design that solves all the stated problems. The densification needs to take place, but the ADM-Cocoa factory and the Sport-Fields have to stay. A new representative entrance to the village has to be created and the barrier of the provincial road and the railroad track has to be solved, as well as the crossing just north of the station.

New program needs to be added that supports the densification and the needs of the location. In order for the factory to stay I have to find out how to improve the integration of the factory with the existing urban fabric. And I have to find a way of densification, without having to move the sport fields.
In this chapter I will explain and discuss the methods and techniques I have used so far. The main method that I have used, to answer the questions of the problem statement, is the Urban Analysis. Firstly I will briefly reflect on the research that I have done, and then I will critically position the research within the framework of an episteme. The Lecture Series Research Methods course AR3A160, has brought me the episteme of Typology, Phenomenology, Praxeology and Semiology. I will highlight the episteme that I think suits best with my approach towards the urban analysis.

§ 3.1 methods and techniques Urban Analysis Zaanstreek

In seven groups of three people, we made an urban analysis on each of the seven station areas of the Zaanstreek.

This Urban Analysis was based on given maps, data and observation of the area. Each group made a booklet of one station area and presented the information to each other. At the same time we made seven posters in a1 format, mapping the Zaanstreek area in seven different themes. (see appendix A)

1. station typology: showing the existing station typologies
2. historical development: showing the relation between the railroad station and the village cores in 1868 (the introduction of the railroad stations in the area).
3. cross connections railroad (Zaanlijn): showing the crossings of the railroad track.
4. public spaces of the stations: showing how the public spaces of the stations are organized.
5. main structuring elements: showing the landmarks, monuments, industrial area, railway, roads, water, green
6. functional character of the station areas: each railroad station area has a different functional character
7. formal aspect of the cross connections: showing the spatial organization of the cross connections.

These posters show the relation between the individual station area and the whole Zaanstreek area, giving a clear overview of the study area.

We managed to get a clear idea about the historical development of the stations in relation to the surroundings, the existing typologies, the traffic problems, the industrial heritage, the structuring elements and the spatial borders of the area.

The purpose of the Urban Analysis was to find design questions in the station areas, which relate to the general problem statement of the studio.

§ 3.2 typology study

In order to get a grip on what the densification of the dwellings actually means, we did a densification study in groups of three students. A generic site, with a railroad track in the middle and 12.5 hectare of free-to-built space on the west and on the east side of the track, was given. We were asked to densify this area of 25 ha with 1000 dwellings of 100 m² a unit. We were totally free on how to do this. Important was to study different themes and see which typologies work best with that theme.

My group studied three wn typologies: courtyards, strokes, and towers. We tried to set extremes for each typology (for example 1 big courtyard in relation to a lot of small courtyards) and exhaust all the possibilities with it. We did studies on what it means to integrate the railroad station with housing, how to create a station square and what the orientation of the typologies towards the railroad track means. And importantly we looked at the ratio of mass and void in each study.

This research is related to the episteme of typology, we used literature about typology to support our studies. For example, the diagram that shows the relation of the height of a building in relation to the necessary open space, in order to have sufficient daylight. (figure 3.1)
Figure 3.2: Station area Kooi–Zaanbuik - Studying historical images

Figure 3.1: Fragment densification study - Combining dwellings with station

Figure 3.3: Station area Kooi–Zaanbuik - Observation Border's Factory
§ 3.3 research Koog-Zaandijk

After selecting the site, finding the problems and formulating my goals, I made my own analysis on local scale to locate the problems. Firstly I wanted to find out which interventions I could do in order to improve the integration of the factory, without disturbing the manufacturing process of the factory. The relation of the factory with the station was most important to me.

The experience of the area was very important for me; I looked at how I personally experienced the site and was constantly thinking how others would perceive it.

Firstly I observed the station and the factory on site, to experience the problems given by the Urban Analysis myself. I took pictures of the problem areas and I tried to find the opportunities of the location.

Secondly I studied the historical development of the factory by using historical maps and old pictures, in order to understand why buildings were built on their current location and how the factory has grown over time.

Thirdly I spoke with an ex factory employee named Simon Kroeze, who has worked for more than 30 years in the factory. He could tell me how the manufacturing process of the factory works. From his information I learned which interventions I could do without disturbing the cocoa manufacturing-process.

By observation I made a selection of factory building I want to keep. I looked at the functions of these buildings and their flexibility for re-use. It was also important that the functions could be moved to another location on the factory terrain.

I went to the archive to get the original drawings of every building so I knew their exact use, their dimensions and construction.

By using these sources; observation, maps and talking with local people, I managed to get enough information about the factory.

I did a traffic analysis on local scale using maps, to see possible solutions of how to solve the traffic problem. The book ‘overholland 5’ helped me to understand the influence of a railroad track in the city and the problems that are part of that.

When I reflect on the analysis that I have done I find that my research mostly matches the episteme of Phenomenology. For me it is very important how people perceive the urban fabric, by doing this research I found ways to improve the integration of the factory within the existing urban fabric. And hopefully change the perception that people have on the factory in a positive way.

The same goes for the traffic analysis and the re-use of the factory buildings. I want to get rid of the barrier of the provincial road and I want to re-use some factory buildings, even though they are not monuments, to make people experience the sense of the place.

My position is to influence the perception that people have on the built environment in a positive way by the interventions that I am going to do.

§ 3.4 phenomenology

I want to critically position my research from the urban analysis within the framework of the episteme of phenomenology.

I studied the episteme of phenomenology by the book of Kevin Lynch ‘image of the city’ in order to compare my own research with his. Lynch studies in his book ‘image of the city’ the relation of human perception and the city environment and shows what consequences this has for the design of a city.

Lynch says:

‘Looking at cities can give a special pleasure, however commonplace the sight might be. Like a piece of architecture, the city is a construction in space, but of a vast scale…perceived only in the course of long spans of time… At every instant, there is more than the eye can see, more than the ear can hear, a setting or a view waiting to be explored. Nothing is experienced on itself, but always in relation to its surroundings. The sequences of events leading up to it, the memory of past experiences. Every citizen has had long associations with some part of his city, and his image is soaked in memories and meanings.’

The very reason why I want to do interventions in this station area is because the area doesn’t give a positive perception to me. I want to give people a special pleasure by my design and dissolve the negative perception as much as possible. However this negative perception is based on my own perception of the village and I am an outsider. I have only formed my image, based on a partly subjective research of several weeks.
Lynch is looking for a ‘public image’ of a city. He wants to test the legibility of a city. Legibility is essentially the ease with which people understand the lay-out of a place. By making questionnaire surveys Lynch has developed a method of analyzing legibility based on five elements:

1. **paths**, Familiar routes followed—“Are the channels along which the observer customarily, occasionally, or potentially moves.”
   - streets, walkways, transit lines, canals, railroads

2. **edges**, dividing lines between districts—“are the linear elements not used or considered as paths by the observer. They are boundaries between two phases, linear breaks in continuity.
   - shores, railroad cuts, edges of development, walls.

3. **districts**, areas with perceived internal homogeneity—“are medium-to-large sections of the city, conceived of as having two-dimensional extent, which the observer mentally enters ‘inside of,’ and which are recognizable as having some common identifying character.
   - center, midtown, its in-town residential areas, organized industrial areas, trainyards, suburbs, college campuses etc.

4. **nodes**, Center of attraction that you can enter—“Are points, the strategic spots in a city into which an observer can enter. The nodes may be simply concentrations, which gain their importance from being the condensation of some use or physical character, as a street-corner hangout or an enclosed square.
   - primary junctions, places of a break in transportation, a crossing or convergence of paths, moments of shift from one structure to another

5. **landmarks**, point of reference—“Are another type of point-reference, but in this case usually a rather simply defined physical object which makes one orient oneself.
   - building, sign, store, or mountain

He gets this ‘public image’ of a city by interviewing several local people according to the protocol that he has prepared, as well as by asking someone to draw a sketch map of an area or describe that area and asking a person to name as many places as possible in a short period of time.

With this information Lynch collects mental maps of people. A mental map is an individual’s own map of their known world. These mental maps form data that can be investigated for design purposes.

Critic on the methodology is that the method still gives a rough ‘public image’ of a city. Lynch made his mental maps on maximum thirty people. Still I think his method gives a more objective ‘public image’ of a city, than just the observation of the designer.

My urban analysis has some resemblances with Lynch’s method. Only I made a mental map based on my own experience. I unconsciously looked for the same five elements as he described. I tried to find paths, but I actually found the lack of clear paths. I found edges, created by the factory fences. The factory also functions as a district and a landmark within the urban fabric. The train station forms an important node. Lynch describes these elements as positive things. According to my analysis some of the elements are there, only they don’t work well at this moment.

I have talked with two local people about the factory and their perception of it, but I didn’t prepare a questionnaire survey as Lynch does and I didn’t talk with enough people to form a solid base.

His method can be very useful for my design process. I know now which elements are important for the design of a city and how people perceive these elements. By comparing my research with his I became more aware of what I was actually doing and what I could have done better.

I will use his five elements for my design in the station area of Koog-Zaandijk so that people can easily understand the lay-out of my design. They can be used as a strong base for making design decisions and clarify what I’m doing.

It gives order in the complex urban situation I am working on.
§ 4.1 choice of location

After formulating the problem statement of the Zaanstreek and propose questions on how to select a location I furtherly studied the Zaanstreek area in order to select a location.

During the Urban Analysis I got a good impression on the general problem statement of the Zaanstreek area.

I wanted to pick a station-area that is representative for the general problem statement of the Zaanstreek area and fits my personal criteria that I wanted to work with.

These are the following criteria:
- the problem of the barrier introduced by the railroad
- industrial heritage and how to deal with it
- densification possibilities

The location of Koog-Zaandijk is to me a representative location for these criteria and that's why I chose to work with it.

This location is extra important due to the presence of the Zaanse Schans with 800000 visitors each year.

§ 4.2 master plan

After the Urban Analysis we made three rough master plans, in three groups of seven people, distributing the minimum amount of 7000 dwellings in the possible development areas (report Henk Engel), within the 800 meter circles, of the Zaanstreek. Also a vision over the area was part of the master plan.

An indication was given for the density of the development areas, for the re-use of industrial heritage, for what to do with the sports-fields in the area. The environmental threats as soil pollution, sound, smell were brought forward, to see which industrial areas were suitable for densification with housing and which weren't. If the industrial area is in the middle of the urban fabric of a village it is feasible to clean the soil.

The numbers of dwellings in the master plans were very rough; they were merely an indication on how to densify the station areas, based on estimation. During the design process the master plans can be sharpened.

Each individual student had to pick one of the three master plans to work with, as a base for the upcoming design proposal.
Figure 4.1: Master Plan Station Area Koog-Zaandijk - Densification Areas

- 1062 DW
- 24.6 ha Potential Area
- 5.4 ha
- 322 dwellings

Figure 4.2: Cross Road Study

- 2.1 ha
- 512 DW
- 79.6 DW/HA

Figure 4.3: Historical Development Factory

- 1910
- 1930
- 1940
- 1950
- 1960
- 1970
- 1980

- Extratransport track until 1955

- Main production cocoa powder/cocoa butter
- Monumental buildings
- Storage parking
- External transport company/garage

Figure 4.4: Diagrams Factory

- 1 2 3

- 1.2 ha
- 623 DW
- 522 DW/HA

- 5.2 ha
- 489 DW
- 425 DW/HA

- 11.5 ha
- 577 DW
- 50 DW/HA

- 10.1 ha
- 909 DW
- 90 DW/HA

- 6.4 ha
- 577 DW
- 90 DW/HA

- 1 ha
- 51 DW
- 51 DW/HA

- 5.7 ha
- 230 DW
- 40 DW/HA

- Traffic study

- Train

- Road

- Diagrams
I chose the master plan that matches mostly with my personal criteria as a base. This master plan keeps the cocoa-factory and sees the area as a suitable area for public functions that can support the surroundings and the future densification.

The densification with dwellings needs to take place west of the station on the sport field area, according to the master plan. About 250 dwellings have to be added on an area of 7.3 hectare. This area is now occupied by parking, soccer fields of the Kooger Football Club ’KFC’ and tennis fields. In the master plan, these sport fields have to move to a location outside the 800 meter circle. The problem is that it’s hardly possible to move the sports function to another location, because the only area that has enough free space is protected by ‘Natuur beheer’. This means nothing can be built in this protected area. A solution has to be found to keep the sport fields and instead of moving the sport fields, the densification of 250 dwellings has to take place elsewhere. The sport fields are very important for the social coherence, so they cannot disappear in my opinion.

I will explain why I want to keep the ADM Cocoa-factory. Of course, the Cocoa-factory has negative influences on the environment in terms of smell, noise, cocoa dust, polluted soil and fire hazard. Since the founding of the factory there have been multiple fires. Cocoa fires are very difficult to extinguish, because of fat that is inside the beans. Because of these reasons, many people would like to see the factory moved to a location outside the centre. This is a very difficult process, because a new location needs to be found that permits a factory like that. The municipality of Amsterdam for example doesn’t give permission to move the factory to Amsterdam. (factory employer) Even when it is allowed, an entirely new factory has to be built. This is economically hardly feasible, because nobody is willing to pay for that at this moment.

Positive points about the factory are that the cocoa-factory offers 450 jobs and has a positive economical influence for the area. Interesting is that some of the inhabitants of Koog-Zaandijk of which I have spoken to, who live near the factory, have an emotional bond with the factory because it is part of their local history. They take the negative aspects for granted, because they are used to them. However people from outside Koog-Zaandijk probably won’t buy a house near the factory. It is easy to say to just demolish or move the entire factory; this has been the trend in urban planning for many years.  

I think in these economical difficult times, we should firstly try to keep the industry in production. I see the plan that I design as a phase in time. Maybe in forty years, the factory wants to leave by itself. Then the new plan for the factory area can be integrated with the plan I am going to design. I see my design as a first step to redevelop the urban fabric of Koog-Zaandijk.

§ 4.3 Analysis and argumentation Koog-Zaandijk

I did an analysis in order to answer the question stated in the problem statement.

I was looking for answers for the following questions:
1. How to improve the integration of the ADM-cocoa factory with the existing urban fabric?
2. How to densify with 250 dwellings and where? The sport fields and the factory have to stay.
3. New program needs to be added which supports the future densification. Which program?
4. The station of Koog-Zaandijk doesn’t serve as a representative entrance to the villages of Zaandijk and Koog aan de Zaan. How to make it representative?
5. The railroad track and the road cannot cross each other on the same level; How to solve this problem?
6. How to deal with the provincial road and the railroad track as a barrier between east and west?

I observed the relation of the station with the factory. When you walk down from the station to the factory you first have to pass the busy provincial road and then you are blocked by rough metal fences of the factory. This doesn’t function as a representative entrance to the village. I found that these fences are often unnecessary, or can be designed in a better way. At this moment the factory is completely enclosed by fences, killing the public space around it. With help from Google earth I drew a map of all the fences around the factory. I now know which fences are necessary for security reasons and which ones can be changed.

I did a study on the historical development of the factory by using historical maps and old pictures, in order to understand why buildings were built on their current location and to see how the factory
grew in time.

From this I learned why storage buildings were located, on a prominent location, next to the station. There used to be a third train track especially for the transportation of cocoa. This third train track doesn’t exist anymore so it is also not necessary anymore for the storage buildings to be located next to the station. I also learned that there was a water path running through the factory terrain for transportation purposes. Nowadays only the Zaan river functions as transportation route.

The Cocoa-factory, founded in 1911, started as one building and has expanded to the big size factory that it is now.

From history on the factory has expanded only in favor of the factory. Houses, around the factory, have been demolished in order for the factory to grow. Nobody of the factory ever thought about the consequences for the surroundings.

Thirdly I spoke with an ex factory employee named Simon Kroeze, who has worked for more than 30 years in the factory. He could tell me how the manufacturing process of the factory works. From his information I learned which interventions I could do without disturbing the cocoa manufacturing-process.

By observation I made a selection of factory buildings that I think are important to keep. I looked at the functions of these buildings and their flexibility for re-use. It was also important that the functions could be moved to another location on the factory terrain.

Storage functions are most suitable to move and the storage buildings provide a big flexibility for re-use, because of their column structure.

I want to keep some factory buildings, even they are not all monumental, to give people the sense of the place. The factory buildings have been built in the beginning of the 20th century and are really part of the history of the villages. By re-use these buildings are finally opened to the public. Also because some buildings are not monumental I have a lot of freedom with re-using the buildings. Two buildings that I’m keeping are monumental. An old post-office and a school, they are now used by the factory for storage. I give these two buildings back to the public.

I went to the archive to get the original drawings of every building so I knew their exact use, their dimensions and construction.

The re-use of the factory buildings with public functions can help to create a representative station area.

To tackle the problem of the provincial road, the railroad track and the crossing just north of the station I made an additional traffic analysis in which I compared different possibilities to solve the problem.

My purpose was to study which solution works best in order to solve the barrier between east and west, create a representative station entrance and works best in combination with dwellings.

Because I want to keep the sport fields and the ADM-cocoa factory, I want to combine the densification of 250 dwellings with the station. The dwellers shouldn’t experience the negative effects of the railroad track and the provincial road. I sketched the possibilities of what to do with the railroad station: lift it from ground level, leave it on ground level, or put it underground. I did the same study for the provincial road. Then I combined the elements provincial road, railroad track/station and dwellings/parking in one drawing.

So I could see which solution works best in combination with each other.

In order to make the station area a pleasant area, I want to make it a car free area, where only public transport, bicycles and pedestrians can access. It has to become a recreational area where people can meet, live, work and travel.

To support this goal, I want to introduce new program in this area, where all the relevant target groups of the area can benefit from, considering the scenario of densification with +1000 extra dwellings in Zaandijk and Koog aan de Zaan.

The main target groups are in my eyes: tourists, commuters, residents and factory employees.

I based my new program on a theory from the book ‘creatieve fabrieken’ on how to create a new program for re-use assignments.

And I followed recommendations of goudappel in his report ‘kansen’

*The station of Koog-Zaandijk can be developed as an entry gate for the area by making them representative and adding specific facilities as an information centre, a bike-rent, group travel that emphasizes the specific recreation.*

In combination with mapping functions in the neighbourhood, I was able to see which functions are lacking in the area and can be introduced on the location.

Based on this theory and studies I was able to formulate a program.
5. Conclusion

§ 5.1 Defining the design question

In the conclusion I will discuss the decisions that I have made based on the Urban Analysis and explain what I want to achieve with my design.

By doing the Urban Analysis on the scale of the Zaanstreek, I was able to select a location and formulate questions for the location that are representative for the problematics of the studio.

My first question was how to improve the integration of the ADM Cocoa-factory with the existing urban fabric of Koog-Zaandijk.

I found out that I was able to move the storage functions of the factory, next to the station, to another location on the factory terrain. There are some empty spots on the factory terrain. Also some old buildings, which aren't part of the factory and have no value anymore, can be removed or re-used so that the storage functions of the factory can be moved there.

By doing this intervention a big part of the factory is given back to the people, without touching the operation process of the factory.

By re-using some of the factory buildings, that are given back, and re-developing the public space that comes free, a representative entrance to the village, in relation to the station, can be created. I made a value statement on which buildings I wanted to keep based on my perception of the buildings and the flexibility of re-use. The monumental post office, a monumental school and storage buildings are interesting to re-use. The school and the post office have to be preserved in my opinion, because they have a monumental status. The storage buildings don't need to be preserved totally. In fact I only preserve the construction of the Helios storage building and I bring back the other storage building in its original state, adding a small new part.

To give the factory more a representative entrance, I moved the entrance of the factory to where it used to be at one of the monumental factory office buildings. I also want the factory to benefit from my intervention.

I also found out that I can soften the borders of the factory, by removing unnecessary fences and designing necessary fences in a different way. The fences don't necessarily have to be ugly metal fences; borders can also be created in a natural way by introducing green or water. For example I reintroduced the old water path and adapted it to my design. This water path functions as a buffer between the factory and my development area.

The traffic studies in combination with the densification and the railroad station helped me to make a decision on what to do with the station area.

The best solution that I found with the traffic study is to put the station and parking underground.

It is a big intervention, but on long term I think it is the best solution.

- The barrier between east and west is solved.
- The crossroad of the railroad track and the road is solved.
- An extra cross-connection between east and west can be introduced.
- The area becomes very suitable for densification.
- People only experience the positive effects of having a railroad station nearby.
- The location becomes ideal for commuters who live in Amsterdam.

The station area with the new densification becomes an important node for the villages of Koog aan de Zaan and Zaandijk.

Basically I have three themes on which I am working: travelling, living, and re-use of industrial buildings.

The main design question is how to combine the three themes: travelling, living and re-use of industrial buildings into one urban/architectural project.
§ 5.2 Answering the design question

§ 5.2.1 courtyard typology

The main design question is combining the three themes travelling, living and re-use of industrial buildings into one urban/architectural project.

With the station placed underground, the barrier is dissolved. As a consequence a big space is giving back to the city.

The question is how to fill up this space given back to the city?

My plan consists of making an underground station, densifying the area with dwellings and supporting functions and re-using the industrial heritage of the ADM-cocoa factory with new functions.

I managed to find a solution for the design question by using the episteme of building typology.

By introducing the courtyard typology I was able to combine the three themes into one project.

I made an urban plan of 3 courtyards of which two of them are more private courtyards used only for living, and one very public courtyard with the underground station, with a pavilion as entrance on the middle of the square.

This courtyard adapts to the location by integrating the industrial heritage to its typology and allows the provincial road to go through. The provincial road is downgraded as research proved that, it is oversized at this moment. It will become a slow speed road through the plan.

At the same time a lot of public space is created that can be used by the inhabitants of Koog aan de Zaan en Zaandijk.

I want this courtyard to introduce a new urban scale within the area which is a starting point for new urban development and strengthens the role of Koog-Zaandijk as part of the metropolitan area of Amsterdam.

It has to be one gesture, but at the same time has to offer a high variety of different program, public spaces and adapt to the context.

The intervention that I’m doing is a very big one and will be a huge investment economically.

In order to make this proposal feasible the design has to last for at least 100 years. We cannot predict what will happen in the future and what the requirements for buildings will be. Therefore I want to base the design for the outer ring of the courtyard on the theory of time-based architecture, design for the unpredictable.

After studying literature about this in the books ‘time-based architecture’ and ‘frame and generic space’ I came up with the following points that I want to translate into the design.

- two facades
  outside facade is load-bearing to provide the architectural character.
  inside facade, can change in time without affecting the character of the building, individual expression is possible
- big spans, few obstacles
- generous circulation space
- generous floor-to-floor height
  (ground floor, communicating with the street 5.0 meter, upper stories 3.6 m)
- raised floors and suspended ceilings
- over capacity
- durable materials

Basically I am creating a generic space that can house a variety of program and can therefore survive for a long time. It is not the job of an architect to determine which program is going to be where in the building. The users of the building will have the choice.

However to show how the block can be divided in terms of program I have created scenarios of how the block could look like in terms of program. The scenarios are, just living, living-working, living with gallery space, retail and office.

The depth of the block is 14 meter (2 x 7 m), this dimension is based on the fact that if the block is one open space there is still sufficient daylight, because the maximum depth of a room from a window is 7 meter.

The block is 4 stories high, this is a bit higher than the surroundings to bring in a new scale in the environment and it has to do with the relation to the open space.
The facade is split in three parts: the base for connection with the square, a middle part and a top part for the best view and to make an ending.

It is designed as a background decor for the square. The emphasize lays on the square with the station pavillion and the industrial heritage.

To dissolve the mass of the building I chose to work with lots of small repetitive parts instead of fewer big parts. Horizontal lines express the continuity of the facade and show that it is one gesture.

The side facades are treated like cuts in the building, being very closed, they only have an opening in the middle for vertical circulation space.

§ 5.2.2 underground station - breaking the barrier

The emphasize of the design is on the underground station, because the theme of the design is about breaking the barrier between east and west.

I have positioned the station platforms two floors underground. The reason for this is that if the station would be on -1, the barrier wouldn’t be solved because of the presence of the provincial road. On top of that there wouldn’t be enough space for underground parking and the train will move right under the buildings.

With the train tunnel on -2 the barrier is totally dissolved.

This gave me the opportunity to create an underground world, going underneath the provincial road, on -1 connecting the station with the industrial heritage buildings. I excavated the floors of the industrial buildings and supported the existing construction with beams and columns, displaying the construction of the industrial heritage. The industrial heritage becomes accessible from underneath. At the same time the industrial heritage functions as entrance buildings to the station.

I added new program to the industrial heritage that suits the character of both buildings. I re-used the Helios building adding a market hall function. A market hall is a good function to attract people going underground and is very convenient being nearby a station.

A glass facade and roof will cover the building. The glass facade has a winter and a summer mode. In the winter the building can close protecting it from water and wind; in the summer the building can be opened allowing natural ventilation to make sure the building won’t overheat. The market stands have heating on local level for in the winter.

The elongated storage building is suitable for an exhibition gallery since it has an industrial atmosphere with, northern-light coming from the roof. Different sorts of temporary exhibitions can take place in this building. A big staircase connects the building with the underground world.

Underneath the provincial road are functions for all the target groups like a lunchroom/coffeebar and functions especially for the 800000 tourists visiting the Zaanse Schans every year, a tourist information centre and a bicycle rent.

All these elements combined introduce a new underground world this world is positioned on a different grid than the outer courtyard, emphasizing the distinction between the two worlds.

The effect, from the underground world, on groundlevel is that the big courtyard is roughly being divided into 4 squares. These 4 squares are all given a different character suitable to the function nearby. Nearby the living function will be a more quiet park square and a playground square, nearby the retail functions will be a more public square with opportunities to park the bicycle. Nearby the post-office that will be re-used into a restaurant/cafe will be a terrace square, ideal for having a drink outside, when the temperatures allow it.
Figure 5.3: Tempietto S. Pietro, Rome
§ 5.2.3 underground station - entrance pavilion

Because the train platforms are -2 underground, the biggest question remains: how to define the entrance to the underground station on the square?

I have found the solution in defining the station entrance as public pavillion on the square. This refers to classical architectural precedents such as the tempietto S. Pietro\textsuperscript{14} built in 1502 (see figure 5.4). In classical examples the movement up is the most important. In my case the movement downwards is most important.

Studies of classical examples and theories have helped me defining the station pavillion.

I have used several elements of the classical examples and translated them into my design, without having the intention to imitate classical examples in terms of architectural expression. Instead I was looking for a contemporary architectural language suitable for the time we are living in now.

Firstly I used the omnidirectional orientation of the pavillion, which explains the choice of a square for the station. The station can be read as an omnidirectional entrance on the square, accessible from all sides.

Secondly the principle of the double layer. The first layer is a collonade outside (consisting of columns of the classical orders) defining the border of the pavillion with the square. I made the collonade of very slender columns without ornament to introduce a certain lightness to the pavillion.

Behind this collonade is a transition space between outside and inside circulating around the middle part of the pavillion. As soon as you step into this transition space you step into the pavillion, and from there people can continue their way.

The middle part is normally the climax of the building. This is mostly a space for religious purposes in the classical precedents. The border between outside and inside is created by a wall with a closed character with several openings. In my case the middle part is a hole in the ground leading towards the platforms of the station.

The border between inside and outside is defined by a glass facade, making sure that daylight can enter the underground world. At the same time the glass facade protects the station from water and wind. From the square it is important that people can see through the building, so people can experience the entire courtyard.

The third principle I have translated in my design is that of the ordering structure of classical precedents.

The classical pavillions have reached a balance in composition, nothing can be taken away and nothing can be added, without disturbing the composition. There are no contradictions in the ordering principle of the construction. A certain self-evidence is reached.

I have tried to get a similar balance in the composition of the pavillion. All the columns are placed on an equal distance from each other, it is a square, with equal sides and the entrance can be in the middle of the facade because of an even amount of columns.

The movement downwards is important for the station pavillion, I looked for a way of expressing this architectonically. I brought this forward in the definition of the roof. In classical precedents there is a base, with stairs going up. I reversed this principle by shaping the roof into stairs making a downwards movement into the hole. This shape is also beneficial for the amount of daylight going into the tunnel.

The shape of the roof is asymmetrical to break with the rigid order that exists in the plan, the roof has an order of its own. This is breaking with the classical middle symmetry of the classical precedents.

I tried to make the underground station something more than a dark tunnel, to give people in the station a sense of orientation. In order to get more daylight in the tunnel and ventilation I added 6 daylight voids, bringing daylight in the tunnel. These daylight voids are also used for ventilation of the tunnel and the parking garage.

\textsuperscript{14} 2600 jahre klassische architektur

15. Metope and triglyph
§ 5.2.4. material concept

In terms of materialization I want to create a contrast between old and new. It has to be visible in material what is new and what is old. The location gives a rough industrial character due to the presence of the ADM-Cocoa factory, with dark brick and metal as characteristic materials. I want to use materials in the same category, but in a contemporary way. This makes the character of both the new and the old buildings stronger.

The station pavilion has a metal shiny character. This is to emphasize the lightness of the pavilion and as mentioned above metal is a good material to reflect light into the tunnel. I want to make the tunnel as light as possible by materializing it with white reflective materials, to get rid of the cliche that a tunnel is a dark artificial lighted place. The underground world is materialized with the purpose to create an interior character.

The spiral staircase for example, is made out of gold colored cladding, giving the staircase a strong character and dramatize the downwards movement. The tunnel walls are made of white marble, changing the impression people have on underground stations. I made the underground station something more than a dark tunnel.
6. Discussion

§ 6.1 reflection

The theme of the studio is Urban Regeneration: What next? The studio focuses on the Zaanlijn (railroad track Zaandam - Uitgeest), which is part of the Metropolitan area of Amsterdam. The Zaanlijn functions as a barrier within the region. The main theme of my proposal is about breaking the barrier by making an underground station.

This is a generic topic that can be applied in cities all over the world; a railroad track usually works as a barrier dividing a city into two parts. (asp. 4)

When the railroad track is put underground, this barrier is dissolved. As a consequence a lot of space is given back to the city. Also the mental barrier of the railroad track for the inhabitants is gone. The question is how to fill up this empty space?

The new underground station in Delft is a good example regarding this topic.

I have worked out this generic theme, in the specific context of Koog-Zaandijk. Two other themes are important for my design proposal given by the studio, densification within existing urban fabric and the role of industrial heritage within the Zaanstreek area. The station-area of Koog-Zaandijk contains the three themes given by the studio, that’s why I chose to work on this location.

With my design I have connected these three themes into one project and I gave an answer on how to deal with these themes in the form of an urban and architectonical design. (asp. 2)

The methods given by the studio have proved to be sufficient for me to come to a design solution. It was difficult in the beginning to formulate a project out of nothing. An extensive urban analysis on the whole Zaanstreek area provided the necessary information to come up with a proposal. The negative aspect was that this analysis took a lot of time, which is not visible in the project anymore. A positive aspect is that I have learned to formulate my own kind of design. Normally the program and the location for a design are given.

Building typology, the framework in which the studio Hybrid Building is operating, gave me the tools to come up with an urban/architectonical design. (asp. 3)

I have searched for a typology that fits the location and the three themes that I wanted to work with, following up from the Urban Analysis.

I found the answer in the courtyard typology. The courtyard typology forms the base for my design. I was able to integrate the underground station, the densification and re-use of industrial heritage into one project.

From there on I developed my design with different tools: by finding reference projects and borrowing solutions from them to sharpen my own design, by making sketches, by making physical models, 3d models, plans, sections.

I always printed the plans and sections I made in CAD to check it with a red pencil. By doing this you see things in the drawing, which you don’t see in the computer.

This interaction between hand drawing and CAD drawing is very important. And it is important to be critical at the outcome and always look for a better solution.

It is very important in a design process to be aware of the topics you are working on. Only then you can carefully study material and theory that provides relevant information about the topic and helps you with the design.

Basically I have tried to keep a dynamic design process, by constantly changing the tools of design. By doing this I didn’t get stuck during the design process and I was always able to make progress. What I can improve is, knowing when to use what tool of design. This can result in a more efficient design process.

However I think that the concept of a dynamic design process proved to be quite successful for me, you constantly change your perspective on the design and find new problems/ opportunities.

I managed to have a quite linear process; this proves that my way of working was adequate. Maybe the progress should have been faster, but the size of the project should be taken under consideration. It is an urban plan as well as an architectonic design, dealing with complex topics and when I started I didn’t fully understand what I was doing yet. The teachers helped me to maintain the right direction and helped me to understand what the project is about. The design solution gives an answer to all the themes of the graduation studio, improving the station area, breaking the barrier, how to deal with industrial heritage and densifying the station area.