Reflection Report

Dwelling graduation studio | Minervahaven Amsterdam

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Preface

The relationship between design and research has been subject of debate for years. The importance of integrating the two became very obvious to me during my graduation. One simple but effective example showing the need for research as a foundation for design, can be seen in the typology of the building I designed.

Without sufficient knowledge of what my decisions would encompass I decided to design part of my building terrace shaped. This proved to be difficult in practice on multiple fronts. To complicate my design even further I thought it necessary or interesting to alternate between one, one and a half or two times my structural grid stacked on top of one another. In every step of the design process, since the P2 presentation, the main issues to solve were how this configuration of different dwelling types could be solved in regard to structure, ventilation, detailing etcetera. Not having research as a basis for this design decision has proved to complicate the entire process. Proving the importance of integrating research in the design process to me. However, as a stubborn designer I might still have continued on this path even if I knew what struggles were ahead, because this process has taught me a lot about what is important in the design of a residential building.

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Introduction

This reflection report is written as part of the Dutch housing graduation studio at the faculty of Architecture and the Built Environment at the TU Delft. The main issue raised in the graduation studio is what the future of dwelling should look like in the Netherlands. 'How do we want to live and what kind of buildings do we need to allow for that?' My design tries to answer this question for modern families in the city of Amsterdam. Contributing to an inclusive, future proof society.

The TU Delft is an academic institution focussed on providing scientific education and conducting scientific research. Accordingly, research is an important part of the education at the faculty of Architecture and the Built Environment. Research is seen as the basis of a deliberate, coherent design, research can justify design decisions.

In the Dutch housing graduation studio, I have used research to investigate how to design a building for modern families in the city of Amsterdam. In this report I will reflect on the research methods used for the design of my building.
The first part of this report is my reflection on the relationship between research and design and to what extent this research is scientific.

The second part of this reflection summarises my personal method of research. Here I will elaborate on the various methods of research I used in the Dutch housing graduation studio. I will also reflect on what could have been explored more or differently in this part of the reflection. To improve my method of research for future use.

Part tree is a retrospective on my personal growth relative to research and design. I will elaborate on a failed design studio and what changes this triggered in my view on research and design. These changes will be compared to the method of research in the Dutch housing graduation studio.

The final part of the reflection report will answer the five reflection aspects provided by the faculty of Architecture and the Built Environment. These aspects try to place my graduation project and research approach in the wider context of my education at the TU Delft, transferability of knowledge and possible ethical dilemmas encountered in the design process.

Scientificity in the design process

In the field of design there is a debate about how design and research relate to one another. Is it possible to see design as a form of research, does research inform a design or are research and design separate entities? Groat & Wang (2013) argue: 'design and research constitute neither polar opposites nor equivalent domains of activity. Rather, the relationship between the two is far more nuanced, complementary, and robust.' According to this statement both research and design are able to influence one another. I believe this is visible in the philosophy of the dwelling graduation studio, where the first semester is spent trying to comprehend your design problem and target group. If done correctly, this knowledge underpins and justifies the design created in the second semester, demonstrating the relationship between design and research in practice.

However, could the research done in the graduation studio be categorized as scientific research? Van der Voordt describes four characteristics for research to be scientific. According to van der Voordt (1998) scientific research is conducted if the methodology of research is formulated in advance, mapping out the steps needed to answer the research question. The research should be done in a methodical manner.

The graduation research in basis adheres to the characteristics as described by van der Voordt. In the first weeks I formulated a topic based on a problem. This included research questions and the different types of research needed to understand the problem at hand and the target group. However, a clear methodology within these different types of research was absent. The gathering of valuable information happened mainly unstructured and through stumbling upon source after source which could provide information for my target group research.

A possible exception can be made for the plan analysis, where a methodology had to be developed to analyse multiple projects on identical aspects. However, on other characteristics of scientificity the plan analysis could not live up to the standards set by van der Voordt.

In scientific research personal views and value assessments of the results should be excluded, making it possible to reproduce the results of the research. If research is carried out according to the described research method the same results should be achieved by different scientists when conducting the same experiment. In the creative, design field this is usually not the case. By looking at the submissions for an architectural tender alone, you see that architects, who start with the same design brief, deliver a completely different design. Personal views and preferences seem to have a big influence on the final result. Complete objectivity therefore seems impossible in a process where research and design influence each other.

As mentioned before, the plan analysis is based on a research question and it is carried out according to a specific method, but it fails to be objective. Van der Voordt (1998) describes a danger for interviewing participants which is similar to the danger presented in the plan analysis: 'self-selection compromises the representativeness of the research results.' By selecting projects I deemed interesting for my target group, I inherently compromised the objectivity of my results. Similarities between projects are inevitable if they all relate to the same target group. As Pierijn, my tutor, mentioned before in relation to interpreting research results: 'aren't you torturing the data, until the data shows what you need it to show?' This symbolises the plan analysis for me. Even though they were interesting to investigate and very useful in providing practical input in the design process, the objectivity of the results can be challenged. Interpreting data is different from interpreting an analytical drawing. The core principles of the drawing may seem apparent, but a drawing is not the same as quantitative research and therefore it is impossible to make it verifiable.

It is virtually impossible for others to recreate the exact same results by themselves, this is applicable to the plan analysis. Even though there was an extensive discussion on how your research should be drawn, people still need help interpreting your drawing to come to the same conclusions. This shows even though the plan analysis in theory is scientific, in practice this is hardly achieved. Even though my research might not be scientific, it is still a valuable source of information provided that the lack of scientificity is acknowledged and the fact that other sources might contradict my findings.

Literature

From the start of the graduation studio, reading has been one of the most influential sources of knowledge. This started immediately after the first meeting, by trying to find an interesting topic to research for my graduation year. For me there was no clear method for finding an interesting topic in this phase of the project. The first weeks were spent trying to absorb as much information as possible on how people dwell and what problems are imminent in our current society. Using newspapers and architecture websites as a main resource of information. With this input I tried to find a problem or target group which fit with my fascinations in the design field. In the previous semester I started to recognise a pattern in the design projects I felt passionate for. All these projects had a large social component built into the design brief. This meant that from the start I was looking for an assignment where social issues were at hand.

Image 1 | News items concerning modern families

My interest was peaked by a couple of articles I found online. These articles showed the increasing number of single parents in cities like Amsterdam. It also showed their vulnerable position on the housing market. This is especially problematic in Amsterdam where the property prizes are skyrocketing.

I decided to research this target group more precisely to find out if this might be an interesting target group for my graduation design. The research in this phase shifted to literature research. Gathering data about the target group and finding out more about what research had already been done. During this phase of the research I found that my target group is part of a larger vulnerable target group: the modern family. A relatively new type of family that is often overlooked on the housing market.

The issues of the modern family seemed intriguing and therefore I chose this target group as the subject of my graduation, focussing mainly on the modern families originating in broken relationships. Studying what scientific research had been done to create a theoretical framework for my design.

I quickly found out that the focus of research on modern families or families in general is on children in the built environment. My goal is to design a building where not only the kids thrive, but also the parents. Parents who already struggle to balance work, a social life and the care for their children. In trying to keep a focus on the parents in my research, I lost track of what children need when they grow up. After the P2 I realised there was still a lot that could be researched to create a more complete story for my design. In my search for balance I started reading about children in the built environment which led to direct input for my design.

Image 2 | Kinderen wonen ook: suggesties ter verbetering van een kindvergeten woonmilieu | Own image

Reflecting on the research I have done in the graduation studio I could have improved on multiple fronts:

What I could have improved the most is being more structured. As described before I lost track of part of my assignment, how to design for children in the research done for P2. If the research had been done more structured I would have been able to keep better track of what I researched and why it is important for my target group, instead of trying to find as much information as possible and losing part of the coherence of my story in the process. At the time of researching literature for the P2 I assumed what I was doing was close to scientific research. But as van der Voordt describes, a clear method or structure should be applied. Looking back at the literature studies I did, I can see that this structure was missing and therefore the research cannot be seen as scientific research. However, I am convinced that (parts of) the same result could be reproduced if someone else were to investigate dwelling for modern families.

In my experience there is a big difference between how literature studies are incorporated during the first and second semester of the graduation studio. The main focus of the first semester is the research of the target group and the problem at hand. A lot of time is spent gathering information to further specify your design brief. After the P2 this research serves as input for the design, but mainly as a benchmark. Looking back at the research and testing my design ideas on the theories of these other researchers. In this phase of the graduation, literature is not the main source of information. It transitions into an informative tool, to underpin certain design decisions. Groat & Wang (2013) describe this process: 'for those whose primary purpose is a physical design outcome, research is likely to be of a more episodic nature, specific to questions arising across different phases of the design process.'

Precedent

A lot of knowledge used by designers is embedded in the world around us. This knowledge is stored in our frame of reference. Patterns from this frame of reference are analysed, used and transformed to create new ideas. (van Dooren, 2014)

The plan analysis I did for my research report is an example of analysing existing buildings to gain knowledge or new ideas for the design process. In this process I analysed four suitable projects, on the same characteristics. I tried to find the design tools used to create comfort, social security/supervision and spaces to play. By analysing all projects using the same method, it was possible for me to extract different design approaches and use these as design tools, to come up with the most suitable solution or a combination of solutions for my target group.

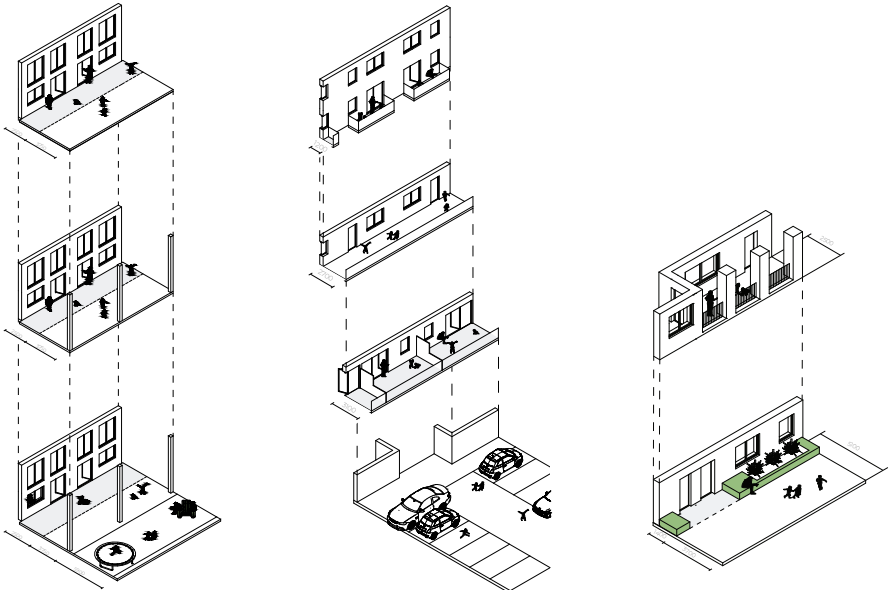

Image 3 | Analysis of comfort and circulation system | Own image

However, as mentioned before, the scientificity of this method is questionable, because the lack of objectivity has influenced the results. Nevertheless, these design tools formed my frame of reference and have helped shape my design.

I subsequently used these projects as references on design topics I hadn't previously analysed. Especially Wisselspoor by URA was an interesting precedent to look at. It showed to me the diversity in dwelling types needed to facilitate different types of families in one building. This was very useful for me in deciding what different dwelling types were needed for modern families, which is a very diverse target group in its own.

After the plan analysis I kept looking at precedent to inform my design decisions. Even though I used these cases in a less structured way, looking at examples often provided input for the struggles I had in my own design. During the entire design process, I have collected reference images on Pinterest. This method is the most effective if you're searching with a specific goal in mind, otherwise you will get lost in a stream of interesting examples, without gaining any practical knowledge to be used in your personal project.

Image 4 | Personal Pinterest page | Own image

In the collection of these references it is visible that a design crystalizes over time. The chronological order of your Pins shows the direction your ideas develop in. At the start of the collection you see a lot of different ideas, which slowly transform into one coherent direction, a direction visible in the end result of my design.

Image 5 | Projects by JURY! compared to my design. Certain design elements and materials can be traced back to this part of my frame of reference.

Images by JURY! and personal image

Every designers' frame of reference is very personal. It is based on your experiences, what you have seen and studied. For the last two years I found myself in the unique situation where I am able to work one day a week at an architecture firm, JURY!. The projects I have worked on in this context form a unique frame of reference. This is something I recognise in parts of my own design. For example, the use of material, types of openings or the highlighting of the entrance of a dwelling is something I unconsciously have picked up in my time at the firm. This reaffirms the notion of Elise van Dooren (2014), designers use their personal frame of reference as a design tool.

Location research

I believe analysing a building site is one of the most important things an architect should do at the beginning of a design project. Finding motives in the urban plan allows an architect to anchor the project on the site.

In the graduation studio, we had to design the urban context our building was going to be designed for. This minimises the effect of location studies, because there is not yet an actual site to anchor your building to. However, to come up with an urban design, the existing location, Minervahaven had to be analysed. During the first day of our graduation year our group visited Minervahaven. We walked around the site which still has to be transformed from an industrial site into a mixed neighbourhood. I tried to capture my first impression by taking a lot of pictures. This is a very subjective way of analysing the environment. There is no method or clear idea behind what strikes your interest during a site visit. However, I do think it is important to visit the site, because the things you notice on site could be limiting for your design and should therefore be incorporated in the assignment.

To realise a more objective view on the location, I made analytical drawings of the site and studied historical maps. These analyses were done of the existing situation and provided the foundation of the urban plan proposal. This proposal was my actual design site, with its own set of characteristics.
To get a grip on the site I analysed the direct surroundings of my building. Looking at patterns in the surroundings to adhere to or to deviate from. However, the boundaries set for the master plan left a lot of room for interpreting the building mass I was going to design. Reflecting on the last semesters, this appears to be the point where I started to struggle with how my building should be shaped.

The shape of the building before P2 was based around my VR research combined with location research. After P2 I came to realise this was designed from one point of view, the street façade. Although the façade opening to the park is the facade characteristic for my design proposal. This prompted me to redevelop my building shape, to emphasise the characteristic facade of my building. Focussing on integrating the design in the complete context, instead of focussing on one specific part. Therefore, I reanalysed the surroundings of my building, what motives where encompassed in the urban plan. These motives were used in the model studies I did afterwards to reshape my building volume.

Physical models

Creating physical models is something I usually try to avoid during the design process. Not because I don't see the value of studying physical models, but because it doesn't fit my style of working. I tend to be too precise in creating the models, which defeats the purpose of using them as study material. Making them very precise does not help in making quick studies of different design options.

In working towards the preliminary design for P2 I used the VR course in a way similar to how one would use a physical model. I studied different volumes and the effect these volumes had on their immediate surroundings. VR allowed me to see at eye level what the effects would be, something which is difficult with actual physical models. However, you miss the tangibility of a physical model in a VR model. You can easily manipulate physical models by hand while discussing them, something which is more difficult in VR.

After the feedback of P2 and some time to think during the summer break, I concluded my building shape should be improved to make the mass more coherent. I was also not happy with the architecture the shape seemed to ask for. It leaned toward classical architecture due to the symmetry in the building shape. These were things I wanted to improve to be able to convincingly continue the design.
However, I couldn't figure out how to go about the changes I needed. I tried sketching new shapes or making different alternative digital models. But none of these measures seemed to get a satisfactory result. Therefore, my tutor suggested studying on what was needed for my design with physical models. I created a framework with rules where my alternatives had to adhere to and started making different models to test different design directions.

In the next tutoring session, my tutor and I could easily discuss what my thoughts were on the different alternatives, using the foam models as a starting point for our discussion. We also started taking apart and changing some models during our discussion, showing how quickly some design ideas can be tested. The value of researching through physical models has become more clear to me during this process. However, I ended op using it only for the form of the building and stopped after this. This is something where I can still improve my method of research. I think I could have made more use of the physical model as a research tool by transforming to bigger scales to research the spatial cohesion within the building and not just for the building as a whole.

Image 6 | Discussing ideas using a physical model allows for manipulating the subject you are discussing | Own image

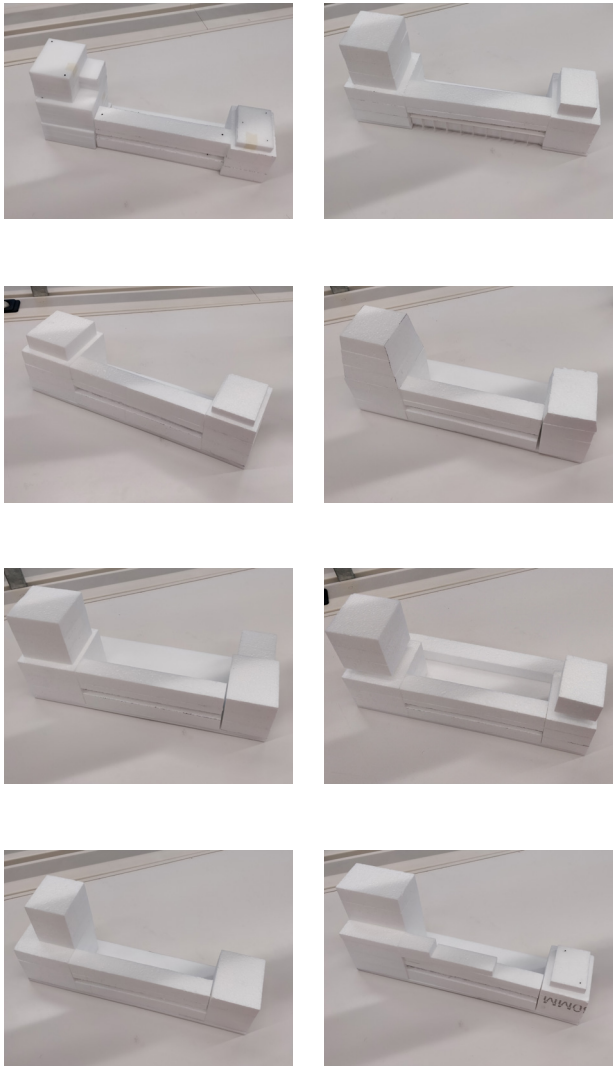

Image 7 | Mass study in physical models | Own image

Digital models

Researching your design using digital models is the research tool I use most frequently in any design process. Digital models can be helpful in all phases of the design process, because they allow for researching your design on any scale necessary. The most valuable input digital models bring is the instantaneous realisation of the consequences 2d design ideas have in 3d space.

I used this form of research a lot, trying to find the shape of my building. I could have researched this with the help of physical models but working in 3d allowed me to test a wide variety of ideas very quickly. Furthermore, I used digital models for studying internal relationships in the building, façade ideas, materiality and all other design decisions in between. As mentioned before it is my favourite tool to use, because it is a quick and simple method to test your ideas.

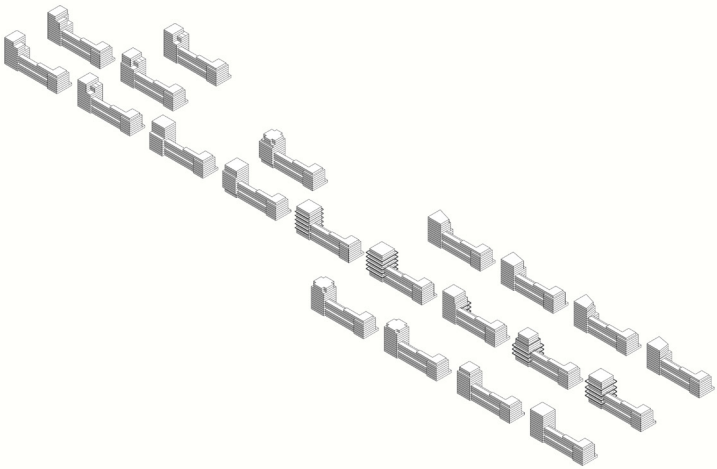

Image 8 | Mass study using digital models | Own image

However, there is a downside to using digital models. Even though you can easily see the effects of the decisions you make in 3d, it can be difficult to compare different alternatives to eachother. One way I tried to circumvent this problem is by exporting the same viewport for the different models and comparing the effect of the intervention.

Another risk, at least for me personally, is being distracted by (irrelevant) details. At a certain moment, when more and more detail is added to the model, it becomes difficult not to get lost in trying to model everything perfectly. This distracts the focus of your research from the main design questions you are trying to answer. Therefore, I can conclude that digital models as a design tool is best used as abstract as possible, figuring out the specifics of one element at a time. If the design has passed this phase it increasingly becomes a tool for representation instead of research.

Image 9 | Facade study using digital models | Own image

Sketching

Sketching is another valuable instrument for architects, and it is one of the tools I used the most during my design process, in association with digital models. My desk has been constantly cluttered with sketches throughout the semester, from scribbling ideas and testing different points of approach. I used sketches to test different ideas on all different subjects of the design. From floorplans and façades to conceptual schemes or the technical details. For me these sketches work as a support system in combination with CAD or other programs, to figure out my ideas more precisely.

However, I see a missed opportunity in the way I use sketches as a tool for research and design. Something I could have improved on, is trying to show my sketches early on to my tutors. One of the things I have difficulty with is showing unfinished products to people who can judge me and my ideas. This sometimes results in me not getting enough feedback during a tutoring session or it can seem that I do not get enough done in a week. This is something I can still grow in as a designer. Not everything you do needs to be perfect, some imperfections can lead to the best design ideas.

Image 10 | Personal sketches | Own image

Retrospective

I think it would be interesting at the end of this reflection to compare my views on design and research to my position during my Msc2 studio: Second Youth. A studio focussed on research, a studio I failed. For the sake of this reflection I will focus on the relationship between research and design and disregard other issues I ran into during this course.

The goal of the studio was to create an innovative concept for housing elderly and demented people. I thought creating an innovative design meant disregarding what has already been done: creating something from nothing. I mostly disregarded earlier ideas, since my idea should be new and what already exists is not new or innovative. I did not see the value of building further on what was already there. The research I tried to do was unstructured because there was no clear vision for my design. This translated into researching everything the tutors suggested, switching from one perspective to the other. Without a method and without a clear theoretical framework to assess the things I found, this research was fruitless. Looking back on this period using the framework of van der Voordt, I can now see there was nothing scientific about this process. This was probably the main reason I failed this course. Not because I don't know how to design and not because I don't know how to do research, but combining the two in a scientific manner was what was lacking.

After failing this studio, I knew my process had to change if I were to successfully complete my next design assignments. The studio I chose was a dwelling studio in IJburg. The structured organization of a dwelling studio helped me to understand necessary steps in a design process. I started making progress towards a more balanced relationship between research and design.

Using data to justify your design topic, valuing precedent as a starting point for design decisions and realizing design is about combining these different techniques to achieve the best result possible. It does not mean I never struggle with balancing the different types of research. Still, I can see the progress I made during this semester.

This development continued during my graduation year. Underpinning every decision with research is something which is very important in this studio. From the problem statement, to the configuration of the floor plan and every step in-between. Working with this method for a year has made me realise the importance of well-informed design decisions. There will always be some decisions made on intuition during a creative process, but I do not longer see research as a means to an end. Research is an invaluable explanation for design decisions made during the entire process.

Aspects

Aspect 1
the relationship between research and design.

This reflection report has focussed on the relationship between research and design. Both in general and in my graduation project. Although it might not always have been scientific, research has informed the design decisions I made. It has shown me the importance of underpinning your design with research. Tastes may differ, but if you can provide a substantiated explanation for decisions made, the discussions will be about essence of the design instead of the appearance.

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 program (MSc AUBS).

The Dutch housing graduation studio challenges us to think about the future of dwelling in the Netherlands. 'How do we want to live and what kind of buildings do we need to allow for that?' are the essential questions of the studio.

Designing for families in the city is an important subject, because families improve the quality of life in the city on economic and social basis. Keeping families in the city of the future is therefore a very relevant subject. My project, a design for modern families, responds to the question 'how do we want to live?' by acknowledging the importance of this vulnerable target group for the city. Providing suitable dwellings for this target group keeps them in the city, improving the overall quality of life in the city itself. I have tried to come up with a design scheme suitable for the families of the future. Creating suitable housing for a relatively new target group requires innovative and sustainable solutions. I believe this topic suits the master track and probably even the TU Delft in general, as both are constantly exploring the possibilities of the future.

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.

The research method of the Dutch housing studio is very structured. Especially in the first semester, where the foundation for the design is laid, focussing on two main forms of research: literature research and plan analysis. Other forms of research are encouraged, to deepen the understanding of your graduation topic. Mainly in the second semester there is room to explore these personal, preferred methods of research. Methods which are explained in this reflection.

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.

My graduation project focusses on modern families leaving the city of Amsterdam. Families leaving is a trend visible in most larger cities. Families are very valuable for the city, as they provide economic and social value to the neighbourhoods they dwell in. Providing suitable housing for these families is essential to keep them in the city.
The target group and its specific wishes and needs was the main focus of my research. Therefore, in the design I tried to provide these specific needs to keep these families in the city. Important factors are social contact and the practical support. These are integrated into the design from the scale of the dwelling, to the circulation system and supportive amenities. Although the location of the building plays an important role in the appearance of the building, the underlying principles in the access system, the organization and dwelling types are largely independent of the location and can be seen as transferable knowledge: transferable to a different location in a different city, to form the basis for a new design.

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 biggest ethical dilemma I encountered during the design process is directly related to the target group I chose to design for. I chose to design for modern families. Does this inherently mean traditional families are not welcome in the building? If traditional families are welcome, what is to prevent them from expelling modern families completely? Finding an answer for this dilemma is not only a matter of what is designed for this target group, but also a matter of how the building is managed when it is in use. Is it ethical to rent out mainly to one specific target group, excluding traditional families in the process? Or is it more ethical to wait for a natural balance? Personally, I am convinced there should be regulations, to prevent this vulnerable target group from being excluded from the housing market as they are today. Modern families have different needs with regard to their living environment. They need more practical support and they desire a social network of like-minded. A building specifically designed for this support cannot be found anywhere in Amsterdam and therefore this building, a building which provides in their needs, should be catered towards these modern families, despite the exclusion of the traditional family. However, in practice this may be unattainable. What are the criteria future residents will be tested on and how distinct can these criteria be made? For example, is a single-parent by choice allowed in this building or not? A single-parent by choice is often more successful, therefore they are financially less dependent allowing them to buy a bigger house. Additionally, they are in less need of a network of like-minded. However, they might need the practical support offered in the building, to balance work and taking care of their children. Which criterium is decisive in these cases? Where do you draw the line of who is allowed to live in this building and who is not?

Another ethical dilemma I encountered is the affordability of the dwellings. There is something diabolical in trying to design affordable dwellings for families. How do you keep a dwelling affordable for a vulnerable target group in cities like Amsterdam where dwelling prices skyrocket? Not only the design of the dwelling and building influence these prices. The dilemma was mainly visible in the size of the dwelling. To create dwellings suitable for a family a certain size is essential, which influences the dwelling prizes. Also external factors like location and prizes of similar housing stock influence the price of the dwelling. How do I present my design as attainable for my target group, if as a designer I cannot control all factors relevant to the affordability of the dwellings. One of the solutions I applied was to diversify the dwelling types and sizes inside of the building, to make sure the more vulnerable modern families are able to afford a dwelling.

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Images:

Image 1:
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https://www.parool.nl/nieuws/steeds-meer-kinderen-niet-bij-2-eigen-ouders~bde68a71/

Image 5:
Herenhuis 010: *https://www.juryarchitecture.com/project/herenhuis-010/*

Vila Heerhugowaard: *https://www.juryarchitecture.com/jury-zet-voet-aan-de-grond-in-noord-holland-en-ontwerpt-duurzame-moderne-villa/*