

# MSC 3 Dutch Dwelling

Between standard and ideals  
the future of housing in the Netherlands

## **“Kinderen van de rekening”** the children who pay the price

Single Parents

Co-Parents

Patchwork-parents



## Between standard and ideals

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all images in the reflection booklet are produced by the author,  
unless stated otherwise

## Preface

This report is part of my graduation project for the studio: Dwelling Dutch Housing, Minervahaven Amsterdam. The project "Children who pay the price" focuses on the vulnerable modern families in the city of Amsterdam. During the project which started in February 2019 I organised my design and research around the question, How can architecture form a living environment for the modern families in the urban setting of Amsterdam in which they are supported in their dynamic life? In order to come up with an answer to this question multiple forms of research are conducted. These forms know a brought scope from scientific to subjective research. In this booklet I try to reflect of these different forms of research, how the forms contributed to the project, how scientific and academic these forms are and what I could have done differently to give a better support to the design.

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## Introduction

The core of education on the TU Delft is to execute academic and scientific research. When done properly, research and its outcomes form a foundation which supports the choices of the design practice. Scientific research has the requirements to be methodical, objective, controllable and scientifically relevant (Voordt, 1998). Where the objectivity and relevance of architectural design are open to discussion, methods and controllability are embedded in the research of this graduation project. Good research and reflection make it possible to not only look back on the design but also to defend and clarify the design choices.

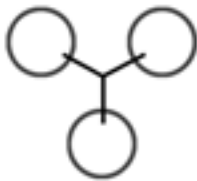
In the first part of this reflection, I will describe the relation between architectural design and research and how this is connected to the five requirements of scientific research as mentioned in the previous paragraph. The question that rises is if all types of research may be considered scientific or rather academic and what the impact is on the design practice.

In the second part, I explicate the different types of research executed. In line with the three types of research as will be described in the first part, I will reflect on the approach and outcomes of the research types. This will not limit to the used types of research but also to the opportunities I missed and how different approaches could have contributed to broaden the foundations of the design.

Part three will conclude the findings of the previous parts and my overall development during my bachelor and master on the faculty of architecture.

I wrote this report intentionally in non-chronological order of the design process, but rather by looking separately at different types of research. During the process multiple types of research are conducted at different moments and therefore cannot be bound to specific moments in time. However, the way these types interact

is shortly discussed in part one of the report. The way of using different types of research can be divided in multidisciplinary, interdisciplinary and transdisciplinary.



multidisciplinary



interdisciplinar



transdisciplinar

The tighter the connection and the more overlaps between the different types of research the harder it is to distinguish individual types but the better all scales of the project will be integrated in the design (Erich, 1970). During the bachelor and master on the faculty of architecture the overall idea is that you grow from a multidisciplinary to a transdisciplinary approach. A multidisciplinary approach asks for clear lists of work and a chronological approach. A transdisciplinary approach uses all scales of drawings and types of research as the same time. to come up with integral design solutions. The disadvantage of this approach is the difficulty of reflection. Besides that it is harder to keep control on the design and research. However, a transdisciplinary approach is needed for innovation and creative new ideas (Erich, 1970).

Besides the reflection on the collaboration between research and design the graduation plan asks for four other reflections. These four other reflections are shortly discussed at the end of this document.



## Scientificness of academic research

As mentioned in the introduction, research lies at the base of the master's degree of the University of Delft. Research therefore returns in multiple aspects and scales of the design process. However, in the overall description scientific research is coupled to the technical aspect of the university. At the same time architecture is described as a design study rather than a technical one. This can lead to the belief that architecture is rather a subjective study than a scientifically objective study. Where scientific research is looking for the truth, architecture is looking for the best solution in a specific situation. Architecture therefore asks for a different type of research which is sometimes more academic than scientific.

However, one of the requirements of the master's degree of architecture is the ability to conduct scientific research. Therefore we as upcoming architects need to explain how and if we are able to meet this requirement and how we can justify the choices we have made during the design process by looking back on the executed research. Architecture, in contrast to other studies can, to a lower extent, execute experiments and handle negative results. In comparison, medical studies know different scales of experiments and learn from them before testing a medicine on human beings. However, architects miss these smaller experiments and carry the responsibility of large scale investments and social welfare. Therefore research is even more important to investigate the requirements and potential truths about the foundations of a design. Bad research does not only lead to a waste of time but also to a waste of materials and investments. The crux in the notion of research is that where scientists do research, just one outcome can be the truth. If the outcome is different one of the scientists must be wrong. In the case of architects the outcome will, in almost all cases, be different even if the design is based on the same research. One of the reasons in my opinion is the difference in creativity and intuition

of designers. In its most simplistic form intuition can be seen as the opposite of scientific research. This sentence of intuition is based on the believe that intuition is formed out of unavailable or shrouded information (Isenman,1997). Groeneveld (Groeneveld, 2006) defines two types of intuition in its thesis. The first type is intuition as a direct internal and personal observation. In this sense intuition is the opposite of rational thinking. However with its second type Isenman works towards an understanding of intuition and its importance in scientific endeavor. According to Isenman intuition is not formed out of self evidence and is based on obtained knowledge gained in the past, conscious or unconscious (Isenman, L. D. (1997). His believe of obtained knowledge is supported by "van Dooren as a key element of designing (Dooren, 2013). Therefore intuition is closer related to scientific research than we may think. Every person has his or her own frame of reference, the only obstruction is that this frame of reference cannot be broke open that easuly and cannot objectively be shared with others. Intuition itself plays an important role in all facets of the scientific inquiry. It orients the researcher, provides him or her with a fruitful conceptualization of the problem, supplying a productive method of attack and reconfigure raw data into a meaningful pattern (Isenman, L. D. (1997). Groeneveld lateron in his thesis support this statement by explaining that intuition goes futher that structualising information but makes it possible to synthetic activities (groeneveld, 2006). A tool that goes hand in hand with a transdisciplinary work proces.

However, in the eyes of scientific research, intuition is neglected or bent towards a mechanism or rational thinking, since it doesn't follow the requirement of scientific research itself. But by reflecting back on the different aspects of the design progress, the shrouded information can be opened and can form the bridge between objective research, rational thinking and the different outcome of designs. Executed well both the design and research touches the

aspects of scientific research as described by the following terms: Methodical, controllable and scientifically relevant research. Due to the difference in the frame of reference objectivity and transparency can be questioned, but forms in my eyes the beauty of architecture. The difference in the frame of reference contributes to a wider range of architectural styles and designs. And since not a single person is the same, not a single design will fit every individual. Therefore "good" architecture will not be fully objective because differences in creativity open new scopes of research and designs.

The balance between creativity, intuition and scientific knowledge describe the three types of research, fundamental research, applied research and development research, used during the graduation project.

Fundamental research seeks for the universal truth by using literature and linking this to raw data of demographic statistics. The applied research uses intuition to turn the raw information of the fundamental design into physical aspects to act like problem solving tools for the raised problem. The key element between the tools and the problems is how Groeneveld describes it "the eureka moment" (groeneveld, 2006). A moment in the unconscious mind which develops out of the synergy between ideas, knowledge, reference, experience and all other type of obtained knowledge. The development research acts like a continuous reflection on the tools of applied science.

The research itself can eventually be tested by carrying out the design and let it be analysed. In my opinion this cycle can eventually broaden and strengthen the foundation of intuition to come up with better tools to face future design problems.



# Types of research



## fundamental research

### Readings and literature

The graduation project started with a research into a specific topic. Where this sounds relatively easy and straight forward, it is a decision that defines the entire progress of the graduation track. Coming up with a good topic casts the foundation for the design and research. During the first weeks I didn't have a strong suggestion where to aim for. In order to come up with a good topic I looked on a couple of news websites to find a topic relevant to the changes in the society of the Netherlands and Amsterdam itself.

From the newspapers I selected two main topics from which to choose. Both families and elderly are target groups threatened by the rapidly changing city of Amsterdam. However both topics were rather general so I looked further inside newspapers to come up with a related social problem. For the families this ended up with the modern aspect of them and for the elderly with dementia. Where both aspects were relevant, I wanted to stick to a topic that also influences and defines my personal everyday life. Because of the personal attachment to modern families it became a topic which kept my interest during the entire process. If I did stick to a topic with a less personal attachment, maybe, I wasn't able to relate it to myself and to keep on asking if I wanted to live inside the design I was making.

After the selection of the topic I started to read into scientific documents to come up with a better understanding of the topic and the broader relevance in society. The research raised more questions during the research than that it actually solved. More and more social problems came into view and showed the complexity of this group and the difficulty of implementing this group into society. The research went faster than I had in mind but missed the overall connection. Just at the end when the architectural relevance came into view, more and more pieces left into place. By using some strong architectural interventions and personal back stories I was able to combine the different social factors into keywords like social

## Groeiende groep alleenstaande ouders wil meer steun

## Gezinnen met jonge kinderen verlaten Amsterdam

Menu [nrc.nl](#) 

### Ouderen krijgen thuis niet de zorg die ze nodig hebben

Onderzoek

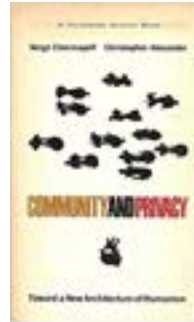
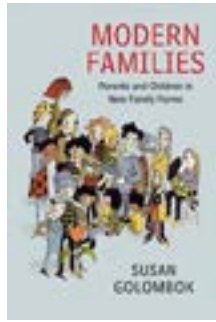
Het aantal ouderen dat thuis woont neemt sterk toe. Het SCP concludeert dat grote problemen dreigen als de zorg voor deze mensen niet snel wordt opgebouwd.



support, social interaction and diversity in family composition. I tried to reach out to experts in the field of family coaching and mediation. However this turned out to be a social vulnerable and privacy vulnerable profession. If I was able to get in touch with them it would have added more nuances and provided a better understanding of how the social changes influences children and how this could be transformed into a design. They advised some literature but couldn't help me further. The social research papers they advised were hard to translate into clear problems without creating a stereotype of the target group. With this in mind not the problems but the happiness of children became important to counter the negative vibe around this target group.

Later in the project I reached out to both the architects of the Maasbode, ANA and BPD which offered documents related to modern families and how they translated the social aspects into architectural aspects. In contrast to the papers these designs saw potential in the problems rather than threats. Not only did these documents help to turn the aspects into architectural tools but also lay the basics of the kick-start design previous of the actual design. It would also have helped to create smaller summaries of red documents to be more efficient in combining different sources and literature.

Where fundamental research on itself is a scientific type of research it is important to note the nuance of the objective value. As designers we look into the data to find problems which we need to solve. In this sense I'm not objective to the subject. I see problems and can't accept that things are as they are. A good example is that I don't accept that families move out of the city, simply because there are also reasons to stay. Without being subjective it will be impossible to trigger the intuition to come up with the tools needed during applied research.



selection of used literature

## Personal background

As stated before in the reflection on scientific research, going from fundamental research to applied research is supported by intuition. In order to make this step it is useful but also a threat to be personally attached to the topic. It makes it able to relate to the topics and to understand what the problems are the target group need to face. But besides the problems it also limits the scope. The personal truth can be seen as overall truth rather than a personal occasion. The "luck" I had is that I just rolled recently in this modern family composition and was fairly unaware of the circumstances. At certain moments the research went ahead of my personal life and showed situations I still had to encounter. In that sense the background did not only support the research but the research did also support my social life. It goes beyond the design and the research but where I saw the struggles out of the documentary of Zembla as someone else's struggles, they turned out to become also problems inside my family. Data can be harsh and abstract but emotions about housing and each other leads to tensions impossible to understand without being involved in the situation.

### Discussion:

The fundamental research phase is a relatively transparent, objective and controllable phase. However, the research is limited to a few main topics due to the limited time. This leads to simplification of topics and prevents an inter- or transdisciplinary approach. Due to the lack of time it was impossible to combine the literal research with an intermingling of interviews and surveys. During the research I tried to keep reflecting on the research by using multiple documentaries like the one of Zembla to turn the theoretical approach of literature to a more socially embedded understanding. This socially embedding marks the deviation from scientific objectivity.



## applied research

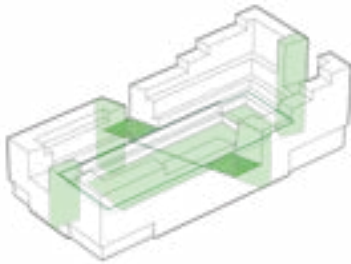
### case studies

The fundamental research laid the basics of the applied research which mainly exists of the case studies. These case studies function as translations between problems and design tools. In order to limit down the scope of the case studies I only focussed on making a space designed for all different age groups of children. The case studies of Babel, the Family, Justus van Effen en the Malings all contributed in their own way to new insights for the design. The research is done by defining the outsid spaces compared to the distance to the dwelling and the visual relation between outside space and dwelling. In order to make these drawings I had to make use of technical drawings rather than subjective impressions. However, still this kind of research is debatable. In some way intuition takes the overhand in these studies. It means you can't fully be sure your findings are true of rather an imagination of what you want to take out of the studies. Without reflection towards the designer or the user you can't be sure about your findings. On the other hand I selected projects which contain in one way or another new design solutions. In this way I can argue that these solutions have in some way a positive outcome, else they wouldn't have been selected as "award winning" or "architectural" projects.

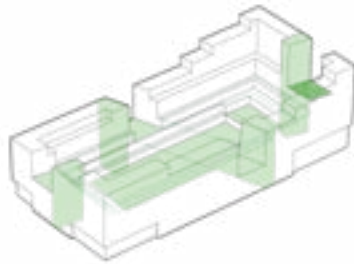
It would have contributed to also look into projects which are the opposite of these award winning projects. By looking in the projects which failed you can extract tools which were left out, tools which did not fail or if certain expectations are not architectural but rather social.

Still the outcomes of the case studies contributed visually in my graduation design. A good example of one of these outcomes is the design of different playspaces divided over all the scales of the project. This outcome is not limited to the case studies but also supported by the outcome of the fundamental research in playspaces and the development of children of different ages. In my

design every dwelling got a direct connection to a playspace as in Babel, every level contributes to the organisation of the building as in the Malings and the spaces gradually grown in size and distance as in Justus van Effenblok. Also the stepped section of Babel is clearly visible in the section of my design. A next step in case studies would be to visit all these projects and to spend more time in there then taking some pictures. However this is not possible during the limited research time of the course.



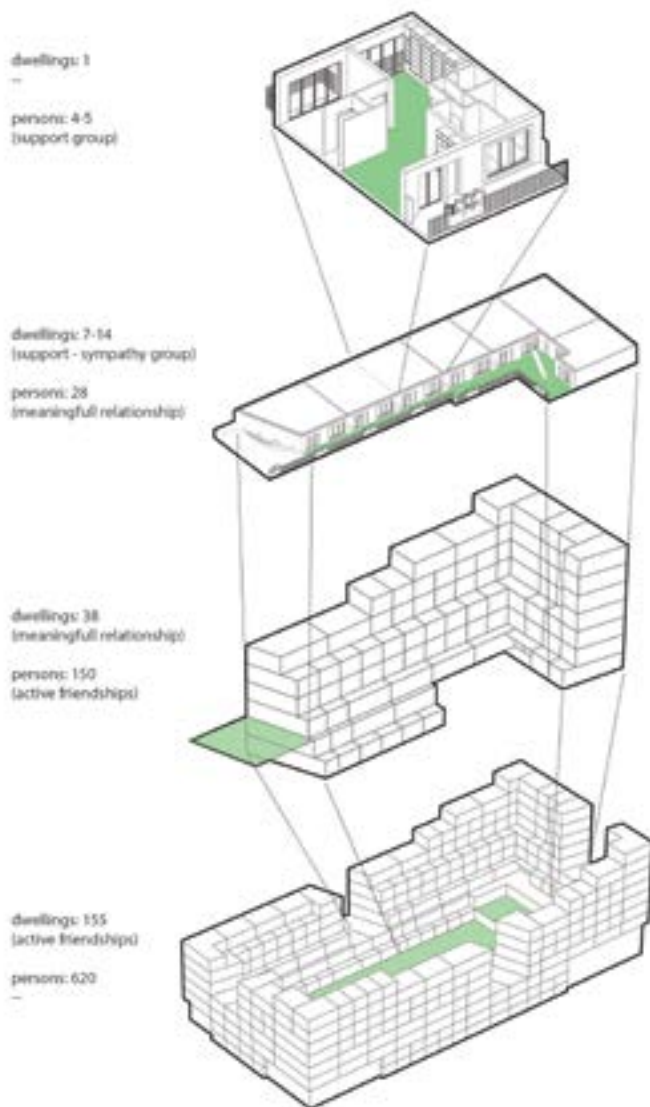
playspaces on level 3



playspaces on level 6

In the two images above I visualised the findings of the case studies into my design. The image besides shows an abstract sequence of how the building is build up and how this is influences by both the case studies and the fundamental research in Dunbars group sizes.

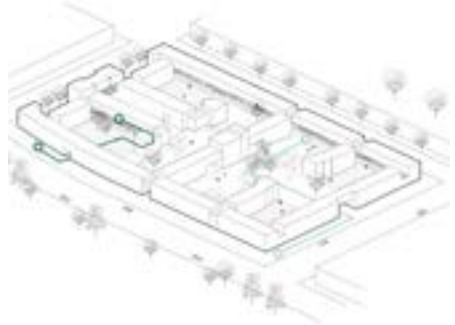
I believe this type of research comes close to what scientific research is about. The research has a clear goal, relevance, method and is transparent. Only as already described above the element of intuition and the drawing style could deliver a small deviation in outcome. But by combining the case studies and the fundamental research I have a clear base to base my design on.



the use of Dunbars numbers



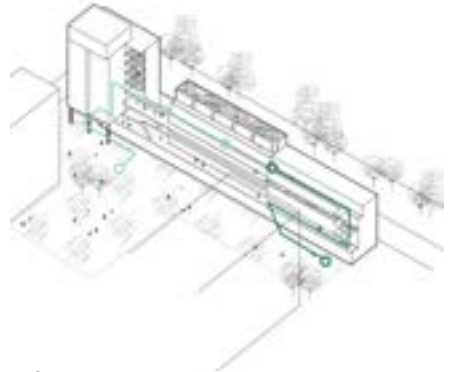
The Malings



Justus van Effenblok



Babel



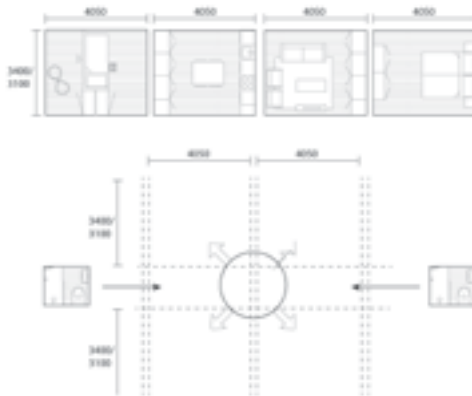
The family



## relevant projects

Another type of case study executed is the search in the TUDelft repository for other projects designed for families. This repository exists of a collection of graduation projects over the last years. Some of these projects have given inspiration and functioned as catalyst for finding reference projects and literature. Hopefully my project can contribute to a broadening of general knowledge to give other people inspiration but to also contribute to supporting the intuition of myself and others used to make future design choices. Even if it turns out that choices i took for granted turned out to also have a backside I oversaw.

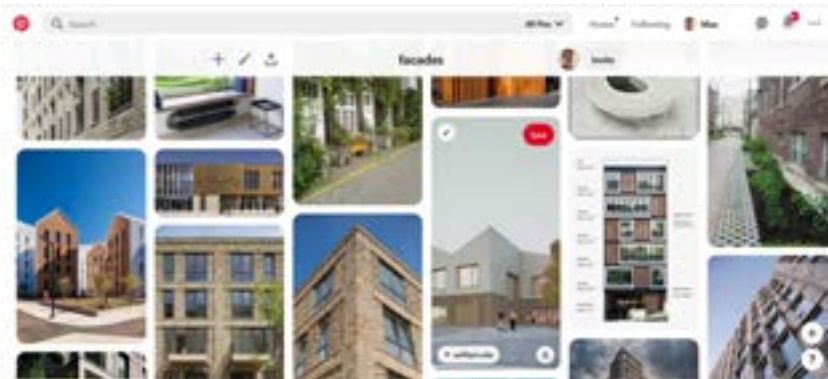
Case study research is further extended during the period between the P2 and the P4 by looking deeper inside the floor plans of the projects of ANA and BPD. I was specifically trying to see how bedrooms were situated around bathrooms and how living rooms were divided without using alleys. Especially the outcome of these non standard dwelling types contributed to the diagonal organisation in my dwelling floor plans.



the dwelling design strategy out of the documents of ANA

## Pinterest

A relative new type of research is the use of online references and in particular Pinterest. Pinterest makes use of an algorithm to show images related to the given keywords. In this way it works more efficient than Google images. Without a clear goal you can lose yourself in this search engine, but with a clear idea in mind a large collection of references can be found. Especially during the design of the facade this engine turned out to be a great tool. This tool cannot be described as scientific or academic research since the algorithm is not open and as a searcher you are unaware of the outcomes of the given search words. Also it's not repeatable since the algorithm uses pinned images for the selection of new images. In this situation this is a positive outcome due to the new inspiration and a continuous flow of new images with sometimes a non expected but interesting outcome. If it would have been open and repeatable it wouldn't have been that useful since it would be limited by the range of vocabulary available or limited scope of imagination. In the picture below I searched for brick facades and accidentally found the left image which led to the use of different materials inside my building to strengthen the concept of the building.



Selection of images of pinterest

## location research

the last type of applied research conducted is location research. Location research is an implementation of the gained knowledge out of research into the urban context. The urban context should in his design influence the conceptual design of the building. The traditional way of doing research into the location follows a clear path of making drawings of transportation, building types and spaces. However, the location and context of the Minervahaven project was different due to the self designing of that location and context. The design of the masterplan already laid the context of the location. For this reason location research wasn't that useful for the project. however, by knowing the context of all masterplans it made the decision for a particular masterplan more important then known on forehand. Selecting a masterplan indirectly formed the layout of the building. In my case this turned out into a centralised building concept. Taking another building block would result into a different configuration of both the orientation of the buildings as the functions inside the block. The advantage of this approach is a better embedding of the project in its context, because both the target group and the masterplan is taken into account. The opposite of the situation is that the choices predefined opportunities and disabled functions later discovered in the research. In my situation I had to deal with the central position of the block and needed to find a balance between an inward and outward orientation of the block. The masterplan was based on Borneo Sporenburg in Amsterdam and therefore already specific for families. This led to a design of the masterplan in which different types of spaces are designed based on the age of children. My building (the left big block) was designed as a symbiosis of all ages. At the same time different functions were assigned to the block. These functions were already linked to families and therefore contained a school and a library. Normally functions would be defined out of what is missing in the current living environment. The design of the masterplan however

made these functions a key element in the entire masterplan. Therefore the location research made the plan of requirements for the building block.



playspaces according age



heatmap of functions

#### Discussion:

Applied research formed besides the requirements a clear foundation for the design in the sense of the organisation of the block, the sequence in communities and the orientation of different functions and playspaces. This design phase is in certain degrees open but as stated before the eureka moment came unaware when I connected the galleries of Babel, the football court of the family and the fundamental knowledge of Dunbar which I unconsciously took with me from a previous studio. So the steps are clear but needed multiple versions and sub eureka moments to end up with the final design. Even for myself I can't clarify when and why these sub eureka moments happened.





## Development research

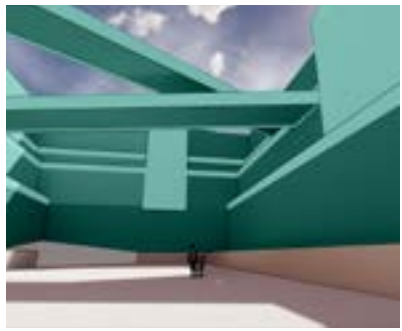
### Model making

The last type of research is development research which turns the abstract knowledge into clear design choices. One of the forms of design research is the use of virtual and physical models.

During this master both models are used to investigate topics connected to the target group. Model making is a tool conducted during both the master and bachelor track. However, the models used in this course are one of the few which influenced the design. Previous models were mostly based on visualising rather than investigating and experimenting.

Mills (mills, 2010) describes four types of models. The first type of model is the concept model. These models don't visualise the building as a volume but rather as a concept. Looking back on my design process I didn't use this type during the graduation project.

The second type exists of massing models. In this studio a new type of massing studies is introduced in the form of virtual reality. The advantage of this type is the visual connection and interaction between the designer and the created mass. In contrast to foam models it is easier to experience scale and impact due to its virtual 1 on 1 scale. With this study I was able to translate the base points of the master plan into a few first design options. In combination with the target group of children this tool was very useful to experience the space from the eye height of children while also taking the overall form into account. Within a few massing models, from which 6 are visible on the next page, I selected the main model from where to start. The steps made in this process are not based on any literature but mainly on intuition. The main questions I had while making the options is where I wanted the connection and which parts of the building I wanted to see from the different positions in the masterplan. This last question returned at the end of the project by situating the building on the best location possible. So by defining the main volume in VR early on, it was relative easy to reflect on them later on in the design.



slight entrance test

selection of RhinoVR models



another type of massing model is the masterplan of the master three. This model knows three steps each with their own outcome. It started with experimenting with the big blocks and later on with the exact placement of these blocks and the placement of the axis through the plan. Making use of this model increased the productivity of the team and made it easier to discuss different options without making time consuming 2D drawings.

The last model type is the development model. These models are used to investigate detailed decisions about the overall design. From the start of the master 4 I made use of a foam model to investigate different topics regarding the shape of the block, the materialisation and the placement of the block in its urban context. In the image below a small experiment is visible around the experiment of the block shape. In the draft design of the master three only a basic outline of the block was defined. But in the model the impact of the stepped facade and the vertical steps in the building volume came to its senses.



two massing tests

The next two images show the experiment regarding the materialisation of the entrances. During the experiment with the entrances I experienced a side effect. A very important, unforeseen, outcome of this experiment was the addition of more levels to rise

the gabs. It was needed to give more body to the plinth to make the entrance fit better in the volume.



slight entrance test

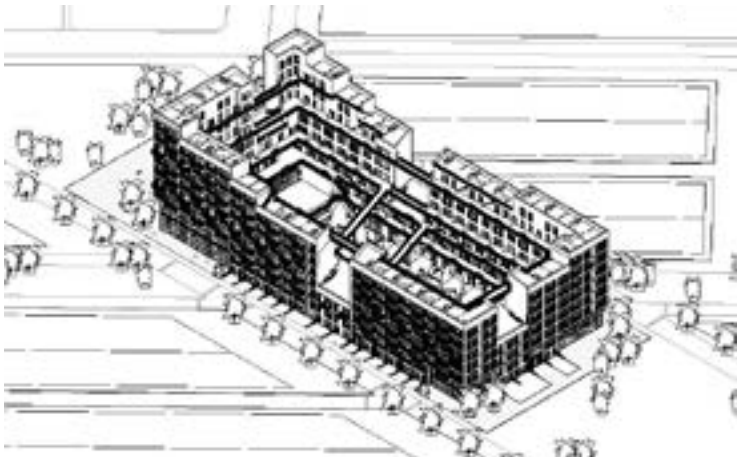
The use of the physical development model did, beside the before mentioned elements, support the second type of development model, the virtual Rhino and Revit models. Virtual models on themselves are hard to experiment with but can easily translate the experiments in the physical model into detailed and technical drawings. With the use of the virtual models and it's linked 2D drawings it becomes harder to reflect on the impact of the separate elements. A change in one of the drawings directly influences the others. As mentioned in the introduction, a transdisciplinary approach gives room for more integral design solutions but limits the transparency of the project. It becomes less traceable since all drawings, models and impressions start to overlay and influence each other.

Both the applied research and development research happened at the same time, this led to the design choices of the diagonal lines through the masterplan, building block, individual floor plans and dwelling floor plans. This diagonal stands for a rupture of the standard pattern but also excecugate and makes space in the rigged structure for exceptional functions. Throughout the entire project these exceptional spaces are all dedicated to the development of

children. At the end of the project its not that easy to trace back the first decision of this design choice since it was already in the masterplan and the research into ANA and BPD.

he previous studios ,in particular the ones of the bachelor, follow a more linear structure where models are used as massing studies and presentation models. In these models it was easier to clarify dthe steps because the individual decisions rely only on one element of the design. In most cases these design choices were not made in the model but in the floor plans. The models were mostly made to visualise the choice rather than to reflect on the design itself.

The complexity of the model and the drawings mark in my opinion the baseline of integral architecture. The transdisciplinary approach leads to a less transparent and repeatable design and deviate the process for the scientific requirements. But in contrast with that it makes it more academic due to its collaboration between all aspects of design and the research.



screenshot of the revit model



## Overall discussion

The use of fundamental, applied and development research is less linear than imagined. In particular when the applied research comes to an end and the development research starts the different elements start to mangle and form a transdisciplinary design. As stated in the previous sections this makes the overall process less controllable and transparent. In the eyes of the designer the choices are very clear and used in all aspects of the project, also the reason why they are implemented are connected to the fundamental research. The method however is less easy to trace and cannot be repeated by someone else or even the designer himself since the mangling is controlled by intuition rather than a chronological set of instructions. Therefore I don't see the lack of a scientific approach as a disadvantage but rather as an opportunity to make a better integral design. However, it is in my eyes not possible to work like this without starting with a linear process. The bachelor therefore starts with this linear approach with preset guidelines and sets of instructions. In this learning curve reflection is a corner stone in understanding your own process. As investigated in the AC3 course during the graduation of the bachelor reflection is needed to be able to get track on the use of different design methods and how to use them next to each other. The conclusion of that course was that my process turned, during the bachelor, from a linear to a interdisciplinary process. Sadly during the master track reflection was not embedded in the courses and I lost focus on the way of using different types of design and research. But with this reflection paper I can state that this graduation course has brought me from an interdisciplinary approach to the start of a transdisciplinary approach. It still feels slightly unnatural to constantly switch between different scales of the project and to conduct research parallel with design.

As mentioned in the paragraph about fundamental research I

missed the connection between literature and the social world. I could have made use of more types of fundamental methods to gain knowledge of my target group.

For the applied research I regret I didn't have the time to visit the different case studies physically. Because, this would have contributed to a broughther scope and the introduction of more diversity into the research. In contrast to other studios I liked the close connection between research and design with the introduction of both the kick-start and the VR to not only test the literature but to also make the first architectural decisions out of the raw data without being limited by the research itself. I see this project as part of a greater design process spread over the master and bachelor on the faculty of architecture. Without the structuralised mindset of the bachelor i couldn't have founded the frame of reference which supported the intuition used during the graduation project. I hope to add this project to this same set of projects to extend my frame of reference for the project to come.

## **Secondary reflections**

## ASPECT 2

“The relationship between the graduation topic, the studio topic, the master track and the master programme”

As mentioned in the fundamental research section it took me some time to come up with a fitting topic of the graduation track. I believe I succeeded in finding a good topic. The families inside the city are a target groups which for multiple years are a threatened target group in society. Especially the modern families are an increasing group in society which need a new type of housing. The mayor question of the studio is how we want to live and what kind of buildings we need to make that possible. For the graduation I tried to seek a solution which fit both the traditional families and the new type of modern families. I investigated the type of dwellings, the configuration of dwellings and the embedding of the plan in its urban context. By using this target group, I took the current geographic and the future possibilities into account. I didn't only follow the base line of the Dutch housing studio but also the master track and the master programme.



## ASPECT 3

“Elaboration on the research methods and approach chosen by me in relation to the graduation studio methodical line of inquiry, reflecting thereby upon the scientific relevance of the work”

In the previous sections I reflected on the types of research done during the graduation project. Most of these types of research are based on the organisation of the master track. Examples of these types are case studies and literal research. Other types of research like VR, model making and Pinterest are used to support these master track methods. The first half year mostly focuses on the topic selection and the architectural consequences of this topic. The research towards the P2 follows the scientific approach of research and lays an objective result for the selected topic. After the P2 intuition start to enter the scene and the project starts to be more personal. This turns the scientific research into an academic design. This design meets different requirements of scientific research but stays a subjective practice. However by opening the process, everyone in the studio follows a comparable track and thereby makes it possible to give and gain feedback on each other's projects. This forces you to make your process transparent where possible. At the same time all members of the studio follow the same product lists and build its research booklet with the same types of research. This makes the overall studio comparable one collection of different topics on housing itself. Due to the feedback, the scientific requirements of the research and the personal intuition in design I believe I designed a well supported design relevant to the current housing problems.

## 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 research and design is not a work standing on its own. My design is based on conscious and unconscious knowledge gained from previous projects, personal living environment, the TU delft repository and the overall urban context. This does not make me the first person who graduates with the topic of families in the city. The theme of modern families is a relative new aspect but still not completely new. With this topic i hope to contribute to the future students to enlarge the overall knowledge on families in the city and how to house them. Being part of this continuous research my project is not the absolute truth, but rather an experiment in a bigger line of references. I learned from the previous experiments and added them to my frame of reference. I hope others can learn from my project as well and adapt the strengths and prevent the weaknesses of my design in there concepts for families. From a personal point of view I'm sure I can transfer the knowledge I gained to future projects in the profession of dwelling design. I learned things about flexibility, community making and cooperations between scales which are universal for dwelling and family designs.

## ASPECT 5

“Discussing the ethical issues and dilemmas I may have encountered in doing the research, elaborating the design and potential applications of the results in practice”

Families and modern families cannot be generalised into one belief. Every family is different. However, families move out of the city because their environment does not meet their requirements. Therefore the families move to surrounding cities where they find the safety and space they need. This leads to a decrease of social diversity inside the cities and a monoculture in the surrounding cities. The problem is that this monoculture is not what the families are looking for. The families want to stay inside the cities but can't find a place which is safe for their children. The social composition of modern families in comparison to traditional ones is even more complex and every child behaves differently according to the social changes in their family. They ask for a personalisation of their dwelling which brings up to a dilemma of standardisation and money towards space and personalisation. With my design I tried and in my opinion succeeded to make a building which is both diverse in types, gives enough flexibility but also seeks for standardised building patterns and building elements. I see the building as feasible in both its concept and its technical design. Therefore I see this experiment as a realistic design which has given me enough knowledge to start in the business of spatial and architectural designer.



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