live/work-building

Towards an efficient use of the city

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Reflection rapport - P4
Dutch Housing graduation studio
2018-12-13

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Introduction

The graduation process is an unwritten process in which doing research and making a design are strongly interrelated to each other. The research results could influence the design and vise versa the design could have an influence in the type of research. To get to know the relation between research and design during the graduation process, I would explain which questions/issues arose during my graduation process and which research methods I chose to find an answer on these questions.

In this reflection report I first illustrate the whole process in a chronological order to present the different research methods I used. These methods will be summarized in a time line to show easily where in the process the different research methods are used. In the second part of the rapport I will reflect on the whole process which should give you an impression of how I made the desicions I made.

the mandatory part of the reflection (the reaction on the five stated aspects) could be found at the end of this reflection rapport.

Aspect 1

The relationship between research and design

The graduation process started with doing research on the entire belt of former defense works around the city center of Amsterdam. First this **location analyses** were about studying several analyses (historical as well as demographical) of the entire belt. These purely objective analyses were made by previous groups of the Dutch Housing graduation studio. Secondly our group had to add something to the already existing analyses. This addition was a location analyses based on our experiences of the location during a visit of it, expressed in drawings, photos, and sound recordings. Although we tried to make the conclusions as objective as possible (traceable), the character of it was more subjective.

At the same time we as a group worked on the analyses of the entire belt, I also did individual research to find an interesting topic for my graduation project. This topic should connect to the main theme/question of the graduation studio: *what residential architecture is needed to fulfill the specific needs of today's society?* To find an answer to that question and get grip on current topics I did an **actuality study**. Therefore I read newspapers, and articles. Based on these sources I noticed that several topics were relevant. For example families that are leaving the city and the shortage on the real estate market. I had to make a decision between them. In the end I adopted the topic of shortages on the real estate market and based my decision partly on an 'once-in-a-lifetime' moment (the Brexit) and the positive chances which were related to this occasion. Besides that the topic simply triggered my interest. Because I had to work on the project for a whole year, this was quite important for me.

The choice for the graduation topic did not automatically lead to a specific target group. Therefore I had to search for a target group which was related to dwelling and offices, and to the Brexit (which was a reason for choosing the topic). After a quest I finally chose for expats because this group is struggling on the Amsterdam housing market. The expectations were, according to the newspapers, and articles, that this becomes even worse due to the fact that employees from the

UK will move to Amsterdam because of the Brexit.

To know more about the topic and the target group, I started a **literature study**. In the beginning I just searched for information in all kinds of sources (books, articles, documentaries). This gave me an overall view and the ability to focus on some specific and interesting aspects related to the topic and target group. I used these specific aspects as keywords to search further for more detailed information. All information about the topic and target group was summarized in time lines which in the end showed a comprehensive story of the topic and target group over time.

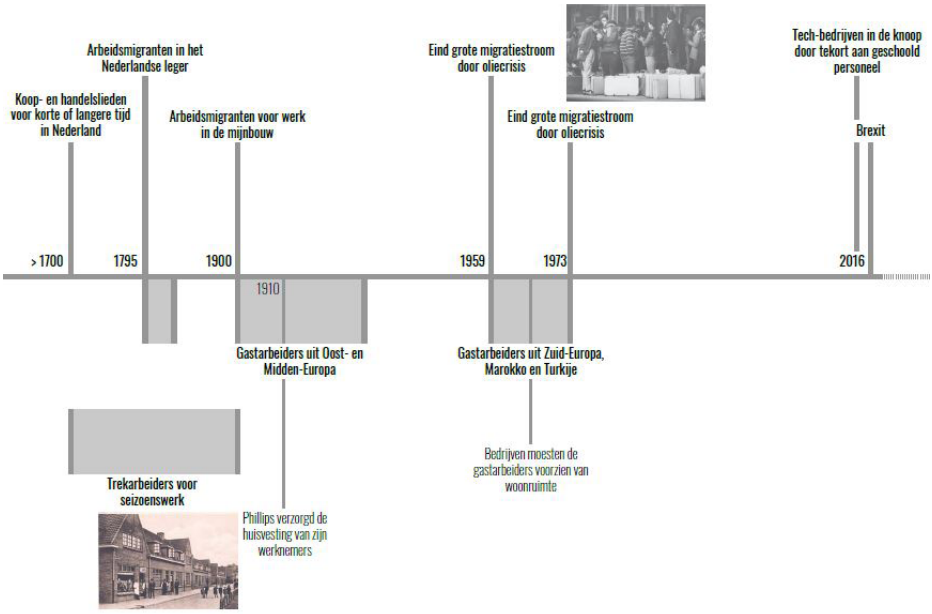


Image 1: time line of target group P1-presentation (own image)

The literature study, which continued after the P1-presentation, led to several problem statements and issues related to the design of a building which deserved some extra attention. Because literature could not answer the problem statements properly I chose to implement **plananalyses** with which I tried to find solutions for specific issues by looking at comparable projects.

In the book *Beyond live/work: the architecture of home-based work* Frances Holliss stated some problems I had to deal with in my graduation project. One of these issues was that there should be a good balance between the public and private area and that a clear separation between different functions is appreciated. How this could be done did not became clear. To find a possible solution for the stated problem, I decided to look at existing buildings in which multiple functions are present. I asked myself the questions *where the different functions were located, where these functions were separated, and what the elements were which created the separation between the functions.* To give an answer to these questions I made analytical drawings of several buildings. By drawing

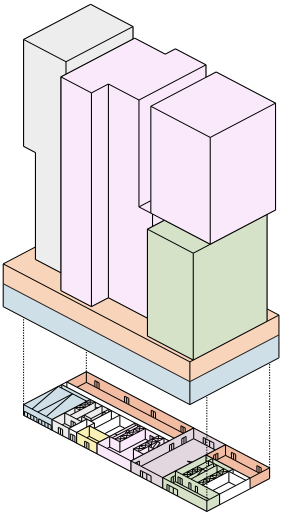


Image 2: plananalyses De Rotterdam: functions (own image)

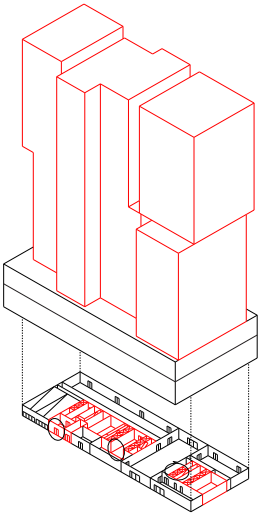


Image 3: plananalyses De Rotterdam: public/private (own image)

the buildings all in the same way, I could compare the buildings with each other easily.

By doing research on the topic and target group I could define my graduation project in a more detailed way. This resulted in a list of preconditions to which my building should comply. Based on these preconditions, combined with the subjective characterized conclusions of the location analyses, I could choose a specific location on the belt.

To get to know the location better, I made another **location analyses**. In contradiction to the first location analyses of the entire belt which had a phenomenological approach and was about the experience of the area, this location analyses was purely theoretical. I studied the plot and its immediate context with the goal to be sure that my location suits the requirements of both the topic and target group. On the other hand I searched for starting points for my design.

Image 4: locationanalyses building typology (own image)

The results of the location analyses could be seen as the starting point for my design. It made me decide to make a building which consists out of several towers on a plinth/basement. Although this will fit into the surroundings according the location analyses, I decided to do a **mass study/model study** to check if the type of building indeed will fit into the surroundings.

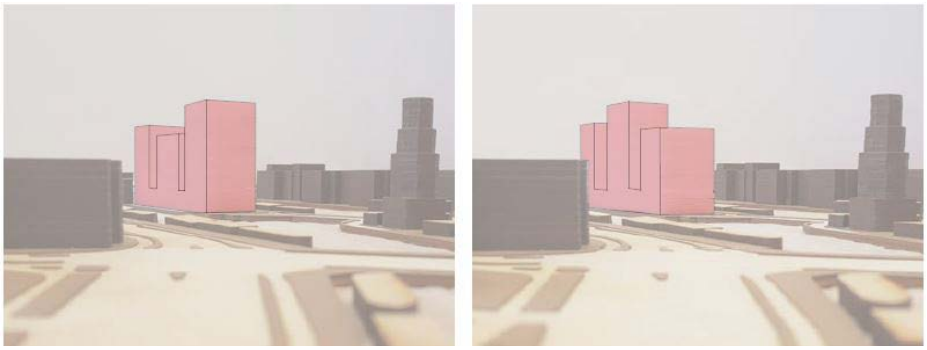


Image 5: mass and composition (own image)

After confirming that the type of building fitted into the surroundings, I started to make multiple compositions of the building. Goal of this study was first to define the amount of towers and their proportions. Secondly my goal was to find the right composition of the towers on the plinth/basement.

By determining the mass and composition of the building, it became clear that some aspects/elements could have a big impact on the design. To be sure that these aspects will not lead to problems in further stages of the design process, I did some **feasibility studies** to test the mass and protect myself for problems during the designing process.

Because my design consists out of I towers, the design for the cores in relation with the floorplan of the towers was one of the important aspects to tackle in an early stage of the design process. These cores namely could have had a big impact on the size of the towers. By doing **research based on guidelines and regulations** of the government and suppliers, I had the ability to configure the most efficient core for the conceptual design which I presented at my P2-presentation.

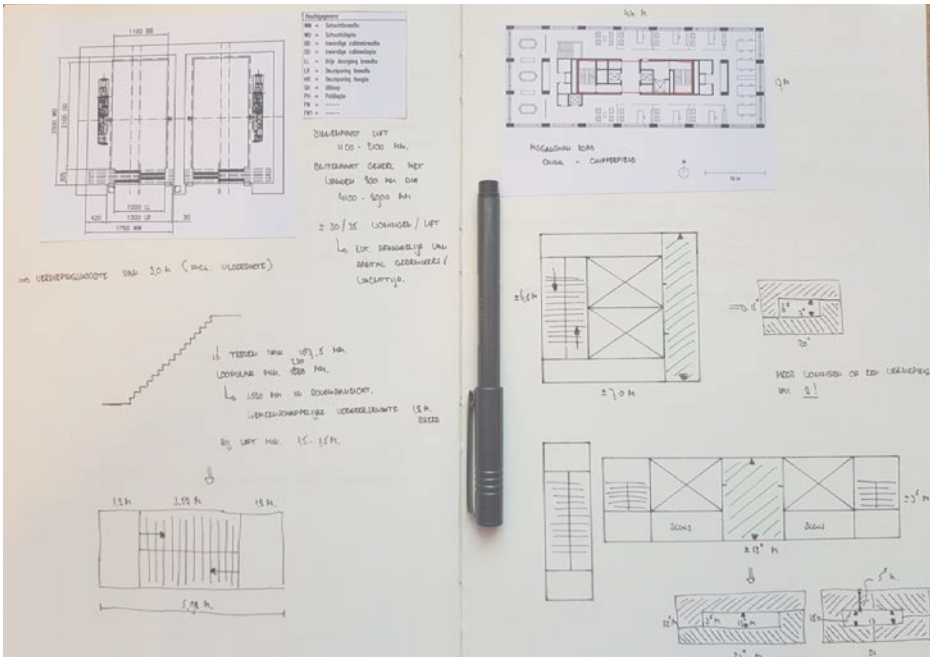


Image 6: guidelines and regulation core summarized in my dummy (own image)

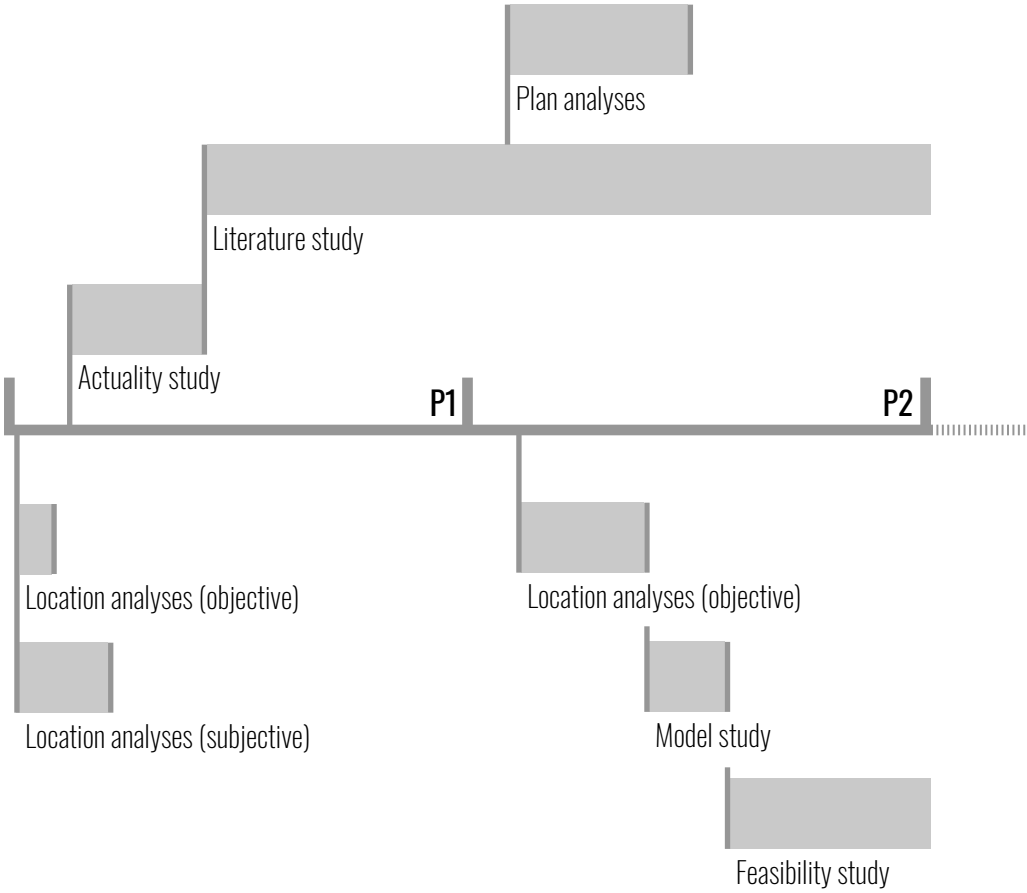
Since the demarcation of the topic and target group and the presence of the conceptual design, **research through design** was introduced into my graduation process. Goal was to find answers on more detailed questions related to the design which could not be answered by studying literature and on which multiple options were possible. Depending on the type of question/subject, this research was done by making sketches, physical models, and computer models.

The results of the research through design did not immediately gave answers on the specific question, mostly multiple options were possible. By comparing the options with each other and writing down the pros and cons, I had the ability to choose for the option which solved the problem and suited my concept the best.

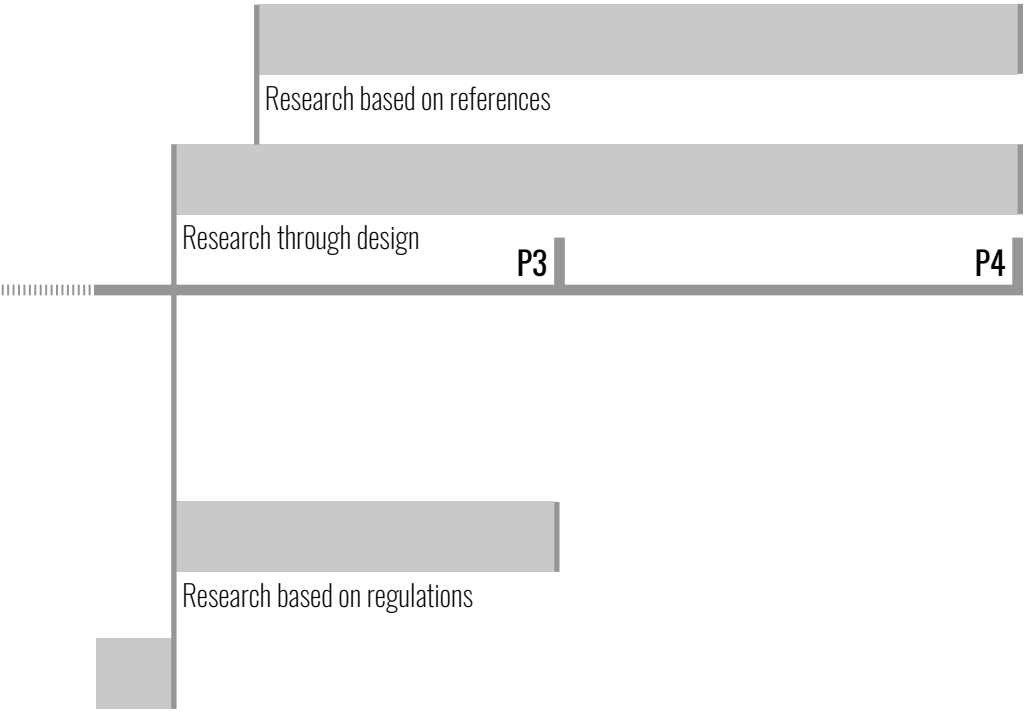
Sometimes it was difficult to find answers on design questions immediately. For that reason I sometimes did **research based on references** to find inspiration for a proper solution. Depending on the specificity of the raised question, two types of reference based research could be noticed during my graduation process.

The first option I had to do reference based research was to look at specific projects and/or architects which dealt with comparable problems I had. To look at existing solutions I could adopt components for my own project.
Secondly, when I did not had any idea where to start to find solutions for specific questions, I looked at references on the internet to find inspiration for my own design and find possibilities which I could compare with each other later on.

By combining all the different research methods during my graduation process with each other, I could make a design which suits both the topic and target group the best and which will fit into the surroundings of the chosen location.



Demarcation of topic, target group, and location with corresponding preconditions



Design which suits topic, target group, and location

To make a design which suits the topic, target group, and location, multiple research methods were used. Most of the time these research methods were related to each other, conclusions raised new questions and led to more/other types of research. This process of concatenation of research methods during my graduation process is illustrated in the presented time line.

When looking at this time line, there is a distinction between the first period of my graduation process and the second period. As illustrated, the first period, till the P2-presenatation, was about finding a demarcation of the topic, and target group with corresponding preconditions. The second period (after the P2-presentation) could be seen as a reaction on this first period. The demarcation and corresponding preconditions were used to make a design with suits the topic, target group, and location.

Before I am going to explain the different research methods, it is important to mention that the graduation process in relation to the research methods is not that linear as it looks like according to the presented time line. I went back and forth between the different methods a lot. Nevertheless the time line shows the process is an overall way.

When looking at the time line in a more detailed way, it could be mentioned that my graduation process started with **location analyses**. Partly these location analyses were objective. As mentioned earlier these analyses were made by previous groups of the graduation studio and were about the history and the demographics of the entire belt. Because these analyses were already present, our tutors made the decision to do something else to get to know the location of the graduation studio better. They proposed to make a location analysis with a phenomenological approach which had a more subjective character. This did not correspond with the idea of doing scientific research immediately. Therefore we had to think about how we could make the research as objective as possible. It made us decide to visit the location several times on different moments during the day. This at least would show us more than only an instantaneous image. Besides that, we made pictures on the entire belt to make it possible to verify information partly.

Besides doing research on the location which in the end resulted in a list of possible locations for my graduation project, looking at actualities was also important in the early stage of the graduation process. Goal of this actuality study was to find a topic which could answer the main question of the graduation studio: *what residential architecture is needed to fulfill the specific needs of today's society?*

It was clear that I was looking for a topic which on one hand was related to the current situation in Amsterdam and on the other hand was related to dwelling/ living in the city. Therefore I decided to search in newspapers, magazines, and documentaries for more information. By using keywords like '*woningmarkt Amsterdam*' (related to the main question of the graduation studio) I could find lots of information related to both the aspects. By clustering all information in folders I had a clear overview of all the information. By comparing the information with each other, in combination with asking myself what topic had my interest the most, I decided to focus on the shortages on the real estate market combined with the related struggles of expats in Amsterdam. What helped me in my decision was the fact that the chosen problem probably becomes worse because of the Brexit, something which could be seen as a 'ones-in-a-lifetime'-moment.

The **actuality study**, which led to a topic and target group, led to a **literature study** for which I used all kind of sources, especially books. Due to the fact that I had not a clear demarcation of the topic and target group yet, I searched for information in a wide range. I used generic keywords which gave me lots of information. By studying this information, I had the ability to demarcate the subject better and set up a list of keywords. Finally I summarized the information in time lines which gave me a clear overall view of the topic and the target group over time(*image 1*). I used the list of keywords to do more in depth research. Where I used more generic keywords in the first part of the literature study, in this second part the list of keywords gave me the ability to search for more specific information.

Although the literature study led to a clear demarcation of my graduation project, I now realize that I did not focus enough on finding design tools/elements for the design. The consequence of this was that it sometimes was hard for me to make

decisions which were related to the topic and/or target group. During my graduation process this raised to questions I had to think about before I could take the design a step further, this took me some extra time. By knowing this, the next time I will focus more of finding guidelines/preconditions for my design.

The literature study also led to new questions which could not be answered that easily by doing a literature study. One of the raised questions was how to combine several functions with each other and where exactly the separation between the public and the private areas in a building should be. This type of question was strongly related to the design itself which made it hard to find a clear and unambiguous solution in literature. The fact that I am not the first one designing a building with multiple functions, it made me decide to do a **plan analysis** to learn from existing buildings.

Before I could start the plan analysis, I had to formulate questions on which I could investigate existing buildings. Based on raised questions by Frances Holliss I decided to ask myself the questions *where the different functions were located, where these functions were separated, and what the elements were which created the separation between the functions.* Secondly I had to decide which buildings I wanted to analyze. Therefore I searched for buildings with multiple functions which had a comparable or bigger size than my graduation project because I had the expectation that these buildings would contain a certain complexity. This complexity would give me a better and more valuable answer on the raised questions.

Besides the precondition that the buildings should have a size which was bigger/comparable with the size of my graduation project, I also tried to find buildings which were located near to Delft. This namely could have give me the ability to visit the buildings with the idea that I could experience the separation between functions myself. In the end this did not succeed. Because it was hard to find proper projects, I searched for projects outside the Netherlands as well. Due to this, one of the projects was located in Japan, it did not have the ability to visit them anymore. Because I did not want to make a distinction between the projects I decided to visit non of the projects specifically for the plan analyses.

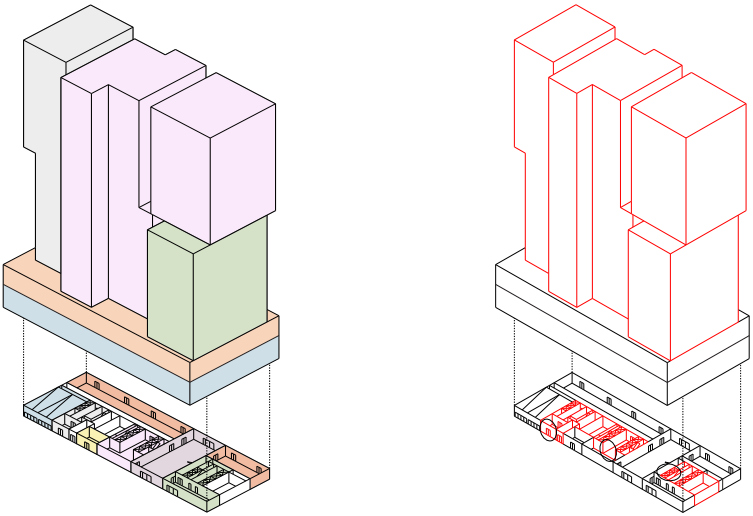


Image 7: plan analyses De Rotterdam (own image)

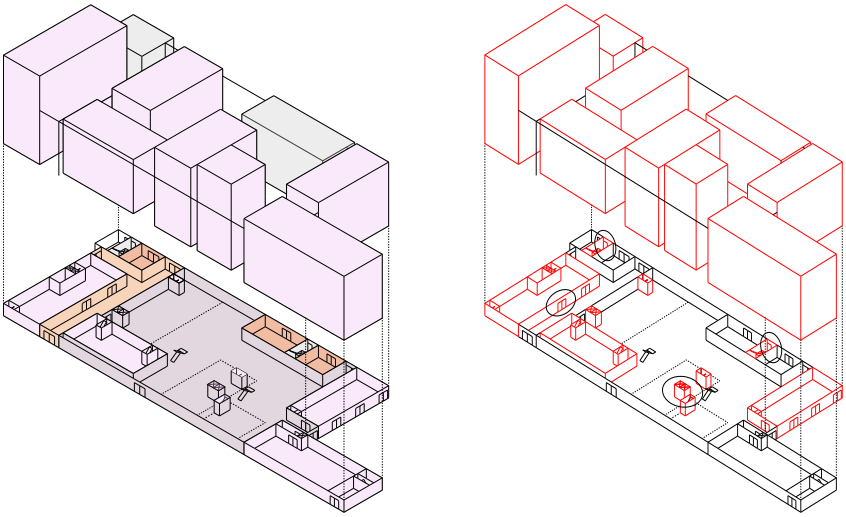


Image 8: plan analyses Haagse Hoge Huis (own image)

Nevertheless I still think that a visit to all the buildings could have been a good addition to the plan analyses. Than I really could experience the separation myself and could have checked if the separation really works how it looked like on drawings and images.

The stated hypothesis that functions have a clear position in the building with an own entrance which is located on the ground floor, made me decide to use isometric drawings of the buildings in which I could indicate the position of the functions. Due to my expectation that the functions will be separated on the ground floor, I decided to draw the ground floor underneath the mass of the building (exploded view). By doing this I could clearly see where functions were located, where its entrances were and how these two were connected to each other. Related to these answers, I made a list of elements which could create the separation between the different functions as input for my design.

By looking again at the list of possible locations, which was an outcome of the location analyses, with all information about the topic and target group in mind, I made the decision to design a building at the Zeeburgerpad. This location is located at the east part of the city, at the very end of the belt.

To get to know the specific location better, I decided to do other **location analyses**. In contradiction with the earlier executed location analyses, this time the analyses were focused on the specific location and its close surroundings. Goal of the new analyses was first to prove that the chosen location corresponds the stated preconditions. One of the preconditions was that the location had a good visibility from multiple directions. To prove this I used a map on which I drew the sight lines towards the location. By combining this map with images I could show the visible position of the plot in the surroundings and could prove that the visibility really exists.

Secondly goal was to find starting points for the design. Therefore I looked for example at building typologies, building heights, and roof types. Based on the different analyses, I could have made the decision to make a building which consists out of a plinth/basement and several towers. The plinth/basement in

this case will corresponds with the striped buildings next to the plot. This will be experienced on eye level, especially from the Zeeburgerpad itself. On the other hand the towers connect with the existing towers at the other side of the Zeeburgerstraat. These are standing close to the water and could be mentioned from a distance. This will lead to an interaction between the existing buildings and my new building (*image 4*).

Besides the fact that the building mass would refer to the buildings in the surroundings, I already realized that not everything was possible to design on the specific location. The plot would for example not allow me to design a building block because the plot is too narrow for such a building. Instead, the maximum depth of the building could be approximately 20 meters. At the same time I did not had the ability to design a stripped building with a depth of approximately 10 meters (windows at two sides) because on one hand I wanted to follow the aligning of the existing buildings at the side of the street and on the other hand I did not want to create an outside space at the north side of the plot because this would be in the shadow all day. I got stuck to the building depth of 20 meters.

At the crash course of *Research Seminar* I worked by chance with a narrow dwelling type with a size of 20,8 x 3,2 meters which was very appropriate on the chosen plot. I decided to adopt this type of dwelling and used it as a starting point for the determination of the building mass.

Image 9: dwelling type Research Seminar (crash coarse) (own image)

One of the first things I did was to define a proper width for the dwelling. Therefore I first did **research based on regulations** which gave me the ability to choose a bay width in which a proper room and a corridor would fit next to each other. This resulted in a width of 4,0 meters. Nevertheless it turned out that this was too narrow which made me decide to change it into 4,8 meters. In conjunction with the search of the ideal bay width I looked at the configuration of the core. Also here I checked regulations to get to know the measurements of the different elements. By doing **research through design** this resulted in a proposal for the size of the towers (*image 10*).

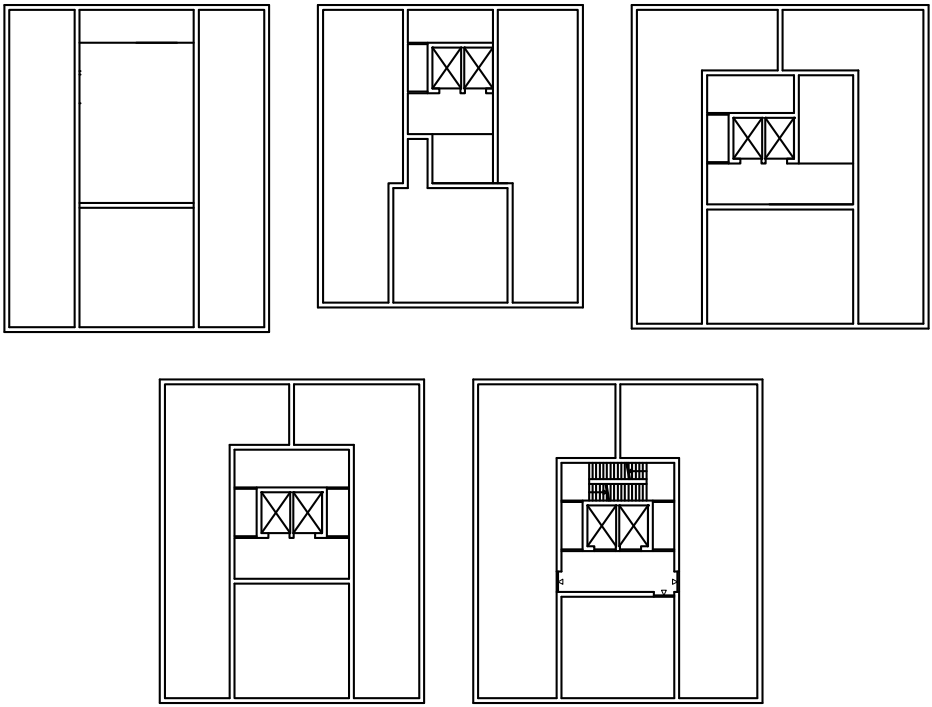


Image 10: evolution typical floorplan tower (own image)

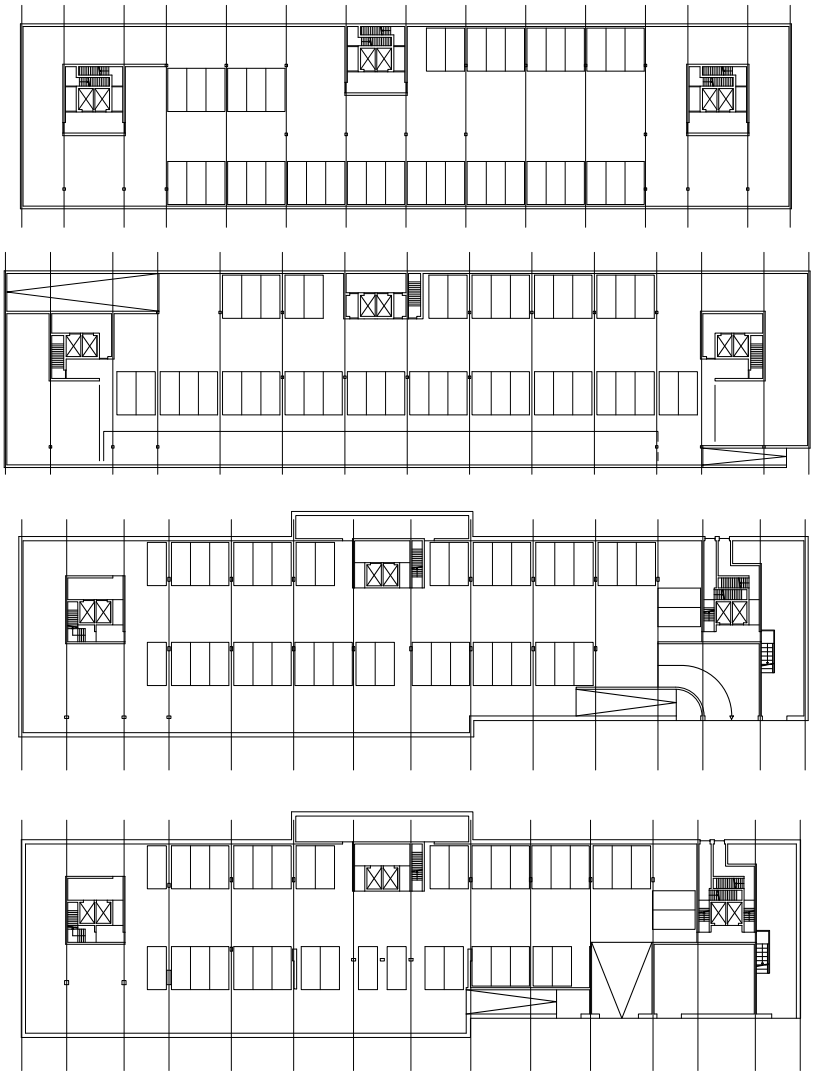


Image 11: evolution parking garage (own image)

An element of the building which I designed the exact same way is the configuration of the parking garage underneath the building. First I searched for regulations and measurements by which I could design the layout for the garage. By making multiple options I tried to improve the layout as much as possible. To have a clear overview of what I already tried and which configurations worked well and which ones did not, I decided to draw all possibilities next to each other in one drawing (*image 11*). By doing this in a computer model, I always worked with correct measurements which assured me that the options would fit in the building. Nevertheless, sometimes this was a disadvantage as well. It cost me lots of time to draw every option. By making sketches it probably could have went faster.

In the end the bay width of the parking garage did not correspond with the bay width of the towers. Because of that I had to change the size of the towers, the measurements of the parking garage were leading in this case. This illustrates that I had to go back and forth between the two aspects.

The interaction was not only visible between the parking garage and the size of the towers. Also the floorplans and the facade of the towers were strongly related to each other, especially because I decided to first design the floorplans to integrate the facade into it later on. Because of this decision the floorplans were leading. The facade, for which I had ideas related to the topic and target group, had to form to these plans.

Based on these aspects I can conclude that the configuration of the facade is based on one specific spot, namely the south facade of the outer towers where multiple constructive walls hit the facade (*image 12*). Due to the importance of flexibility, each floor configuration should be exchangeable for the other variant without affecting the construction and facade, I had to deal with these connections on each level. This made me decide to make a rhythmic facade which is applicable for each floor configuration, something which related to the topic (business appearance). In the end this would not only have the advantage that each constructive wall is located behind a closed part of the facade, it also means that the floorplans itself does not have to change in case the floor configuration

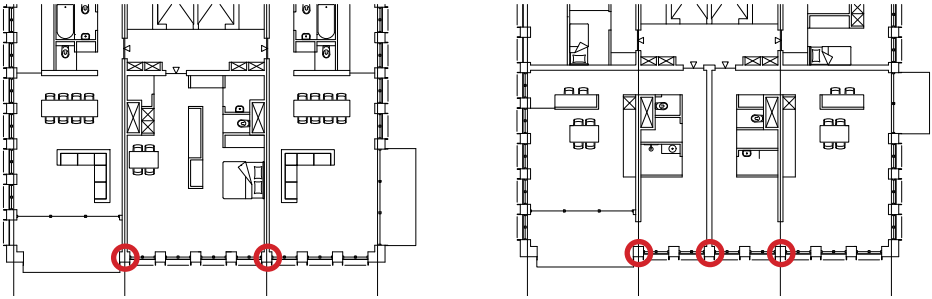


Image 12: closed facade due to construction (own image)

changes.

The rhythmic facade suited the preconditions to have flexible floorplans and a building with a business appearance well. Due to this type of facade I did not had that much options for variety anymore, the research on the facade in my case was therefore more focused on details. Nevertheless, I still had some aspects to think about. Main goal was to give the towers such an appearance so that people could recognize the building as a place where people live. Therefore I had to think about characteristics of a residential building.

One of the characteristics I could think about was the presence of balconies. Till the moment I decided that I had to do something with the visibility of the residential character of the building, each dwelling had a loggia inside the building mass as its required outside space. I chose for these loggias because I did not want to affect the building mass and its facade in relation to the surrounded buildings. Nevertheless, for the visibility of the residential program balconies were appreciated which made me decide to add them to the building.

By making sketches I tried to find out which facades were most suitable for the addition of balconies (*image 13*). Therefore I kept in mind that, in combination with adding balconies, I wanted to strengthen the deviation of the facades by using bigger window openings and another material for the specific facade.

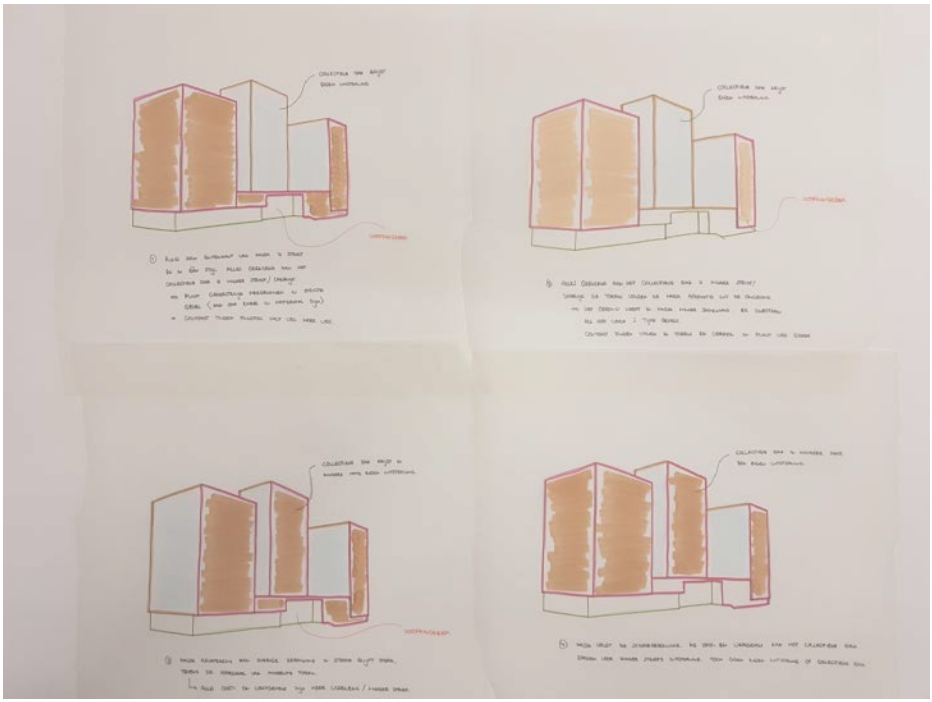


Image 13: sketches for different facades (own image)

Based on the precondition that I did not want to affect the outer lines of the building mass, I decided that I would handle the facades connected to the collective roofgarden differently. These facades namely does not affect the outer lines of the building mass but are still visible enough to give the building a residential character. To strengthen this residential character of the building even more, I finally decided to change the south facades of the outer towers as well by making most of the balconies visible there too.

To be sure that the intervention in the facade worked out well, I decided to make a physical model. With this model I in the end could have a clear overview of the whole building (*image 14*).

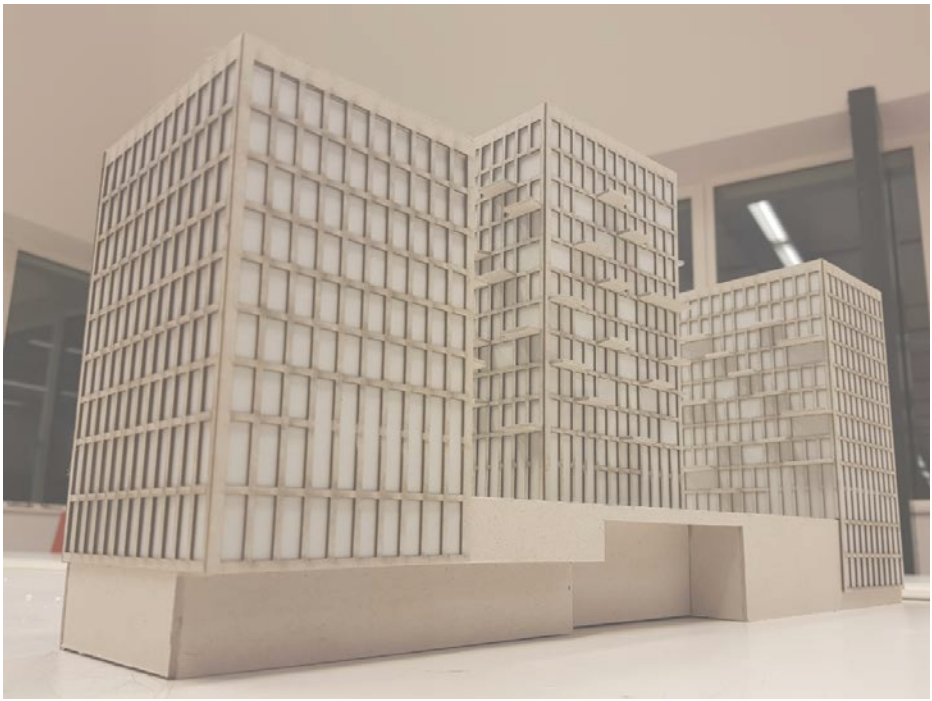


Image 14: sketches for different facades (own image)

When writing this reflection of my graduation process, I realized that there is a strong interaction between research and design which is not only present in the first part of the graduation process. Although doing research will be mostly associated with literature which was a big part of the graduation project until the P2-presentation, doing research was still present in the period after the P2. Nevertheless the type of research was different. Instead of doing literature based research, the second part of the graduation process was more design based research.

When looking at the presented timeline, I can conclude that the different research methods are strongly interrelated. Often the results of a specific research led to new questions which could be answered by using other research methods. After a while, when multiple research methods were already used, I had the ability to start with a first design which was based on formulated conclusions. Without these conclusion I was not able to start with the design process in an academic way. During the design process, the interrelation between the different research methods stayed. I went back and forth a lot to find solutions for specific design issues.

Although I strongly believe in the essence of doing research before start designing in an academic way, I think it is impossible to make a design which is completely based on academical conclusions. There will always be situations in which multiple options are possible and where a personal preference will be leading for a specific decision.

Aspect 2

the relationship between your graduation (project) topic, the studio topic (if applicable), your master track (A,U,BT,LA,MBE), and your master programme (MSc AUBS).

Goal of the graduation studio is to find an answer on the question how we want to live in cities in the future. My answer on this question is an reaction on the fact that in the future more people would live in cities combined with the limited grow possibilities for cities. For that reason it is important to combine functions with each other with the idea to use the available space in the city in an efficient way.

By relating the general topic to the topic of the studio, I decided to focus on the combination of working and living in one building because there is a shortage in both dwellings and office spaces in Amsterdam combined with the fact that the available space in the center of Amsterdam is limited. This resulted in a design in which dwellings and office spaces are combined in such a way so that it will always be possible to change the function of the building which in the end is sustainable.

In my opinion my design suits the master track and master program of the TU Delft because the design is future prove and could be seen as a reaction on problems the society is dealing with right now.

Aspect 3

Elaboration on research method and approach chosen by the student in relation to the graduation studio methodical line of inquiry, reflecting thereby upon the scientific relevance of the work.

When looking at the research approach of the Dutch Housing graduation studio I can conclude that the studio prescribed the way of doing research quiet well, especially in the first half of the graduation process until the P2-presentation. Main research methods were doing research based on literature combined with doing plan analyses, something which is a typical way of doing research at the TU Delft. The results of these research methodologies, mostly practical input, could be seen as the basis for the final design.

Besides the scientific orientated research methodologies, the studio also prescribed me to write a manifesto in which I would describe the city of the future in an exaggerated way. Although this was not scientific at all, this manifesto helped me to think about an actual topic in such a way that it gave me the ability to formulate a goal for the graduation project. Thanks to this I realized that it is not always necessary to work in a scientific way immediately, sometimes it could be useful to do something nonacademic first.

Although I did lots of research with which I tried to make my graduation process as scientific as possible, not every decision could be based on research results only. Lots of times results formed the basis for the design but the actual elaboration was in the end based on my own interpretation/preference. This gave my graduation process a more practical character.

Aspect 4

Elaboration on the relationship between the graduation project and the wider social, professional and scientific framework, touching upon the transferability of the project results.

By looking at actualities I could conclude that it is important to combine functions with each other in one building with the goal to increase the efficiency of the available space left in the city. For my graduation project I decided to design a building which consists out of a plinth/basement on which three towers are positioned.

Although my design has a good influence on the density of the city, the type of building will probably not be accepted in society immediately. Therefore the mindset of governments and inhabitants of Dutch cities should change, especially in Amsterdam which is one of the last big cities in the Netherlands without the ambition of making high rise buildings possible in the city center.

Because I chose a location which did not have buildings close to it, I made the decision to design a higher building to show the possibilities of high rise close to the city center of Amsterdam without causing immediate nuisance in the area. Nevertheless, the basic principle of my building could also be used on locations where this could be a problem. Due to the system of stacking floors, the height of the building could be changed easily. This means that the building can be customized for other locations in Amsterdam and other cities in the world.

Aspect 5

Discuss the ethical issues and dilemmas you may have encountered in (i) doing the research, (ii, if applicable) elaborating the design and (iii) potential applications of the results in practice.

The first ethical dilemma I encountered was the choice for the specific location. Because there were buildings present already, I made the decision to demolish some of these buildings. This was based on a rating of/personal opinion about the appearance of the buildings. Although I did some research on the future developments of the location which suited my plans for the location, I never really did research at the buildings itself.

A second ethical issue I had to think about was the balance between working and living in one building. How could the different functions be separated and what elements would make this separation? By doing a plan analyses I tried to find an answer on these questions. Nevertheless, this did not gave an answer on the question weather this separation would still be noticeable or not when you are living together with only colleagues in one building and when the working places are present in the residential area. Do expats appreciate it to live in a building with colleagues only? And what do they appreciate when relating to the separation of working and living? Can the working places be visible or should there be a physical and visible separation?

It was almost impossible for me to find an answer on these type of questions. Therefore I decided to react on these questions in a practical way. I tried to find answers/solutions by thinking about the use of the building instead of the preferences/opinions the users may have.