

# Aging (in) architecture

Including elderly preferences in renovating existing housing typologies to senior living environments  
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## Introduction

*"Senior housing is the solution to housing shortage"*

– de Lange (FD), 2021

*"The amount of elderly people will increase sharply in the coming years"*

– Sociaal & Cultureel Planbureau, 2018

*"Building homes for elderly will be given high priority"*

– Ministry of Health, Welfare and Sport, 2021

*"Over the next ten years, 1 million homes will have to be built"*

– NOS, 2021

*"Even though their house is too big and they have enough money, elderly don't want to move"*

– Obbink (Trouw), 2020

*"Solving the housing shortage and improving housing quality requires [...] support measure for renovation"*

– Mlecnik (Genovesi / de Volkskrant), 2021

Just some quotes of Dutch newspapers and government agencies emphasizing the urge of the rapid aging of Dutch society and the related housing shortage. This development is seen all over the world: Japan, Germany, Italy and Finland are some of the countries with an average over-65 population of at least 20%, followed by the Netherlands with 19% (PRB, 2021). The current Dutch housing shortage is believed to be influenced by elderly continuing to live in their family home (Ryan, 2016; Obbink, 2020). 'Empty nesters' would hold up homes for young families, as relocation is stagnating (Team Stadszaken.nl, 2020). The financial daily newspaper FD claims solving this stagnation allows elderly to move into senior homes, only if they could be tempted to move. However, Eelco Damen, former chairman of a healthcare organization, claims he's surprised by the lack of involvement of elderly in the design of senior complexes (FD, 2021). So the problem is not simply the lack of senior housing available (Mol, 2020). The involvement of elderly in the design stage to create suitable housing, would plausibly

make it possible to have elderly relocate (Demirbilek & Demirkhan, 2004; Van Hoof et al., 2021). This participation is needed anyway, as it turns out lots of elderly do not even want to move at all (Obbink, 2020). ANBO, the General Dutch Association for the Elderly, claims this to be mostly due to lacking attention for "good and appropriate housing" for elderly (De Koster, 2019).

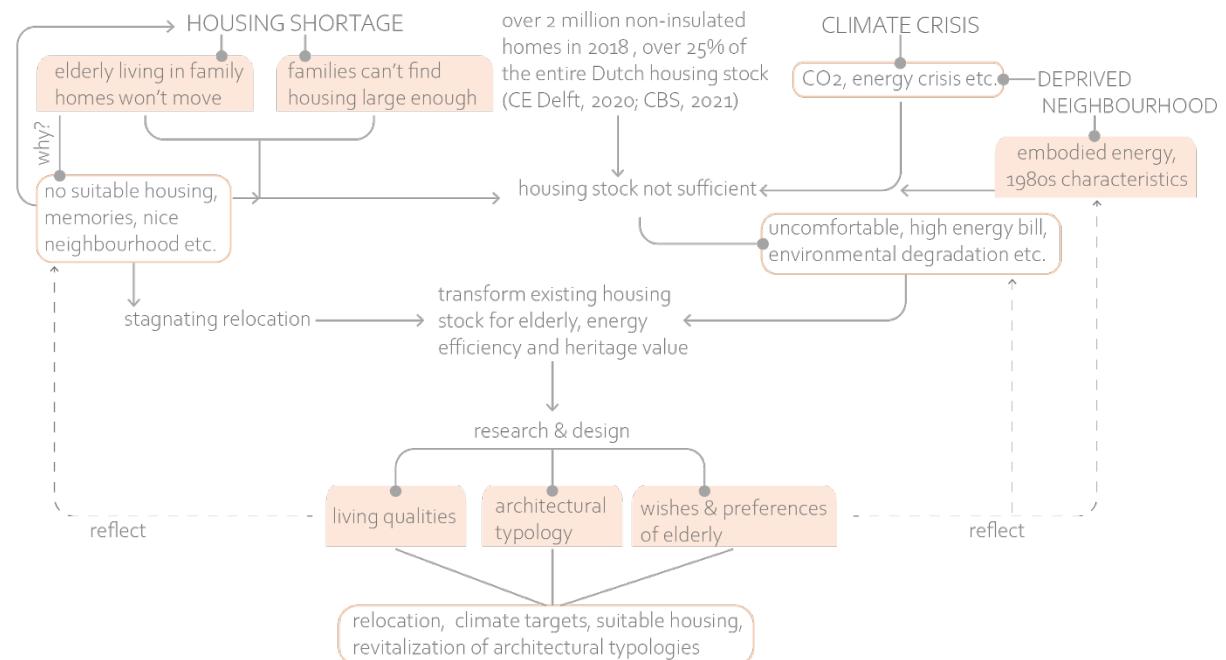
Everyone will encounter a point at which they are no longer able to live comfortably in their familiar home. The way my grandparents experienced this process, inspired me to start digging into what elderly really want and need when this happens. They did not feel like moving unless there was no alternative, as those were less than desirable. This more human side, what they really need to live and not just because they live alone in a family home, should be the driver to let elderly relocate. Imagine a staircase that becomes impassable or physical thresholds to and inside the house, facilities outside of walking distance or a lack of social interaction. Partly practical matters for which regulations are made, but this doesn't touch the social and emotional side. The inconveniences could lead to an increased amount of care or eventually relocating to a care home. Of course the current regulations on quality housing should not be left unnoticed, but the task is to find out what it is these might be lacking in terms of the human side.

As a matter of fact, older people are not living at their family homes just because they are in the right place. Living independently at home for longer was imposed by the government when it cut budgets for care homes, as "institutional care" is very expensive (Wiles et al, 2011). Creating more suitable houses then, sounds like a logical next step. However, the ANBO pointed in 2018 at a "shortage of 80.000 senior houses" which would increase with 20.000 every year, leading to a demand of 400.000 suitable homes in 2040 (Mol, 2020).

In the Netherlands as a whole, there's an enormous task to build one million homes before 2030, to solve the housing shortage (Cobouw, 2021). Suitable housing for elderly

should definitely be taken into account in this task.

Simultaneously the existing housing stock no longer meets the sustainability requirements in terms of insulation and energy consumption, factors of a qualitative living environment. Milieu Centraal even mentions 2 out of 3 Dutch homes to be insufficiently insulated for current climate requirements, coming down to at least 5 million homes (2021). Simply demolishing the insufficient buildings and creating new ones means that a huge amount of embodied energy is lost and has to be recreated. That's why the challenge in the Netherlands and worldwide, is to preserve and upgrade the existing housing stock. The stock built in the period of 1985-1995 is especially important, containing more than one million homes, 13% of the entire current Dutch housing stock. This period is not valued as much in terms of building quality or architecture. That's why valuing this building period characteristics would not only include an important part of the Dutch housing stock as an element of cultural heritage, but would also significantly help reaching future climate requirements by renovation. The case study elaborated in the research is such a 1980s typology, the 'woondek'. It's a typology mostly consisting of multifamily housing, a category to which more than 300.000 homes from the 1980s belong (CBS, 2021).



## Problem statement

The problems touched in this research, are the mismatch between the aging population and available housing stock, together with the housing shortage and future climate requirements. The focus of the research is on 1980s typology architecture within the field of cultural heritage and energy efficiency, combined with the chances for elderly, their preferences in the redesign of these homes and to what extent these can be incorporated into current building regulations.

When studying the preferences of elderly for housing, a lot of questions arise. How do they spend their days? What is the preferable living environment? What functions are crucial to have nearby? Do or would they like to spend time outside a lot? What are the emotional wishes? How about spending time with their (grand)children? Do they want their own garden? Or would they like to take care of one collectively? Do they care about what the building looks like? In this way, (re)design does not only concern the actual houses themselves and the practical needs, but the environment and situation surrounding it as well. The design of a viable living environment for elderly, in which they can live independently or at least with the least care possible.

Scheme 1. problem - solution

To find out if the 'woondek' housing is fit for this purpose, the central research question is:

*How can living on a 'woondek' be made suitable for an aging society?*

In order to answer this question, the following sub-questions will elaborate:

- What are living preferences for elderly?
- What are the policies and regulations around qualitative living in the Netherlands?
- What is a 'woondek' typology, its key characteristics and how is it assessed?
- How can the 'woondek' at Bijlmerplein be redesigned to create senior housing?

## Research aim

The aim of this thesis is to find out if the 'woondek' typology is, and if not, can be made suitable for senior housing based on the preferences of elderly, ranging from outdoor space to indoor climate. With this research aim, the final goal is to redesign the 'woondek' housing at Bijlmerplein (Amsterdam) for senior housing. In short, creating a design guideline for an existing housing typology to implement senior housing, based on the preferences of elderly.

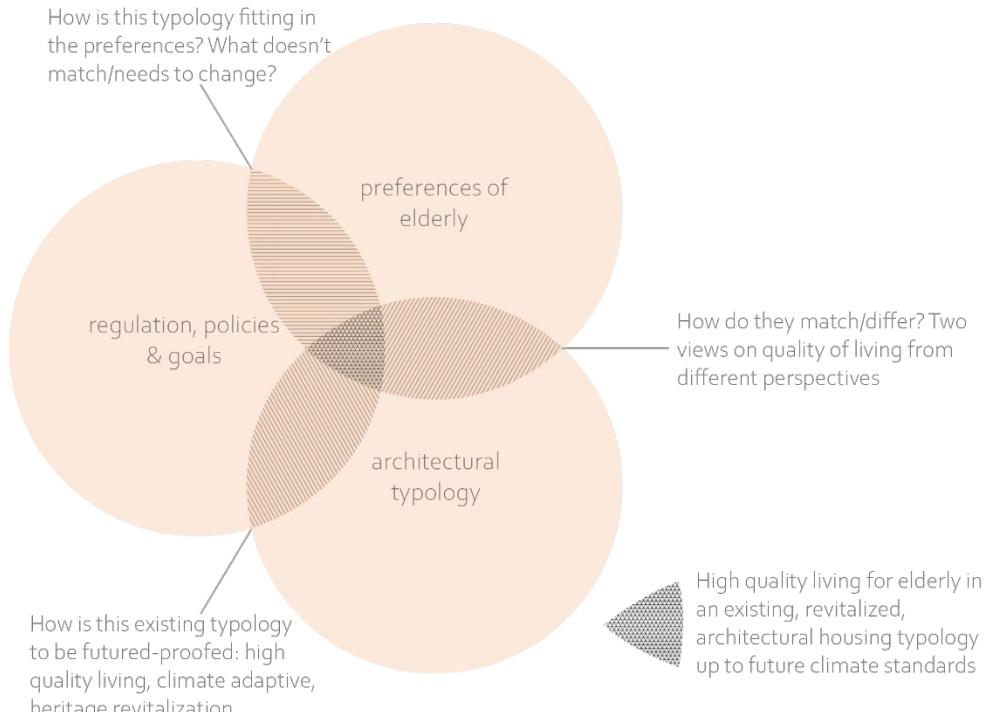
In a wider perspective, the aim is to learn and gain knowledge and tools for the broader issues: suitable housing and housing shortage; climate goals; and revitalizing architectural typologies.

## Theoretical framework

This thesis focuses on implementing the preferences of elderly in an existing housing typology. The research is from a theoretical point of view split up in three parts: the 'woondek' typology including all of its features; regulations, policies and goals concerning high quality housing; and preferences of elderly in the field of housing.

The 'woondek' typology is explained by Barzilay and Ferwerda as an experimental type of housing being built from the 60s on (2019). As this typology was experimental by nature, it is obvious that some prototyping did not live up to its ambitions. This is another part of the research, which will therefore evolve around what exactly are the minors and stumbling blocks of the concerning typology. Where and how, if at all, did the ideology turn out not quite as expected and which elements flourished?

The regulations are first of all represented by the Dutch 'Bouwbesluit', the guide for building



Scheme 2. interfaces topics

regulations, from which the most practical information for housing and renovation is extracted. Zooming in to the accessibility most likely to be involved with senior housing, Maarten Wijk offers a design manual for accessibility in public space, buildings and homes (2013). This knowledge is very useful in transforming an existing non-senior home and environment, especially at the 'woondek' which is not at ground level. An architectural look on senior housing is given by Clementine Mol, a doctor with her bachelors in architecture. Her work for the Ben Sajet Centrum, "a center for knowledge development and innovation in long term care" for elderly, elaborates on the qualities and preferences of elderly, combined with design of suitable housing (2020). Mol describes with models and interventions how to house elderly, what to think of, and not just the practical issue of accessibility. Her work is of great importance for the research as it is a guide to thinking about homes for the elderly in a design way.

In the field of policies, the report of the House of Representatives of the Dutch government (2005) describes the development of elderly housing and governmental interventions up until 2040.

The living preferences by elderly are split up in sub-categories, regarding: mobility, social interaction, facilities and outdoor spaces, and indoor qualities. A combination of these themes returns in the research by economic geographer Petra de Jong, who devoted her thesis to the reasons for elderly to relocate and their housing preferences (2021). This is very useful for the research as De Jong gives an elaborate explanation of why elderly don't want to move to a new home. It creates a possibility to address those aspects when designing senior housing.

A more location oriented approach can be found in the study of Heren 5 Architects about the city veterans or 'stadsveteranen' and their preferences for housing (2016). As this study is based on people living in the city already, it is very relevant for the location of the site: Bijlmerplein. FAME Magazine, a magazine by the eponymous architecture firm which

specializes in independent seniors complexes, is a very fruitful source in discovering how architects respond to independency and elderly housing. The magazine focuses foremost on what elderly want in terms of living. Finally, a more technical approach stems from research in which elderly are asked what their indoor climate preferences are, based on visual and thermal comfort (Steenkamer 2014; Steenkamer et al., 2014). In order to respond to indoor comfort through integral design, this source is of great importance for the research. In this way not only social wishes are taken into account, but also comfort based on senses.

## Research methodology

The research will be structured in three subdomains: preferences of elderly; regulations, policies and goals; and an existing architectural housing typology. Scheme 3 gives an overview of how to test every literature research with either outcomes of other subdomains or field research.

The literature on elderly preferences will be tested by interviews and surveys, performed on a representative group: 50 to 65 year olds, the largest group of elderly between now and 20 years in the Netherlands and Bijlmerplein; living independently; and most preferably in a family home. The focus is thus on the elderly of the future. The limitation might be the possible mismatch of preferences found in literature as these often include elderly above 65 as well. However, this is also a chance to see what can be done differently to create high quality housing for these future elderly.

Studying the regulations, policies and goals of high quality living is conducted by literature research, which is tested in a comparison with elderly preferences, but also with the existing housing at Bijlmerplein. It is not to say when differences occur in preference or regulation that either of both sources is wrong, the purpose is to find a middle way to satisfy everyone.

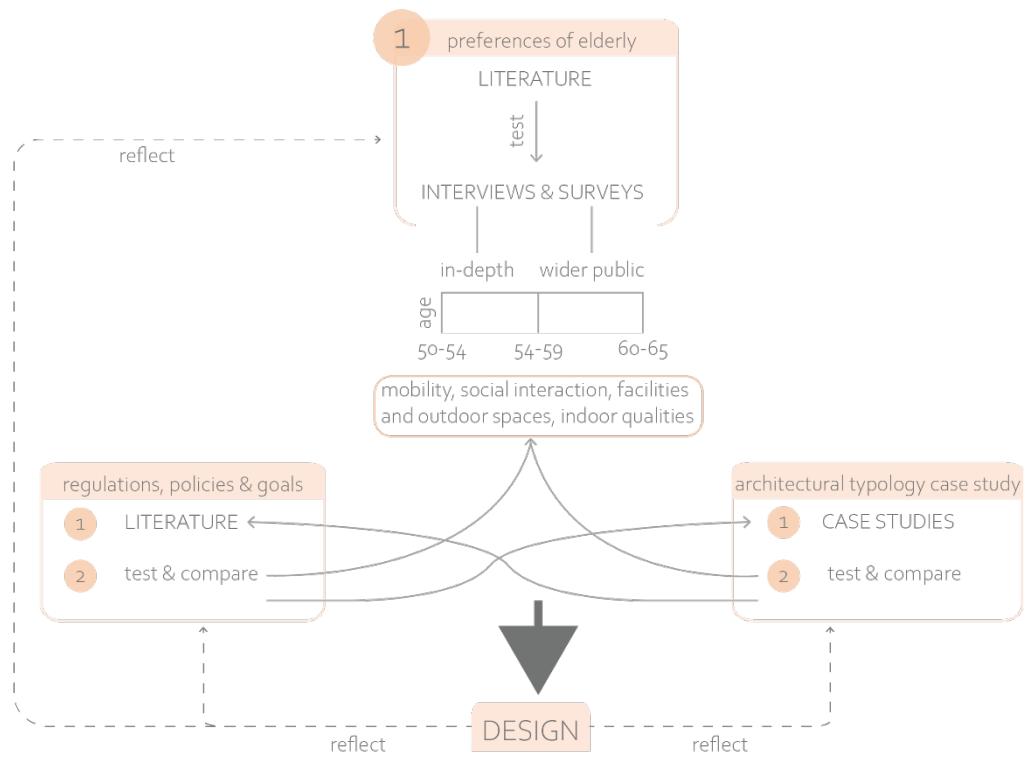
The 'woondek' typology is then analyzed in a way of comparing case studies from a study by Barzilay and Ferwerda (2019) about 'woondekken', and Bijlmerplein. The case studies

are tested for accessibility, circulation, access to homes and design of public space, as well as the ideology and current state. Why is the typology valuable from a heritage perspective? How do people use the outdoor spaces? Was it intended in this way by the designers? The case study outcomes are compared to regulations and policies and the preferences of elderly to conclude if, and if not, how the typology can be future proof. The limits of this study might be the comparison of 'woondekken' from the same construction period. It is however a good way to find out how all of these decks could improve in the future.

## Relevance

A lot of research has already been done on new housing types, or cohabitations for elderly and the relevance for this target group (Huang, 2011; Tyvimaa, 2011). Another large part is evolving around the topic of the care system and services in connection to senior housing (Kim, Kim & Gon Kim, 2003; Spitzer, Neuman, & Holden, 2004). Furthermore, the concept of 'aging-in-place' is a popular upcoming research topic (Henning, Åhnby, & Österström, 2009; Wiles, et al., 2011; Treichler et al., 2020). Although these individual

researches are very relevant to include in a design for senior housing, a link is still missing. The link between the redesign of existing housing typologies to senior housing with the focus on elderly preferences and qualitative living - not only adapting a home to a senior-like residence. The emotional, human side has to be implemented in the practical needs of the design, rather than only what a majority thinks should be good for these elderly to be their living conditions. There's also a lot of relevance in the nature of the linked design task, the renovation of 'woondek' housing at Bijlmerplein. For there's a lot of complexes from the same building period and typology in the Netherlands which have to be renovated sooner or later out of climate considerations and regulations. Proposing elderly as residents for these buildings, could stimulate relocation of elderly and families. As for the regulations, the limitations of existing buildings will be tested, which is a relevant tool for transformation of the existing housing stock. Finally, revitalizing a 20<sup>th</sup> century architectural housing typology can be considered very relevant to stimulate revitalization of other existing typologies and broaden the possible variety of housing typologies by reinventing the 'woondek'.



Scheme 3. methodology

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