TU Delft Faculty of Architecture and the Built Environment

Research plan: Transformation for elderly housing

A research in the needs and demands of elderly for a transformed utility building to grow old in together and healthy.

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Problem Statement:

Because life expectancy is rising elderly are living longer and therefore more and more elderly people need help. When getting older, elderly people get small complaints that are not only mental but also physical (think of diseases such as arthrosis, but also thinks like visual limitations or loss of hearing). Because of this the elderly people need some assistance in their daily life. Since these issues are not too big and ever present, permanent care and therefore living in a nursing home is not necessary. Therefore, we see a gap between elderly living at home and elderly living in a nursing home. Most elderly can still live at home but just need a little assistance in some of the tasks in their daily lives. The Dutch government has adapted a new policy where they encourage elderly to keep living in their own homes for as long as possible to reduce pressure on the elderly healthcare system of the Netherlands. (Ministerie van Volksgezondheid, Welzijn en Sport, 2018) This policy coincides with the wish of the elderly to keep living at home (Akkermans et al., 2020). However, elderly that stay at home are causing different kinds of pressure of the healthcare system. They are still in need of (incidental) care which is provided by a corporation called "Thuiszorg". Because all the elderly keep living at home they are scattered around the city and therefore the caretaking of the elderly is very inefficient because of the travel times. Research showed that many elderlies want to keep living at home because of their independence, they like to still have their own home where they can keep to their own rhythms and habits and where they can receive visits from their friends and family (Akkermans et al., 2020). Currently there are already some initiatives that are trying to tackle some of these problems such as the Knarrenhofjes and Erfdelen, but are these options sufficient and meeting all the wishes and demands of the elderly?

Another problem that we can see is the fact that most of the current projects for elderly housing exist out of new buildings instead of transformation of the existing building stock of the Netherlands. The New European Renovation wave encourages the European counties to think more about renovation instead of new developments in our current and future building projects since this is more sustainable (European Commission, 2020). The Dutch government adapted this way of thinking by introducing a new residential building policy where the transformation of existing (abandoned) buildings is encouraged (Rijksdienst voor Ondernemend Nederland, 2022). The current building stock of the Netherlands contains out of over 200.000 abandoned buildings (Centraal Bureau voor de Statistiek, 2022). These abandoned buildings can form a solution for the housing problem of the elderly and therefore I would like to research this. I will do this by using the following research question: **Which architectural interventions can be introduced in an existing utility building to create a living environment that improves the care and prevents health issues for vulnerable elderly in the Netherlands?**

Theoretical Framework

The research is based on three different subjects: Renovation, elderly housing forms and elderly care. Each of these three subjects are important for various reasons and therefore it is good to have a look at the already existing research on these three different topics and to pick out the aspects that are of importance for this research.

Renovation/transformation

An important part of the European Green Deal is the Renovation of both public and private buildings. To achieve this and put this topic higher on the agenda in the building sector, the so-called European Renovation wave was initiated (European Commission, 2020). In this document the European committee talks about the importance of renovation and how this improves the sustainability goals of the European Union and on the way this topic is promoted using initiatives such as the New European Bauhaus and investments. When we look at the document, we can see that most of the motivation to renovate buildings is for improving the sustainability of the buildings. The committee states that 85-95 percent of the buildings standing in 2050 are already built and therefore to improve sustainability and reach the European climate objectives these buildings should be renovated to meet the new demands for sustainability (European Commission, 2020). However, renovation is not necessarily transformation and therefore it is important to see why transformation could be the solutions for problems in the Netherlands.

To find an answer for this we can have a look at the Dutch governmental policy on housing. The Netherlands must deal with a big housing crisis which is getting bigger every year. In 2022 then minister of housing Hugo De Jonge send a message to the Dutch government to explain his solution for dealing with the housing crisis. Here he states that he wants to increase the number of houses that will be created by means of transforming buildings into housing units. This is important because these transformations are more flexible and at the same time it is more durable because of increased circularity and futureproofing (De Jonge, 2022).

Elderly housing forms

To research the housing wishes of the elderly, it is important to know which types of housing there are and how these types of housing can be rated. Therefore, I will use the research "Woonprofielen van senioren" from the bureau Platform 31 as a basis for my research (2020). This research creates a selection of 10 types of elderly housing which are rated on various criteria by the elderly. This research will be part of my literature research on the housing wishes of elderly and this research will be complemented by other literature sources to get a view from more different perspectives on these types of housing. Nevertheless, the criteria which Platform 31 used to rate the different housing types are very interesting and they will be the guiding criteria for this part of my research as well. Platform 31 created 10 dimensions which they used to rank and rate different types of housing. Not all dimensions are used in my research because their relevance diminished due to the limitations in my research. This leaves me with the following dimensions:

1. Individuality
2. Living area
3. Participation/control
4. Facility sharing
5. Durability
6. Comfort

Elderly healthcare and prevention

Before research about architectural interventions for the elderly can be done, it is important to have a look what health challenges these elderly in the Netherlands face. To understand this, we must first ask ourselves: what is health? When we look at the definition of health by the WHO we can see they divided the topic of health into three sub-topics: Physical, mental, and social well-being and this division is still used today (World Health Organization, 1946). However, this definition is 77 years old and we can see that there is some criticism of this definition. Huber et al. wrote an article where that address this criticism and they come up with six dimensions which make up the definition for positive health (2016). When we put these six dimensions next to the three sub-topics of health defined by the WHO, we can see there is some overlap, and these six dimensions can be clustered in the three subtopics of health defined by the WHO resulting in the following classification of health:

1. Physical health, consisting of body functions and the ability to properly function daily.
2. Mental health, consisting of mental functions and the experience of quality of life.
3. Social health, consisting of social participation and the spiritual dimension.

These three topics of health combined with the connected dimensions will be used as a basis to determine the health challenges of elderly in the Netherlands.

Hypothesis

Even though the government policy is for elderly to keep living at home as much as possible and this coincides with the wishes of elderly, I believe living at home is not a total solution. When the elderly get older the rising demand for more care is inevitable which makes providing individual care near to impossible. Next to that the world of elderly gets smaller the more they age because their ability to move gets less, causing the risk of feeling isolated and lonely. Therefore, I think a form of grouphousing is a good solution for these elderly, in housing communities the elderly can help each other with small daily tasks improving independence and reducing pressure on the Dutch care system. Next to that the elderly can continue having social interactions within or near their house with people of similar age, which could improve social health. By sharing facilities and staying active whilst maintaining these facilities elderly both get a feeling of purpose in the later stages in life and physical health issues are prevented. Of course, there are many types of grouphousing and not all these types might fit the needs and wishes of the elderly. In this research there will be a study about the different types of grouphousing which types fit the needs and wishes of the elderly. Next to that the research will also show how these types of grouphousing can be introduced in the transformation of an existing building.

Research Questions

Main research question:

Which architectural interventions can be introduced in an existing utility building to create a living environment that improves the care and prevents health issues for vulnerable elderly in the Netherlands?

Sub questions:

What are the location conditions of my target group in relation to the existing building?

Which type of buildings are suitable for transformation into elderly housing and what transformation strategies are there to transform these buildings into elderly housing?

What health problems do the elderly have, what care demands follow from this and which architectural interventions can tackle or prevent these health problems?

How are these interventions currently implemented in existing buildings and what can we learn from that?

Definitions:

Elderly: People aged 75 years and older. This is the group described in the government program "Langer Thuis" and usually this group is more likely to use the care system (Ministerie van Volksgezondheid, Welzijn en Sport, 2018).

Location conditions: All relevant criteria on which a building location and building type might be selected. (Definition by author)

Living environment: The combination of the built environment and social systems that are presented to the inhabitants to create a place where these people can live their daily lives. (Definition by author)

Transformation: A complete change in the appearance or character of something or someone, especially so that that thing or person is improved. (Cambridge University Press, n.d.)

Vulnerable Elderly: Vulnerability for elderly is a process where physical, mental and/or social limitations in functioning can increase the risk of negative health outcomes. (Translated from dutch, *Kwetsbaarheid bij ouderen is een proces van het opeenstapelen van lichamelijke, psychische en/of sociale tekorten in het functioneren dat de kans vergroot op negatieve gezondheidsuitkomsten)* (Ministerie van Volksgezondheid, Welzijn en Sport, 2015)

What to include/Exclude:

This research will focus on the elderly and their housing situation in the Netherlands. Worldwide research on elderly and case studies will be excluded from the research since elderly healthcare situations and the way elderly are treated can be different throughout the world. The research will focus on finding a solution for Dutch elderly within the Netherlands. However, literature about design solutions for certain health issues of elderly that are also relevant for Dutch elderly will be incorporated into this research.

Next to that this research will focus on the scale of the building and its direct surroundings such as the yard. Architectural interventions on both the interior and exterior will be researched and private outdoor space that belongs to the building(complex) will be included within this research. The larger

scale such as neighborhood influence or even location within the city or country will be excluded from the research.

Of course, there is a fast diversity in elderly but also in people in general. Not everyone is interested in living together for various reasons. However, many people are, and this research will focus on those people who have an interest in living together.

Finally, this research will focus on elderly without a disease which requires 24/7 care. Designing shared spaces and community-based care is very hard for these elderly, especially since their demands are very different. Next to that there already are existing solutions for housing these elderly in the form of nursing homes.

Research methods

The research question *"Which architectural interventions can be introduced in an existing utility building to create a living environment that improves the care and prevents health issues for vulnerable elderly in the Netherlands?"* can be split into four parts which also are my sub questions. Each of these questions will be answered using multiple research methods that are stated per question below:

What are the location conditions of my target group in relation to the existing building?

Before choosing a building to transform into elderly housing, it is important to understand the location conditions of the target group, where do they want to live and what needs do they have in terms of facilities and surroundings and what types of housing do they prefer to live in. This will be conducted by having a look at various researches performed by several different research agencies into the housing wishes of the elderly. These researches provide an insight into the different ways elderly are living at this moment and how well these types of living are rated by these elderly.

Which type of buildings are suitable for transformation into housing and what transformation strategies are there to transform these buildings into housing?

Since there are few known cases of utility buildings being transformed into elderly housing in the Netherlands, this research question will focus on the requirements and strategies for transforming utility buildings into housing. At the end of the overall research the combination of general transformation requirements and strategies of this sub questions will be combined with the requirements for elderly housing following from the next sub question to give an answer to the main question. To be able to transform a utility building into elderly housing it is important to know which type of utility buildings are suitable for this type of transformation and which strategies can be used to successfully perform this transformation. In this research question two research methods will be used:

First, I will have a look at several researches on transformations of utility buildings. The outcomes of these researches will provide me with an overview of requirements for a building to be suitable for transformation into housing. Next to that these researches will provide me with a list of transformation strategies that are used to transform utility buildings into residential buildings and which transformation strategies can best be used for certain building features.

After this research on basic transformations, I will have a look into different types of housing varying from very individualistic housing with individual apartments to very communal housing types where most facilities are shared. From this second literature research new required building conditions may rise, and these conditions can be added to the list of basic conditions that has been drawn up after the first literature research. This second literature review will also show me which transformation strategies are used most often for the different types of housing that are realized. Therefore, giving me an insight on which transformation strategies might work best for the different housing types.

Finally, this research will be completed by building case studies on how to renovate utility buildings into residential buildings. For selecting these case studies it is important that there must be documentation about the transformation in both literature and drawings and the housing type should be comparable to elderly housing both in unit size and scale of the overall project.

What health problems do the elderly have, what care demands follow from this and which architectural interventions can tackle or prevent these health problems?

This sub question will focus more on the target group, the vulnerable elderly, and their health and care needs.

This research will start of by having a look at the quantitative data on the current health issues of the Dutch elderly and if and how these issues might change in the future. This research will provide me with an insight into the general health problems amongst elderly in current times and in the future. This data I will then compare with literature research about the current housing problems of the elderly. This literature research will provide me with insights into where our current care system falls short in terms of providing housing with the right care for the elderly. These two combined researches will result in a list of health issues that are common amongst elderly and causes failures in the current care provided by elderly housing in the Netherlands.

With these health issues in mind, I will then proceed with combined research on which architectural interventions can provide solutions for these issues. This research will be executed using literature, doing observations, and having interviews with users of existing housing projects for the elderly. The literature will provide me with theory on how architects can design for certain health problems or how to design for prevention of these health problems. These theories will then be tested by doing observations and having interviews with the users of existing forms of elderly housing.

How are these interventions currently implemented in existing buildings and what can we learn from that?

Finally, the theories gathered by the sub questions mentioned above will be validated in practice by performing several case studies of existing housing complexes that are either renovated or transformed. These case studies do not only include building case studies but they also include literature research and observations of the buildings.

Fieldwork

From 13 to 17 November, I will stay at a nursing home as part of my research. During my stay I will have a start with answering the subquestions about elderly housing wishes and health issues. This research will consist of 3 parts:

First of all, I will do observations. The goal of these observations is to see which architectural elements are present in the nursing homes, how these are used and especially how these interventions affect the life of the residents. These observations will be done using pictures, sketches, and creating maps of the building and its spaces.

Secondly, I will interview the caretakers that work in the complex. These caretakers work with the residents every day and therefore have a good idea of what they must deal with. Next to that these caretakers are professionals with a medical background and therefore they can provide a good insight into the most common health issues of they elderly and how to treat these.

Finally, I will interview the elderly residents themselves to see how they experience the complex and their own health issues. These will provide me with an insight on how the architecture of the building influences the life of the elderly. And it will also provide me with a more personal perspective on the health issues of the elderly and how these issues limit them.

In the Appendix I put a list of research questions which I will use during the fieldwork week.

Describe your output

In the end my research will provide me with an assessment tool for existing utility buildings to see if they are suitable for transformation into elderly housing. Once a building is suitable for transformation, this research will provide me with the basic architectural interventions for transformation into housing and the extra interventions needed to meet the healthcare demands and housing wishes for the elderly.
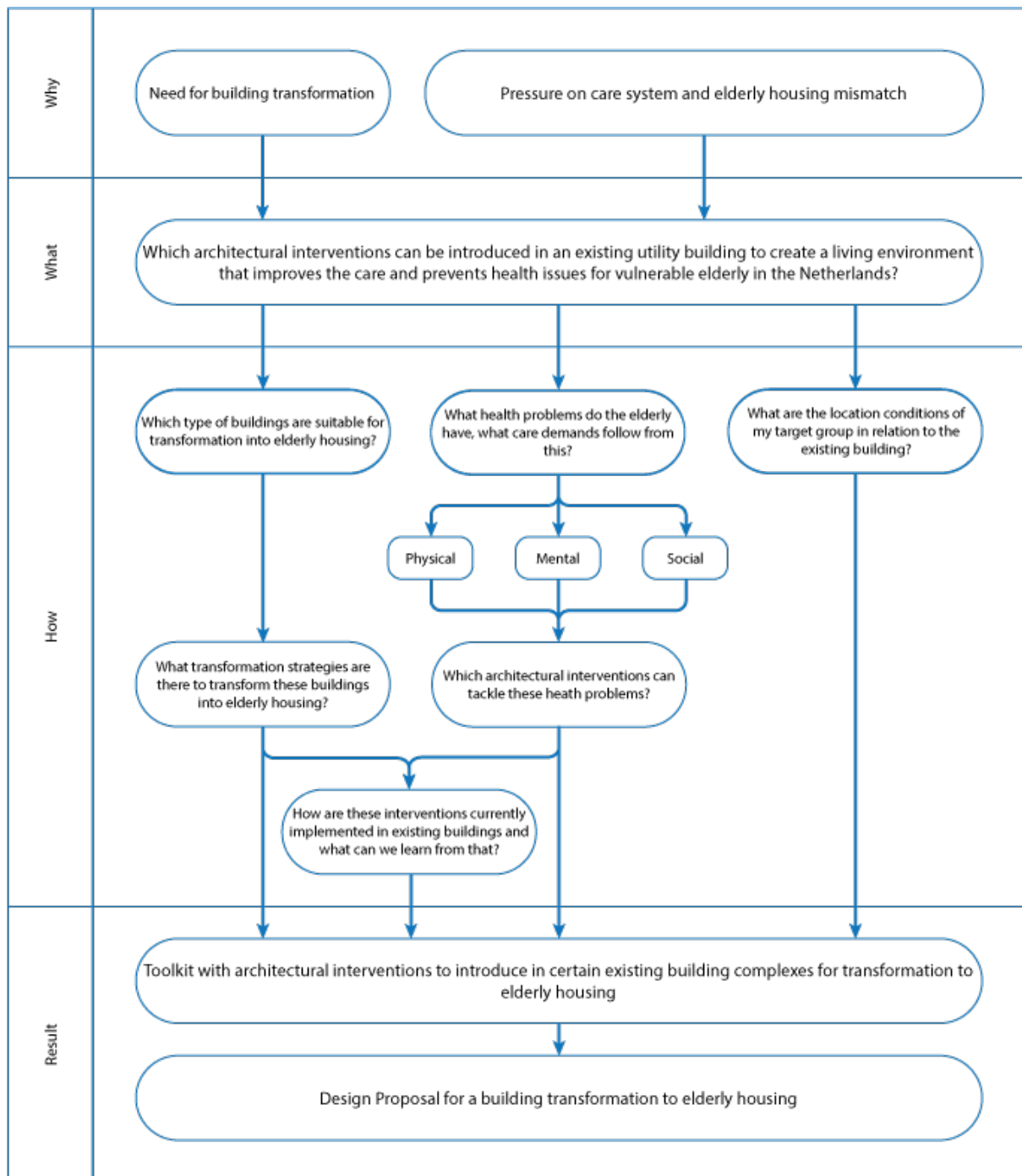
Research Flow Diagram:

Figure 1: Research Flow diagram (Author, 2023)

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Appendix A: Interview questions fieldwork week

Caretakers:

What are the main health issues of the elderly living here?

How are these health issues treated?

Can architecture play a role in the treatment or prevention of these health issues and if so, how?

Which architectural features are important for you as caretaker to be able to provide good care for the residents?

What architectural features of the complex do you see are appreciated by the residents and do you know why?

Which spaces in the building are used often by the residents and how are these spaces used?

Residents:

How are you currently living and what do you feel is missing in your current living situation?

Which spaces in the building do you like to use/use often and why?

Which building features do you think are missing?

What health issues do you have and how do these health issues limit you in your daily life?

Do you still exercise? If so, what type of exercises do you do, how often and where?

Which social connections do you have and how do you maintain these social connections? Are these social connections within this complex or outside?

Would you like to live in an old factory building/office complex/school/shopping mall/ Cloister/Church that is transformed into housing and why (not)?