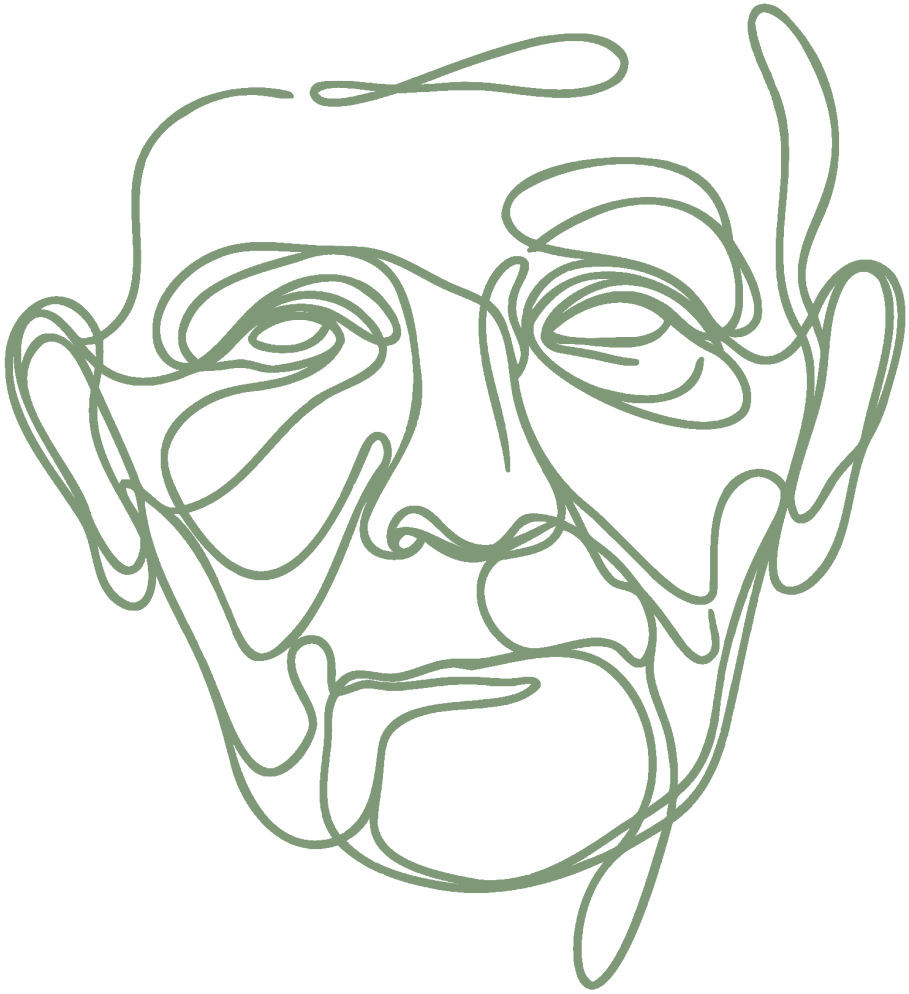


AGEING ELDERS

Finding the right home to age

RESEARCH

Laurens Coster 5433770
Graduation Studio: Advanced Housing Design
Faculty of Architecture & Built Environment, TU Delft

Laurens Coster - 5433770
January 16th, 2024

Graduation Report
Advanced Housing Design - AR3AD100
Delft University of Technology
Faculty of Architecture & the Built Environment

Tutors
Ir. H.A.F Mooij - design
Ir. R.S. Guis - research
Ir. E. Karanastasi - building technology

AGEING ELDERS

Finding the right home to age

Table of contents

INTRODUCTION

illustration drawn by TU Delft students for Urban Oases by Willemijn WIlms Floet, edited by author

1.1 Background

The Netherlands is experiencing a large housing shortage that will only get worse in the near future, despite over 73,000 new-build homes being delivered in 2023 (Centraal Bureau voor de Statistiek, 2024). However, very many more new-build homes need to be delivered to address this acute housing shortage. With 437,000 housing applications and 47,000 available homes, the national level of the housing shortage comes to a total of 390,000 homes in 2023 (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2023).

One of the major reasons causing the housing shortage is the sharp increase in population growth and an even greater increase in the number of households both now and in the future. An increase of 916,000 is expected through the year 2037. This increase in households is mainly due to the group of older singles and older couples without children (Gopal et al., 2023). The increase in the number of older singles and older couples is a result of the increased improvement in medical care and rise in wealth.

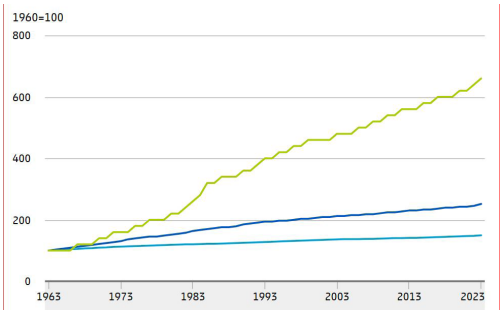


fig. 1 Growth population (purple), households (blue) and oneperson households (purple) (Centraal Bureau voor de Statistiek, 2023)

As more of the baby boomer generation start to reach their retirement age, this trend will only intensify. (De Zaandam Jong, 2021). Not only is the baby boomer generation reaching retirement age, but life expectancy will continue to rise in the future. As a result, the population distribution table is slowly going to change from a pyramid shape to a rectangular shape (fig. 2), where the older population is becoming more prominent, see figure (Central Bureau of Statistics, s.d.-b).

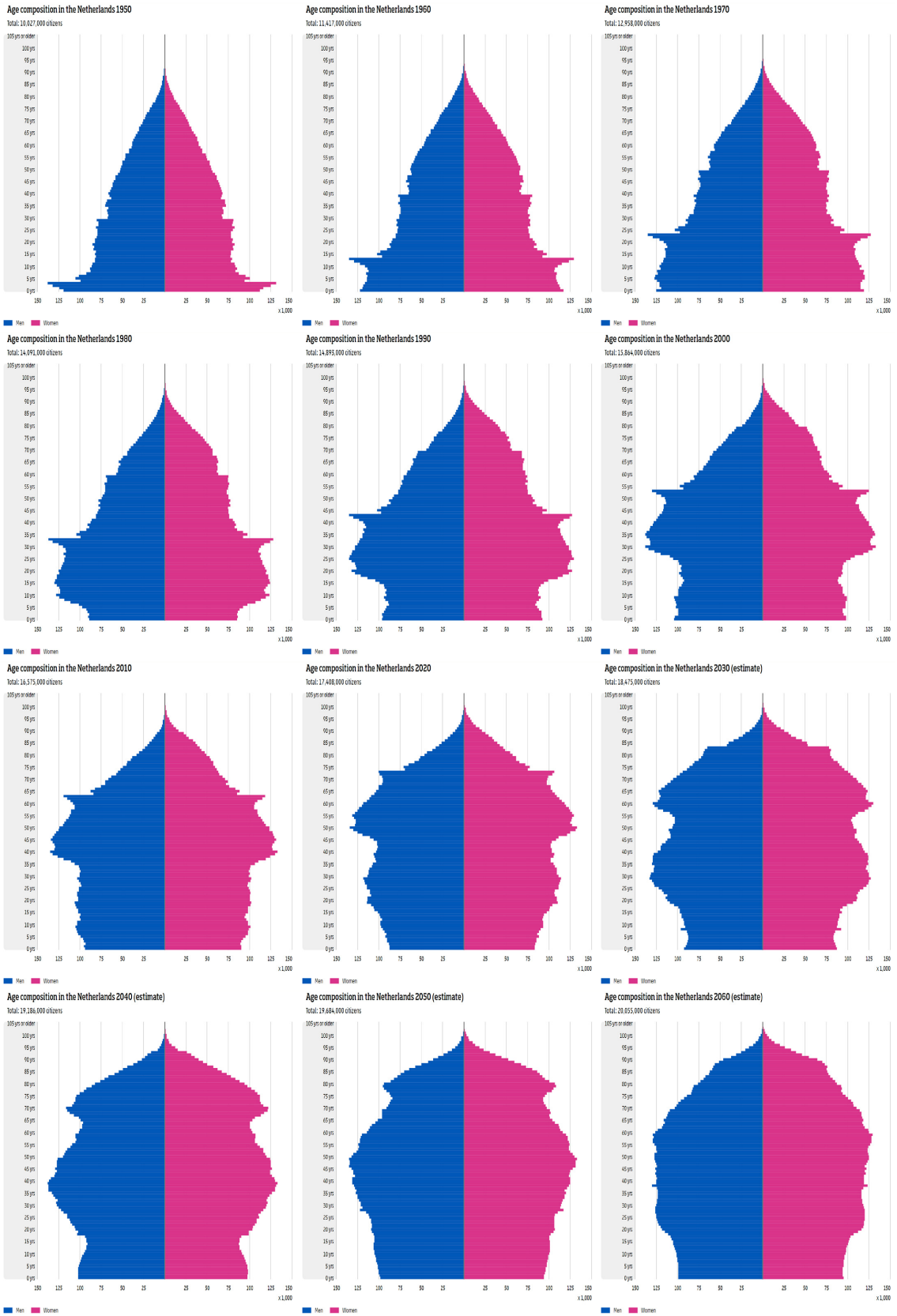


fig. 2 Population age structure 1950 - 2060 (Centraal Bureau voor de Statistiek, 2023)

1.2 Problem statement

More and more older people who are in their "third phase of life" (the phase after retirement) are getting older and staying vital and healthy for longer (Rijksinstituut voor Volksgezondheid en Milieu, 2020). As a result, we have a good number of years left after retirement that we can fill as we wish. There is now more space and time to contribute to society in new ways.

Many older people contribute to society. For example, 25 per cent of the over-65s do volunteer work in care and support or by babysitting their grandchildren, relieving their children at rush hour. Despite the differences in how these older people spend their new leisure time, there are also common values they do share. The need to be self-reliant for as long as possible, feeling connected to other people and having a sense of belonging (De Raad voor Volksgezondheid en Samenleving, 2020).

Currently, the planning of the third stage of life is seen as an individual matter. While being able to design the third stage of life for oneself is important, the availability and accessibility of these choices is a communal responsibility. Indeed, their choices are highly dependent on collective and/or societal arrangements, norms and circumstances (Szreter & Woolcock, 2004). Consequently, there is a large untapped potential among this group of older people in their third stage of life, which is only growing, who can mean more to society not only at the social level, but also at the spatial level. In a way, the way urban development is filled determines the height of the role these elderly people can play.

1.3 Research questions

Because of the previously stated problem statement, this research will focus on the potential role of the elderly in the highly densified built environment, specifically in Amsterdam. The following research question shall therefore be adressed in this research.

Which design strategy can create a healthy living environment on a social and spatial level where the elderly feel included and helpful while also being able to age in place?

Answering this questions requires historical knowledge about the roles of church and government changed throughout the years, as well as the different housing typologies that came with it. From here, understanding the group of seniors in order to find out what we can take away from the history. Thus the following subquestion will be asked:

"When and how did we design housing for seniors and what can we learn from it for nowadays designing?"

Furthermore, it is imperative to understand the importance of different needs and wishes of the elderly and acquiring knowledge to the different housing types (e.g. co-housing, CPO's) and how it relates to their needs and wishes. The following question shall therefore be asked:

"What does a group of seniors need in order to stimulate a sustainable community and subsequently what can this community offer to its surroundings?"

1.4 Theoretical framework

For the historical aspect of this research, the 2009 publication of Mens & Wagenaar investigated how senior housing changed in the Netherlands. They emphasised the importance of historical changes in the social status of the elderly, which is a crucial component of our research. Through examining the dynamics of interactions between the aged and society and pinpointing areas in need of development, the objective is to incorporate these insights into creative solutions that are specifically designed to meet the requirements of the ageing population.

In the body of current literature, the study of older people's wants and needs has been thoroughly examined. The urgent physical and spatial needs of the elderly are outlined in a study written by the Ministry of the Interior and Kingdom Relations (2022). Furthermore, Van Hees (2018) promotes the idea of "lifecycle-robust" neighbourhoods and its abilities to stimulate outgoing behaviour within the elderly group, suggesting that simple changes to housing configurations are insufficient to encourage older adults to be more active and socially engaged.

Barros et al. (2019) pose questions on the possible impact of planning, urban design, and architectural features on the psychological and social welfare of the general public. According to their research, social and mental well-being are correlated with the type of home, floor level, and spaces found in high-rise buildings. Ji et al. (2023) have demonstrated the important influence that easily accessible green spaces have on the psychological well-being and social behaviours of senior citizens, highlighting the critical function that these surroundings play in boosting general well-being.

1.5 Methods of research

The first sub-question explores the role of the elderly in society by researching historical events. This investigation attempts to examine case studies applying a SWOT analysis through a review of Mens & Wagenaar's book (2009) and a comparison analysis. This method provides insights into the historical background of senior housing by concentrating on the advantages and disadvantages of architectural projects, especially as they relate to society and spatial dynamics.

Examining multiple aspects and perspectives is necessary to answer the second sub-question. Comparing the demands and preferences to the size of individual homes as well as the larger neighbourhood setting is part of this. The study will investigate factors related to physical, social, and spatial problems and conduct interviews with seniors residing in varying living conditions. Through the integration of these insights with literature evaluations, a thorough understanding of current concerns will assist in the development of design concepts that promote the well-being of the aged.

HISTORICAL ANALYSIS OF ELDERLY HOUSING

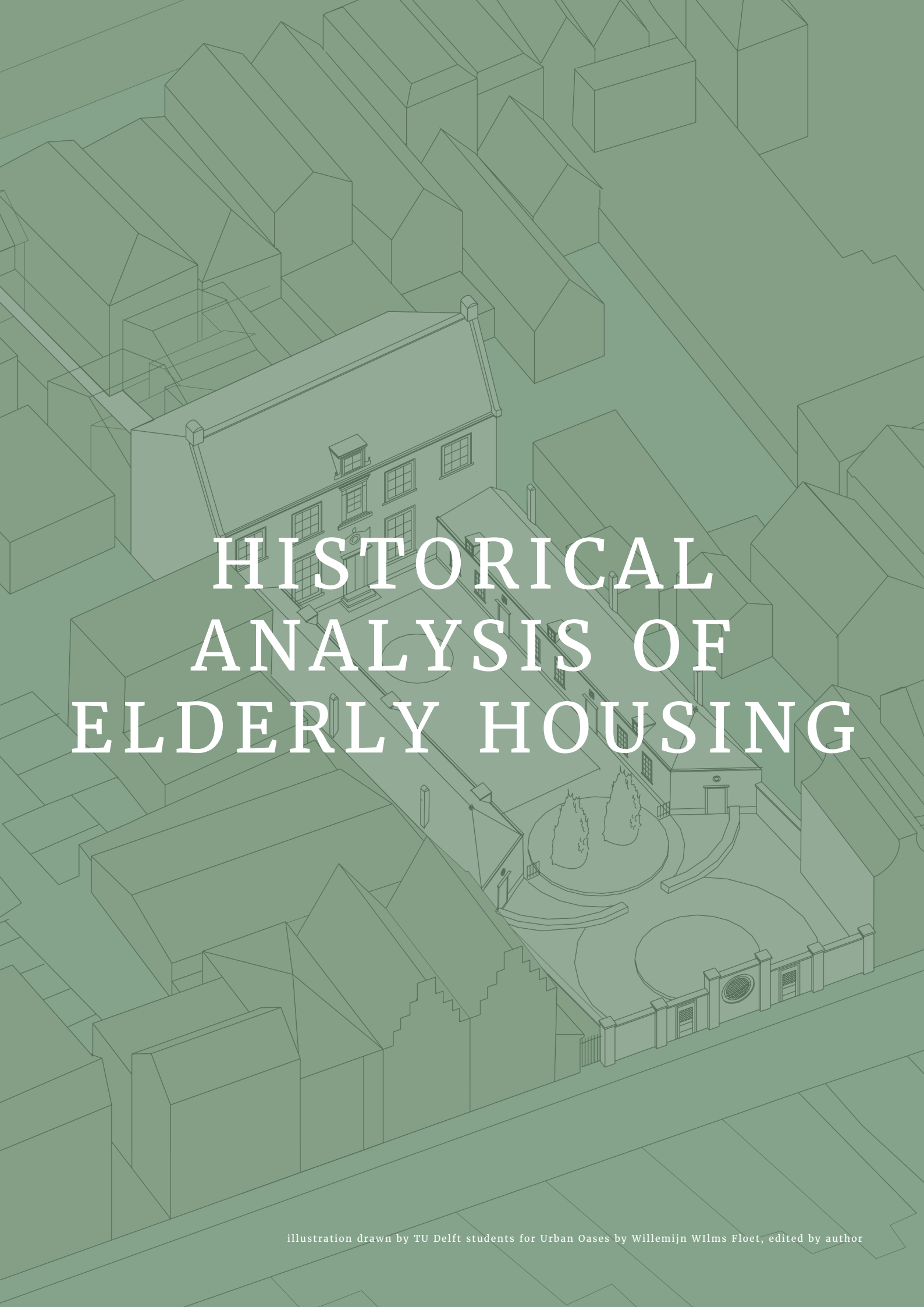


illustration drawn by TU Delft students for Urban Oases by Willemijn WIlms Floet, edited by author

2.1 INTRODUCTION

This chapter will dive into the historical developments of the elderly housing. By examining contemporary case studies as well as the amount of influence the Dutch government had when it came to the care of the elderly, this chapter hopes to explain what it meant to be a elderly person. By describing the developments using a timeline we can perhaps see whether the design ideas that were important might be reused or evolved into something that could be used for nowadays seniors.

2.2 The Courtyard
13th - 19th century

The earliest kind of housing for the elderly is a courtyard. A courtyard is a neighborhood created by private citizens as a way to escape the hectic pace of the city. The majority of well-known and wealthy citizens left a will to construct a court after they passed away. In addition to being a means of providing for the underprivileged and elderly, it was also a means of preserving their souls in order to secure a spot in heaven. Not only did wealthy residents construct courtyards, but so did local authorities and places of worship. These 'hofjes' were mostly inhabited by elderly, unmarried, and impoverished women (Geschiedenis, n.d.).

These courtyards were first built in numerous cities in the thirteenth century. The building of hofjes spread throughout the Netherlands in the ensuing centuries. The seventeenth-century hofjes in Amsterdam were residences for elderly singles from impoverished backgrounds. They were given free housing, access to some sort of care, and free food, including butter, rice, beans, and peat (Mens & Wagenaar, 2009).

The urban environment of the courtyard is what's most striking, rather than the houses themselves, which are fairly typical of the era. Courtyards are gated communities of standalone, compact homes arranged around a central area that is typically designed as a beautiful garden, frequently featuring a chapel or church at the perimeter. The architectural units are characterized as calm, safe spaces that radiate a feeling of community. The front doors of the houses faced the courtyard, and the walls behind them were closed. Each resident had a room, and communal spaces like the dining room, kitchen, and restrooms were shared by all.

While the majority of elderly impoverished people continued to live in the worst and cheapest housing, those with sufficient income had less concerns. Those with a little extra cash could buy into a "proveniershuis or proveniershof," where they could get lifetime free housing and food in exchange for a one-time payment (Floet, 2021).

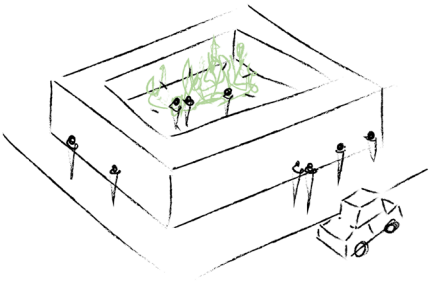
Van Gameren, D. (2018). DASH: from Dwelling to Dwelling: Radical Housing Transformation. Nai010 Publishers.

Proveniershof

Location:	Haarlem
Adres:	Grote Houtstraat 140
Architect:	Onbekend
Year built:	1414
Inhabitants:	1414 – women of high status 1592 – drill ground for riflemen 1681 – Gentlemen's club 1706 – Provenieren 1866 – Renters

Architectural values
The closed walls to the outside of the courtyard creates a calm and serene inside.

The communal courtyard provide means to communicate with neighbours, creating stronger communal feeling



Beeldbank Amsterdam (ca. 1890), retirement home for the elderly

2.3 First interference of the government
Beginning of the 20th century

According to the Armenwet of 1854, the poorest members of the group that the elderly belonged to should receive support primarily from church and private organizations. In addition, the family was expected to contribute to the elderly's maintenance under the Onderhoudsplicht. An important debate about who should take care of the elderly began at the turn of the 20th century. Is it the responsibility of the community to provide the care, or is it up to each individual? The Ongevallenwet (1901), the amended Armenwet (1912), the Invaliditeitswet (1913), and the Ouderdomswet (1919) marked an important shift from the government's laissez-faire approach to public poor care and marked the beginning of the government's active engagement with the elderly.

Pensiontehuis
Beginning of the 20th century

Prior to the development of retirement homes in the early 20th century, there were very few other types of housing designed expressly for the elderly, with the exception of the long-standing courtyard. A retirement home, also known as a rest home or an elderly person's home, is a complex made up of many apartments or dorms with shared amenities like a dining area and a central kitchen. Institutional housing was another name for these types of homes in the past.

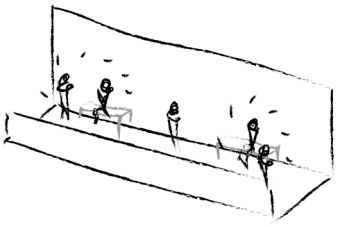
J. Duiker en B. Bijvoet, Karenhuizen, Alkmaar, 1916-1920 corridor. Opdrachtgever: Vereeniging voor Volkshuisvesting 'Alkmaar'

De Karenhuizen

Location:	Alkmaar
Adres:	Krelagestraat 3
Architect:	Johannes Duiker Bernard Bijvoet
Year built:	1916
Inhabitants:	Senior men and women

Architectural values

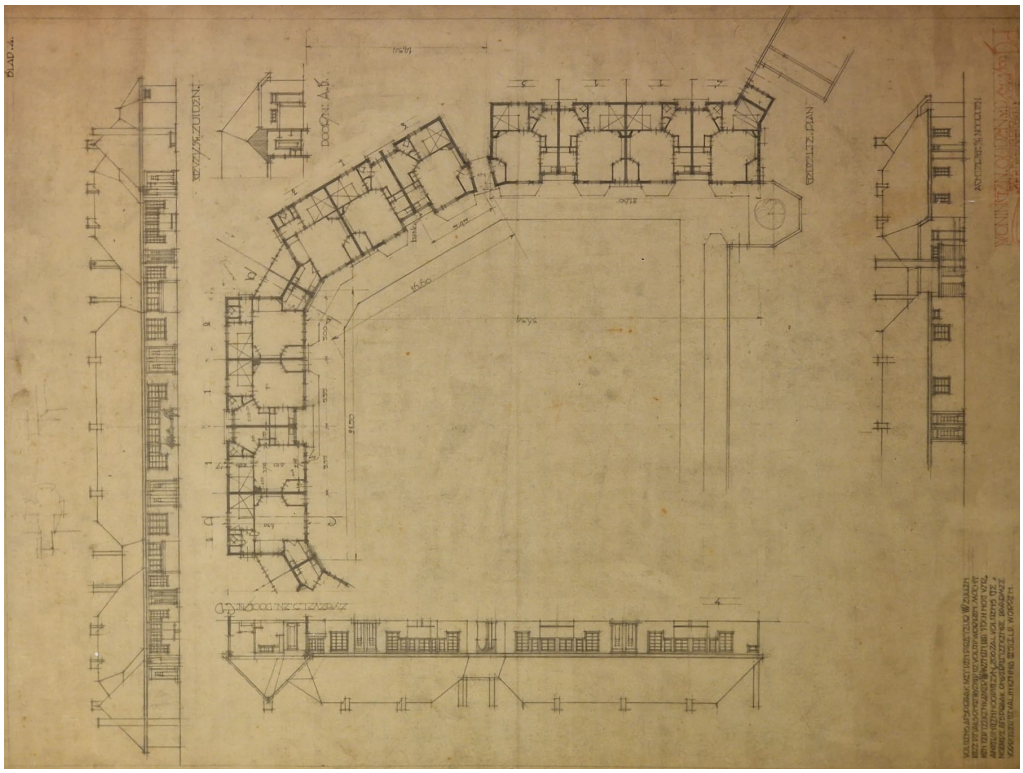
There are no communal spaces. Indepence and individual privacy was considered more important. The corridor was built in such a way that it became pleasant to stay there with big horizontal windows and benches and where encounters were created.



Stadsarchief Amsterdam Ilpendammerstraat bejaardenwoningen, 1931. Architect: Jan Boterenbrood

2.4 Seniorhouses
1920 – 1940

From the early twentieth century – as a consequence of the Woningwet (1901) – houses were sparsely developed especially for the elderly. These houses were part of social housing complexes built mainly by housing corporations on the outskirts of medium-sized and large cities. The homes for the elderly were therefore not located centrally in the city, but often in the middle of the housing complex: near churches, shops and public gardens. Compared to the older hofjes and guesthouses, the new homes for the elderly were less closed and more integrated into the living environment. In larger cities like Amsterdam, attention was paid to the construction of specific homes for the elderly. Within the expansion plans, space for this was reserved and then constructed by both municipal housing companies and corporations. One of the many examples of this is the garden village Nieuwendam in Amsterdam (Mens & Wagenaar, 2009).



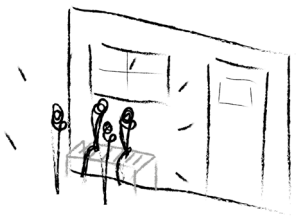
Plattegrond Tuindorp Nieuwendam ouderenwoningen (Mens en Wagenaar, 2009)

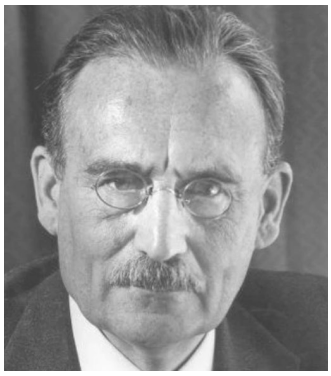
Tuindorp Nieuwendam

Location:	Amsterdam
Adres:	Ilpendammerstraat
Architect:	Jan Boterenbrood
Year built:	1927
Inhabitants:	Seniors

Architectural values
These were also called benchdwelling.
They had a permanent bench between the dwelligs and under a roof where gatherings could take place.

These dwellings also had their living rooms in the front having the curtains usually open, compared to a private bedroom.





Willem Drees
photo by Henk Blansjaar

2.5 The 'Noodwet' Drees
1947

After World War II, the Netherlands experienced a severe housing shortage as a result of war damage, the backlog of newly built homes, and a sharply increased demand for housing. The elderly problem was one of the main topics of discussion in the housing shortage solution. This quickly led to the creation of a new social insurance and benefit system.

This all started with the battle against "old-age poverty." People who were unable to work were left with no money, which led to their living in appalling conditions. A significant portion of the issue was that only a small percentage of the elderly could avoid this.

The elderly population was growing quickly, and the fact that different people experienced different outcomes contributed to the complexity of the problem of providing care for the elderly. While some older people did not experience acute poverty, others did. There was an argument made for the gradual implementation of a system in which contributions made during one's working years would be used to fund old-age benefits (Mens & Wagenaar, 2009).

When Willem Drees introduced the Noodwet Ouderdomsvoorziening in 1947, this income insurance for the elderly began to take shape. In this sense, the link between poverty and elder care was severed, and elder care now included all elderly people, not just those who also happened to be impoverished. This law provided financial assistance to the elderly and opened retirement communities to all seniors. This attempted to close the wealth gap between the elderly and the impoverished, in need. This law also defined what was meant to be a "elderly." Reaching retirement age of 65 was now the benchmark, not being unable to work (Mens & Wagenaar, 2009)

2.6 New and improved housing for the elderly
1950s

Building homes, residential neighborhoods, and residential districts that embodied the social ideal that dominated social reconstruction at the time was deemed the most important task, and this included the architecture of housing for the elderly. Elderly housing was now a part of one of the biggest and most ambitious projects in Dutch architecture and urban planning: the goal was to use public housing, in particular, and the building of new homes as a means of social and economic reconstruction during the reconstruction period. As a result, senior housing began to take the form of various housing types (Mens & Wagenaar, 2009)

2.7 Seniorhousing

The first kind of home was one designed with senior citizens in mind. These were ground floor apartments with minimal thresholds, unlike houses built for the younger generation. These homes may be dispersed among the remaining housing stock because at this time it was still very common for the grocer, greengrocer, milkman, and general practitioner to deliver to the home. Their purpose was to prolong the years of independence for the elderly. This was preferred over forming big groups in the 1940s. In this sense, interactions with the younger generation continued to be organic and unplanned (Mens & Wagenaar, 2009)

2.8 Retirement homes

The elderly were still housed in retirement communities. For senior citizens who required it, this type of retirement home offered some degree of domestic assistance. The retirement community was primarily senior singles' housing, with a tiny amount reserved for married couples. Common collective amenities included central kitchens, dining areas, conversation and recreation areas, offices, and staff housing for residents. This place was not just for the elderly who required minimal care. Elderly people who enjoyed comfort also found the retirement home appealing (also known as elderly resorts). The houses were designed to be

as compact as possible. There was consequently no space for lodgers, which is why there were shared guest rooms. Retirement communities frequently featured shared bathrooms and showers (Mens & Wagenaar, 2009)

2.9 Combination retirement home and individual senior dwellings

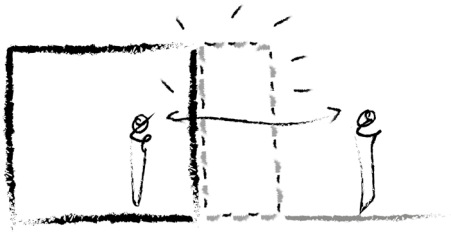
A combination of a retirement home and 'independent' dwellings for the elderly was a common variant in housing for the elderly. In this combined arrangement, residents of the 'independent' homes also have access to the collective facilities of the retirement home. This means they can benefit from the common dining facilities, healthcare and social activities of the boarding house, without sacrificing their independence. This hybrid model offers the best of both worlds, combining the privacy and autonomy of independent living with the support and involvement of a retirement home environment.

2.10 Serviceflats

Up until the 1970s, the housing types specifically mentioned for elderly housing were thought to represent the full range of senior amenities. The notion that this "complete" list ought to acknowledge all senior housing had begun to gradually fade into the background as early as the 1950s, and ever since, the regular housing market has come to be seen as more significant because senior housing was also constructed there. In addition to housing wealthy and independent elderly people, private initiative gave rise to residential buildings with communal amenities that were the responsibility of the residents, known as "service flats." Their goal: for people to live comfortably. Therefore, service apartments offer more than just a place to live; they also include a range of communal amenities like a caretaker, meals, and common areas. Because of this, the service apartment became a unique type of senior housing.

A. E. van Eyck, J.C. Rietveld, 64 bejaardenwoningen, Amsterdam-West, ca. 1952. Opdrachtgever: Woningbouwvereniging Amsterdam-Zuid, Woningbouwvereniging Het Oosten, Woningbouwvereniging Zomers Buiten. Collectie Het Nieuwe Instituut

Senior housing



Location:	Amsterdam
Adres:	Ilpendammerstraat
Architect:	Aldo van Eyck
	Jan Rietveld
Year built:	1952
Inhabitants:	Independent seniors

Architectural values
The buildingblocks are placed in such a way that it creates an openness as well as closedness. They railings to demarcate the front garden and used the storage to create corners, while also having full view of the open public space creating those feelings.

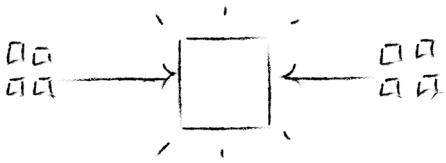
Rusthuis Rozenoord, Sluis 1947 by J.P. Kloos (Mens en Wagenaar, 2009)

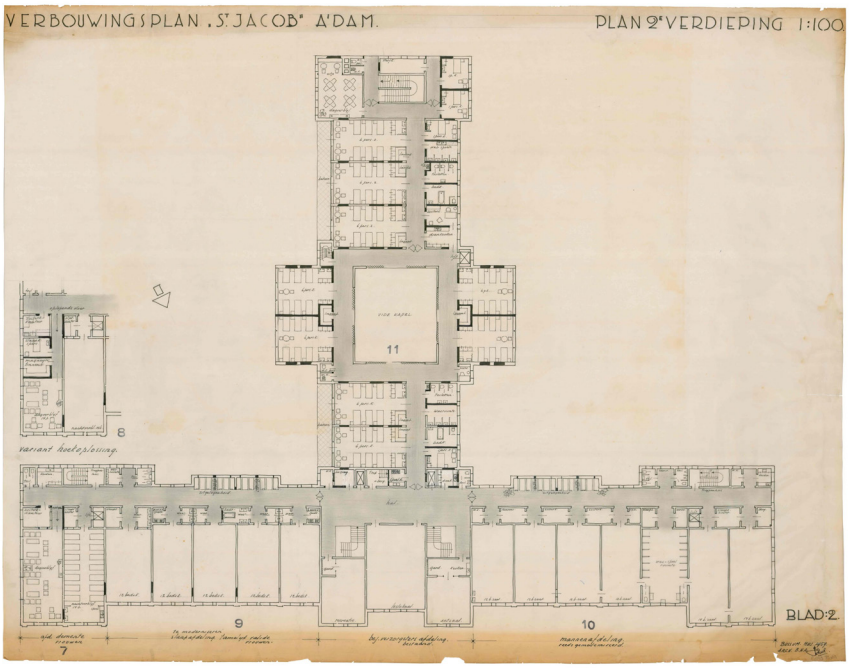
Resthome Rozenoord

Location:	Sluis
Adres:	Hoogstraat 58
Architect:	Jan Kloos
Year built:	1947
Inhabitants:	Independent seniors and seniors in need of care

Architectural values
The common rooms were all focused in one part of the building located in another part of the complex, keeping the independent and dependent seniors apart.

The building has only two storeys creating a more human scaled, senior friendly design.





H. van Putten, verbouwing van de mannen- en vrouwenafdeling van het Sint Jacob Gesticht, Amsterdam, 1959. Collectie Het Nieuwe Instituut

Sint Jacob

Location:	Sluis
Adres:	Plantage Muidergracht 99a
Architect:	Herman van Putten
Year built:	1959
Inhabitants:	Seniors in need of care

Architectural values

The nursing home had an efficient and hygienic corridor systeem. All rooms were located along this axis. In order to liven up this corridor, collective seating areas were created in the corridor stimulating meetings with inhabitants.

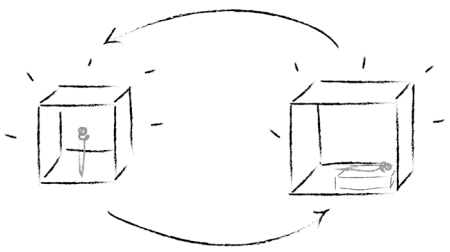
Bejaardencentrum Transwijk, Utrecht
(Mens en Wagenaar, 2009)

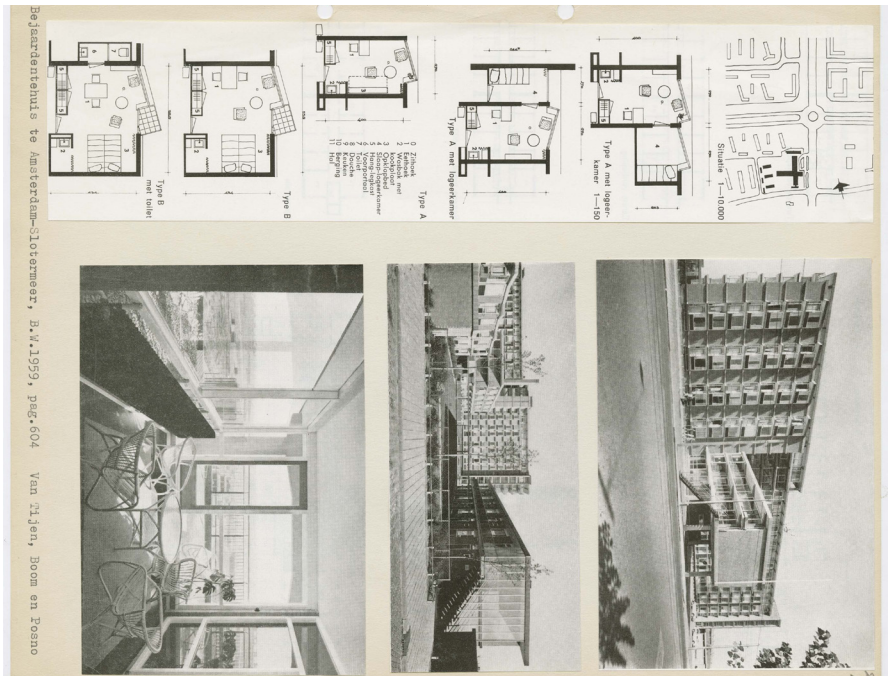
Combination retirement home Transwijk

Location:	Utrecht
Adres:	Hoogstraat 58
Architect:	Gesienus Pothoven Architectembureau H.A.
Year built:	1966
Inhabitants:	Independent seniors and seniors in need of care

Architectural values
It had both nursing and independent housing. When an independent senior need care they were able to easily move to the nursing home without all the hassle.

Even with a clear demarcation between the independent seniors and the seniors in need of care, the common rooms were located in the middle of the complex, easily reachable for all.





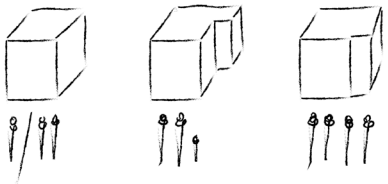
W. van Tijen, Gerhardhuis, Amsterdam, ca. 1959. Opdrachtgever: A.H. Gerhardstichting. Collectie Het Nieuwe Instituut

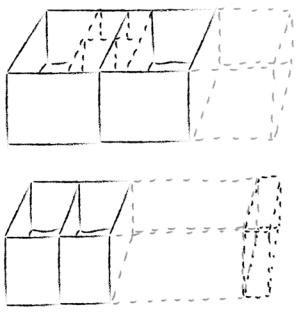
Serviceflat Gerardhuis

Location:	Amsterdam
Adres:	Herderhof
Architect:	Willem van Tijen
Year built:	1959
Inhabitants:	Independent seniors and seniors with light care

Architectural values
This serviceflat had different floorplans to house seniors with different needs. Some appartements had toilets or an guestroom.

The floorplans were kept small in order to create multiple high quality common areas.



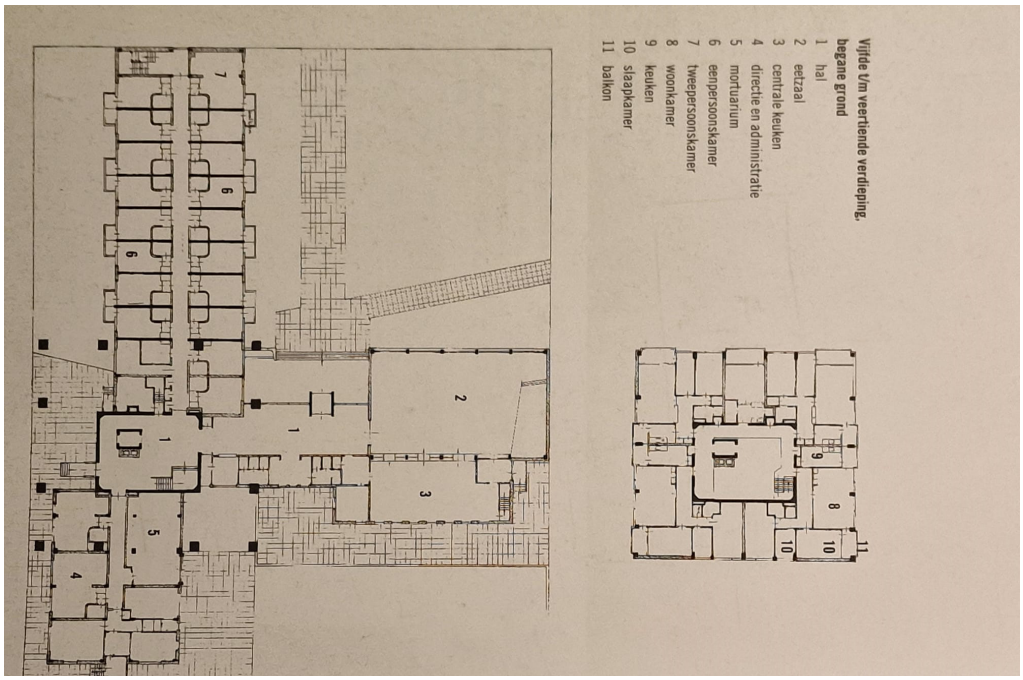


2.11 Standardisation
1950s and 1960s

Modernizing Dutch architecture was a major project, even during World War II. Following that, attempts were made to mechanize building, create standard types, and aim for factory production. Labor had to be imported from overseas as the elderly moved into retirement communities and unemployment increased. This gave rise to a new perspective on modernizing construction: cutting down on both construction time and construction cost. This was pushed harder in the 1960s by policy and the start of massive production flows that supported architectural design elements.

The home's suburbanization required the emergence of new housing types. Tall residential buildings were the necessary innovations, and they worked incredibly well with standardization. In order to reach greater densities, it was required. Remarkably, senior housing in the form of high-rise apartments and boarding houses proved to be the perfect architectural accents. The retirement home stood tall as a symbol of modernization in the 1950s and 1960s.

Bejaarden lat woontoren in Gorinchem 1961
(Mens en Wagenaar, 2009)



De Torenflat, Gorinchem by Ssam van Embden. (Mens en Wagernaar, 2009)

Bejaardenflat

Location:	Gorinchem
Adres:	Kon. Wilhelminalaan 4
Architect:	Sam van Embden
Year built:	1961
Inhabitants:	Independent seniors

Architectural values
This retirement home is 16 layers high, housing multiple facilities. In order to also pull in people from the neighbourhood, a restaurant was built on the top floor with its view.

The core of the tower is open with a skylight in the roof, creating a gallery on each floor with natural light.

2.12 Algemene Ouderdomswet
1957

In 1957, the Noodwet Drees became the Algemene Ouderdomswet (AOW). This law was significantly more luxurious than the previous one. Working people contributed a portion of their earnings to cover costs. In addition to the introduction of general national insurance, the Algemene Weduwen- en Wezenwet (1959) and the Algemene Kinderbijslagwet (1962) aimed to eliminate poverty that arose due to old age, unemployment, decline to the state of widowhood or the high cost of children (Mens & Wagenaar, 2009).

2.13 Wet op bejaardenoorden
1963

There was a severe nursing home shortage in the 1950s. The elderly with chronic illnesses were forced to leave hospitals, and only those who met the eligibility requirements were allowed entry. The Wet op Bejaardenoorden was intended to address that in 1963. It made it possible for the government to construct both nursing homes and retirement homes (Mens & Wagenaar, 2009).

2.14 Wet Bijzondere Ziektekosten
1968

The Algemene Wet Bijzondere Ziektekosten (AWBZ), which was introduced in 1968, eliminated in one fell swoop the financial obstacles that the elderly faced because of conditions that necessitated nursing home admission but were not covered by the Ziekenfondswet. That was stopped by the law (Mens & Wagenaar, 2009).

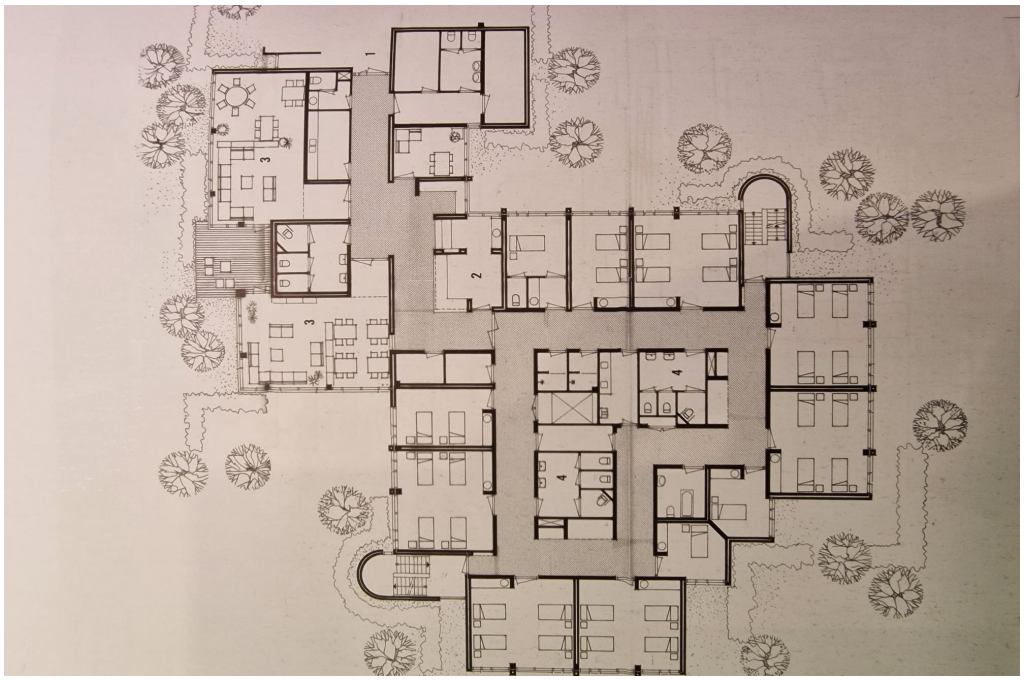
2.15 Critique on the nursing home model
1970s

Normalization—housing nursing home patients as normally as possible—became increasingly important as a result of growing criticism directed toward the facility. This amounted to making the nursing home as similar to a normal home as possible in an institutional setting where patients were required to stay for shorter or longer periods of time. This fundamental shift in focus stemmed from the realization that the hospital-in-a-care facility was no longer suitable.

The nursing home had to close, and the "rehabilitation model" had to take its place because some of the patients could be treated and later sent back to their homes. The bedrooms' sizes began to take on significance in the nursing home's new layout. Patients were placed in bedrooms accommodating one to four people instead of the hallways. It was also suggested that the building's design should take into account the fact that many patients actually spend a significant amount of their lives in nursing homes.

It also questioned the overly big complexes that stood alone in the suburbs and, due to their self-contained nature, could hardly be incorporated into the urban fabric.

The nursing home strives to become a socially and medically integrated living environment where the resident—as a human being, not just his illness or disability—is central. It is no longer a place where one must stay in order to be cared for and treated. This made it possible to observe one trend in particular: the convergence of retirement communities and nursing homes. Living became more important in nursing homes, while care took on greater importance in retirement communities (Mens & Wagenaar, 2009).



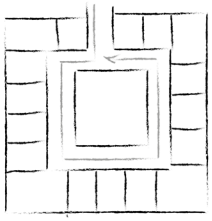
Van Gameren, D. (2018). DASH: from Dwelling to Dwelling: Radical Housing Transformation. Nai010 Publishers.

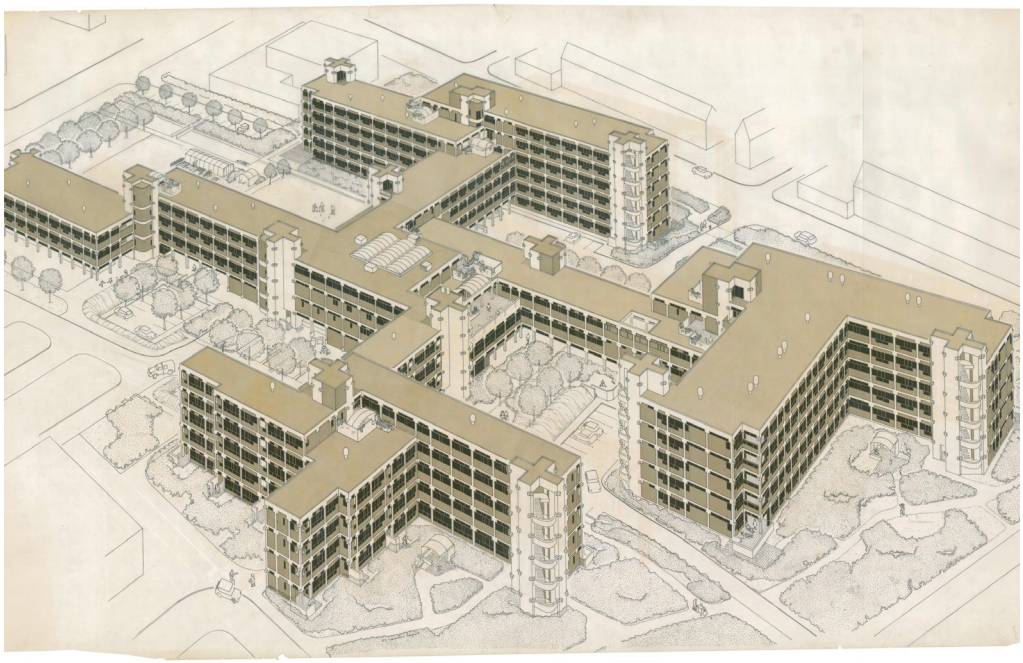
Nursing home Pronsweide

Location:	Winterswijk
Adres:	Morgenzonweg 29
Architect:	Hendriks, Campman, Tennekes
Year built:	1981
Inhabitants:	Seniors with need care

Architectural values

The seperation of living and care were seperated here as well as the living room and sleeping.
There were no dead ends in the hallways. The toilets and bathrooms were located in the middle of the building, creating another route to your room.





H. Hertzberger, en C. van Empel-
en, Verzorgingshuis De Drie Hoven,
Amsterdam, ca. 1970. Opdrachtgever:
Nederlandse Centrale voor Huisvesting
van Bejaarden. Collectie Het Nieuwe
Instiuut

2.16 Retirement home as an urban building

1970s

There was a change in architecture during the 1970s. Housing for the elderly was a major factor in this. The numerous drawbacks of the traditional, isolated types of housing could be circumvented by considering big buildings as miniature cities and by utilizing the adaptability that already existed in urban structures rather than tearing them down.

The traditional city accommodated all conceivable activities within a comparatively small area. From the perspective of urban planning, it served multiple purposes. The city, the street, the square, and the spontaneity of the unplanned were all valued again instead of the functional order. The 1970s and early 1980s saw a greater realization of this revaluation (Mens & Wagenaar, 2009).

H. Hertzberger, en C. van Empelen, Verzorgingshuis De Drie Hoven, Amsterdam, ca. 1970. Opdrachtgever: Nederlandse Centrale voor Huisvesting van Bejaarden. Collectie Het Nieuwe Instiuut

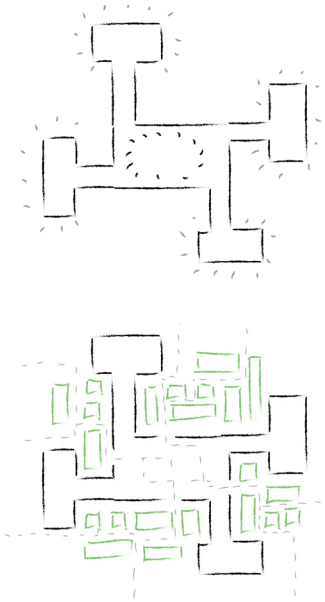
De Drie Hoven

Location:	Amsterdam
Adres:	Louis Bouwmeesterstraat 377
Architect:	Herman Hertzberger
Year built:	1974
Inhabitants:	Seniors with need care and independent seniors

Architectural values

The 'centre' of the buildings housed multiple facilities like shops, a bar, library, snookerroom, hairdresser, laundrymats, kitchen en storages. Together with corridors, design like streets, created a village atmosphere.

The outdoor grounds of the Drie Hoven was a public park for tor the neighbourhood, while for the residents it was a functional garden, with a greenhouse and recreational areas. The public had attractive pathways that would connect the neighbourhood with the pedestrian area. The pathways also intersected with the various entrances of the Drie Hoven creating accidental encouters with the residents of the neighbourhood.



2.17 Urban renewal

1970s

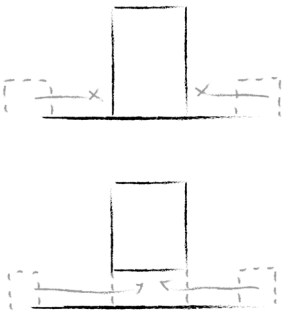
In the past, historic areas of the city were destroyed to make room for brand-new structures that hardly set themselves apart from the suburbs. In part due to the great building explosion, and particularly in the context of urban planning, it was thought that redistributing facilities and residential concentrations would be harmful. Consequently, traffic breakthroughs caused old inner cities to increasingly display the contrast between residential concentrations on one side and offices and shops on the other. The affluent relocated to the suburbs. Those who had no options to choose from, such as the elderly, were left behind.

The development of nursing homes in the city's older neighborhoods was an indication that there was a growing appreciation for the areas that had escaped urban clearance. an understanding of the complex social and functional nature of old neighborhoods, which encouraged chance meetings and allowed for everyone to be both an actor and a spectator at the same time (Mens & Wagenaar, 2009).

Abma, Hazewinkel Dirks De Haan, Verzorgingshuis De Gooyer, Amsterdam, ca. 1978. Foto Sybolt Voeten. Collectie Het Nieuwe Instituut

De Gooyer

Location:	Amsterdam
Adres:	Von Zesenstraat 298
Architect:	Abma en Hazewinkel
Year built:	1978
Inhabitants:	Seniors who need care



Architectural values
The neighbourhood (Dapperbuurt) was in a bad condition but was never fully demolished. De Gooyer lies in the centre of a lively neighbourhood, pulling the shops and markets into the building creating a fully incorporated senior home into the city.

2.18 Experimentation

1970s

The 1970s brought about an important change in the way senior housing architecture was conceptualized, which in turn created a need for radically different approaches to meet the changing requirements of an aging population. Traditional designs, which were frequently institutional and lacked the adaptability to accommodate older adults' varied lifestyles and preferences, began to disappear during this time. The dominant architectural models placed more of an emphasis on functionality than on fostering environments that are stimulating, encouraging, and community-focused.

Restrictive legal and regulatory frameworks, however, posed significant obstacles to the drive towards creative architectural solutions for senior housing. The experimental designs that architects and planners envisioned were not supported by the laws and building codes that were in place, which frequently limited their ability to apply new concepts and innovations in technology. Because of this circumstance, regulatory exemptions became urgently necessary to enable the investigation of alternative housing models.

Exemptions were made in response to this need in order to give architects the necessary margin for experimentation. As a result, senior housing architecture saw a great deal of experimentation during the 1970s. Innovative ideas like mixed-use communities, shared living spaces, and flexible housing units that could better accommodate the evolving needs of senior citizens were being investigated by designers (Mens & Wagenaar, 2009).

TOUR: Zonnetrap · Rotterdam Architectuur Maand. (n.d.). Rotterdam Architectuur Maand. https://rotterdamarchitectuurmaand.nl/programma/item/zonnetrap/

De Zonnetrap

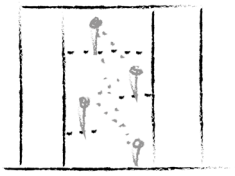
Location:	Rotterdam
Adres:	Molenvliet
Architect:	Enrico Hartsuyker Luzia Hartsuyker-Curjel
Year built:	1980
Inhabitants:	Independent seniors

Architectural values

The concept ‘multifunctional’ was central part of the design, instead of seperation of functions. Facilities like a shoemaker, a bank, a coffeeshop and a snackbar were accessable to the neighbourhood as well, creating a lively retirement home.

With its public hallway and galleries created a vertical connection between pepople in the hallway and people on the galleries, accentuated by protruding balconies in the gallery and walkbridges.

The dwelling were designed as walk-around’ dwellings with the bathroom at its core creating a flexible layout for seniors to design themselves.



2.19 Early form of cohousing

1980s

The idea of senior cohousing groups first surfaced in the 1960s and experienced a comeback in the 1980s. The Landelijke Vereniging Groepswonen voor Ouderen was established in 1984, and in a short period of time, it had grown to include thirty living communities. The following topics were the focus of these cohousing groups:

- Wanting to stay active
- Seeking security and safety
- Seeking ways to fight loneliness
- Seeking ways to avoid relying on institutional forms of housing and care

The majority of housing groups are compact. They frequently had a shared living room, kitchen, hobby room, and guest room and were made up of five to fifteen households (Mens & Wagenaar, 2009).

Kreilerburcht, Atrium. Photo by Jasper Mol. Maaswonen

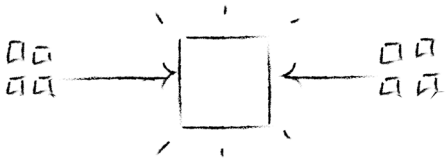
Kreilerburcht

Location:	Rotterdam
Adres:	Kreileroord
Architect:	Wytze Patijn
Year built:	1991
Inhabitants:	Independent seniors

Architectural values

The association for ‘Anders Wonen’ wanted a building with common rooms to prevent loneliness and dependence on care. The main idea was that the inhabitants were voluntarely taking care of each other. With an atrium and galleries people were able to see each other and interact through the vertical openness of the building.

Each floor had a clusterroom where people could speak with each other and do activities together.



2.20 The first wedges between government and senior housing
1970, 1975 and 1986

Separate documents (1970 and 1975) dismissed the era of the major forward-looking existing policies aimed at improving housing for the elderly. All of these policies were replaced by the new no-nonsense policy that called for significant cuts. The percentage of senior citizens utilizing care facilities decreased as a result of the cuts. The percentage of senior citizens who remained in "regular" homes was projected to rise from 70% to 93%. Over 7% of the elderly were not to be housed in dedicated housing. One way to achieve this was to conceive of the 'independent' home for the elderly as a normal small dwelling, thus reducing dedicated housing for the elderly to care and nursing homes.

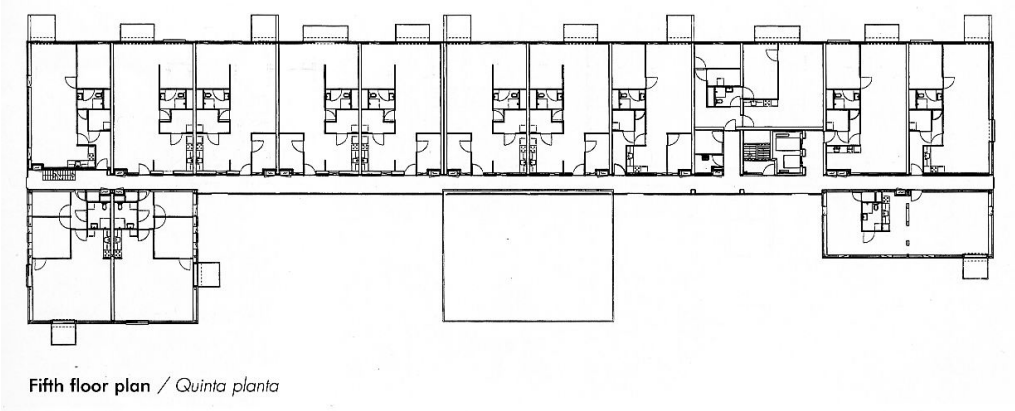
The Nota Zorg voor Ouderen expanded care homes' admissions policies to include nursing homes in 1986. From now on, housing and care would be kept apart. Old people's homes and nursing homes grew closer to one another as a result of a construction freeze on nursing homes, which made the residential component vanish on its own (Mens & Wagenaar, 2009).

https://www.vinkbouw.nl/in-verkoop/oklahoma

2.21 Woonzorg-complexen
1990s

The main theme in the development of care and nursing homes since the 1970s has been the relationship between living and care. At care homes, pushing out able-bodied residents made the care theme increasingly more important and the reverse happened at nursing homes. They grew towards each other, so to speak, which gave reason to experiment with a subsequent separation between living and care. Living became independent and care was applied from outside. The elderly resided in these residential complexes in a similar way to an independent home for the elderly.

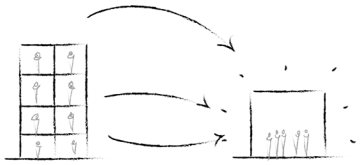
Residents could call for care as needed and the more they needed it, the more their situation resembled that of a nursing home and when they needed less care, their situation resembled more that of a care home. This new type is also called a residential care complex (wozoco) and in a way marked the departure of housing as a cornerstone of housing for the elderly, although the nursing home still remained the main facility.



Fifth floor plan of the Oklahoma complex (http://www.polyucee.hk/cecspoon/lwbt/Case_Studies/Wozoco/Wozoco. htm)

Oklahoma

Location: Amsterdam
Adres: Ookmeerweg
Architect: MVRDV
Year built: 1997
Inhabitants: Independent seniors



Architectural values
With care and living now seperated these senior appartement were optimaly designed for light and air with the gallery on the north side of strip.

The inhabitants are still able to call in for help of nearby facility and care centre.

2.22 WLZ en WMO 2000 - present

Alongside the growing older population came an increase in the number of elderly people in need of care. Care packages (also known as ZZPs or Zorg Zwaarte Pakketen) were created in 2007 to guarantee that those in need of care received the proper assistance from the AWBZ. Those with the lightest form of care needs fell under a ZZPs and were eligible for intramural care, which involved remaining in a care facility, as well as reimbursement for such stays. The majority of the population was covered by this light type of care (ZZP 1, 2, and 3). The extramuralization of care occurred in 2013 as a response of the spiraling expenses (Nederlandse Zorgautoriteit, 2012). Seniors categorized as ZZP 1 through 3 were no longer eligible for intramural care as of 2014; ZZPs started at level 4.

- ZZP 4: Sheltered living with intensive supervision and extended care.

- ZZP 5: Sheltered living with intensive dementia care.

- ZZP 6: sheltered living with intensive care and nursing services.

- ZZP 7: Sheltered living with very intensive care, due to specific conditions, with emphasis on supervision.

- ZZP 8: Sheltered living with very intensive care, due

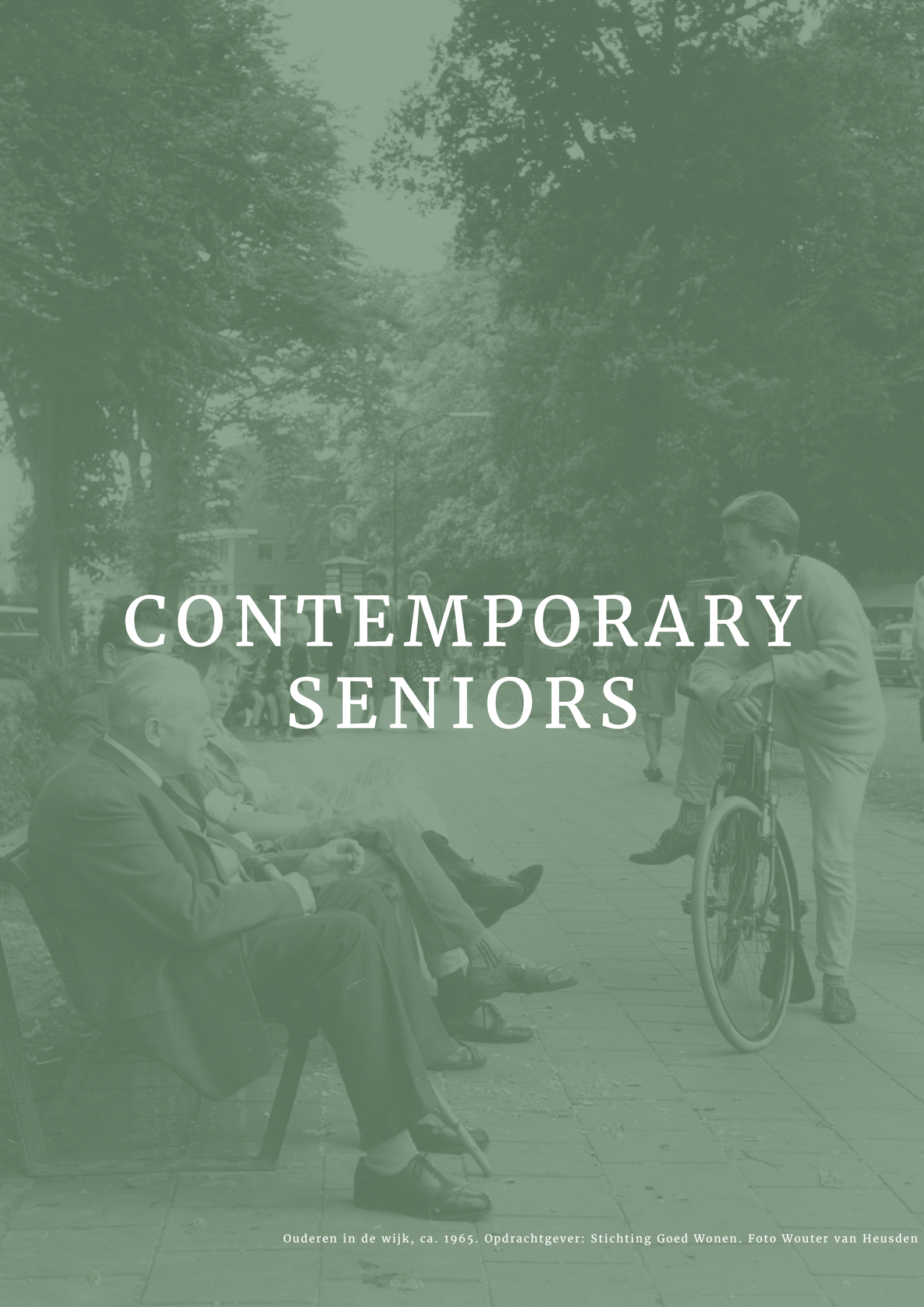
to specific conditions, with emphasis on care/nursing.

- ZZP 9: Recovery-oriented treatment with nursing and care.

- ZZP 10: Protected stay with intensive palliativeterminal care.

Significant changes to the law were made in 2015. The Long-Term Care Act (Wet Langdurige Zorg, WLZ) took the role of the AWBZ once it was abolished. It stated that only intensive long-term care would be covered, with individual or municipal responsibility covering the remainder. Seniors were forced to stay at home longer as a result, and care facilities started to concentrate more on patients who need more extensive care. With little help from the government, this shift turned the social care culture into a do-it-yourself culture. Individuals had to rely on themselves, the municipality and people from their social environment.

CONTEMPORARY SENIORS



Ouderen in de wijk, ca. 1965. Opdrachtgever: Stichting Goed Wonen. Foto Wouter van Heusden

3.1 Introduction

For decades, the proportion of people aged 65 and older in our country has been increasing, and this trend will continue in the coming years. According to Centraal Bureau van de Statistiek (2022), 25.1% of the population is predicted to be 65 years of age or older by 2040. Furthermore, the proportion of senior citizens "of advanced age"—those who are 80 years of age or older—is also increasing.

A remarkable development is taking place. The elderly of the Netherlands' post-war reconstruction era are not the same as the elderly of today. They are wealthier, more energetic, better educated, and healthier—in part because of economic expansion and medical progress. Seniors now have different goals and standards of life than they did in the past, and there are also more noticeable distinctions within this group. Ironically, many studies continue to portray "the elderly" as a homogenous group (Vrieler & Ter Heegde, 2021).

The phrase "active elderly," which refers to a new demographic of people between the ages of 55 and 75, has only just gained popularity. Since the start and duration of this life stage differ from person to person, it is obvious that this age group cannot be precisely characterized. Retirement and children leaving home are two life-altering events that typically take place during this period and have a big impact on housing decisions (Blije et al., 2009).

Since many people become "empty nesters" at this age and some of them start to consider retirement status, the lower limit of 55 years was decided. Because people become less eager to move after the age of 75 and are more likely to choose renting than owning, this upper limit was chosen (Lijzenga et al., 2018).

Numbers and housing locations alone are insufficient to adequately characterize the population of active seniors. The idea of lifestyle is also important: how do these elderly people live their lives? How do they view their living circumstances, what do they value, and what do they spend their money on? The most crucial question is probably whether they even wish to relocate.

3.2 The BSR-model

There is less and less correlation between aging and a certain age. People are living longer and staying healthy for longer thanks to improvements in healthcare. This helps people enjoy "growing older", with more focus on the chances and possibilities that come with this (longer) stage of life (Commission on the Future of Care for Seniors Living at Home, 2020).

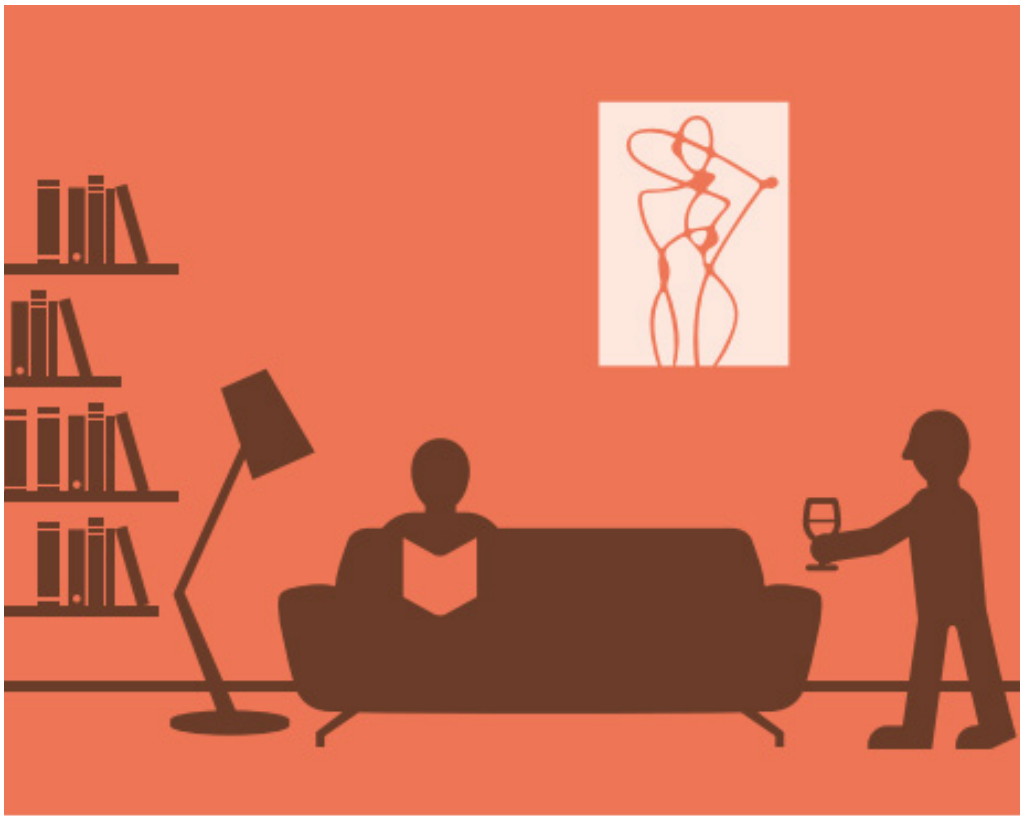
In the Netherlands, almost half of those over 55 look forward to growing older. They hope to live for many more years in their existing state and have a strong connection to society (Statistics Netherlands, 2024). According to Lijzenga et al. (2018), many active seniors do not want housing that is specifically made for them.

The lifestyles of older persons are getting more varied as a result of their increased vitality. The sociodemographic characteristics of active seniors have up till now been used to categorize them and offer some insight into their housing preferences. Lifestyle, however, is also quite important. Even if a person's sociodemographic traits are the same, their reasons for choosing particular choices differ.

People's perceptions of their housing conditions are also significantly influenced by their psychological and sociological dimensions, which measure how inwardly or outwardly oriented they are and whether they prioritize the group or themselves. MarketResponse's Brand Strategy Research methodology identifies four lifestyle kinds, each of which is symbolized by a unique "lifestyle color" (fig xx.) Everybody possesses certain aspects of each lifestyle color, but one is typically more common. This method may help in understanding the housing and relocation choices of active seniors, providing a more nuanced way of meeting their wants and needs.

The most common lifestyle in the Netherlands is yellow, which is closely followed by green and blue. The least popular lifestyle is the red one. This order is unaffected by a breakdown by the G32 cities and beyond. However, because the G32 is more urban oriented, the red lifestyle is more common there. Interestingly, the green lifestyle is particularly common among active seniors (Vrieler & Ter Heegde, 2021).

Brand Strategy Research (BSR) model (https://www.am.nl/wp-content/uploads/2021/02/Onderzoek-naar-woon-wensen-van-actieve-en-vitale-ou-deren.pdf)

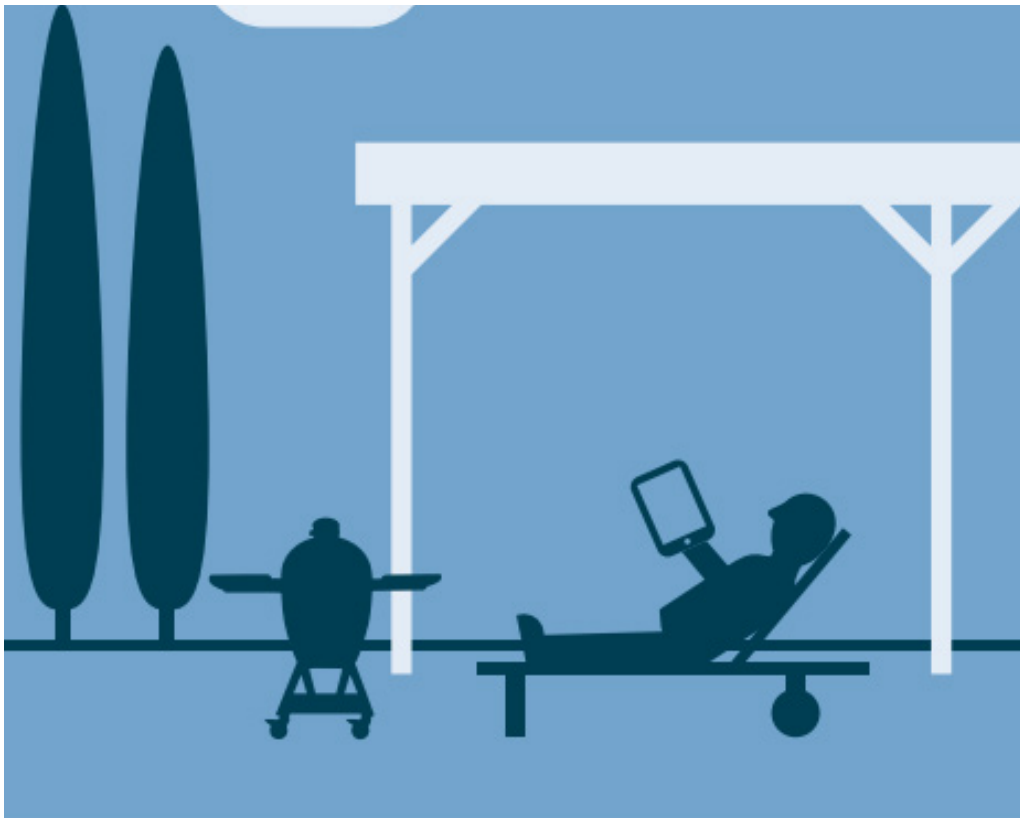


3.3 Red: freedom and vitality

The red consumer is an adventurous, self-sufficient person who places a high importance on independence. They have an active lifestyle that requires plenty of time for travel and cultural growth in addition to work. Despite their urban orientation, red consumers have no obligation to live in cities. The home is an extension of the red consumer's lifestyle. They love unique buildings and eye-catching details, and they place a great importance on architectural diversity. Presentation is important; the house should be slightly different from the typical one. Red consumers are eager to follow the newest trends and are typically early adopters. They find themselves drawn to the sharing economy (Habion et al., 2018; Vrieler & Ter Heegde, 2021).

3.4 Yellow: harmony and community

Yellow customers are very group-oriented and value neighborhood relationships highly. Their lives revolve around their family or the home. They like to visit their neighbors or spend time in and around the house. Traditional, comfortable, and village-like living settings appeal to the yellow world. The three main ideas are security, comfort, and hospitality. The house is open to the outside world for the yellow consumer. The housing is situated in a small, secure neighborhood with many of opportunities for social contact. Yellow consumers want a feeling of village life rather than privacy. They like living in mixed-age neighborhoods where the young and the old interact. They find small squares, residential courtyards, and small alleys to be appealing house designs (Habion et al., 2018; Vrieler & Ter Heegde, 2021).



3.5 Blue: manisfestion and control

Performance and exclusivity are crucial for blue consumers. Blue consumers tend to have more disposable cash and are more focused on their jobs. Status is crucial: blue people are attracted by luxurious neighborhoods and lifestyles. The house and living space are indicators of the prosperity of society. Although blue customers are drawn to (high-end) urban areas, their primary preference is for peaceful, roomy living spaces. The home serves as an oasis and a place of relaxation for the blue world, away from a chaotic, public-facing existence. Privacy is important. The house should be comfortable and manageable without demanding a lot of work (Habion et al., 2018; Vrieler & Ter Heegde, 2021).

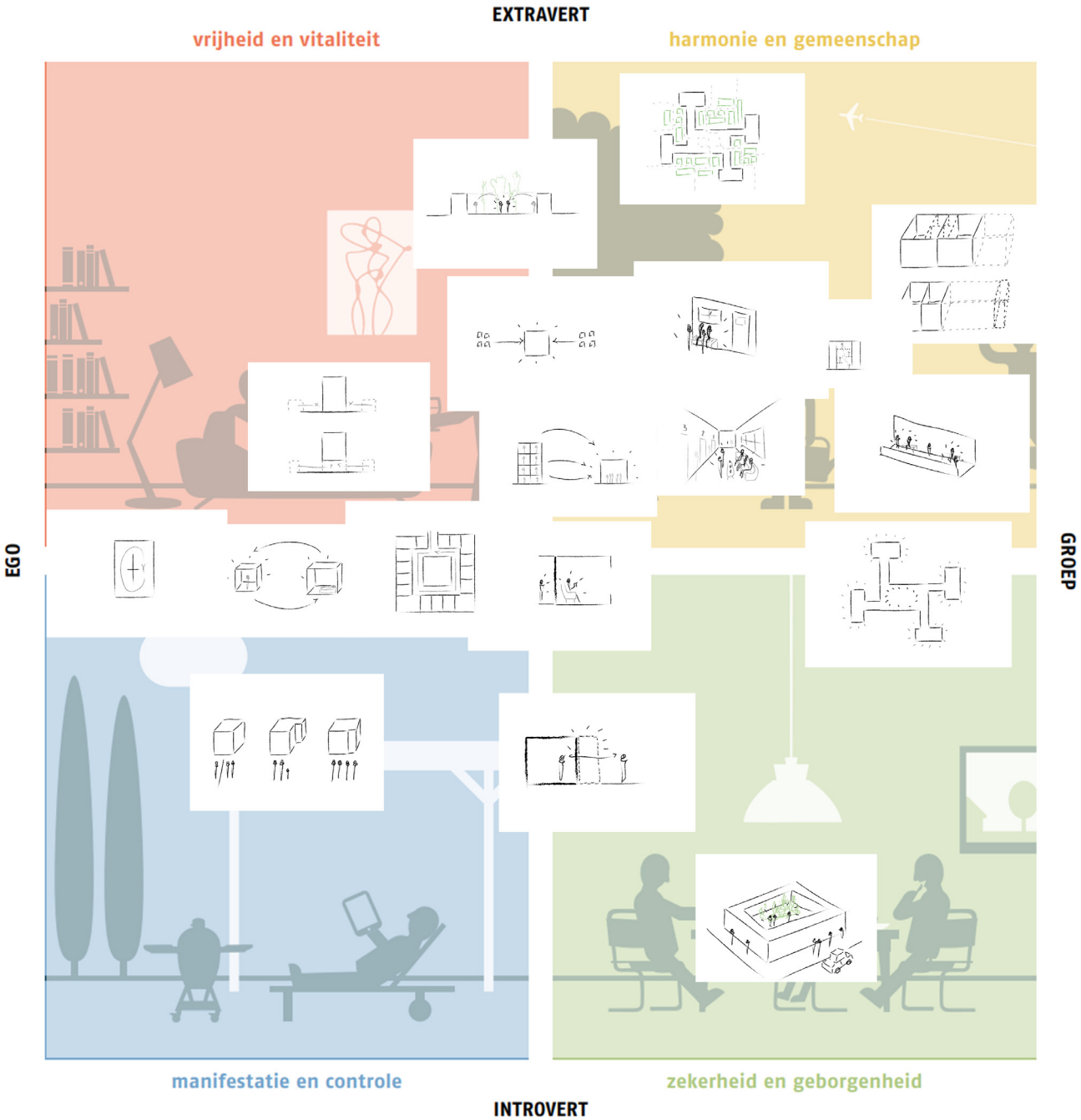
3.6 Green: security and safety

Despite being group-oriented, the green consumers have a very restricted personality. Intimate relationships are maintained while people travel within a small circle of neighbors and family. The goals for housing are straightforward and modest: “just be yourself, that’s enough.” The dwelling is comfortable—a sanctuary in the green world. The living space should provide privacy and peacefulness, and the house should be practical and efficient. Although social interaction is not required, it is valued when it occurs. Green consumers would rather be surrounded by people they know and can relate to (Habion et al., 2018; Vrieler & Ter Heegde, 2021).

3.7 Relating the BSR-model to this research

It is possible to determine which design ideas initially proposed by architects can be modified and applied to the housing needs of contemporary seniors by evaluating many historical case projects using the BSR (Brand Strategy Research) model. By classifying various lifestyle patterns, the BSR model makes it possible to gain a better understanding of how ideas for design that may have worked well in the past fit in with the demands and preferences of the senior population today.

This method offers a more individualized and nuanced analysis of how historical architectural ideas could be rethought to better serve the needs of contemporary seniors. It aids in determining which elements of the designs appeal to various lifestyle groups, such as active seniors who value comfort and freedom or those who want a closer sense of community.


EXTRAVERT
vrijheid en vitaliteit
harmonie en gemeenschap
EGO
GROEP
manifestatie en controle
zekerheid en geborgenheid
INTROVERT

3.8 Conclusion

This chapter aimed to answer the following questions:

"When and how did we design housing for seniors and what can we learn from it for nowadays designing?"

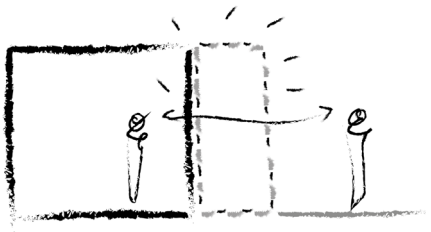
After creating a timeline showing the main developments through history, we can see that the government played a crucial role in the creation of the societal role of the elderly. From the beginning of the 20th century when the elderly were given a little bit of money to spend and the subsidization of the elderly housing, the group of elderly were immediately seen as a source to make profit and immediately push them out of the city. With the mass production of retirement homes the group of elderly were isolated. From the seventies focus shifted to how these elderly people could be integrated as a whole within the city limits and how the neighbourhood could interact with the elderly making them part of society again. However with realising how expensive elderly care was with budget cuts as a result meant that the elderly people were meant to stay at home longer putting a burden on relatives, friends and the neighbourhood.

From this we are now able to assess which design ideas are most applicable for use in housing for contemporary seniors thanks to the analysis of these case studies. Every design idea can be linked with particular lifestyle (colours) needs by applying the BSR model and looking at the wide range of lifestyles represented in this group. This method enables an individualized analysis of how these ideas might work in contemporary situations, giving a clear picture of what solutions could successfully meet every need of contemporary seniors living.

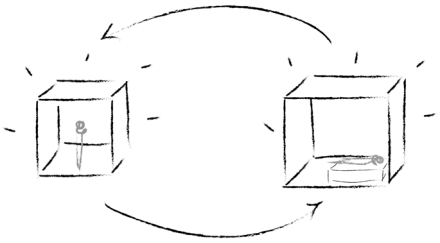
From the research we can conlude that incorporating places where the elderly can interact with each is something that is still shared with nowadays seniors. However, the ability to retreat to your home, away from the commotion and safe in your home is still something that should be respected today. By creating different zones, private, semi-public to public could help in maintaining this balance. Furhtermore, we can also see that interaction through encounters is indirectly stimulated in the

case studies (both horizontally as vertically), which shows the importance of that bufferzone. By creating a porous building with facilities allows the neighbourhood to profit from it as well, creating even more chances of encounter. All these ideas can be found on the next page.

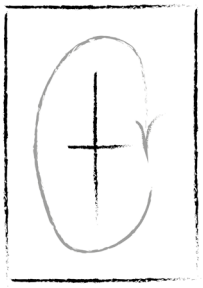
INDIVIDUAL SCALE



semi-public space

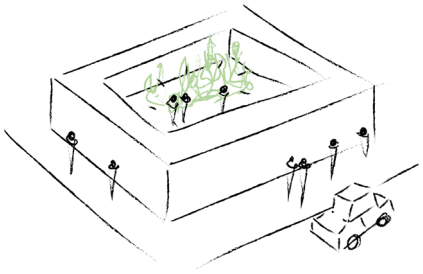


opportunities for growth advancements



flexible and clear floorplan

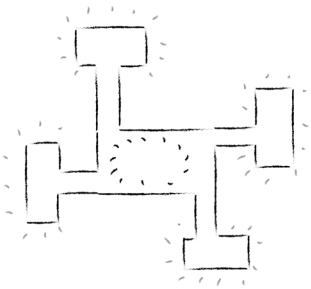
COLLECTIVE SCLAE



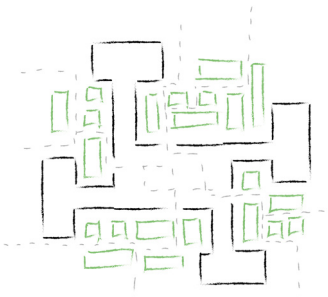
community closed off

closer connections with people within own building

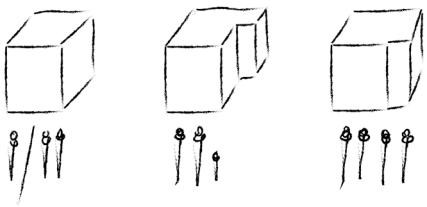
facilities



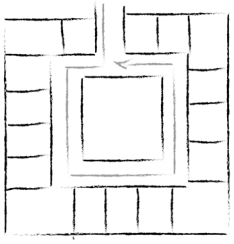
collective space in centre of building



porosity of building for the neighbourhood

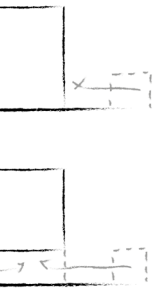


different size dwelling based on needs

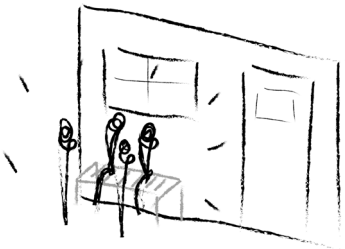


promoting different routes and walking

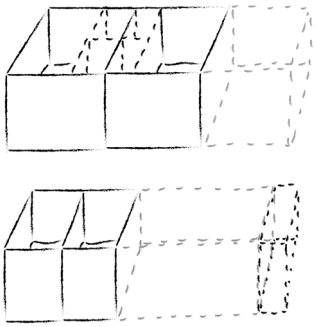
seperation between collective and individual



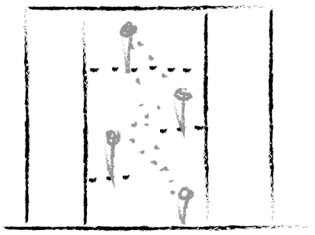
inside building



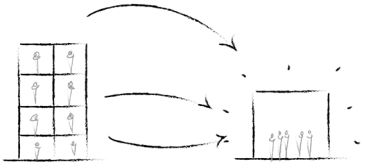
interaction in traffic space



facilities in collective space to make it more qualitive



vertical interaction



service centre nearby

	The Courtyard	Retirement home	Senior houses	Nursing home
13th - 19th century				
1900s				
1920s - 1940s				
1950s -1960s				
1970s				
1980s				
1990s				
present				

es

Combination (retirement home and senior houses)

Serviceflats

City in retirement home

Wozoco

Laws

Armoede wet 1901

Noodwet Drees 1947

AOW 1957

Wet op bejaarden oorden ~~1963~~

Nota Zorg voor Ouderen 1970-1975

Nota Zorg voor Ouderen 1986

WMO & WLZ 2015

4. NEEDS & WISHES OF CONTEMPORARY SENIORS

illustration drawn by TU Delft students for Urban Oases by Willemijn WIlms Floet, edited by author

4.1 INTRODUCTION

This chapter will dive into the needs and whishes of the contemporay seniors. The previous chapter ended the history on last change of the law of elderly care and initiating the extramuralisation of the senior care. The majority of the senior population are expected to live at home as long as possible. However, what do they need in order to live at home comfortably? What makes a home suitable for a senior person? These questions stand at the centre of this chapter.v

4.2 Diversity amongst the seniors

When individuals discuss the senior, they typically refer to those who are over 50, over 57, over 60, etc. Baars (2017) and Van Oostrom et al. (2016), on the other hand, discuss a multiplicity of diversity in ageing. According to Doekhie et al. (2014), policy assumes that differences among older people are smaller than they actually are. For example, the preferences of the older population today differ from those of the previous generation (Gielen et al., 2018). The baby boom generation is less interested in housing with the "senior label," as an example, whereas the pre-war generation was accustomed to nursing homes and senior housing (Mol, C. 2020).

4.3 Vulnerability amongst the seniors

Vulnerability is likewise diverse among the senior. Moreover, RIVM (2016) asserts that there is no such thing as THE frail senior person. Analyzing the constraints that the senior will encounter as they age is a prerequisite to comprehending their needs. Vulnerability in older adults was divided into four domains by RIVM (2016):

- Physical vulnerability
- Vulnerability to cognitive stress
- Vulnerability in society
- Vulnerability to psychological stress

However, what are these weaknesses and how do they affect older individuals' autonomy?

Physical vulnerability

One of the initial approaches for addressing vulnerability in the senior focuses primarily on physical functioning barriers, such as decreased weight and muscle strength, weariness, a decrease in walking endurance and speed, deterioration of vision and hearing, and problems with fine motor skills and reaction speed (RIVM, 2016; Gude, 2006).

Cognitive vulnerability

Aging also seems to impair cognitive abilities. As we age, our memory deteriorates, responsiveness declines, and learning new skills becomes more challenging due to a reduction in imprinting strength (Gude, 2006).

Social vulnerability

The lack of social relationships in your life or the insufficient social support you receive from others are the main causes of social vulnerability. This type of vulnerability is also linked to experiences of loss, including the dissolution of important social roles, the loss of meaningful relationships, and growing dependency. Furthermore, a deficiency in social interaction may exacerbate the loneliness that older adults feel (Sport And Exercise Against Loneliness Among Older People, 2024b).

Psychological vulnerability

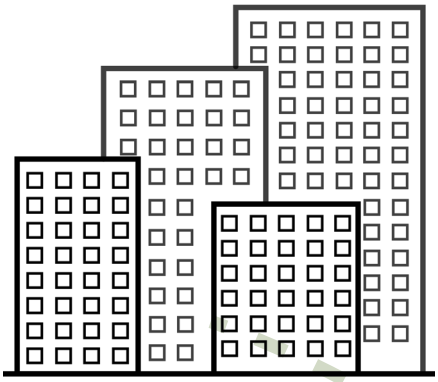
Declining well-being can result from a variety of different circumstances, such as losing one's work (Kraus & Graham, 2013), experiencing physical and health declines (Charles, 2010), and living in impoverished urban neighborhoods as an adolescent (Cheng et al., 2014). Furthermore, older persons' perceived vulnerability is heightened by factors that negatively impact their well-being, such as food insecurity, unmet health care needs, increased morbidity, and decreased physiological flexibility.

4.4 Design principles for the seniors

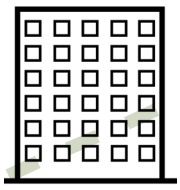
The qualities of ideal living environments for the senior support their health in two ways: directly by providing care and support, for instance, and indirectly by promoting positive attitudes and healthy behaviors. On the other hand, behavior and perception of the surroundings are influenced by health (Mol, 2020). There are two levels at which the residential environment of older adults is distinguished: the home itself; and the neighborhood or district.

According to Daalhuizen et al. (2019), in reality, senior residents' living environments frequently only address one level. If an senior person can live independently at home for an extended period of time, it depends on more than just the house. An appropriate place to live is also crucial. Mol (2020) makes a distinction between physical, functional amd social characteristics.

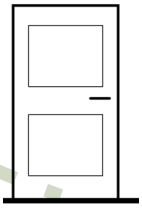
On the other hand, Mantingh and Duivenvoorden (2021) make a distinction between the living environments of older individuals on three levels: the residential block; the route from the street to the home and neighborhood; and the dwelling and threshold zone. An overview with strategies on how the senior can live at home longer and how to create a healthy living environment can be made by basing the study of the needs of the senior on the three levels mentioned above and differentiating between the three



neighbourhood



residential block

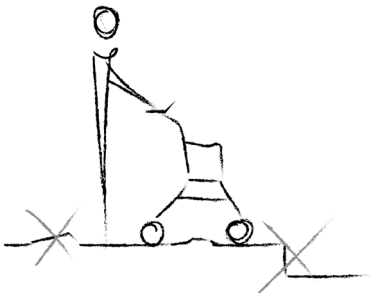


dwelling

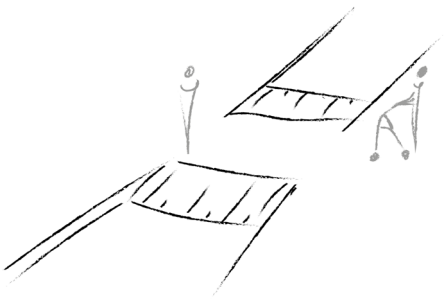
4.5 Neighbourhood

Physical

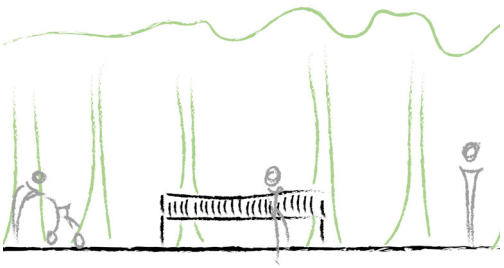
Accessability & Safety



Senior accessibility is affected by an inaccessible and unsafe environment, and their decreased mobility is negatively impacted as well (Rantanen, 2013). In the context of the safety theme, there is a distinction between subjective and objective safety, where the former refers to the feeling of safety that is primarily influenced by the physical surroundings (Mol, 2020). Accessible, well-maintained pavements increase physical safety. In order to minimize trips, there should also be an adequate number of road crossings with appropriate crossing points that are situated at the same height as the pavement.

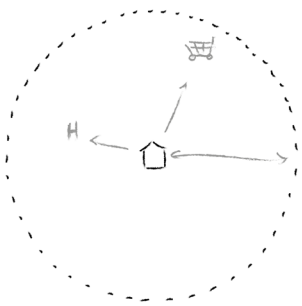


In order to allow senior citizens to safely rest along the route, benches should also be included. The appropriate dimensions for senior citizens in addition to handrails to facilitate their easier mobility. A spot with unique views or views of areas with lots of activity is where benches should be placed (Cammelbeeck et al., 2014).



Mobility & activity

In addition to improving the quality of public areas, studies conducted by Maas et al. (2006) indicate that having greenery within a 1- or 3-kilometer radius of one's residence positively affects the senior's perception of their own health. In order to ensure safety and encourage older people to go outside, it is important to create shaded resting places for them with greenery and water, as well as public water points (Ministry of Health, Welfare and Sport, 2018).



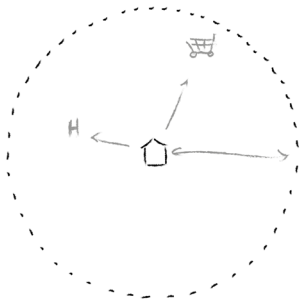
Human scale

Human scale is ideal for public and shared spaces. Squares and other large areas that are frequently used for meeting don't always feel pleasant (Mantingh & Duivenvoorden, 2021). Maximizing the size of plaza areas and creating a visually pleasing balance between the height and width of street profiles are two aspects of public space dimensions. Gehl (2010) explains that the maximum size of a pleasant urban space is 100 meters, and that we can distinguish people from objects up to that distance. For senior individuals who struggle with mobility, a maximum distance may be more comfortable. These areas feel less confined, for instance, when sloping buildings are used.

Functional

Accessability facilities

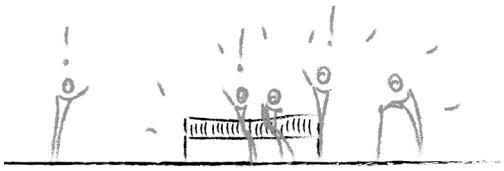
Timmermans et al. (2016) state that a pharmacy, doctor's office, grocery store, and public transportation stop are among the main amenities. A suitable living environment is one in which the home's primary amenities are 500 meters or less away by foot which would be around a 15 minute walk based on an average 75 year old (Daalhuizen et al., 2019). Which interactions and activities are appropriate for senior citizens living in the neighborhood are determined by the radius of action. The availability of public transportation and facilities supports older people's health by promoting self-sufficiency, physical activity opportunities, engagement, meaning, and social interactions (Mantingh & Duivenvoorden, 2021). For instance, senior citizens should have easy access to stand-up taxis and be able to board buses with maximum convenience.

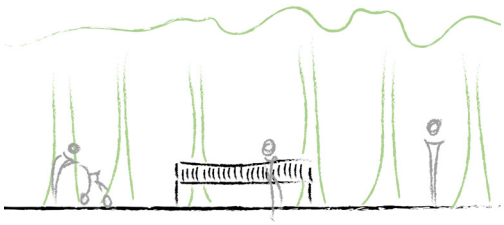


Social

Encounters

The Ministerie van Volksgezondheid, Welzijn en Sport (2018) states that random encounters in public spaces play a major role in determining social cohesion within a neighborhood. Neighbor interactions that are fleeting and superficial can improve one's quality of life and sense of community. Green and open green spaces in the neighborhood can be used to facilitate these interactions, but putting benches there can also promote social interaction.



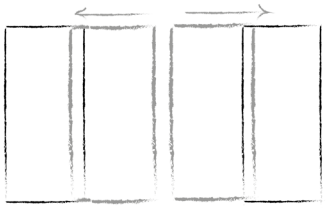


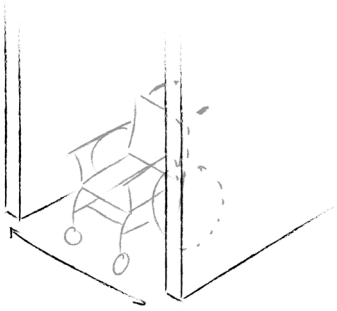
4.6 Urban Block

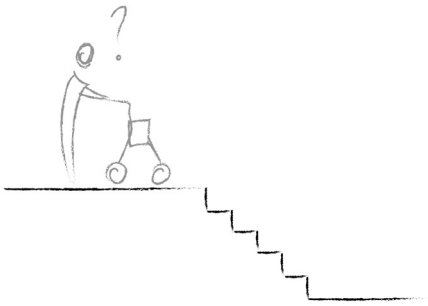
Physical

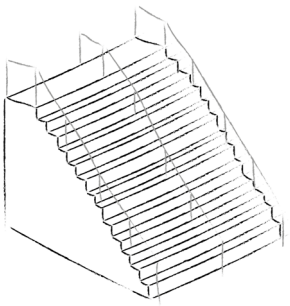
Accessability of building block

As mentioned earlier, maintaining mobility among the senior can be ensured by increasing accessibility. This also applies in terms of the residential block. For instance, residential blocks should be walker, wheelchair or mobility scooter friendly (Joosten, 2013). A lift and ramp should be available for this group of senior people to enter the building. In addition, applying automatic doors help in making the building accessible.



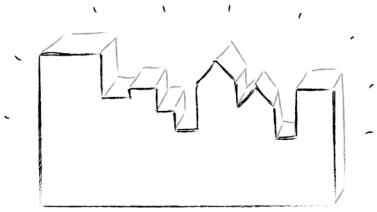






Recognizability & orientation

According to Van Gemerden and Staats (2006), senior people's sense of security, self-reliance, and general health are also influenced by recognizability and orientation. When built architecture is more diverse, the built environment is highlighted rather than the seemingly empty horizon. Above that, a unique feature of a building or in a public area should make every other street corner stand out. Various materials and objects can be used to indicate safe routes (Cammelbeeck et al., 2014).



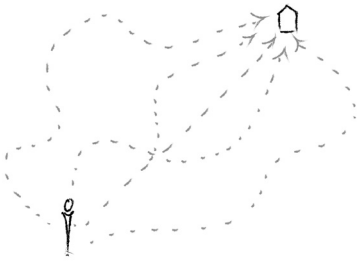
Green

A community vegetable garden can contribute to health by encouraging fruit and vegetable intake, physical activity and social contact with neighbours (Alaimo et al., 2008; Ulrich, 2002; Detweiler etal., 2012). Installing roof gardens contributes to the stratification of greenery in high-density urban areas. Seniors who live far away can seek out greenery by placing roof gardens. The senior who struggle with walking more are going to benefit more. Additionally, building walkways facilitate physical connections amongst other roof gardens, increasing their allure for exercise and promoting random meetings at building level.

Functional

Routing

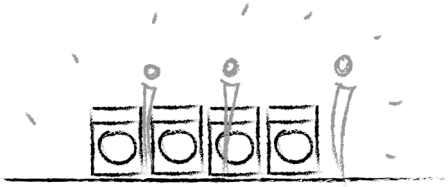
The walk from the street to your house should seem secure and comfortable. In light of this, it is crucial that this route be as free of public spaces as possible and be as isolated from it as feasible (Mantingh & Duivenvoorden, 2021). Meeting new people can happen right there in a secure shared space. Establishing shared meeting areas is crucial. For example, oversized dimensions in a post space would be very beneficial so that people can talk without anyone getting in the way (Mantingh & Duivenvoorden, 2021). It's also pleasant to take a more casual route to your house. where you have the option of avoiding or meeting other neighbors.



Social

Shared spaces

A shared space can play a major role in neighbourly contact. This space is located between the private of the home and the public of the city. Activities that residents cannot or do not want to do in their own homes can take place in this safe collective space (Mantingh & Duivenvoorden, 2021). Furnishings and amenities (e.g. washing machines and coffee machines) can encourage use.

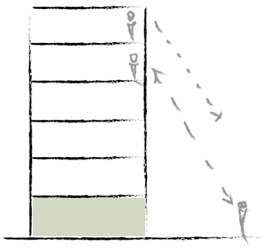


Height

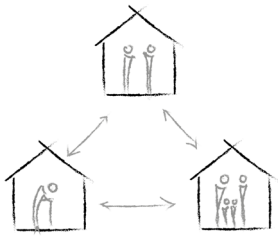
The height of buildings and dimensions of spaces largely determine the relationship you can have with the ground level from your home (Mantingh & Duivenvoorden, 2021). For example, Gehl (2010) showed in Cities for People that contact is possible up to and including the fifth floor, then you are still able to recognise people. Similarly, he says that at higher than five floors, you would live more in the sky than in the city.

Human physiology dictates that people look mostly horizontally and very little upwards by default. 90% of buildings in a city or village can be identified by their plinth, which is their ground floor (Mantingh & Duivenvoorden, 2021). Thus, the ground floor should have both active uses like a café or restaurant as well

as lively uses like housing. This facilitates communication between the inside and outside and makes the walkways safer to walk on.



Intergenerational contacts
A mixture of residents in owner-occupied and rental properties, as well as those living in the social and private sectors. This diversity of individuals is necessary for the neighborhood's public areas to serve as spaces that promote empathy and tolerance, meeting individuals who live different lives or who have a different worldview (Mantingh & Duivenvoorden, 2021). For instance, this can facilitate the sharing of experiences and knowledge among senior citizens.

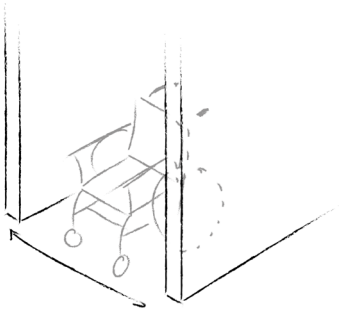


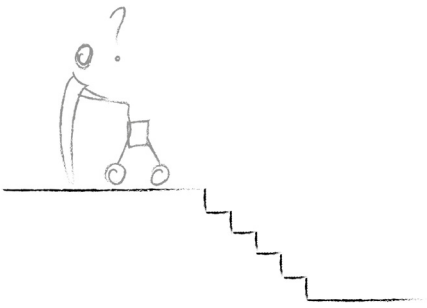
4.7 Transition zone and dwelling

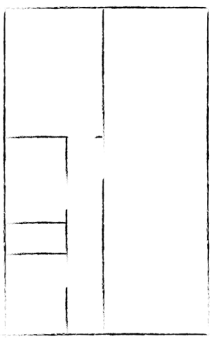
Physical

Accessability and safety

A home needs to be ground floor in order to be safe, accessible, and, consequently, lifetime. This implies that every housing function—living room, kitchen, bedroom, and bathroom—is on the same floor and that there are neither stairs nor thresholds. The risk of falling is decreased in homes that are appropriately accessible (Mol, 2020). The house should also have enough space for a wheelchair or walker to turn around in. Color use in the living environment also affects the functioning and well-being and thus health of the senior. A contrasting color of the background compared to solid home objects improve daily functioning (Parke & Friesen, 2015).





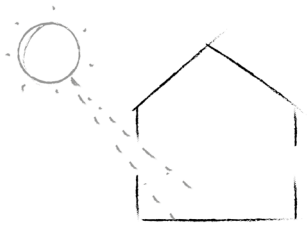


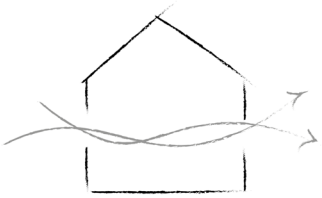
Recognizability

Additionally, colors can influence orientation and recognition. The front door represents the division between private and public spheres and can trigger the sense of "home." Colors and symbols can be used to accomplish this. Furthermore, in the home, recognizability can also be crucial. Having a well-defined floor plan guarantees that senior citizens can navigate the house with ease (Annink, 2018; Salomons, 2023)

Wellbeing

Residents of housing types like service apartments and courtyards are more likely to mention seeking interaction and spending time together (Mol, 2020). Seniors who live independently in their homes also appreciate the lively view of the living room balcony from the balcony. It is considered to be valuable to have greenery around (Mol, 2020). The living room, patio, and backyard are common areas for senior citizens to unwind. Older adults frequently unwind in chairs (Annink, 2018). The building physics of the building must also be taken into account for a home to be comfortable. For the senior, a healthy indoor environment is especially crucial. Older people are more susceptible to changes in temperature (Salomons, 2023). As a result, keeping the house at a consistent temperature can help to minimize drafts and keep dust from being disturbed. Furthermore, adequate ventilation is necessary in the house in order to eliminate stagnant air (Mol, 2020).

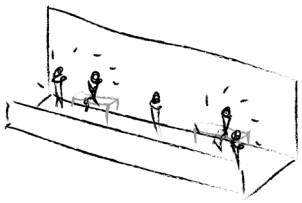




Functional

Space of comfort

Seniors who live alone greatly value being able to interact with others in a secure setting because they have a restricted range of mobility and are more dependent on their houses. By placing a chair by the window, seniors can look outside and engage with passersby, such as waving to youngsters (see figure 115) (Mol, 2020). Their sense of belonging to everyday life is greatly increased by being a part of public life outside their window, which they appreciate for its lively view and activity. Seniors' emotions of loneliness can be lessened just by spending time with others (Alkema, 2019).

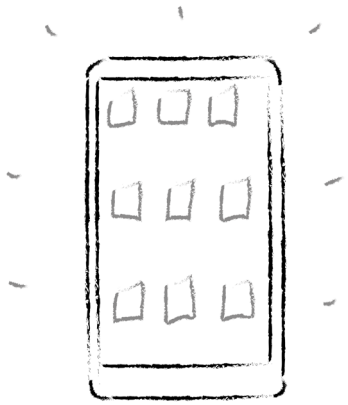


Balconies, galleries, and gardens may be used as safe outside areas that make interacting with locals easier. The presence of a hedge or fence between private regions and public spaces gives a sense of security, boosting social interactions (Annink, 2018). Furthermore, semi-public areas—also called threshold zones—promote social cohesiveness by creating settings in which senior citizens feel secure and inspired to interact with others.

Domotica

For elders, having room in their homes for in-home services like housekeeping or personal care is imperative. Technology can assist in addressing a number of restrictions in addition to this expert support. This covers both electronic and physical support (Gude, 2006). For example, using home automation systems, often known as "smart home systems," has shown to be beneficial in allowing seniors to maintain

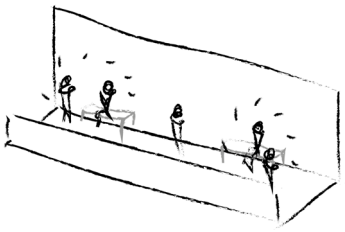
their independence for as long as feasible. The senior's safety, independence, and general well-being are improved by these smart home solutions (Van der Gugten, 2017).



Social

Privacy vs encounters

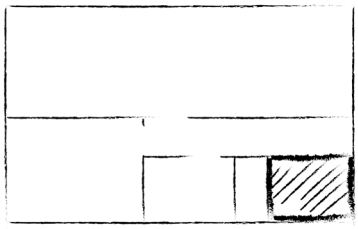
The threshold zone facilitates more interaction between residents and the outside world as well as between neighbors. In addition to improving resident interaction, a sufficient threshold zone raises the standard of living in the dwellings. A resident could retreat inside the house by putting a bench in front of it, for example. The transition from private to public space is softer in the intermediate area. The extent to which contact with neighbors can be initiated is also determined by the size of the threshold area. It is feasible to sit in the threshold zone in Soft City of Sim (2019) at a width of 50 cm.



Flexibility

Having hobbies or other activities at home improves the sense of place (Penninx & Royers, 2007). Seniors usually unwind in the living room, balcony, or garden since comfort and relaxation go hand in hand. A beloved chair is frequently the main place to unwind in the living area. A sensation of peace and relaxation is also enhanced by indoor plants and vistas of greenery from the balcony or garden.

According to Annink's (2018) research, having a spare room is quite important. Seniors who live far away from friends and family can stay longer when there is an additional room available.



Co-housing
A growing number of people are looking for new ways to live these days that can satisfy their needs for safety, involvement, community, and possibly even informal care and support. In residential communities or groups, residents place a strong emphasis on their social and organizational connectedness.

Conclusion

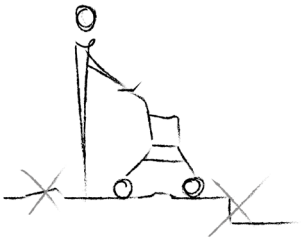
This chapter aimed to answer the following question:

What does a group of seniors need in order to stimulate a sustainable community and subsequently what can this community offer to its surroundings?

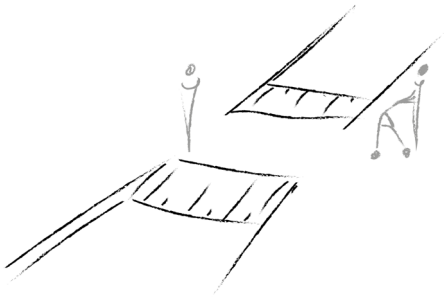
It can be concluded that many physical, functional and social aspects are very significant in creating a comfortable space for a senior. Physical aspects like accessability and safety (stairs and ramps), but also recognition of your own home helps creating a place of belonging and creating reason and freedom to be mobile. All important because they are connected to physical limitations they experience. Being able to move more freely through the building and neighbourhood creates more opportunities for encounters, which is not only beneficial to heir phyisical health but also their mental health.
On the functional aspect it is important to have amenities close by, like supermarkets, pharmacy and busstops creates reasons to keep moving, exercising the body. Social aspects like a divers group of neighbours and many shared spaces (e.g. washing room or communal garden) might alleviate social loneliness in seniors. The next pages shows an overview of al the needs and whishes.

Physical

accessibility & safety



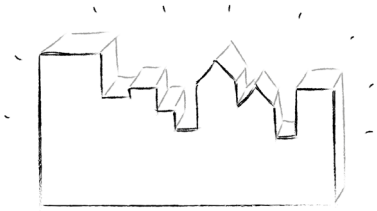
no obstacles



slowing down traffic &
easily crossing the street

recognition

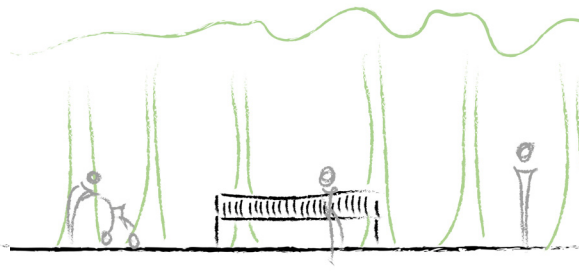
street corners



diversity in architecture &
functions

activity

benches

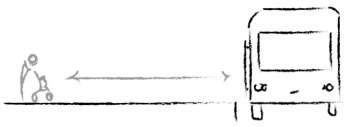


park

drawings based on design principles by Platform31 and Ben Sajet Centrum

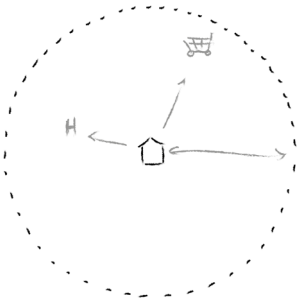
Functional

transport



accessible public transport

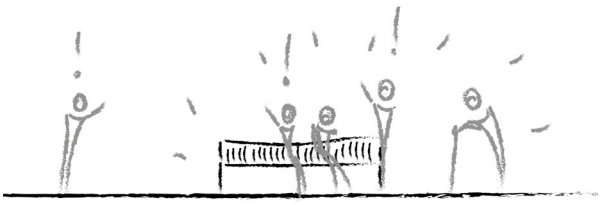
amenities



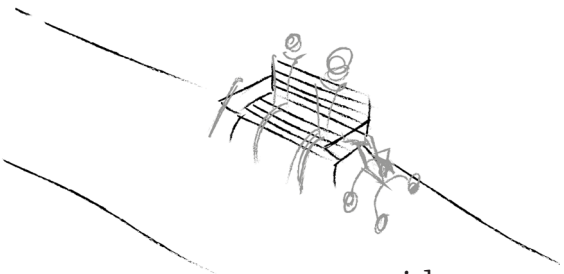
amenities within 500m range

Social

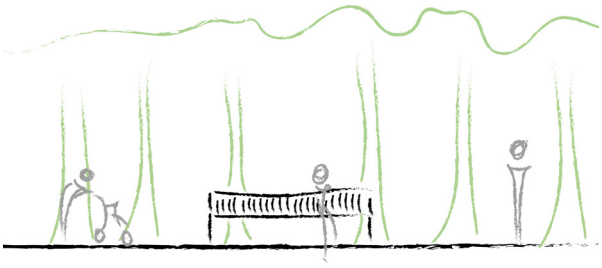
social interaction



bench in active place



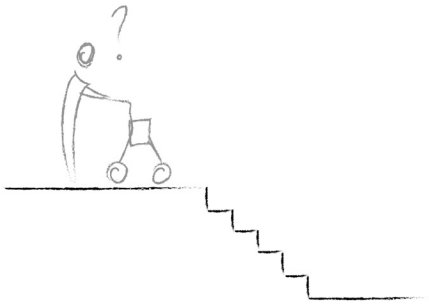
encounters outside



green for stimulating encounters

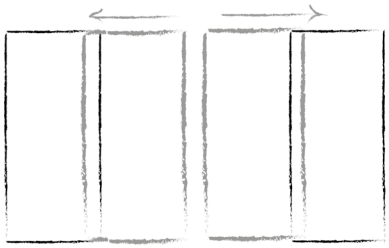
Physical

accessibility & safety

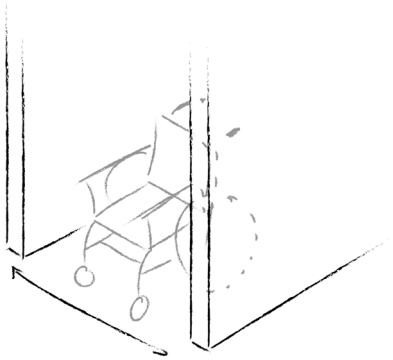


no unneccessary stairs

slopes for wheelchairs & walkers

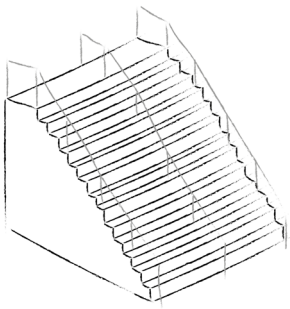


automatic doors



hallways wide enough for wheelchairs and turning

activity

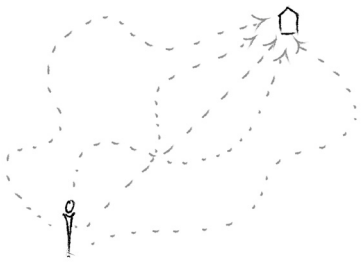


stairs with bannisters

drawings based on design principles by Platform31 and Ben Sajet Centrum

Functional

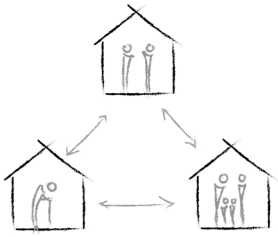
routing



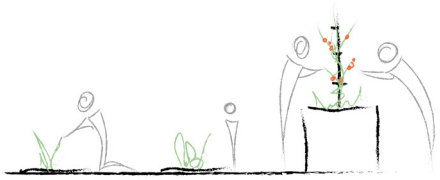
different routing

Social

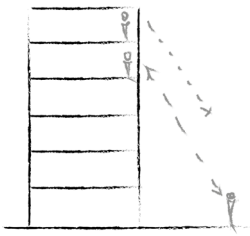
social interaction



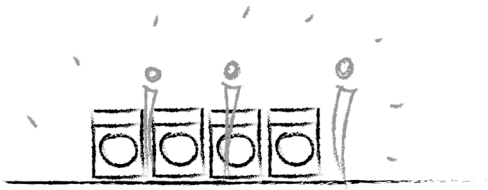
diversity in generations



communal garden

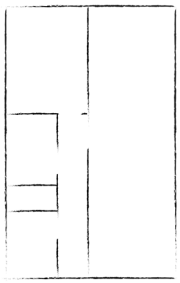


recognizing people from 5 floors

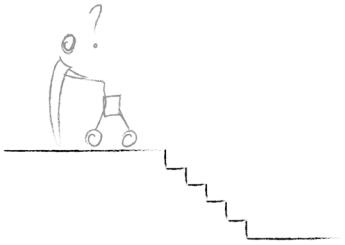


shared spaces

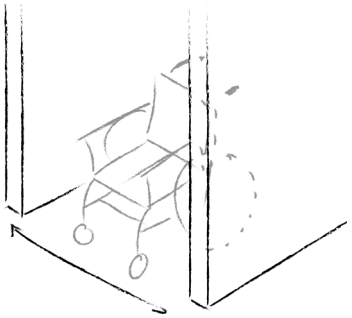
accessibility & safety



important rooms on ground floor

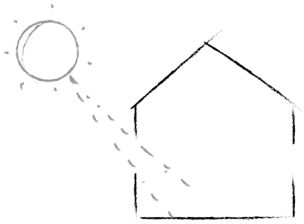


no stairs and thresholds

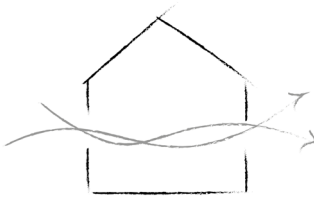


wheelchair

comfort

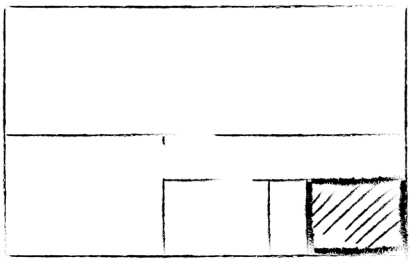


daylight



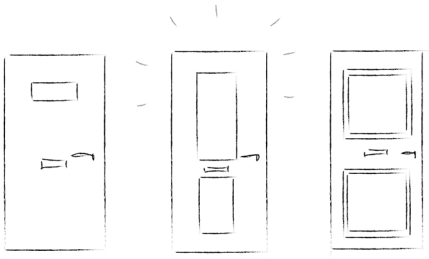
good ventilation

comfortable space to sit



hobby room

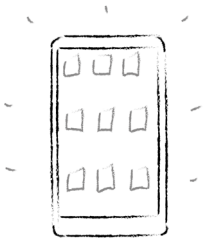
recognition



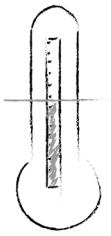
front door

drawings based on design principles by Platform31 and Ben Sajet Centrum

needs



domotica

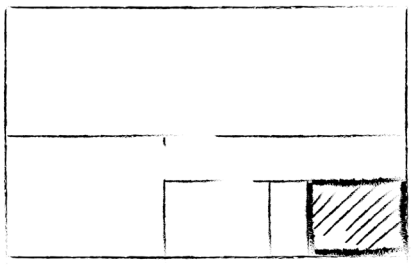


constant temperature

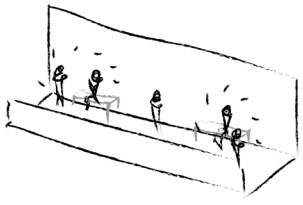
Social

connectivity

clustered living



spare bedroom



interaction on gallery space

5 CONCLUSION

illustration drawn by TU Delft students for Urban Oases by Willemijn WIlms Floet, edited by author

In this research the following main question stood at the centre:

Which design strategy can create a healthy living environment on a social and spatial level where the elderly feel included and helpful while also being able to age in place?

In order to answer the main question, two subquestions were asked and studied.

The first subquestion that was answerwd was:

"When and how did we design housing for seniors and what can we learn from it for nowadays designing?"

After creating a timeline showing the main developments through history, we can see that the government played a crucial role in the creation of the societal role of the elderly. From the beginning of the 20th century when the elderly were given a little bit of money to spend and the subsidization of the elderly housing, the group of elderly were immediately seen as a source to make profit and immediately push them out of the city. With the mass production of retirement homes the group of elderly were isolated. From the seventies focus shifted to how these elderly people could be integrated as a whole within the city limits and how the neighbourhood could interact with the elderly making them part of society again. However with realising how expensive elderly care was with budget cuts as a result meant that the elderly people were meant to stay at home longer putting a burden on relatives, friends and the neighbourhood.

From this we are now able to assess which design ideas are most applicable for use in housing for contemporary seniors thanks to the analysis of these case studies. Every design idea can be linked with particular lifestyle (colours) needs by applying the BSR model and looking at the wide range of lifestyles represented in this group. This method enables an individualized analysis of how these ideas might work in contemporary situations, giving a clear picture of what solutions could successfully meet every need of contemporary seniors living.

From the research we can conlude

that incorporating places where the elderly can interact with each is something that is still shared with nowadays seniors. However, the ability to retreat to your home, away from the commotion and safe in your home is still something that should be respected today. By creating different zones, private, semi-public to public could help in maintaining this balance. Furhtermore, we can also see that interaction through encounters is indirectly stimulated in the case studies (both horizontally as vertically), which shows the importance of that bufferzone. By creating a porous building with facilities allows the neighbourhood to profit from it as well, creating even more chances of encounter. All these ideas can be found on the next page.

The second subquestion that was answered was:

"What does a group of seniors need in order to stimulate a sustainable community and subsequently what can this community offer to its surroundings?"

It can be concluded that many physical, functional and social aspects are very significant in creating a comfortable space for a senior. Physical aspects like accessability and safety (stairs and ramps), but also recognition of your own home helps creating a place of belonging and creating reason and freedom to be mobile. All important because they are connected to physical limitations they experience. Being able to move more freely through the building and neighbourhood creates more opportunities for encounters, which is not only beneficial to heir phyisical health but also their mental health. On the functional aspect it is important to have amenities close by, like supermarkets, pharmacy and busstops creates reasons to keep moving, exercising the body. Social aspects like a divers group of neighbours and many shared spaces (e.g. washing room or communal garden) might alleviate social loneliness in seniors. The next pages shows an overview of al the needs and whishes.

All answers from these subquestion lead to a design strategy that could be utilized for designing dwelling for the seniors who wish to live independently, seniors who wish to share their knowledge and experiences through social contact to other people. Thus, this design stratey was built from the

following principles:

– Creating opportunities for interaction and encounters

– Creating freedom by removing physical, functional and social hurdles

– Creating a divers neighbourhood with a multi- generational setting

6 BIBLIOGRAPHY

History of elderly housing

64 bejaardenwoningen Slotermeer (1952) A. E. van Eyck, J.C. Rietveld. (n.d.). Nieuwe Instituut. https://nieuweinstituut.nl/projects/ouderenhuisvesting/64-bejaardenwoningen-slotermeer-1952-e-van-eyck-jc-rietveld

Charles, S. T. (2010). Strength and vulnerability integration: a model of emotional well-being across adulthood. Psychological Bulletin. https://doi.org/10.1037/a0021232

Cheng, Y., Li, X., Lou, C., Sonenstein, F. L., Kalamar, A., Jejeebhoy, S., Delany-Moretlwe, S., Brahmbhatt, H., Olumide, A. O., & Ojengbede, O. (2014). The Association between Social support and Mental Health among Vulnerable Adolescents in five Cities: Findings from the Study of the Well-Being of Adolescents in Vulnerable Environments. Journal of Adolescent Health, 55(6), S31–S38. https://doi.org/10.1016/j.jadohealth.2014.08.020

Collectieve huisvesting. (n.d.). Nieuwe Instituut. https://nieuweinstituut.nl/projects/ouderenhuisvesting/collectieve-huisvesting

De Drie Hoven (1970) H. Hertzberger en C. van Empelen. (n.d.). Nieuwe Instituut. https://nieuweinstituut.nl/projects/ouderenhuisvesting/de-drie-hoven-1970-h-hertzberger-en-c-van-empelen

De Gooyer (1978) - Abma, Hazewinkel Dirks & De Haan. (n.d.). Nieuwe Instituut. https://nieuweinstituut.nl/projects/ouderenhuisvesting/de-gooyer-1978-abma-hazewinkel-dirks-de-haan

De Heemhaven (1968) J.P. Kloos. (n.d.). Nieuwe Instituut. https://nieuweinstituut.nl/projects/ouderenhuisvesting/de-heemhaven-1968-jp-kloos

De Zonnetrap (1970) E. Hartsuyker, L. Hartsuyker-Curjel. (n.d.). Nieuwe Instituut. https://nieuweinstituut.nl/projects/ouderenhuisvesting/de-zonnetrap-1970-e-hartsuyker-l-hartsuykercurjel

Floet, W. W. (2021). Oases in de stad. Het hofje als architectonisch idee.v

Gemeente Amsterdam. (2019, December 24). Hofjes. Voor oude vrijsters of millennials? https://www.amsterdam.nl/nieuws/achtergrond/hofjes/#:~:text=Amsterdam%20heeft%2056%20hofjes.,Ook%20woningcorporaties%20beheren%20hofjes

Gerhardhuis (1959) W. van Tijen. (n.d.). Nieuwe Instituut. https://nieuweinstituut.nl/projects/ouderenhuisvesting/gerhardhuis-1959-w-van-tijen

Geschiedenis. (n.d.). Codde En Van Beresteyn. https://www.coddevanberesteyn.nl/geschiedenis.html#:~:text=Hofjes%20werden%20in%20Nederland%20vooral,van%20een%20onbezorgde%20oude%20dag

Karenhuizen (1916) J. Duiker en B. Bijvoet. (n.d.). Nieuwe Instituut. https://nieuweinstituut.nl/projects/ouderenhuisvesting/karenhuizen-1916-j-duiker-en-b-bijvoet

Kraus, A., & Graham, C. (2013). Subjective wellbeing in Colombia: some insights on vulnerability, job security, and relative incomes. International Journal of Happiness and Development, 233–260. https://doi.org/10.1504/IJHD.2013.057652

Loeff, K., Van Meijel, L., & Opmeer, P. (2005). Bejaardentehuizen: Categoriaal Onderzoek Wederopbouw 1940-1965. Rijksdienst voor het Cultureel Erfgoed. https://www.cultureelerfgoed.nl/binaries/cultureelerfgoed/documenten/publicaties/2005/01/01/bejaardentehuizen-categoriaal-onderzoek-wederopbouw-1940-1965/bejaardentehuizen.pdf

LVGO. (2024, January 17). Woongroep van ouderen Oude Schans (WOOS) - LVGO. https://www.lvgo.nl/woongroep/woongroep-oude-schans-amsterdam/

Mens, N., & Wagenaar, C. (2009). De architectuur van de ouderenhuisvesting: bouwen voor wonen en zorg. Nai010 Uitgevers. https://research.tudelft.nl/en/publications/de-architectuur-van-de-

ouderenhuisvesting-bouwen-voor-wonen-en-zo

Nederlandse Zorgautoriteit. (2012). Advies: Scheiden van wonen en zorg in de AWBZ.

Osdorperhof (1962) J.W.H.C. Pot en J.F. Pot-Keegstra. (n.d.). Nieuwe Instituut. https://nieuweinstituut.nl/projects/ouderenhuisvesting/osdorperhof-1962-jwhc-pot-en-jf-potkeegstra

Sint Jacob (1959) H. van Putten. (n.d.). Nieuwe Instituut. https://nieuweinstituut.nl/projects/ouderenhuisvesting/sint-jacob-1959-h-van-putten

Visser, Y. (2024, May 27). Hoe de invoering van de AOW werd beleefd. Historiek. https://historiek.net/hoe-de-invoering-van-de-aow-werd-beleefd/75640/

Contemporary seniors

Blije, B., Van Hulle, R., Poulus, C., & Hooimeijer, P. (2009). Het wonen overwogen: De resultaten van het WoonOnderzoek Nederland 2009. In Ministerie Van Volkshuisvesting, Ruimtelijke Ordening En Milieubeheer. Ministerie van VROM en het Centraal Bureau van de Statistiek. https://dspace.library.uu.nl/bitstream/handle/1874/304330/2010hetwonenoverwogen2009.pdf?sequence=1&isAllowed=y

Centraal Bureau voor de Statistiek. (2022). PBL/CBS Regionale bevolkingsen huishoudens prognose 2022–2050. In Centraal Bureau Voor De Statistiek. https://www.cbs.nl/-/media/_pdf/2022/27/rp2022_web.pdf

Centraal Bureau voor de Statistiek. (2024, May 8). Welzijn; kerncijfers, persoonskenmerken. Centraal Bureau Voor De Statistiek. https://www.cbs.nl/nl-nl/cijfers/detail/85542NED

Commissie Toekomst zorg thuiswonende ouderen. (2020). Oud en zelfstandig in 2030. Een reisadvies. In Rijksoverheid. Rijksoverheid. https://open.overheid.nl/repository/ronl-c2d7f150-e264-477e-b45f-e481e0e60ad0/1/pdf/Advies-Oud-en-zelfstandig-in-2030-Een-reisadvies.pdf

Habion, Vastgoed Zorgsector, & DISCvision. (2018). Leefstijlen van ouderen. In debilt.nl. https://www.debilt.nl/fileadmin/bestanden/Bouwen_en_wonen/Samen_werken_aan_wonen/Habion___Leefstijlen.pdf

Lijzenga, J., Gijsbers, V., Poelen, J., & Tiekstra, C. (2018). Ruimte voor wonen: de resultaten van het WoonOnderzoek Nederland 2018. Ministerie van Binnenlandse Zaken en Koninkrijksrelaties.
Vrieler, A., & Ter Heegde, H. (2021). Blijven of een volgende stap? In AM.nl. AM Vastgoedontwikkeling. https://www.am.nl/wp-content/uploads/2021/02/Onderzoek-naar-woonwensen-van-actieve-en-vitale-ouderen.pdf

Needs and wishes of contemporary seniors

Alaimo, K., Packnett, E., Miles, R. A., & Kruger, D. J. (2008). Fruit and Vegetable Intake among Urban Community Gardeners. Journal of Nutrition Education and Behavior, 40(2), 94–101. https://doi.org/10.1016/j.jneb.2006.12.003

Annink, A. (2018). Een leven lang plezierig wonen. In Leyden Academy. Leyden Academy. https://www.leydenacademy.nl/wp-content/uploads/2018/12/Rapportage-woonplezier-onderzoek-defYK.pdf

Borst, H. C., Miedema, H. M., De Vries, S. I., Graham, J. M., & Van Dongen, J. E. (2008). Relationships between street characteristics and perceived attractiveness for walking reported by elderly people. Journal of Environmental Psychology, 28(4), 353–361. https://doi.org/10.1016/j.jenvp.2008.02.010

Cammelbeeck, C., Engbers, L., Kunen, M., & L'abée, D. (2014). Ontwerpprincipes voor een beweegvriendelijke omgeving. In Kenniscentrum Sport & Bewegen. Nederlands Instituut voor Sport en Bewegen. https://www.kenniscentrumsportenbewegen.nl/kennisbank/publicaties/?ontwerpprincipes-voor-een-beweegvriendelijke-omgeving&kb_id=12556

Campen, C., & Ross, J. A. (2011). Kwetsbare ouderen. Sociaal en Cultureel Planbureau.

Daalhuizen, F., Van Dam, F., De Groot, C., Schilder, F., & Van der Staak, M. (2019). Zelfstandig Thuis op Hoge Leeftijd: Verkenning van knelpunten en handelingsperspectieven in beleid en praktijk. In Planbureau Voor De Leefomgeving. Planbureau voor de Leefomgeving.

Detweiler, M. B., Sharma, T., Detweiler, J. G., Murphy, P. F., Lane, S., Carman, J., Chudhary, A. S., Halling, M. H., & Kim, K. Y. (2012). What is the evidence to support the use of therapeutic gardens for the elderly? Psychiatry Investigation, 9(2), 100. https://doi.org/10.4306/pi.2012.9.2.100

Doekhie, K., De Veer, A., Rademakers, J., Schellevis, F., & Francke, A.

(2014). Verschillen in de wensen en mogelijkheden voor wonen, welzijn en zorg. Nivel. https://repub.eur.nl/pub/77850

Gehl, J. (2010). Cities for people. Island Press.

Gielen, W., Herbers, D., & Hitzert, F. (2018). Verhuizing van oudere huishoudens. In Centraal Bureau Voor Statistieken. Centraal Bureau voor Statistieken. https://www.cbs.nl/-/media/_pdf/2018/32/verhuizing-van-ouderen.pdf

Gude, J. (2006). Mensgericht ontwerpen -in zorg en wonen voor ouderen. University of Twente. http://essay.utwente.nl/58161/

Joosten, M. (2013). Een woonomgeving voor het leven. Technische Universiteit Delft.

Maas, J., Verheij, R. A., Groenewegen, P. P., De Vries, S., & Spreeuwenberg, P. (2006). Green space, urbanity, and health: how strong is the relation? Journal of Epidemiology and Community Health, 60(7), 587–592. https://doi.org/10.1136/jech.2005.043125

Mantingh, I., & Duivenvoorden, A. (2021). Ontwerpen voor ontmoeten. In Platform31. Platform31.

Ministerie van Volksgezondheid, Welzijn en Sport. (2018, October 24). Ruimte voor redzaamheid. Advies | Raad Voor Volksgezondheid En Samenleving. https://www.raadrvs.nl/documenten/publicaties/2015/03/11/ruimte-voor-redzaamheid

Mol, C. (2020). Ouderen langer zelfstandig thuis! Maar hoe dan? Ben Sajet Centrum.

Parke, B., & Friesen, K. (2015). Physical Design Components for an Elder Friendly Hospital. In RGP Toronto. https://www.rgptoronto.ca/wp-content/uploads/2017/12/CodePlus-Final2-April-2015.pdf

Rantanen, T. (2013). Promoting mobility in older people. Journal of

Preventive Medicine and Public Health, 46(Suppl 1), S50–S54. https://doi.org/10.3961/jpmph.2013.46.s.s50

Salomons, M. (2023). Independent elderly living, integrated into an informal care stimulating neighbourhood [Master Thesis]. Delft University of Technology.

Sim, D. (2019). Soft city: Building Density for Everyday Life. Island Press.

Sport en bewegen tegen eenzaamheid bij ouderen. (2024a, March 18). Beteroud_Nl. https://www.beteroud.nl/actueel/verhalen/sport-en-bewegen-tegen-eenzaamheid-bij-ouderen
Sport en bewegen tegen eenzaamheid bij ouderen. (2024b, March 18). Beteroud_Nl. https://www.beteroud.nl/actueel/verhalen/sport-en-bewegen-tegen-eenzaamheid-bij-ouderen

Timmermans, E. J., Schaap, L. A., Visser, M., Van Der Ploeg, H. P., Wagtendonk, A. J., Van Der Pas, S., & Deeg, D. J. H. (2016). The association of the neighbourhood built environment with objectively measured physical activity in older adults with and without lower limb osteoarthritis. BMC Public Health, 16(1). https://doi.org/10.1186/s12889-016-3347-8

Ulrich, R. S. (2002). Health benefits of gardens in hospitals. ResearchGate. https://www.researchgate.net/publication/252307449_Health_Benefits_of_Gardens_in_Hospitals

Van Gemerden, E., & Staats, H. (2006). Ontwerp en Sociale Veiligheid. Ministerie van Volkshuisvesting, Ruimtelijke Ordening en Milieubeheer. https://doi.org/10.13140/2.1.2207.3922

Van Oostrom, S., Van der A, D., Picavet, S., Rietman, L., De Bruin, S., & Spijkerman, A. (2016). Ouderen van nu en straks: zijn er verschillen in kwetsbaarheid? In Rijksinstituut Voor Volksgezondheid En Milieu. Rijksinstituut voor Volksgezondheid en Milieu.