



The Future of Living

Creating a high-rise community through architecture

MSc 3/4 Advances Housing Design
Research Plan

Index

· Introduction	04
· Personal motivation	04
· Relevance	04
· Problem statement	04
· Relation to the site	04
· Frame of reference	06
· Hypothesis	06
· Research question	06
· Theoretical Framework	08
· Research structure	08
· Research methods	010
· Research methods in environmental psychology	010
· Human-centred epistemology	010
· Human scale	011
· Belonging	011
· Case-studies	012
· Graphic novel	013
· Bibliography	014
· References	015

Colophon

Delft University of Technology
MSc3 Dutch Housing Graduation
Studio 2021-2022
AR3AD100 Advanced Housing Design

Student

Mirthe Ebels
4566149
M.Ebels@student.tudelft.nl
+31 6 39667728

Mentors

Anne Kockelkorn
Ovl Klijn
Klaske Havik

Figure 1 - Photograph of the VM House in Copenhagen (Cover)

Photograph by Author (2018). VM House

Introduction

The dynamics of living in the Netherlands

The graduation studio AR3AD100 Advanced Housing Design focuses on the great challenges today's society is facing when it comes to housing design in the Netherlands. There is a need to explore design solutions for affordable housing that can deal with diversity, live-work interactions, environmental challenges, and sustainable design solutions. The challenge for Rotterdam is to expand its affordable housing stock and create a sustainable living environment for its inhabitants.

Personal motivation

The social character of this studio was, for me, one of the main reasons to choose the Advanced Housing Design studio. Not only does Rotterdam have a shortage of affordable housing, but almost all of the Netherlands also has the same problem and challenges. There is a need for 1 million new homes before the year 2030 (NOS, 2021). Next to that, with the current housing market in the Netherlands, it is very difficult to rent or buy a house, especially for recently graduated students, who just started working, or are still looking for a job. Within a year, this will be my situation and this is already something I am worried about. The role of the architect in the complex world of housing in the Netherlands is a role I find very interesting to investigate. The studio Advanced Housing Design allows experiencing and examining the way architecture can influence the way people live in cities and how architecture can create an inclusive living environment.

Relevance of high-rise residential buildings

New concepts of affordable and sustainable housing could influence the way people live in cities. Cities in the Netherlands will get denser due to a growing population and the increasing amount of people who move to the so-called Randstad (PBL/CBS, 2019). Because of the rising amount of people that want to live in the cities, densification of the urban fabric is needed. This is a challenge for urban planners and architects. Densification is therefore one of the main focus points for the redevelopment of the Walenburghof in Rotterdam. One of the solutions for creating more dwellings in a city with a growing population is the realisation of high-rise residential buildings (figure 2). More and more high-rise residential buildings will be built in the Netherlands in the coming years. These buildings provide an efficient but anonymous way of living. The question, however, is whether anonymous living is a bad or a good thing, or

whether that depends on the person you ask.

Problem statement

When it comes to high-rise residential buildings there are many different opinions. Overall it seems that high rise living is one of the best solutions to the growing demand for housing in the Netherlands. However, there are some downsides such as the high cost of building a high-rise. Next to that high-rise buildings are experienced differently from conventional low-rise dwellings and other buildings. David Halpern (1995) even states that there is a relationship between living in a high-rise building and poor mental health. This has been proven for children who are more likely to develop behaviour problems when they live higher up. In the Netherlands however, there is still only a small group of families living in high-rise residential buildings (Raemaekers, 2011). One other disadvantage of high-rise residential living is that for most people, these houses are seen as a home to eventually move on from to an owner-occupied home, it is rarely the ultimate goal for a tenant (Raemaekers, 2011). Because of this, tenants do not have a connection with high-rise buildings. The residents do not have a sense of belonging when it comes to the high-rise residential building they are living in. Because of these problems concerning high-rise living, in my design and research, I will focus on children and one- or two-person households. It is important to design for these target groups to make sure that small households have more access to affordable housing and that there is a positive future for children living in high-rise buildings.

Relation to the site

Within the Walenburghof in Rotterdam there are a few buildings that are quite high, they can however not be classified as high-rise buildings. In the Netherlands a building can be classified as a high-rise when it is higher than 70 meters. Because of their height, the buildings at Walenburghof do have some characteristics a high rise building can have. There is no direct connection between the higher floors and the public space on street level. The connection between the building and the public space has also not been designed in a way that social interaction is encouraged (figure 3).

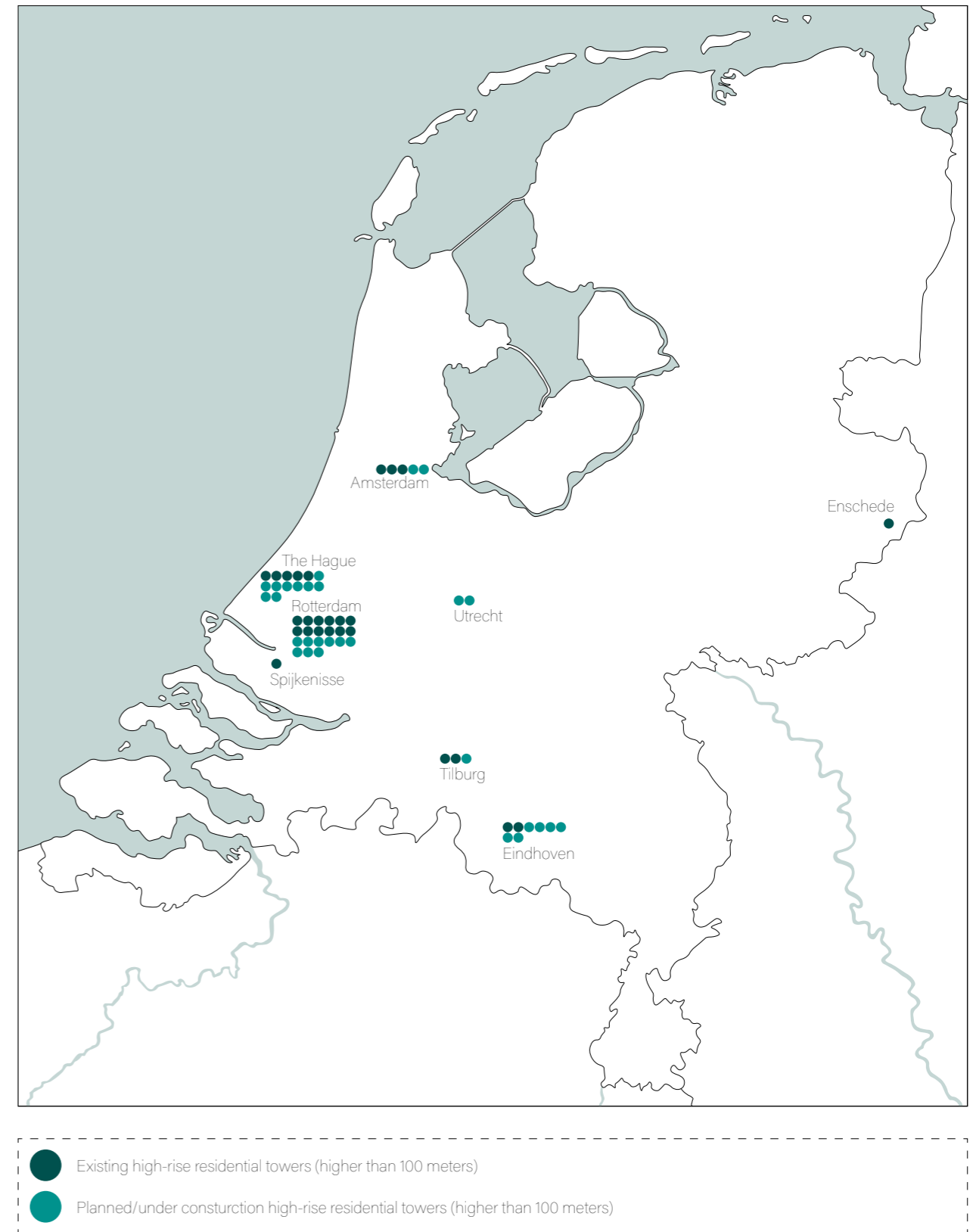


Figure 2 - High-rise residential towers in the Netherlands

Drawing by Author (source: <https://www.wed.nl/wonen/wonen-op-grote-hoogte-groei-spurt-wolkenkrabbers-in-nederland-a5e41543/>)



Figure 3 - Front doors at Walenburghof
 Photograph by Author (2021). Entrances Walenburghof

In and around these large and repetitive buildings it may feel like the human scale has not been taken into account. To help create a high-rise residential community where people feel connected to their surroundings it is important to study the transactions between the residents and their physical setting. This can be done by studying environmental psychology.

Frame of reference

The frame of reference for my research will be the study of **environmental psychology** which is a study of transactions between individuals and their physical settings (Gifford, 2014). This study will be used to learn more about the way people experience their physical environment. As an architect, it is difficult to design a building that is used exactly the way it was meant to be used. By learning more about the different transactions between people and their physical setting, I hope to gain more insight into how to design truly good buildings for everyone.

The main theme of the graduation studio is ecology of inclusion. **Ecology** is the relationship between living organisms, including humans, and their physical environment (What Is Ecology? – The Ecological Society of America, n.d.). This refers to

the way people interact with each other and how they experience their surroundings. **Inclusion** is interpreted in a way that the final project should be accessible and liveable for all kinds of people that may have difficulties finding a house in the city centre of Rotterdam at the moment.

Hypothesis

Within a city, there is always something to find that suits a certain person, this should also be the case in the redeveloped Walenburghof. With this redevelopment, there is a chance to create a high rise community for different types of households with varying incomes and different needs. Within this dense urban fabric, the building should be a place where people feel at ease and at home. I hypothesise that human scale, social interaction, privacy, territory and feeling at home are important aspects of improving the way people live in high-rise residential buildings.

Research question

How can a high-rise residential building respond to the human scale and stimulate a sense of belonging in Rotterdam?

The research question consists of two parts: the human scale and a sense of belonging. To find an answer to the question, the research will be divided into several sub-questions:

- *How can the human scale contribute to the design of high-rise buildings?*
- *How can a sense of belonging be stimulated in a residential high-rise building?*

To answer these questions I will be studying the concept of environmental psychology in combination with literature research and the examination of several case studies.

For the first sub-question I will look into the way people experience different scales in their physical environment.

To answer the second question I will be looking into the sense of belonging. This part of the research will be divided into the following key themes:

- Creating a community
- Stimulating social interaction
- Identity

The aim of this research is to explore the ways of creating a high-rise residential building where the human scale has been taken into account on different scales from the public space to the dwelling. The building should also be a place where different people will feel at home and have a sense of belonging.

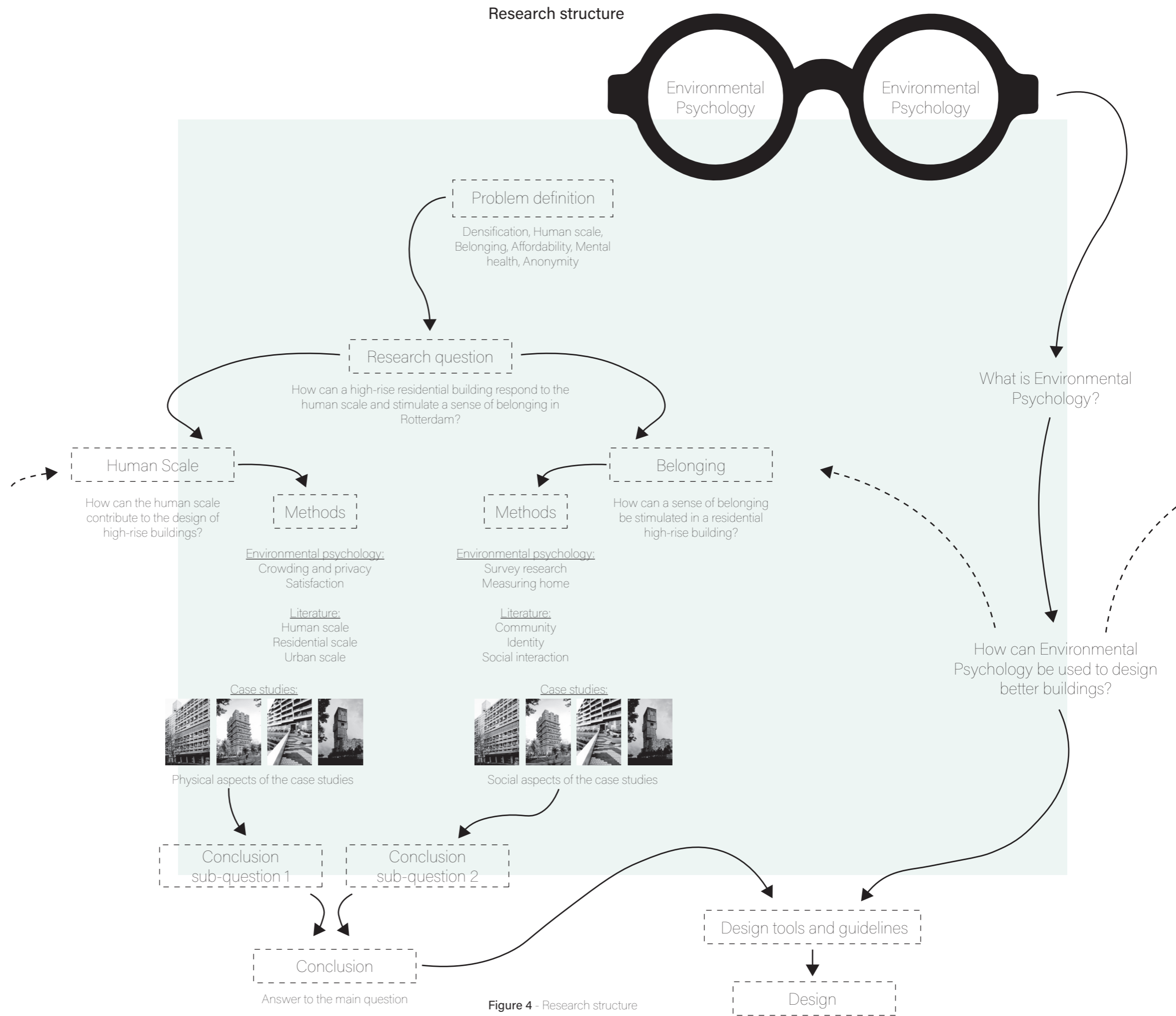
By doing this research, I will develop design tools and guidelines that can help with designing a new high-rise residential building in Rotterdam. Within this building, the residents can enjoy life in their private individual houses, but can also enjoy the social interaction with their neighbours because they feel like a small community.

Theoretical framework

Environmental Psychology

As stated in the introduction, the theoretical framework of my research will be the study of Environmental Psychology. To be able to use the knowledge from this specific field of study, I will start with a research on what environmental psychology is exactly and how it can be used to design better buildings. This part of the research can be seen as a separate part of the thesis (Figure 4). However, the research on Environmental Psychology will form the basis for the rest of the research. Therefore it can be seen as glasses of Environmental Psychology that determine the point of view. The question on how environmental psychology can be used to design better buildings will be also used to answer the sub-questions.

Every part of the main research will be related to the topic of environmental psychology. This is also the case for the two sub-questions. The book by Robert Gifford on the Principles and Practice of Environmental Psychology (Gifford, 2014) will form the basis of this part of the research.



Research methods

For this research, I want to introduce three research methods that I will be using as a guiding tool (figure 5) . The research will be based on: research methods from the field of environmental psychology, literature on the human scale and belonging, and the examination of case studies. For each method I will explain its relevance to the proposed research and how it will be used to answer the main research question and sub-questions.

Research methods in Environmental Psychology

For this research, I will use the study of environmental psychology as a theoretical framework. Within the field of environmental psychology, there are many different methods of study. These methods are described in the book by Robert Gifford (2014). Depending on the research question different methods are suitable. Within the field of Environmental Psychology, there are many different kinds of research methods that can be divided into three broad paradigms.

- **The adaptation paradigm:** which focuses on biological and psychological survival as a key process. The way people behave in their physical setting is determined by the need to survive as a species.
- **The opportunity paradigm:** in which the drive to actively fulfill goals determines the way people interact with their environment, instead of reacting to the threats and demands of their environment.
- **Sociocultural environment:** here researchers believe that the way humans behave in their physical environment is nested within other contexts and disciplines such as history and culture.

The different research methods of environmental psychology have often limitations because they cannot be used at the same time within the same research. One solution can be to look for patterns in multiple studies. Because I will be doing only one research, one way to validate the outcome is to compare it to other research that has already been done within the field of environmental psychology. Therefore I will be looking for existing research on living in high-rise buildings.

For my research, I will focus on different themes within the field of environmental psychology. One of these themes is the way people experience their dwelling and the public space around it. To study

this theme there are different approaches. One of these approaches is measuring home.

- **Measuring Home**

The sense of home can be measured in six different ways:

- Classifying based on the five structure-and-use dimensions:
 1. Permanent to temporary
 2. Differentiated to homogeneous
 3. Community to noncommunity
 4. Identity to communality
 5. Openness versus closedness
- Measuring the financial value of the dwelling
- Objective listing of the attributes of the residence
- Measuring the quality of the resident for a particular purpose
- Measuring what a residence can do for a person
- Measuring the meaning of a residence as a home

Another theme that can be studied is place attachment. Studying place attachment can be done with two different approaches:

- **The quantitative approach:** where the strength and the type of attachment are translated into numeric terms.
- **The qualitative approach:** where meanings and personal experiences of the attachment are articulated by individuals and summarized into prominent themes. The approach can be used with case studies, where the summarized themes can be translated to new projects.

For both approaches, I will have to determine individuals' feelings, thoughts, and motivations. One way of ascertaining these is to simply ask. This can be done by survey research. Especially in the case of place attachment, survey research can be interesting because its cognitive-emotional elements are not easy to observe.

Human-centred epistemology

In my research, the transactions between humans and their physical environment will be the focal point. The research will therefore be human-centred. The field of praxeology has become of greater value for architecture and it can be interesting to study the social-spatial practices and the user perspective. Praxeology is based on practice and everyday life

and focuses on how people use their environment. By doing this the human individual can become more involved in architecture, the use of a building becomes more important than the aesthetic character. Doing survey research can be a part of this praxeological approach.

Human Scale

For the first sub-question on the human scale, it is important to focus on the way people experience certain scales and what design interventions can be used to create the human scale in a high-rise residential building. To find an answer to the sub-question: How can a building be designed taking into account the human scale? I will study the way people experience the scale of their environment through literature. Next to that, I want to study several case studies that are designed to meet human needs concerning scale.

Belonging

For sub-question 2 on the sense of belonging the theoretical framework of environmental psychology is again very important. The second sub-question is: How can a sense of belonging be stimulated in a residential high-rise building. To stimulate this sense of belonging a few topics will be investigated such as: creating a community, stimulating social interaction and identity. "For almost anyone, a sense of collective and cultural identity is a powerful source of motivation for active involvement and leadership. If residents feel like they don't belong to a place or a region, it is difficult for them to invest time and energy to work on improving things around them. (And it doesn't hurt that sense of belonging contributes directly to health outcomes—since that's the ultimate goal. Research has shown that people who feel attached to, and interact more with, others enjoy better health than those who are more isolated.)" (Stojicic, 2018)



Figure 5 - Research methods
Drawing by Author

Case studies

By studying both questions with the literature, the newly acquired knowledge can be used to study several case studies (figure 6). For each case study, I will describe why it is relevant for my research to look at that specific building. I will use these case studies to answer the sub-questions about the human scale and a sense of belonging.

For the human scale, it is relevant to study the physical aspects of the case studies in combination with the knowledge about how people experience certain scales in their physical environment. To examine the physical aspects of the case studies, I will look into architectural drawings, maps, and other drawings about the



8 House
BIG
Copenhagen - Denmark
2006 - 2010
Source: <https://big.dk/#projects-8>

Unité d'habitation
Le Corbusier
Marseille - France
1947 - 1952
Source: <https://archiplore.com/nl/ unite-dhabitation/>



Binck Blocks
LEVS
The Hague - Netherlands
2021 - 2024 (prognosis)
Source: <https://www.levs.nl/projecten/binck-blocks>

Family Scraper
Van Bergen Kolpa
Architecten
Rotterdam - Netherlands
2004 - present
Source: https://www.vanbergenkolpa.nl/nl/16_family_scraper_de_maasbode.html

Figure 6 - Case studies

buildings and their immediate surroundings.

For the theme of belonging, I will look into the social character of the case studies. This part of the research will be more about the way people experience living in that building. The same themes that I will address in the literature research, can be interesting to look at in these case studies. These themes are: creating a community, stimulating social interaction and identity. It is important to look into the relationship between these themes and the sense of belonging for the residents. It can also be interesting to look at facebookgroups of the residents of these buildings. By doing this, I want to gather information about the way the actual residents, experience living in that building.

The case studies that I want to use for this research all have different qualities. The first two are existing projects:

- 8 House in Copenhagen is a very large complex with dwellings on high floors that are connected to a very interesting outdoor circulation space. Some houses on the upper floors even have front gardens that are connected to this elevated street.
- Unité d'habitation in Marseille is a very interesting case study because of its communal character and the housing typology.

The second two case studies have both not yet been realised. They are, however, both very interesting and new concepts for high-rise residential buildings in the Netherlands:

- Binck Blocks in The Hague is an example of a high-rise residential building that tries to form conventional dutch neighbourhoods in the sky. The building has elevated streets and squares where residents can meet and children can play.
- The Family Scraper in Delft is a high-rise residential building that has been designed for families in particular. It is interesting to study the principles that have been used to design this tower in a way that it is suitable for families with young children.

Graphic novel

The target group for my design will be mainly families with children, because of the proven negative effects on the mental health of children. These families will be combined with one- or two-person households because of the shortage in housing for this group. To get a better understanding of the way children live in high-rise buildings, I will use the development of a graphic novel with two children as the main characters (figure 7). I will

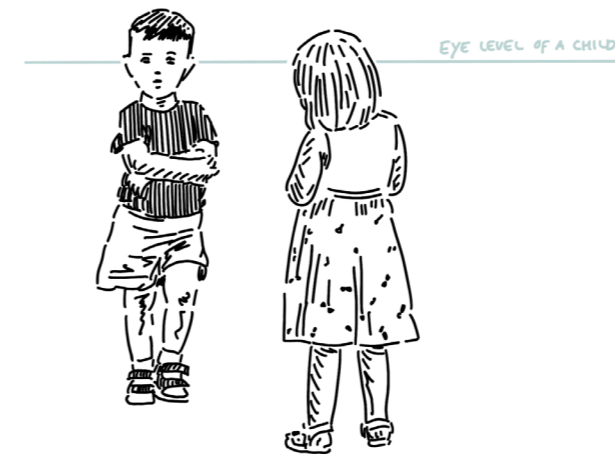


Figure 7 - Research structure
Drawing by Author

try to develop a storyline that highlights the way children experience living in a high-rise building. The story will be about two children playing in and around their houses on a high rise. (figure 8) With this graphic novel, I will try to understand what is important for children in their living environment.

The graphic novel will consist of three parts that take place in three different timeframes:

- The first part will be about two children that move into the building right after completion. These children are used to living in ground-bound dwellings and need to adjust to their new surroundings.
- The second part will be about the two children that have spent their youth in the high-rise building and are fully ground up. They have both moved into their own space in the building.
- The third and last part shows the two main characters that have now children of their own who have been born in the high-rise and do not any better. The play on the high floor like it is not special at all.

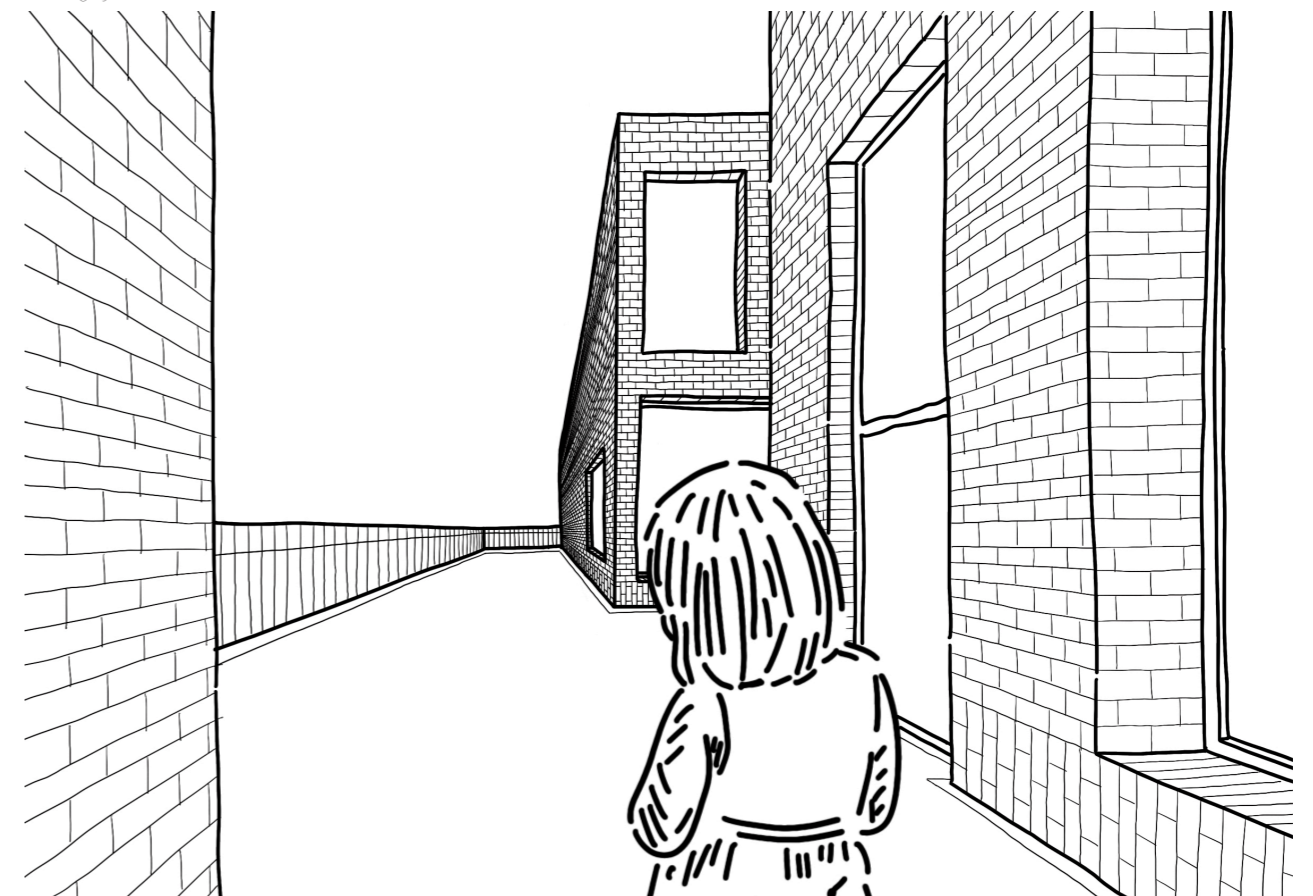


Figure 8 - Research structure
Drawing by Author

Bibliography

Social aspects:

- Altman, I. (1975). *The Environment and Social Behavior*. Monterey: Brooks/Cole Publishing Company
- Blokland-Potters, T. V. (1998). *Wat stadsbewoners bindt: sociale relaties in een achterstandswijk*. Kampen: Kok Agora.
- Blokland, T. (2009). *Oog voor elkaar: veiligheidsbeleving en sociale controle in de grote stad*. Amsterdam: Amsterdam University Press.
- Blokland, T. (2008). *Ontmoeten doet er toe* (Essay). Consulted on 26-10-20, from <https://docplayer.nl/77751-Ontmoeten-doe-er-toe.html>
- Gehl, J. & Svarre, B. (2013). *How to study Public Life*. Washington DC: ISLAND PRESS
- Gehl, J. (2011). *Life between buildings: Using Public Space*. Washington DC: ISLAND PRESS
- Huron, A. (2018). *Carving Out the Commons: Tenant Organizing and Housing Cooperatives in Washington, D.C. (Volume 2) (Diverse Economies and Livable Worlds) (1st ed.)*. Univ Of Minnesota Press.
- Jacobs, J. (1961). *The Death and Life of Great American Cities*. New York City: Penguin Random House
- Lofland, L.H. (1998). *The public realm, exploring the city's quintessential social territory*. New Jersey: Transaction Publishers.
- Schoonen, W. (2020). *Een gebrek aan sociale contacten? Dat is net zo schadelijk als roken*. Retrieved on 22-10-2020, from <https://www.trouw.nl/nieuws/een-gebrek-aansociale-contacten-dat-is-net-zo-schadelijk-als-roken~b0a82139/>
- Van de Wal, H. & Van Dorst, M.J. (2015). *Privacyscript – De invloed van architectuur op sociale interactie in woongebouwen*. Bussum: Uitgeverij Thoth
- Webb, M. (2017). *Building Community*. London: Thames & Hudson.

Sustainable environment:

- Aalbers, M. B. (2007). *A Century of Social Housing in the Netherlands: From Mass Model to Gentrification? OASE, 73*. <https://www.oasejournal.nl/en/Issues/73/ACenturyOfSocialHousingInTheNetherlandsFromMassModelToGentrification#029>
- Assen, V. S., Boomen, V. T. D., Broekman, M., & Eyck, V. G. (2017). *Urban Challenges, Resilient Solutions: Design Thinking for the Future of Urban Regions (Trancity)*. Valiz/Trancity.
- Rohmer, M., Keesom, J., & de Haan, H. (2016). *What Happened to my Buildings*. nai010 uitgevers.
- Van Dorst, M.J. (2005). *Een duurzaam leefbare woonomgeving: Fysieke voorwaarden voor privacyregulering* (Doctoral thesis). Consulted on 27-10-20, from <http://resolver.tudelft.nl/uuid:6af7e7a1-0572-4678-a5e5-cc31af2d9d3f>

Environmental psychology:

- Gifford, R. (2014). *Environmental Psychology: Principles and Practice* (5th ed.). Optimal Books.
- Hamel, R. (2013). *Omgevingspsychologie en ontwerpen, over de toepassing van psychologishce kennis in het ontwerpen* [E-book]. Amsterdam: Universiteit van Amsterdam, Faculteit der Maatschappij- en Gedragwetenschappen, Afdeling Psychologie, programmagroep Brein en Cognitie.
- Proshansky, H. M. (1970). *Environmental psychology: man and his physical setting* (First Edition). Holt, Rinehart and Winston.

Living in high-rise buildings:

- Gigon, A., Guyer, M., & Jerusalem, F. (2016). *Residential Towers*. Amsterdam University Press.
- Jephcott, A. P. (1971). *Homes in High Flats: Some of the Human Problems Involved in Multi-storey Housing*. Edinburgh: Oliver and Boyd.

Case studies:

- 8 House, Copenhagen - Denmark, 2010, BIG
- Torres del Parque, Bogotá - Colombia, 1970, Rogelio Salmona
- Residential Tower, Antwerp - Belgium, 2020, CF Moller Architects
- Unité d'habitation, Marseille - France, 1952, Le Corbusier

References

- Halpern, D. (1995). *Mental Health and The Built Environment: More Than Bricks And Mortar?* (1st ed.). Routledge.
- Klijn, O., Kockelkorn, A. (n.d.). *Advanced Housing Design - Ecology of Inclusion* (course guide).
- NOS. (2021, February 17). *Grote bouwcoalitie presenteert actieplan voor 1 miljoen woningen in tien jaar*. <https://nos.nl/artikel/2369043-grote-bouwcoalitie-presenteert-actieplan-voor-1-miljoen-woningen-in-tien-jaar>
- PBL/CBS. (2019). *"Regionale bevolkings- en huishoudensprognose"*. <https://themasites.pbl.nl/o/regionale-bevolkingsprognose/>
- Stojicic, P. (2019, September 25). *The Importance of Residents' Sense of Belonging, Trust, and Power*. Rethink Health. <https://rethinkhealth.org/Resource/the-importance-of-residents-sense-of-belonging-trust-and-power/>
- Vesteda, & Raemaekers, M. M. W. (2011, December). *Hoogbouw te hoog gegrepen? Ervaringen met wonen in hoogbouwcomplexen*. <https://docplayer.nl/10833289-Hoogbouw-te-hoog-gegrepen-ervaringen-met-wonen-in-hoogbouwcomplexen.html>
- *What Is Ecology? – The Ecological Society of America*. (n.d.). EsaMain. Retrieved 19 September 2021, from <https://www.esa.org/about/what-does-ecology-have-to-do-with-me/>