SAFE AND SOUND

THE INFLUENCE OF ARCHITECTURE ON THE SOCIAL SAFETY AND INDIVIDUALITY OF ELDERLY

RESEARCH BOOKLET

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Designing for Care
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Technically speaking, I think you're already dead to the outside world if nobody sees you anymore. I don't think life is worth it if I would be locked up in a room of 4 by 6 and the food would be placed in front of the door

~ Hendrik Groen (pseud. De Smet), 2020, p.106

Preface

The book in front of you is the research outcome of the graduation studio 'Designing for Care: Towards an inclusive living environment'. The graduation studio is a part of the Master Track Architecture of Delft University of Technology and focusses on a new living concept for elderly.

I chose this graduation studio for its social character and for its target group: the elderly. When I was almost three years old, my mother died and my grandparents on my father's side helped him to take care of us. Now I have three pairs of grandparents and I got the chance to research and design a new housing type where they could live when they can't stay in their own house anymore.

At the beginning of the research, we were invited to stay at one of the elderly homes of the housing corporation Habion. The stay has helped me to understand the needs of elderly who need care and has helped me to come up with a solution for the problems of anonymity versus individuality.

I want to thank Habion for giving us the chance to stay in an elderly home and for their feedback during the rest of the studio. I also want to thank our mentors Birgit Jürgenhake and Marieke Berkers for their support and their feedback during the online and live tutoring.

Jasper Hulsbosch

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1. Introduction

The graduation studio focusses on the aging society and mainly the elderly who are in need of care. Current elderly housing in the Netherlands is not suited for the needs of the elderly. Therefore there will be a huge challenge to supply with the need of future elderly homes. The main question of the studio is: 'How do we want to live when we are old and when we need care and what kind of buildings and neighbourhoods do we need to make that possible?'. With this question in mind, the students are asked to develop a new concept of dwelling for elderly, based on research of their own interest in the field. The title of the studio indicates 'living in an inclusive environment', which means that the students will make a design in which the elderly are included in society, instead of excluding them.

For me the social aspect of the studio was an important element to choose this graduation studio, but the specific target group of elderly was the deciding factor. My mother passed away when I was almost three years old and my grandparents on my father's side helped my father to take care of us. They are very special to me and I always wondered what would happen if they could not live in their own house anymore. The graduation studio gives the opportunity to make a design for them and others. Through literature, case-studies and observational research, a new concept for elderly homes can be developed. The new concept can only be developed through understanding the target group. The housing corporation Habion, who is specialized in housing for elderly, invited us to stay in one of their elderly homes, so we can see and experience how elderly live.

During the stay in the elderly home in Loenen aan de Vecht, it was clear that there are multiple kinds of groups. The first ones are the residents who didn't like being with one group only, so they rather stayed in their rooms and invite people in there. Then there are the residents who still have an active life outside of the building, but also want to have some interaction with the other resident. Finally, there are residents who join the group activities as much as possible. The first group, the invisible residents, often value their privacy and mistrust strangers. The socially isolated elderly think that they need to be alone, because they are insecure, or they think that it makes them happy (Van Houten, 2015). However, according to the research of an American psychologist Julianne Holt-Lunstad (Schoonen, 2020), social isolation has a harmful effect on the health of the elderly. The lack of contact causes stress and therefore problems with blood pressure and your immune system (Schoonen, 2020). The socially isolated elderly can be self-reliant in the beginning, but when they get older, the problems will get worse and professional help is needed. According to researcher Anja Machielse (Van Houten, 2015), professionals are a temporary fix, the society needs to step up and help their socially isolated. Especially when the amount of elderly is rising in the future.

Another group that could benefit from the same way of living are the people with a mild form of dementia and their partners. Some of the residents in Loenen aan de Vecht were living there, because their partner started to suffer from dementia and they had to move to an enclosed care facility. The moving is very difficult for both the people with dementia and their partners. Besides, people suffering from dementia don't want to be secluded from society, but want to be participating in the neighbourhood (3Bplus, 2019). The elderly and people with dementia deserve to have a home where they can stay until they die and where they can rely on the help of others. Their last home should make it more easy for both parties. Therefore, I want to explore the following research question:

*How can architecture stimulate the **social safety** of elderly, while maintaining their **individuality**?*

Safety and individuality go side-by-side. They both relate to being independent, but the individuality expresses the freedom of not being part of the group, while safety means that there are people who will notice if something is out of the ordinary. Social safety is in this research not the safety from criminality, but the safety from feeling weak.

To be able to answer the research question, sub-questions should be researched. These questions are based on the themes of the main question. These questions are:

- What is social safety?
- When do the elderly feel safe?
- How can architecture influence social safety?
- What does individuality mean?
- How can the individuality and community influence the zones between private and public?

My goal is to create a new concept with architectural tools to develop a place where people can stay for the rest of their lives. A place where they can keep their individuality, but where they can rely on the help of others, even when they can't ask for it. Here, the elderly can feel safe and included in their neighbourhood, but also feel safe when they are alone at home. The posed problem should be solved through architecture, but also through the help of the network of the elderly. The preconditions of the architectural concept should make it easier to provide with that help.

2. Methodology

The studio Designing for Care uses a user-centred research, which means that the human in relation to architecture is the most important element. The research is mostly on an anthropological base, because most of the research is conducted in a way that we can obtain a better understanding of what it is like to be old and see the problems they are facing. Underneath is an elaboration of the different methods and why these methods are used in the research.
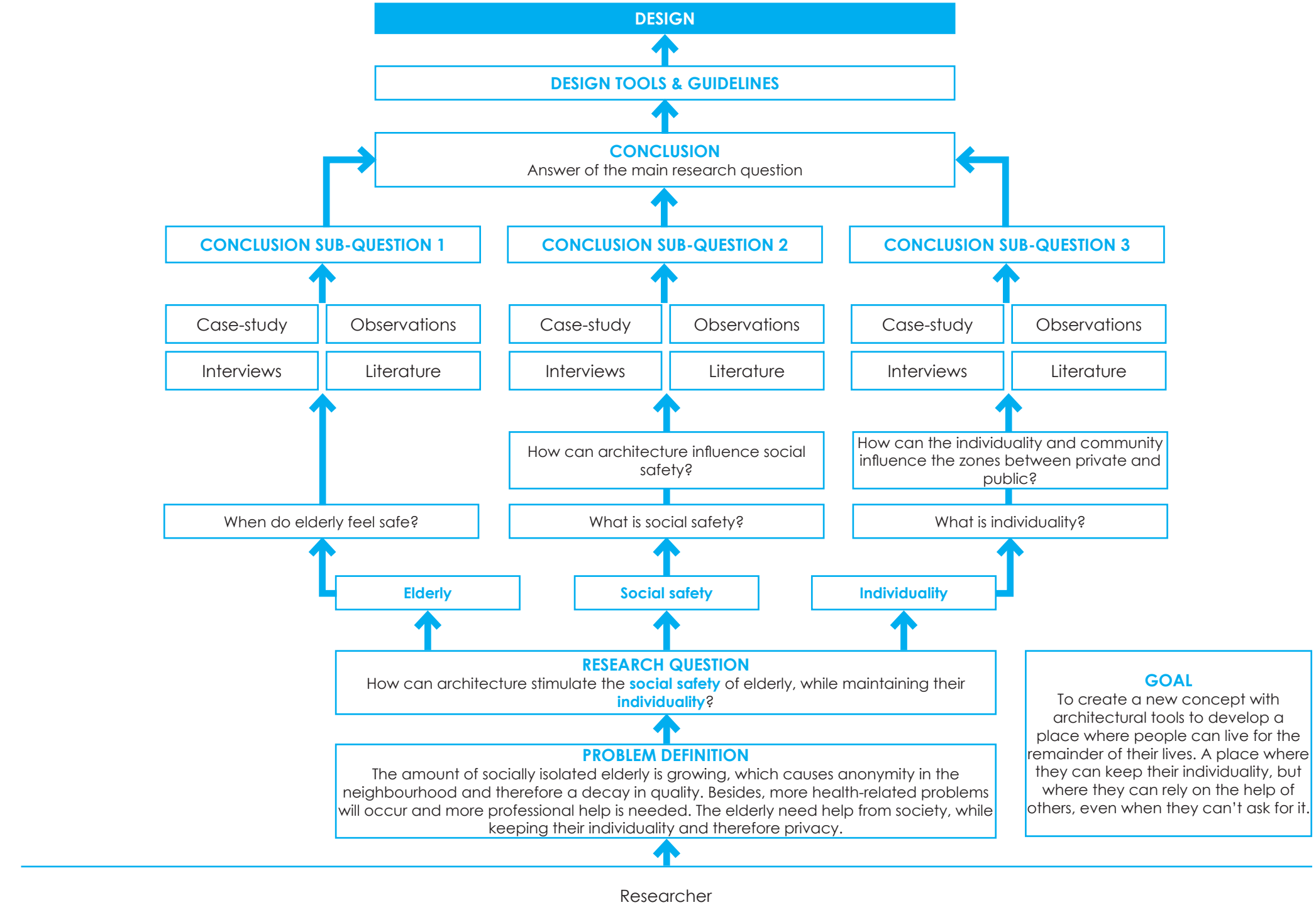
Observational research
The housing corporation Habion, which focusses on elderly homes, invited us to stay a week in one of their elderly homes and see for ourselves what problems the elderly are facing. Our studio is designing future elderly homes, so it is therefore important to experience the problems/opportunities and positive points in the current elderly homes. The best way to get into the problem is participatory observation. Now, the elderly are humanized, instead of being an abstract description of a target group. During the stay, interviews with different elderly were conducted and observations were made. The two tools (interviewing and observations) complement each other. As an observer, the elderly are seen in a neutral way. What are they doing and how? After observing, the why becomes important. Why are they doing it that way? The interview could therefore be an addition. The observer 'confronts' the elderly with their behaviour and tries to get an answer. The interview is also a tool to get extra information about the previous life of the elderly, their daily activities and other problems we can't see by observing and use it as a concept that can be implemented in the architecture.

Literature
After the observations in the elderly home, the problems of the current elderly homes became visible and the research can be developed further through literature. Through literature the theme of social safety and individuality are further explored and explained. Researchers like Jan Gehl, Ruth Soenen, Machiel van Dorst, George de Kam, Barrie Needham, Jane Jacobs and Talja Blokland, are thinking about the perspective of humans and how the building environment influences the perspective on that space. There are differences in the way they do their research. Researchers like Jacobs and Blokland talk about how the actions of the users can change the environment, while for example Gehl and De Kam & Needham have it the other way around. Their research is about how the environment and architecture can influence the behaviour of the people using that environment. Because this studio is so human-centred, we can look in the field of sociology and use the research that has been conducted in that field. The literature is used to find out to define social safety and individuality and see when people, in particular elderly, feel safe. What role does architecture play in creating safety? The information derived from the literature is ordered and compared. This research has become a foundation for further research and for the new concept of future elderly homes.

DESIGN

DESIGN TOOLS & GUIDELINES

CONCLUSION
Answer of the main research question

CONCLUSION SUB-QUESTION 1

CONCLUSION SUB-QUESTION 2

CONCLUSION SUB-QUESTION 3

| Case-study | Observations |
| Interviews | Literature |

| Case-study | Observations |
| Interviews | Literature |

| Case-study | Observations |
| Interviews | Literature |

How can architecture influence social safety?

How can the individuality and community influence the zones between private and public?

When do elderly feel safe?

What is social safety?

What is individuality?

Elderly

Social safety

Individuality

RESEARCH QUESTION
How can architecture stimulate the **social safety** of elderly, while maintaining their **individuality**?

GOAL
To create a new concept with architectural tools to develop a place where people can live for the remainder of their lives. A place where they can keep their individuality, but where they can rely on the help of others, even when they can't ask for it.

PROBLEM DEFINITION
The amount of socially isolated elderly is growing, which causes anonymity in the neighbourhood and therefore a decay in quality. Besides, more health-related problems will occur and more professional help is needed. The elderly need help from society, while keeping their individuality and therefore privacy.

Researcher

3. Fieldwork

The fieldwork is divided into three researches: 3.1 Feeling weak, 3.2 Neighbourhood research and 3.3 Elderly home research.

The observations, analysis and conclusions of chapter 3.3 are divided in the following subjects:

People - House - Building - Neighbourhood

3.1.1 Walking blindfolded in the city of Delft

The design studio focusses on designing elderly housing, so to get a better understanding in the way elderly face problems in the build environment, we became the elderly. We started with walking in Delft with a blindfold on.

Three of us walked in the neighbourhood Westerkwartier in Delft. One of us could still see and corrected the other two who were blindfolded. Therefore, we all could walk twice with a blindfold.

Walking blind, 1st time
The first thing I noticed is that your orientation is completely gone. When you think you're walking straight, you walk into a bush on the other side of the street. That happened for a few minutes. Then I started using my foot to kick against the sidewalk, so I can find the right directions. However, sometimes there were bumps on the way and the curbs stops, so you lose your orientation again. In these narrow streets, it's difficult to hear where you should go to. Sometimes a car passes by so you can follow that direction.
     All the sounds are getting better to hear but more difficult to distinguish, some sort of alarm,

people working on construction, cars in the distance (thinking that they are coming in your direction) and finally some ticking on the ground (it was a blind man with his stick).
     Most of the time, I couldn't smell anything but sometimes the filth of the street became more obvious. Furthermore you could feel the cold wind blowing in your face and hear the leaves.

Walking blind, 2nd time
The second time went slower than the first time. After turning a few times, I completely lost my orientation and I could sense any objects to help me. There were people walking by very closely. It felt like we were walking zigzag but it was a straight way and one time to the right. The texture of the streets gives an idea of a crossing or just the road.

Conclusion
For people with a visual disability orientation becomes more important. Directions are difficult to find, so the materials of the pavements, height differences and visual connections should be used to create a sense of orientation for the people with a visual 'challenge'.

Figure 1: The terrain for walking with a blindfold (own image)
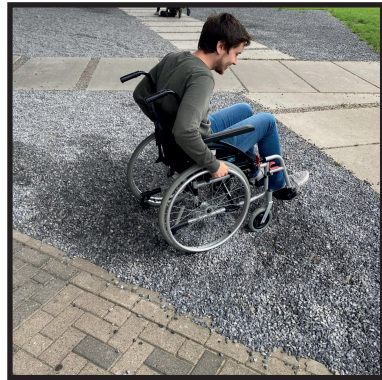
3.1.2 Walking with a walker and a wheelchair

The design studio focusses on designing elderly housing, so to get a better understanding in the way elderly face problems in the build environment, we tried to step into their shoes by walking with a walker and wheelchair. Each student had the opportunity to walk one hour with a walker, and sit in a wheelchair for one hour. To make this more complicated, we were provided with special glasses. These glasses were made in such a way that they replicate common problems with vision among elderly. Marlous and I tried one pair of glasses with a black dot in the centre of the eye, and one pair of glasses with tunnel-vision.

Our route with the wheelchair was mostly conducted on the campus of the TU Delft, and a little bit in the neighbourhood on the East-side of the Schoemakerstraat

After two hours with the wheelchair, we went inside the Architecture faculty and walked around with a walker.

Interesting is that the Architecture faculty is great for people with a disability. The floors are even, so there are no obstacles in the way, the toilet facilities for the disabled are on every floor and big enough, there are two elevators in the building and doors open automatically (except for the rooms). One problem occurred with the tunnel-vision glasses: the stairs are quite large and it is difficult to distinguish the steps, so I almost fell down the stairs.

Conclusion walker
For people with a walker, the height differences are easier to overcome than with a wheelchair. However, not everybody can lift their feet while walking, so height differences shouldn't be too high. There needs to be a balance between height differences for training and the prevention of falling.

Conclusion wheelchair
People in a wheelchair automatically become smaller. Their eye-level is on a lower height, so objects like care can block their view and become safety issues. A clear, even path can help with creating a feeling of safety and gives direction. The person in the wheelchair should have some possibilities to train himself and the material of the pavement can help with the training.

Figure 2: Strolling around with the wheelchair and walker (Images made by Marlous Heikamp and own images)
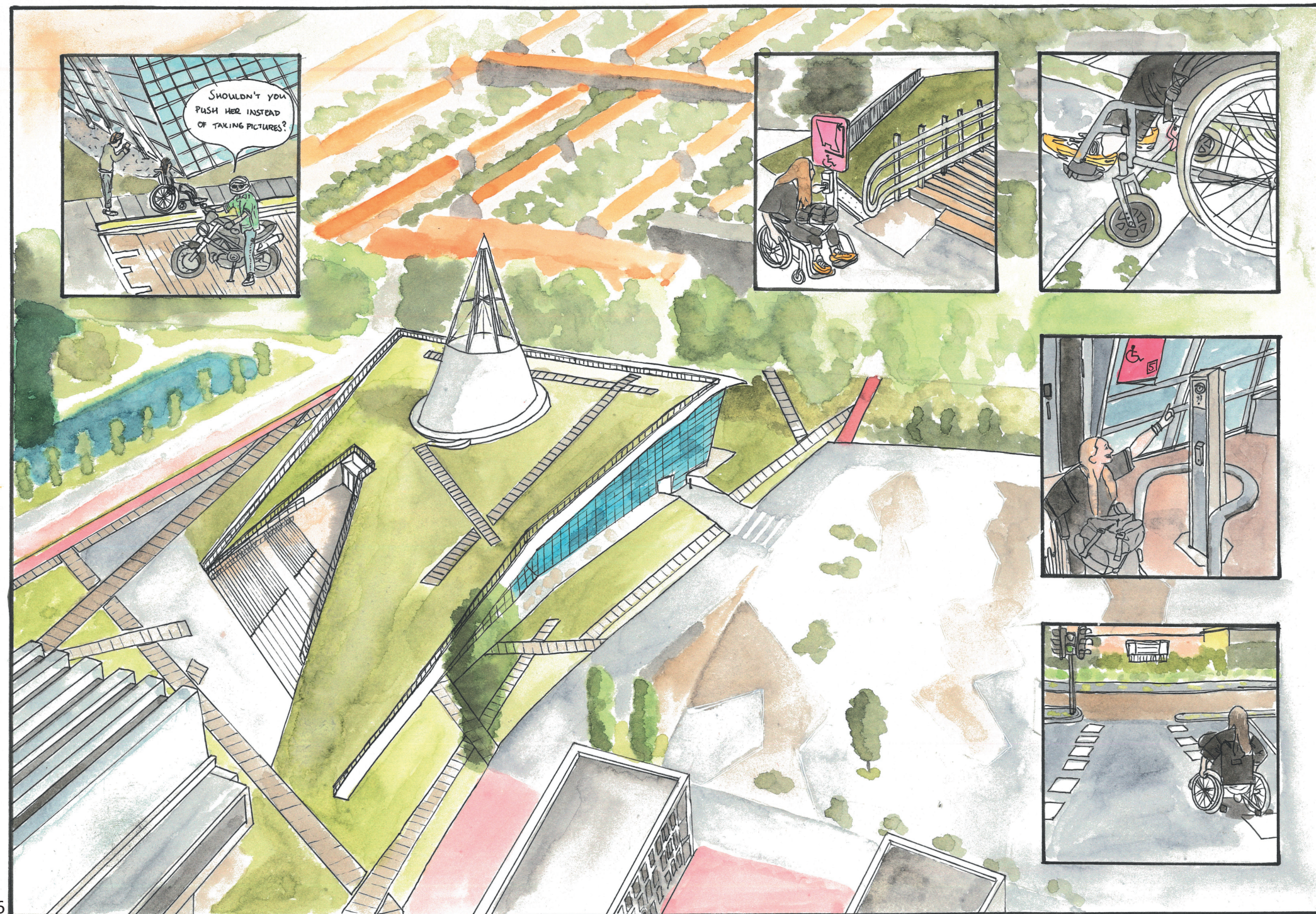
Walking with a wheelchair: Marlous

Marlous was the first one to take the wheelchair and roll around the campus. The route started at the faculty of architecture and ended in the neighbourhood on the East-side of the Schoemakerstraat.

The first struggles started with the height differences. To go from the parking lot on the sidewalk felt like climbing a hill. The most difficult part was the feeling of going backwards. The next obstacle was a fire hydrant and street lantern that were blocking the sidewalk, so she could barely pass the objects.

Around the campus we noticed a few situations. These situations are drawn in the watercolor on the left.

After walking through the park next to the architecture faculty, we arrived at the corner of the TU Delft library. There Marlous had some difficulties with the tiles, so I took a picture of her with her struggles. A motorcycle stopped next to us and corrected me by saying annoyed: "Shouldn't you push her instead of taking pictures"? This situation shows that bystanders always see the peoples with weaknesses, but there is something that withholds them from taking action. They first want to see if the person can take care of himself, then they want to help.

We noticed that the campus is quiet wheelchair inaccessible even though it is supposed to be an inclusive campus. We both thought that the library would have a ramp for wheelchairs, which was not true. They have an elevator, but you need to have a key, so you have to walk to the side of the building: the cargo area.

The path is terrible: there is a 10cm gap between the tiles, which causes the smaller wheels to get stuck.

To get into the library, you have to press a button so people can buzz you in. However, the iron bars surrounding the pole prevent the person in the wheelchair to reach it. Besides, the camera is too high for people to see you.

Looking at all the other faculties, it became clear that the entrance for wheelchairs are always in either the basement or at the side entrance of the building, which gives a feeling of exclusion.

Figure 3: Barrier Map, Marlous (own image)

Figure 4: Barrier Map, Jasper (own image)
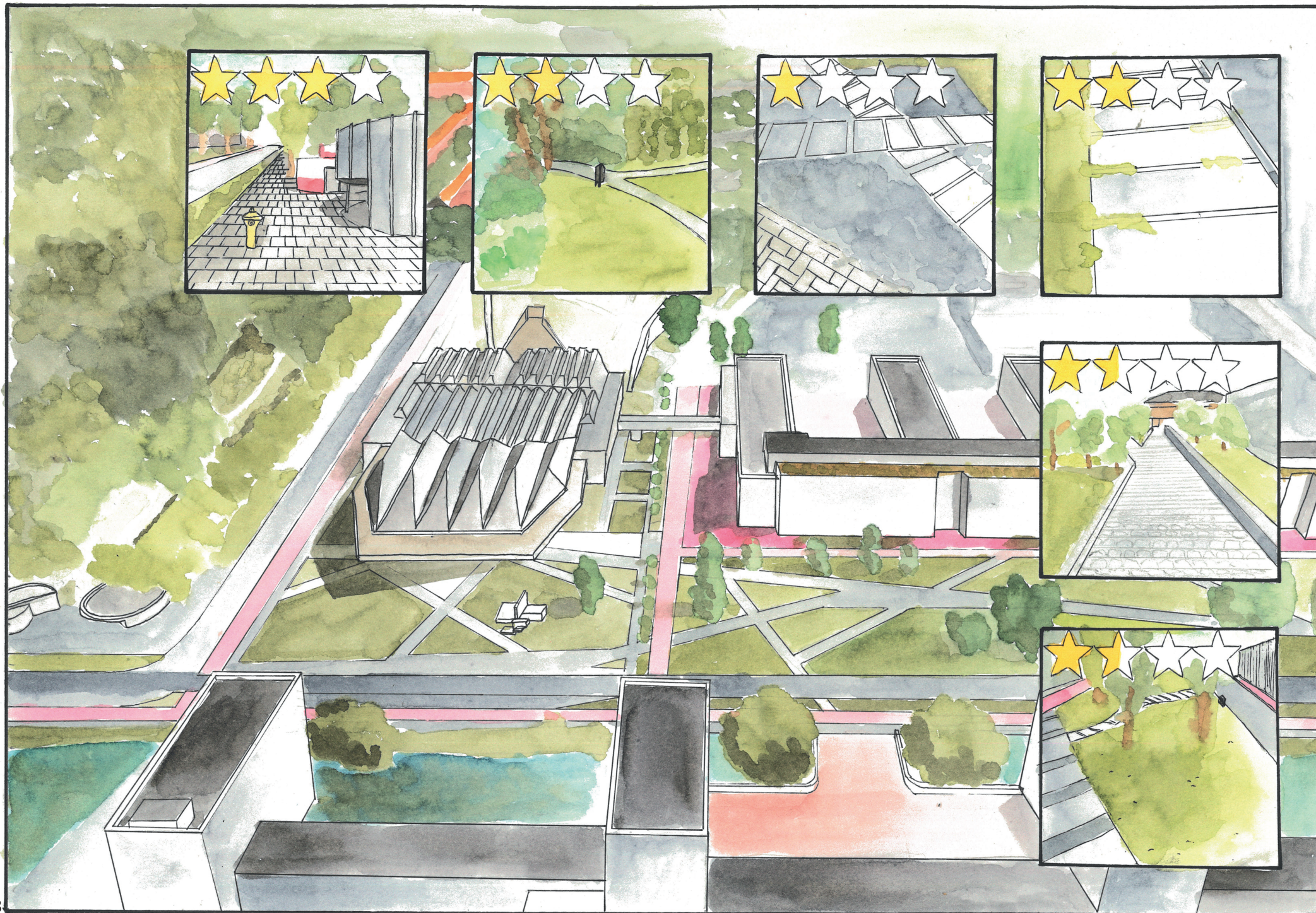
Walking with a wheelchair: Jasper

After Marlous used the wheelchair, it was my turn. I rolled on the Schoemakerstraat, past the Stieltjesweg, over the campus towards the architecture faculty.

The Schoemakerstraat is terrible. Trees are blocking the sidewalk so you have to roll on the bike lane, which creates a conflict with the cyclists. Then crossing the street is difficult, because there are no traffic lights and the cars drive fast. I had to get out of my wheelchair to be able to comfortably cross the street.

At the student building of the Stieltjesweg, people parked their bikes on the sidewalk, so it was unable to roll on the sidewalk.

From that moment on, I noticed the difference in textures of the pavement, so I decided to test how the different textures felt.

The best pavement are the 30x30cm tiles, which are quite common in the Netherlands. The campus only use these at the edges of the campus for the pedestrians. The amount of stars stand for the bumpiness, the grip, the resistance and the slope.

For the experiment, I also tested some materials that normally would not be used as pavement on the street, but can be used in the garden. These are gravel and grass, which are located next to most of the paths on campus. Gravel is the worst: there is no grip, too much resistance and felt painful.

Grass however was quite comfortable, but there still was too much resistance. Getting grip was also difficult, especially when you want to go in a different direction.

The centre path on campus is made from cobblestone. Normally, the cobblestone looks like small dents, but in a wheelchair it feels like you are driving off stairs. Because of the bumpiness, the resistance becomes much bigger and the grip more difficult to keep.

The large tiles on campus are good, if they are connected to each other. Next to the library, the tiles have a gap of 10cm, which causes the front wheels to get stuck. Therefore, the resistance and bumpiness are terrible.

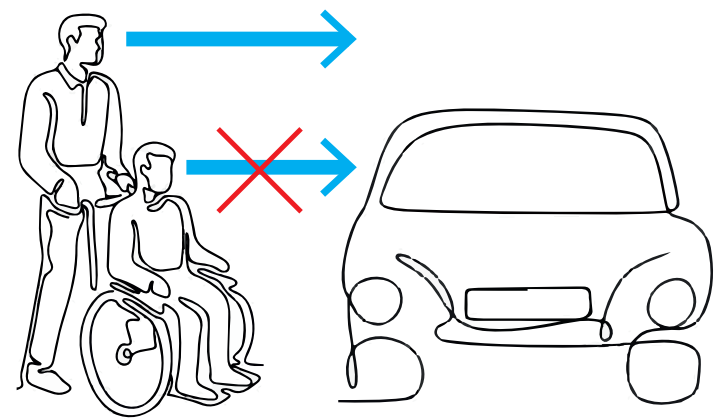The sandpath feels smooth, but still there is a lot of resistance and no grip.

Figure 5a: Elderly have a different eye-level
(own image)

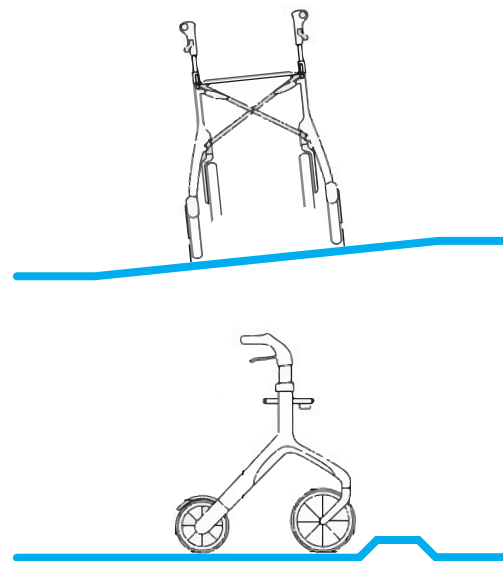Figure 5b: Rating of pavement materials
(own image)

Figure 5c: Challenges of walker
(own image)

3.1.3 Conclusion

From the experience with the wheelchair and walker a few things became more clear. We got to understand the struggles the disabled or the challenged have everyday.

Firstly, people in a wheelchair and walker have a different eye level. When you become older, the calcium in bones decrease and the person shrinks little by little. So elderly, people with a walker and people in a wheelchair see from a lower lever than the average person. The lower level makes it difficult for them to see past objects like cars or bikes. When crossing the road, it could be difficult to see traffic because of parked cars. This creates a unsafe feeling and causes doubt.

The different textures of pavements can be a challenge for people in a wheelchair. The smaller the material, the more difficult it becomes for the wheelchair. The bumpiness and resistance increases and they will lose grip. However, there is a positive side. For walkers, these materials are easier to overcome. Therefore, the pavement can be seen as training for walking with a walker; to get used to different terrains.

The same goes with slopes and thresholds. For a wheelchair, the slope in a road (for drainage) makes it difficult for one arm to constantly push harder. For a walker, you can correct this with your feet, so it becomes a training exercise. If there is a threshold, a wheelchair has difficulties with going over it. For the person in the wheelchair it feels like falling backwards, and he needs to speed up to be able to overcome the threshold. For the walker, it is much easier and it gives the person an exercise for lifting their legs.

In conclusion, the materialization of the public space has to be designed in a way that elderly are motivated to go outside, which increases the possibilities of interaction. The materialization can cause feelings of insecurity, which means that the elderly will avoid certain places or avoid going outside at all.

3.2.1 People

The next step in getting to know the elderly is researching neighbourhoods with elderly in it. I went to an ex-elderly home, which is now mixed with students and followed elderly in this neighbourhood. The home Abtswoude Bloeit is located in the neighbourhood Voorhof in Delft.

From two of the people I followed, I made watercolour drawings. The drawings show how the residents of Abtswoude use their neighbourhood and what struggles they face.
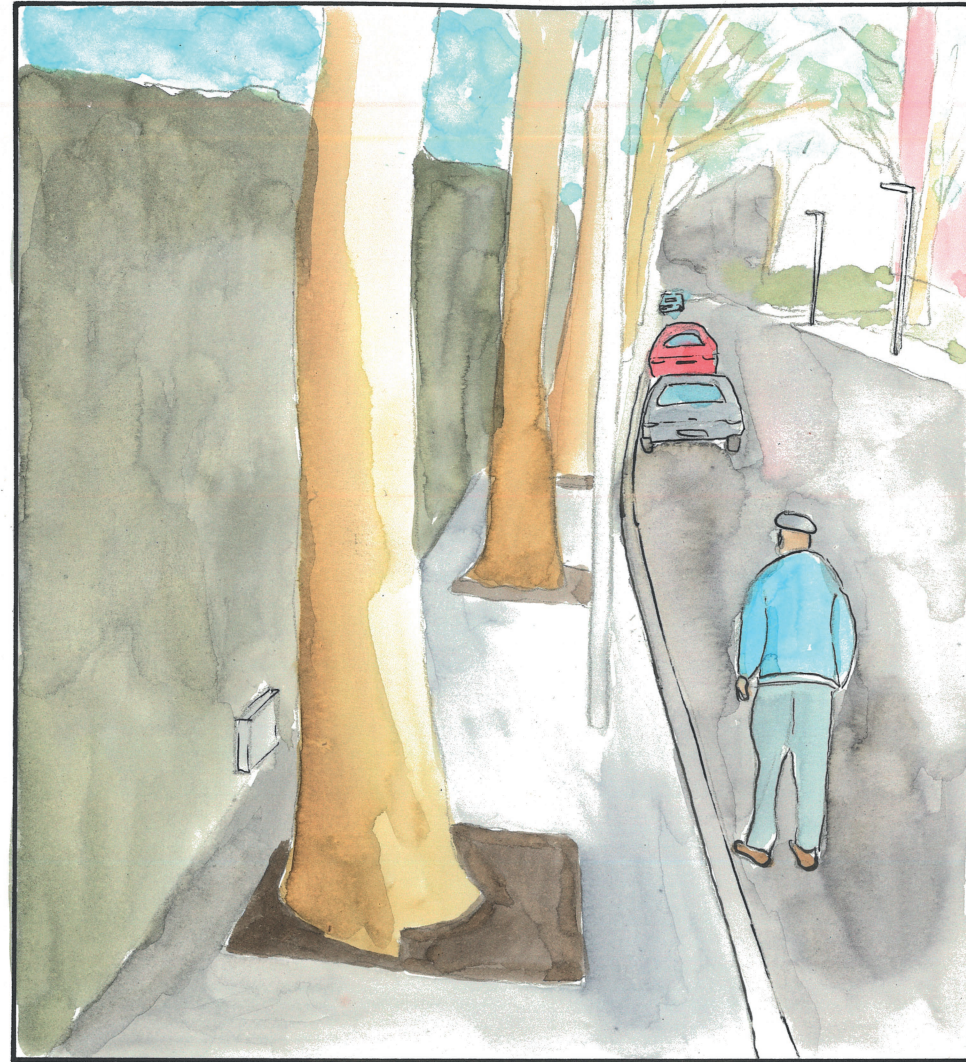
The man walks on the smaller left side of the road, instead of the wider, more flat sidewalk on the right. Problems of this sidewalk are the trees that are in the middle of the sidewalk. The man had to walk on the street where cars were passing by. It took a 100m before he could walk on the sidewalk again.
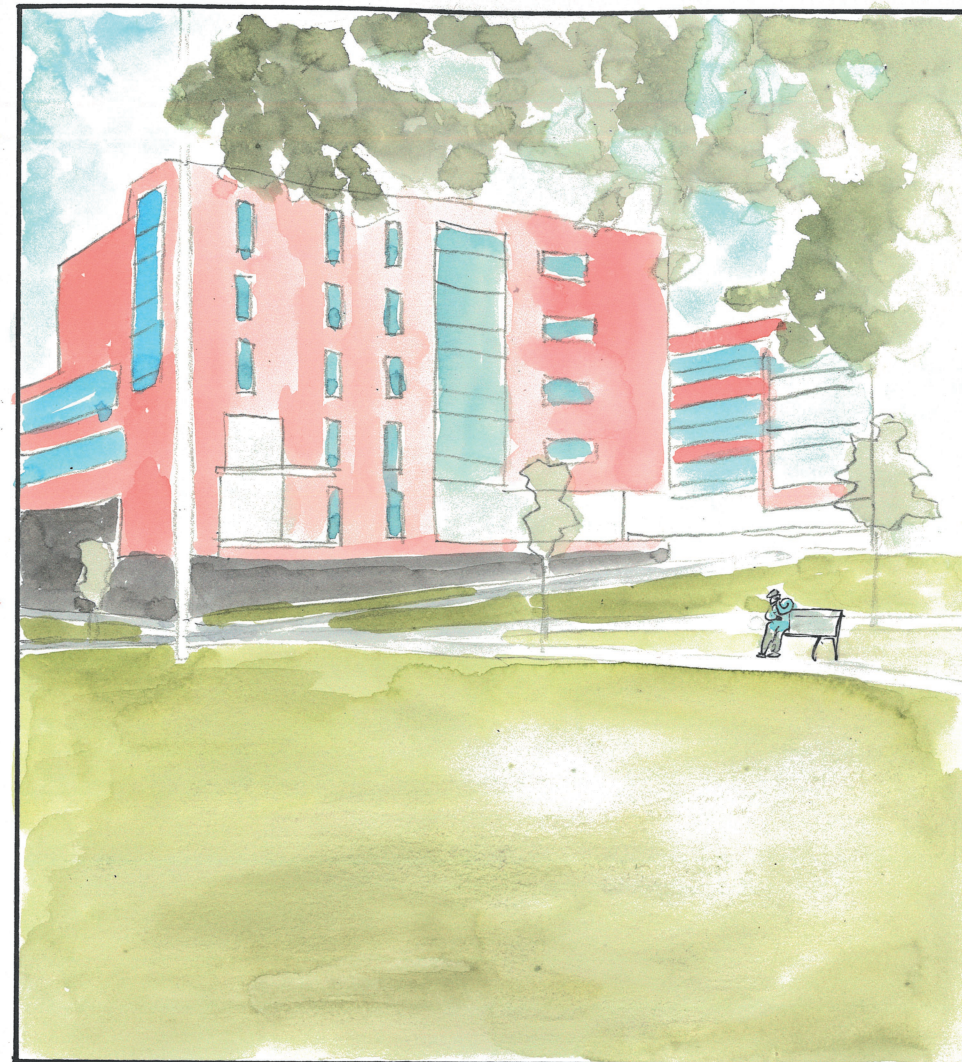
The man walked more than 500m where he finally reached the park: the Popta Garden. In the park, he set on a wet bench and took out his cellphone. He was calling someone about making plans for next week. After 15 minutes, somebody sat next to him and they had a small-talk.

On the way to his home, he went to the supermarket Dirk van de Broek. He bought lunch for himself: two luxury sandwiches and a drink. Now he used the other sidewalk and crossed the road at the corner, so he could walk the final 100m through greenery.
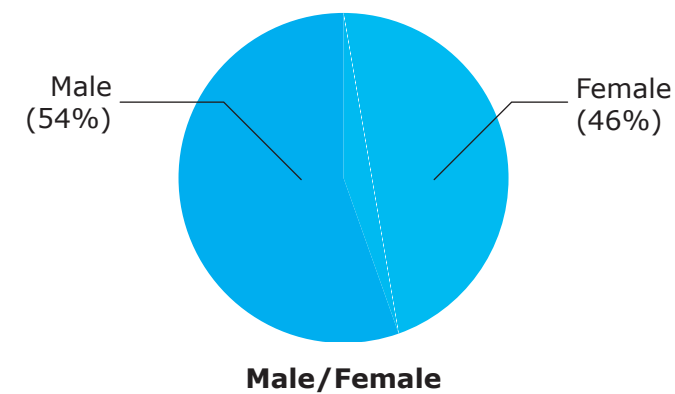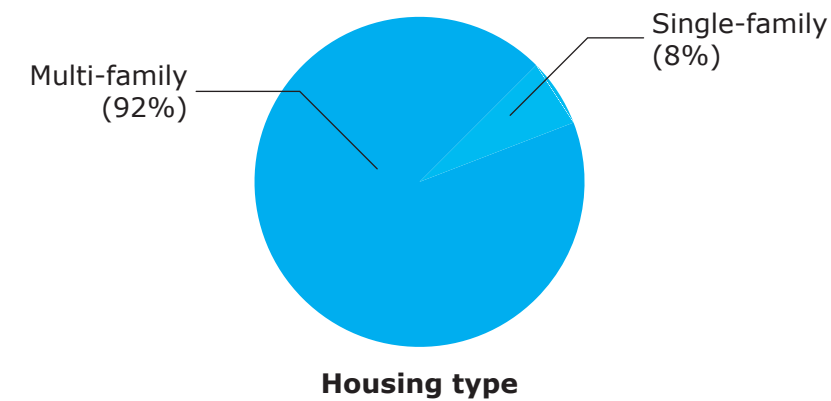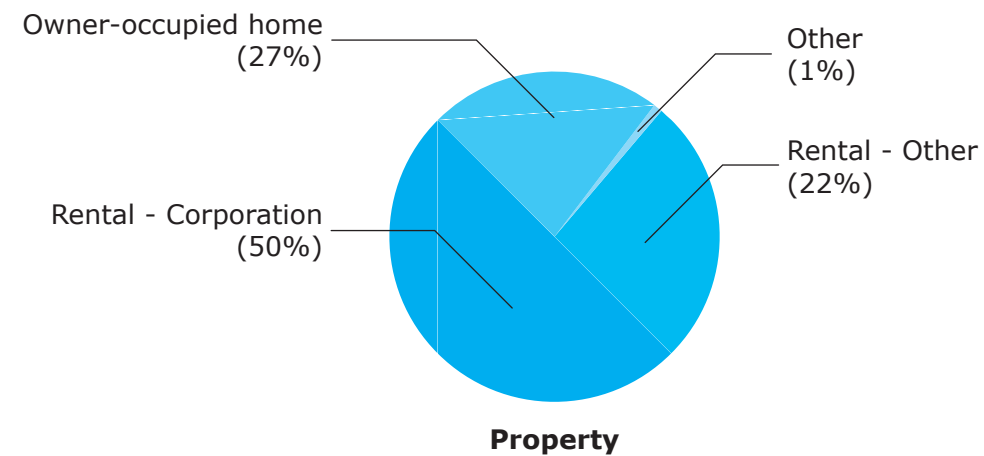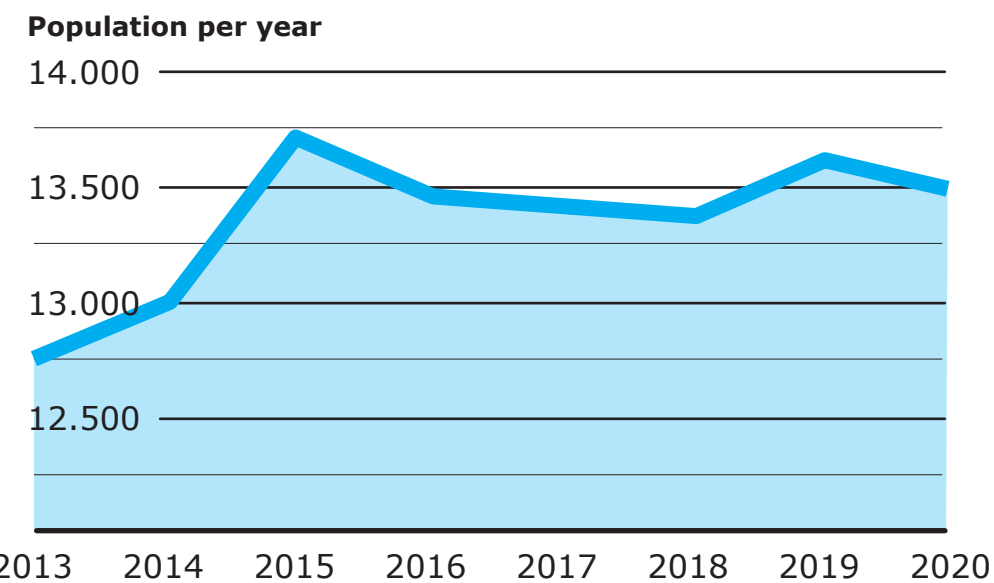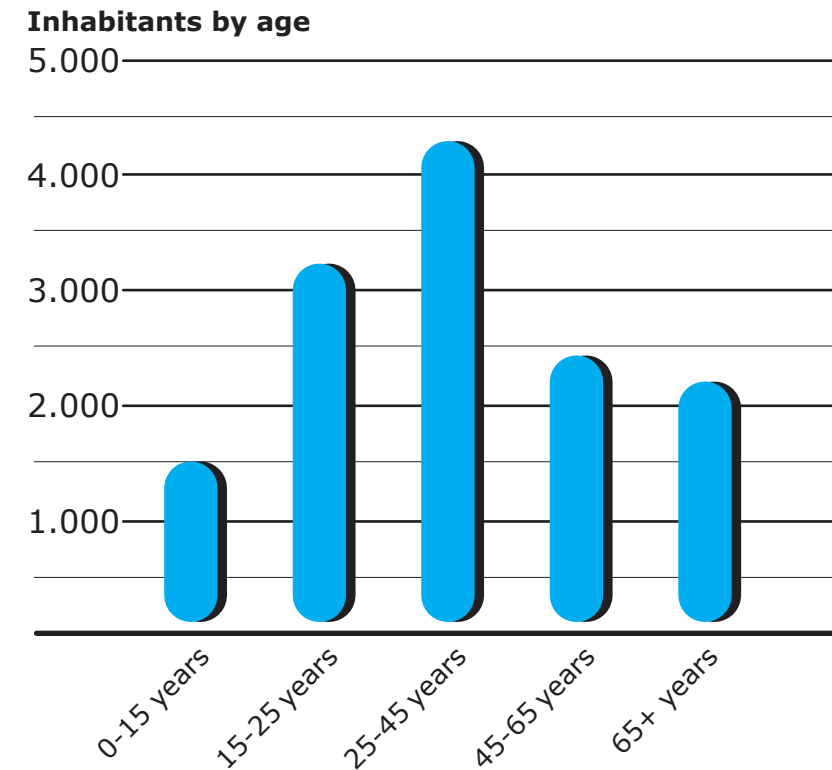
The woman was walking from her residency to the direction of the mall. At the corner of the road, she crossed to get to the wider sidewalk. On the corner, just out of sight of Abtswoude, she took out a cigarette and started to smoke. After she lit the cigarette, she continued to walk, while smoking.

Halfway on her route, she came across two people walking on the sidewalk. One of them was walking with his bike, so the sidewalk was almost completely blocked. Because of the fear of the corona-virus, she stopped at the corner and waited until she could pass them with a 1,5m distance.

Her final destination was the supermarket Dirk van de Broek. There, she gave her shopping cruiser to the service counter, so she could take a cart. She packed her groceries in the trolley at the end and walked on the other side of the road. There she lit a second cigarette and smoked on her way back.

Inhabitants by age

Population per year

Property

Owner-occupied home (27%)

Other (1%)

Rental - Other (22%)

Rental - Corporation (50%)

Housing type

Single-family (8%)

Multi-family (92%)

Male/Female

Male (54%)

Female (46%)

3.2.2 Neighbourhood

Demographics
On the left page, some of the demographics of the neighbourhood are shown.

Most of the people are in the age between 25 and 45 years. The amount of elderly (65+) is approximately 2100 people.

The population has increased from 2013 to 2015 significantly, while the next years were fluctuating around the 13.500 inhabitants. In 2019/2020 there were about 13.500 inhabitants.

The percentage of housing types is 92% multi-family homes and 8% single-family houses. 50% Of these houses is rented through corporations and 22% rented by others. 27% is owner-occupied.

The percentage-ratio of male/female is 54% and 46% respectively.

Figure 6: Demographics of Voorhof, Delft (own image based on AlleCijfers.nl, 2020a)

Where do the elderly walk to in the neighbourhood of Abtswoude?

Abtswoude is an old care center, but is now shared with students

1 man + 2 women came back to Abtswoude

1 man in blue jacket took a route with as little crossings as possible. Walked towards Poptahof park.

A man in a wheelchair smokes there from 9.45 - 10.45

2 persons coming back
- Man in blue jacket who bought two sandwiches after the park
- Woman with shopping cruiser came back from DvdB while smoking and with an extra bag

An elderly couple walked from their car to the zorg-centrum and back

Green light passes too fast

Abtswoude

Difficult crossroad

Trees in the middle of the sidewalk

Zorgcentrum

Almost no place to sit with protection from the rain

3 men + 1 woman

De Hoven Passage

1 woman walking with a shopping cruiser

2 men walking with umbrella as a cane

3 persons
- 1 man with a red umbrella and a bag, dangling on the sidewalk, walking to the Dirk vd Broek
- 1 woman walking with a mask walked to the tram
- 1 woman walking from Abtswoude to the Dirk vd Broek with a shopping cruiser while smoking

10 persons
- busiest sidewalk
- 3 persons from before + couple
- 1 woman with a walker who needed help crossing the street

A lot of elderly doing groceries

— = Elderly person walking to the right
— = Elderly person walking to the left

Routing

Most of the people took the same road to the mall. They all walked on the Aart van der Leeuwlaan, but to different destinations.

Interesting were the objects people used as hidden walkers. Some were walking with their shopping cruiser, which is also useful for carrying their groceries. Others were using an umbrella, which was also useful as a precaution for the grey weather. Finally, there were couples who used each other for stability.

The destinations varied. A couple parked their car in the neighbourhood and walked to the care facility (on the right side of the map), where the general practitioner is located. Most of the people walked to the mall and did their groceries. It was in the morning, so they could do their groceries in peace. The final destinations were the stops for public transport. Some walked to the tram stop (on the right side of the map), while other walked to the bus stop (on the bottom direction of the map).

Some of the obstacles I noticed:
- A man was smoking outside of Abtswoude, but was almost glued to the facade, because there is almost no coverage against the rain.
- The trees in the middle of the sidewalk made people to walk on the street.
- The traffic light at the Martinus Nijhofflaan were going too fast. They turned red too fast, so elderly had difficulties crossing the road. One woman with a walker did not dare to cross it alone, so she had to ask someone for help. Together they crossed the road.
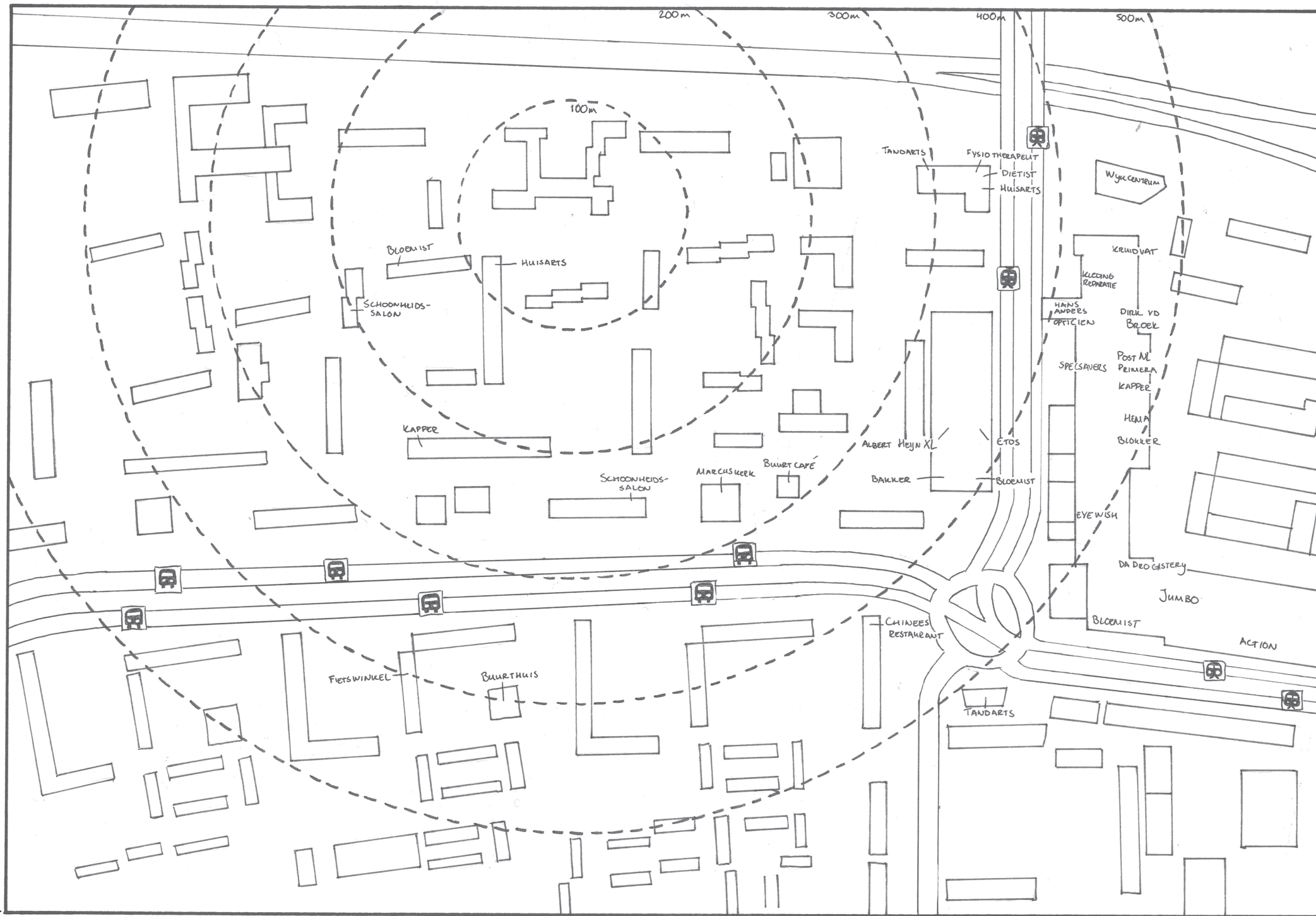
Figure 7: Walking routes of elderly in Voorhof (own image)

Figure 8: Woman with a trolley as hidden walker

Figure 9: Stranger helping elderly woman with crossing the road

Facilities

On the left, I made a map of the facilities in the neighbourhood and the distance from the home to those facilities.

100m

In the 100m radius, there is one general practitioner available. Next to that, there is nothing. There used to be a bus stop next to the building, but that has been removed. Now it is a pick-up spot for elderly taxis.

200m

In the 200m radius, little facilities are available. There is a florist and there is a beauty salon. The facilities are on the left side of the map, while the other facilities are on the right.

300m

In the 300m radius, most of the care-facilities are located. There is a barbershop, a beauty salon, a dentist, a dietitian, a general practitioner and a physiotherapist. Besides the care-facilities, there is a church and a community centre in this radius.

400m

In the 400m radius, the closest public transport stops are located. On the Martinus Nijhofflaan, people can hop on the tram to the city centre or the suburbs of Delft. On the Voorhofdreef (bottom side of the map), the nearest bus stops are located. Bus 64 that stops here goes from the South side of Delft (Tanthof) to the North side of Delft (Abtswoudse Park).

The first supermarkets are located in the 400m radius. The Albert Heijn XL, a bakery, the Etos and a florist can be found in this radius.

500m

In the 500m radius, most of the facilities are located. The mall provides people with the Dirk van de Broek, Kruidvat, several opticians, the Blokker and Post NL. In the radius, communal facilities are located, such as a church, neighbourhood centre and a community center. Outside of the 500m radius, more supermarkets can be found and restaurants.

Figure 10: Facilities Map Voorhof (own image)

500m
400m
300m
200m
100m
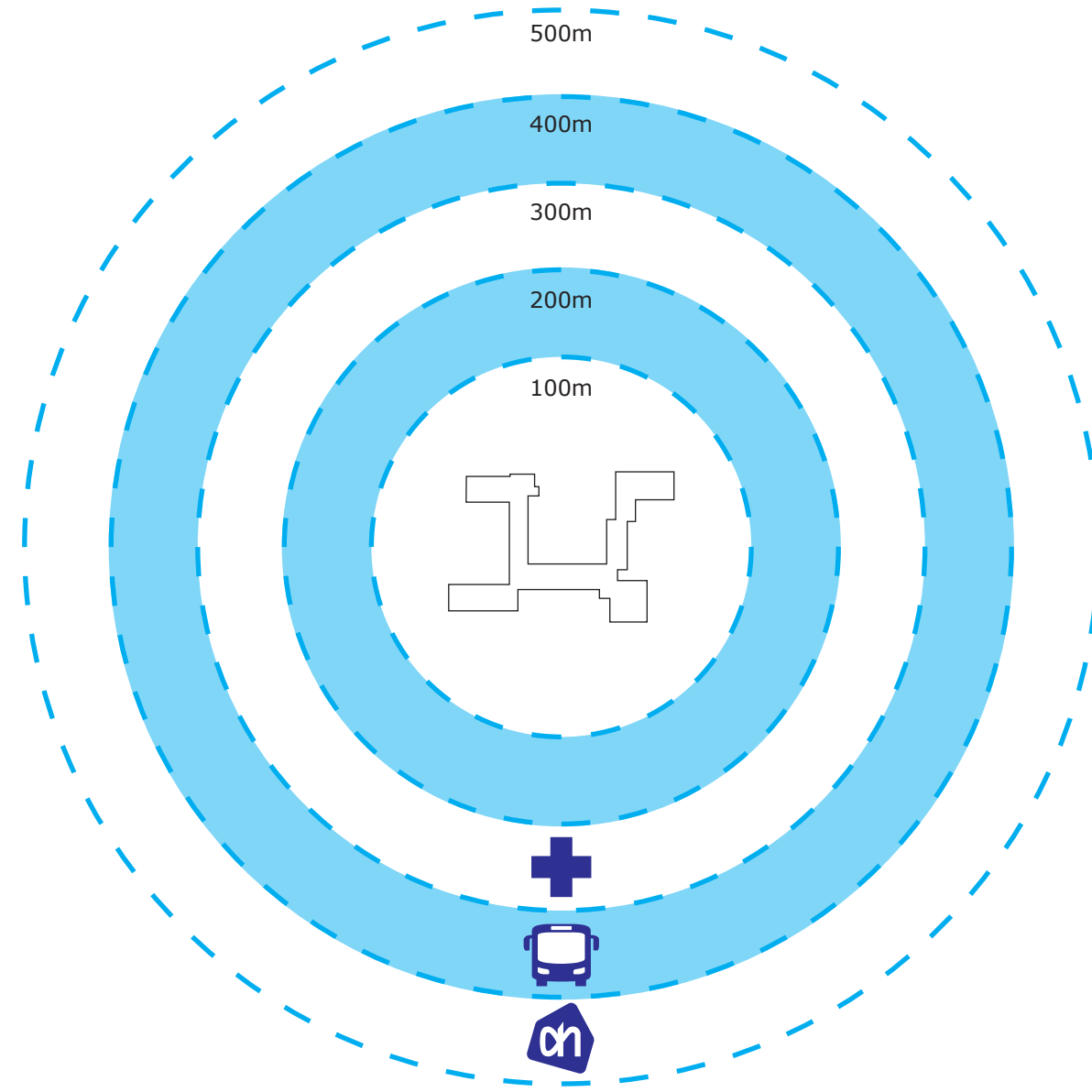
3.2.3 Conclusion

To conclude this paragraph, the most interesting element is the distances from elderly houses to facilities. Below, there is summary of the most important elements in the radius of a neighbourhood.

First of all, the furthest everybody walked was 500m, which was the distance to the supermarket. Some less vital elderly parked their car and walked a 100m maximum.

In the radius of 300m the care-facilities were located, like the general practitioner, dentist and physiotherapist. Some of the communal spaces were located in this radius

Finally, the public transport was in the radius of 400m. The tram and bus are both available for the residents and both can take them to the city centre of Delft.

These distances were walk-able, but there were some struggles on the way. Trees were blocking the sidewalk, so the elderly had to either cross the street or walk partially on the street. Traffic lights should not change too fast, because the slower elderly cannot walk that fast. For them, the road is dangerous.

The average elderly person walks 10 minutes to get to their maximum distance, which is around 500m, while younger people walk an average of 800m. To keep them in shape, it is sensible to place the facilities within the 500m. By using this distance, the elderly are still motivated to walk or bike to their destination instead of using a car (De Zeeuw, 2017). Ewing et al. (2015) shows that in the United States, 400m for facilities is a maximum distance, because research shows that people quickly lose interest after 400m. Others found out that the distance to the supermarket should be 450m (Moudon et al., 2006). The question remains if the research from different countries is applicable in the Netherlands (CROW, n.d.), but it shows that the maximum walking distance to facilities should be around 500m, so elderly will interact with others on the route.

Figure 11: Facilities versus distances (own image)

3.3.1 People

During our stay in the elderly home in Loenen aan de Vecht, we did observations to get a general knowledge of the building and its people. However, to get to know the elderly, we started to interview them. To make the elderly more comfortable, we went to their apartments and talk to them in their own living room. This was also a good opportunity to look at their rooms and see how they use their apartment.

We talked to six of the residents and one of the care-givers. To make the interview more manageable for the elderly, the questions are divided in three larger themes: 'Personal life', 'Interaction' and 'Architecture: 't Kampje and surroundings'. The questions can be found in the appendix. The interview went back and forth in subjects, so there is not a correct order in questions. Therefore the answers are placed in the three themes.
    The residents, their interviews and their rooms are combined in seven little booklets. An example can be found on the next page. Three booklets are made with the same content, but with my grandparents instead of the residents.

Some of the people we have interviewed are in the care-system, while a few need little to no help and live in an 'aanleunwoning'. The elderly all still have family that visits them often. If they don't live nearby, they have a lot of phone-calls with them. The family is a big important element in their lives.
    Most of the elderly lived nearby before they went to Loenen aan de Vecht, and lived in either apartments or single-family homes. Due to their health of the health of their partners, they moved to the elderly home.
    Most the residents join the activities organized by the care-givers or Vrienden van 't Kampje, an external committee. Most of the activities are about music or having dinner together, but there are also activities that stimulate the hobbies of the residents, like painting. The paintings are also exposed on the walls of the halls (see appendix).

Interesting to see are the different types of people. There are people who join most of the activities and have a lot of contact with the other residents. Then there are those who still have an active life outside the building and have little contact with the other residents (see Mrs. Huiskamp in Appendix). Finally there are the anonymous residents. They stay in their room all day and their neighbours don't know them. They are not interested in the communal activities and conversations.

Figure 12: Residents of 't Kampje (own image)

MRS.

EVERWIJN

## Interview

Personal life
- Children living in the Netherlands, Germany, Spain and Israel
- She used to live in a big apartment in Woerden
  - 3 bedrooms
  - Big central hall
  - 4x4m kitchen where everything took place
- She used to own a bakery with her late husband
- She has a family of psychiatrists, so that's where she learned to listen to other people
- Hobbies are music (used to play herself), painting and writing in her diary

Interaction
- Children try to visit as much as possible and they call every day
- She joins most of the activities and coffee breaks organized by the care-giver
- She joined a painting class
- She visits friends in the building
- She is open to other cultures and ages in her building (for example a Syrian family in her old building)

Architecture: 't Kampje and surroundings
- Loenen aan de Vecht is a beautiful village: walking along the water is great
- The view from her ground floor apartment is great: looking out on the square and on the fountain
- Her room has a good size. It's not too big and not too small and it's great to have your own kitchen
- She doesn't use the open kitchens in 't Kampje
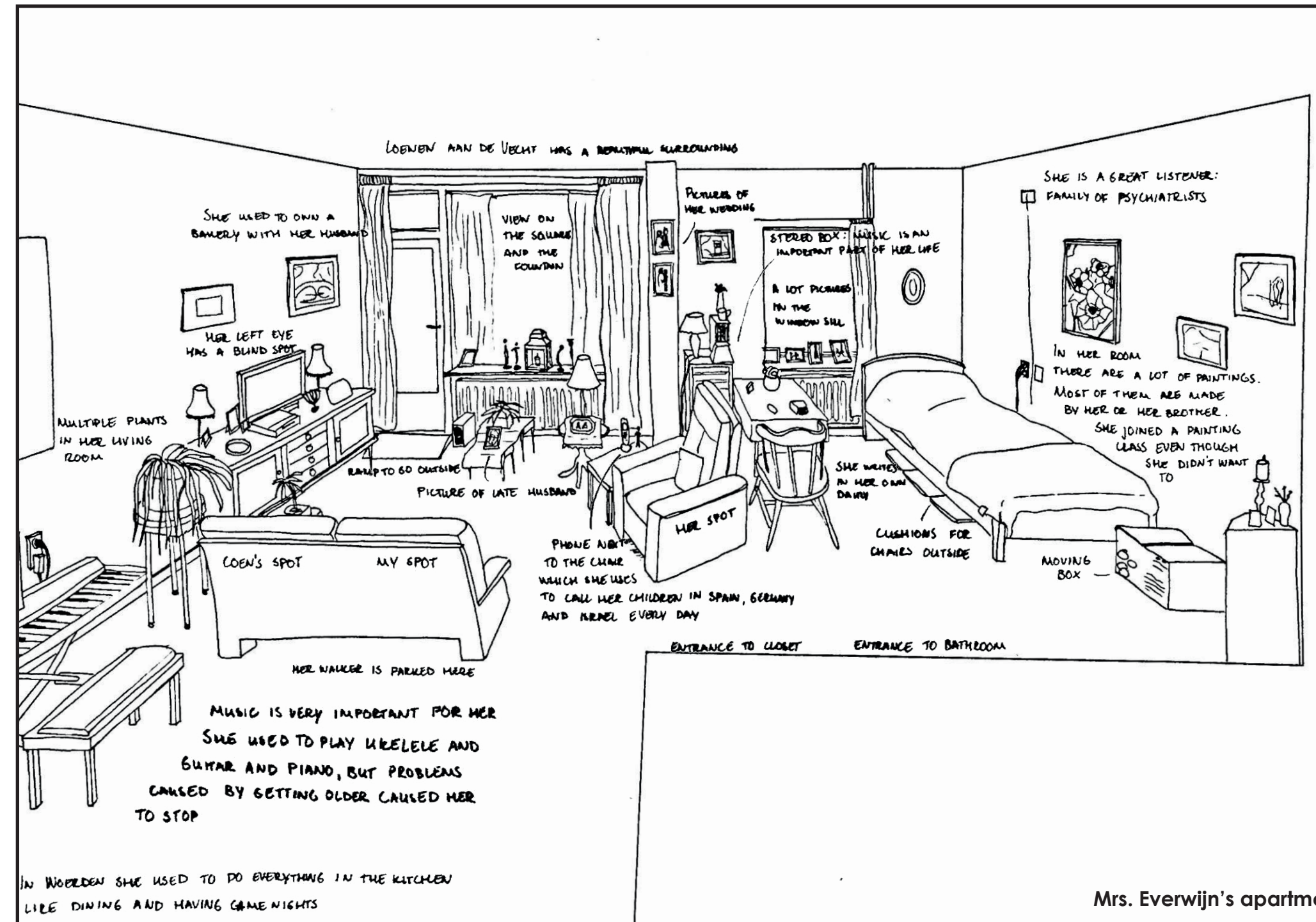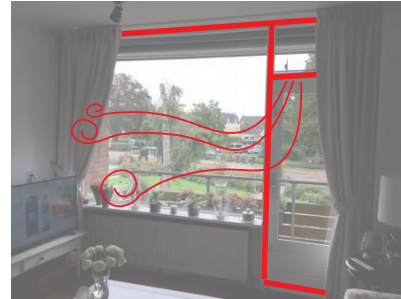

Mrs. Everwijn's apartment
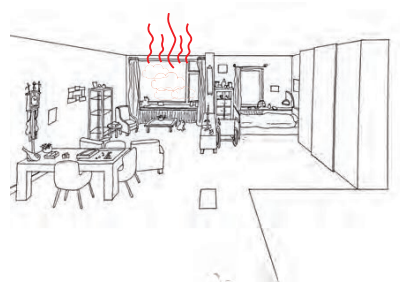
Figure 13: Improvements vs positive points of 't Kampje (own image)

Architecture

Out of the interviews and observations, some points about the apartment, building and neighbourhood can summarized. The residents were asked to say something about what they like in these scales and what could be improved. The pictures on the left show the points which were discussed the most among the elderly.

What could be improved?
The biggest problem for the building is the emptiness in some of the communal rooms. The organization designed the open kitchens for the residents, where they can cook and dine together. However, the kitchens are only used by the personnel for meetings, and Vrienden van 't Kampje for dinners with the elderly.

Other improvements are smaller problems that a few of the residents have. For example the noise and smell coming from downstairs. The private rooms are filled with the smell and in the summer the residents don't want to open their windows because of it. The threshold at the door to the balcony or garden is too high for the more fragile elderly. Finally, there are not enough shops in the neighbourhood, only the Jumbo which is on the perfect distance of the nursery home.

What are the positive points?

The residents are really content with their room. I will discuss the decoration of the rooms on the next page. The kitchen and balcony are elements that makes the residents feel that they have freedom. Freedom of making the choice of cooking for yourself and not feeling locked up in the room. The sun and view is important for them. They talked about what they like in a view: the fountain, greenery, the square, the church, the playground, the bus-stop and the busy street. They like a lively view.

Another positive point is the organised activities, especially the dinner activities with Vrienden van 't Kampje.

The library is great for reading the newspaper in the morning and having small-talk with friends, family and the neighbourhood.

In the summer they sit in the garden near Studio Idee underneath a large tree. There the livelihood of the neighbourhood is visible.
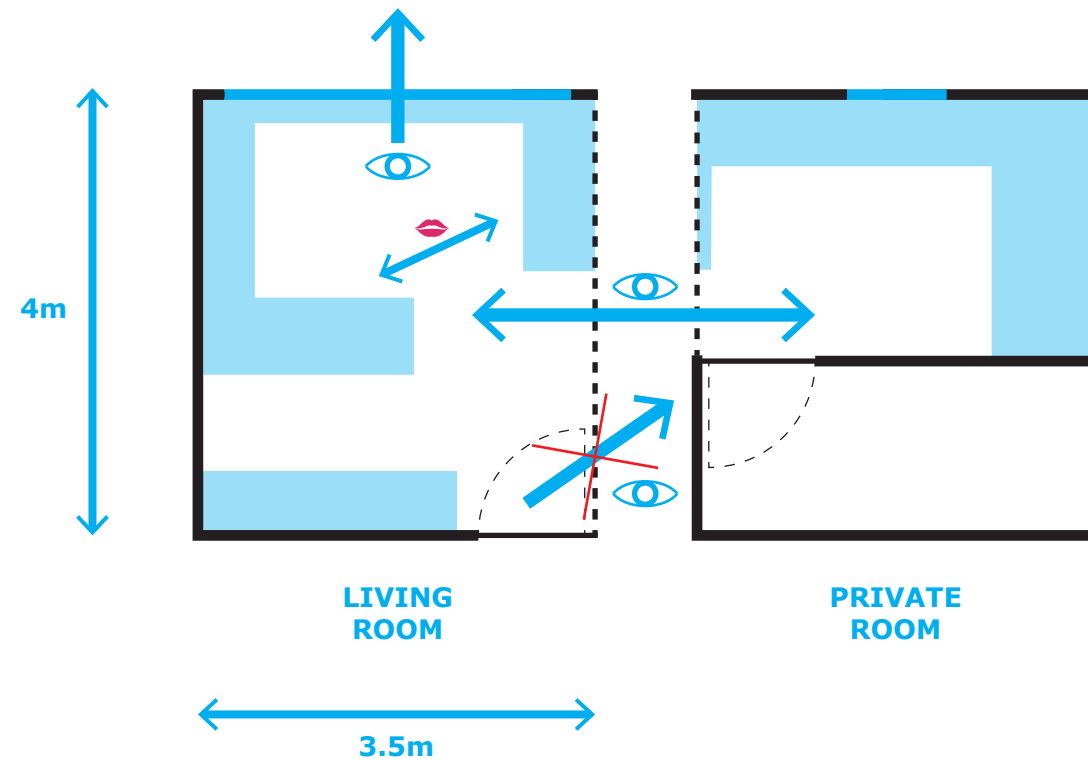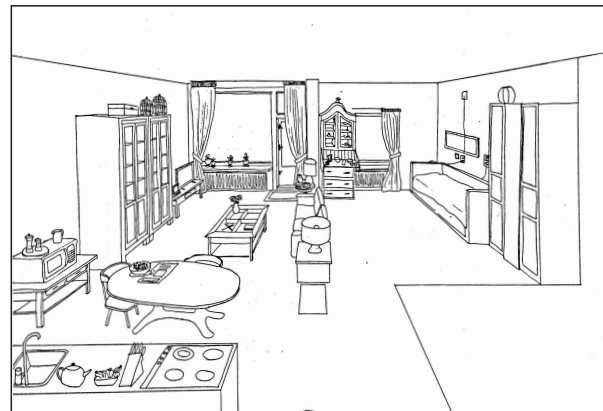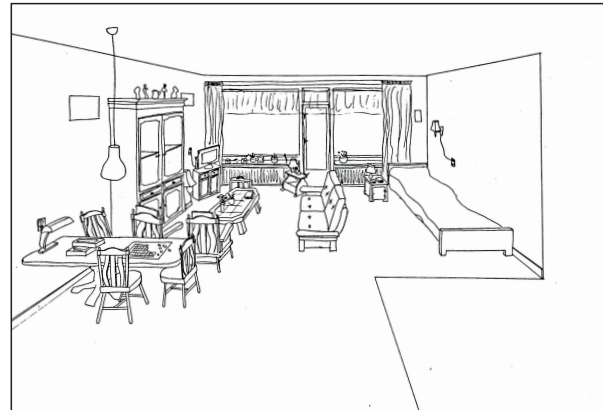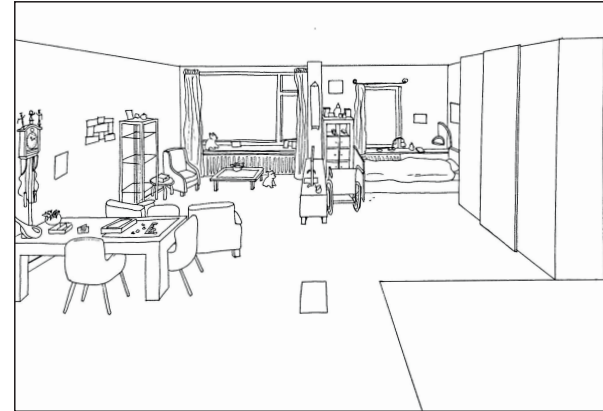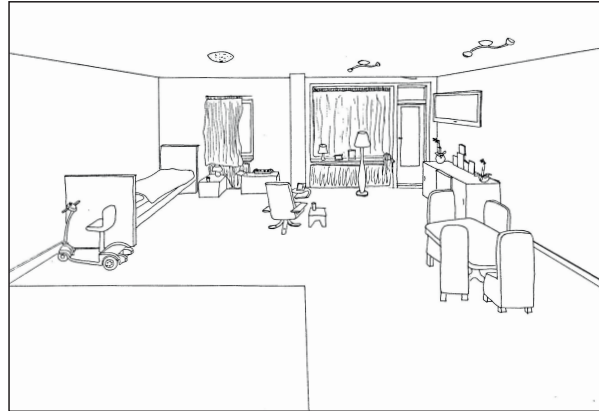
Improvements:
Empty communal spaces - draught - not enough shops - smell and noise from kitchen - threshold to balcony

Positive points:
Freedom - View - Small-talk library - Organized activities - Large tree for shading

Figure 14: The lay-out of the apartments (own image)

3.3.2 House

During the interviews, we got the chance to look around in the apartments. Almost everyone said that the size of the room is perfect. In the beginning it was a big step: from a large single-family house or apartment to a smaller nursery home. Now the size is large enough to walk around in. The room is 7m wide and 4m deep.

One of the residents we talked to lived in a different apartment in an 'aanleunwoning' or sheltered house. That apartment was about 11m long, had two bedrooms, one large bathroom and a large living room with open kitchen. For her, this was too big. As an example she said that it felt like she had to walk a marathon to get a cup of coffee. Even the bathroom was too big. The room would be difficult to warm up, so she was always cold when she tried to shower.

Going back to the other rooms, before the renovation they were half in size. Now two old rooms form one big room. The residents have their own kitchen and bathroom. On the living room and kitchen side they have a large window with a door going to either the balcony or the garden. The other half contains the bathroom and bedroom with a smaller window in the middle of the room.

The residents all have more or less the same lay-out, but there is a reason behind that.

The immovable elements are the bathroom and kitchen. You enter with the kitchen on the one side and a wall of the bathroom on the other. The wall of the bathroom creates privacy for the bedroom. The guest can't immediately look into the bed. Only when you take a few steps forward, you can see the whole room.

Near the large window is the living area. Most of the residents have placed some lounge chairs and/or sofas in this area, where they can have their private conversations. Because of this arrangement, they can both talk and look outside to see the livelihood. The room is always divided into two sides through something in the middle. Most of the time this is a lounge chair, but it could also be the television.

Interesting to see is that the residents who use the care-system and have constant care, don't use the kitchen. They filled the induction cooker with kitchen appliances like the water boiler, and with fruit or vegetables.

Legend:
→ = ROUTE OF RESIDENT
→ = ROUTE OF CARE-GIVER/VISITOR
△ = ME
○ = STANDING STILL
↔ = VERBAL INTERACTION

3.3.3 Building

Movement and interaction

One of the mornings, I took the time to sit at the entrance of the building and see how the people using the building, move and interact. I looked at the residents, the care-givers/staff and the guests.

The building has two entrances: one facing the square of the building and one in the direction of the town centre. In the central hall there are almost no seating. Only one table with four chairs. The other tables are part of the library and are not very visible from the entrance. I sat on the perfect spot. I was visible for everybody and therefore received a lot of greetings.

The residents

Most of the elderly are washed and dressed by the care-givers in the morning and when they are done with their breakfast, they start to walk around. While walking, they greet everybody they meet with a good morning. They stop at the mailboxes to see if they have received something. Some of the elderly met with care-givers in the hallway and stood their for about 5 minutes. Not all of them were able to stand that long so they sat on their walkers. It could be interesting to design a seating elements near the mailboxes, where the elderly could sit, talk and wait on the mail. If they would sit there, it would also create some form of security: the elderly see people walking in and out and become some sort of guard-dog.

The care-givers

For the care-givers, the morning is a very stressful time. The elderly wake up, need to be washed, dressed and have their breakfast. During the observation, the care-givers were walking with a fast pace in all directions. Some had carts with them, some were hosts of the residents and woke them up and there was a beautician to clip the nails. The staff had little time to chat for a long time, but they greeted everyone and did their best to have small-talk with them.

The visitors

In the morning, there were a few visitors in the building. Two women were looking for books in the library. They moved from shelf to shelf and took out a few books. When they saw the elderly, they said good morning, but not to the younger people. A man who was visiting someone in the building was waiting in the entrance hall. Because I was sitting at the table, there was no more place for him and he was standing in the room.
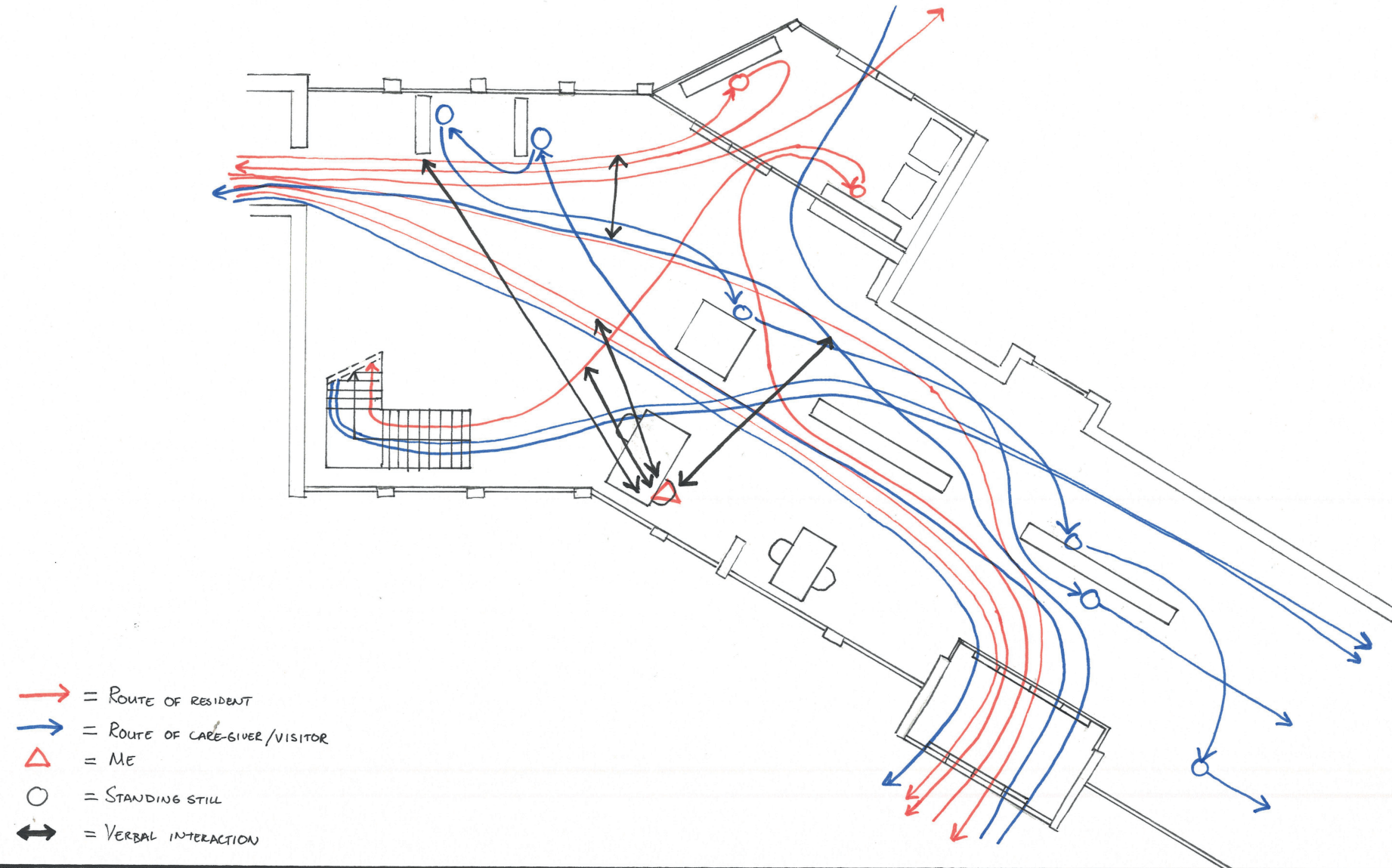
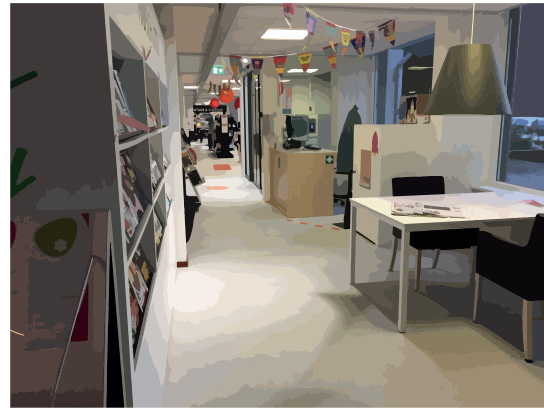**Figure 15:** Movement Map of the entrance (own image)

Open kitchens

Only used by personel and Vrienden van 't Kampje

Library

Sometimes used for reading the newspaper and smalltalk

't Trefpunt (1/2)

Used for lunch and games

Tuinkeuken

Often used for interaction before corona

Garden near Studio Idee

Often used in the summer

't Trefpunt (2/2)

't Trefpunt was occupied most of the day, every day

Communal spaces

The left pictures show how much the communal spaces are used by the residents. In the analysis are included: open kitchens, library, communal living rooms and the garden. The building also houses a physiotherapist and a barbershop/beautician, but these were to difficult to observe from a distance.

Open kitchens

The open kitchens are a new concept after the renovation of 't Kampje. They are designed in a way that the elderly can sit there in a living room area or at the dining table, and have a large kitchen where the residents can cook together. Unfortunately, none of the residents uses the kitchen. When asked why, the reason was always: "I just don't want to" or "I don't feel like it". And that's a shame, because the kitchens have everything. The only people that use the open kitchens are the personal for meetings and Vrienden van 't Kampje who cook for the residents.

Library

The building has a public library on the ground floor and partially on the first floor. One of the reasons that they build it next to the residents is that one of the elderly had said that she doesn't want the library to be in their building, she wants to live in the library! When we were there, almost no one used it. Some elderly went there to read the newspaper or had small-talk, but due to corona, nobody wants to gather here with the neighbourhood.

't Trefpunt

't Trefpunt is a communal living room and has two sides. One is the dining area, which was used for lunch made by the care-givers and for some games. Besides these activities it wasn't used. The other side, the small cosy living room was used most of the day, every day. That is due to the furniture, the position in the building and the views on the lively street.

Tuinkeuken

The Tuinkeuken is also an open kitchen with a living room part. Before corona, this living room was the hotspot of the building. The residents gathered here and talked to each other

Garden near Studio Idee

In the summer, the elderly sit outside in the garden near Studio Idee. There are nice seats and tables and a large tree that will cover them with shading.

Figure 16: The amount of activity in the communal spaces (own image)

Inhabitants by age

Population per year

Property

Housing type

Male/Female
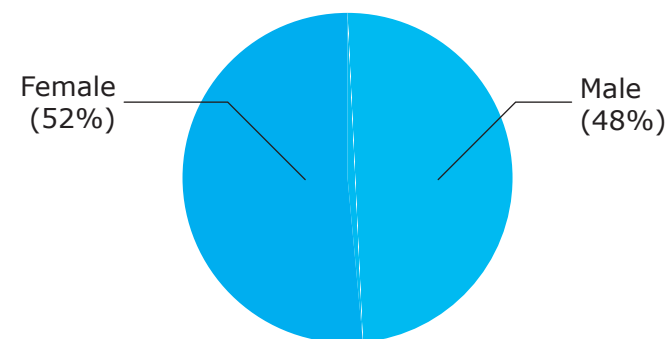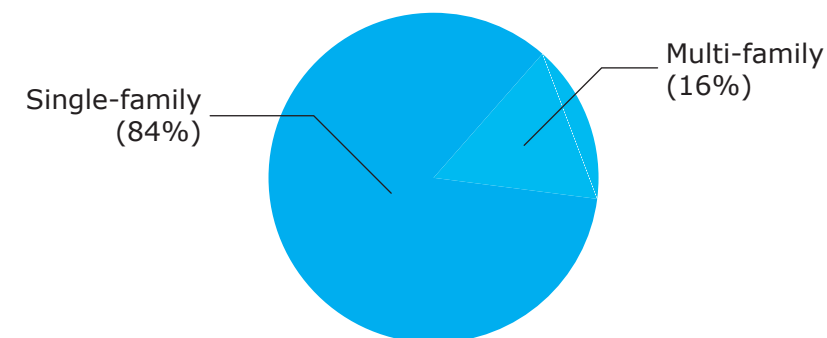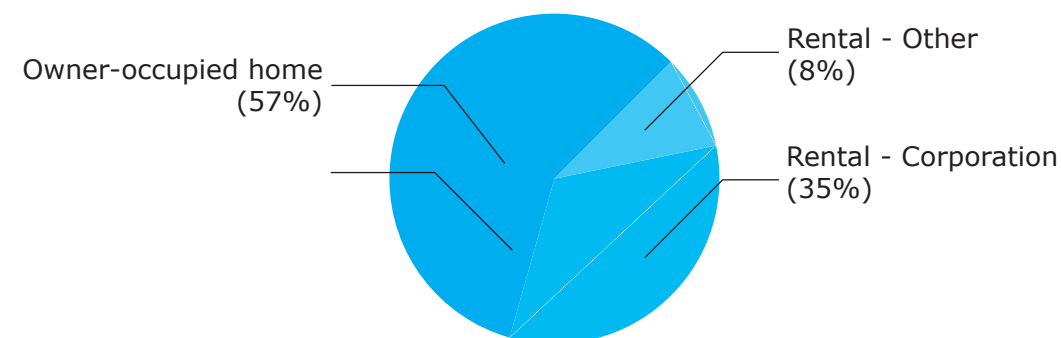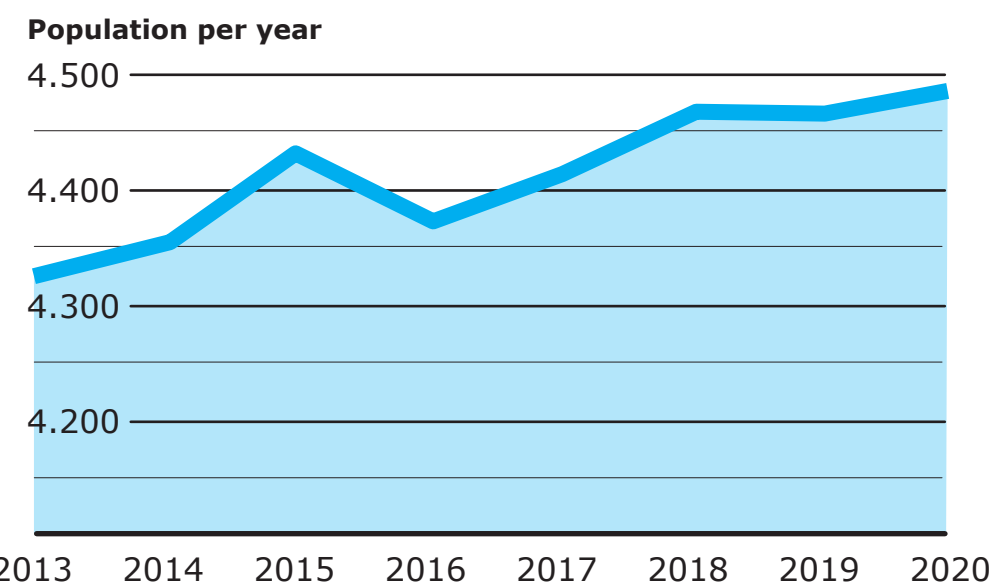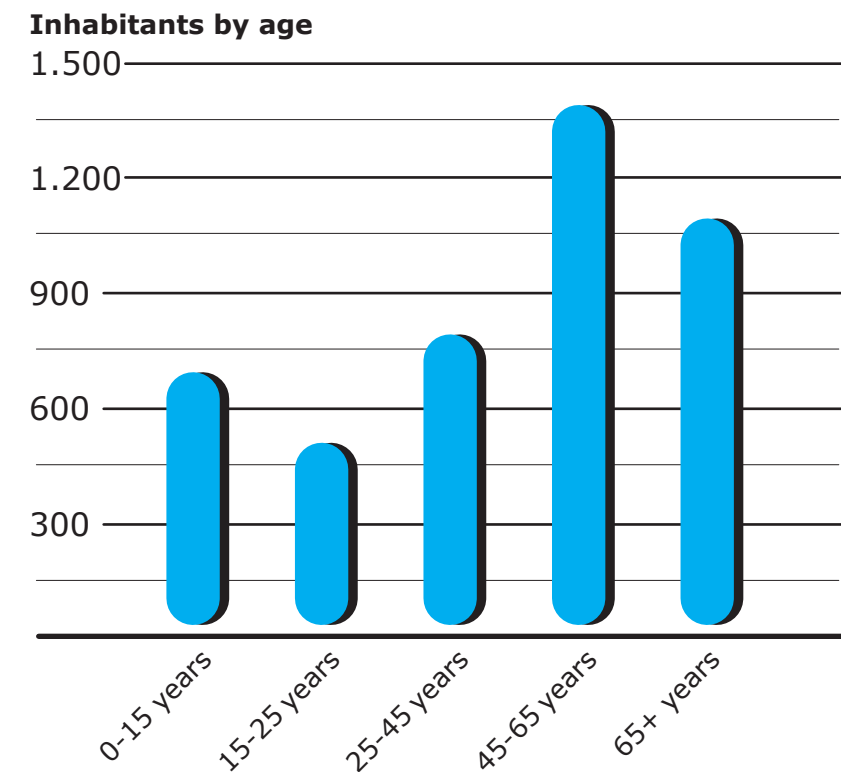
3.3.4 Neighbourhood

Demographics
On the left page, some of the demographics of the neighbourhood are shown.

Most of the people are in the age between 45 and 65 years, followed by the 65+. The amount of elderly (65+) is approximately 1100 people.

The population has increased from 2013 to 2015, while in the following year the population suddenly dropped. From 2016 to 2020, it started to increase again. In 2020 there were about 4.500 inhabitants.

The percentage of housing types is 16% multi-family homes and 84% single-family houses. 35% Of the houses are rented through corporations and 8% rented by others. 57% is owner-occupied.
        The percentages differ significantly from Voorhof in Delft. The graphs show that the residents of Loenen aan de Vecht are wealthier.

The percentage-ratio of male/female is 48% and 52% respectively.

Figure 17: Demographics of Loenen aan de Vecht (own image based on AlleCijfers.nl, 2020b)

Legend:
- ✚ = Medical facility
- ✂ = Barber/beautician
- ✂ = Bus stop
- ✚ = Church
- 🛒 = Supermarket
- 🛍 = Store
- ✕ = Cafe/Restaurant
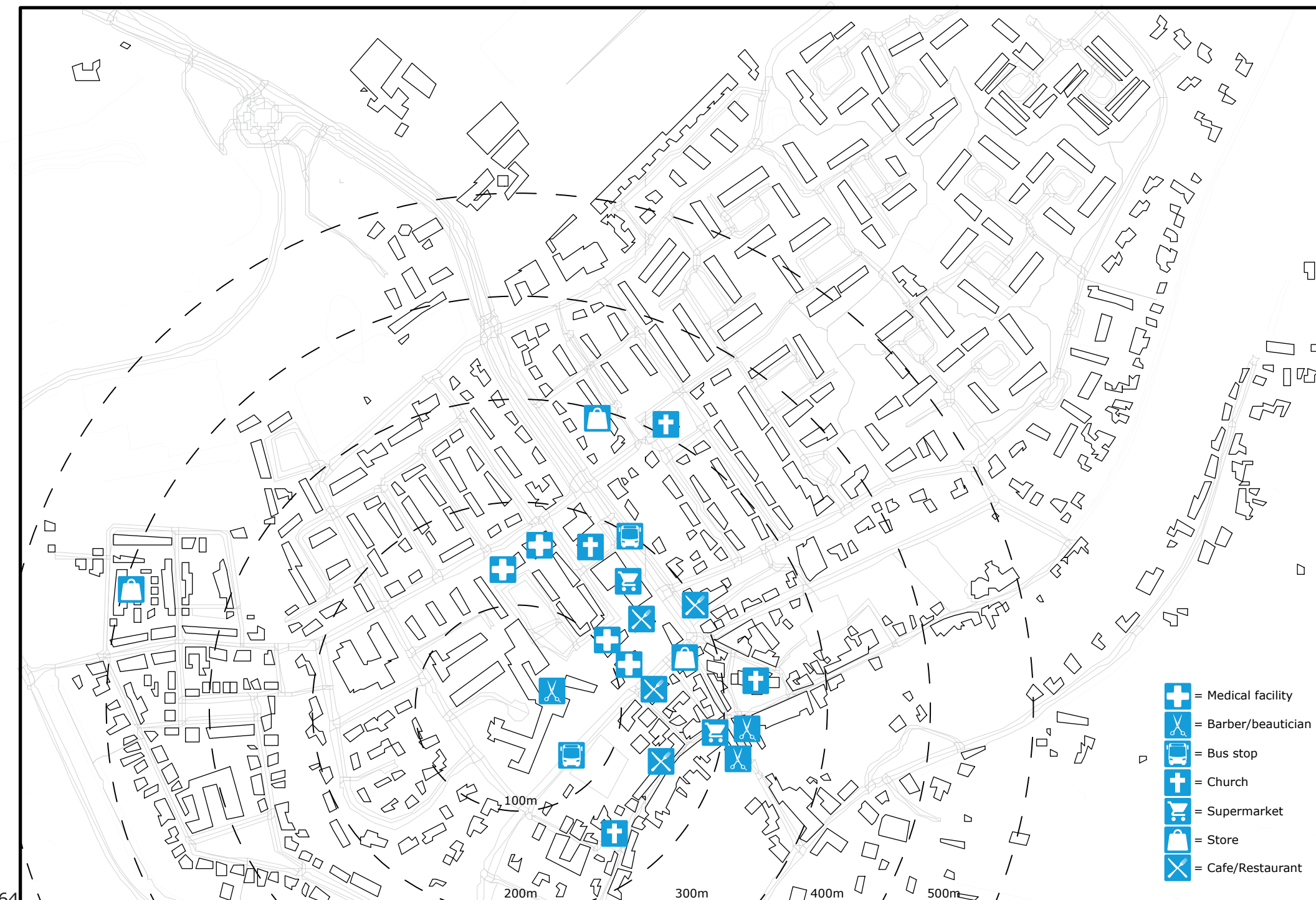
Facilities

Loenen aan de Vecht is a small town in the province of Utrecht. The town is located next to the beautiful river the Vecht and has many walking routes. One of the complaints of the residents is that the town has to little facilities. This paragraph looks deeper into the amount of shops and the distance to them.

The nursery home is located near the centre of Loenen aan de Vecht. Before the renovation, they had only one entrance and it was to the south side of the building. The residents had to walk around the building to get to the centre, which was exhausting for them. Now there is an entrance facing the centre of the town, which has been a great success for the elderly.

The only big supermarket in the neighbourhood is the Jumbo. From the nursery home, it is in the radius of 200m. The elderly who walked with a walker said that the walk to the Jumbo is the furthest they can walk. Some of the residents even use the scooter to get there. The only other food supplier is the bakery next to the water, but nobody talked about it.

The medical facilities are also in the 200m radius. The general practitioner, the dentist and the pharmacy are all on a walk-able distance. The general practitioner used to be in the building, but after the renovation he moved into the town. That is the only complaint of the elderly. The physiotherapist is still in the building.

Just like the physiotherapist, the barber is also located in 't Kampje. This barbershop is also a beautician. Other barbershops and beauticians are located in the 300m radius next to the water.

For leisure there are cafés and restaurants in the 200m radius next to the busiest street of Loenen. None of the residents talked about them. What I heard from them is that they eat more for lunch and therefore don't feel hungry at night. A lunch-room would be better for the elderly.

On Sunday they can go to multiple churches in Loenen. The churches are located in the 200m, 300m and 400m radius, but they also have a pastor who comes to the building and gives a service in Studio Idee.

If the elderly decide to go to Breukelen, they can take the bus, which is located next to their home.

Figure 18: Facilities Map Loenen aan de Vecht (own image)
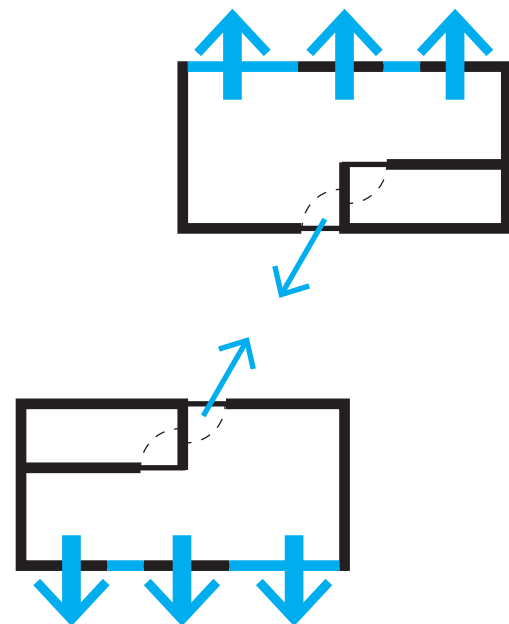
Figure 19a: Residents alone in their room

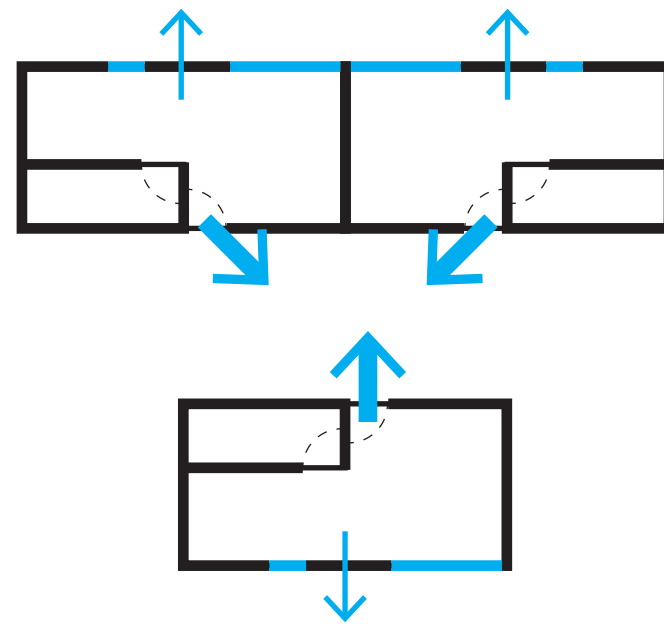Figure 19b: Residents who have a life outside, but still have contact inside

Figure 19c: Residents who do almost everything with the community inside

3.3.5 Conclusion

The start of the literature research begins with our personal interest. The research is going to be the foundation for a design that will give solutions for a problem in current elderly architecture. In Loenen aan de Vecht, there were not many big problems, mostly smaller problems that are only for a few people applicable. However, there is something that can be a problem for the future.

In the nursery home, there were many groups of people. Firstly, there are residents who do almost everything with the community inside the building. They still have family outside, but most of their contact is with the other residents.

Then there are the residents who still have an active life outside with their family and friends. They are more vital than the others, so they have the possibility to go out. These residents still want to have contact with the other residents, but only either small-talk with the less vital residents, or longer conversations with the residents who have the same interests.

The final group are the residents who rather stay alone in their room. According to the host Maarten who tries to have one-on-one talks with them, these residents are either farmers from the neighbourhood or people with a higher education. The farmers are not used to having neighbours: there houses were far apart from each other, so they only had contact with friends and family. The people with a higher education rather stay in their room than talk to people with less interesting conversations. An example is a doctor who didn't join the groups, because she is done with all the talk about diseases.

The problem lies with the last group. The residents don't know who there neighbours are: they are ghosts. This anonymity can lead to decay in the scale of neighbourhood. No one will look out for each other and public elements will be neglected. (Van Dorst, 2005; De Kam, Needham, 2003).

Of course, the choice of staying alone in your room is your own choice. This freedom should not be taken away. However, research shows that even though the people think that they are happy when they are isolated, there will still be health problems due to stress (Schoonen, 2020). In the beginning, they can be self-reliant, but eventually the problems will get worse and they will need professional help. With the growing amount of elderly that will be problematic. If every individual needed a professional, the care-system will fail. There is already a shortage in staff. Therefore society should help where they can help (Van Houten, 2015).
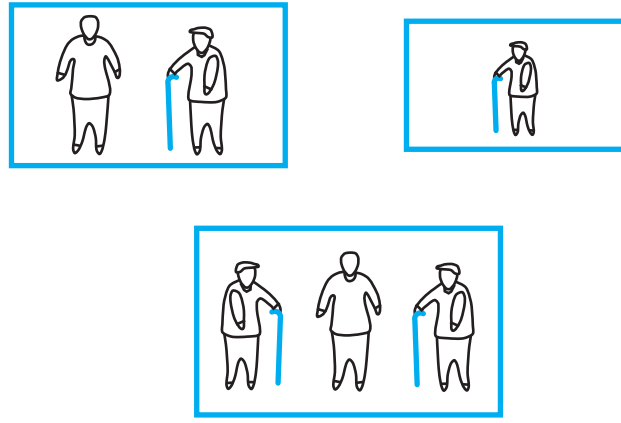
Figure 20a: The amount of communal spaces is important for how often it is used. Too much and nobody will use it. The sizes should differ for the various forms of activities

Figure 20b: The residents should have a space near the entrance where they can sit while waiting for the mail

Figure 20c: The apartments size of approximately 30m² is an ideal size for elderly who are in need of care
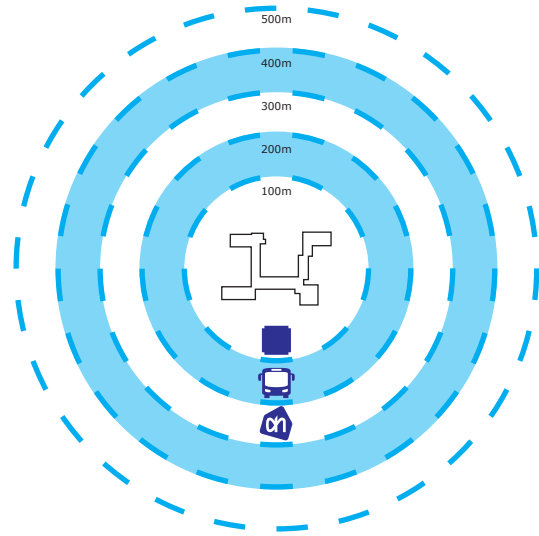
Figure 20d: Elderly prefer variation in shops in the neighbourhood. The medical facilities, public transport and supermarket should be in the 300m radius
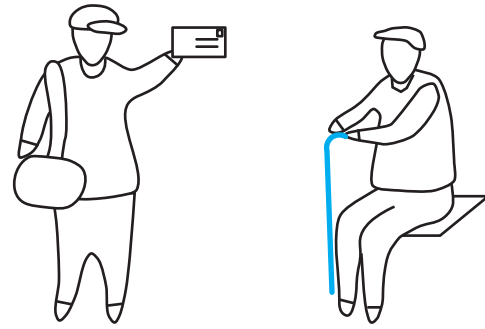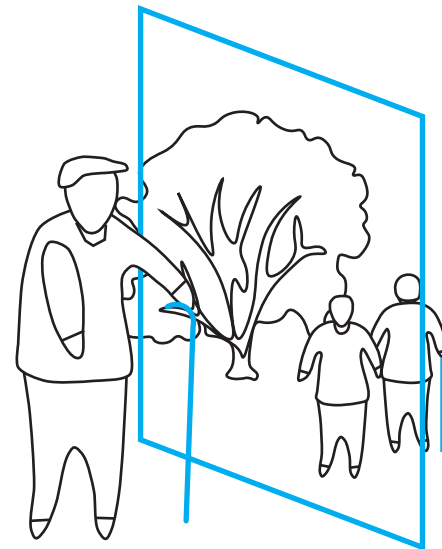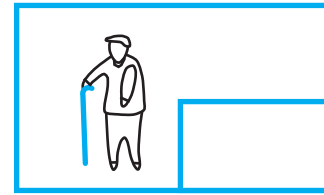
Figure 20e: Elderly need views on activity: views on greenery, children, bus-stops and lively streets
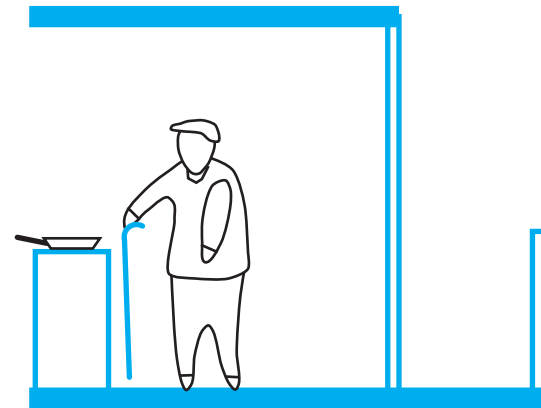
Figure 20f: Freedom is important: freedom to cook and freedom to go outside on their balcony or in their garden

3.3.6 Architectural findings

This final page will summarize the improvements and positive points of the architecture of the nursery home in Loenen aan de Vecht for future references.

Improvements

The biggest improvement could be the amount of communal spaces. The open kitchens were not used by the residents at all, so in case of a care building, one open kitchen in a larger communal space would be better.

The sizes of communal spaces could help with differentiating in sorts of activities and conversations. Not everyone feels at ease in a larger area and are in need of smaller spaces.

The amount of shops in the neighbourhood could be improved. There is little variation in where people can shop. Now there are only cafés, restaurants and one supermarket and the elderly have to go to surrounding towns and cities for other shops.

The elderly should have a space near the entrance where they can sit when looking for their mail. Now there were no seats available and people sat on their walkers.

Positive points

The most positive point was the size of the room. For people in need of care, a large room means that they have to walk too far. The ideal size appears to be 4x7m with a bathroom included. However, this is the size for elderly in need of care and not healthy elderly. They prefer a larger space.

Freedom is important for elderly, so people should be able to cook themselves and they should be able to have their own private outdoor space, like a balcony or garden.

The rooms and communal spaces should have a view on greenery, children, bus-stops and lively streets so the elderly can have interaction with the outside world.

Not everything was visible in the building environment of the elderly. As mentioned on page 67, the problem lies with the anonymous elderly. To give a solution with the help of architecture, the topics of social safety and individuality should be researched. The following chapters will look into existing literature on the topics and give architectural solutions to create a social network for elderly. Firstly, the definitions will be discussed.

4. Social Safety

The stay in the nursery home in Loenen aan de Vecht showed that there are anonymous elderly living in the nursery home. They are socially isolated and this will cause decay in the neighbourhood and health-related problems. Social safety could be a solution for this problem, but the elderly should remain their individuality. How can the social safety and individuality of elderly be stimulated through architecture? To understand the research question, the term 'social safety' should be defined out of literature and observations, because the term has a wide meaning at the moment.

Social safety is more commonly used as a term in the field of economics, but its definition could also be applied in the field of sociology. According to an article in the Journal of Asian Economics (Paitoonpang, Abe & Puopongsakorn, 2009), social safety is something people receive if they have a social safety net (SSN). Paitoonpang (2009) says:

The safety net analogy is drawn from high-wire walkers who are protected by a safety net if they fall. The net reduces the chance of injury if the walker falls, and many walkers also carry long poles which help them maintain their balance and prevent falls.

The social safety net can be classified into a formal category and an informal category. The difference between the two categories is that formal safety is legally guarantied, while informal safety is not legally mandated. Informal social safety is provided by family members, friends, the neighbourhood and members of a community (Paitoonpang, Abe & Puopongsakorn, 2009).

Social safety is not only provided by having a safety net, consisting of members of your community, but also by surroundings. Emotion plays an important role in safety through surroundings. Surroundings can create a feeling of self-dependence and safety. An example is greenery. Social safety and the percentage of green space are related. Multiple analyses show that the feeling of social safety is enhanced, when there is more green space in the living environment. However, in strongly urban areas, the feeling of safety is diminished when the green space is enclosed (Maas et al., 2009; Groenewegen, Van den Berg, De Vries, & Verheij, 2006). During the fieldwork weeks, I interviewed my own grandparents to go deeper into their feelings of safety. One of the important conclusions is that the feeling of safety also comes from the touch of sunlight, sounds and having a wall in your back (see the interview with Grandparents De Hommel, Appendix A).

Psychotherapist Bob Livingstone (2020) says: "Feeling safe means being self-assured and ditching the self-doubt. It means waking up in the morning and deeply knowing that you deserve to live in a safe space and have the happiness that it brings". This is the most

important thing about feeling safe. Feeling safe means feeling happy and therefore be healthier. When people are happy and healthy, less care is needed and they will do more on their own.

In this research, social safety does not mean the safety from strangers and/or criminals, but it means the safety from feeling weak. When people get older, statistically more problems will occur. When that happens, people who are alone need to have help from others, without constantly asking for it, otherwise they will feel resilient.

Social safety is a feeling that will make an individual more independent and stronger, provided by a supporting network and their physical surroundings. It does not mean the safety from criminality, but the safety from feeling weak. Through social safety, people can rely on each other, without constantly having to ask for help. Social safety and the supporting network stimulate interaction and makes sure that everyone can feel as included as they want.

Social safety is directly related to social activity. Jan Gehl (1971) mentions in his book Life between Buildings: Using Public Space that social activities only take place when the social environment is at the most pleasant. But when is this environment at its most pleasant?

According to the Twelve Quality Criteria of the Gehl Institute (n.d.), there are three themes for a pleasant environment: Protection, Comfort and Enjoyment. The matrix can be found in Appendix B. The twelve qualities are spread over a matrix with these three main themes. The matrix is to be used as a tool to determine the quality of a public space. Some of the topics are about safety, walk-ability and enjoyment of the space. For Gehl (1971), safety is mostly about physical safety. Protection from crime, protection from traffic and protection from unpleasant weather. However, to be safe means to feel safe, so not every solution is physical.

This chapter will dive more into elements that will make people and namely elderly, feel safe.

Social control
Social control has a negative connotation. Social control is associated with the obligation of having a social network: you have to constantly watch each other. Only that is one side of social control. Social control is the control of a social network on the individual. There is a certain need for the living environment, and social control to keep the norms and values of that environment. If there is too much social control, it will become a strict community, but if there is no social control, the neighbourhood turns to an anonymous environment and will decay in quality (Van Dorst, 2005; De Kam, Needham, 2003; Platform31, 2021).

Anonymity was an important issue for the elderly in Loenen aan de Vecht. Some of their neighbours were always in their room, so they did not know who they were and it made them, the non-anonymous, feel estranged from their own building. Blokland (2008) shows that the anonymity can be addressed through 'public familiarity'. Through multiple small meetings, people will get familiar with each other. They will know each other, but not necessarily be each other's acquaintances. Interesting is that public familiarity is obtained through direct contact, for example having small-talk at a public place like the bakery, but also through talking with someone about a person you don't know. In an earlier book (Blokland-Potters, 2008), Blokland describes three different types of relations neighbours can have. A relation where both parties benefit from small service exchanges, like watering the plants or giving a spare key, is the transaction. The second relation is the connection. Some people value being a good neighbour, not because they need the relationship. The neighbours are not important as individuals, but the relationship started from their morals as being a good neighbour. The last connection is the bond. Now the unique characteristics of the

neighbour are important (Blokland-Potters, 2008; De Kam, Needham, 2003). Granovetter (1973) calls this a strong-tie. The three different types of relations are important for the existence of healthy communities and neighbourhoods. Not everybody will have strong-ties with everyone and that is not necessary. The different relations of the residents in Loenen aan de Vecht were visible. Some spend the whole day together and have small-talk to people who are in different groups. Anonymity is the problem that needs be addressed. A balance of the different relations will create a chain of recognition in the neighbourhood. Neighbours can place certain faces in certain groups and they will know who they are.
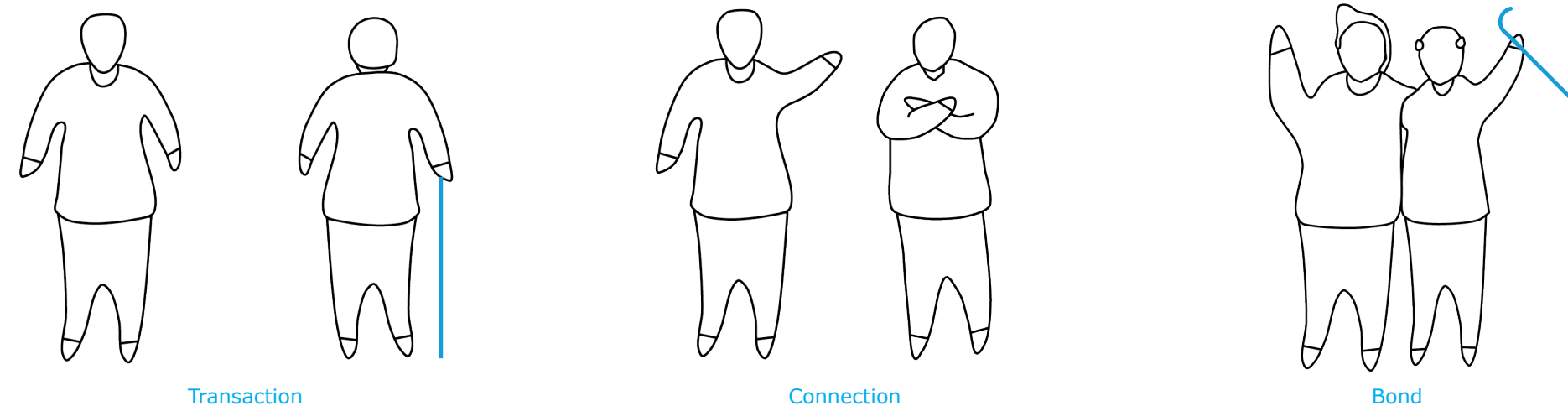

Transaction   Connection   Bond

Figure 21: Blokland's relations between neighbours (own image based on Blokland-Potters, 2008)

4.3 To see and to be seen

So the elderly can feel more safe when they know who is living in their neighbourhood. The elderly should know who is from there building and who is a potential threat. Public familiarity means knowing your neighbours by seeing them, talking with them and hearing about them. Especially the visibility is very important. To see and to be seen. Then over time, the anonymity will change into familiarity and being part of the community. That does not mean that they will have to interact, but by only knowing the face of your neighbour, he can be linked to a community. What does that mean for architecture?

To see

From the experience of feeling weak, it became clear that the eye-level of the elderly is different than from the other ages. The average eye-level of adult (20-60 years) Europeans is 1705mm while standing and 833mm while seated. For Dutch elderly (60-100 years) the eye level is 1465mm while standing and 694mm while seated (Voskamp, n.d.). If the elderly want to see outside and they want to be seen, the windowsill should be at a maximum 500mm.

Social safety can also be perceived through activity. Gehl (1971) says that when people perceive activity, they will most likely be attracted to this activity. The attraction to activity is what makes the neighbourhood be both physically safe, there are less criminal activities, and socially safe, there are people outside who can keep an eye out for you. The most

famous example of this solution is the concept of 'eyes on the street' by writer and journalist Jane Jacobs (1961). She says: "The buildings on a street equipped to handle strangers an d to insure the safety of both residents and strangers must be oriented to the street" (Jacobs, 1961, p.35). To create the safety, there must be a balance between people who can watch the street and people who will use the street. Nobody wants to sit on the sidewalk if there is no activity. To ensure activity, a public plinth can be placed in the building, or elements like benches or a bus stop can be placed, so people will be attracted to go there.
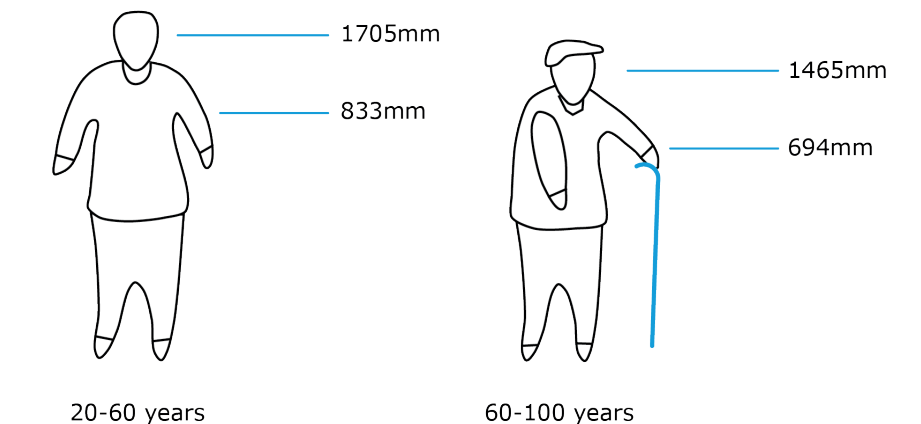

20-60 years   60-100 years

Figure 22: Eye-levels of elderly (own image based on Voskamp, n.d.)

To be seen

Creating social safety without interaction means also to be seen. Social control needs to happen without the observed feeling constantly observed, so he can keep his self-independence and individuality. If they feel observed, the behaviour or performance will alter and has consequences on their feeling of privacy. But at what level can you still see what's happening in the building from the street? Gehl (1971) shows that there is a relation between social control and the height of the building. If the building exceeds a certain level, then the people who live above that level will not be part of the social control/interaction of the street level. If one is the ground floor, then between the third and fourth floor, there will be a decline in the ability of contact with the ground floor. Above this level, people will have to lean more and more from the window to be seen. The final threshold is between the fifth and sixth floor. Anything and anyone above this level cannot be seen and will lose contact with the activities on the street (Gehl, 1971).
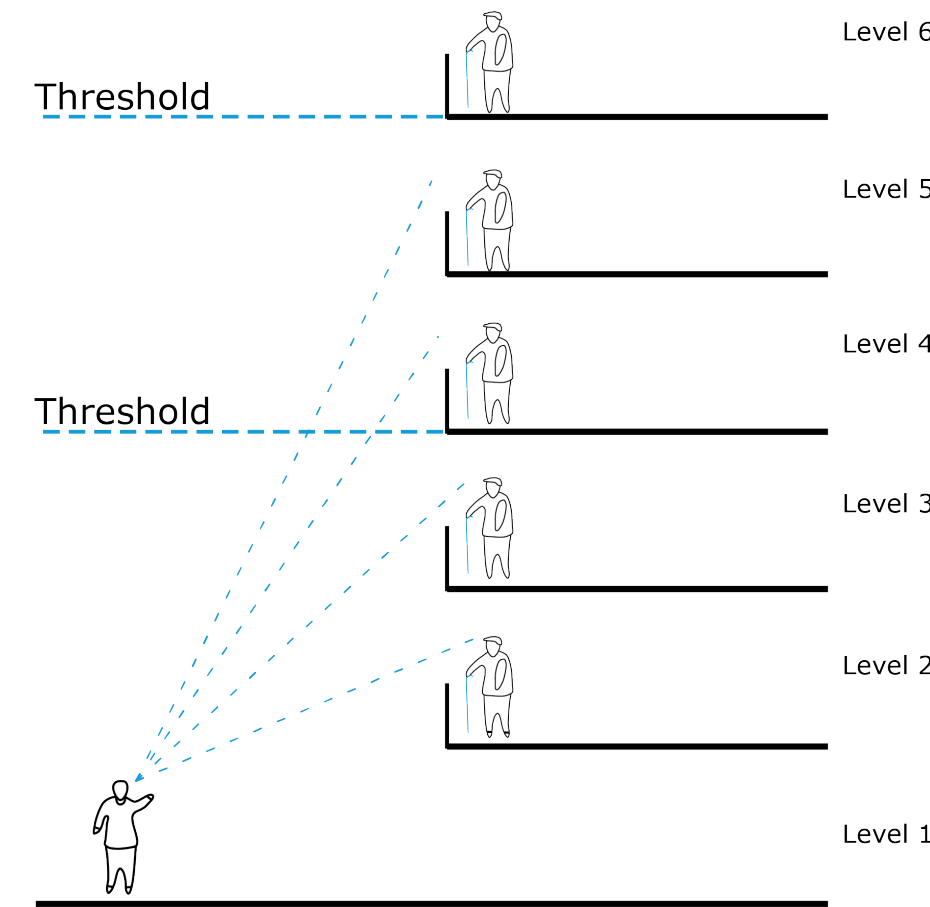
Threshold

Threshold

Level 6

Level 5

Level 4

Level 3

Level 2

Level 1

Figure 23: Contact with the ground level
(own image based on Gehl, 1971)

Public familiarity can be achieved through the different relations in a neighbourhood. People start to recognize each other and take care of each other through social networks. That raises the question of the group size. What is the comfortable amount of people in a social network? Is there a maximum of people in which the network feels safe?

Need of belonging

The next chapter describes the importance of individualism, but for now we talk about being part of a collective. Among humans there is a need to belong. An explanation could be from an evolutionary perspective. Baumeister and Leary (1995, p. 499), two social psychologists, state that social bonds have survival and reproductive benefits. To survive, humans stayed together, hunted in groups and maintained defences against predators. Children would stay with the adults so they can stay healthy and be fed. The same is visible with animals: many stay in groups, packs, herds, a colony, etcetera. Baumeister and Leary came up with a theory of the need to belong (Baumeister & Leary, 1995). In contrast to the Freudian version of Bowlby's (Bowlby, 1969, p. 207) work, where an individual only feels a belonging to his boss or superior, due to the relation with the birthmother, the theory of Baumeister and Leary states that an individual can direct the feel of belong to any other person. Only, it takes some time to establish this bond, but thus can be replaced with another. Social contact with a long-term acquaintance can give some satisfaction and a sense of belonging (Baumeister & Leary, 1995, p. 500). Their theory is on one part conflicting with the ideas of Blokland, Van Dorst and Soenen. According to Baumeister and Leary, the sense of belonging and safety can only be retrieved from long-time acquaintances, while the others say that getting to know strangers also helps with these feelings.

Social network proportions

Now that is established that there is a neurological drive to stay within groups, the question still remains with how many people, and especially elderly, they feel the safest. According to anthropologist Robin Dunbar, the size of the neocortex is connected to the social capabilities of primates. If the neocortex of the primate is larger, there is a greater chance that the primates are able to live in bigger groups. Furthermore, he states that there is a limit to the group size, before it starts to fragment. The group consists of smaller, tightly bonded cliques, instead of one group in which every individual has to monitor the others (Dunbar, 1992). According to Dunbar the group sizes can differ, caused by their function, and according to him there is an optimum in size for which the group can survive. The different sizes are 5, 15, 50, 150, 500 and 1500. To create an easier distinction, the levels will be given a name. The tightest group has 5 people, the loved ones, and is the *core group*. The next layer of 15 are the good friends, or the *close group*. After 15, the

steps become bigger and so becomes the distance in relationship. 50 people consists of friends: the *band*, 150 people are meaningful friends: *clan* or *regional group*, 500 people are acquaintances: *megaband* and 1500 people are people you can recognize: the *tribe* (Dunbar, 2003; Dunbar & Sosis, 2017; Ro, 2019.; Patrick, 2014; Zhou, Sornette, Hill & Dunbar, 2005).

5 People: Core group   15 People: Close group
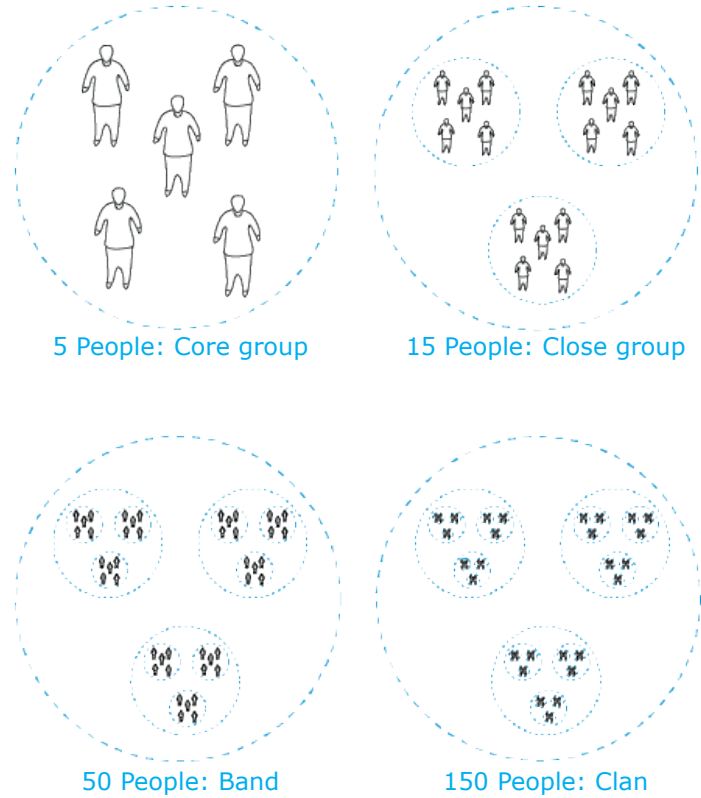
50 People: Band   150 People: Clan

Figure 24: Optimal group sizes (own image based on Dunbar)

Between the core group and the close group is a big difference in the way of having conversations. The participants in these groups behave differently due to the size of the group. An experiment on the influence of group size on group discussions, shows that two ways of communications occur during the group discussions. In the experiment, 150 undergraduates were asked to discuss a one-page description of plagiarism among students. They were assigned to either a 5-member group or a 10-member group. The results show that in the group of 5 people, a dialogue is held, while in the group of 10 people there is one dominant speaker who monologues. In the last group, there is less interaction. Only 4 to 5 people speak and the rest listens. The participants are strongly influenced by the dominant speaker and rather agree to his opinion than of a less-dominant speaker. More interaction takes place in the group of 5. The participants interrupt each other more often and therefore, the conversation becomes a dialogue instead of a monologue. The results show that when it is needed to take the range of opinions of a group into account, the group of 5 is better. If the goal is to explain one opinion to a group, then the group of 10 with a dominant speaker would be more effective (Fay, Garrod & Carletta, 2000; Gurteen, n.d.; Casari & Tagliapietra, 2018). In the nursery home in Loenen aan de Vecht, these differences were also visible. During the coffee breaks, the group consisted of approximately 6 people. The conversations were held like a dialogue. Everyone could join in and express

their opinion. The only problem was the hearing of the elderly. Some were sitting on the edge of the group, so they had trouble hearing the others. If the group was bigger than 6, the elderly could not have conversation due to their hearing and due to the fact that they felt like they did not belong in the group.

Another example is the laundry room. In the nursery home, there is only one laundry room for all the residents. The room is located on the farthest corner on the ground floor of the building. 5 Residents took the initiative to buy their own washing machine and place it near their apartments. The reason was that they rather not share the laundry room with others and the distance to the laundry room. In their opinion, the room was too small for the whole building.

For groups bigger than 5 and 15, different interactions will take place. The conversations from the core and close group can't take place in groups of 50, 150, 500 and 1500. However, according to Dunbar there is an optimum size for the stability of groups. By studying two self-sustaining communities in North-America and in Israel, he found out that 150 is the most consistent number. For the Hutterites in North-America, he noticed that the community would split when they reached a number of approximately 150 members. In the experience of the Hutterites, the cohesion of the community could not be maintained without formal laws and police force if the limit of 150 would be

exceed. The fissioned daughter communities would exist of 50 members for stability and survival. The Israeli Kibbutzim has 150 members at the foundation and goes back to this number after a fission. Numbers between the 50 and 150 and number larger than 150 create economically and socially unstable communities (Dunbar, 1992; Dunbar, 2003; Dunbar & Sosis, 2017; Casari &Tagliapietra, 2018; Ro, 2019; Zhou, Sornette, Hill & Dunbar, 2005). For social safety these numbers are important. As mentioned before, the anonymity will diminish if people start to recognize each other (Blokland, 2008). 50 and 150 are the amount of people that can still be recognized and not people with whom you should have constant contact. A research conducted with almost 60.000 participant from 16 different European countries show the importance of the size of a social network on the satisfaction with life for older adults (50+). Through interviews and questionnaires, Tomini, Tomini & Groot (2016) found out that people with larger social networks say that they are more satisfied with their lives. A difference is visible between the North-Western European countries and the East-Southern European countries. Countries like Denmark, Sweden, Austria, Germany and The Netherlands have a higher than average score on the satisfaction with life question than the countries like Slovenia, Poland, France and Portugal. The Eastern and Southern European countries tend to report smaller social networks. Individuals embedded in a social network are found to feel less lonely, happier

and have less anxiety. The social network provides a supporting structure and may be a source of well-being and happiness. The elderly population in their research tend to be more satisfied with having more family member in the network than friends (Tomini, Tomini & Groot, 2016). An important conclusion is that the core and close groups become more important for the feeling of satisfaction, and thus happiness and less loneliness, while the bands and clans are more important to have a stable community in which people recognize each other and therefore feel more at ease.
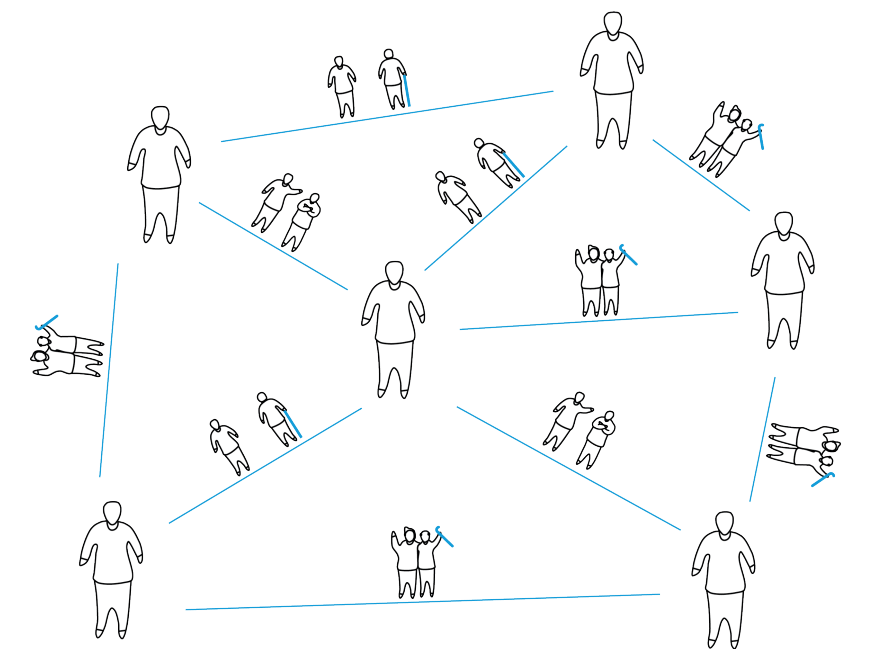

Network based on relationships (own image)

4.5 Greenery

As defined in the beginning, being socially safe means being safe from feeling weak. An important factor is the healing environment that is necessary to improve the psychological and emotional well-being of both the healthy elderly and elderly in care. One of the elements in that environment is greenery.

The role of greenery in the urban environment is ambiguous. On one side, urban greenery could be seen as a threatening area where criminal activities can be concealed or where criminals can jump out of. On the other side, green space can decrease the feelings of anger, frustration or aggression and therefore increase the social safety in the neighbourhood (Maas et al., 2009). Maas et al. (2009) did research on the relation between feeling safe and the amount of greenery in different urban environments in the Netherlands. They started with three hypotheses where they stated that people in urban areas with more green space feel less safe, that women, elderly and members of ethnic minorities feel less safe in green environments than others, and that open green spaces are positively related to social safety. Open green spaces are grass areas and other low-dense greenery. Closed green spaces contain forests and closed dune vegetation. The results of the analysis shows that there is positive relation between the feeling of social safety and the amount of greenery. People feel more safe when there is greenery in their living environment, except for in very strong urban areas. Open greenery is preferred over closed green space. Elderly feel safer when there is more green space in their living environment (Maas et al. 2009). Besides feeling safer, nature proved to reduce stress, reduce pain and pain medication usage, and promotes recovery (Ulrich, 1984; Ulrich, Berry, Quan & Turner Parish, 2010). Therefore, there should be visual access to nature. Views on nature can be manifested through outdoor gardens, indoor plants and window views on greenery, or through artwork depicting nature scenes (Ulrich et al., 2010; Kahn et al., 2008). The window views on nature are both positive for the elderly and the care-givers. The care-givers report less stress, feeling healthier and have a higher job satisfaction (Schweitzer, Gilpin & Frampton, 2004). The picture should depict landscapes during warmer seasons, like the summer and spring, where flowers, older houses and garden scenes should be visible (Schweitzer, Gilpin & Frampton, 2004).
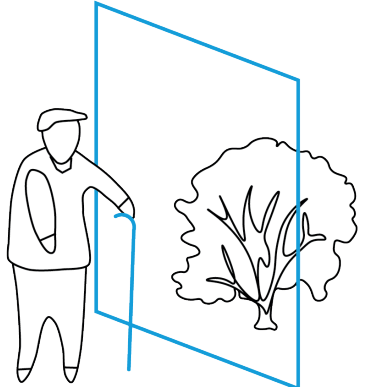

View on greenery (own image)

Another important form of greenery are gardens in which elderly can work. Besides stress reduction, working together in a communal garden improves the social cohesion between the elderly. Groenewegen, Van den Berg, De Vries & Verheij (2006, p.4) says "… allotment gardens may help with establishing a sense of social and cultural integration among gardeners. Especially for older people, allotment gardens may provide a supportive environment that combats social isolation and contributes to the development of their social networks".
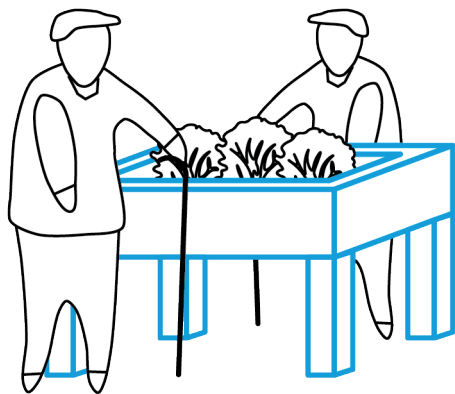
The colours of plants can also give a feeling of safety to elderly who are more visually impaired. When people get older, the cells in the retina that are responsible for the perception of normal colours, are becoming less sensitive. People after 55 start to see colours with a longer wave length (red) better than colours with a shorter wave length (blue). Red, orange and yellow are better colours to guide the elderly, because the colours blue and green start to blur into one colour (Zarzycki, 2012; Krijgsman & Overbeek, 2011).

Figure 27: Communal gardens improve social cohesion (own image)
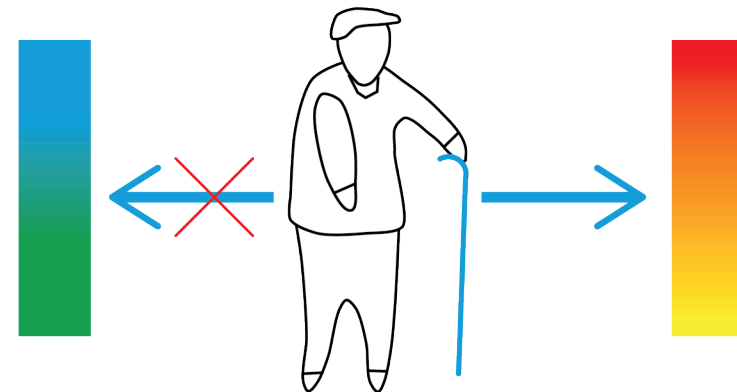
Figure 28: Distinguishing colours (own image)

4.6 Natural daylight

During one of the interviews with my grandparents, my grandmother said that when she was alone, she feels more safe when there is the touch of sunlight on her neck (see interview with Grandparents de Hommel, Appendix A). Her favourite spot is a big leather chair, which encloses you with sunlight on her neck.

According to research, the use of natural daylight in healing environments like the hospital or rehabilitation centre, has a positive influence on the patient. Exposure to sunlight has been related to improved patient outcomes as well as higher staff morale and job satisfaction. Patients feel less stressed, faster recovery and less usage of medication (Ulrich, et al., 2010; Miedema, 2017). In the winter, people tend to feel more depressed, irritable and fatigued, due to a combination of factors, among which the dark days is one. This leads to the term of Blue Monday, a day at the end of January on which people tend to feel the most depressed. The amount of melatonin in the brain increases by regular exposure to daylight. That amount of melatonin is lower in the winter (Schweitzer, Gilpin & Framton, 2004).

Designing with light and elderly can be a difficult task. As mentioned in the interview with Mrs. Boerstra, she two problems with daylight in her room. Firstly, her orientation of the windows is North-East and she wants to have more direct like during the day. Secondly, for her the windows are too tall, so her room is too bright for her and it causes headaches and feeling of distress

(see interview with Mrs. Boerstra, Appendix A). Glare and flickering lights result in a intensification of existing vision problems. The consequences are eye fatigue, headaches and a loss of concentration (Schweitzer, Gilpin & Framton, 2004). For elderly it is important to be able to adapt the amount of direct sunlight in their living environment. Every elderly person is different and has different needs, so adaptability is necessary.

Figure 29: Elderly should be able to control the amount of daylight (own image)

Dementia is a strange disease that is caused by the loss of connections between the braincells. One of the symptoms is recognizable through the short-term memory. New information is quickly forgotten and that creates a feeling of frustrat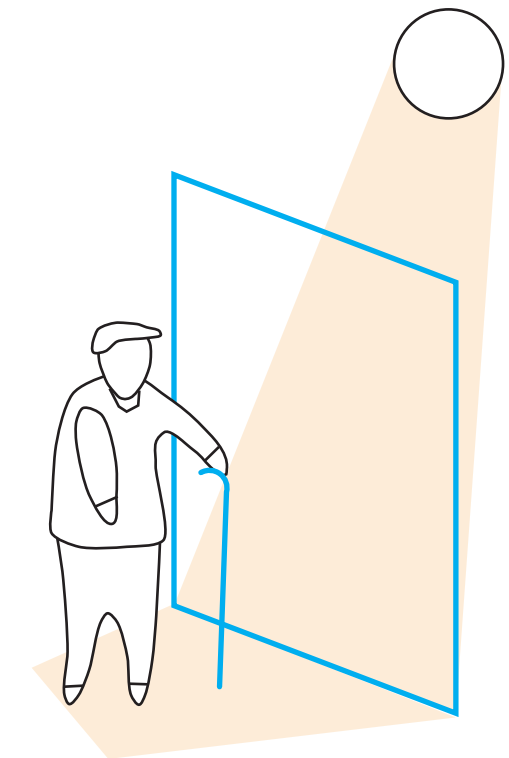ion to both the person with dementia and the bystanders. People with dementia often are disorientated in time and place, so one moment they are back in the home of their childhood and another they are back in adulthood (Alzheimer Nederland, n.d.; Kolkman, 2013).

How important is memory or nostalgia? Nostalgia used to be labelled as a mental illness (immigrant psychosis), because why would you want to go back in time and relive your memories? Current research shows that indulging in nostalgic research is good for your psychological health. A study from the University of Southampton shows that participants who consider themselves as nostalgic thinkers, score better in happiness and self-esteem. Nostalgic humans reflect on their own actions and learn from them. Nostalgia gives a sense of support. By recalling memories in which people have helped you, you will feel part of a support network (Psychologies, 2012). Another research shows that stimulating with positive memories causes participants to experience less threats and therefore increases the social safety of people (Holden, Kelly, Welford & Taylor, 2016).
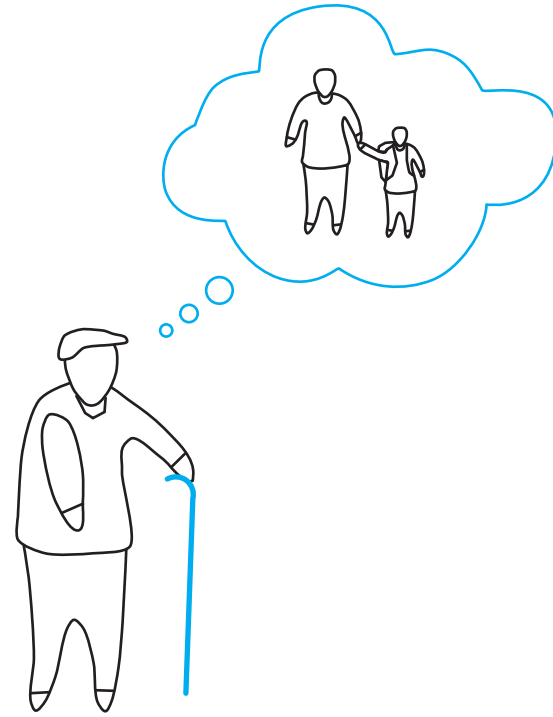
Figure 30: Memory or nostalgia creates a feeling of happiness and safety (own image)

An example of memories in architecture for elderly is the concept of 'Home for the Elderly' by Junya Ishigami. Ishigami was asked by a client to design a group assisted-living residence in the Northwest of Japan. Each elderly home should be visually distinguishable from the other houses. The design should not feel like a hospital for people with dementia, but it should feel like home.

Ishigami, who is known for his imaginative and poetic projects, decided to take the brief of the client literal. His idea consisted of taking existing Japanese wood-frame houses from all over the country and place them on site with a crane. Then, he planned to take off the cladding of the facade, connect the remaining structures by their columns and roofs. Japanese houses are based on the unit of one tatami mat, which made that possible. The interior of the buildings would consist of flexible/movable fittings and glass. The elderly could wander the grounds freely out of their house. The elderly would recognize their own houses by the differences in each of the individual houses. Characteristics like dents in the columns, remnants of paint and shape of the house, triggers the memory of the elderly and therefore they can find their way back home (Grima, 2013; Raskin, 2018). Unfortunately, the design hasn't been realized, but current architecture should think outside the box while designing for elderly.

Figure 31ab: Home for the elderly by Junya Ishigami (Grima, 2013)

5. Individuality

This chapter will provide an in-depth research on the topic of **individualism** in architecture. The fieldwork in Loenen aan de Vecht showed that people need to have more social safety, but also need to have their own space. A space where they can be themselves and where they don't have to do activities with the others. Their individuality is important.

Firstly, the definition and importance of individualism will be described. Then this chapter will go more into depth in the topic of how to implement individualism into collective architecture. In other words, how can privacy be implemented in a more communal architecture, and how can the transition of private to public help with sudden interactions and therefore social safety?

5.1 Definition and importance

As seen in the nursery home, having a place for your own is important in a larger community. Not everyone wants to be constantly with the other residents. They rather stay in their rooms, which they enjoy more than the activities in the communal areas. These residents prefer being an individual over being part of a larger community, but that does not mean that they never want to have contact with the others.

What does it mean to be individualistic? The Centraal Bureau voor de Statistiek (2020) made an analysis to see if the Netherlands is becoming more individualistic. Because of a lack of a general accepted definition, they first had to research what it means to be individualistic. According to them, many different definitions are given, but a few elements are important in the definitions: the influence of traditional institutions, the freedom of choice and self-determination, and the connections between individuals and groups (CBS, 2020). Geert Hofstede, a Dutch psychologist, is well-known on his research on cross-cultural groups and organizations. In his article Dimensionalizing Cultures: The Hofstede Model in Context (2011), he describes the difference of individualism on the one side and collectivism on the other. Individuals are supposed to take care of themselves and their family. Privacy is a right and it is healthy to speak one's mind. According to his Individualism Index, Western countries prevail in individualism, while Easter countries value the collectivity more (Hofstede, 2011).

In architecture, individuality is seen as a dirty word according to Daniel Libeskind (Griffiths, 2015). He compares the human race to the animals and what defines us is the individual expression (Griffiths, 2015). Individualism is seen as a way to show off, instead creating something unique. But that is not what individualism is. Individualism is the right to express yourself. It is the freedom of choosing yourself over the rest of society.

At the end of the '60's and starting of the '70's, nursery homes in the Netherlands were built in large amounts. To solve the problem of elderly living alone in single-family homes, these nursery homes were build and the elderly moved to these institutions. The only problem was that when they set foot in these buildings, the elderly lost their individuality. The care-system took care of them and didn't look at the needs of the elderly. The elderly had no saying in what kind of building they would like to live and they lost their freedom to choose (Fame, 2014). In current society, the care-system is changing and we are giving more freedom to the elderly. The elderly still have problems with their health and need care, but it should not be a social control. That is why it is important to let them have their individuality. This research is looking for ways to create social safety for elderly through architecture, but that does not mean that the elderly should be watched 24/7. The individuality is important and can help with the social safety. A balance between individuality (privacy) and collectivism (public) is important to be found. According to Jane Jacobs (1961), safety can be created through trust. And how

you do start to trust people? By getting to know the anonymous caused by accidentally meeting them and starting to recognize them.

Sudden meetings with other people can happen in different spaces, from private areas to the public realm. Who you meet depends on where you are. In private areas, it is most likely to meet family, friends, acquaintances or neighbours. In the public space, meetings will occur with people of the neighbourhood or strangers. Architecture can play with the design of meeting spaces, from the private areas to the public space. To find architectural solutions for meeting spaces, the different zones, like private, semi-private and public should be researched. Three theories could be helpful with the transition zones: the privacy-zoning theory by Machiel van Dorst (Van Dorst, 2005), the realms theory by Lynn Lofland (Lofland, 1998) and the *Privacyscript* by Harmen van de Wal and Machiel van Dorst (Van de Wal, Van Dorst, Leuenberger, Vonk & Van Vugt, 2016).

The privacy-zoning theory by Van Dorst is based on the research of Irwin Altman. Altman, a social psychologist, analysed the concepts of privacy, crowding, territory and personal space in humans. In his interdisciplinary research he shows multiple ways in how humans behave in the different zones. He calls the buffer zone, which lies between private and public, the secondary territories. The concept of privacy is central and creates a connection between the four concepts. According to Altman: "…privacy is conceived as an interpersonal boundary process by which a person or group regulates interaction with others" (Altman, 1975, p.6). Privacy

is a dynamic process in which the individual or group has to control the amount of privacy between desired privacy and achieved privacy (see *figure 25*). The ideal situation is when the achieved privacy is the same as the desired privacy. If the achieved privacy is more than desired, the person will feel social isolated. If the achieved privacy is less than desired, the person will feel crowded. Anonymity will occur when the achieved privacy is less than desired. The person will get lost in the crowd. (Altman, 1975).

Proshansky, Ittelson and Rivlin (1970) propose that privacy allows an individual or group to have control over their activities by maximizing their freedom of choice. Kelvin (1973) says that privacy means protecting yourself from the influence and power of others. In this case, the person's freedom and desire for contact with others is obstructed, and therefore he exists in a state of social isolation. In all these definitions, the individual must have freedom to control their privacy. Altman (1975) discusses four different mechanisms to provide privacy. The first mechanism, Verbal Privacy Mechanism, is one of the clearest way to let others know they are overstepping. By the use of words, pronunciation, voice dynamics and speed rates, the need for privacy can be expressed. Another mechanism is Nonverbal Privacy Mechanism, which means that a person uses body language to make clear that they need privacy. The third mechanism, Culturally Based Privacy Mechanism, is based on the

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┌─────────────────────┐
│  Social isolation   │
│  achieved > desired │
└─────────────────────┘

┌──────────────┐      ┌─────────────────┐      ┌──────────────┐      ┌──────────────────┐
│Desired privacy│─────▶│ Interpersonal in│─────▶│Achieved privacy│────▶│    Optimum      │
│   (ideal)    │      │control mechanisms│      │  (outcome)   │      │achieved = desired│
└──────────────┘      └─────────────────┘      └──────────────┘      └──────────────────┘

┌─────────────────────┐
│      Crowding       │
│  achieved < desired │
└─────────────────────┘
```
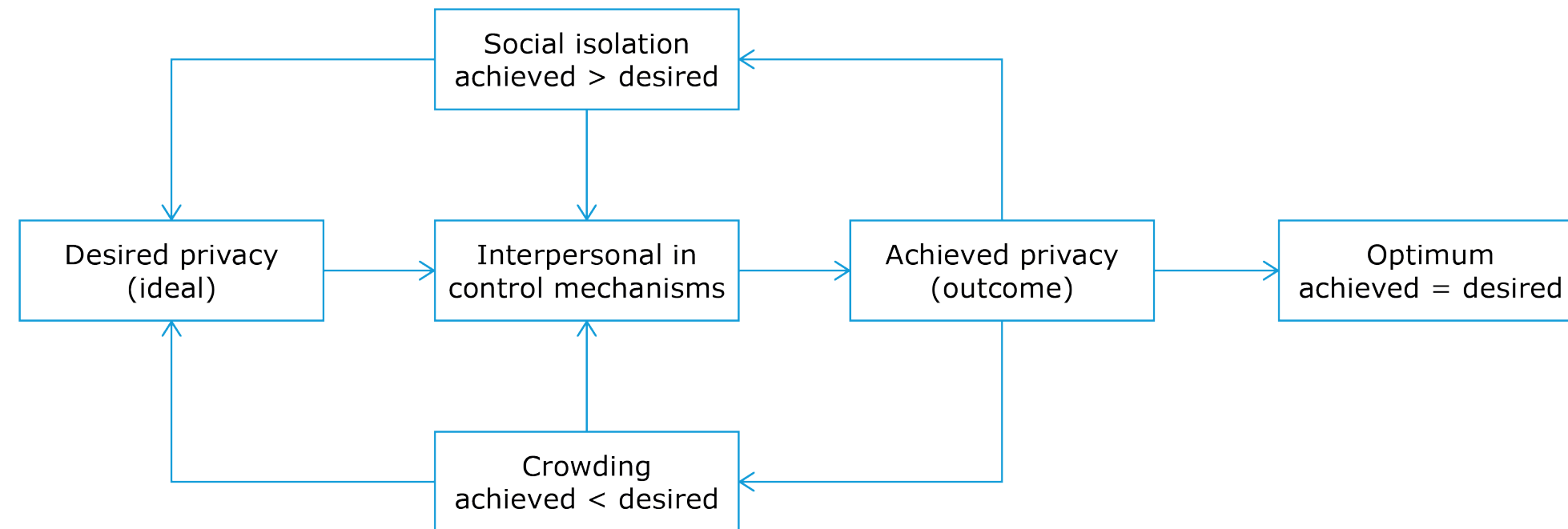
Figure 32: Privacy-regulation (own image based on Altman, 1975)

cultural understanding of privacy. The status of people can create a different need for privacy. Children need to knock before they enter their parents room, but parents don't have to do that with their children. The final mechanism is important for architecture. The Environmental Privacy Mechanism regulates privacy through clothing and personal space. The concept of personal space is one important element for expressing privacy. The personal space is the area immediately surrounding the body, and can be altered in distance when the person feels safe or not. The personal space could also be protected in and around the home. Family members have their own rooms, which can be protected from the outside world by for example curtains. The home can be protected through doors, fences and signs (Altman, 1975). To summarize, privacy is an important feeling of freedom of choice to interact with others, and can be regulated through different mechanisms, like verbal & non-verbal, cultural and environmental expressions. Especially the environmental mechanism is important for architecture, but to what extend is it possible to regulate the privacy in the building space?

Anthropologist Edward Hall (1966) discusses four spatial zones in social interaction. These distances could be useful for architecture. The first zone, intimate zone, covers 2,5 to 20cm, and is the distance for wrestling, lovemaking, comforting and protecting. The details become more prominent in this zone. The second zone, personal distance, covers 45 to 120cm.

The zone is reserved for intimates: you can still smell and touch them which makes it more personal. The third zone, social distance, covers 120 to 365cm. In this zone, business and general social contact occur. The full figure of others is observed, but the distance makes the details disappear. The social distance zone is an appropriate distance in public settings. The conversations in public happen within this distance. The last zone, public distance, varies from 365 to 760cm and communication becomes more like a monologue. One person speaks in front of a larger group (Hall, 1966).

These zones are not direct related to architecture, but it shows the possible feelings people have with distances. Of course, for some people their intimate zone can be larger than others and they need more privacy. Lynn Lofland (1998) doesn't see the zones as clearly defined spaces, but as realms. According to her, realms are social territories and not physical. Realms are "the consequences of the proportions and densities of relationship types present and these proportions and densities are themselves fluid" (Loffland, 1998, p.11). They are not bound to spaces, but travel with a group and is therefore not a characteristic of a space. Lofland describes three different realms: the public realm, the parochial realm and the private realm (Lofland, 1998). The parochial realm would be defined as the secondary territories in Altman's work (Altman, 1975). For Lofland, the private realm is characterized

by the relationships between primary group members within households and personal networks. The parochial realm is characterized by the communal sense between neighbours and acquaintances, who are connected through interpersonal networks within the communities. Instead of defining public as a space which is open for everyone, she defines the public realm as an area in which individuals tend to be personally unknown or only partly known to each other. A space can be any of the realms, depending on the behaviour of the people using the space. An individual walking to the supermarket uses the street differently than a group of women having their bachelor party. For the individual, the street become part of the public realm, while for the women it could be part of the parochial realm (Lofland, 1998).

In his dissertation *Een duurzame leefbare woonomgeving* Machiel van Dorst (2005) talks about the privacy-zoning. According to him the theory of "privacy-zoning could be described as the materialization of the control on the social environment and social interactions" (Van Dorst, 2005, p.127). By looking at the materials of a space, the visitor should immediately see to whom the space belongs. However, the normal threefold division of private, semi-private/semi-public and public will not be used to describe these spaces. The uses of the spaces can have different meaning for different groups. The street could be the public space for an individual, but it could also be a

private space for the residents as group in the street. These zones with different meanings for privacy and social interaction are therefore called privacy-zoning (Van Dorst, 2005). The theory of realms and the theory of privacy-zoning have a difference in definition of the zoning. For Lofland, the realms are immaterial, realms originate of how people use a space and is therefore a behavioral aspect. For Van Dorst, the zones are defined by the materialization of the space. Visitors immediately know in what kind of space they are and how they are allowed to behave. So for Lofland, the space is only defined by how people behave in it, while for Van Dorst the behavior is determined by the materialization of the space. In the book Privacyscript Van de Wal, Van Dorst, Leuenberger, Vonk and Van Vugt (2016) find an explanation for the two theories. According to them, the two theories can be linked through expectation and reality. The realms are the actual level of publicity and the privacy-zoning is what could be expected from the level of publicity in the space. The spaces don't determine how people are going to behave, but the materialization shows the people what can be expected from them.

In Privacyscript Van de Wal et al. try to research the question: how can architecture facilitate the demands of the different levels of publicity? They developed the term *privacyscript.* The privacyscript of a space is the combination of affordances and the layout, which together determine what levels of publicity can be expected. People who visit the space

see with the help of privacyscript what is expected of their behaviour. If visitors read the characteristics of the privacyscript, a certain realm should arise. Van de Wal et al. use three realms: the public, parochial and private realm.

The private realm is the most intimate, trusted place where involvement is greatest. Strangers are not welcome in the private realm unless they are invited.

The parochial realm is the in-between-space where people with different backgrounds communicate and maybe have something in common. The parochial realm is not accessible for everyone, so the people in the parochial realm can distinguish the intruders from the initiates.

In the public realm there is less social control. People from different places, different backgrounds and different connections come together in the public realm. Here the relation between citizen and state is determinative.

To be able to read the privacyscript, there are some indicators. Accessibility, the size of the space, the possibility of social control and ownership of the layout are four indicators. The first three are mostly determined by architecture, while the last indicator determined by how the space is being managed. Routing is for accessibility an important factor. A parochial space is most likely not on the main route, but accessible with a detour (Van de Wal et al., 2016).

To conclude, individuality in architecture is determined through the layout of public to private. From the route from public to private, indicators like accessibility and ownership determine how people should behave in the space. By designing in the zone between the private and parochial realm, people can shape their own space and therefore can interact with those who pass that space (Platform 31, 2021; Van de Wal et al., 2016).
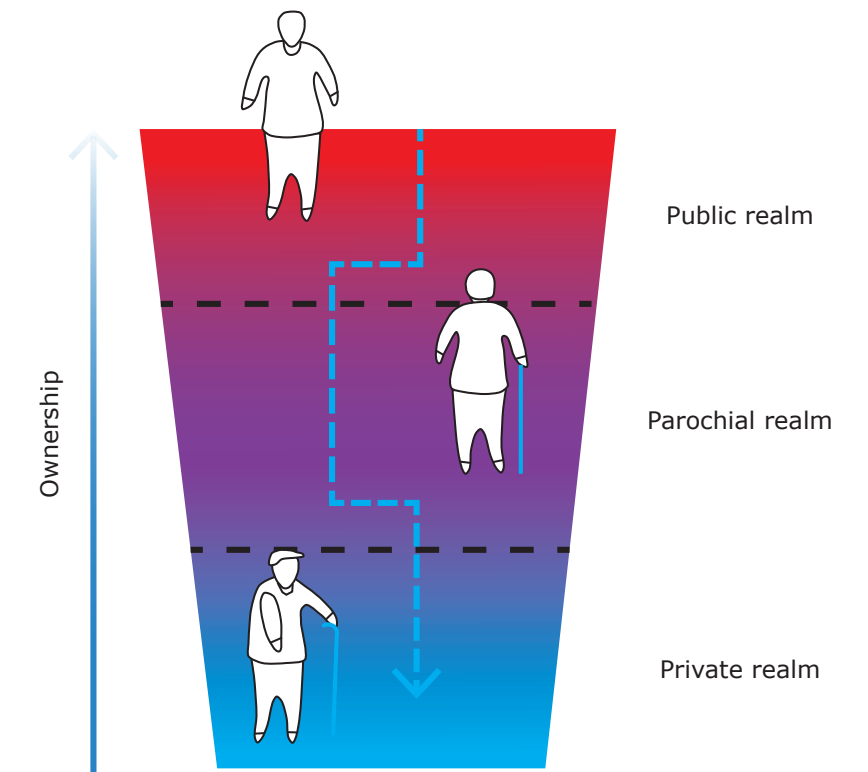

Figure 33: Routing from public to private (own image)

6. Case-studies

6.1 Criteria

According to Teegavarapu & Summers (2008) case-studies can be implemented in more characteristic requirements than surveys, interviews and experiments, but there is always the danger that it could be subjective. To make it less subjective, it is of importance to make a list of criteria in the search of case-studies. The method of case-study is suitable for the development of theories in design research (Teegavarapu & Summers, 2008).To narrow the search for case-studies, the cases must meet to certain criteria. Only then, the search for case-studies would give fruitful information. For the research I want to research two topics: social safety for elderly, and the transition between privacy and public.

Social safety

First of all the building must have both private apartments, but also communal areas. Then there would be a better chance for people to gather and learning to know each other.

Secondly, elderly (65+) should be the main target for the architect. Elderly have different routines and their own habits, so it would not be interesting to look at for example student housing. The combination with non-elderly is not a must, but it would be good to see an example of the combination.

Thirdly, anonymity or social exclusion are problems that the architect tries to solve through his building.

Finally, there should be views to nature, but also to the neighbourhood and other neighbours (central garden or balconies help with that).

Privacy-Public

First of all, interaction and meeting are important topics for the architect. The building should be build with this concept.

Secondly, the elderly (65+) should be the main target for the architect. The combination with non-elderly is not a must, but it would be good to see an example of the combination.

Thirdly, the residents should have communal areas in the building. Then it would be interesting to see how they collectively use the communal space (do they make it their own, or do they leave it as it is).

6.2 Case-studies: Choice

For social safety I chose two projects of the same architect. Both designs are made by Inbo Architecten.

ParkEntree, Schiedam

The first building is ParkEntree in Schiedam. The concept for the building is Senior Smart Living. Through this concept, anonymity must be eliminated. The residents should be in contact with each other and are encouraged to be active and to undertake activities with each other. The design contains two 'hofjes' or little courtyards with communal gardens in the middle. There are semi-public spaces with grasses and flowers, trees and a path. In ParkEntree the Lounge is where people get together and do all kinds of activities.

Romeinhof, Enkhuizen

The second building is the Romeinhof in Enkhuizen. The people who live here are chosen by Welwonen for their motivation to help their neighbourhood. The residents should be willing to help their neighbours. The residents, age 29 to 82, don't have a private garden, but they share a communal courtyard, where they could work together.

I chose two projects by the same architectural firm to see how they implement the concept of community and looking out for each other, in their architecture. The analysis exists of floorplans, transition privacy, public, lay-out of the communal areas, views, entrances and connection to the neighbourhood. Some analyses should be done through looking at reviews, if they exists, to see how the users like their building.

Figure 34: Impression of the neighbourhood (Inbo, n.d.)

6.3 ParkEntree, Schiedam

The first building is ParkEntree in Schiedam. The project developer Blauwhoed, concept developer Beyond Now, architect Inbo and hospitalitymanager Vitaal&Zo worked together to create this new form of living. The concept of Senior Smart Living is developed by Alex Sievers, who was inspired by the Sun City in Arizona, where people are encouraged to be active and to undertake activities with each other. The design contains two 'hofjes' or little courtyards with communal gardens in the middle. There are semi-public spaces with grasses and flowers, trees and a path. There is one communal space for the neighbourhood, where people can come together and have a cup of coffee: the Lounge.

The design of ParkEntree, inspired by the ideas of Knarrenhof, is realised in 2020, so the question remains if the project is successful. A trip to the location is planned with the municipality of Delft to see how people are using the building.

Figure 35: Impression of the exterior space (Inbo, n.d.)

Figure 36: Routing around the courtyards (own image)

6.3.1 Routing

Important for sudden interactions is the routing to someone's home. To diminish the anonymity, residents in the neighbourhood should recognize each other and the sudden interactions can help with that.

The entrances of the houses are located on the outside of the courtyard. Both courtyards are surrounded by pathways for pedestrians, so multiple routes to the homes can be used.
The location of the entrances of the rowing houses, makes it more difficult to have sudden interactions. The houses have a small front-yard and are directly connected to the sidewalk. The balconies on the front side of the apartment can be used to have small interactions with the people on the street. Here the height is at a maximum of 4 levels, so people on the street can still have a connection with the residents on the balconies. The large apartment block in the back is a different story. The building has 6 levels, so there is a smaller connection with the courtyard. However, in this building the communal space is located, so people can go to this area to meet with others.

Figure 37: Entrances (Inbo, n.d.)

6.3.2 Private zones
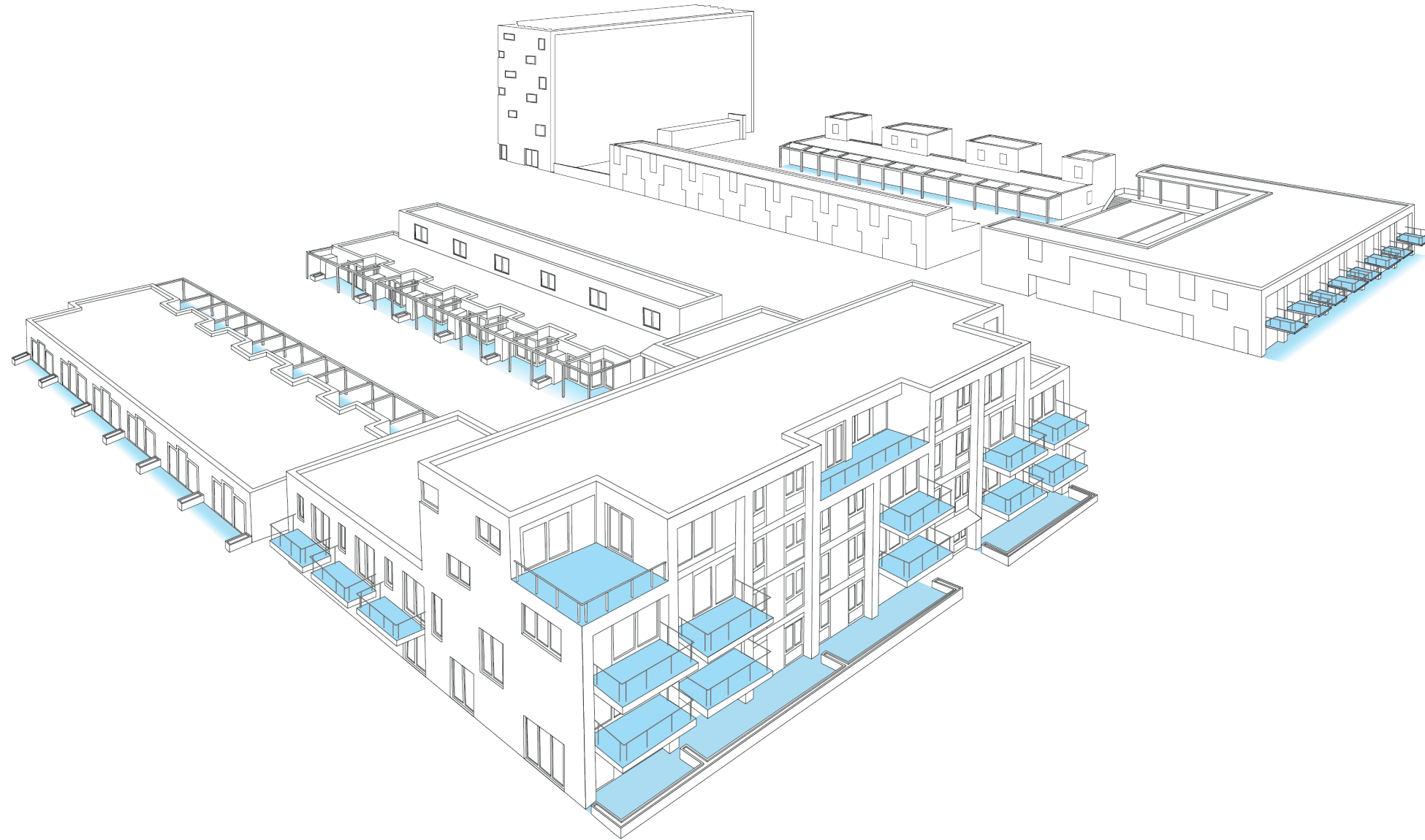
Interaction can also happen in the transition from public to private. People know how to behave on someone's property and know when they are overstepping or when they know that they are allowed to be there.

In ParkEntree there are two types of houses. The rowing houses with a small front-yard and a larger backyard, and the apartment blocks with balconies. The balconies are clearly defined and people have decorated them with greenery and seats. People can sit there, enjoy the sun and have small conversation with their neighbours or the people on the street. The front- and backyards of the rowing houses are directly connected to public walking routes. In the courtyards, people can walk through greenery and interact with the residents.

A second advantage of the public greenery in between the private backyards is that people can watch over the public greenery. The residents see if something is wrong and they can warn each other.

Figure 38: Transition from public (white) to private (blue) (own image)

Figure 39: Backyards and balconies (Inbo, n.d.)

Figure 40: Facilities in the neighbourhood of ParkEntree (own image)

✚	= Medical facility
✂	= Barber/beautician
🚌	= Public transport
🔔	= Church
🛒	= Supermarket
🛍	= Store
✕	= Cafe/Restaurant
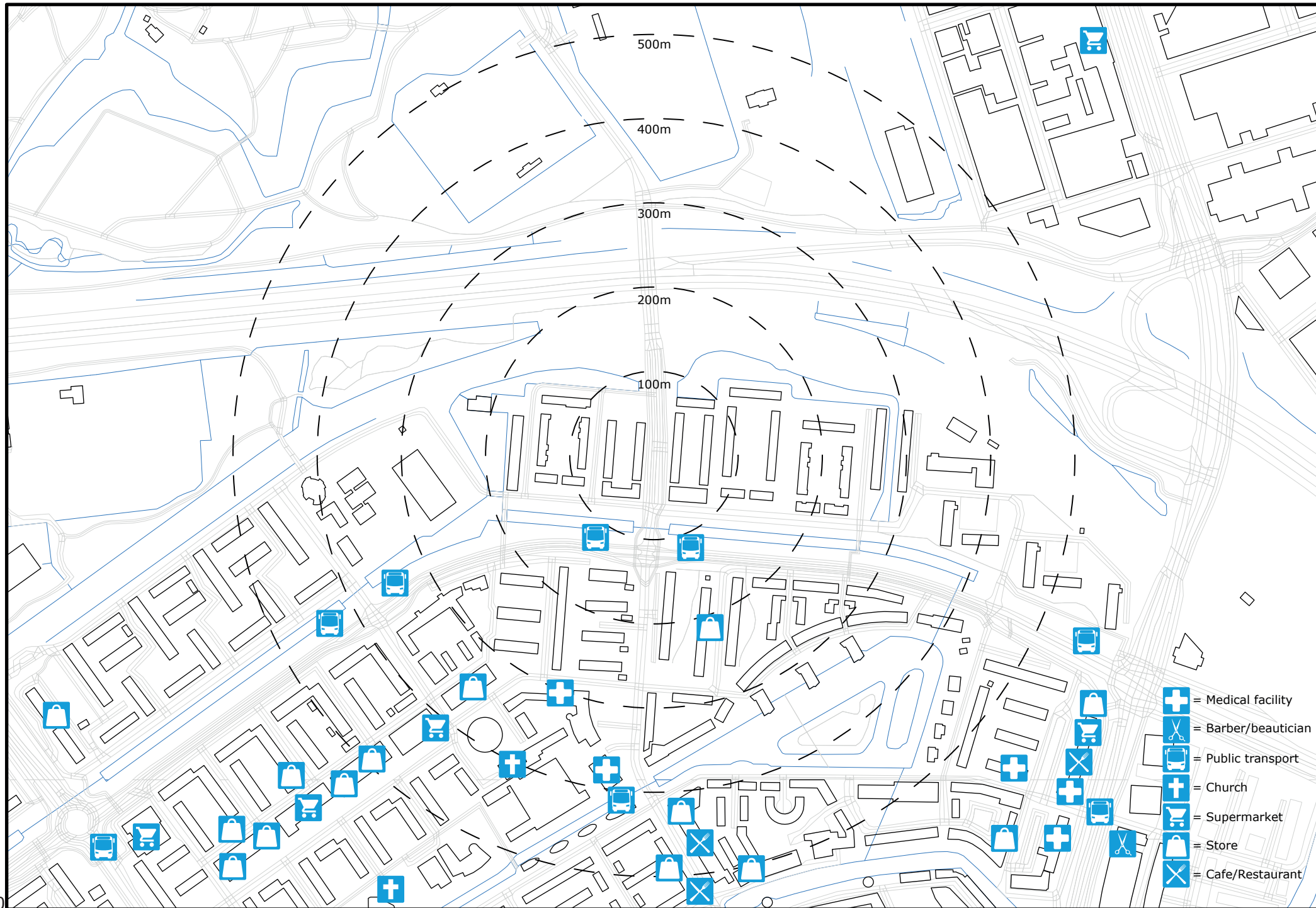
6.3.3 Neighbourhood facilities

Important for interaction is the sudden meeting. A meeting can happen on the way to the supermarket, so it is interesting to see what facilities are near the ParkEntree.

The closest facilities are the stops for the tram, so public transport (in the 200m radius). Then the closest, most important facilities are medical facilities like the dentist and the general practitioner (in the 400m radius). The supermarket and most of the stores are in the 500m radius and beyond that.

The facilities are not in walking distance of ParkEntree. The weaker elderly shall have to take the bike or car to get to the stores. The public transport makes it possible for the residents to get to the rest of Schiedam.

An important aspect of ParkEntree is that it is the gate to the Beatrixpark on the North side of ParkEntree. The people have to walk/bike/drive underneath the A20 and then they will arrive at the entrance of the park. The distance is within the 400m radius.

Figure 41: Connection to the Beatrixpark
(Schiedam Nieuws, 2016; Hof van Delfland, n.d.)

6.4 Romeinhof, Enkhuizen

The second building block is Romeinhof in Enkhuizen. The location consisted of social terraced houses, which were outdated, so new houses had to be designed. The housing-corporation Welwonen assigned Inbo Architected to design the new houses. Romeinhof is now a 'little courtyard' with 15 two- or three-room-apartments.

Welwonen used a selection-procedure for the new residents. Based on their motivation to be committed to help their neighbours, residents were selected to become part of the Romeinhof group. Before the realization of the project in 2018, the new residents already started to become a small community with social cohesion. The residents have different ages: from 29 years old to 82 (Inbo, n.d.)

Figure 42: Impression of the neighbourhood (Welwonen, 2018)

Figure 43: Impression of the exterior space (Welwonen, 2018)

6.4.1 Routing

Important for sudden interactions is the routing to someone's home. To diminish the anonymity, residents in the neighbourhood should recognize each other and the sudden interactions can help with that.

The entrances of the houses are located on the inside of the courtyard. To get to these entrances, the residents can take six different routes, all leading the residents to the houses of the others. The placement of the entrances increased the chances to interact with the other residents. This principle is often used in the 'hofjes' in the Netherlands, where community is an important aspect.

The sizes of the streets surrounding the Romeinhof allows the residents to walk in the neighbourhood. The six different exit routes are orientated to different directions in the neighbourhood, so people can create their own favourite pathways to avoid certain places or people in the neighbourhood. The narrow entrances creates a feeling of belonging: outsiders are unsure if they are welcome, but they get a glimpse of what is going on on the inside.

Figure 44: Routing around the courtyards (own image)

Figure 45: Entrances (Inbo, n.d.)
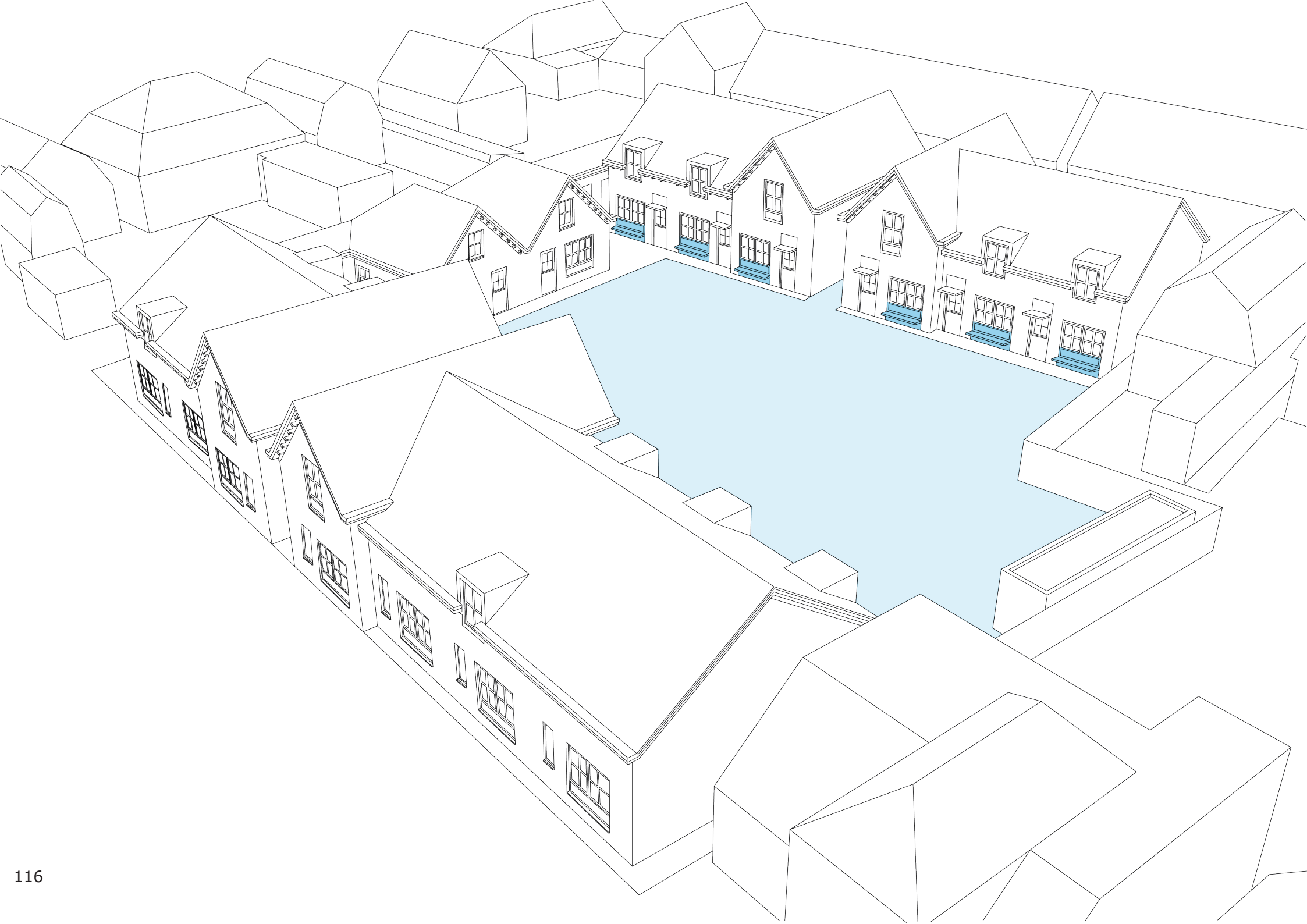
6.4.2 Private zones

Interaction can also happen in the transition from public to private. People know how to behave on someone's property and know when they are overstepping or when they know that they are allowed to be there.

The principle of a 'hofje' is that the courtyard is the communal area, where the elderly can work in the garden and look out for each other. That principle is also used in the Romeinhof. In collaboration with a landscape architect, Grijs Kleurt Groen, the residents designed the communal garden to their needs. In this garden, the residents can garden together, sit together and have dinners together.

The architect purposely didn't create private gardens, so people will be together. However, they designed a bench underneath the window, which the residents decorated with their own objects. Some residents also placed benches and/or plants next to the benches to claim a part of the communal area for themselves.

Figure 46: Transition from public (white) to communal (light blue) to private (blue) (own image)

Figure 47: Private and communal (Inbo, n.d.)

= Medical facility

= Barber/beautician

= Bus stop

= Church

= Supermarket

= Store

= Cafe/Restaurant

500m
400m
300m
200m
100m
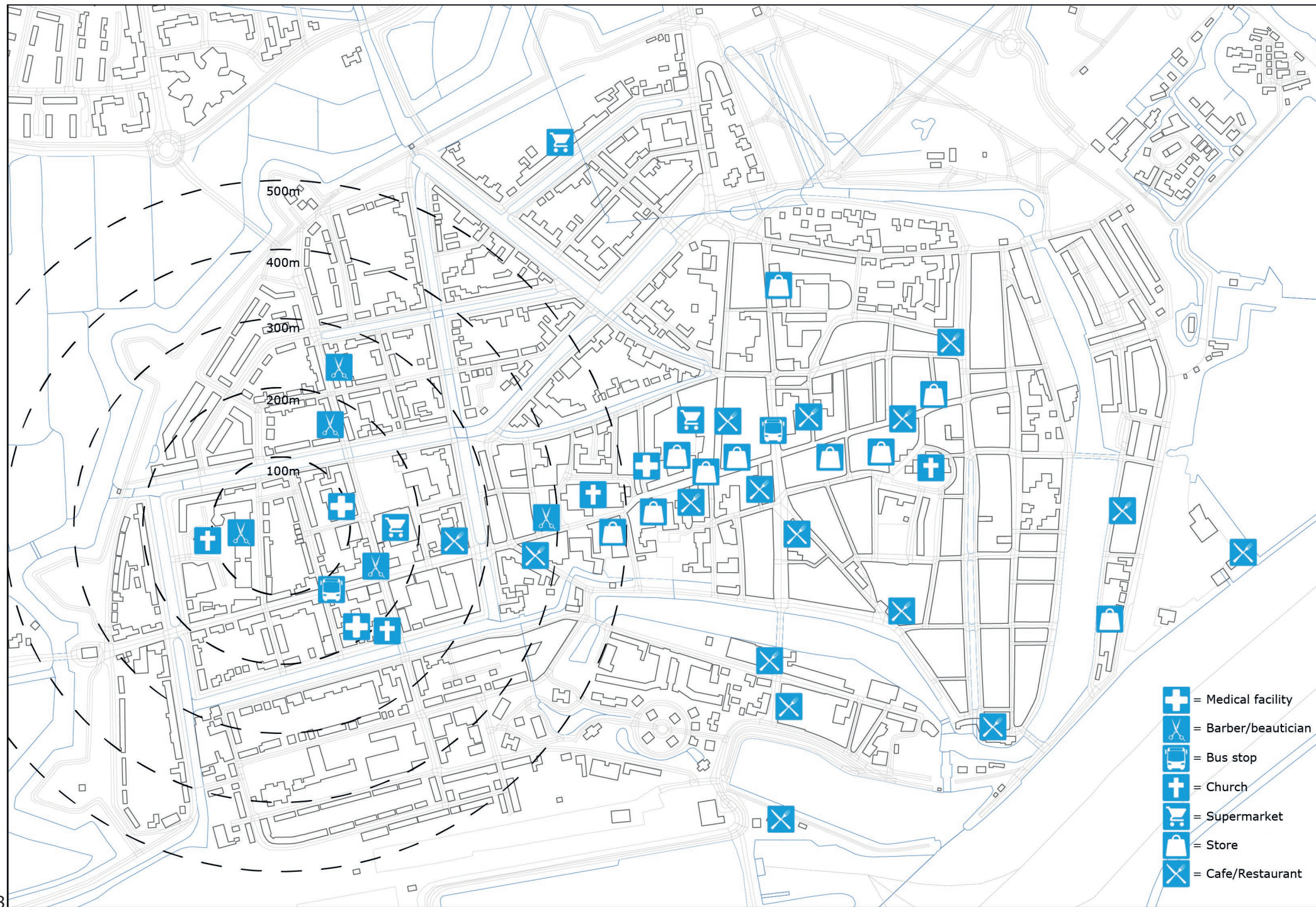
6.4.3 Neighbourhood facilities

Important for interaction is the sudden meeting. Such an interaction can happen on the way to the doctor or while sitting on a terrace in a restaurant. What facilities are close to the Romeinhof?

Romeinhof is located within the old city centre and close to the shopping street of Enkhuizen (Westerstraat) as you can see in figure 40. The Westerstraat is, together with the Noorderweg, the most main route connecting the old city of Enkhuizen with the surrounding cities. Romeinhof is build within 100m of this street.

The essential facilities, like the doctor, supermarket and public transport are all within the 200m radius of Romeinhof, which makes it very accessible for the elderly. The church, which is a place where people come together to interact, is also located within the 200m and 300m radius. Barbershops, beauticians and a restaurant can be found in the 300m radius. The only facilities missing in the 500m radius are the shops, so the elderly have to use the bus to get there or use their bikes.

Figure 48: Facilities in the neighbourhood of Romeinhof (own image)
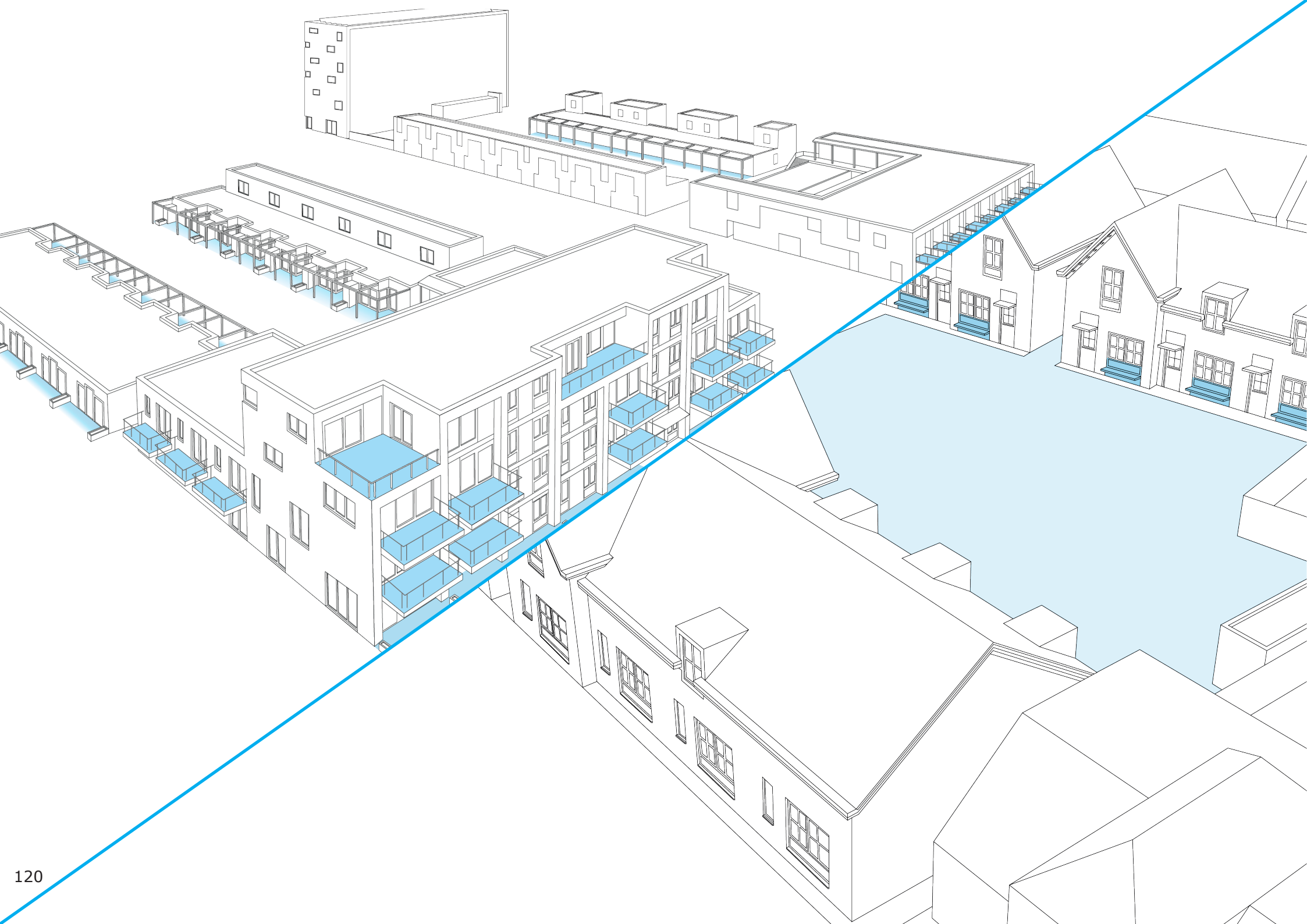
6.5 Case-studies: Comparison

Unfortunately, due to the corona pandemic, it is not possible to do interviews with the residents. The analysis is done based on drawings, photographs and articles about the projects. Both projects try to create a social network in the neighbourhood by creating communal areas. ParkEntree focusses on eliminating anonymity in the neighbourhood and Romeinhof focusses on helping each other. For both projects, interaction is an important aspect, which can be created in architecture through routing, private/public space and facilities in the neighbourhood. What do the two projects have in common and will their design solve the problems they are focussing on?

Routing
ParkEntree has the main entrances on the outside of the courtyard, while Romeinhof has entrances on the inside. The courtyard of ParkEntree has an open character with a communal garden where people can stroll through. Romeinhof has smaller alleys which directly lead to the communal garden. The chances of meeting someone are bigger in Romeinhof than in ParkEntree due to the placement of the entrances. The houses are orientated on the courtyard so everyone can see what's happening in the middle. ParkEntree has many routes people can take to get to their houses, so the chances of meeting someone are slimmer.

Private zones
The courtyard of Romeinhof is a communal garden, designed by a landscape architect in consultation with the residents and there are no private gardens. The fixed benches placed against the houses are the only elements residents can use for their own decorations. ParkEntree has private backyards and balconies, so there is less communal activities in the courtyard. However, ParkEntree has a communal lounge area where people can meet each other and have dinners together.

Facilities in the neighbourhood
Romeinhof is located in the old city centre of Enkhuizen, while ParkEntree is located on the edge of the centre of Schiedam. ParkEntree is created with the concept of Senior Smart Living, where elderly keep to enjoy life through doing activities together with others. However, in the close proximity there is only public transport, the Beatrixpark and the lounge area where people can come together. Most of the facilities are located outside of the 500m radius. Romeinhof is close to the three most important facilities: medical facilities, public transport and the supermarket. To get to the shops they have to go outside of the 500m radius.

Conclusion
Based on the three topics of the analysis, Romeinhof has a better chance of being a community. The individualistic character of ParkEntree makes it difficult to tackle the problem of anonymity, but maybe the residents have solutions that are only visible on location. The communal courtyard of Romeinhof creates activities for the elderly and feeling of social safety by having views on greenery and each other.

7. Conclusion

Fieldwork
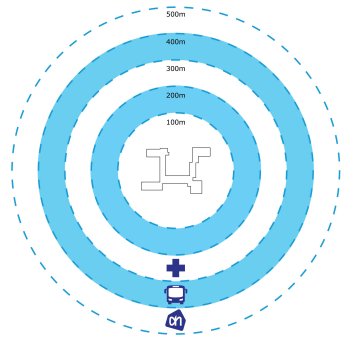
Place the most important facilities within the 500m radius

Create a communal entrance where elderly can interact with the neighbourhood

Give freedom to the elderly: freedom to cook and freedom to go outside on private property

Social safety

Views on activity

Views on each other

Views on greenery

Let the elderly adapt the amount of direct sunlight

Threshold

Level 5
Level 4
Level 3
Level 2
Level 1

Buildings should be max. 3 or 4 stories high to optimize contact

Design communal spaces for the different group sizes

Individuality

Ownership

Public realm

Parochial realm

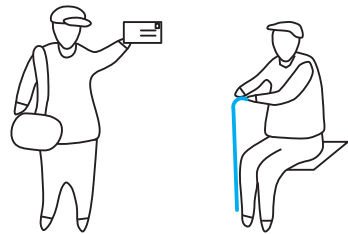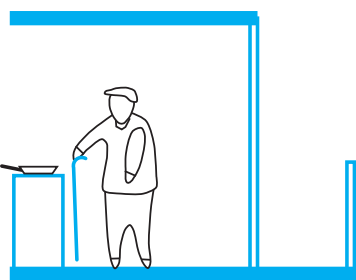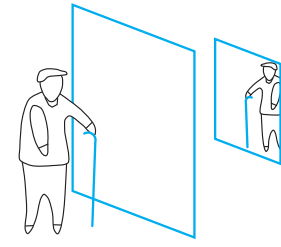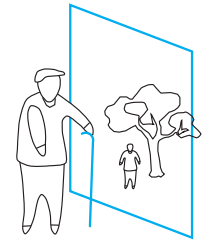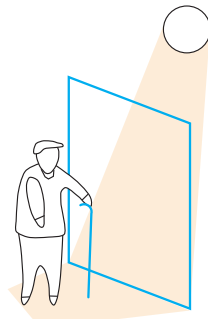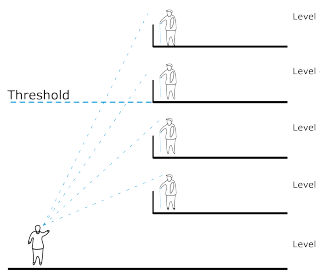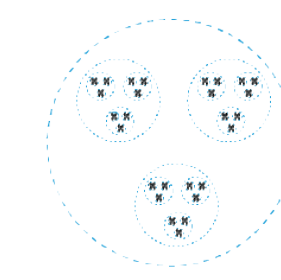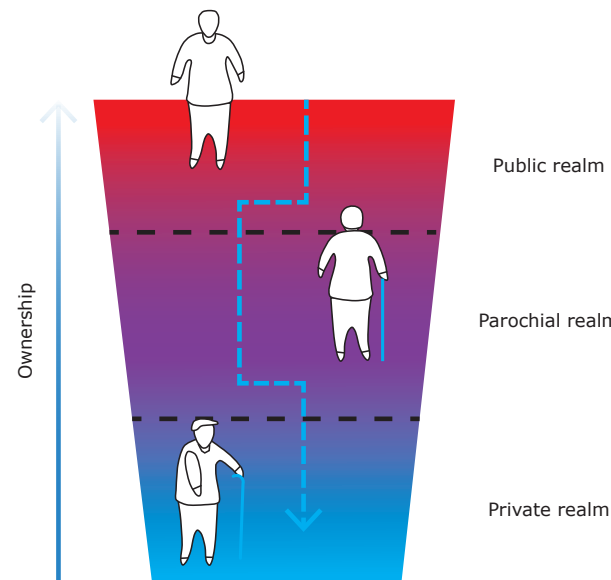Private realm

Create a route from public to private and design in-between-zones which residents can make their own

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7.1 Conclusion + design guidelines

If the current care-system is going to be used in the future, the professional care-givers will be overloaded. Who is going to take care of the elderly? With the help of a social network, people have to help each other. This research is looking at architectural solutions for this problem and the following question is therefore:

*How can architecture stimulate the **social safety** of elderly, while maintaining their **individuality**?*

The main conclusion of this research is that the routing from the public to the private realm is important for both the social safety and the individuality. Social safety is the safety from feeling weak. A social network can help with creating this social safety. A social network does not mean that everyone is on the same level of intimacy. Neighbourhoods consist of different relations, which are needed to address the anonymity. Some have a bond or strong tie where the neighbours are seen as friends or family, some only have transactions like exchanging keys in case of emergency. These different forms of relations create a chain of recognition in the neighbourhood and therefore creates a feeling of safety. The chain of recognition is important for the routing, because on this route, different forms of interaction can happen: a nod to somebody you only recognize by face or a conversation with your neighbour about the latest gossips.

Architecture should therefore be used to create different sizes of spaces where different forms of interaction can take place. A room for 5 people leads to a dialogue, a room for 15 leads to a monologue and a space for 50 people can become a place where different smaller groups come together and form a bond as a neighbourhood.

Another aspect that creates social safety is view. Views on activity lure people to go to the activity, views on nature creates a healing environment, views on each other creates a form of social control. The views should be combined with the zones between private and public: activities are mostly in the public space, views on each other means something for privacy and individuality. Too much view on each other and there is no privacy. The height of the building also plays a role in views. Three or four stories is the maximum height a building should have if the main goal is to create a connection with the ground floor. Taller buildings means no connection.

Architecture can stimulate social safety through designing the realms between public and private. The individuality of the residents can be kept if the distinction between private (individual), parochial and public (communal) is designed clearly. The transition zones should be designed in a way that it is clear to whom the space belongs and how people should behave in that space. The route from public to private is part of the design and is important for the sudden interactions between neighbours and is the most effective way to solve the problem of anonymity.

Figure 49: Design guidelines (own image)

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8. Reflection

8.1 General reflection

In general, the research-based design has proven to be fruitful for me. The first semester mostly focusses on researching the target group: the elderly. By observing, interviewing, doing literature research and by trying to feel what it's like to be old, a foundation for the design was build. The anthropological and sociological research is important to give a voice to the more forgotten group of elderly. By doing the research in the first semester, the problems of the elderly became clear and solutions in the form of design guidelines were created. The guidelines help with the design process in the second semester. Every step means also reflecting on the research and deciding if the new change will be in conflict with your design guidelines or if it will strengthen it. The same goes with the feedback of the mentors. The mentors give feedback on your process and will suggest new changes, but in the end you have to decide if the feedback is in line with your research. Instead of general remarks on for example architecture or building technology, the mentors give feedback with in their mind the perspective of the elderly. How would an elderly person benefit from your design? Their personal motivation and interest in elderly makes the feedback so useful.

The social aspect of the graduation studio makes the whole process so unique. After this, you will never visit an elderly home for a week as part of the design process. I noticed that research-based design works great for me. By constantly reflecting on the research, the design becomes more coherent. However, I also noticed that the pandemic and isolation started to take its toll and that I need others to discuss the work. Otherwise, the process stops and the motivation and inspiration will disappear.

But to end with a positive note, I am proud of what I have researched and designed and my goal of designing something where my own grandparents could live is coming closer. To finalize the graduation period, I will use the feedback from the P4 to change the last elements and create renders and/or models for an inspiring P5. Next to that, I want to have one final session with our critical friends from the municipality and elderly homes to get the final feedback from them.

8.2 Reflection on relationship between:

Research and design

The MSc 3 Studio 'Designing for Care – towards an Inclusive Living Environment' tries to find a new concept for architecture for elderly. The target group 'elderly' is a broad group. Not every elderly person is the same, so to make a design for the elderly, the different groups should be researched. Besides, we, the designers, are students. We don't know what the elderly feel and need, so we have to get into the perspective of the elderly. How else do we know if the design will work for the specific target group.

In the first semester, the studio focusses on the research of elderly. Our stay in a nursing home showed me the strengths and weaknesses of elderly in care. The week in the nursing home gave us a fruitful insight in how architecture can help or obstruct the mental and physical well-being of elderly. The other weeks of the semester were filled with fieldwork research (how does it feel to be old), literature research and location research. From these different kinds of research, design guidelines were created. These design guidelines are like a common thread through the design process. Every step of the design process means looking back at the design guidelines: is my design in accordance with my research? The advantages of the interaction between research and design is that eventually, the design will have a strong foundation filled with arguments. Every change can be explained through your research, which gives the design meaning.

In my design, I developed a neighbourhood in which the routing from the public space to the apartment will create a social network for the elderly. The design of having an apartment with an inlet, creates spaces for sudden interaction, which research shows to be essential for healthy social networks in a neighbourhood. The design is based on design guidelines, gained from research.

8.3 Reflection on relationship between:

Project topic, studio topic, Master track Architecture and Master program

The MSc 3 Studio 'Designing for Care – towards an Inclusive Living Environment' is looking for new concepts in architecture for elderly who are in need of care. In the Netherlands the elderly housing is undergoing some changes, due to the demographic transition to an aging society and the change in policy of the care-system.

"[…] Firstly, the elderly homes, built in the 1960s, do not respond to the desires of the elderly of today, who want to be self-supportive and not excluded from society.
[…] Secondly, new architectural designs for people with care demand need to offer an environment for a mixed community as care giving needs to undergo a change of attitude from professional to unprofessional support by family members and the neighbourhood, and thirdly, the elderly themselves need to be empowered as much as possible to gain their place in the society" (Jürgenhake, n.d.).

The studio tackles some bigger social issues in the Netherlands and tries to find a solution through architecture. The research 'Safe and Sound' develops some architectural tools to make it easier for society to help their elderly neighbours. The architectural tools, based on literature research, observational research and case-studies, are the foundation for a new architectural concept and design. The design will be developed on multiple scales and therefore interact with the context and the user. Architecture is not on one scale, it is the interaction between the different levels. If the design would be focused on one element, the design will fail on the others and will lose its importance. The multi-disciplinary approach is an important aspect of the master program. The design will be stronger if it is substantiated with research. The Bachelor and Master taught us that the academic attitude of architecture comes forth in the constant exchange between different domains, like literature and design. As Van Dooren (2013) says: making the implicit explicit through constantly experimenting and reflecting.

8.4 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 graduation project tries to find a solution for a larger problem in the elderly care through architecture. The problem of anonymity and individuality is researched with multiple methods, like literature research, observations of the target group, interviews, questionnaires and case-studies. The research doesn't stop with architecture, but also looks into sociology and anthropology. The multi-disciplinary research with different methods creates a full picture of how elderly behave and live in their environment, and therefore the research can give an answer to the larger social problem in the Dutch care-system. The researchers used in the graduation project use less participating approaches in comparison to the research of 'Safe and Sound'. For example, Jan Gehl (2011) describes the observations he made in the public space and gives solutions for the problems he notices through architecture. Blokland (2008) uses observations and interviews to show the importance of meetings in the neighbourhood. Van de Wal & Van Doorn (2015) use literature research and case-studies to research the transition from privacy to public. The research 'Safe and

Sound' combines these techniques to show the elderly from different perspectives and let them participate in the research by listening to their problems. It is important for the elderly to let them be heard, to get rid of the anonymity and therefore create more social safety. The research 'Safe and Sound' uses different methods in understanding the elderly and translates their needs in design tools for a new living concept in which the elderly can stay the rest of their lives.

8.5 Elaboration on:

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

As mentioned before, the graduation project tries to find a solution for a larger problem in the elderly care through architecture. In the research phase of the studio, not only the problems of elderly architecture in the Netherlands were discussed, but also the problems of individual elderly. Through observations and interviews, the elderly showed what problems they were facing. Solutions for these problems were integrated within the design. The target group of the design is the elderly, so their needs should be an important aspect in the design. However, the danger could be that the design will only be useful for a small group of people. Therefore, the interests of various parties should be linked to realize a design that has a wider influence. It is the task of the designer to carefully consider what can or cannot be used in the design. For example, two different actors are in conflict on the location. The design location, Tanthof, is loved by its residents. At the moment there is a school, which the neighbourhood wants to keep. The municipality wants to remove the school and wants to build apartments for elderly. The task of the designer is to connect the interests of the two parties. What could be useful is to have a participatory design in which the neighbourhood can help with the design. The design of 'Safe and Sound' has not used this, due to the pandemic and due to the sensitivity of removing the school, but a questionnaire in the neighbourhood and critical discussions with the municipality shows the interests of both parties. The protests in the neighbourhood show that there is a need to be heard, a need to have a voice in the design. The graduation project gives a voice to the elderly. The research on the needs of elderly, the collaboration with the elderly in the nursing home and personal interests (every students has grandparents, so create a design for them) show what elderly need and therefore solutions to the current problems in elderly architecture can be given.

8.6 Reflection on dilemma's

Discuss the ethical issues and dilemmas you may have encountered in, doing the research, elaborating the design and potential applications of the results in practice.

The biggest issue in this course was that the group elderly feels like a forgotten group. The designs of nursery homes in the last century are only showing problems in the last century. If the elderly person was not able to take care of himself, he was taken from his home and placed in a building with other elderly who had the same issues. In there, their needs were not found important anymore. Now, these problems are being solved, but we still have some steps to take. During the stay in the nursery home, it became clear that new concepts are needed. To be clear, the nursery home itself was not bad, but not every resident was happy there. Some had to move from their home in which they lived a big part of their lives, because their partner had started to develop dementia and needed care. They both moved to the nursery home and were placed in different wings. This is problematic for both partners: the one with dementia doesn't know the neighbourhood and will never really settle, and the other one is obliged to move with the partner and has to stay there even after the other one has passed away. It wasn't their home. I have three pairs of grandparents and with the nursery home in mind, I got the motivation to design a better living environment in which they can live.

A different dilemma is how to combine the different needs into one design. As said before, not every elderly person is the same, so how could you implement the needs of one group and not forget or obstruct the needs of a different group. The research is helpful in creating a general solution. Of course, not all needs will be fulfilled, but the design will be useful for a larger group.

A final dilemma is the different opinions of the municipality and the neighbourhood, and the results of the research. The neighbourhood is against the plan of destroying the schools by the municipality. If we asked questions in the neighbourhood, the residents thought that we were spies of the municipality and were less inclined to help us. The municipality has their own needs, like they want to build a taller building (max. 6 stories) with a denser lay-out, but from literature research and neighbourhood research, a different density is preferred. The design is a combination of the different needs, so that every group has something. If the design will be applied in practice, the lay-out will probably have to be denser, but now the design gives the elderly a new home where they can stay the rest of their lives.

8.7 Reflection on learning process

The course Research Plan helps us to develop a research plan through the subjects of Methods, History and Theory. Through lectures and how-to sessions we had to reflect on our own methods and when and why we use them.

Methods

At the start of the course we had an introduction about methodology and methods. This was at the very beginning of the studio, so we did not start our research yet. However, the studio has a very clear subject and the methods in our research have their origins in the field of anthropology. As architects, we have to work in multiple disciplines and we have to find a balance between those fields. For each of the disciplines, different approaches for research can be used (Havik, 2020). In the lecture about methods, a few epistemes, or frames of value and thought', were shown and I tried to think which one we would probably use. Our studio is human-centred: we are asked to design a new concept for the elderly, which is a very specific group. Therefore, we would do our research in the field of praxeology, which is about social-spatial practices and user perspective. For architecture, praxeology has become more important over time. Praxeology has its origin in the field of philosophy, where it has become more clear that there needs to be a definition for the study of human actions. The human has become involved in architecture: instead of only designing aesthetical pleasing buildings, the architect

is also thinking about who is using this building. After the first six weeks of research, I started to look back at what we have done so far. It is true that most of what we have done is in the field of praxeology. I have followed elderly in neighbourhoods and have seen what they were doing. I have done fieldwork in an elderly home, where we have conducted interviews with the elderly. With the focus of praxeology, I'm able to learn what the our target group, the elderly, need and wish. Through the research, the elderly have become humans in flesh, instead of an abstract description of a target group. Besides the praxeology, I also tried to learn how the elderly perceive their environment and why they felt that way. What do they prefer in their building and what does architecture contribute to that? This research is sensory and is more related to phenomenology. All these different techniques to research give various ways of visualize the information and I try to experiment with that.

History

Historical research plays a smaller part in our studio than sociological research. We try to perceive our target group, so we interview them and use tools, like a walker or blindfold, to be like them. However, there is a reason why we have to develop a new concept for the elderly. Therefore, historical research becomes more interesting. Over the years, the elderly homes have constantly changed, but not always in the best way. The elderly started to become less human and

were just products in the factory of the care-system. Now we try to create friendlier homes for the elderly, but it is useful to use the materials that are already there, to see where things go wrong or right in the past. Tools like archives or historical mapping can help to develop a base on which you can substantiate your problem statement and further research.

Theory

For theory, why is the most important question. First of all, why are we researching the elderly? The percentage of elderly is rising the Netherlands over the next decade, so we have to find a way to provide the elderly with their needs and be able to provide them with the care which is already under pressure. We try to solve this big problem in modern society, but in the meantime, we find new problems by constantly asking why. That is what architects do. We are a problem-solving enterprise and we find those problems through the questions: when, where, how, for who and with what purpose? If you constantly ask yourself these questions, you will further develop your research and create a strong argument for the design in the end.

Architecture uses practice-based research. Hypotheses in the field of architecture can only be verified through the results of built buildings. However, the research following the hypotheses have a certain level of complexity due to the many connections of architecture with other fields. Architectural researchers therefore also look in fields like anthropology and sociology. All those different researches have influence on the current architectural field. But, where does this place my research in all the other architectural researches?

As explained before, the design studio 'Designing for Care' focusses on user-centred research, so humans in relation to architecture. The research uses therefore studies in the field from sociology. The topic social safety among elderly uses different methods in the field of sociology.

In the fieldwork week, observational research has been conducted. How do the elderly interact with each other and how do they use the spaces they live and roam in? These participatory observations show what problems the elderly are facing and what could be improved. Jan Gehl (2011) uses very similar approaches in his book Life between Buildings. By studying the public life in cities, Gehl points out the issues cities are facing in public spaces. He sees the space between the buildings as a different dimension of architecture and tries to show how the society changes the character of this space. The reason why

this research is so important is that he conduct his architectural research on the scale of the people. He is an architect doing sociological research.

Gehl's research is based on one of the most influential people in humanistic planning: Jane Jacobs. In her book The Life and Death of Great American Cities, she discusses the problems in neighbourhoods of American cities and uses anecdotes from what she sees on the streets to provide with solutions. She is not an architect, but a journalist and that gives new insights for other architects (Jacobs, 1961).

Gehl and Jacobs both use different settings than my research. They are both looking from an urban scale, while the research on social safety among elderly is looking at the building. Still they all have the user in common and how architecture can help with safety and interaction. The participatory observation also means doing interviews with the elderly to understand the observations better. The observations raises the question of what people are doing, but the interviews can give more insight in why they are doing it. Talja Blokland (2008) uses the essay *Ontmoeten doet ertoe* to show why people need social interaction. She uses literature research and examples of people to give a better understanding of meeting with other people in the neighbourhood.

The research week in the nursery home in Loenen aan de Vecht is what makes this research stand out. Architects do not stay in a nursery home for a week to get to understand their target group. The fieldwork gave the opportunity to observe the elderly from a closer distance. The combination of observational research and participatory research made the week interesting. First, it was possible to see what the elderly were doing without you interacting. Then if observations needed more explanation, it was possible to ask the elderly why they were doing what they were doing. The interviews gave a better understanding of the problems they are facing, what their daily habits are and what they prefer in their living environment. The literature research is an important addition to the fieldwork research. Not everything can be answered by observing, so the literature research is needed to strengthen the fieldwork research.

One of the main topics of the research is individuality and in particular the transition from public to private to create moments of interaction. For architecture, the transition is an interesting topic, because architecture is a tool to express publicness or privateness of a space. Researchers like Altman (1975), Lofland (1998), Van Dorst (2005) and Van de Wal & Van Dorst (2015) all have their own opinions on that topic. Firstly, Altman divides the zones from private to public in territories. The private zone is the primary territory, the public zone is the public territory and the

area in between the two is the secondary territory. The territories are created through the influence of the physical borders on the human behaviour (Altman, 1975). Lofland calls them public, parochial and private realms, where the space isn't defined by materials, but by the users (Lofland, 1998). Van Dorst's privacy-zoning theory says that materialization marks the function of a space and is therefore the opposite of Lofland (2005). Van Dorst's theory is the expected function of the space, while Lofland's theory is the real outcome of the function. Van de Wal & Van Dorst (2015) come up with the theory of privacyscript, which influences the readability of a privacy-zone. They go back to having three domains: the private, parochial and public domain (Van de Wal & Van Dorst, 2015). Van Dorst is co-author of the *Privacyscript* and it looks like that he has a different opinion on privacy-zoning: his theory from 2005 shows that he thinks that there are no clear divisions in the zones from private to public, but in *Privacyscript* they use the three zones. For me, a combination of Lofland, Van Dorst and Van de Wal & Van Dorst is the way to approach the transition from public to private. Not every space can be defines: some have multiple functions which are caused by how people are using the space. However, it is useful for the users to give definitions to spaces, like someone's backyard can be defined as a private space. The users know therefore how to materialize the space and how to behave in it. In the route from public to private architecture can be used to create

certain expectations of the space. For example smaller communal spaces in the hallway for neighbours to come together and space in front of a door on a gallery could be used for private purposes. People can meet each other on these routes and therefore recognize each other, which will create safety.

Besides literature and observational research, case-studies are also analysed in the research 'Safe and Sound'. For now, two case-studies are used. Both projects are designed by the same architectural firm. The first project is the ParkEntree in Schiedam and the second project is called Romeinhof, located in Enkhuizen. Both are design by the architectural firm Inbo. The projects are chosen because of their research topic in combination with the target group of elderly. The projects both try to find solutions for the problems of anonymity and helping each other. The case-studies could be helpful for the research to see how others have implemented architectural tools to solve these problems. I chose two projects of the same architectural firm to see if they implement the same design principles in multiple projects or if they use different principles. According to Teegavarapu & Summers (2008) case-studies can be implemented in more characteristic requirements than surveys, interviews and experiments, but there is always the danger that it could be subjective. To make it less subjective, it is of importance to make a list of criteria in the search of case-studies. Besides, it will narrow

down the search for case-studies. The method of case-study is suitable for the development of theories in design research (Teegavarapu & Summers, 2008).

The combination of literature research in the field of sociology in architecture, participatory observation through observations and interviews, and analysing case-studies is important for this research, because it highlights different aspects of user-centred, architectural research. These methods change from looking as outsider to the problems of elderly architecture, to letting the elderly participate in the research by listening to their problems. It is important for the elderly to let them be heard, to get rid of the anonymity and therefore create more social safety. The research 'Safe and Sound' uses different methods in understanding the elderly and translates their needs in design tools for a new concept in which the elderly can live out the rest of their lives.

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Appendix A: Interviews

MR.

CARBO

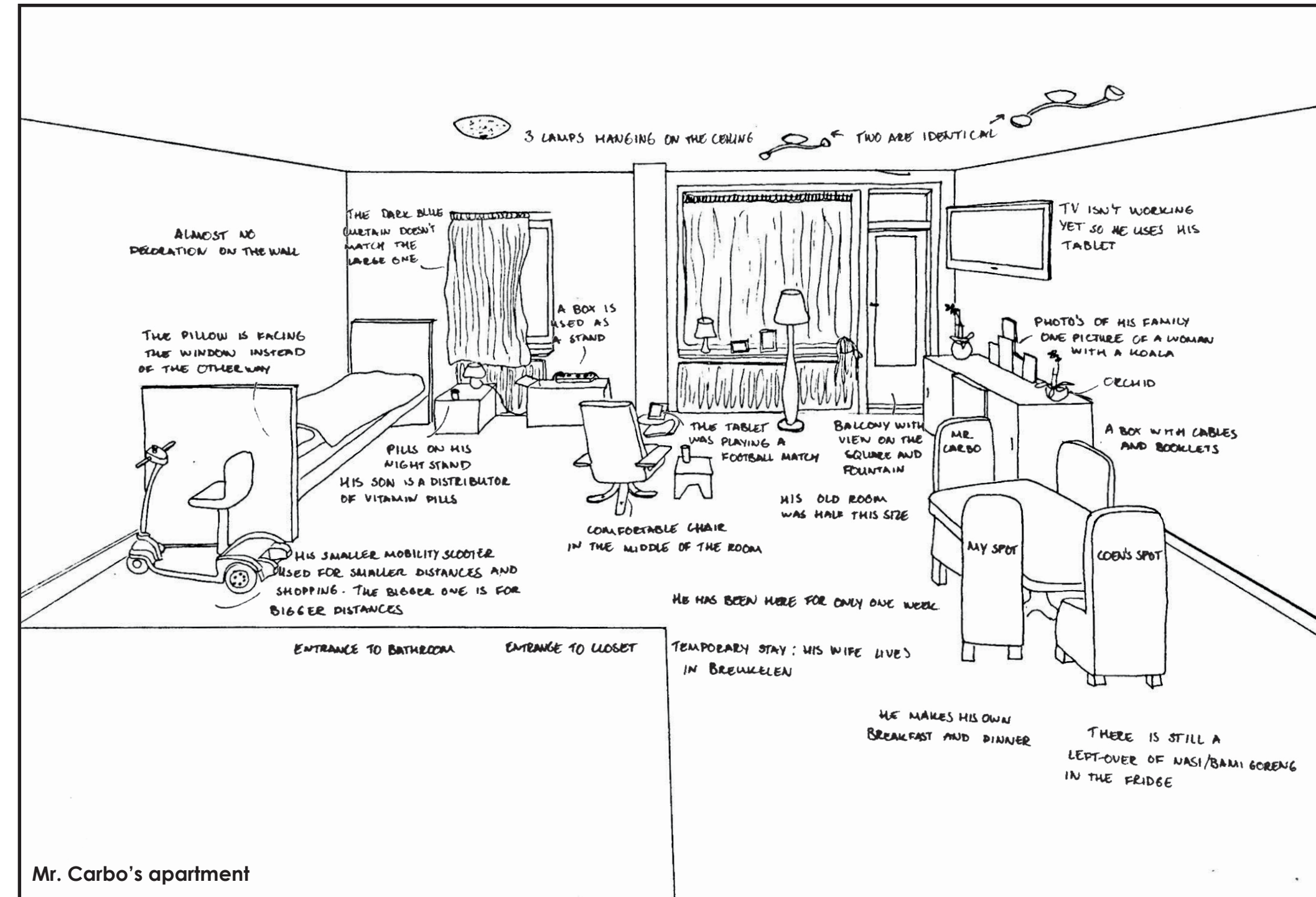## Interview

Personal life
- His wife lives in Breukelen, his son lives in the neighbourhood
- His previous house was in Kanaleneiland, Utrecht
  - Half the size of this room
  - A bus stop was nearby and he used this all the time with his friend
- He used to live in a rowing house in the city
- He used to be a street foreman (for example the pier in Scheveningen)
- He still has good vision and coordination, but he had an accident with his leg

Interaction
- His son visits a lot and helps him with his new home: the television still needs to be activated
- He visits his wife in Breukelen on his mobility scooter
- He needs partial care, so he lunches together with the other elderly (lunch is the warm meal of the day)
- He tries to make contact with the others, but so far most of them are too far gone (and only has lived there for one week so far)
- Does his own groceries with the smaller scooter

Architecture: 't Kampje and surroundings
- Loenen aan de Vecht has beautiful surroundings, but there are too little shops, only the Jumbo.
- The view from his room is perfect: it faces the fountain and square
- His room is huge. Before, his room was half the size and he had to share the bathroom. He is happy with the kitchen and bathroom

Mr. Carbo's apartment

MRS. MULLER

Interview

Personal life
- She lives alone and has need of the care-givers
- She has children and grandchildren
- She used to live in a house that was more free
- Mr. Geijtenbeek is one of her good friends
- She has lived here for 6 years

Interaction
- Her children and grandchildren visit multiple times: her granddaughter called her and said she was going to do her nails and help with the puzzle
- She used multiple forms of transformation to go to other places (bus, elderly taxi and family)
- She almost always joins the weekly activities and daily coffee breaks
- She does a lot of activities like: jeu de boules, watch movies, play Rummikub, flower arranging
- She gets her food from the care-givers (and has lunch with the others)
- Door is always open for small-talks
- She uses the library for interaction

Architecture: 't Kampje and surroundings
- The room is beautiful, but a little bit too big
- Beautiful view on the square, but she can't open the window, otherwise the smell of the kitchen below will fill her room
- The communal garden is beautiful: in the summer they sit underneath the big tree
- She misses the doctor in the building and misses clarity and structure in the organisation
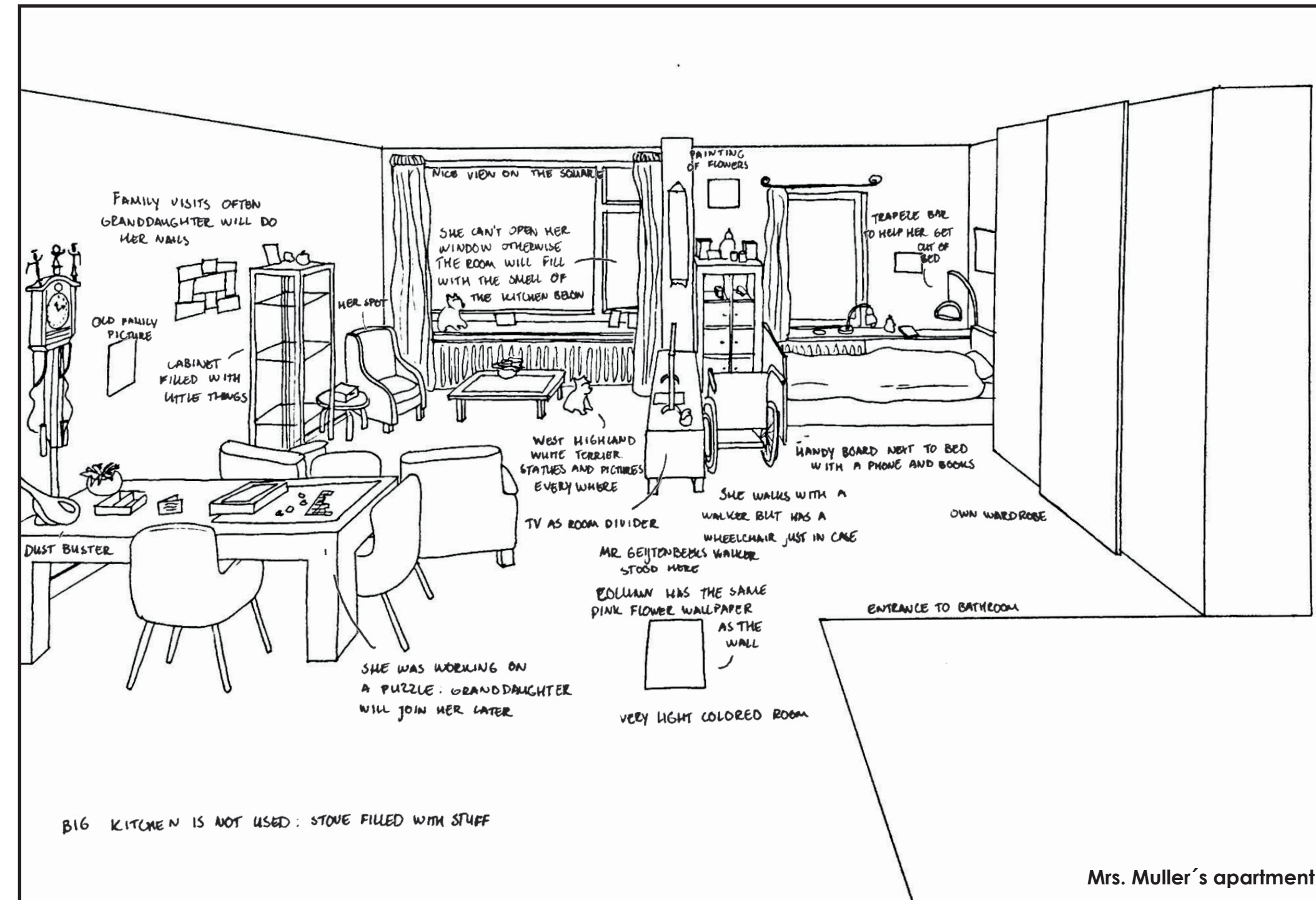
Mrs. Muller's apartment

MR.

GEIJTENBEEK

Interview

Personal life
- He used to live in an appartment
- He has one daughter, which he couldn't see at the moment, because she just had knee surgery
- He has a grandson studying on Terschelling
- He lives in the 'aanleunwoning', so he cooks himself
- He doesn't like the conversations about illnesses and WWII

Interaction
- His daughter visits him often en drives him around
- Even though he isn't part of the care system, he joins the activities and coffee breaks (one of the few men). Last week, he was told that he couldn't drink coffee with the group anymore, because he wasn't part of the care-system, so now he pays €28,- per month to have a cup of coffee and join the activities
- Mrs. Muller is one of his good friends and they eat together sometimes
- He goes to the Jumbo one or two times a week

Architecture: 't Kampje and surroundings
- Beautiful view on the water and willow tree from his apartment
- He enjoys his balcony
- He likes 't Trefpunt and the living room next to the open kitchen on his floor
- The communal garden is beautiful: in the summer they sit underneath the big tree
- He is open for a mix of young and old in the building: more to talk to
- Distance to the supermarket is the maximum distance for him
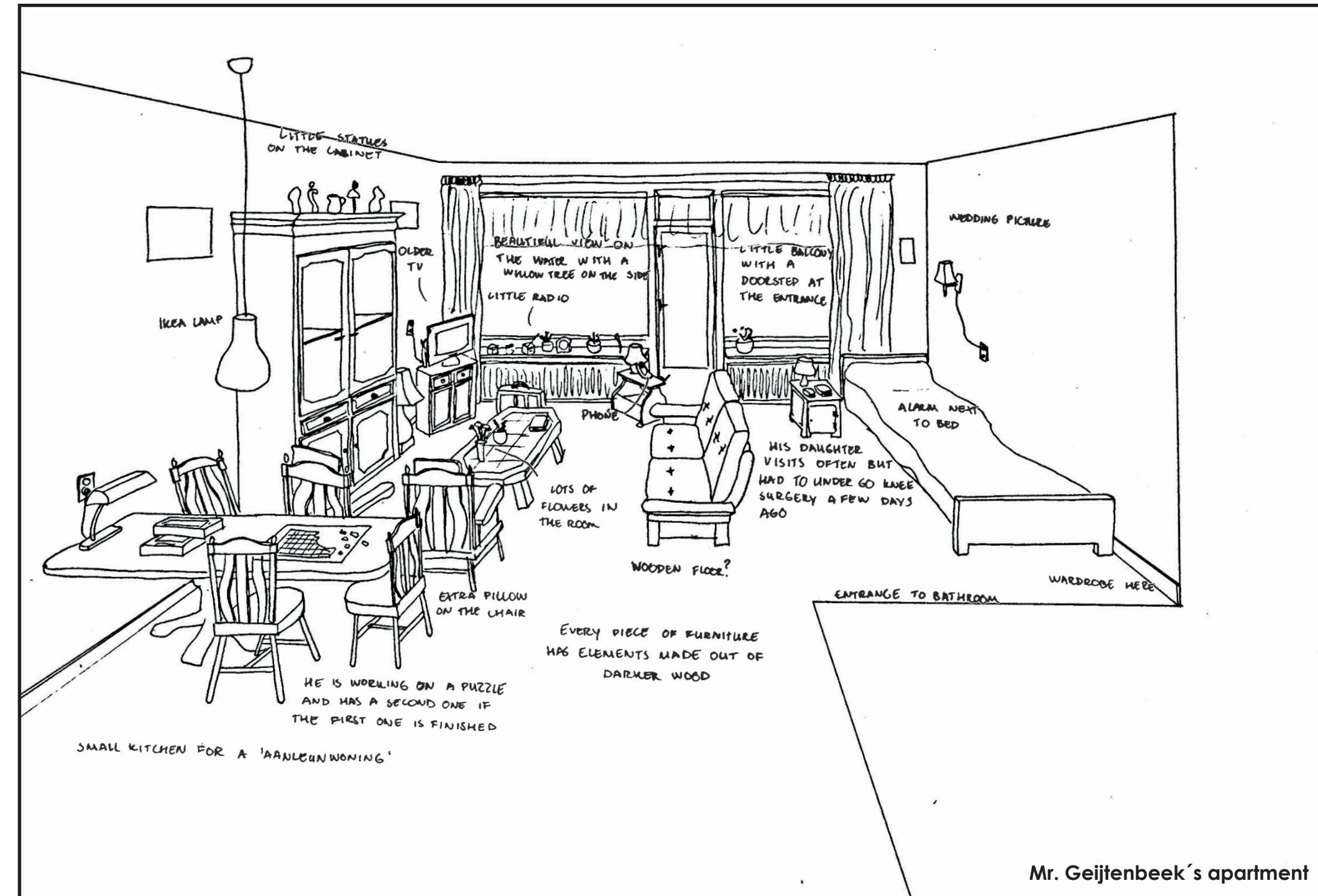
Mr. Geijtenbeek´s apartment

MAARTEN

Interview

Personal life
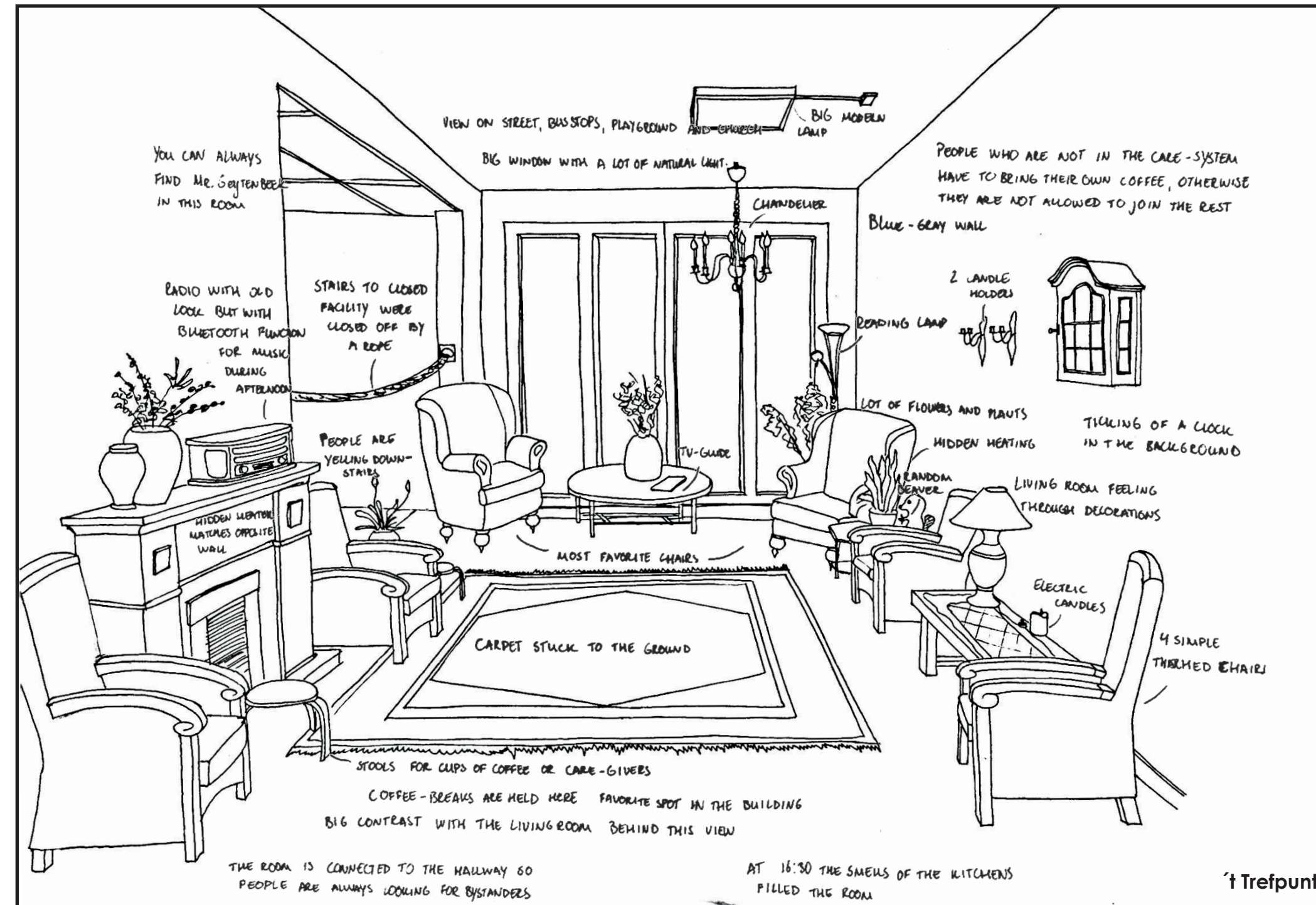- He is the host and contact person of 't Kampje:
  - Provide the residents with breakfast
- He works here for 9 months, just before corona
- He is in multiple committees
- He used to be a technical specialist, but he followed his passion for taking care of people
- He also works in an addiction clinic
- In his break he:
  - Smokes outside and reads the letters he sends to the residents
  - Sits in the open kitchen and reads
  - Sits in the Flamingo (the cafeteria)

Interaction
- He tries his best to have contact with everyone and especially the people sitting alone on their room. These people mostly have done a higher education and don't like the conversations.
- His specialty is one-on-one contact
- Vrienden van 't Kampje: they try to do activities with everyone, even the aanleunwoningen, like cooking together

Architecture: 't Kampje and surroundings
- The open kitchens aren't used by the residents, only the VvK and meetings
  What to do with 1.000.000?
- Buy back Studio Idee, so they can organize more activities
- Plan more activities with the elderly
- Create bigger kitchens for live cooking
- Reorganize the big space of 't Trefpunt: close it off with sliding walls and new furniture

You can always find Mr. Seytenbeek in this room

View on street, bus stops, playground and colored...

Big window with a lot of natural light.

Big modern lamp

People who are not in the care-system have to bring their own coffee, otherwise they are not allowed to join the rest

Chandelier

Blue-gray wall

Radio with old look but with bluetooth function for music during afternoon

Stairs to closed facility were closed off by a rope

2 candle holders

Reading lamp

Ticking of a clock in the background

Hidden heater matches opposite wall

People are yelling down-stairs

TV-guide

Lot of flowers and plants

Hidden heating

Random server

Living room feeling through decorations

Most favorite chairs

Electric candles

Carpet stuck to the ground

4 simple themed chairs

Stools for cups of coffee or care-givers

Coffee-breaks are held here   Favorite spot in the building

Big contrast with the living room behind this view

The room is connected to the hallway so people are always looking for bystanders

At 16:30 the smells of the kitchens filled the room

't Trefpunt

MRS.

HUISKAMP
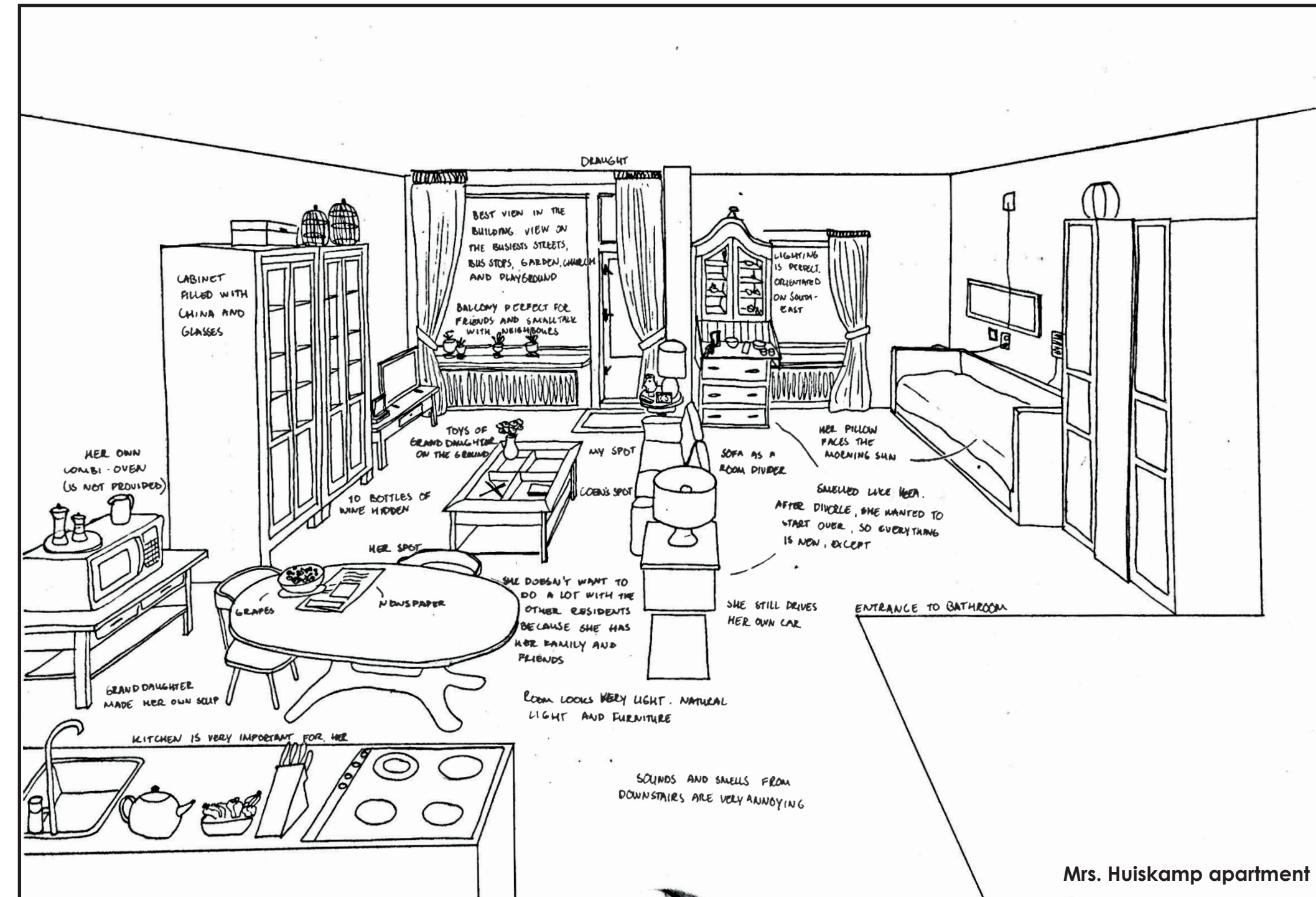
Interview

Personal life
- She used to live in a big house in Loenen aan de Vecht
- She has a daughter and two grand-daughters living nearby
- She is an 'overblijfoma' for her granddaughter

Interaction
- She drives her car to friends in the neighbourhood
- Granddaughters are there most of the time (school nearby)
- Makes small-talk with the other residents, but doesn't stay for coffee breaks
- Friends with Mr. Molenkamp in the building
- Invites people in her apartment and on her balcony to have a drink

Architecture: 't Kampje and surroundings
- She has the best spot in the building:
  • Window faces SE, so morning sun
  • View on the street, church, bus stop and playground
- Balcony is great, without it, she would feel locked up
- She doesn't go into the garden
- She hates the open kitchen: it constantly smells in her apartment (bad ventilation)
- She has noise complaints: people constantly moving chairs and banging on the heating
- Room is big enough and she loves her big kitchen
- She doesn't like the name 't Kampje: too old for her and sounds like Mein Kampf

Mrs. Huiskamp apartment

MRS.

BOERSTRA
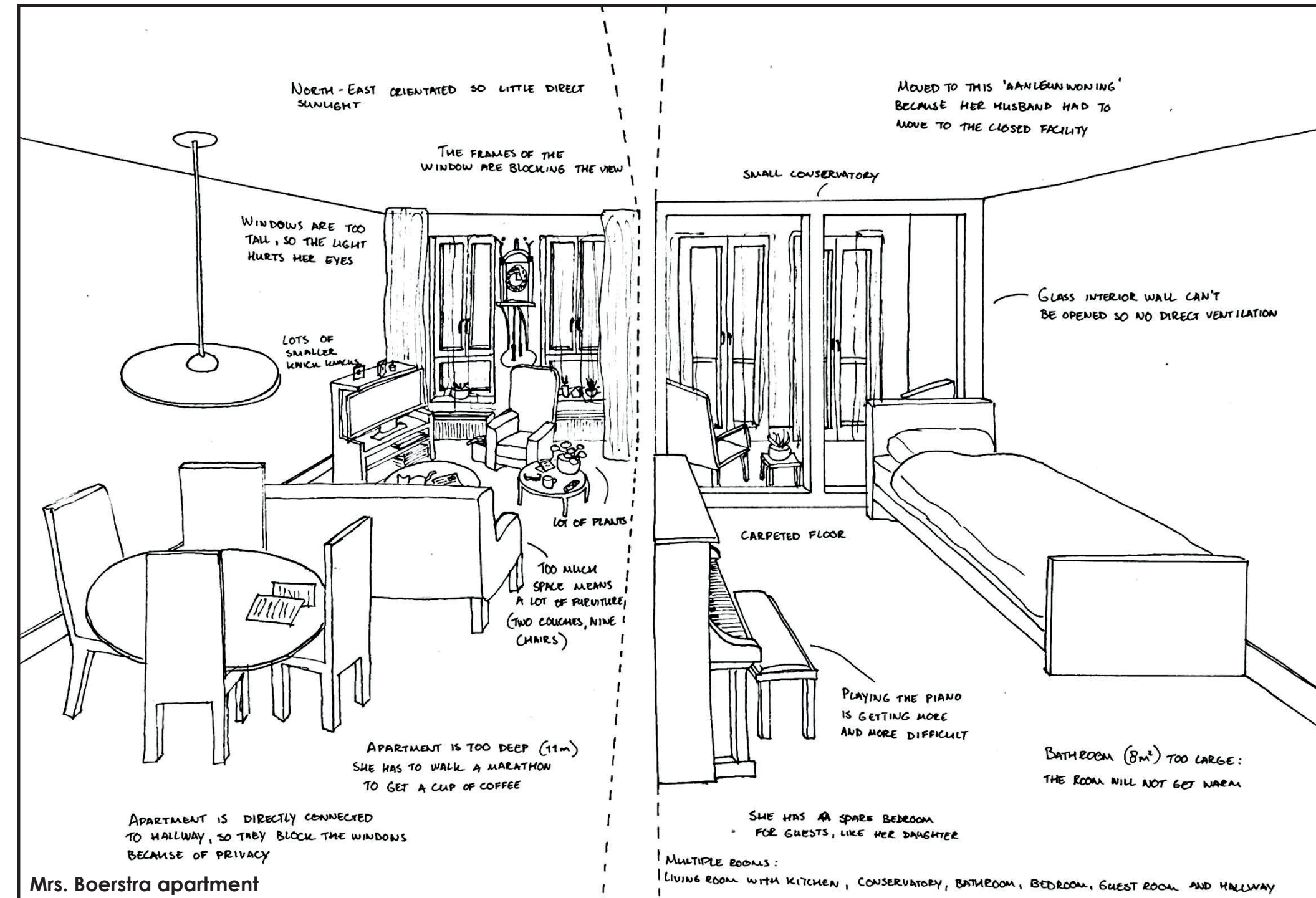
Interview

Personal life
- She moved to the 'aanleuningwoning' in 't Kampje, because her husband had dementia and had to move to the closed facility. She wanted to live close to him.
- She has at least one daughter, who helps with her household at least two times per week.

Interaction
- Her daughter visits often.
- Children are playing on the square connected to her window, which she enjoys watching.
- Some of her activities are:
  - Paintings class
  - Playing the piano
  - Crocheting
  - Using her iPad

Architecture: 't Kampje and surroundings
- She likes the activities in the building, but if her husband didn't have dementia, she wouldn't have moved here.
- Her windows are too tall (too much bright light), but she also wants a different orientation (now NE), so she can have more direct sunlight.
- The window frame is blocking her view: designer didn't think about the eye-level of elderly.
- Because of a glass wall separating her bedroom from the windows, she can't have fresh air in the bedroom.
- Her bathroom is too big: she can't get warm
- Windows facing the hallway always have closed windows, because of privacy.

North-east orientated so little direct sunlight

The frames of the window are blocking the view

Windows are too tall, so the light hurts her eyes

Lots of smaller which which

Lot of plants

Too much space means a lot of furniture (two couches, nine chairs)

Apartment is too deep (11m) she has to walk a marathon to get a cup of coffee

Apartment is directly connected to hallway, so they block the windows because of privacy

Moved to this 'aanleuningwoning' because her husband had to move to the closed facility

Small conservatory

Glass interior wall can't be opened so no direct ventilation

Carpeted floor

Playing the piano is getting more and more difficult

Bathroom (8m²) too large: the room will not get warm

She has a spare bedroom for guests, like her daughter

Multiple rooms:
Living room with kitchen, conservatory, bathroom, bedroom, guest room and hallway

Mrs. Boerstra apartment

GRANDPARENTS

HULSBOSCH

Out skirt of village
Semi-detached house

3 children
3 grandchildren
1 great-grandchild

Interview

Have you already thought about where you would want to live?
- As long as possible at home, but otherwise in an Indonesian nursing home: cooking and eating together

With whom do you often have interaction?
- Vangi: cleaning lady for the house (also Indonesian)
- Ben: for the most difficult jobs in house
- Tristan: the gardener
- Children and grandchildren: groceries, taxi, small jobs

What activities do you have in the week?
- Visit the Global (garden center) and have lunch there. The lunch lady has a small talk with them and gives them extra cheese on there grilled cheese
- Doing groceries in Hoofddorp: the mall is large and indoor. They sometimes have lunch at Bagels and Beans
- Neighbours Amema sometimes come by and have a talk. They sometimes do some groceries for them
- GP walks with his oldest son in the dunes once a week
- GM used to do bridge, but her partner passed away

What is your favourite spot in this house?
- GP: his own sofa. Here he can look outside in the garden, there is natural light, birds, he can read and watch television
- GM: the garden and the shed in the garden. There is a heater in this shed and she can relax in here after working in the garden

How would your preferable building look like?
- GP: an independent apartment where he can have contact with other residents
- GM: a 'hofje' (little courtyard), where she can live independently, but where she can work in the garden (in tall bins)
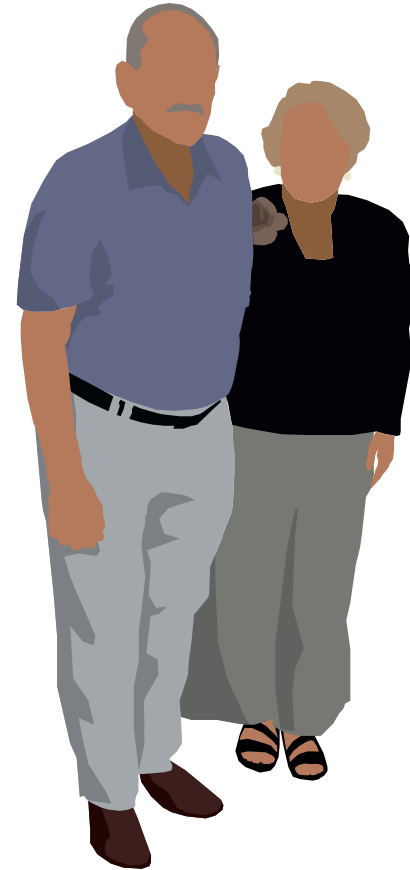
With whom do you want to live in this mixed building?
- GP prefers 40+, but students who want to have conversations, is not bad either
- GM prefers starters and older (preferably boys)
- Both don't want to have young children
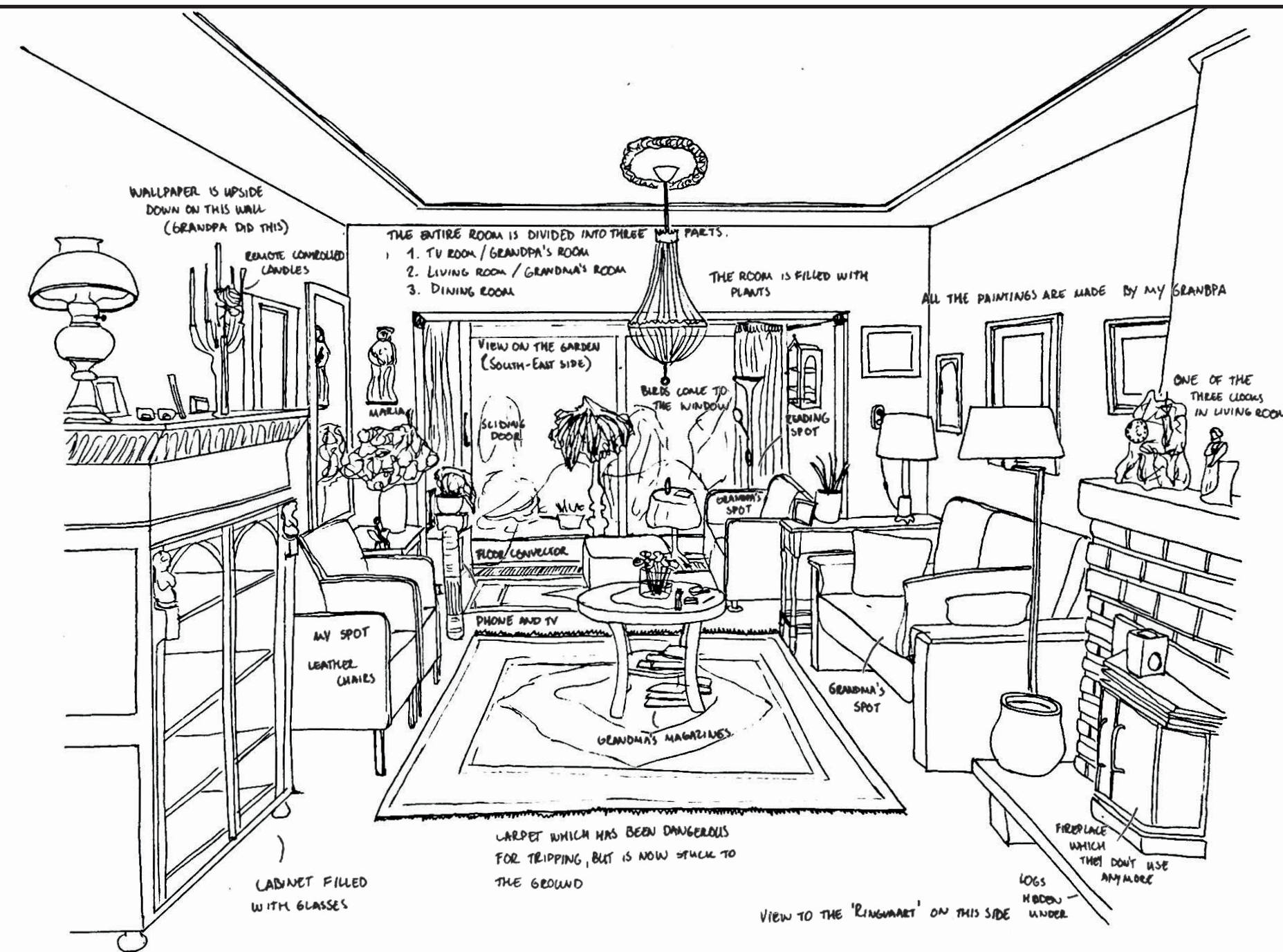
Living room

GRANDPARENTS

VAN LOON

Suburb of a city
Terraced house

2 children
4 grandchildren

Interview

Have you already thought about where you would want to live?
- As long as possible at home, but otherwise in a community (GM) and in a house with sailors (GP)

With whom do you often have interaction?
- Church: having coffee, sometimes dinners
- Family: children, grandchildren, brothers
- Friends: from church, neighbourhood

What activities do you have in the week?
- Trombone lessons
- Church
- Groceries in the city centre
- Bridge
- Family and friends coming over
- Riding the e-bike

**What is your favourite spot in this house?**
- GP: the shed in the garden, where he can work on his motorcycles
- GM: her sport at the table: she reads the paper there, easiest place for conversations (not the sofa), good **height, natural light from the arched windows**

**What functions should the building have (nearby)?**
- General practitioner
- Library
- Garden, where they can work in
- Bicycle shed
- Supermarket in the neighbourhood
- City centre on bicycle distance

With whom do you want to live in this mixed building?
- GP prefers a mix, but preferably people from a higher technical education
- GM prefers a mix of all ages. She doesn't mind, but it should be community. In the neighbourhood they notice that the younger couples don't know each other and don't meet the neighbours, which my grandparents used to do.

Living room
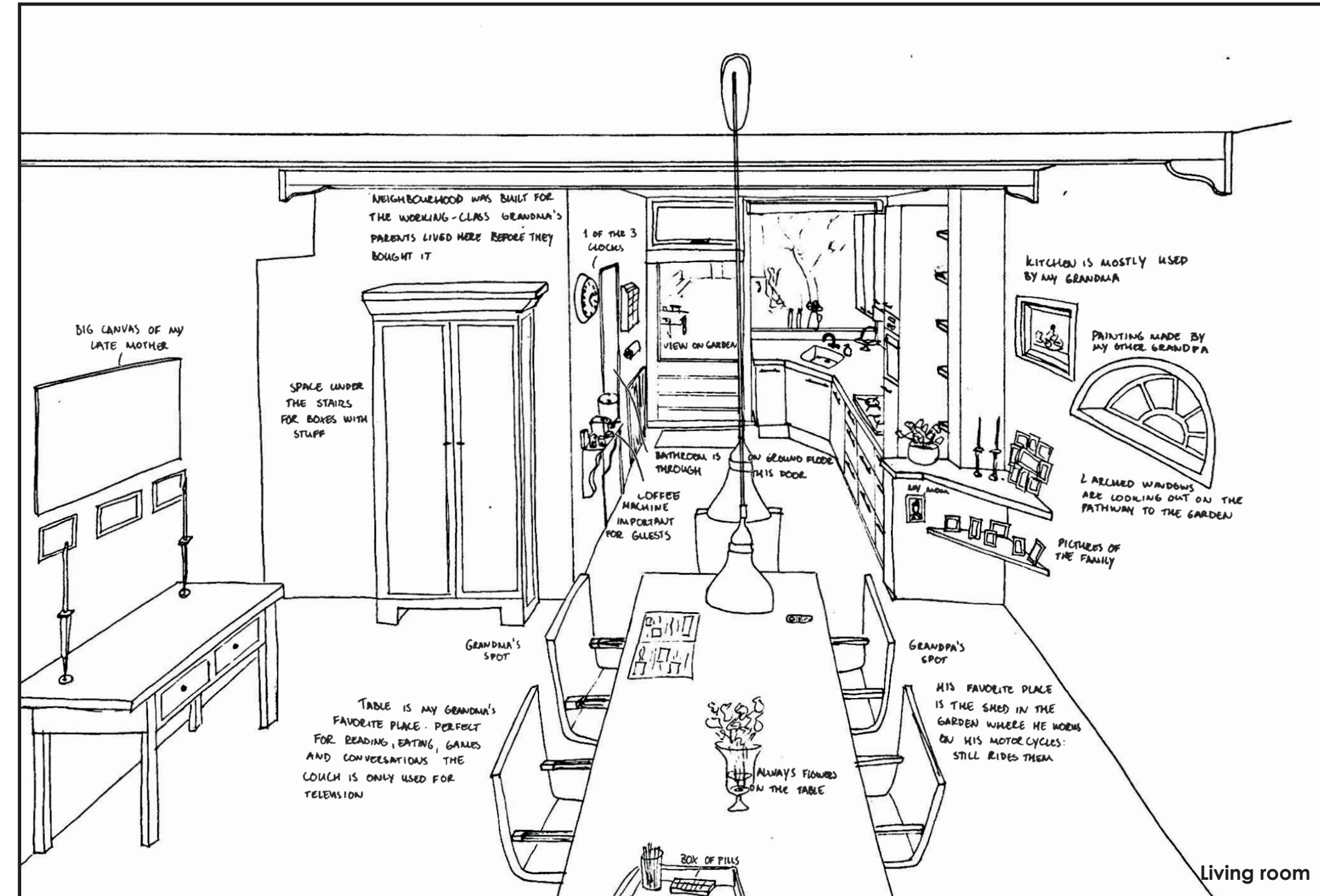
GRANDPARENTS
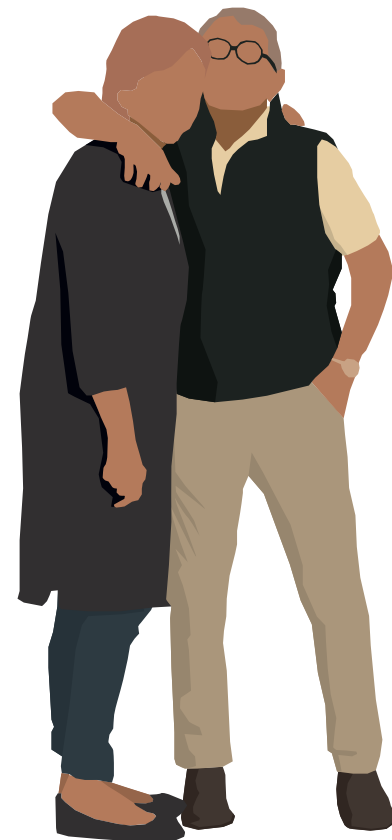
DE HOMMEL

Suburb of a city
Detached house

2 children
4 grandchildren

Interview

Have you already thought about where you would want to live?
- GP wants to stay at home, but GM would rather live in an apartment near the centre of Breda: cultural buildings nearby (museums, (movie) theatres)

What activities do you have in the week?
- Friends (65-80 years) visit each other for a drink or dinner. What they notice is that friends who live far away only want to have lunch instead of dinner (driving at night is more scary)
- Golf (in weekend together, GM on Tuesday with team, GP on Wednesday with team)
- Long walks
- Bookclub (GM)
- Family: meeting children and grandchildren

What is your favourite spot in this house?
- GM: the black leather chair in the middle of the room: you feel enclosed, sun in your neck and feet on the table
- GM: when alone, the blue leather sofa in the television room. The wall creates a smaller room and makes her feel not alone. Otherwise the bed: in the afternoon, the sun shines on her, while reading a book

**What functions should the building have (nearby)?**
At this moment:
- Open kitchen for friends and family
- Family room
- Library for book club
- Small theatre
For later (example of Heerlen Parc Imstenrade, her own mother used to live in this service building):
- Barbershop   - General practitioner
- Supermarket   - Activity rooms
- Dry cleaner/laundry   - Restaurant/lunch bistro

With whom do you want to live in this mixed building?
- People with the age of 40 and above: more mature
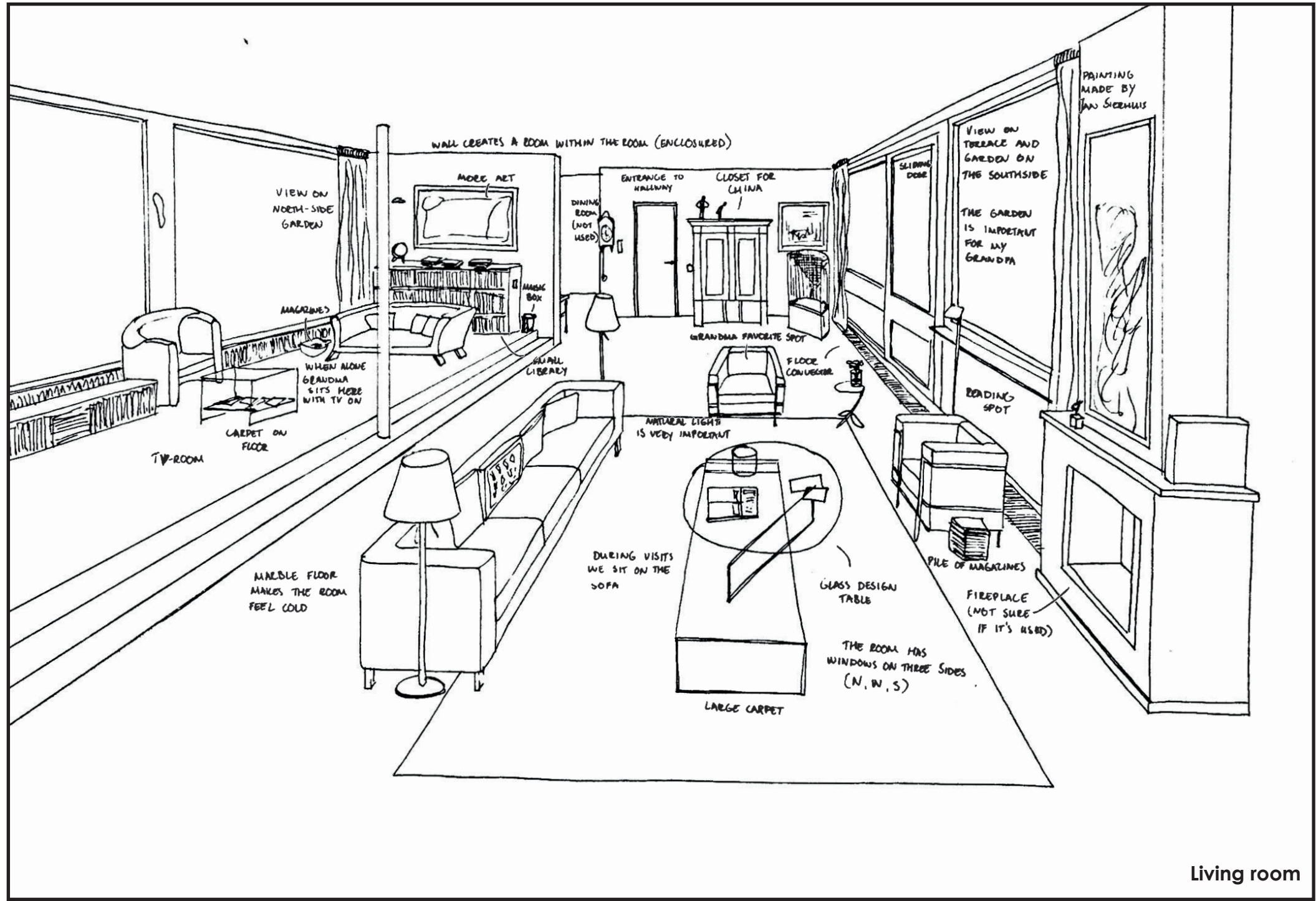
Living room

Appendix B: Matrix by the Gehl Institue

TWELVE URBAN QUALITY CRITERIA

LOCATION:

3 = YES
2 = IN BETWEEN
1 = NO

Protection

Protection against traffic and accidents.
Do groups across age and ability experience traffic safety in the public space? Can one safely bike and walk without fear of being hit by a driver?

Protection against harm by others.
Is the public space perceived to be safe both day and night? Are there people and activities at all hours of the day because the area has, for example, both residents and offices? Does the lighting provide safety at night as well as a good atmosphere?

Protection against unpleasant sensory experience.
Are there noises, dust, smells, or other pollution? Does the public space function well when it's windy? Is there shelter from strong sun, rain, or minor flooding?

Comfort

Options for mobility.
Is this space accessible? Are there physical elements that might limit or enhance personal mobility in the forms of walking, using of a wheelchair, or pushing a stroller? Is it evident how to move through the space without having to take an illogical detour?

Options to stand and linger.
Does the place have features you can stay and lean on, like a façade that invites one to spend time next to it, a bus stop, a bench, a tree, or a small ledge or niche?

Options for sitting.
Are there good primary seating options such as benches or chairs? Or is there only secondary seating such as a stair, seat wall, or the edge of a fountain? Are there adequate non-commercial seating options so that sitting does not require spending money?

Options for seeing.
Are seating options placed so there are interesting things to look at?

Options for talking and listening/hearing.
Is it possible to have a conversation here? Is it evident that you have the option to sit together and have a conversation?

Options for play, exercise, and activities.
Are there options to be active at multiple times of the day and year?

Enjoyment

Scale.
Is the public space and the building that surrounds it at a human scale? If people are at the edges of the space, can we still relate to them as people or are they lost in their surroundings?

Opportunities to enjoy the positive aspects of climate.
Are local climatic aspects such as wind and sun taken into account? Are there varied conditions for spending time in public spaces at different times of year? With this in mind, where are the seating options placed? Are they located entirely in the shadows or the sun? And how are they oriented/placed in relation to wind? Are they protected?

Experience of aesthetic qualities and positive sensory experiences.
Is the public space beautiful? Is it evident that there is good design both in terms of how things are shaped, as well as their durability?