

PAST FORWARD:

THE POSTWAR NEIGHBOURHOOD ELDERLY-FRIENDLY



Dwelling Graduation Studio
Designing for Health and Care in an Inclusive Environment
Technical University Delft
Faculty of Architecture and the Built Environment
Thyrza Tepper | 4840313 | November 6th, 2023

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THE POSTWAR LIVING
ENVIRONMENT
ELDERLY-FRIENDLY**

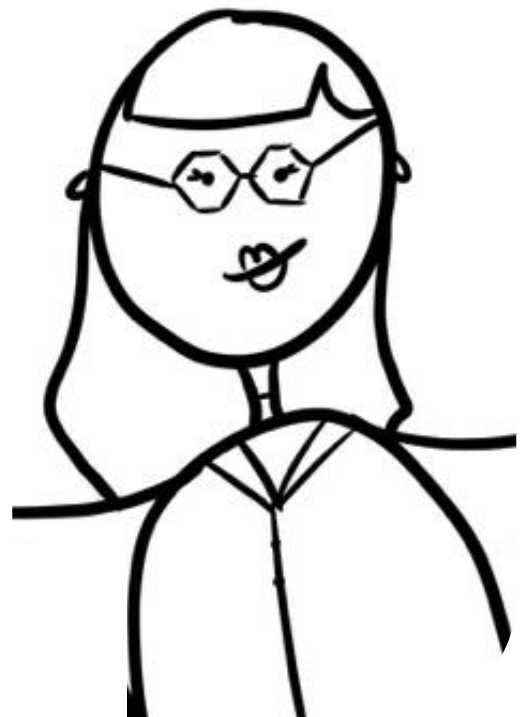
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Preface

Dear reader,

Probably most people can relate to a situation where they have witnessed a loved one ageing and gradually losing their independence. It is disheartening to see someone's world shrink due to declining mobility and perhaps worsening health. This situation is particularly challenging when someone lives alone but is no longer fully self-sufficient, yet they resist the idea of moving to an assisted living facility.

I personally experienced this with my grandparents, who played a significant role for me during my childhood. We spent so much time at their place that it felt like a second home to me, where everything was allowed. We went on various adventures, from day trips to playing in the garden and even traveling together to the other side of the world. While they were physically vital, they took care of my sister and me. However, there came a point when their physical abilities began to decline, initially gradually and then quite suddenly. It was my grandmother's health that deteriorated and my grandfather became her primary caregiver. Together they managed quite well for a long time, because they lived close to all the facilities and family. But eventually, there was a point where my grandfather could not handle the care and home care services became necessary. This was also the point at which it became impractical for my grandmother to continue living at home, as their house was no longer suitable due to the stairs. After moving to a residential care facility, my grandmother's health declined rapidly. If they had lived in a home designed for aging in place, with features like a single level, an adapted bathroom and closer access to home care services, perhaps they could have stayed together longer.

The fact that people in their 60s often do not think about their future housing situation is evident in a conversation I had with my father. When I mentioned the topic of my thesis, his immediate response was "I can't see myself living among those elderly!". Which I think is understandable, but I believe the image associated with senior housing, such as living in a small apartment surrounded by only elderly, is a significant issue. What if people could actually improve their quality of life by moving and enhance their happiness and wellbeing in their later years? What if this transition could expand their social circles and enable them to maintain their independence with all the necessary amenities nearby? It might even allow couples to stay together longer, regardless of their healthcare needs. It should be a natural step in a person's housing journey, much like how students leave their parents' homes at the beginning of their college years. With this thesis I will explore the needs and preferences of elderly to contribute to improving their housing situation.

With pleasure,

Thyrza Tepper

Key definitions

Postwar neighbourhoods:

Neighbourhoods developed after World War II (1945-1965) to solve the housing shortage caused by destruction, with a focus on functionality, simplicity and efficiency (Blom, Jansen, & Helden, 2004).

Elderly people:

People of an age of 65 and older. This thesis has a main focus on the group of 'empty nesters', people between 55-75 who are still vital and actively thinking about their future housing situation (Hagen & Neijemeijer, 2020).

Ageing in place:

To remain living in the community, with some level of independence, rather than in residential care (Davey, de Joux, Nana, & Arcus, 2004). Ageing in place often involves the adaptation of a living environment, access to necessary healthcare services and support from caregivers (Wiles, Leibing, Guberman, Reeve, & Allen, 2012).

Ageing-friendly:

Ageing-friendly environments are designed to promote active and healthy aging by enhancing well-being, inclusivity and optimizing health. These environments accommodate the diverse needs of elderly people by adapting physical environment, social environment and municipal services (World Health Organization, 2017).

Living environment:

The physical environment in which we live, dwell, work, travel and recreate. The physical environment consists of different facets such as buildings, infrastructure, water, ground and soil, air, nature and greenery, agriculture, landscape and cultural heritage (Geonovum, n.d.).

Urban transformation:

Urbanism can be defined as: city-design-and-building processes, spatial products about designing processes of social and political empowerment and designing systems and structures. Transformation can be defined as the significant and fundamental positive change, the task of urbanism should be to transform cities (Inam, 2014).

Needs and preferences:

People's choice in housing is influenced by the distinction between housing needs (fundamental necessities) and housing preferences (personal desires). These factors are influenced by various elements, including age, marital status, household size, education, culture, as well as housing attributes such as the dwelling, location and neighbourhood characteristics (Kam, Lim, Al-Obaidi, & Lim, 2018).

Abstract

By 2040 a quarter of the Dutch population consists of elderly people. This increasing number of elderly will lead to a higher demand for healthcare, but the healthcare sector is already overburdened by the high demand and shortages of professionals. Therefore, elderly have to live independently for as long as possible and enough suitable ageing-friendly housing is necessary. Unfortunately, this is not the case. Many seniors find themselves residing in homes designed for families. Especially when living alone, these houses are often excessively spacious and unsuitable for ageing in place. However, alternatives to move to are not available or do not suit their needs, because they are for example not in their current neighbourhood or not affordable. At the moment the housing construction is stalled and housing plans can take many years, so it is necessary to focus on opportunities. This study focuses on addressing this issue by exploring the potential of transforming postwar neighbourhoods into ageing-friendly living environments, because research shows that solutions can be found in the existing urban context of the postwar neighbourhood.

The research investigates the architectural and spatial elements necessary for creating ageing-friendly environments through a comprehensive analysis of existing literature and a case study by going on a fieldwork week to an real-life example of a living community for elderly. The results are formulated in design guidelines for an elderly-friendly living environment. The characteristics of and problems in the Dutch postwar neighbourhood and the

possibilities for transformation are described though analysing literature. The research identifies strategies for renovating and repurposing existing housing stock, as well as incorporating new construction to meet the housing needs of the elderly population.

Key findings highlight the importance of promoting diversity, mixed-use development, and walkability within postwar neighbourhoods to create vibrant and inclusive communities for aging residents. The study emphasizes the significance of balancing social interventions with privacy considerations and addresses challenges such as safety perceptions and the need for wheelchair accessibility. Overall, this research contributes to the construction of ageing-friendly living environments, improves housing conditions for the elderly in the Netherlands and offers insights into the transformation of the postwar neighbourhoods.

01 Introduction

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Introduction

Chapter 1

Introduction

The first chapter introduces the research topic, problem statement and purpose of the research. Followed by the positioning of the topic within the literature by a theoretical framework and a hypothesis. From this, the main research question and sub-questions are formulated, followed by the research methodology.

1.1 Research topic

Elderly people in the Netherlands have to live independently for as long as possible. Besides the fact that they often want this themselves, it is an important governmental objective (NOS, 2022). Traditional retirement homes like we know from the past no longer exist and exclusively when there is no other option someone will move to a residential care facility. In addition, globally people live longer and the Dutch population is expected to continue growing over the next fifty years. By 2040, a quarter of the population is expected to consist of people of 65+ and the number of people over 80 years old is expected to double (Centraal Bureau voor de Statistiek, 2022).

Due to the increasing number of elderly, the demand for healthcare will grow as well. However, the (elderly) healthcare sector is already overburdened by the high demand for care and shortages of professionals (Klundert, 2023). The government is aware of this, so they are adapting health policies by seeking for new approaches categorised the goals into: prevention, relocation and replacement. Prevention involves strategies to prevent people from needing care. Relocating is about 'the move from the waiting room to the living room', either from the healthcare facilities to people's homes. Replacement refers to deployment of innovative solutions (Ministerie van Volksgezondheid, Welzijn en Sport (VWS), 2019).

1.2 Problem statement

Changes in healthcare and the fact that people live longer, often in better health, are altering housing needs (Ministerie van Volkshuisvesting en Ruimtelijke Ordening, 2022). Given the Dutch government's objective that elderly have to live independently for as long as possible - regardless likely needed healthcare that involve ageing - enough suitable ageing-friendly

housing for elderly should be available. Unfortunately, this is not the case (Teepe, 2022). Many seniors find themselves residing in homes designed for families. Especially when living alone, these houses are often excessively spacious and unsuitable for ageing in place. However, alternatives to move to are not available or do not suit their needs, because they are for example not in their current neighbourhood or not affordable (MAX Meldpunt, 2022).

To initiate the transition of elderly moving to suitable housing, the Dutch government, the Minister of Housing and Spatial Planning and Long-Term Care in particular, launched a programme 'Housing and Care for Elderly'. The programme sets three goals: 1) of the 900,000 houses that have to be built by 2030, at least 290,000 should be suitable for elderly, 2) supporting elderly people move into suitable housing, so this leads to a flow in the housing stock, and 3) ensuring suitable ageing-friendly living environments. Achieving these goals requires both the construction of new buildings, as well as better or more efficient use of the existing housing stock. The programme targets 'elderly' from the age of 65 and over. To smoothen the transition, it is crucial to inform elderly about opportunities and to offer them support during the moving process by providing the assistance of moving coaches (Ministerie van Volkshuisvesting en Ruimtelijke Ordening, 2022).

To address the shortage of suitable ageing-friendly housing for elderly and to make up the shortfall of healthcare professionals and informal carers, 450.000 ageing-proof houses need to be built by 2040. This amount of housing for elderly would reduce job vacancies in the healthcare sector with 100.000 and the number of informal carers with 130.000. Unfortunately, the current housing market is not equipped for this demand for elderly housing. The fact that the construction of housing is stalled and these housing development plans can take many years, does not help either (Teepe, 2022). Since the entire housing development is facing challenges, the transition of elderly moving to ageing-proof housing could contribute to solve problems. The shift of elderly leaving their family houses benefits the housing market, because these vacant homes offer opportunities for families to move and this creates openings for starters (Ministerie van Volkshuisvesting en Ruimtelijke Ordening, 2022).

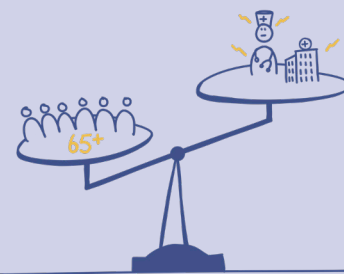
Taking these challenges in the housing market and construction into account, it is necessary to focus on opportunities and changes. A research of Dutch architectural firm KAW Architecten that solutions can be found in the existing city, for example in postwar neighbourhoods. They state that there is enough space in the existing urban environment to almost completely solve the housing demand and they recommend to look into a better use of the existing housing stock by renovating and expanding. Such plans can be realized relatively quickly and efficiently in postwar neighbourhoods, since they are already equipped with facilities, easily accessible and presently in need of renovation (Reimar, et al., 2020). Postwar neighbourhoods are often experienced as unsafe due to the high amount of social housing where only vulnerable people get to live, which causes problems and differentiation (Leidelmeijer, Iersel, & Frissen, 2018). So, with the increasing amount of elderly people, a suitable supply of elderly housing and ageing-friendly living environments in these postwar neighbourhoods can lead to a flow in the housing market and will touch upon multiple problems.

“To investigate the possibilities in postwar neighbourhoods for building ageing-proof housing and designing ageing-friendly living environments that are attractive for elderly people to live in and that suit their needs.”

1.3 Purpose of the thesis

The research addresses the gap in suitable ageing-friendly housing for the growing elderly population in the Netherlands, aligning with the government’s objective of promoting elderly to live independent for as long as possible to alleviate problems in the healthcare sector. Therefore, the purpose of the thesis is to investigate the possibilities in postwar neighbourhoods for building ageing-proof housing and designing ageing-friendly living environments that are attractive for elderly people to live in and that suit their needs to simultaneously touch upon multiple problems in these postwar neighbourhoods.

This research contributes to the construction of ageing-friendly living environments, improve the housing situation for elderly in the Netherlands and reduce the pressure on the healthcare sector. In addition, the thesis will create social awareness for the problem. Showing people the possibility to think about how one wants to live in the future. This includes the awareness that elderly do not necessarily fall short by having to move, but that the transition could have positive impact on their state of wellbeing, promote them to live longer in better health.



Disbalance growing amount of elderly and the pressure on the healthcare sector



Urgent demand for suitable elderly housing



Challenges in the housing market

Figure 1. Problem statement (by author)

Chapter 1

Theoretical framework

1.4 Theoretical framework

The theoretical framework is a reflection of relevant theories and studies within the research topic to contextualise the thesis.

1.4.1 Elderly housing needs and preferences

The increasing number of seniors in the Netherlands and the trend of living independently for as long as possible, presents the urgent challenge: a high demand for housing options where seniors can age in place. However, what are needs and preferences of seniors regarding their living environment? Platform31, a Dutch independent urban knowledge and network organisation, made a report that provides insight into the variety of housing preferences among seniors (Hagen & Neijemeijer, 2020). The research builds on data analysis by Sprinco, into the satisfaction of elderly people about their living situation, conducted using available data from 22,500 seniors in South Holland. The data originates from WoON 2021, a national survey conducted in the Netherlands regarding living conditions of the Dutch population (Sprinco, 2018). Sprinco and Platform31 derived ten housing profiles from the preferences of the respondents (Hagen & Neijemeijer, 2020).

The ten housing profiles:

1. Own personal place
2. Private domain
3. **Basic**
4. **Residential building**
5. **Family house**
6. **City apartment**
7. **Neighbourhood block**
8. **Park apartment**
9. **Courtyard building block**
10. **Senior apartment**

The first two profiles are excluded from this research, because they mainly are located in rural areas and not in the urban context. As a follow-up, Platform31 links practical examples to the housing profiles that either already exist or are in the planning phase, to provide a comprehensive overview of the possibilities in the market of elderly housing. Towards the end of the report it becomes clear that it is not always easy to get plans started. This also confirms the issues in the housing market and housing construction. In addition, the data about the housing preferences has been collected without specifically taking into account that

people should continue to live independently for as long as possible and asking for housing preferences that align with that goal.

Considering the opportunities presented in postwar neighbourhoods, the research will provide a deeper exploration of the eight relevant profiles and associated examples in architectural and spatial aspects that are important for designing an ageing-friendly living environment for elderly. Platform31 focuses on housing typologies for elderly in a typical, matching environment, but without considering the connection with it. The World Health Organization created a handbook for age-friendly cities in Europe. The handbook provides, within the first two domains (outdoor environment and transport and mobility), useful information for the thesis to get an overview of possibilities for creating an ageing-friendly living environment (World Health Organization, 2017).

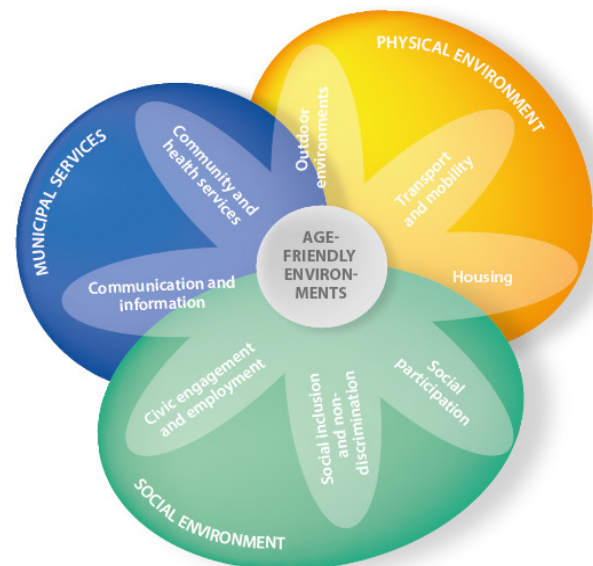


Figure 2. eight domains age-friendly environments (World Health Organization, 2017)

1.4.2 The postwar neighbourhood

Dutch postwar neighbourhoods (1945-1965), were developed after World War II to solve the housing shortage caused by destruction, with a focus on functionality, simplicity and efficiency (Blom, Jansen, & Helden, 2004). The housing stock is a diverse mix of medium-high and low-rise, apartments and single-family houses of which 35% is built between 1945-1965 (Centraal Bureau voor de Statistiek, n.d.). It is essential to understand the idea of how these neighbourhoods are built-up. Therefore, an important

theory of the modernistic design of an urban living environment, is the 'Neighbourhood Unit' of urban planner, sociologist and author Clarence Perry (1872-1944). The Neighbourhood Unit is a planning tool that aims to create self-contained, pedestrian-friendly neighbourhoods within larger urban areas surrounded by main streets. These self-contained residential areas promote a community-centric lifestyle within the hustle and bustle of the city (Perry, 1929).

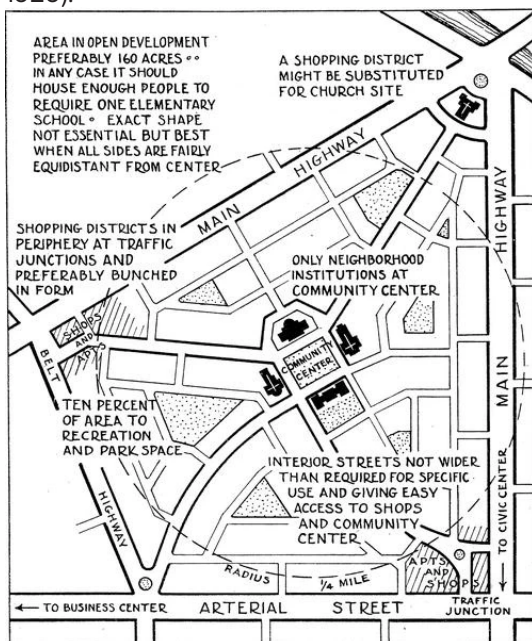


Figure 3. Neighbourhood Unit (Perry, 1929)

The 'Wijkgedachte' (translated into neighbourhood thought) reflects the Dutch adaptation of the concept and these principles to the local context and urban planning practices (Blom, Jansen, & Helden, 2004). The 'Wijkgedachte' and Clarence Perry's 'Neighbourhood Unit' share a similar philosophy: emphasize the creation of self-sustaining and self-contained neighbourhoods with a community-feeling within urban areas. The urban planning of that time was very 'family focused', which we nowadays, with the increasing amount of elderly, should be questioning.

The approach of city planning of that time also received criticism, such as from journalist and urban activist Jane Jacobs (1916-2006). Jacobs argues that the modernistic, top-down planning practices are misguided and harmful to cities. She promotes mixed-use neighbourhoods, with a diversity of building

types, styles and purposes, such as residential, commercial and cultural (Jacobs, 1961). For this thesis, it is important to understand the underlying principles of the design of postwar neighbourhoods and the criticisms they faced, to conduct a comprehensive analysis. In addition, the aforementioned theories will be juxtaposed with the criteria for ageing-friendly living environments.

1.4.3 Transformation of postwar neighbourhoods

In postwar neighbourhoods there is an opportunity to build houses because there is space available, and these neighbourhoods are in need of renewal. These areas offer many amenities, have a rich green and water structure, are widely built-up and have good connections to city centres. When these neighbourhoods are comprehensively revitalized, they become attractive places to live. Through a combination of renovation and new construction results in an interesting mix of housing options. Research of KAW Architecten on the transformation of postwar neighbourhoods lead to four categories of possible interventions (Reimar, et al., 2020).

The four categories of possible interventions:

1. **Existing dwellings:** splitting, expanding, building on top;
2. **Surgical interventions:** small interventions, use of the unused space;
3. **Restructuring:** demolishing and new building;
4. **Edges:** reducing the use of cars will lead to space at the edges of the city and neighbourhoods.

These four categories are going to be used to classify the required interventions to transform a postwar neighbourhood into an ageing-friendly living environment.

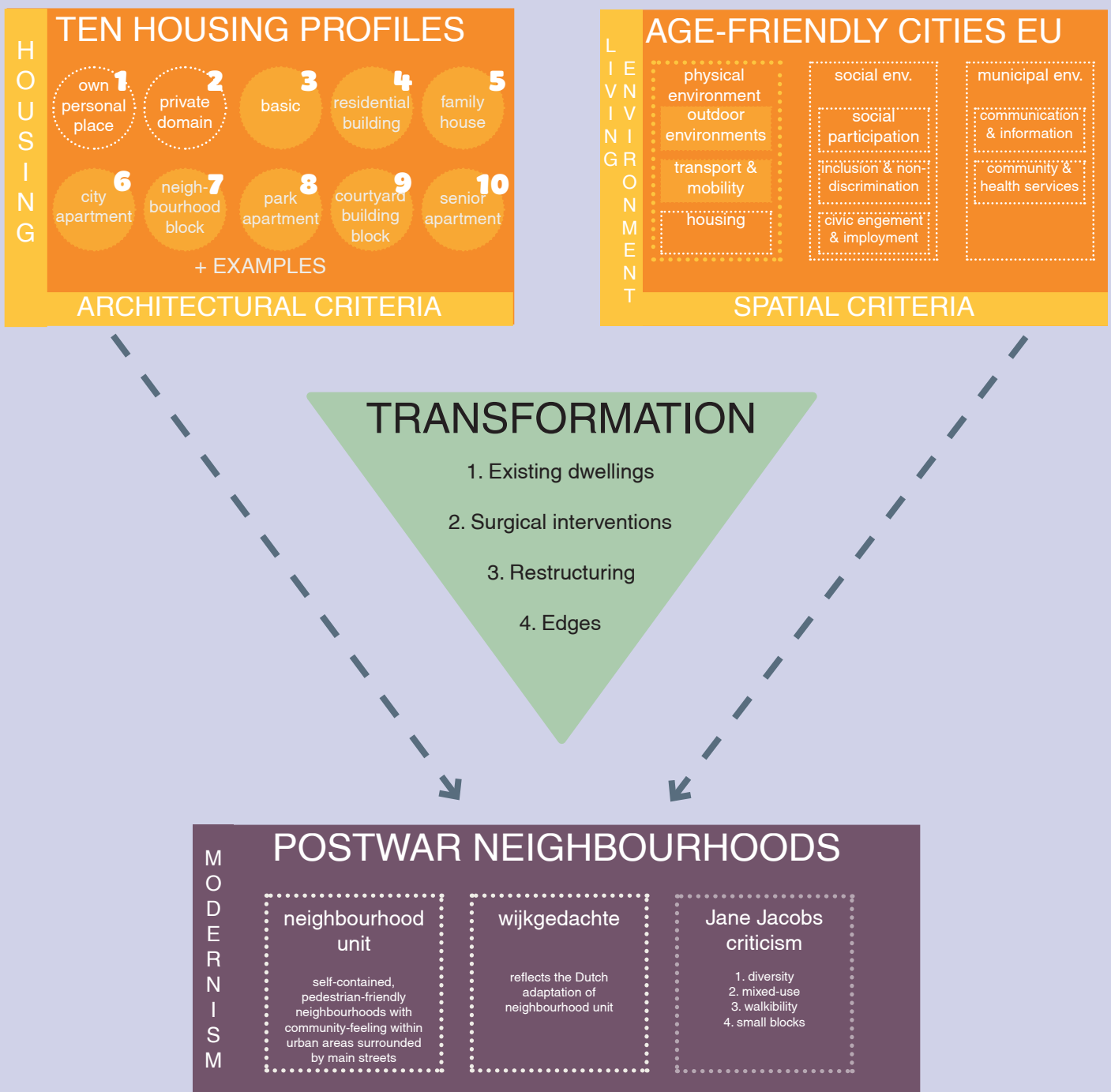
1.4.4 Positioning overarching themes

In the diagram on the next page, in figure 4, is visualized how the theories, mentioned in this chapter, come together in the thesis and how they are positioned in relation to each other. The relevant parts of the theories are highlighted in lighter orange. Figure 5 shows where the three overarching theme's overlap and where the research gap arises, so research is necessary. The relevant theories are places within the overarching themes.

Chapter 1

Theoretical framework

Figure 4. Visualizing the theories from the theoretical framework (by author)



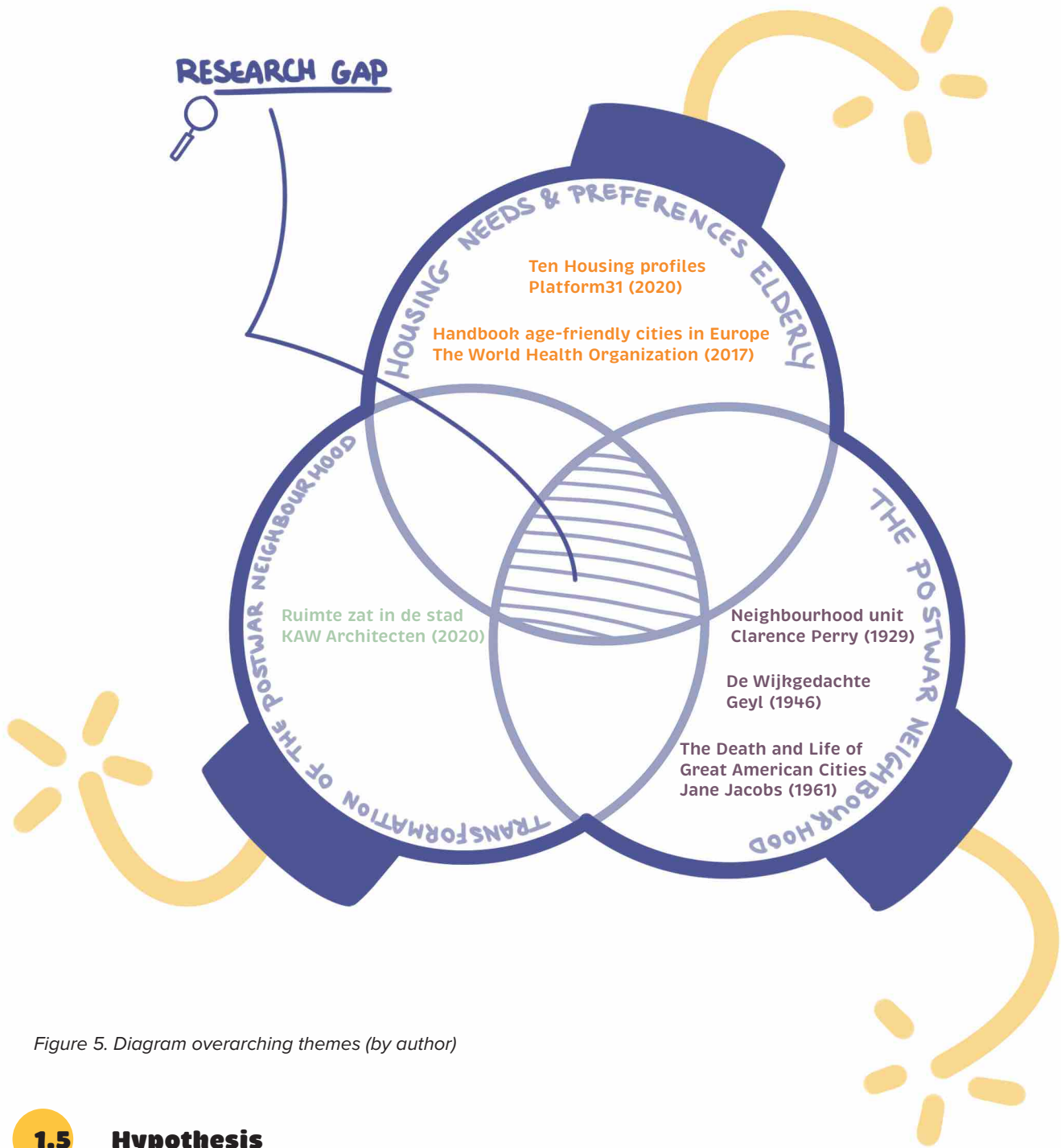


Figure 5. Diagram overarching themes (by author)

1.5 Hypothesis

When we grow old, our world becomes smaller and smaller. When elderly have to live independently that small world needs to be as complete as possible serving elderly's needs. Elderly people want to live in a living environment that is attractive, with sufficient facilities nearby and with mixed generations. It is important for many elderly to stay in their own neighbourhood where they built their social connections, but at the moment there are not enough options for them within their current neighbourhood. Postwar neighbourhoods were also not designed from the perspective that elderly people have to live independently for as long as possible, so transformation is necessary. The expectation is that by implementing ageing-friendly design criteria and addressing the

needs and preferences of elderly residents, it is possible to transform postwar neighbourhoods into an aging-friendly living environment that promote independence, wellbeing and social cohesion among (elderly) people. By transforming postwar neighbourhoods, besides the housing shortages, multiple problems can be addressed, such as sustainability and the state of impoverishment. This involves not only constructing new buildings, but also adapting the existing environment and housing stock, so the entire neighbourhood can benefit from these enhancements, enabling more people to age in place independently.

Chapter 1

Questions and methodology

1.6 Research questions

Based on the problem statement and theoretical framework, the following research question for the thesis arises:

“How can a postwar neighbourhood be transformed to suit the needs and preferences of elderly people regarding an ageing-friendly living environment?”

Sub-questions:

To give an integral and complete answer, the main question is divided into the following sub-questions:

- 1. What architectural and spatial elements make a living environment ageing-friendly for elderly people?***
- 2. What are the characteristics of a postwar neighbourhood?***
- 3. What are the possibilities of transformation in postwar neighbourhoods to create an ageing-friendly living environment for elderly people?***

1.7 Research method

The aim of this research is to explore architectural and spatial elements of a living environment that promotes healthy ageing in place, considering preferences and needs of elderly. The postwar neighbourhood will be analysed to give an overview of possibilities for creating ageing-friendly living environments. The ultimate goal is to provide recommendations in the form of design strategies and guidelines for the transformation of postwar neighbourhoods into living environments that support elderly people to age in place and live independently for as long as possible.

The thesis is a qualitative empirical study, because the research adopts a qualitative approach of anthropological research by investigating

experiences, perspectives, needs and preferences of people (Verschuren & Doorewaard, 2015). The research methodology will enable a holistic exploration of the existing situation in practice by doing case studies. It combines insights from existing research with a literature study.



1.7.1 Literature study

Literature study as a research method will be used in all parts of the research. It includes a comprehensive review of existing literature on elderly housing needs and preferences, suitable housing options for elderly, ageing-friendly neighbourhoods and the feasibility of aging in place. Combined with literature of postwar neighbourhoods and the opportunities of transformation.

For the first sub-question literature study covers information on architectural aspects of ageing-proof housing and spatial elements of ageing-friendly living environments. The diagram (figure 5) shows which literature should be included. Criteria for additional literature:

- Due to the fact that it is a current topic, literature about preferences and needs of elderly must be up-to-date and not older than ten years;
- Terms to search for are: ageing-friendly living environment, ageing-proof housing, ageing in place, levensloopbestendig;
- Looking into references of relevant used literature can lead to more relevant literature.

For sub-questions two and three, literature study implies theory about postwar neighbourhoods and its transformation. Criteria for additional literature:

- Literature for question two about the history of postwar neighbourhoods. This includes thinkers such as: CIAM, Jane Jacobs, Clarence Perry, Geyl and others related to modernism and the postwar period;
- Terms to search for: postwar neighbourhoods in the Netherlands, Dutch postwar neighbourhoods, naorlogse wijken, urban transformation, naorlogse krachtwijken, veerkracht in corporatiebezit;
- Looking into references of relevant used literature can lead to more relevant literature.



1.7.2 Fieldwork

For an in-depth analysis and exploration of a real-life case, fieldwork has been done at a residential facility for elderly people. The fieldwork is part of answering sub-question one by analysing this successful example of an ageing-friendly living environment where elderly people live. The researcher stayed for four days to have a full experience of what it is like to live there and to get a complete overview by doing observations, interview residents, handing-out a survey and doing a workshop. Criteria for finding a place for the fieldwork:

- A living environment of maximum two hundred residents, with mixed ages and residents both with and without demand for care;
- The majority of the residents is 65+;
- Apartments and living environment are ageing-friendly and suitable for ageing in place;
- Healthcare is available;
- The living environment has common/shared spaces, outside space and there is a sense of community among the residents;
- In an urban context.

The plan analysis consists of (explanation of the methods in appendix I):

1. **Observations** of three apartments and three communal spaces about the use of spaces and experiences, ‘what makes this living environment ageing-friendly?’;
2. **Conversations** with residents to explore experiences, motivations, needs, questions are attached in the appendix.
3. **Survey** to gather some data about the residents in general about their satisfaction with the place, their living situation, health and the community;
4. **Workshop** with residents to gather information about their ideal living situation. (See appendix I for more information.)

1.8 Output research

Ultimately, the goal of the research is to provide design guidelines for the transformation of postwar neighbourhoods into living environments that support and empower elderly people to age in place and stay independent for as long as possible, while maintaining their health and quality of life. The first sub-question results in a list of criteria in the form of architectural and spatial elements that make a dwelling and living environment ageing-friendly. The second sub-question describes the context of postwar neighbourhoods. This delivers an overview of important characteristics, problems and qualities of postwar neighbourhoods that are necessary to understand. The last sub-question provides transformation options. Finally, by combining the results, the research output are design guidelines, which are design recommendations in the form of sketches paired with written explanations.

Figure 6, on the next page, shows how all the elements come together in the research diagram.

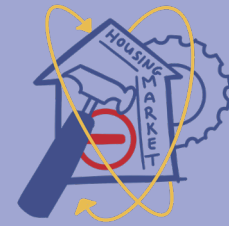




Disbalance growing amount of elderly and the pressure on the healthcare sector



Challenges in the housing market



Urgent demand for suitable elderly housing

“How can a postwar neighbourhood be transformed to suit the needs and preferences of elderly people regarding an ageing-friendly living environment?”

1

What architectural and spatial elements make a living environment ageing-friendly for elderly people?

List of criteria: architectural and spatial elements that make a dwelling and living environment ageing-friendly

BY

**Literature
Case studies
Fieldwork**

2

What are the characteristics of a postwar neighbourhood?

Contextualize and create an overview of problems and quality of postwar neighbourhoods

BY

Literature

3

What are the possibilities of transformation in postwar neighbourhoods to create an ageing-friendly living environment for elderly people?

Transformation options: requirements that are necessary to make a postwar neighbourhood ageing-friendly

BY

Literature

Architectural and spatial aspects translated in design guidelines that make a living environment of a postwar neighbourhood attractive for elderly and allow them to age in place

Figure 6. Research diagram (by author)

02

**Ageing-friendly
living environment**

Chapter 2

Needs & preferences of elderly

The second chapter describes, based on analysed case studies, experiences during the fieldwork and additional literature, important architectural and spatial elements that make a living environment ageing-friendly for elderly.

2.1 Elderly housing profiles

As highlighted in the problem statement, the goal is to enable elderly to maintain their independence for as long as possible. However, not every residence or living environment is conducive to this objective. Currently, there is a shortage of attractive and suitable options for elderly to move to. Therefore, it is crucial to understand what they find appealing, by investigating their needs and preferences. The theoretical framework, paragraph 1.4 of the introduction, mentioned the research of Platform31 into housing needs of elderly people translated in ten housing profiles, which are based on data of how seniors prefer themselves residing (Hagen & Neijemeijer, 2020).

1. Own personal place
2. Private domain
3. **Basic**
4. **Residential building**
5. **Family house**
6. **City apartment**
7. **Neighbourhood block**
8. **Park apartment**
9. **Courtyard building block**
10. **Senior apartment**

The eight relevant housing profiles (profile 3 until profile 10), in the urban context of postwar neighbourhoods, are seen as the starting point for the thesis, since these housing options are a reflection of the needs and preferences of elderly.

The housing profiles can be seen as a reflection of the market in the field of elderly housing. In their report, platform31 shows the supply and demand of the housing profiles in South-Holland, revealing that within profiles 3, 4 and 5 is more supply available than demand and within the other profiles is more demand than supply (Hagen & Neijemeijer, 2020).



Figure 7. The eight relevant housing profiles (by author)

To come up with the ten profiles, Platform31 analysed ten dimensions in which housing preferences of elderly differ. Figure 8 shows the ten dimensions and how the eight relevant housing profiles score relative to each other. Firstly, it is noticeable that most profiles score not particularly high in terms of living with care. However, in all of them is healthcare on a certain level available. It can be concluded that elderly prefer to live in a living environment where healthcare is accessible, but not prominently visible. Secondly, almost all housing profiles include some form of community living. From this, it can be inferred that social interaction with neighbours is an important housing preference for elderly. Thirdly, it is evident that elderly prefer to stay within or close to their current neighbourhood. Fourthly, it is noteworthy that the dwellings are generally not very spacious, ranging from medium to small size. Fifthly, the figure makes clear that it is important for elderly to make use of communal spaces. Finally, the profiles vary significantly in terms of the level of heterogeneous/homogeneous, comfort and interest in sustainability (Hagen & Neijemeijer, 2020).

In a report published by Platform31 about design for interaction, the living environment is divided into five scales: neighbourhood, route from street to dwelling, building block, intermediate zone and dwelling (Mantingh & Duivenvoorden, 2021). This thesis will distinguish three scales. The first is the public level of the neighbourhood, which includes the route from the street to the building. The second is a semi-private scale of the building block or street, which also covers the social community of the neighbours or residents. The third is the private dwelling itself. The housing profiles of platform31 primarily differ in building typology, context of the location and the level of sense of community. For each housing profile, one practical example Platform31 links to it is analysed on the three scales. Appendix II shows the analysis and the following paragraphs describe the conclusions translated into design guidelines for each scale.

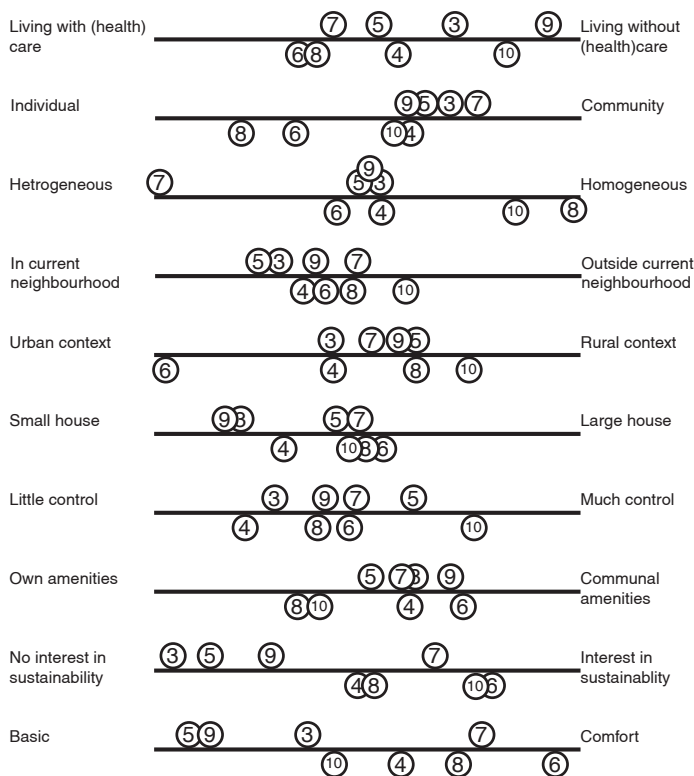


Figure 8. Housing profiles on a scale for ten aspects (made by author) (Hagen & Neijemeijer, 2020)

Conclusion:

- Housing complex must not feel like a nursing home, healthcare should be available, but not prominently visible;
- Create a certain level of sense of community through facilitating social interaction and organising activities;
- Offering housing options within or close to one's previous living environment;
- The dwelling itself does not have to be very spacious, but complemented with the possibility to make use of communal spaces.

Chapter 2

Needs & preferences of elderly

2.2 Fieldwork real-life experience

To gain more insight in how elderly people want to live, fieldwork has been done at a real-life residential facility for elderly people, in a city somewhere in the middle of the Netherlands. The residential facility will not be named, due to privacy of the residents. The residential facility could be seen as an example of housing profile 4 'residential building'. The residential facility, also called 'live-through house', is a formal nursing home, transformed into social housing where elderly people live together in a community. The residents live together by sharing communal spaces, organising activities and help each other by for example cooking for each other once a week. So the residents are in charge of the building and the community, as they manage certain tasks in different groups. Of the 150 residents in total, among 85% of the residents is 65+ and the other 15% are young adults who study or work in a field that has affinity with the concept. The concept, purpose of the spaces and layout of the building is made-up in collaboration with the residents through a participation process of several months. Currently, when someone is interested in living there, they have to write a motivation and will be invited to have a conversation about how they can contribute to the community. Healthcare is available in the building, but not visible as the healthcare professionals wear normal clothes and their office is located among the apartments. Although the apartments and the building are life-course-proof and healthcare is accessible, it is not suitable for everyone to stay during sickness. For example, at certain stages of dementia or when someone needs heavy care any time of day.

Results of the fieldwork consists of observations, a survey filled in by 38 residents, informal conversation with residents about their satisfaction and motivation of living there and a workshop. Out of the survey (see appendix III) and conversations with residents, pictured in figure 9, could be concluded that there are a few important reasons why people moved to the elderly residential facility, such as: 1) the previous home was no longer suitable, 2) one had a desire for social contact, 3) future need for healthcare, 4) immediate need for healthcare, 5) relatives live close by, 6) relatives thought it would be better and 7) loss of a partner. It becomes evident that some residents consciously choose for this concept. For instance, two

couples initially lived in family homes that became too large and a burden to maintain. They came across the concept, interacted with current residents and then decided to move. Selling their house and transitioning to social housing had a positive effect on their finances. So, it can be concluded that primarily people chose for this concept because of the social connections through the community, the availability of healthcare and simply the fact that the location was in their current neighbourhood or close to relatives.

Conclusion:

- Residents consciously chose the concept due to a combination of factors;
- Residents have a desire for social connections within a community;
- The availability of healthcare is important, discrete with an office among the apartments and care professionals should be wearing normal clothes;
- Residents prefer the practicality of the location either in their current neighbourhood or close to relatives;
- A participation process with residents of several months builds up the concept very carefully;
- The majority of residents are elderly, mixed with young adults, all of whom have to undergo a selection process;
- The residential facility is not suitable for everyone to stay during sickness and at a certain stage of dementia.

Figure 9. Residents and reason of moving (by author)



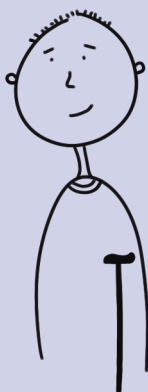
"I moved here, because of a divorce with my wife. I no longer needed to own a large house. Now I am very active in the community, however I did not specifically choose for it."



"I felt not safe anymore to live alone, so I was looking for a place with social contact. Here I am close to my son."



"Our previous house became too large and too much work to maintain. The concept of social connection was attractive for us."



"After an accident I could no longer live alone, my daughters wanted me to live nearby."



"After a life of traveling and adventure, it was time to settle down. I like that I still can be active and creative here by organising activities!"



"I became sick and dependent on care. Therefore I moved back to the city I grew-up in. I really appreciate the social interaction here!"

Scale 1:
Neighbourhood

Chapter 2

Neighbourhood scale

The first scale is the public level of the neighbourhood, which includes the route from the street to the building.

2.3 Age-friendly environments

The World Health Organization created a handbook for age-friendly cities in Europe, which draws from successful age-friendly projects in Europe, incorporating locally developed tools and the latest research (World Health Organization, 2017). As a description of an ageing-friendly city they state:

“An age-friendly city or community is a good place to grow old. Age-friendly cities and communities foster healthy and active ageing and thus enable well-being throughout life. They help people to remain independent for as long as possible, and provide care and protection when they are needed, respecting older people’s autonomy and dignity.”

The handbook shows practical interventions for eight domains for creating an ageing-friendly living environment. The first three domains focus on the physical environments, 1) outdoor environments, 2) transport and mobility, 3) housing. The next three domains are about the social dimensions of age-friendly environments, 4) social participation, 5) social inclusion and non-discrimination, 6) civic engagement and employment. The last two domains are about the role of the government and municipality, 7) communication and information, 8) community and health services. The first two domains contain a number of interesting aspects for this research, further explained underneath.

As people age, mobility and vision reduces and local accessibility to essential services and social activities becomes crucial for sustaining social connections, whether by driving, walking, or public transport. So when elderly still have and want to be independent, it is important that the physical surroundings are safe to go out to for example shops, a café, visit friends and family or going to activities by using public transport that is easily accessible and well indicated with signs. Moreover, many elderly face barriers getting outdoors, for example through the lack of

public toilets. People who live close to green spaces are more likely to go out, for a walk and when there are enough places to rest, interesting street-life and perception of safety elderly are tend to go out more and participate in everyday life. So, addressing social barriers is essential, as they can contribute to feelings of loneliness and isolation. The World Health Organization also states that worldwide falls are the second leading cause of accidental injury deaths and the built environment has influence in forms of: poor building design, slippery floors and stairs, loose rugs, insufficient lighting and cracked or uneven sidewalks (World Health Organization, 2017).

To address the important topics mentioned above, the handbook mentions a number of interesting interventions to make the outdoor environment and public space more age-friendly. These interventions are combined in the following list of aspects that are relevant for the thesis:

1. Create barrier-free public spaces and buildings to improve walkability;
2. Create infrastructure for active mobility and walkability, including accessible walking paths with resting point, access to public toilets, water points and points of interest, as well as pedestrian streets with good lighting;
3. Strengthen infrastructure for road safety, safe walking and cycling paths and accessible public transport, by separating pavements, cycling paths and motor traffic and maintaining the paths;
4. Safe and well signalled pedestrian crossings for people with any kind of impairment through special buttons, audio signals, curbs that provide better visibility and enough time to cross the street;
5. Streets should be well connected and well lit, pavements need to be wide enough and free of barriers. Safe and smooth paths, without slopes, curbs and obstacles;
6. Make public transport accessible, easy to use and improving the quality of information;
7. Feeling of safety improves by lighting, clean environments and good infrastructure conditions, not to heavy traffic;
8. Designing urban areas that are easy to understand and have landmarks and high legibility, clear signage and layout outdoors, in buildings and all public spaces improves the accessibility for people with dementia as well as people with mobility limitations. Based on an case study from

Oxford Institute of Sustainable Development, elderly with dementia tend to prefer (Sheehan, Burton, & Mitchell, 2006):

- Mixed-use, compact local neighbourhoods;
 - Short, gently winding street with wide pavements and good visual access;
 - Varied urban forms and architectural features and aesthetic environmental features;
 - Historic, civic or distinctive landmarks;
 - Quiet, pedestrianized streets and welcoming open spaces;
 - Places, spaces and buildings whose functions and entrances are obvious;
 - Simple, explicit signs with large, dark unambiguous graphics and light background;
 - Easy-to-use street furniture in styles familiar to them;
 - Smooth, plain, non-slip, non-reflective paving.
9. Install exercise equipment and areas in public places and parks and make parks more accessible and safe by benches and lighting;
 10. Seeing other's being active can increase the perception of trustworthy and motivates to participate. Accessible walking paths, infrastructure for physical activity and cycling paths;
 11. Natural environments, parks and green spaces promote well-being and (mental) health through increased activity levels. Implementing greenery, tree-lined streets, plants and green to watch could improve mental health and reduces stress. Interacting and working in the garden stimulates sense of achievement, satisfaction and creates aesthetic pleasure.
 12. Access to core facilities such as local shops, healthcare services and other amenities, to stimulate elderly to take care of their daily activities and go for a walk. For example by creating "20-minute neighbourhoods" with key facilities within walking distance for elderly;
 13. Provide a range of opportunities for social participation and physical activities accessible, by local commercial centres and meeting places designed in inclusive ways;
 14. Physical environments can be co-created with elderly and elderly associations;
 15. Create supportive environments for social exchange and places to meet.

To cope with the fact that the elderly population is growing and elderly people have to live independently for as long as possible, Dutch cities document their ambitions to make the city suitable for the changes. The municipality of Rotterdam created from a brochure for architects and developers with the most important preconditions out of the 'Langer Thuis Akkoord' (translated into: Longer at Home Agreement). Regarding the neighbourhood scale they state that the world of an elderly becomes smaller when someone ages and therefore it is important that the immediate living environment, around a building where many older people live, is accessible, safe and attractive with sufficient facilities within walking distance (500 metre). The outside environment has to be green and attractive to stimulate physical activity and encounter and has to be equipped with enough parking spots (Gemeente Rotterdam, 2021).

Conclusion:

- Create safe, accessible and barrier-free infrastructure: walking and cycling paths, motor traffic and public transport;
- Promote walkability and physical activity;
- Provide parks and greenery to promote well-being and (mental) health;
- Accessibility of essential facilities on walking distance (500 metre);
- Designing urban areas that are easy to understand (and dementia-friendly);
- Create social participation by providing inclusive and accessible meeting places;

Chapter 2

Neighbourhood scale

According to the handbook of The World Health Organization it is important to have barrier-free public spaces, well connected, with enough benches, etcetera. These interventions are also visible in the reconstruction of a road from a nursing home to the shopping centre in Dronten, a village in the middle of the Netherlands. By the new design for the reconstruction of the road, the municipality intended to create a route for elderly which is also dementia-friendly. They implemented remarkable, luminous green benches every less than a hundred metre, all barriers have been removed and clear signage for safe crossings were added (Omroep Flevoland, 2022). The route has been observed and pictures are attached in appendix IV. While walking the route it became very clear that only the road that was planned is renovated as the starting point and end felt very abrupt. A point of criticism would be to make sure that the route is well-connected to a route that is even as dementia and elderly-friendly.



Figure 10. Dementia-friendly walking route in Dronten (by author)

2.4 Elderly preferences

The residential facility of the fieldwork is located in a city in the middle of the Netherlands. The city centre with facilities such as supermarket, shops, theatre, cinema, church, restaurants, etcetera, is around 700 metre away. Multiple residents mentioned that they were very glad that they were able to walk to the city centre, which enables them to stay independent even though their mobility reduces. Another supermarket is even closer at around 500 metre. During the workshop residents were asked to choose from different categories, a maximum of three aspects that they find most important and stick stickers of these aspects in their living environment - apartment, building, walking distance or city – where they would like to see the elements. From the workshop can be concluded that some residents rather see the supermarket in the building. However, based on the fact that walking and going outdoors promotes health and well-being (World Health Organization, 2017), it could be argued that everything within the building is very efficient, but does not stimulate people to go out anymore. Some other facilities residents have chosen to have within walking distance are shops and cultural facilities.

Right in front of the building, as visible in the plan in figure 11, is a bus stop and a pedestrian crossing with traffic lights situated. The importance of public transport is also reflected in the workshop results, where residents have chosen for a bus stop or train station on walking distance.

According to a resident, the building feels like a vertical village, since communal spaces are situated in a central centre of the building where people come and go throughout the whole day. Also out experience of the researcher and out of observations became evident that it is very easy to stay inside. Although the survey shows that almost 90% of the residents goes outside everyday, it can feel like a closed off bubble within the building. The building is open to external people visiting the physiotherapist or participating in organised activities. This is perceived positively by residents to stay connected to the neighbourhood.

“The building almost feels like a vertical village”

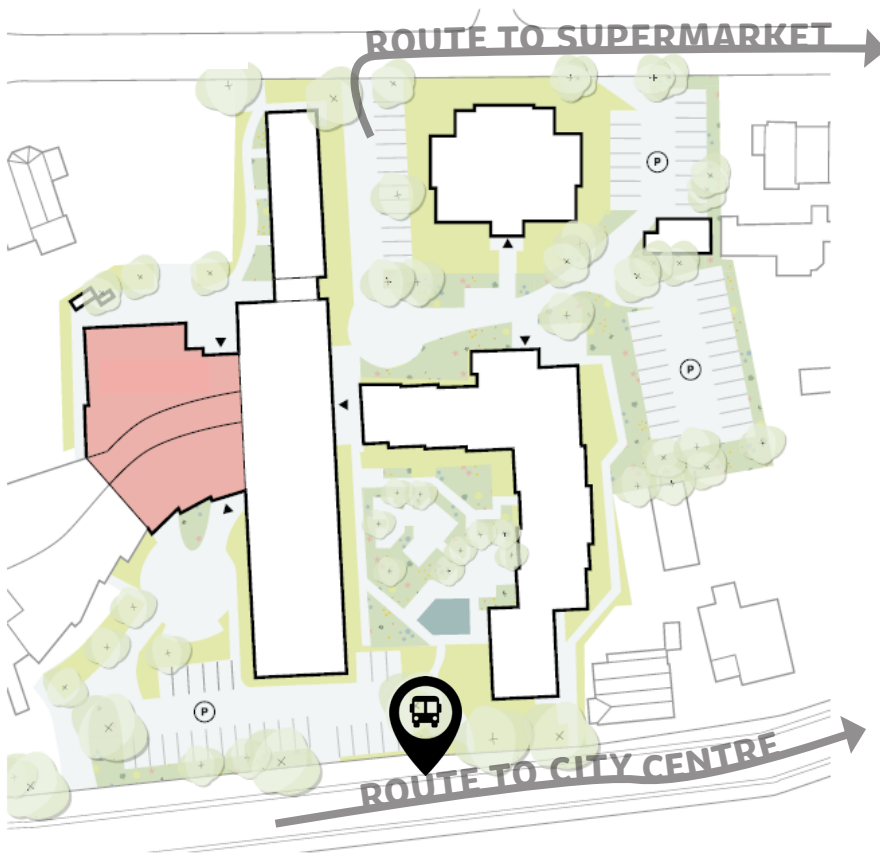


Figure 11. Plan residential facility fieldwork in context

Conclusion:

- City centre and facilities on walking distance;
- Public transport on walking distance;
- Promote residents to go outside;
- Stay connected to the neighbourhood to offer public facilities or the opportunity to participate in activities.

Chapter 2

Conclusion

Guidelines neighbourhood scale

While ageing elderly's world becomes smaller and smaller as, for example driving a car is no longer possible, their mobility is decreasing and vision reduces. To ensure that elderly people can live independently for as long as possible, it is important to keep their 'small world' as complete as possible, by facilitating all relevant amenities and services within walking distance. Out of literature and fieldwork as describes before, the following guidelines are formulated:

N1

safe, accessible and barrier-free infrastructure

- 1
- 2
- 3

Create safe, accessible and barrier-free infrastructure: walking and cycling paths, motor traffic

- Separating pavements, cycling paths and motor traffic
- Maintaining the paths
- Providing safe and well signalled pedestrian crossings for people with any kind of impairment through special buttons, audio signals, curbs that provide better visibility and enough time to cross the street
- Connecting streets
- Pavements need to be wide enough and free of barriers
- Safe and smooth paths, without slopes, curbs and obstacles
- Feeling of safety improves by lighting, clean environments and good infrastructure conditions, not to heavy traffic

N2

safe walking route from the residential facility to a (city) centre

- 1
- 2
- 3

Create a safe walking route from the residential facility to a (city) centre

- With enough remarkable resting points,
- No-barriers,
- Clear signage,
- Access to public toilets,
- Water points,
- Points of interest
- Good lighting

N3

accessible public transport

- 1
- 2
- 3

Make public transport accessible, on walking distance, easy to use and improve the quality of information

- 1 mentioned in literature
- 2 mentioned in case study
- 3 mentioned in fieldwork

N4

essential facilities on walking distance

- 1
- 2
- 3

Accessibility of essential facilities on walking distance

- Facilities such as local shops, healthcare services and other amenities
- City centre
- Creating “20-minute neighbourhoods” with key facilities within walking distance for elderly

N5

social participation

- 1
- 2
- 3

Create social participation

- Providing inclusive and accessible meeting places
- Local community centres
- Physical environments co-created with elderly and elderly associations
- Create supportive environments for social exchange and places to meet

N6

housing options within or close to previous living environment or relatives

- 1
- 2
- 3

Offer housing options for elderly within or close to their previous living environment or relatives

N7

promote walkability and physical activity

- 1
- 2
- 3

Promote walkability and physical activity

- Install exercise equipment and areas in public places and parks
- Make parks more accessible and safe by benches and lighting
- Seeing other’s being active motivates to participate
- Accessible walking paths, infrastructure for physical activity and cycling paths
- Not providing everything in the building to promote people to go out

N8

provide parks and greenery

- 1
- 2
- 3

Provide parks and greenery to promote well-being and (mental) health

- Implementing greenery, tree-lined streets, plants and green to watch could improve mental health and reduces stress
- Interacting and working in the garden stimulates sense of achievement, satisfaction and creates aesthetic pleasure

N9

areas that are easy to understand

- 1
- 2
- 3

Designing urban areas that are easy to understand (and dementia-friendly)

- Compact local neighbourhood, mixed-use
- Short, gently winding street, wide pavements and good visual access
- Varied urban forms and architectural features and aesthetic environmental features
- Historic, civic, distinctive landmarks
- Quiet, pedestrianized streets and welcoming open spaces
- Places, spaces and buildings with obvious functions and entrances
- Simple, explicit signs with large, dark unambiguous graphics and light background
- Easy-to-use street furniture in styles familiar to them
- Smooth, plain, non-slip, non-reflective paving

Scale 2:
Building block

Chapter 2

Building block scale

The second is a semi-private scale of the building block or street, which also covers the social community of the neighbours or residents.

2.5 Analysis case studies

As introduced in paragraph 2.1, the eight relevant housing profiles are analysed with a case study for each profile, see appendix II. For the scale 'building block' the case studies were compared upon characteristics such as: building type, new building or transformation, size, if the apartments were rental or owner occupied, level of sense of community, communal space, facilities in the building, healthcare facilities, communal outside space and the overall value of the project. The projects are transformation and new buildings of which some already completed and some still in planning phase. The residential facilities differ in building typology, but most of them are residential buildings with multiple stories with different amounts of rental apartments, sometimes combined with owner occupied houses, with communal spaces. The residential facilities have a different amount of apartments, from 40 to over 150 apartmentst, with the majority of 70 apartments. The communal spaces give the residents the opportunities to meet each other and organise activities. Some projects highlight to stimulate encounter by making use of gallery access. In all of the projects is healthcare accessible in or right next to the building, but none of the projects is a nursing home. So, residents live independent with the option to make use of the healthcare service. Beside the healthcare services additional care services are available different for each project, such as: daily meal, laundry services, domestic services and handyman services. In most of the projects are also facilities established in the plinth of the building, examples are: meeting space for the neighbourhood, town centre, physiotherapist, primary school, kinder garden, shops, supermarket, restaurant, small business studio's and more. In most of the projects the majority of the residents are elderly, but something that stood out is that often a mix of people is an important key component. This includes different generation as well as people with different levels of demand for care, people with mental disabilities or people with dementia.

Conclusion:

- Different amount of apartments and size possible
- Communal spaces
- Stimulate encounter by gallery access
- Healthcare available
- Independent living, no nursing home atmosphere
- Additional care services
- (Public) facilities in the plinth
- Mix of residents with majority elderly

2.6 Real-life experience

As mentioned before is the social interaction one important reason for people to move to the residential facility where the fieldwork has been done. Due to the fact that loneliness and boredom have effect on the health and state of wellbeing of elderly people (World Health Organization, 2017), during the fieldwork, the residents have been asked through a survey if they feel lonely or bored on a scale from very often to almost never. As visible in figure 12 underneath, could be concluded that this concept, where elderly people live in a community together, has a positive influence on these aspects. The fact that the residents know that they could go to the communal space at any time of day to look for social interaction or take part in activities helps for people to feel less lonely or bored.



Figure 12. Feeling of loneliness and boredom among the residents (by author)

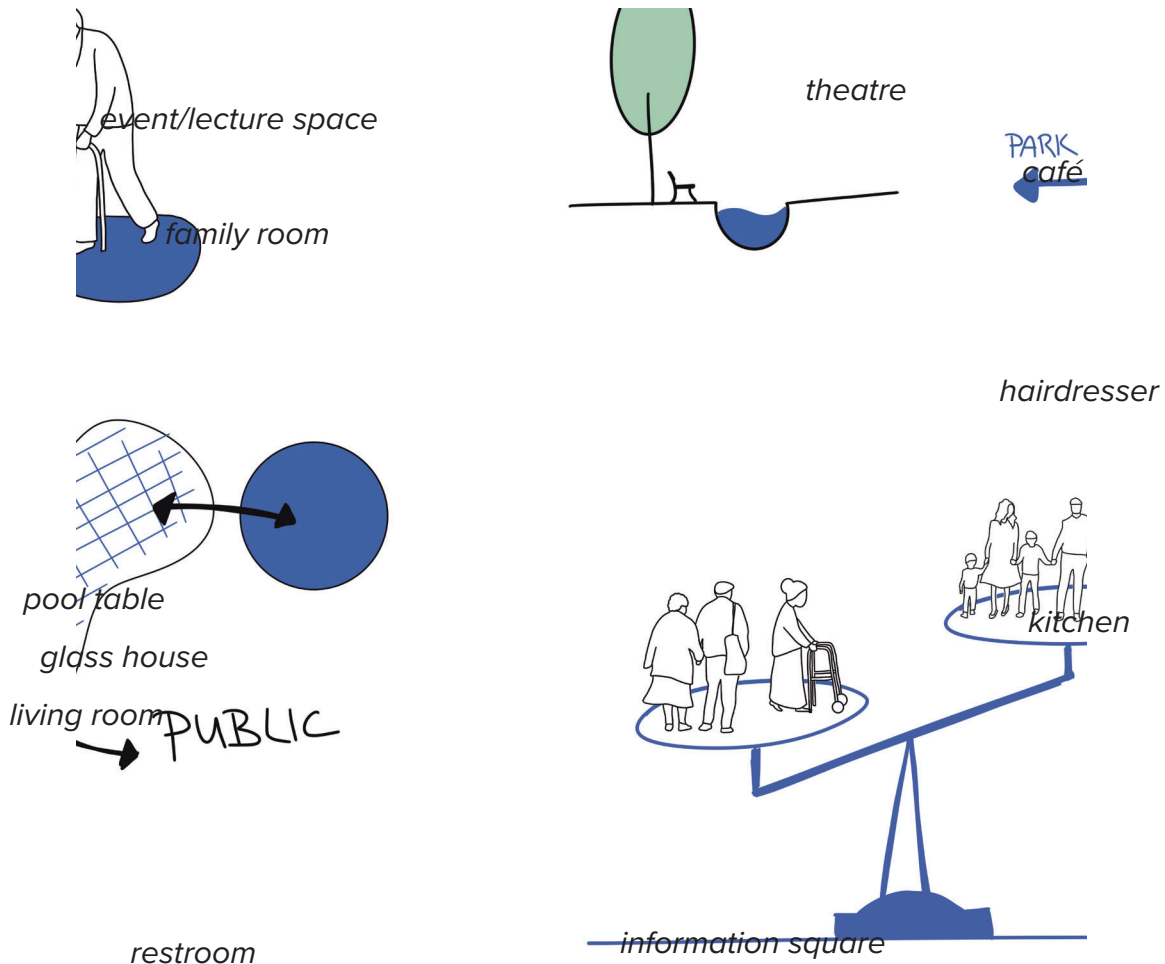


Figure 13. The communal centre (by author)

The communal spaces

The building can be seen as a vertical village. The apartments are connected to the communal centre and facilities by corridors and elevators, where residents can go for social interaction and activities. If residents were not forced to go outside for daily errands like groceries, it is easy to stay indoors all day.

An important part of the residential facility is the communal centre of the building. The building is a transformed nursing home and where the residents were involved during the designing process. The residents have been asked what functions they would like to see as communal spaces. That resulted in spaces to meet each other, a open kitchen, a theater, a café and a family room which residents can hire for events such as a birthday party. Figure 13 shows a drawing of the plan of the communal centre of the building located on the first floor. It is a large open space with different corners, such as: an open kitchen space with a large table, multiple tables in, a living room set, pool table and a glass house where people could sit a little more closed off. Also the theater, family room and the café are connected to this space. To facilitate the residents, a hairdresser, pedicure and physiotherapist are located in the building. The physiotherapist is a public facility for the

whole neighbourhood. The building also has a space with tools, managed by a few residents who help with handyman jobs when other residents need it.

It is remarkable that during the workshop the facilities 'hairdresser' and 'café' were chosen to be located in the building by several residents. Both are already currently located in the building, which confirms the importance of these facilities for the residents. As already mentioned 'supermarket' is chosen multiple times and a 'drugstore' a few times. Additional spaces that were chosen during the workshop to add on building block scale were guestroom, event room and family room. Which emphasizes that it is important for residents to have a space they can use when family and friends are coming over. Within the topic mobility, parking for bicycles and cars were the most chosen aspects. For outside space the residents would like to see a roof terrace and a communal garden with vegetable garden. Within the topic 'people around you' it stands out that all residents choose for a mix of people and none of them wants to live surrounded by only elderly people. Residents also had the option to add something in the 'idea-zone' of the workshop and also a question of the survey was 'What would you like to add to the residential facility'. The most given answer here is a swimming pool.

Chapter 2

Building block scale

Observing the communal centre made clear that the space is well-used, by a lot of resident, all with their own purposes. By the 'coffee group' by drinking coffee in the morning at the kitchen table, by 'the art lady' by organising an event, by other residents by having a drink together in the afternoon in the glass house or the café and by the housing association by organising tours and lectures. In figure 14 and 15 are two pictures made of the communal spaces. The most important conclusion out of the observations, is that for all these different activities it is not very convenient to have everything in one open space.

Sometimes it could have been good to close parts off to use it for a specific purpose. On the other hand, having just one place to go where everything is happening, ensured that on every moment of the day the residents could look for social interaction. Although, mostly the same thirty people made use of the space. Out of conversations it was noticed that for some people one large communal space could be experienced as quite intimidating. They mentioned that smaller communal meeting spaces, which they had to share with a smaller amount of people, would work better for them.



Figure 14. The indoors glass house for meeting each other



Figure 15. The open kitchen for meeting each other and cooking

The community

As already mentioned around 150 residents live together in the building. The community consists of 85% elderly of 65+ and 15% young adults. From observations and conversations with residents it became evident that the young adults do not take part in the community. Some elderly consider this as a pity, because the community is an important part of their lives and the intention was that the young adults could support and help them with certain things. In the survey, the residents have been asked what the most important part of the community is for them and as visible below in figure 16, diversity is chosen the most. Also privacy and communal activities are very important. From this can be concluded that is very important to create a balance between social interaction and the privacy of the dwelling.

What is the most important part of a community?

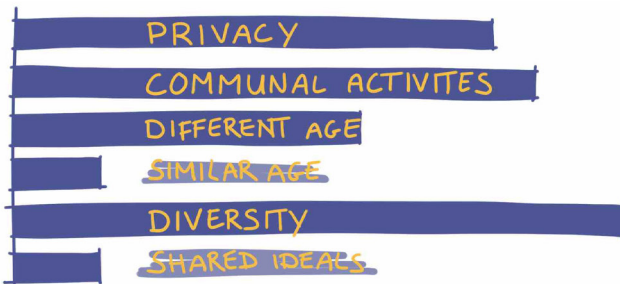


Figure 16, Residents answer on question 22 of the survey

The elderly in this case study have built a great community among themselves. Residents can become part of a group to contribute something to the community, for example committees for catering, maintaining the garden, finance, music group, cooking, communal spaces, the monthly paper and activities. Every week someone cooks and the residents can subscribe on a list if they want to join dinner. This applies also with the activities. The building is run by the residents themselves, as there is no concierge or building manager and when people from outside come to visit they have to host for them. Although it is not always easy and some residents take their tasks very serious, you can see that it gives them a purpose.

The municipality of Rotterdam also mentioned the importance of a smooth transition between the more private and communal parts of the building. Well designed transitions provides space for social interaction, but also respects the privacy of residents (Gemeente Rotterdam, 2021).

Conclusion:

- Create a sense of community
- Create a communal centre where people always can go to
- Providing communal spaces for social interaction and organising activities, such as: communal kitchen, living room space, café, family room, theatre or event space
- Providing (public) facilities to support residents, such as: physiotherapist, pedicure, hairdresser
- Provide shared facilities, such as: workshop space, guestroom
- All different functions in one open space causes nuisance
- Involving residents by participation in the design process gives insight in what residents want and need
- Diversity is experienced as important within a community
- Ensuring a great balance between social interaction and privacy by designing smooth transitions
- When residents have to run the building and community by themselves will give them a purpose

Chapter 2

Conclusion

Guidelines building block scale

Since elderly's world gets smaller, the direct surrounding of their private dwelling becomes very important. The building block is experienced as a so-called 'vertical village' where a sense of community among the residents is crucial for elderly as well as diversity in the form of mixed residents. Social interaction can be achieved by providing communal spaces. The following guidelines on building block scale are formulated:

B1

create a sense of community

- 1
- 2
- 3

Provide spaces for social interaction and organising activities to create a sense of community

- Living room
- Kitchen
- Event space
- Theatre
- Gathering space with pool table
- Café
- Family room (for residents to hire)

B2

communal centre

- 1
- 2
- 3

Create a communal centre for the whole community, with the possibility to close off spaces with different uses

B3

communal outside space

- 1
- 2
- 3

Communal outside space

B4

communal spaces for smaller groups

- 1
- 2
- 3

Provide communal meeting spaces for smaller groups

- Living room
- Kitchen with dining table
- Laundry room

B5

stimulate encounter

- 1
- 2
- 3

Stimulate encounter with gallery access

B6

supportive facilities and services

- 1
- 2
- 3

Provide facilities to support residents to remain independent

- Daily meal, laundry services, domestic services and handyman services
- Swimming pool, hairdresser, pedicure and physiotherapist

B7

healthcare facilities

- 1
- 2
- 3

Offer healthcare facilities, without creating a nursing home atmosphere

- Professionals wear normal clothing
- Office among apartments)

B8

public facilities

- 1
- 2
- 3

Make the facilities public to connect the neighbourhood

- Meeting space for the neighbourhood, town centre
- Physiotherapist
- Primary school, kinder garden
- Shops, supermarket
- Restaurant, café
- Small business studio's

B9

diversity in people

- 1
- 2
- 3

Create diversity by a mixed community

- Age
- Demand for care
- Rent and owner occupied housing

B10

diversity in functions

- 1
- 2
- 3

Create diversity in function

- Different housing typologies
- Different communal spaces
- Different facilities

B11

balance between public and private

- 1
- 2
- 3

Ensure a balance between the private, the communal and the public through designing smooth transitions

B12

involve residents in design process

- 1
- 2
- 3

Involve residents in the design process to increase engagement

B13

residents run building and community

- 1
- 2
- 3

Let residents run the building and community themselves to create a purpose

- Activities
- Residents help with managing

B14

stimulate people to go outside

- 1
- 2
- 3

Stimulate people to go outside by not having everything in one building

- 1 mentioned in literature
- 2 mentioned in case study
- 3 mentioned in fieldwork

Scale 3:

Dwelling

Chapter 2

Dwelling scale

The third scale is about the private dwelling itself.

2.7 Ageing-friendly housing

Ageing-friendly houses are designed and adapted to enable residents to live independently for as long as possible, even as they age or face limitations. For example by adaptability and flexibility of the space and by meeting the requirement of elderly and people with physical disabilities, ease of use and comfort. Ageing-friendly houses could be distinguished into two-room apartments, zero-steps apartments and ground level family houses. For designing ageing-friendly housing, requirements are defined in 'Bouwbesluit', in 'Woonstandaard' for housing corporations and in the 'Woonkeur' for one in the private sector wants to do something extra than the mandatory standard. These requirements are about accessibility, an apartments needs to be wheelchair-friendly, flexibility, safety, lighting and so on (Ven, 2018).

Since elderly people spend a great amount of time in their homes, a suitable and comfortable house is important, so one could continue living at home even if the need for healthcare increases. The municipality of Rotterdam mentions the following aspects to make a home suitable for elderly (Gemeente Rotterdam, 2021):

- Accessibility: walker-friendly, wheelchair-friendly, suitable for healthcare
- Space: elderly prefer an extra room as a guestroom or hobby room and the need to have enough storage
- Private-communal: the size of the house depends on the availability of communal spaces, especially the transition and balance between private and communal spaces is important. A small home combined with communal spaces encourages meeting and helps prevent loneliness. Examples of communal spaces include: shared living room, meeting area, studio, workshop, guest room, outdoor space or communal laundry room.
- Outside environment: private garden, balcony or terrace or a communal garden or roof terrace. Also the outside environment need to be accessibility and wheelchair-friendly.
- Comfort: lighting and an attractive view, the position of the windows so that elderly have a view on the street or garden even while sitting. Easy to clean, adjustable temperature and sunscreens.
- Safety: consider fire safety (gasless cooking or installing smoke detectors), social safety (door spy) and physical safety (supports and handles in bathrooms and toilets and good lighting).
- Technology: e-health and domotics

Besides mandatory requirements it is interesting to find out what elderly prefer. Analysing the case studies of Platform31 (see appendix II) confirms that elderly people do not need excessively large houses. In general the housing facilities provide apartments with one or two bedrooms. The smallest apartments have a size of 45m², which builds up until apartments of around 70 m². The apartments provide space for a small kitchen, living room, bathroom, bedroom and a hallway. Some residential facility also provide larger apartments up to 120 m². The apartments are accessible by elevator and have no stairs. Most of the apartments, in particular the bathrooms and width of the doors, are adjusted to wheelchairs. The apartments have a private outside space in the form of a balcony, front yard or space at the gallery.

Conclusion:

- One-level houses that are wheelchair-friendly and suitable for healthcare
- One or two bedroom apartments between 45 and 70 m²
- Elderly prefer an extra room
- Enough storage space
- Outside space private or communal
- Opportunity to make use of communal spaces
- Attractive view, even while sitting

2.8 Real-life experience

During the fieldwork some apartments have been visited together with the residents to get an impression of their satisfaction about the space. The apartments in the building were around 50 m², which at first especially for couples looks quite small. Out of conversations, it became clear that once the apartments were furnished, the residents were satisfied with the size of it. The apartments have a small kitchen, living room, bedroom, wheelchair-friendly bathroom with sliding doors and a small storage room for the washing machine. The apartments do not have thresholds. The residents are able to furnish their apartments themselves, which they experience as positive. In addition to the apartments, residents have access to communal spaces and storage space, which is also experienced as beneficial to the small apartments. The front doors of the apartments have no windows, which makes the apartments very closed-off and without daylight at that side.

In the workshop during the fieldwork, residents could choose to place the aspects in their apartment and the one that is chosen the most here is 'a nice view'. The second most chosen aspects was 'balcony', then 'animals', 'healthcare' and a 'kitchen'.

Conclusion:

- Residents prefer to have a nice view from their apartment
- Residents want to have a private outside space
- Animals should be permitted
- Suitable for healthcare
- Residents want to have their own kitchen
- An apartment of 50m² at first looks small, but once furnished is seems large enough even for couples

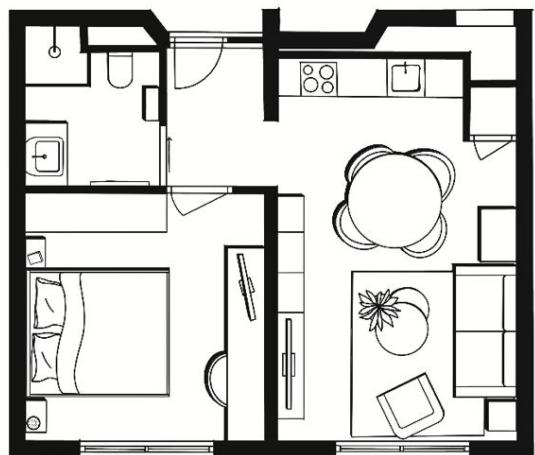
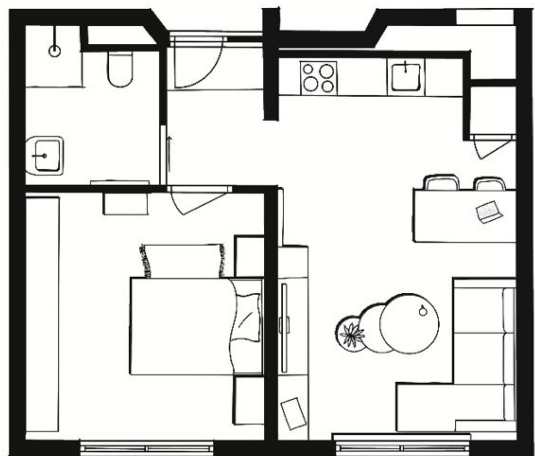
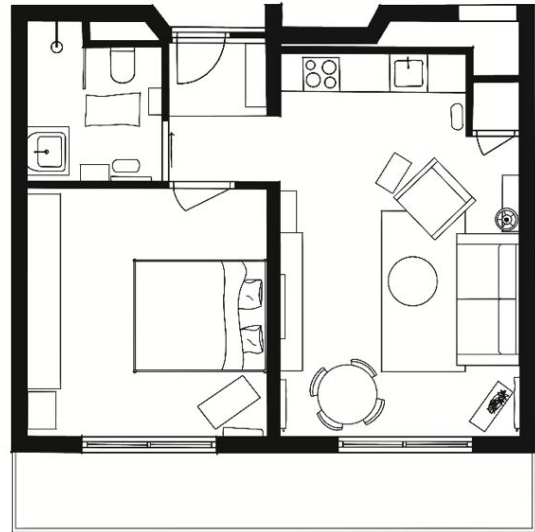


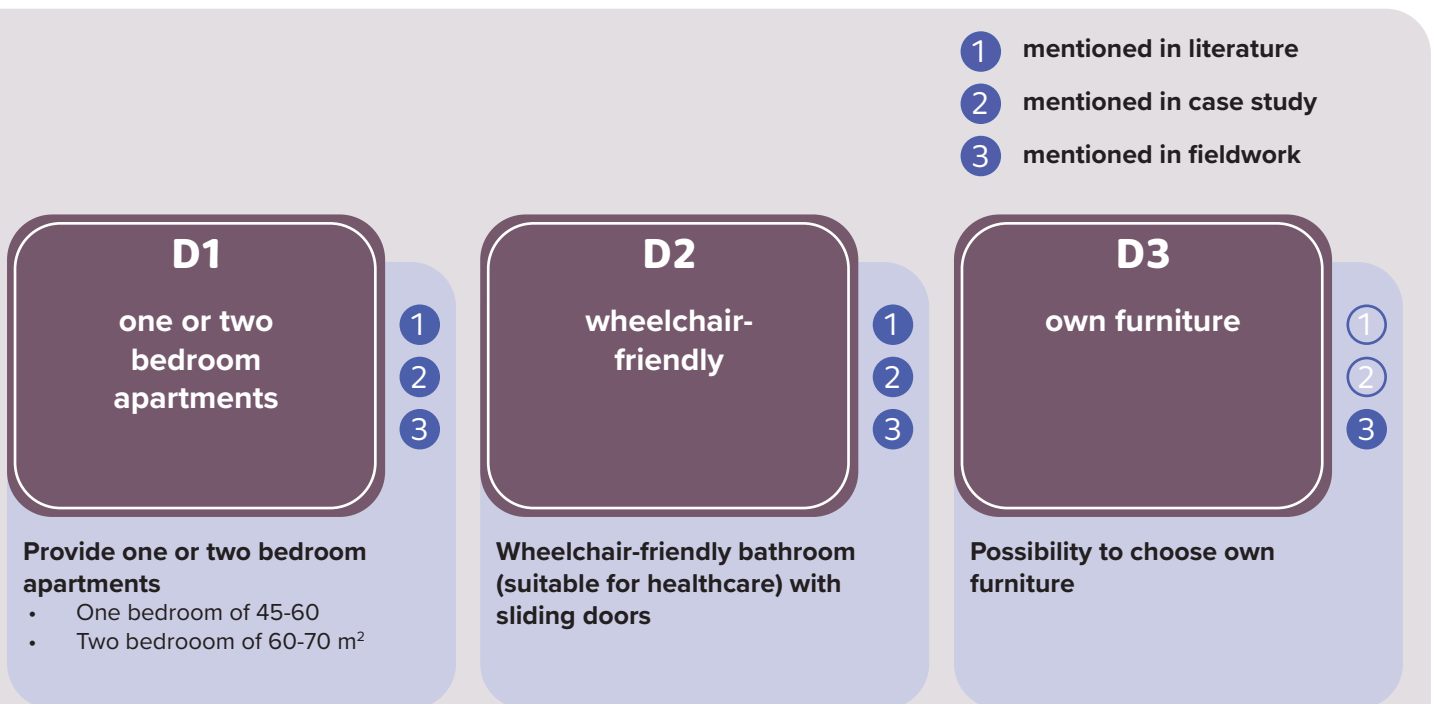
Figure 17. Apartment plans (by author)

Chapter 2

Conclusion

Guidelines dwelling scale

Since elderly people spend a great amount of time in their homes, a suitable and comfortable house is important, so one could continue living at home even if the need for healthcare increases. The following guidelines on dwelling scale are formulated:



D4

interesting view

- 1
- 2
- 3

Nice view even seated

- On greenery or park
- On garden

D5

no barriers

- 1
- 2
- 3

No barriers or thresholds

D6

own kitchen

- 1
- 2
- 3

Own small kitchen block

D7

own living room

- 1
- 2
- 3

Living room with space for a sofa, coffee table and dining table

D8

bedroom apartt
and extra room for
hobbies

- 1
- 2
- 3

Bedroom large enough for a double bed and a closet

D9

windows at both
sides of the
apartment

- 1
- 2
- 3

Ideally windows at both sides for daylight and social control

D10

private outside
space

- 1
- 2
- 3

Private outside space

- Private garden
- Balcony

D11

enough storage
space

- 1
- 2
- 3

Individual storage space for all the stuff one collected during their life

D12

Pets allowed

- 1
- 2
- 3

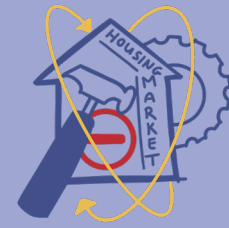
Pets allowed



Disbalance growing amount of elderly and the pressure on the healthcare sector



Challenges in the housing market



Urgent demand for suitable elderly housing

“How can a postwar neighbourhood be transformed to suit the needs and preferences of elderly people regarding an ageing-friendly living environment?”

1

What architectural and spatial elements make a living environment ageing-friendly for elderly people?

List of criteria: architectural and spatial elements that make a dwelling and living environment ageing-friendly

BY

**Literature
Case studies
Fieldwork**

2

What are the characteristics of a postwar neighbourhood?

Contextualize and create an overview of problems and quality of postwar neighbourhoods

BY

Literature

3

What are the possibilities of transformation in postwar neighbourhoods to create an ageing-friendly living environment for elderly people?

Transformation options: requirements that are necessary to make a postwar neighbourhood ageing-friendly

BY

Literature

Architectural and spatial aspects translated in design guidelines that make a living environment of a postwar neighbourhood attractive for elderly and allow them to age in place

Figure 6. Research diagram (by author)

03

**The postwar
neighbourhood**

Chapter 3

The postwar neighbourhood

The third chapter describes the context and typology of a postwar neighbourhood.

3.1 Contextualizing

The postwar period was all about reconstruction and modernization, because of the resulting damage cause by World War II. This evolved the development of new approaches, with a focus on functionalism, rationality and efficiency. One of the key developments was the emergence of modernist urban planning, which emphasized the use of new materials and technologies and the integration of different functions and activities within the urban fabric (Diefendorf, 1989). An important influence, France-Swiss architect and leader of the CIAM-movement, Le Corbusier (1887-1965), was known for his idealistic, utopian view of modernism, with a dominant top-down approach. CIAM was convinced that architecture and city planning could solve problems in society. They plead for separating functions within a city such as housing, work and leisure, connected by infrastructure to create modern, efficient and functional cities (Fitting, 2002).

Urban development was before the sixties mainly the urban planners' domain, where the designer was regarded as the artist who intuitively sensed societal changes and was ahead of his time. Later became functionality and the amount of dwellings more important than aesthetics and form. Solving the housing shortage was the highest priority, but with as few money, materials and resources as possible. Separation of the functions living and working was the starting point (Blom, Jansen, & Helden, 2004). The city's core consisted of a centre with horizontal streets with administrative, business and shopping functions. Surrounding this core were residential areas separated by green strips, comprising multiple neighbourhoods with approximately 2,000 to 4,000 residents each (Bosma, 2013).

The urban planning approach during that period originated from Ebenezer Howard's Garden City, conceived as a tool for the progressive

reconstruction of capitalist society into a multitude of cooperative communities. In this model, the city's heart is green and public functions are situated at the periphery. The dwellings were divided into different neighbourhoods, each serving a distinct function, surrounded by an extensive green buffer (Blom, Jansen, & Helden, 2004).

Subsequently, the idea of community building and the built-up of cities during the reconstruction period is to be deduced from an important theory of the modernistic design of an urban living environment the 'Neighbourhood Unit' of urban planner, sociologist and author Clarence Perry (1872-1944). The Neighbourhood Unit is a planning tool that aims to create self-contained, pedestrian-friendly neighbourhoods within larger urban areas surrounded by main streets. The neighbourhoods promote a community-centric lifestyle within the hustle and bustle of the city (Perry, 1929). The size of a neighbourhood was determined by the amount of people one school could serve. The school, church, and the neighbourhood centre were centrally placed. The concept represents the following key principles:

- Centre the school in the neighbourhood so a child's walk to school was only about one-quarter of a mile and could be achieved without crossing a major arterial street;
- Size the neighbourhood to support a school sufficiently, between 5,000 and 9,000 residents, approximately 160 acres at a density of 10 units per acre;
- Implement a wider use of the school facilities for neighbourhood activities, constructing a large play area around the building for use by the entire community;
- Place arterial streets along the perimeter so they define and distinguish the place of the neighbourhood;
- Design internal streets using a hierarchy that easily distinguishes local streets from arterial streets, using curvilinear street design for both safety and aesthetic purposes and to discourage unwanted traffic;
- Restrict local shopping areas to the perimeter or perhaps to the main entrance of the neighbourhood, thus discouraging nonlocal vehicular traffic into the neighbourhood;
- Dedicate at least 10% of the neighbourhood land area to parks, creating places for play and community interaction (Perry, 1929).



Figure 18. Sceme 'Gelede stad' (Geyl, 1946)

The 'Wijkgedachte' (translated into neighbourhood thought) reflects the Dutch adaptation of the concept and these principles to the local context and urban planning practices. It includes ideas such as the decentralization of the city, organizing people's lives hierarchically around various social groups at different scales, with a neighbourhood unit and a centre consisting of 20,000 people (Blom, Jansen, & Helden, 2004). To promote a sense of community, Geyl establishes within the neighbourhood concept, a social and spatial organization: home, neighbourhood (buurt), district (wijk), city district, and city. Around the family and homes is the neighbourhood where a child first encounters the world by playing with neighbours and attending school. The neighbourhood is also significant for adults in terms of interacting with neighbours, running errands, visiting a café, and taking walks. At neighbourhoods level, people reside, and basic facilities are provided, such as a bakery, butcher, and grocery store, with two of each to maintain competition. Additionally, a café, children's playground, and public green should be present. At the district level, there are facilities serving a larger public, including churches, schools, stores, and service-oriented businesses. Districts also offer parks, community gardens, and sports fields, which can surround the district like a green belt.



Figure 19. 'De Wijkgedachte' (Geyl, 1946)

However, the modernist approach to urban design also faced significant criticism, particularly from social and political movements, such as journalist and urban activist Jane Jacobs (1916-2006) as mentioned in paragraph 1.4.2. Jacobs advocates for a bottom-up approach to urban planning, where cities are built around the needs and desires of residents, rather than the visions of architects and city planners. Jacobs emphasizes in her book 'The Death and Life of Great American Cities', the importance of mixed-use neighbourhoods, with a diversity of building types, styles, and uses, such as residential, commercial, and cultural. This mix creates lively neighbourhoods that are safe and inviting to people of all ages and backgrounds, therefore she distinguished four aspects:

1. The importance of diversity for interaction and building social connections;
2. Mixed-use neighbourhoods where different people cross each other in their everyday lives;
3. Walkability from homes to shops, parks, and other amenities, for interaction with neighbours and a sense of community;
4. Small blocks and diverse building types, to create a sense of visual interest and human scale that encourages people to engage with their surroundings.

Jacobs underlines the importance of 'street life', the diverse activities that take place in public spaces and 'eyes on the street'. The presence of people walking, sitting, and talking on the streets is crucial for deterring crime and creating a sense of community (Jacobs, 1961).

Chapter 3

The postwar neighbourhood

3.2 Typology

Postwar neighbourhoods often feature modernist architecture with a focus on functionality, simplicity and efficiency, because they were designed with the intention of creating a spacious, healthy and green living environment. There was a strong emphasis on collectively achieved through a combination of medium-rise residential buildings of three or four stories (portiekflats) and high-rise surrounded by a large stretch of greenery. Experimentation with open building blocks led to courtyards and these urban planning patterns were often repeated as 'stamps'. Through the separation of functions distinct centres with shops and other amenities emerged. The frequent repetition of functionalistic neighbourhoods, the emphasis on collectively, and the absence of functional mixing result in a predictable and visual unstimulating living environments (Lörzing & Harbers, 2009).

However, the housing shortage, compounded by limited materials and skilled labour, caused the emerge of system-built construction, a method involving prefabricated building components, enabled the construction of a great amount of homes in a short period. Although the system-built construction required substantial investments in machinery, factories and cranes. A few new techniques aimed to quickly realize as many homes as possible. Three dominant types of buildings emerged: gallery flats, the portico apartment (portiekflats) and family row houses. The MUWI building system and the choice plan homes were prominent and in the early 1960s the shift towards element construction and cast construction occurred. Suitable for high-rises gallery flats, up to fourteen floors, with gallery access to provide as many homes as possible accessible by elevator. Portico apartments are mostly four story flats with eight one-level apartments with a balcony, of which the households share a staircase, or portico, without an elevator. The family row houses are more private two story houses with their own front door on street-level and a backyard. Postwar high-rises aimed not so much for monumentality, but rather to serve as distinctive focal points or landmarks. The interplay of low and high-rise structures intended to create a varied urban landscape (Blom, Jansen, & Helden, 2004).



Figure 20. Typical gallery apartment flat



Figure 21. Typical portico apartment flat (portiekflat)



Figure 22. Typical family row houses

3.3 Current problems

Nowadays, the postwar neighbourhood is often portrayed negatively, characterized by monofunctional, deteriorated areas, with low-quality apartment flats, where people generally do not feel safe. In a lot of Dutch postwar neighbourhoods live low-income, single-person households in rental houses (Centraal Bureau voor de Statistiek, 2017).

According to research by Aedes (2018), 'Veerkracht in corporatiebezit' (Resilience in housing corporations), increasing disturbances and unsafety in postwar neighbourhoods is often linked to a growing concentration of vulnerable residents. These individuals typically have low incomes, lower levels of education and more frequent mental and physical health issues. In areas with a substantial amount of housing corporation properties, these vulnerable groups are placed in the social housing apartments. This results in significant differentiation, as these neighbourhoods consist exclusively of social housing. The concept of 'resilience' refers to the ability of a neighbourhood to cope with the increasing concentration of vulnerable residents and promote their self-sufficiency and that of the local organizations. When a neighbourhood lacks resilience, attention is needed, which is often the case in many postwar neighbourhoods due to the abundance of social housing (Leidelmeijer, Iersel, & Frissen, 2018).

The urgency of this issue is highlighted in an article by de Volkskrant about the postwar neighbourhood Overvecht in Utrecht, where numerous problems arise due to a large number of vulnerable individuals, including refugees, people with mental health issues, ex-convicts and former homeless people, being placed in social rental homes. All available housing is allocated to these priority target groups, leading to a high pressure and escalating issues in these neighbourhoods. The accumulation of problems results in residents in such areas living in isolation rather than together, as there is no ability to support one another (Venneman & Huisman, 2024).

Creating a mix of residents with diverse backgrounds in terms of income, education, social class, household type, age and tenure can have positive effects on neighbourhoods, particularly those with a high

number of poor and deprived residents. For instance, if middle-class individuals move in, it could enhance the social connections of lower-income groups. This, in turn, might provide them with improved information about job opportunities and other knowledge, ultimately helping them move up socially (Kleinhans, 2012).

3.4 Quality of postwar neighbourhood

Besides the problems in postwar neighbourhoods, they also have positive characteristics. The housing stock is a diverse mix of medium-high and low-rise, apartments and family houses of which around 60% are single-family houses. The areas boast plenty of public green spaces, parks and playgrounds, are centrally located in relation to city centres and are well-connected to the main road network and public transportation. The diversity of housing types have a good price-quality ratio, even though the homes are generally quite small and as described in the previous paragraph, consist primarily out of social housing (Blom, Jansen, & Helden, 2004).

Although the postwar neighbourhood is generally in need of transformation and renovation due to several social problems, it is also important to recognize the qualities of these so-called 'krachtwijken' (strength neighbourhoods) by ensuring that elements such as recognized monuments, remaining pre-war buildings, facades, old roads and waterways are protected and enhanced due to their significant contribution to the neighbourhood's identity (Lörzing & Harbers, 2009).

A number of recommendations are followed:

- Make better use of the rich green and water structure. Give existing and new buildings a view on water and green and give use value to the greenery.
- Improve public space in the immediate residential area. The fact that courtyards and parks are laid out the same way is not good for recognisability, so redesign of the residential environment is necessary.
- Counteract segregation of functions. Shops, employment and amenities have disappeared from the neighbourhoods and the lower layers of residential buildings are dense plinths. To improve liveliness, social safety, housing, small

Chapter 3

The postwar neighbourhood

facilities and businesses could be added to the plinth.

- Designate special urban design ensembles as ‘protected townscapes’.

Interventions may not immediately solve the socio-economic disadvantages of postwar neighbourhoods, but they can contribute to a better living environment. Redesigning parks and courtyards can increase the use value and improve the sense of security. In addition, it is possible to densify, delivering additional housing (Lörzing & Harbers, 2009).

Changed housing needs and sustainability requirements make the renewal of urban neighbourhoods inevitable. Postwar neighbourhoods, particularly the plinths of portico flats (portiekflats) and gallery flats offer opportunities for new housing typologies within a neighbourhood. In addition, many postwar neighbourhoods also require the renewal of amenities. According to ‘de Wijkgedachte’ concept, residents should find a wide range of shops, schools, churches and health centres within walking distance of their homes. Many of these facilities were initially clustered around squares and strips under corridor and high-rise buildings. Due to the fact that people moved out of the postwar neighbourhoods, these amenities became financially unsustainable and relocated, also requiring renewal, by for example the transformation of the plinth (Boer, 2017).

3.5 Conclusion

To conclude, the postwar neighbourhood is constructed from a modernist and functionalistic approach, aiming to build as many houses as possible in a short time with minimal funds. The key principle here was the separation of functions, working and dwelling. The concept of the Neighbourhood Unit and 'Wijkgedachte' is family-oriented, with an emphasis on creating self-contained, pedestrian-friendly areas that fostered a community-centric lifestyle. These neighbourhoods were designed to have all essential facilities nearby separated by abundant green spaces. However, the modernistic top-down approach of city planning also faced criticism. Jane Jacobs advocated for a more bottom-up approach, emphasizing diversity, mixed-use, walkability and small blocks with various building types to create vibrant and lively neighbourhoods with a sense of community among residents. Postwar neighbourhoods mainly consist of three types of housing: single-family row houses, portico apartment buildings and gallery flats. The buildings are arranged in repeated block formations, often accompanied by undefined green public spaces, resulting in predictable and visually unstimulating living environments.

Currently, the postwar neighbourhoods face numerous challenges, primarily due to the concentration of social housing for which vulnerable groups are prioritised. It is urgent to address these issues by promoting diversity through a mix of residents with different backgrounds in terms of income, education, social class, household type, age and tenure. By providing mixed-use

neighbourhoods with different housing typologies and amenities. Additionally, it is crucial to enhance the quality of these neighbourhoods by optimizing green and water structures, improving public spaces, counteract the segregation of functions and designating certain urban areas as protected townscapes. As people moved away from postwar neighbourhoods and households become smaller, amenities became financially unsustainable and relocated. This also needs to be addressed, since the amenities require renewal, such as the transformation of ground-level spaces.

Recommendation postwar neighbourhoods:

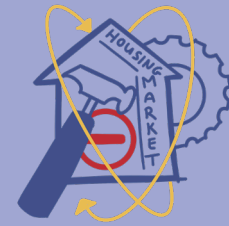
1. Create and stimulate diversity by mixed residents, mixed-use and counteract segregation
2. Promote community living
3. Make better use of rich green and water structure
4. Improve public space
5. Support local amenities by densification and creating an attractive living environment for mixed people to move to
6. Apply a bottom-up approach



Disbalance growing amount of elderly and the pressure on the healthcare sector



Challenges in the housing market



Urgent demand for suitable elderly housing

“How can a postwar neighbourhood be transformed to suit the needs and preferences of elderly people regarding an ageing-friendly living environment?”

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BY

Literature

3

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Transformation options: requirements that are necessary to make a postwar neighbourhood ageing-friendly

BY

Literature

Architectural and spatial aspects translated in design guidelines that make a living environment of a postwar neighbourhood attractive for elderly and allow them to age in place

Figure 6. Research diagram (by author)

04

Transformation

Chapter 4

Possibilities of transformation

The fourth chapter touches upon possibilities of transformation of the postwar neighbourhood and aims to create a strategy to create postwar living environments that are suitable for ageing in place for elderly people.

4.1 Opportunities in existing cities

The Netherlands experiences, especially in cities, a high pressure on the housing market due to people who want to live in the city and immigration. On the other hand, the group of single-person households is growing and since they have various wants and needs, a diverse supply is important. However, urban neighbourhoods are shrinking. Households are currently, with 2,2 person per household, 40% smaller than in the 1970s, but the existing houses stayed the same size. As a result, once thriving amenities, such as shops and schools, are no longer economically profitable in a neighbourhood. Consequently, there is a mismatch in the housing supply and demand in the Netherlands, because only a quarter of the households consist of two-parent families, while 65% of the housing stock consists of single-family houses (Reimar, et al., 2020).

According to KAW Architects, it is crucial not to exacerbate these issues by expanding the city but rather by addressing the existing urban context. In addition, postwar neighbourhoods suffer structurally from a deprivation. So, this presents an opportunity to achieve a sustainable, equitable and forward-looking design of the living environment through transformation, offering multiple benefits (Reimar, et al., 2020). Pairing opportunities of transformation are:

1. Balancing supply and demand, by transformation of the existing unsuitable housing stock;
2. Physical and social integration by combining transformation with approaches to improve social integrating and sustainability efforts;
3. Encouraging ageing in place by realising housing options for elderly within their current neighbourhoods to promote a seamless transitions and create housing options for other groups;
4. Intensification for facilities support by increasing housing density to provide support for local amenities;
5. Boost municipal income through increased land development;
6. Reduced sensitivity to risks by being less susceptible to risks and obstacles by adapting existing structures;
7. Save on infrastructure and energy costs by optimizing existing urban layouts;
8. Preserve green spaces, ecology and climate-resilient housing, resulting in cost-effective and sustainable living.

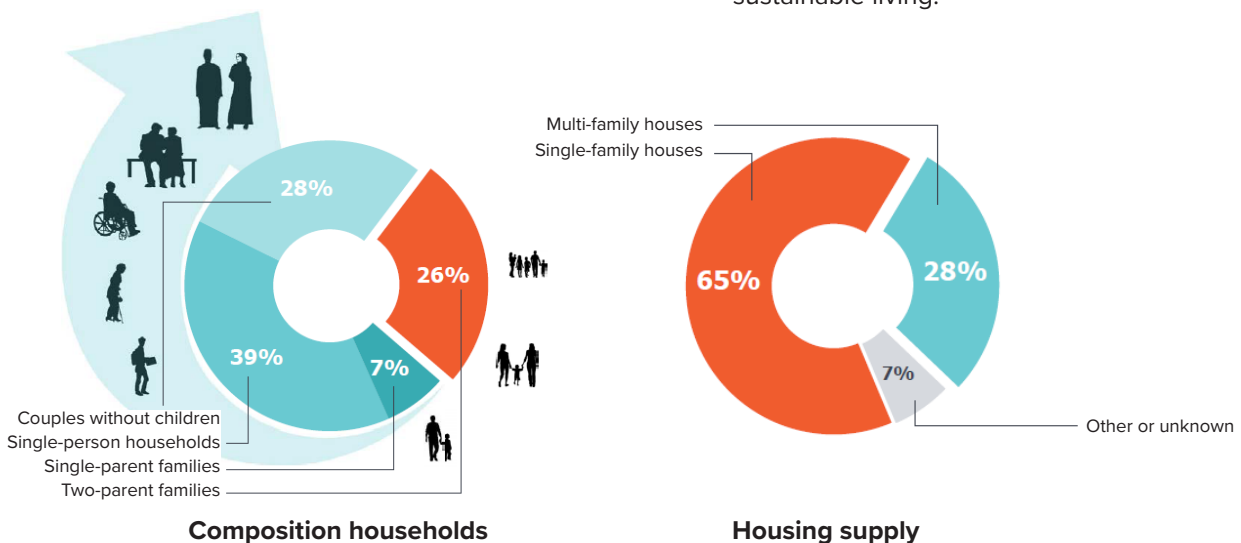


Figure 23. Mismatch in the Dutch housing supply and demand (Reimar, et al., 2020)

4.2 Four categories of interventions

In postwar neighbourhoods is an opportunity to build houses because there is space available, and these neighbourhoods are, as described earlier, in need of renewal. In addition, these areas offer many amenities, are green and have good connections to the city centre. When these neighbourhoods are comprehensively revitalized, they become attractive places to live. A combination of renovation and new construction results in an interesting mix of housing options (Reimar, et al., 2020).

Research of KAW Architecten on the transformation of postwar neighbourhoods lead to four categories of possible interventions. A combination of these four interventions could realise in postwar neighbourhoods an average of 25% more houses, so KAW Architecten emphasises a mix-use of the categories.

1 Existing dwellings: splitting, expanding, building on top

Expansion on existing buildings within the zoning plan with light structures, such as one or two additional storeys. Modifications to existing houses and subdividing them, particularly suitable for postwar portico apartment flats and family row houses with a clear shell.



Figure 24. First category (Reimar, et al., 2020)

2 Surgical interventions: small interventions, use of the unused space

Utilise unused space for small housing. Demolition of small buildings such as attached homes or garages to make space for larger buildings, at corners of large blocks, to improve urban design. Also demolition of single-family houses with replacement for multiple dwellings. Many postwar buildings have blind ends and corners, so this provides an opportunity to place a building volume for housing in combination with other forms of access. In addition, postwar building blocks often have anonymous in-between spaces that are unused in their current use. These interspaces both present an opportunity to densify. The car is prominent in postwar neighbourhoods, in view of declining car traffic, car parks can be given a different function.



Figure 25. Second category (Reimar, et al., 2020)

Chapter 4

Possibilities of transformation

3 Restructuring: demolishing and new building

Densify by providing more housing by demolition and new construction, focusing on densification with alternative housing typologies. The transformation of neighbourhoods that are repeated as stamps offers plenty of room for housing development. In addition, existing green structures can be better utilised and transformed into climate-adaptive and biodiverse neighbourhoods. Making use of vacant school sites offers space to build.



Figure 26. Third category (Reimar, et al., 2020)

4.3 Implementation

To address the mismatch in the housing supply and demand, KAW Architects carried out a study on the 'tiny home', ensuring its quality. They argued that a home should be usable with care and assistance, wheelchair-accessible and able to be a full, independent and healthy home with activities that go with it. From this, it can be concluded that the smallest possible independent homes are just slightly smaller than 50 m². Still, when densifying in the city, they emphasise the importance of a mix of housing type in size and ownership (Reimar, et al., 2020).w

4 Edges: reducing use of cars will lead to space at the edges of city and neighbourhoods

Expected changes in mobility suggest reduced car traffic, resulting in freed up space on the edges of neighbourhoods due to fewer traffic lanes and fewer nuisances. Currently, there is a lot of double access to neighbourhoods and excess infrastructure.



Figure 27. Fourth category (Reimar, et al., 2020)



Figure 28. Tiny home of 50 m² (Reimar, et al., 2020)



Figure 29. Splitting portico apartments (Reimar, et al., 2020)



Figure 30 Splitting family row houses (Reimar, et al., 2020)

A way to implement smaller houses in postwar portico apartment flats (portiekflats) is to transform two family apartments into three or four smaller apartments as viable in figure ... above. Family row houses could also be divided into two smaller houses, especially the houses on the corner by adding a volume, as visible in figure ... (Reimar, et al., 2020).

Options to give postwar residential buildings an upgrade are:

- Renovation of the façade to improve the look, sustainability, sound insulation and safety;
- Expand existing volumes by building on top and improve the accessibility by renovating the staircase and adding an elevator;
- Expand the apartments by expanding outside space, such as balconies, or merge spaces horizontally or vertically;
- Reduction of residential building blocks by demolishing a part to let them fit better in the context;
- Upgrade the closed 'dead' semi-underground plinth by adding functions on street level;
- Transform apartments elderly-friendly by removing thresholds and level differences, changing lighting, make the houses accessible by elevator and renovating bathrooms (Rijksdienst voor het Cultureel Erfgoed, sd).

Chapter 4

Possibilities of transformation

An example of a transformation of the postwar neighbourhood Utrecht Overvecht. As mentioned in paragraph 3.3, this postwar neighbourhood has to deal with many issues. Therefore the ten-story flat is going to be demolished and a plan is made to address current issues, such as the lack of a human scale, excessive pavement and a deficit of community engagement. The plan aims to create a new, diverse neighbourhood with approximately 250 new homes. To create more diversity, half of the homes will be designated as social housing and the other half consists of mid-range rental houses and owner occupied houses. In addition, the plan aims to foster community connections and improve overall living conditions (Oosterbeek, 2019).



Figure 31. Transformation Utrecht Overvecht Ivoordreef (Oosterbeek, 2019)



Figure 32 Transformation Utrecht Overvecht Ivoordreef (Oosterbeek, 2019)

4.4 Conclusion

On the one hand the Netherlands faces high pressure on the housing market and on the other hand households become smaller and neighbourhoods shrink. So, there is a need for smaller houses for single-person households. According to KAW Architecten, it is crucial to address the existing urban context, such as postwar neighbourhoods since they structurally suffer from a deprivation. Improving these neighbourhoods and make better use of the existing qualities will offer multiple benefits. For example, KAW Architecten highlights encouraging ageing in place by realising housing options for elderly within their current neighbourhoods to promote a seamless transition, as a pairing benefit for the transformation of postwar neighbourhoods. For transformation four categories of interventions are possible: splitting and expanding of existing dwellings, surgical interventions to make use of unused space, restructuring by demolishing and building new and building at the edges of the neighbourhoods where infrastructure becomes available due to the expecting reducing use of cars. Family houses and apartments can be split into multiple houses and residential buildings could be renovated, to expand, improve the look, improve sustainability, upgrade the plinth by adding other functions and make houses ageing-friendly by adding for example elevator access and renovating bathrooms. With all that, it is important to create diversity in housing typologies, residents and other functions. Fostering a sense of community is crucial and helps to improve the overall living conditions.

05

To conclude.

Chapter 5

Conclusion

The conclusion answers the main research question.

The increasing amount of elderly people and the Dutch governmental objective that people have to live independently for as long as possible causes a growing demand for suitable housing in ageing-friendly living environments. To address this, solutions are to be found in the existing urban context of the postwar neighbourhood. Based on this topic, the following research question have arisen: How can a postwar neighbourhood be transformed to suit the needs and preferences of elderly people regarding an ageing-friendly living environment?

The world of an elderly becomes smaller while ageing, as driving a car is no longer possible, mobility is decreasing and vision reduces. To ensure that elderly people can live independently for as long as possible, it is important to keep their 'small world' as complete as possible. Therefore it is important that the immediate living environment, around a building where elderly people live, is accessible, safe and attractive, with sufficient facilities within walking distance and a sense of community among residents. An ageing-friendly living environment should be attractive for elderly to move to, to give them the opportunity to have influence on their own future living situation. For designing an ageing-friendly living environment, guidelines should be implemented, which are formulated and divided into three scales: neighbourhood, building block and dwelling.

The postwar neighbourhood is constructed from a modernistic and functionalistic approach where the separation of functions was a key principle. The concept of the Neighbourhood Unit and 'Wijkgedachte', upon which postwar neighbourhoods were built, aligns with the idea that the small world of an elderly should remain as complete as possible, with everything within walking distance. Perry's idea of a self-contained and pedestrian-friendly neighbourhood, abundant in greenery, supports the importance of walking and physical activity for elderly. According to Perry, a neighbourhood should promote

a community-centric lifestyle, which is also a crucial aspect for an ageing-friendly living environment. However, postwar neighbourhoods are designed with the perspective of families with children, which should be reviewed, since the elderly population is growing. So, certain buildings becoming vacant and other functions become more important.

However, the modernistic top-down approach of city planning also faced criticism. Jane Jacobs advocated for a more bottom-up approach, emphasizing diversity, mixed-use, walkability and small blocks with various building types to create vibrant and lively neighbourhoods with a sense of community among residents. Which are according to the research, topics that are also very important for an ageing-friendly living environment. Currently, postwar neighbourhoods face numerous challenges, primarily due to a lack of diversity by the concentration of social housing for which vulnerable groups are prioritised. It is urgent to address this issue by promoting diversity through a mix of residents and providing various functions. The separation of functions, living and working, no longer aligns, because to support the elderly to live independently for as long as possible, facilities need to be distributed and within walking distance rather than concentrated in one area. Although, densification is necessary to keep amenities economic sustainable, since people moved away from postwar neighbourhoods and households became smaller.

For elderly people the direct surrounding of the private dwelling is very important, because of their smaller world. Therefore, elderly prefer a sense of community among neighbours and other residents surround them. Here, a diverse set of people is favourable, because elderly have stated that they prefer not to be surrounded only by people of the same age. Within a community people can have social interaction and can support each other, which creates a purpose. It is, however, important to ensure a balance between social interventions and privacy. The problems in postwar neighbourhoods make the environment perceived unsafe, which is not beneficial for fostering a sense of community.

To create an ageing-friendly living environment in postwar neighbourhoods, the aforementioned most important topics need to be addressed and

“How can a postwar neighbourhood be transformed to suit the needs and preferences of elderly people regarding an ageing-friendly living environment?”

transformation is necessary. Many homes, especially those designed for families, lack wheelchair accessibility and elevators. The green surroundings of postwar neighbourhoods can encourage elderly to spend time outdoors. So, making better use of this rich green and water structure is recommended. For the transformation of postwar neighbourhoods four categories of interventions are possible: splitting and expanding of existing dwellings, surgical interventions to make use of unused space, restructuring by demolishing and building new and building at the edges of the neighbourhoods where infrastructure becomes available due to the expecting reducing use of cars. Family houses and apartments can be split into multiple houses and residential buildings could be renovated, to expand, improve the look, improve sustainability, upgrade the plinth by adding other functions and make houses ageing-friendly by adding for example elevator access and renovating bathrooms. Hereby, the guidelines for an ageing-friendly living environment have to be implemented. Considering the shrinking households and the prevalence of elderly individuals living alone, transformation strategies should focus on densification with diversity in housing types, diverse residents, mixed-use and the creation of a sense of community. With all that, it is important to create diversity in housing typologies, residents and other functions. Fostering a sense of community is crucial and helps to improve the overall living conditions.

Bibliography

The bibliography shows all relevant literature and used sources.

- Blom, A., Jansen, B., & Helden, M. v. (2004). De typologie van de vroeg-naoorlogse woonwijken. Zeist: Wederopbouw Rijksdienst voor de Monumentenzorg.
- Boer, J. (2017, May 22). Transformeren vanuit de kracht van de wijk. Opgehaald van ROMagazine: <https://romagazine.nl/artikel/17101/transformeren-vanuit-de-kracht-van-de-wijk>
- Bosma, K. (2013). Geblesseerde steden, weg van de kern. In A. Blom, Atlas van de Wederopbouw Nederland 1940-1965: ontwerpen aan stad en land (pp. 27-31). NAI010 uitgevers.
- Centraal Bureau voor de Statistiek. (2022, December 16). Prognose: meer inwoners door migratie. Opgeroepen op September 17, 2023, van CBS Nieuws: <https://www.cbs.nl/nl-nl/nieuws/2022/50/prognose-meer-inwoners-door-migratie>
- Centraal Bureau voor de Statistiek. (2017, November 11). Veel naoorlogse stadswijken sociaaleconomisch zwak. Opgehaald van cbs: <https://www.cbs.nl/nl-nl/nieuws/2017/46/veel-naoorlogse-stadswijken-sociaaleconomisch-zwak#:~:text=Het%20aandeel%2065%2Dplussers%20in,zoals%20in%20Arnhem%20en%20Emmen.>
- Centraal Bureau voor de Statistiek. (n.d.). Noorlogse stadswijken. Opgehaald van CBS: <https://www.cbs.nl/nl-nl/nieuws/2017/46/veel-naoorlogse-stadswijken-sociaaleconomisch-zwak/naoorlogse-stadswijken>
- Davey, J. A., de Joux, V., Nana, G., & Arcus, M. (2004). Accommodation options for older people in Aotearoa/New Zealand. Christchurch: Centre for housing Research.
- Diefendorf, J. M. (1989). Urban Reconstruction in Europe After World War II. *Urban Studies*, 26(1), pp. 128-143.
- Fitting, P. (2002). Urban Planning/Utopian Dreaming: Le Corbusier's Chandigarh Today. *Utopian Studies*, 13(1), pp. 69-93.
- Gemeente Rotterdam. (2021). Ontwerpen voor ouderen. Rotterdam: Gemeente Rotterdam.
- Geonovum. (n.d.). Fysieke leefomgeving. Opgeroepen op October 21, 2023, van Geonovum: <https://www.geonovum.nl/themas/kookboek-digital-twins/fysieke-leefomgeving#:~:text=De%20fysieke%20leefomgeving%20is%20de,landbouw%2C%20landschappen%20en%20cultureel%20erfgoed.>
- Geyl, W. (1946, April 13). De opbloei van de wijkgedachte. *Bouw*, pp. 365-371.
- Hagen, G., & Neijmeijer, R. (2020). Woonprofielen van senioren. Den Haag: Platform31.
- Inam, A. (2014). Designing urban transformation. New York: Routledge.
- Jacobs, J. (1961). The Death and Life of Great American Cities. New York: Vintage Books.
- Kam, K. J., Lim, A. S., Al-Obaidi, K. M., & Lim, T. S. (2018). Evaluating housing needs and preferences of generation Y in Malaysia. *Planning Practice & Research*, 33(2), pp. 172-185.
- Kleinhans, R. (2012). Housing Policy and Regeneration. In M. E. S.J. Smith, *International Encyclopedio of Housing and Home* (pp. 590-595). Oxford: Elsevier.
- Klundert, M. V. (2023, Mei 26). Ouderen moeten het straks vooral zelf, thuis en digitaal gaan oplossen. Opgehaald van NOS Nieuwsuur: <https://nos.nl/nieuwsuur/artikel/2476575-ouderen-moeten-het-straks-vooral-zelf-thuis-en-digitaal-gaan-oplossen>
- Leidelmeijer, K., Iersel, J. V., & Frissen, J. (2018). Veerkracht in het corporatiebezit. Amsterdam: RIGO Research en Advies.
- Lörzing, H., & Harbers, A. (2009, Juni). Naoorlogse Krachtwijken. Planbureau voor de Leefomgeving, pp. 26-29.

- Mantingh, I., & Duivenvoorden, A. (2021). *Ontwerp voor ontmoeten*. Den Haag: Platform31.
- MAX Meldpunt. (2022, June 3). *Seniorenwoningen bouwen helpt doorstroming op woningmarkt*. Opgehaald van Max meldpunt: <https://www.maxmeldpunt.nl/wonen/seniorenwoningen-bouwen-helpt-doorstroming-op-woningmarkt/>
- Ministerie van Volksgezondheid, Welzijn en Sport (VWS). (2019). *Gezondheid & Zorg Kennis- en Innovatieagenda 2020-2023*. Den Haag: Health Holland.
- Ministerie van Volkshuisvesting en Ruimtelijke Ordening. (2022). *Programma Wonen en zorg voor ouderen*. Den Haag: Ministerie van Binnenlandse Zaken en Koninkrijksrelaties & Ministerie van Volksgezondheid, Welzijn en Sport.
- NOS. (2022, November 23). *Kabinet wil dat ouderen verhuizen, maar niet naar het verpleeghuis*. Opgehaald van NOS Nieuws: <https://nos.nl/artikel/2453589-kabinet-wil-dat-ouderen-verhuizen-maar-niet-naar-het-verpleeghuis>
- Omroep Flevoland. (2022, September 1). *Dementievriendelijke straat gemaakt aan de Oost*. Opgeroepen op December 21, 2023, van Omroep Flevoland: <https://www.omroepflevoland.nl/nieuws/299760/dementievriendelijke-straat-gemaakt-aan-de-oost>
- Oosterbeek, R. (2019, January 22). *Hoe zien de naoorlogse wijken van de toekomst eruit?* Opgeroepen op January 12, 2024, van DUIC: <https://www.duic.nl/algemeen/hoe-zien-de-naoorlogse-wijken-van-de-toekomst-eruit/>
- Perry, C. A. (1929). *The neighborhood unit, a scheme of arrangement for the family-life community*. In *Monograph One in Neighborhood and Community Planning, Regional Plan of New York and Its Environs*. New York: Committee on Regional Plan of New York and Its Environs.
- Reimar, v., Wout, S., Jeroen, D., Daniel, R., Gabriele, F., Mahsa, K., . . . Folkert, H. (2020). *Ruimte zat in de stad*. Groningen, Rotterdam, Eindhoven: June.
- Rijksdienst voor het Cultureel Erfgoed. (sd). *Upgraden van naoorlogse woningen*. Opgeroepen op January 12, 2024, van Cultureel erfgoed: <https://www.cultureelerfgoed.nl/onderwerpen/wederopbouw/upgraden-van-naoorlogse-woningen>
- Sheehan, B., Burton, E., & Mitchell, L. (2006). *Outdoor way*. *Dementia*, 5(2), pp. 271-281.
- Sprinco. (2018). *Samenvatting rapportage De Grote Omgevingstest*. Rotterdam: Sprinco.
- Teepe, V. (2022, October 22). *Levensloopbestendig bouwen nodig in strijd tegen groeiend tekort aan zorgverleners en mantelzorgers*. Opgeroepen op October 25, 2023, van Achmea: <https://nieuws.achmea.nl/levensloopbestendig-bouwen-nodig-in-strijd-tegen-groeiend-tekort-aan-zorgverleners-en-mantelzorgers/>
- Ven, H. v. (2018). *Richtlijnen voor levensloopbestendig bouwen*. Utrecht Heuvelrug: Gemeente Utrechtse Heuvelrug.
- Venneman, I., & Huisman, C. (2024, January 2). *Flatwijk Overvecht kan niet nog meer kwetsbare bewoners aan, maar dat moet wel*. *de Volkskrant*. Opgehaald van <https://www.volkskrant.nl/nieuws-achtergrond/flatwijk-overvecht-kan-niet-nog-meer-kwetsbare-bewoners-aan-maar-dat-moet-wel~bd220c35/>
- Verschuren, P., & Doorewaard, H. (2015). *Het ontwerpen van een onderzoek*. Amsterdam: Boom Lemma uitgevers.
- Wiles, J., Leibing, A., Guberman, N., Reeve, J., & Allen, R. E. (2012). *The Meaning of "Aging in Place" to Older People*. *The gerontologist*, 52(3), pp. 357-366.
- World Health Organization. (2017). *Age-friendly environments in Europe: a handbook of domains for policy action*. Copenhagen, Denmark: World Health Organization Europe.

Reflection

The reflection as a short substantiated explanation to account for the preliminary results of the research and design in the graduation phase

Relation between graduation project, master track Architecture and programme health and care

The graduation project is part of the graduation studio of Dwelling “Designing for health and care in an inclusive environment”. The research addresses the gap in suitable ageing-friendly housing for the growing elderly population in the Netherlands, aligning with the government’s objective of promoting elderly to live independent for as long as possible to alleviate problems in the healthcare sector. The graduation project delves into the intersection of architectural (and urban) design and social inclusivity by exploring how the transformation of postwar neighbourhoods can accommodate the needs of elderly people while fostering intergenerational diversity. This aligns with the objectives of the Architecture track and the master programme of dwelling “Designing for health and care in an inclusive environment”, which emphasizes innovative and sustainable architectural solutions for societal issues within the context of Health and Care.

Influence of research on design

The first semester of the graduation project was mainly devoted to doing research and writing the thesis. For the research into elderly housing needs and preferences I have stayed in a former nursing home that has been transformed into a community where elderly people live in a community together. They have their private apartments and share communal spaces such as a kitchen, living room, café, theatre and workshop space. During the fieldwork I had many conversations with residents about their satisfaction of the place and reason of moving, did observations of the use of spaces, we distributed a survey and did a workshop where residents were asked to create their ideal living environment. The most important results of the research formed input for the design process, such as the importance of the community and social interaction for elderly and the value of providing spaces where people can stay active. Of the residents is 15% young adult and that mix of was for a lot of residents also very important. The

research, fieldwork combined with literature, resulted in guidelines for an ageing-friendly living environment and together with insight in the challenges and opportunities in postwar neighbourhoods, formed an important influence for the design and design recommendations. This led to the development of a toolbox for the transformation of postwar single family row houses into an ageing-friendly living environment. Truly connecting with the target group during the fieldwork obtained a good picture of what is important for elderly people which has been used as input for the design to create an ensemble of housing blocks for different generations, with facilities to serve them surrounded by greenery in a communal courtyard and even a public park. During the design process the toolbox and the design focus points have been the starting point. From there the project elaborated through research by design based on feedback by professionals.

Assess value of way of working

The project and research methodology is carefully constructed by a comprehensive research plan. The fieldwork experience provided valuable insights into the practical aspects of communal living and the importance of intergenerational interactions. This experience informed the design process, ensuring that the proposed interventions are not only based on theory, but also grounded in real-world observations and user experiences. The iterative design process, guided by the developed toolbox and research findings, allowed for continuous refinement and optimization of the design solutions, ensuring that they align with the overarching design principles.

Assess academic and societal value, scope and implication of the project including ethical aspects

The research contributes to the construction of ageing-friendly living environments, gives insight to improve the urgent problem of the housing situation for elderly in the Netherlands and contributes to reduce the high pressure on the healthcare sector.

In addition, the thesis will create social awareness for the problem. Showing people the possibility to think about their future living situation, also when we age. This includes the awareness that elderly do not necessarily fall short by having to move, but that the transition could have positive impact on their state of wellbeing, promote them to live longer in better health. By creating the design toolbox for transformation of postwar single family row houses, the graduation project seeks to contribute to another societal issue of the transformation of this areas that are in need of renewal due to problems caused by a high concentration of social housing and the lack of sustainability.

Assess value of the transferability of project results

Due to the fact that the first semester was devoted to the thesis the important information is documented in a research booklet. In the research booklet are the results and conclusions of the research already formulated into design guidelines. These design guidelines formed the focus point of the design. The focus on postwar neighbourhoods in the research gives a scope for the context. The toolbox for the transformation of single family row houses in postwar neighbourhoods, created during the design process, allows that the project results could be used on multiple postwar locations in the Netherlands. The outcome of the design project, which can be seen as a testcase, forms an example of a transformation of a postwar neighbourhood into an aging-friendly living environment for elderly people.

The project aimed to strike a balance between revitalizing postwar neighbourhoods and preserving their unique identity. By conducting thorough research into the historical and social context of these neighbourhoods, design interventions were carefully created to respect and improve these areas while addressing contemporary challenges. The development of a design toolbox ensured that interventions can be used in different levels. General

for different postwar neighbourhoods and a specific elaboration on one location.

Reflecting on my role as an architect in addressing the issue of elderly housing, I believe that proactive steps need to be taken to facilitate the transition of people from their family homes to more suitable living arrangements when we age. This shift is essential to alleviate the strain on the housing market and ensure that dwellings are available for the intended target groups. As household sizes decrease and many elderly individuals find themselves residing in large family homes, we have to look for alternatives. Through my project, I aim to provide a solution by transforming family homes into diverse housing options, including private apartments and co-housing arrangements. The inclusion of hubs with additional spaces in my design allows residents to access essential facilities and services, promoting independent living while fostering a sense of community. By showcasing these alternative housing models, my project seeks to inspire the broader scope of housing transitions to address the evolving needs of our ageing population.

Appendix

I. Research methodology

Enclosed is a further description of the research methodology during the fieldwork. This includes questions during the conversations with residents, the workshop and the survey.

Fieldwork

A case study as a research method involves an in-depth analysis and exploration of a specific, real-life subject or case. The first case study will be part of answering sub-question one by analysing a successful example of an ageing-friendly living environment where elderly people live. The researcher will do fieldwork by staying there for four days to have a full experience of what it is like to live there and to get a complete overview. Criteria for finding a place for the case study to do the fieldwork:

- A living environment of maximum two hundred residents, with mixed ages and residents both with and without demand for care;
- The majority of the residents is 65+;
- Apartments and living environment are ageing-friendly and suitable for ageing in place;
- Healthcare is available;
- The living environment has common/shared spaces, outside space and there is a sense of community among the residents;
- In an urban context.

The plan analysis consists of:

Observations:

Observations of the use of spaces and experiences of the residents. Three apartments are observed together with the residents who live there. To get an idea of how the apartments are furnished and what the residents think of the space. Furthermore, three communal spaces are observed on how, when and by who the spaces are used. The observations are done with the question in mind 'what makes this living environment ageing-friendly?'

Conversations with residents:

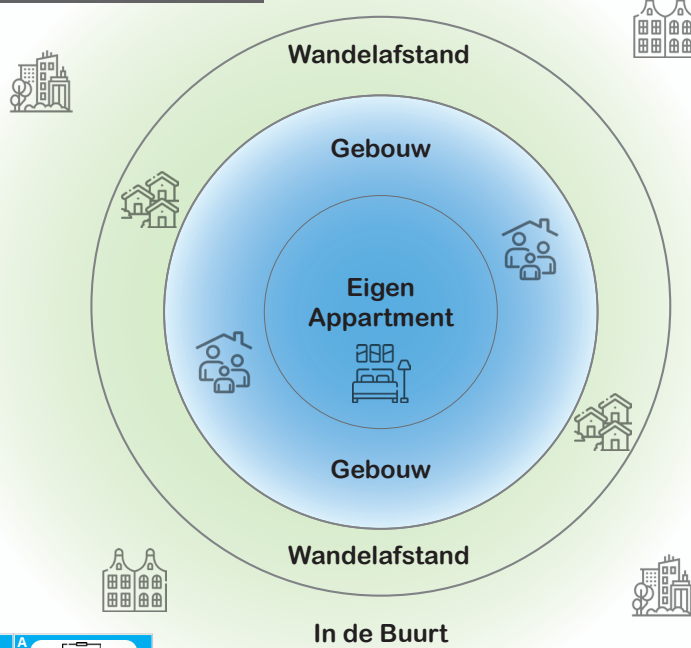
To explore experiences, motivations, needs and the factors contributing to the well-being and happiness in the chosen living environment. The researcher asks the residents about the reason why they live there, what their motivation was to move there and what they miss in their surroundings, etc. The researcher chose to have informal conversations instead of formal interviews with the residents, because of the informal topic about their motivation. This way it was easy to approach residents and made them enthusiastic to talk about themselves. Examples of asked questions are:

- How are you, how long do you live here?
- Previous living situation
- Motivation to live in elderly residential building – why here?
- Apartment – satisfaction, space, is something missing, what could be better?
- Building - Where do you spend most of your time, besides own apartment? Favourite place? What do you wish you could change?
- Facilities – What do you use? What do you miss?
- Connection with neighbours – What about the community do you like and not like?
- Healthcare services – what do you use and what do you miss?
- Part of the community – what is your role?
- Greenery/garden - satisfaction, how do you use it, is something missing, what could be better?

Workshop with residents:

To gather information about the ideal living situation of the residents. During the workshop residents have been asked to choose from different categories, a maximum of three aspects that they find most important and stick stickers of these aspects in their living environment - in their apartment, in their building, within five minutes walking distance or within their neighbourhood/city – where they would like to see the elements. Below you can see which stickers residents could choose from and on the right is shown where the residents could place the chosen stickers.

Mijn Ideale Leefomgeving



Creëer uw ideale leefomgeving:

- Kies van iedere categorie uw drie favoriete stickers (maximaal drie!)
 - = Ruimtes
 - = Mobiliteit
 - = Voorzieningen
 - = Activiteiten
 - = Buitenruimte
 - = Mensen om mij heen
 - = Zorg en ondersteunende hulp
- Plak de stickers ergens in uw leefomgeving. Waar ziet u ze het liefste? In uw appartement - privé voor u alleen In het gebouw - Delen met uw medebewoners Op wandelafstand - In de buurt op maximaal vijf minuten lopen Ergens in de wijk - Mag iets verder zijn
- Gebruik de joker voor als wij iets zijn vergeten binnen een bepaalde categorie en plak deze ook in de leefomgeving De ideeën zone: wat zou u graag willen zien in uw ideale leefomgeving, droom groot! De rode zone: wat wilt u absoluut niet in uw leefomgeving?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Geslacht						Geboortjaar					
- Val hieronder uw geslacht en geboortjaar in

ROOD ZONE
Ik Wil Niet!

A Keuken	A Gezamenlijke Woonkeuken	A Klusruimte	A Evenementen ruimte
A Logeerkamer	A Wasmachine ruimte	A Familiekamer	A Mooi uitzicht
B Supermarkt	B Drogist	B Bakker	B Bouwmarkt
B Kapper	B Boekhandel	B Cafe	B Slijterij
C Fietsparkeerplaats	C Wandelroute met bankjes	C Autoparkeerplaats	C Scootmobiel Parkeerplaats
C Busstop	C Treinstation	C Autovrije zone	C Taxi Service
D Sport en Spel	D Religie	D Tuinieren	D Vrijwilligerswerk
D Cultureel	D Ontspannen	D Bibliotheek	D Winkelen

E Balkon	E Dakterras	E Tuin	E Moestuin
E Park	E Wandelroute	E Speeltuin	E Openbare Sportplek
F Dieren	F Gezinnen	F Jongvolwassen	F Studenten
F Vrienden	F Eigen Familie	F Senioren	F Mantelzorgers
G Thuiszorg	G Huishoudelijke hulp	G Mantelzorg	Hebben wij iets gemist? Voeg hier toe...
G Was services	G Dagelijkse maaltijd	G Klussendienst	Hebben wij iets gemist? Voeg hier toe...
G Pedicure	G Fysiotherapeut	G Dagbesteding	Hebben wij iets gemist? Voeg hier toe...

Appendix

I. Research methodology

Survey:

To gather some data about the residents in general about their satisfaction with the place, their living situation, health and the community a survey was administered among the residents. The survey is enclosed below.

Beste bewoner van residential facility,

Voor ons afstudeerproject aan de TU Delft logeren we deze week in "facility". Om een goed beeld te krijgen van "facility" en de bewoners willen we u vragen om ons te helpen door deze korte vragenlijst in te vullen. Alvast bedankt!

Zou u de ingevulde vragenlijst **vóór vrijdag 17 november** willen inleveren in de doos in "facility" ? Als u hulp nodig heeft bij het invullen of met ons wilt kennismaken, wij zijn op dinsdag en woensdag in "facility" (en vast nog vaker).

Algemene informatie

1. Geslacht:

- Man Vrouw Zeg ik liever niet

2. Geboortjaar:

3. Woont u in het gebouw verbonden aan "facility" ?

- Ja Nee

Wonen

4. Wat was uw woonsituatie voor "facility" ?

- Appartement
 Vrijstaand huis
 Twee-onder-een kap / Rijtjeswoning
 Anders, namelijk: _____

5. Wat was de eigendomsverhouding met uw vorige woning?

- Huurwoning
 Sociale huurwoning
 Koopwoning

6. Wat was de voornaamste reden dat u naar "facility" kwam?

- Omdat ik op dat moment zorg nodig had
 Omdat ik in de toekomst zorg nodig zal hebben
 Omdat ik behoefte had aan sociale contacten
 Omdat mijn huis niet meer geschikt was
 Omdat mijn omgeving vond dat dit beter voor mij was
 Anders, namelijk: _____ **Z.O.Z.**

7. Hoe bevalt het wonen in "facility" ?

- Zeer tevreden
 Tevreden
 Neutraal
 Ontevreden
 Zeer ontevreden

8. Waar spendeert u de meeste tijd gedurende de dag?

- Appartement
 Gemeenschappelijke ruimte 'Het Hart'
 Andere gemeenschappelijke ruimte
 Buiten
 Ergens anders dan "facility"

9. Wat is uw favoriete plek in de woonomgeving?

10. Wat zou u willen toevoegen?

In "facility"

In uw appartement:

11. Wat bent u bereid om met anderen te delen? (meerdere antwoorden mogelijk)

- Keuken
 Badkamer
 Logeerkamer
 Tuin
 Grotere woonkamer
 Hobbyruimte
 Wasmachine
 Gereedschap
 Auto
 Fiets
 Scootmobiel
 Computer
 Boeken

Z.O.Z.

Gezondheid

12. Hoe fysiek actief voelt u zich?

- Heel actief
- Gemiddeld actief
- Een beetje actief

13. Ontvangt u ondersteunende hulp?

- (Thuis)zorg
- Mantelzorg
- Huishoudelijke hulp

14. Voelt u zich eenzaam?

- Vaak
- Af en toe
- Bijna nooit

15. Voelt u zich verveeld?

- Vaak
- Af en toe
- Bijna nooit

16. Hoe vaak komt u in de buitenlucht?

- Meerdere keren per dag
- Elke dag
- Om de dag
- Wekelijks
- Minder dan bovenstaande

17. Welke activiteiten doet u? (meerdere antwoorden mogelijk)

- Wandelen in het gebouw
- Wandelen buiten (bijvoorbeeld naar de winkel)
- Fietsen
- De trap gebruiken
- Tuinieren
- Zwemmen
- Yoga / Pilates of iets dergelijks
- Fysiek inspannende sport, zoals: Fitness, Hardlopen, voetbal
- Anders, namelijk: _____ **Z.O.Z.**

Gemeenschap

18. Bent u lid van de vereniging "facility" ?

- Ja
- Nee

19. Hoe vaak doet u iets voor de gemeenschap?

- Dagelijks
- Wekelijks
- Maandelijks
- Nauwelijks / nooit

20. Kruis aan hoe vaak u de faciliteiten in Liv Inn gebruikt

Dagelijks / Wekelijks / Maandelijks / Nauwelijks

Het Hart	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gem. keuken	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fitnesszone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Familiekamer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Huistheater	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Café / de soos	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kapper	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Leeftuin, buiten	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Werkplaats	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

21. Mijn sociale kring bevindt zich:

- Voornamelijk in Liv Inn
- In en buiten Liv Inn
- Voornamelijk buiten Liv Inn

22. Wat is voor u het belangrijkste in een gemeenschap (kies 1)

- Privacy
- Gemeenschappelijke activiteiten
- Verschillende leeftijden
- Dezelfde leeftijden
- Diversiteit
- Dezelfde idealen

Einde. Nu kunt u hem inleveren in de doos. Hartelijk bedankt!

Appendix

II. Housing profiles

Profile 3: Basic

Brinkpark, Blokker



Neighbourhood

Context:

Semi-urban (village)

Facilities within 500m:

Supermarket, doctor, public transport

Green:

Park on walking distance

Building block

Building type:

Residential building, three story apartment block

New or transformation:

Renovation nursing home

Size:

Around 70 apartments

Ownership ratio:

Social rent

Community:

Opportunity to meet residents in communal spaces

Communal spaces:

Meeting space, guestroom

Facilities in the building:

Meeting space is public for the neighbourhood

(Health)care services:

Independent living with healthcare in adjacent building, daily meal service

Shared outside space:

Communal courtyard garden

Value:

Privacy and calmness

Dwelling

Type:

Two- and three-rooms apartments

Size:

51 m2
77 m2

Spaces:

Bedroom, livingroom, small kitchen block, bathroom, hall, space for washing machine

Wheelchair-accessible:

Yes

Private outside space:

Yes, terrace or balcony

Storage:

Individual storage space

Profile 3. Basic

functional and social: emphasizes functionality, affordability, and social cohesion. Residents have access to communal spaces and (health)care services and the apartments have no stairs. The location caters to seniors' needs with convenient services and facilities and is often located near their precious living area.

Profile 4: Residential building

Elderburen, Arnhem



Neighbourhood

Context:
Urban, residential neighbourhood

Facilities within 500m:
Not specified where it is built, urban context of Elderveld Arnhem, plausibly sufficient facilities

Green:
Park on walking distance

Building block

Building type:
Residential building, four story apartment block with gallery access to stimulate encounter

New or transformation:
New building?

Size:
Around 70 apartments, 50 for elderly and 19 for

Ownership ratio:
Social rent and mid-range rent

Community:
New concept with mixed living, a community of elderly of 55+ and people with non-congenital brain injury, association

Communal spaces:
Meeting/activity space

Facilities in the building:
Meeting space for residents, communal facilities, activities for residents

(Health)care services:
Independent living with healthcare in adjacent building, daily meal service

Shared outside space:
Communal courtyard garden

Value:
Inclusive living by community feeling and meeting each other

Dwelling

Type:
Two-rooms apartments

Size:
Around 50 m2 (different options)

Spaces:
Bedroom, livingroom, small kitchen block, bathroom, hall, space for washing machine or storage

Wheelchair-accessible:
Yes

Private outside space:
Yes, balcony

Storage:
Individual storage space

Profile 4. Residential building

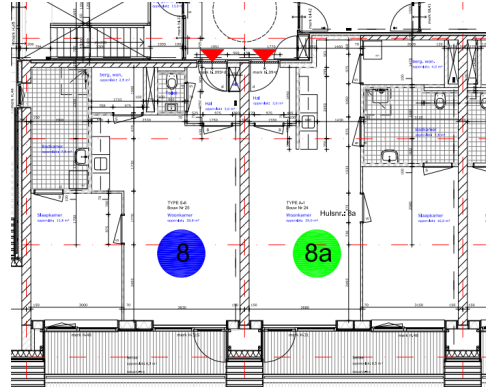
comfortable and familiar: is distinguished by its prime location near amenities, high living comfort, rental convenience, and a community of like-minded individuals. Emphasizing homogeneity in age and lifestyle among residents, the concept values simplicity, includes communal facilities and optional convenience services. Senior households consciously opt for rental properties in the private sector.

Appendix

II. Housing profiles

Profile 5: Family house

Hart van Austerlitz, Austerlitz



Neighbourhood

Context:

Small village surrounded by rural area

Facilities within 500m:

Small neighbourhood supermarket, café, primary school

Green:

Located next to greenery

Building block

Building type:

Multi-generational residential building, three story 'large house', town centre with activity functions and a daycare

New or transformation:

New building

Size:

Around 40 apartments, of which 17 care apartments and 8 apartments for youth all mixed

Ownership ratio:

Social rent and 15 owner occupied

Community:

Mixed living community, people with demand for care and youth

Communal spaces:

Town centre for activities

Facilities in the building:

Town centre, day care, physiotherapy, primary school and kinder garden

(Health)care services:

Independent living with healthcare in the building that serves the whole neighbourhood, not present during the night

Shared outside space:

Communal courtyard garden

Value:

A building that serves the community of Austerlitz for living, relaxing, sports, healthcare and education

Dwelling

Type:

Two-rooms apartments

Size:

Around 62-74 m2 for the care apartments, 85 m2 for the patio apartments

Spaces:

Bedroom, livingroom, small kitchen block, bathroom, hall, space for washing machine or storage

Wheelchair-accessible:

Yes

Private outside space:

Yes, balcony or terrace

Storage:

Individual storage space

Profile 5. Family house:

familiar and attachable: characterized by individual houses in a neighbourhood that promotes close social connections and mutual care. Diverse community with different generations, with a focus on local amenities and public transportation rather than specific senior facilities. Seniors already live in these family houses and do not specifically move there, so adaptation for seniors with reducing mobility and (future) healthcare needs is necessary.

Profile 6: City apartment

Wonen met een plus, Stadshart Delfzijl



Neighbourhood

Context:

Urban context of the centre of Delfzijl

Facilities within 500m:

The project is the centre of Delfzijl, so all facilities are there, shops, supermarket, public transport, theatre

Green:

Not a lot of greenery, but the beach is on walking distance



Building block

Building type:

Residential building, three and four story life-course-proof housing, gallery access to stimulating encounter

New or transformation:

Reorganisation of the city centre of Delfzijl

Size:

70 social apartments, 8 apartments for sale

Ownership ratio:

Social rent and 8 owner occupied

Community:

Mixed generations, young and old, with or without demand for care

Communal spaces:

No, rooftop garden

Facilities in the building:

Public plinth with a lot of facilities: shops, supermarket, public transport, theatre

(Health)care services:

Independent living with healthcare in the building, services as home care, domestic services, daily meal service, handyman services, laundry service

Shared outside space:

Rooftop garden for relaxing and gardening

Value:

Independent living, life-course-proof

Dwelling

Type:

Three-rooms apartments

Size:

Around 65-70 m²

Spaces:

Two bedrooms, livingroom, small kitchen block, bathroom with separate toilet (not care bathroom), hall, space for washing machine or storage

Wheelchair-accessible:

Yes

Private outside space:

Yes, balcony or gallery

Storage:

Individual storage space

Profile 6. City apartment

dynamic and independent:

in proximity to multiple urban facilities, diverse community, and a high level of privacy. Care is limited or absent in this concept, but optional shared facilities could add value for residents. The functional apartments come in various architectural designs where residents tend to live independently.

Appendix

II. Housing profiles

Profile 7: Neighbourhood block

Hof van Leijh, Haarlem



Neighbourhood

Context:

Urban context of Haarlem

Facilities within 500m:

In the plinth of the building is a neighbourhood supermarket, healthcare and some office/studio spaces. An other supermarket within walking distance, a few schools and other facilities

Green:

A park within ten minutes walking



Building block

Building type:

Residential building with community living for different generations, four and seven story life-course-proof housing, gallery access to stimulating encounter

New or transformation:

New building

Size:

151 apartments, 126 social housing appartments (77 with demand for care and 16 for people with mental disability), 4 live/work apartments, 21 family houses social housing

Ownership ratio:

Social rent

Community:

Mixed generations, young and old, with or without demand for care

Communal spaces:

Community centre, place for cooking together and activities

Facilities in the building:

Neighbourhood convenience store with restaurant, place for people with mental disabilities to work

(Health)care services:

Independent living with healthcare in the building, services as home care, domestic services, daily meal service, handyman services, laundry service

Shared outside space:

No

Value:

Independent living, life-course-proof with community living, to get to know each other and help each other

Dwelling

Type:

Two or three-rooms apartments

Size:

50 m2
66-69 m2

Spaces:

One or two bedrooms, livingroom, small kitchen block, bathroom with separate toilet (notcare bathroom), hall, space for washing machine or storage

Wheelchair-accessible:

Yes

Private outside space:

Yes, balcony

Storage:

Individual storage space

Profile 7. Neighbourhood block

social and lively: integration in a vibrant, diverse community, with diversity in homes and residents, connected to the neighbourhood. Privacy is less crucial, and the sustainable, comfortable homes feature shared amenities. Sometimes there is interest in communal living or collaborative projects and a communal courtyard. The concept offers flexibility in care and convenience services based on individual needs, what makes it suitable for aging in place.

Profile 8: Park apartment

Vit en vitaal in de Vroon, Den Haag



Neighbourhood

Context:

Urban context of a suburb of the Hague

Facilities within 500m:

No

Green:

Next to a park

Building block

Building type:

Residential building with community living, three to six story life-course-proof housing, gallery access to stimulating encounter

New or transformation:

New building

Size:

36 apartments

Ownership ratio:

Rent

Community:

Community living through meeting each other and doing activities

Communal spaces:

Meeting space, living room with open kitchen, workshop and atelier space, guestroom, fitnessruimte

Facilities in the building:

No

(Health)care services:

Independent living with healthcare in the building, services as home care, domestic services, daily meal service, handyman services, laundry service

Shared outside space:

No

Value:

Independent living, life-course-proof with community living, with a focus on healthy lifestyle

Dwelling

Type:

Two or three-rooms apartments

Size:

60-120 m²

Spaces:

Two bedrooms, livingroom, small kitchen block, bathroom with separate toilet (notcare bathroom), hall, space for washing machine or storage

Wheelchair-accessible:

Yes

Private outside space:

Yes, balcony

Storage:

Individual storage space

View:

Nice view on a park and water

Profile 8. Park apartment

scenic views and landscape:

characterized by a central location, high comfort, and a homogeneous community. Situated away from the bustling city centre in areas with views on water or greenery. There is a balance between urban amenities and natural landscapes, for instants for recreational activities. Residents live independently and the homogeneous community provides a sense of calmness and stability. Care is not available, residents individually arrange it if needed.

Appendix

II. Housing profiles

Profile 9: Courtyard building block

De Eendrachtshof, Coevorden



Neighbourhood

Context:
Urban context of Coevorden with rural surroundings

Facilities within 500m:
Supermarket, cafeteria

Green:
Next to greenery

Building block

Building type:
Row houses

New or transformation:
Transformation

Size:
51 houses (and 40 assistant living apartments, aanleunwoningen)

Ownership ratio:
Rent

Community:
Community living through meeting each other and doing activities

Communal spaces:
Meeting space, living room with open kitchen, workshop and atelier space, guestroom, fitnessruimte

Facilities in the building:
No

(Health)care services:
Living with healthcare, dementia-friendly

Shared outside space:
Courtyard, closed off safe for people with dementia

Value:
Living with healthcare, but in your 'own' home, safety

Dwelling

Type:
Two or three-rooms houses

Size:
60-120 m²

Spaces:
Ground floor with: bedroom, livingroom, kitchen, bathroom
First floor: room for a bedroom and hobbyroom

Wheelchair-accessible:
Yes

Private outside space:
Yes, own frontyard

Storage:
No information available

Profile 9. Courtyard building block

together and community: the closed off courtyard is characterized by its strong community feeling, mutual care, where comfort is less important. The courtyard provides a sheltered space, in the centre of small single-story homes or stacked residences, appealing to households in similar life stages who understand and support each other. Social interaction is an explicit part of the concept, with essential shared amenities nearby catering to seniors' needs. The higher demand for care could be provided by a nearby care facility.

Profile 10: Senior apartment

Aaron, Nijmegen



Neighbourhood

Context:
Urban context of suburb Nijmegen

Facilities within 500m:
Supermarket, busstop

Green:
Park within walking distance

Building block

Building type:
Residential building with community living, five story life-course-proof housing

New or transformation:
New building

Size:
91 apartments

Ownership ratio:
Social rent

Community:
Community living, mixed groups 60+ers with and without demand for care and young adults with mental disabilities, also for people with dementia

Communal spaces:
Meeting space, multiple living room with kitchen every floor

Facilities in the building:
No

(Health)care services:
Living with healthcare in the building, services as home care, domestic services, daily meal service, handyman services, laundry service, physiotherapist, psychologist, paramedics (healthcare)

Shared outside space:
No

Value:
Living with care, life-course-proof with community living

Dwelling

Type:
Two-rooms apartments

Size:
45 m²

Spaces:
One bedroom, livingroom, small kitchen block, bathroom for care, hall, space for washing machine or storage

Wheelchair-accessible:
Yes

Private outside space:
Yes, balcony

Storage:
Individual storage space

Profile 10. Senior apartment

independent aging: highly adaptable living environment, suitable for active elderly transitioning from larger homes with gardens to independent, comfortable, and age-friendly apartments. Located near key amenities, enables independent living. Residents value living among similar age groups but prioritize privacy. These apartments are situated in urban, suburban, or rural areas, aligned with residents' previous living area. The increasing need for care is a significant motivator for choosing this housing type.

Appendix

III. Dementia-friendly route

According to the handbook of The World Health Organization it is important to have barrier-free public spaces, well connected, with enough benches, etcetera. These interventions are also visible in the reconstruction of a road from a nursing home to the shopping centre in Dronten, a village in the middle of the Netherlands.

By the new design for the reconstruction of the road, the municipality intended to create a route for elderly which is also dementia-friendly. They implemented remarkable, luminous green benches every less than a hundred metre, all barriers have been removed and clear signage for safe crossings were added (Omroep Flevoland, 2022). The route has been observed and pictures are attached in appendix III. While walking the route it became very clear that only the road that was planned is renovated as the starting point and end felt very abrupt. A point of criticism would be to make sure that the route is well-connected to a route that is equally as dementia and elderly-friendly.





