research report

ADVANCED HOUSING DESIGN DENSIFICATION STRATEGIES:
invigorating
contemporary urbanities

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May 2023

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Research Report

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Advanced Housing Design
Densification strategies: invigorating contemporary urbanities

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Co-housing as a densification and reinvigoration strategy for post war neighbourhoods in the Netherlands

A typological study on densification strategies

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ABSTRACT

Coinciding with the decline of post war neighborhoods and the housing shortage in the Netherlands the trend towards individualism and one person household has emerged since the 1950's. This report investigates densification and reinvigoration strategies of theses post war neighborhoods by using co-housing as a strategy. In the past co-housing has been tried as a solution for social injustice and vulnerable groups within a society.
To develop these strategies, case studies of postwar renovation projects have been analyzed as well as co-housing spatial principles and fundamentals to combine into a design strategy for the renovation plan of IJsselmonde. The results are a design approach for densification of a postwar neighborhoods that takes into account the current residents while providing suitable housing for new residents and connects them through co-housing.

Keywords: co-housing, post-war neighbourhoods,urban reinvigoration, shared housing.


MARO

1. INTRODUCTION

1.1 STUDIO INTRODUCTION

The Graduation Studio 'Advanced Housing Design Densification strategies', of the Architecture and Dwelling chair aims to study strategies to densify and invigorate existing urban neighborhoods within the Randstad while taking into account the current liberal housing market, ecological footprint, livability and inclusiveness.
The location for testing the design hypothesis of this densification strategy is the post war neighborhood of IJsselmonde in the South of Rotterdam.

1.2 PROBLEM STATEMENT

Currently the Netherlands is dealing with two problems in it's built environment. A housing crisis which is caused as much by the lack of housing as it is caused by the way the current housing stock is distributed and a housing stock which mainly dates from the early post war era which is in need of renovation and is a agglomeration and accelerator for neighbourhood decline.

The housing crisis excludes starters from entering the market and locks current house owners in housing situations which do not fit their current needs anymore.[1]

After the banking crisis of 2008 housing prices have been on the rise again since 2013. In 2020 the prices have risen 47,8% compared to 2013 and are still on the rise due to a lack of flow on the housing market, an underestimate of the rising demand for housing, political choices and a trend towards more individualistic living.[2]

At the same time the number of one person households is drastically increasing in the Netherlands. The average number of people per household has dropped from 3,5 to 2,2 since the 1970 and has come to a halt only due to the current housing shortage forcing people to live together.
Currently around 39% of the Dutch population is made up of one person households while the housing stock consists of family homes for more than 65% creating a demographic and spatial mismatch on the housing market.

Although this more individualistic trend has been going on since the 70's, the mantra within real estate development has always remained the same; family homes. The question of the current housing shortage is as much a question of redistribution of the current housing stock as it is a question of developing ways of housing and typologies to facilitate the need for single households.[3]

When we talk about post-war neighborhoods in the Netherlands we often refer to 'early' post-war neighbourhoods which are built between 1945 and 1970· Because neighbourhoods are often a mix of old and new built houses some criteria are set to determine if a neighbourhood is a post-war neighbourhood· If 650 homes in a neighbourhood were built in the period between 1945 and 1970 it is considered an 'early' post-war neighbourhood· With this methodology the Netherlands has 1.012 neighbourhoods which meet these criteria·[4]

In the report *Ruimte zat in de stad* by KAW architects it is estimated that these neighbourhoods include around 1.8 million post-war homes which is roughly 22% of the whole housing stock of the Netherlands making them significant within the housing crisis·[5]

Almost half of the housing stock in these neighbourhoods is usually social housing which is part of the downfall of these early post-war neighbourhoods·
High and middle income households left these neighbourhoods for better quality

▲
1. van Bockxmeer, J. (2021, May 17). *Over deze oplossing voor de woningnood hoor je nooit iemand*. De Correspondent. Retrieved 13 April 2022, from https://decorrespondent.nl/12375/over-deze-oplossing-voor-de-woningnood-hoor-je-nooit-iemand/2545901906625-48bfddfa

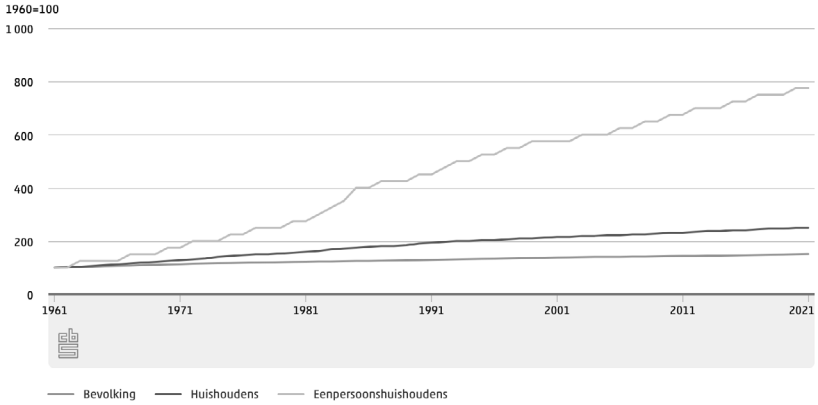
2. Verwaaij, A. (2022, January 13). *Waarom zijn huizen in Nederland zo duur?* NPO Kennis. Retrieved 25 March 2022, from https://npokennis.nl/longread/7757/waarom-zijn-huizen-in-nederland-zo-duur

▲
3. KAW. (2020, juni). Ruimte zat in de stad. https://www.kaw.nl/wp-content/uploads/2020/06/KAW_RUIMTE_ZAT20200623.pdf

4. Argiolu, R., & Boven, J. (2008). Bloei en verval van vroeg-naoorlogse wijken. Nicis Institute.wp-content/uploads/2020/06/KAW_RUIMTE_ZAT20200623.pdf

5. KAW. (2020, juni). Ruimte zat in de stad. https://www.kaw.nl/wp-content/uploads/2020/06/KAW_RUIMTE_ZAT20200623.pdf

Fig.01. Population growth by household composition.



housing, while low income households were forced to move to these neighbourhoods because of the cheaper rents whilst being indifferent to connect with the place.[7]

Ouwehand (2008) finds that most people in social housing firstly seek a house and secondly look for the neighbourhoods that house is in, showing absence of freedom of choice within these groups.[6]

This left the post-war neighbourhood homogeneous and vulnerable and in complete contrast to the way they were intended to be inhabited. They were once designed with the idea to mix income groups, this heterogeneous population would be more resilient to sudden economical changes.[7]

The two problems of the housing shortage and decline of post war neighbourhood provide an opportunity for re-imagining the post war fabric and in the process provide much needed housing for a more diverse population. How can we utilize this crisis to tackle both of these problems? Maybe by taking a look at the initial ideology of the post war construction era and learning from their mistakes?

Fig.02. Geographical location of all neighborhoods in the Netherlands with at least 500 households and at least 50% post-war homes.

1.3 PERSONAL FASCINATION

My fascination for co-housing was sparked during the MSc1 studio Fundamentals of Housing Design at the TU Delft. The implementation of a communal space to a housing project made it possible to combine the social and spatial needs of residents and even expand these ambitions to the neighborhood.

I am a student with a car, a boat, an office and a garden. All these things are made possible through sharing and co-ownership. I share a car with my brothers, as a group of friends we bought a boat, my office is a co-working space in the city center and my garden is a public allotment which I share. Sharing and co-ownership is often portrayed as giving up space for the community and losing individual freedom. I see it as a solution to the redistribution of space and an answer to the trend towards more individualistic households but a need towards an urban sense of community.

Fromm (2012) finds through analysis of case studies that co-housing can play a key role

▲
6. Ouwehand, A. L. (2008). Van Wijken Weten. TU Delft.

7. Argiolu, R., & Boven, J. (2008). Bloei en verval van vroeg-naoorlogse wijken. Nicis Institute.

in mixing residential incomes, stabilizing vulnerable or marginalized groups within neighborhoods and improving the overall sense of community and community engagement. Both in urban revitalization and urban infill this co-housing approach yields similar results making it a suited strategy for a revitalization and densification strategy. [7]

1.4 THE TEST LOCATION

IJsselmonde is an example of an early post-war neighbourhood and was developed after the second world war around 1960 to provide quick and efficient housing for the inhabitants of Rotterdam who lost their homes during the war. The neighbourhoods were built in the recognizable modernist post war style of the 60's which focused on creating views, and green zones in between the buildings. The quickly IJsselmonde was soon outdated and in dire need of renovation on an urban scale and on a building scale.[10]

Half of the current housing stock of IJsselmonde is social housing with a matching urban demographic. Demographically IJsselmonde is mainly elderly, one person households who are economically vulnerable. To successfully densify this urban area their needs have to be taken into account as densification is often perceived as a radical process by the current residents.[11]

Fig.03. Neighbourhood profile of IJsselmonde in three domains; physical index, safety index and social index.

8. Fromm, D. (2012). Seeding Community: Collaborative Housing as a Strategy for Social and Neighbourhood Repair. Built Environment, 38(3), 364–394. https://doi.org/10.2148/benv.38.3.364

9. Hage, K. (2005). Van Pendrecht tot Ommoord (1ste editie). Thoth, Uitgeverij.

10. Wonen in Rotterdam. (2022, March 29). Wonen in Groot-IJsselmonde | Start je zoektocht op. Retrieved 13 April 2022, from https://www.woneninrotterdam.nl/ijsselmonde/groot-ijsselmonde/

1.5 RESEARCH QUESTION

The three topics of housing crisis, post war neighbourhoods and co-housing can be seen as a **cause**, **opportunity** and **strategy** (fig.04) and a research question can be formulated as well as several sub questions to link these three themes together and broaden the knowledge on them.
The main question which incorporates all three themes is:

How can co-housing be designed to reinvigorate and densify post-war neighbourhoods in the Netherlands?

To answer this question we need to define the elements of this question to fully understand their meaning within this context. This can be done through the following sub-questions:

• What are post-war neighbourhoods?

• What design strategies can be used to reinvigorate post-war neighbourhoods?

• Who should we build co-housing for?

• How to design co-housing for different target groups?

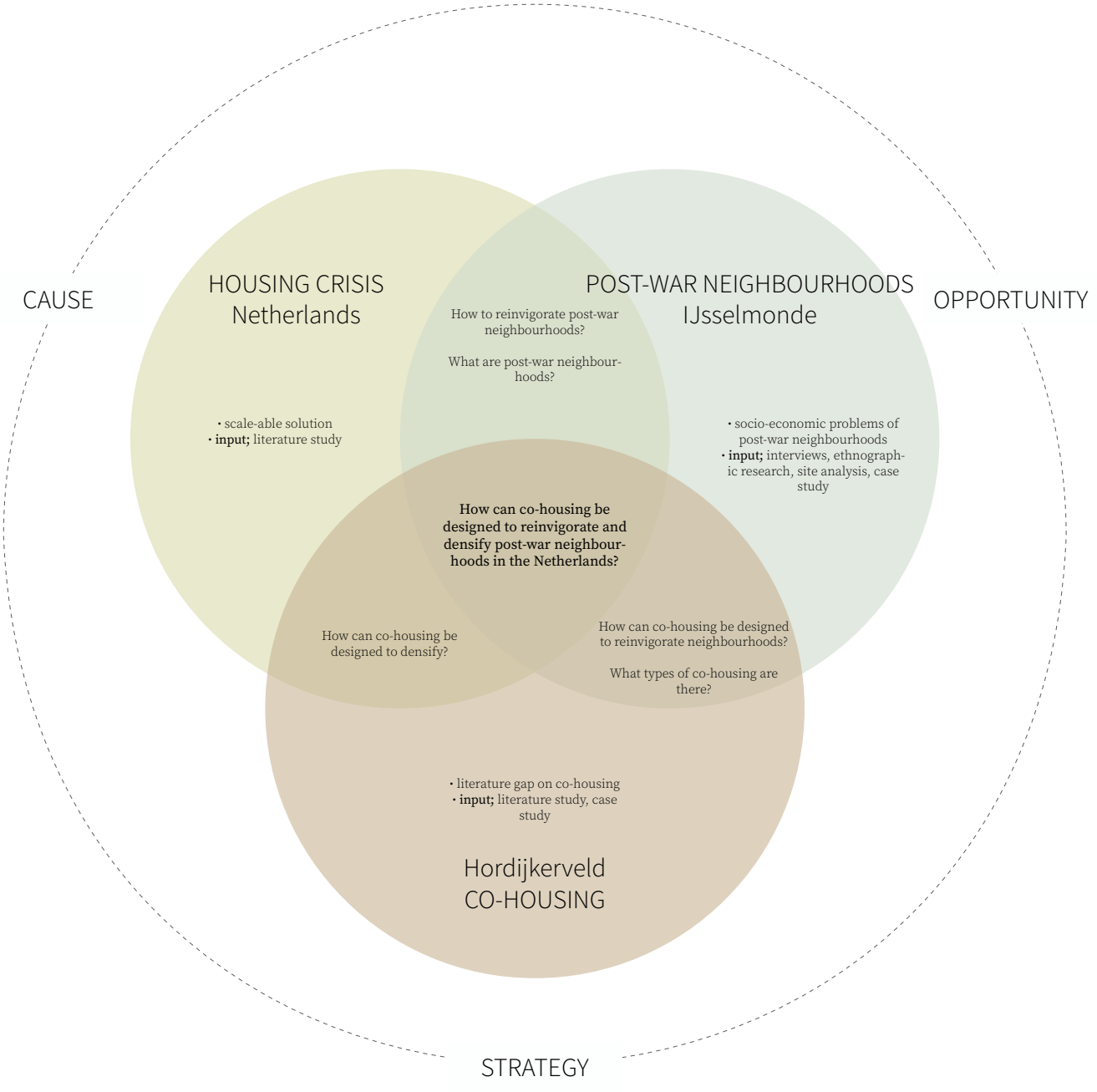


Fig.04. Research diagram

2. LITERATURE REVIEW

2.1 LITERATURE

The theoretical framework reviews studies that have already been conducted on the topic of co-housing and reinvigoration. The framework helps to define the knowledge gap within the literature on co-housing and to indicate the relevance of this research.

Meltzer (2000) researches the links between co-housing and environmental awareness which is not the main goal of this research but does provide some insight in how to quantize the cast study data to be able to derive design solutions from them and categorize them. Meltzers research is exemplary for the trend of co-housing being a way for people to shape their own society with their spatial, environmental and social ambitions. Using co-housing to empower and realize those ambitions.[12]

Krokokfors (2012) points out that the wider impact on co-housing on a neighborhood community is hard to measure and there is too little data to support this claim the cause being that although co-housing development is on the rise, even in Denmark, generally considered the most advanced country in this respect, co-housing represents only 1% off all housing.[13]

Fromm (2012) shows through several international case studies of co-housing that these communities can have a positive impact on a wider neighborhood level, beyond the borders of the co-housing development itself, and could be a viable strategy for neighborhood reinvigoration.[14]

Very little research has been done on the spatial requirements and architectural expression of co-housing. Palm Lindén (1992a) researched the spatial aspects within the Swedish co-housing co housing framework by using the space syntax method.
Her research indicates that the location of shared facilities play a key role in how the residents use them. Transitional zones such as entrances, elevators and stairs are also crucial for social interaction and also important for the co-house to function as a whole. In her research she categorizes co-housing case studies into three spatial conditions; building type, communication system (loggia's gallery, stairs) and location of the shared facilities within the building.[15]

Tummers (2015) concludes in his overview of contemporary co-housing research that the driving force behind co-housing has always been one of social change but may also provide answers to more practical solutions such as everyday services and energy costs.
'Major themes, besides the manifold practicalities of realizing a co-housing project, are: demographic change and gender roles, the impact on the neighborhood, criteria for design and social interaction, and the relatively new fields of legal property and planning implications.'[16]

The research indicates a knowledge gap within co-housing between the projects, their influence on a larger community scale (neighbourhood) and what design features can be used.

▲

12. Meltzer, G. (2000). Cohousing: verifying the importance of community in the application of environmentalism. Journal of Architectural and Planning Research, 17(2), 110–132.

13. Krokfors, K. (2012). Co-Housing in the Making. Built Environment, 38(3), 309–314. https://doi.org/10.2148/benv.38.3.309

14. Fromm, D. (2012). Seeding Community: Collaborative Housing as a Strategy for Social and Neighbourhood Repair. Built Environment, 38(3), 364–394. https://doi.org/10.2148/benv.38.3.364

▲

15.Palm Lindén, Karin (1992b): Community and Privacy in the Swedish Collective House. Lund: University of Lund

16. Tummers, L. (2015). The re-emergence of self-managed co-housing in Europe: A critical review of co-housing research. Urban Studies, 53(10), 2023–2040. https://doi.org/10.1177/0042098015586696

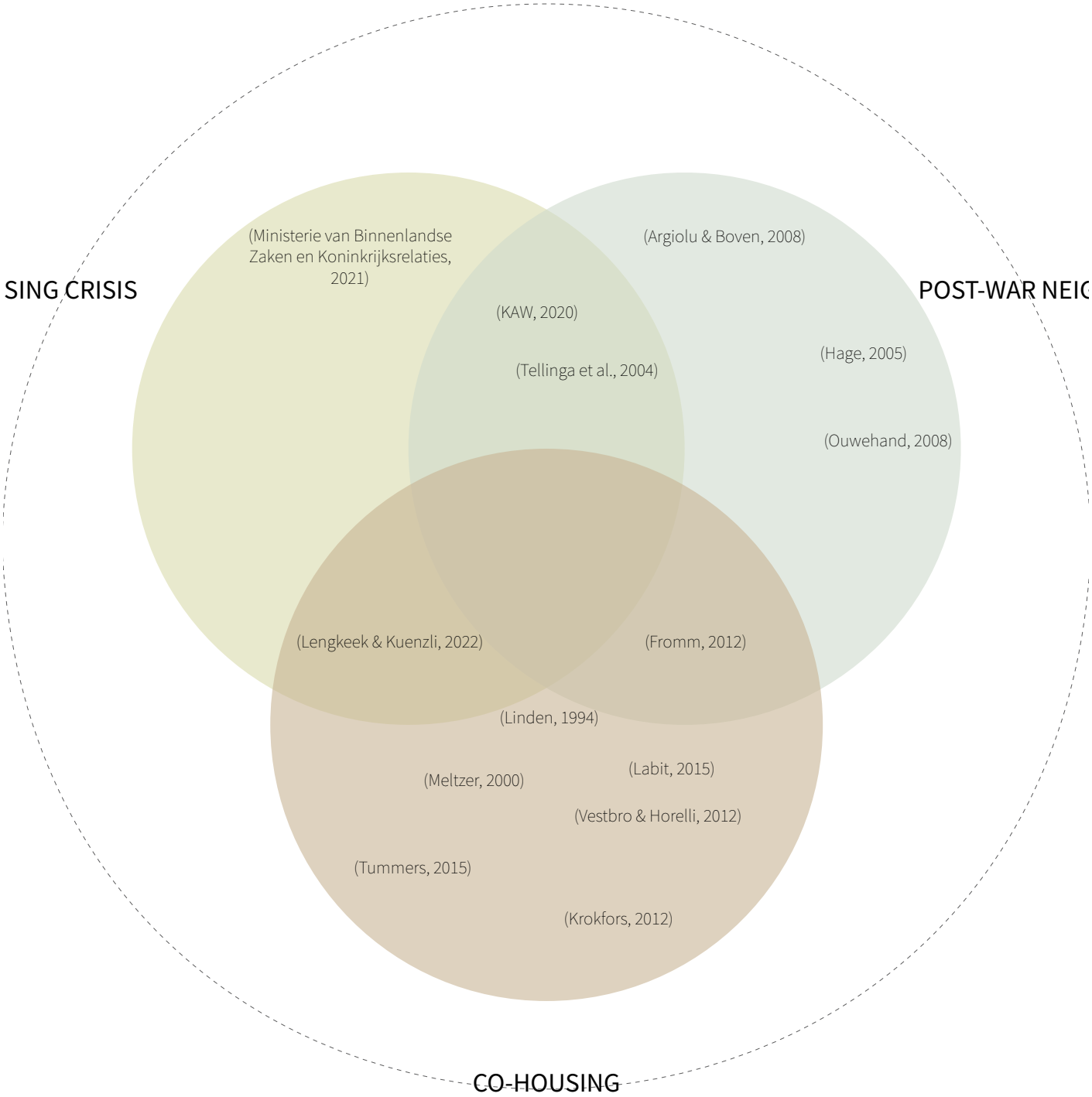


Fig.5. Research diagram by used sources

2.2 TERMINOLOGY

Co-housing can be interpreted from a communal, collaborative or collective standpoint. Collaborative is often interpreted as collaboration between residents in a housing project. Communal refers to housing with the goal of creating a community and collective refers to the shared use and organization of services. [17]

Tummers (2015) states that this diversity of interpretation of what co-housing is makes the conducted research on the topic hard to interpret and use to build a case for co-housing.

'The lack of verifiable quantitative data does little to support the 'believers' who claim that co-housing is 'the third way of housing' of the (near) future. On the other hand, the case for 'cynics' who tend to dismiss the co- housing trend as catering for a privileged minority is at present even less articulated. The lack of quantitative data is partly due to the wide and fuzzy boundaries of co-housing.'

Defining the terminology is key to communicating a clear message to future residents of what is expected and what co-housing means.

Therefore a terminology list is included to provide a framework for clear communication within this research:

CO-HOUSING
Housing with common space and shared facilities

COLLABORATIVE HOUSING
Housing oriented towards collaboration by residents

COLLECTIVE HOUSING
Emphasizing the collective organization of services within housing

COMMUNAL HOUSING
Housing for togetherness and sense of community

COMMUNE
Living without individual apartments.

COOPERATIVE HOUSING
Cooperative ownership without shared spaces or facilities, therefor no co-housing [18]

ECO-VILLAGE
People in Eco-villages intentionally live together in a community or in several communities. They strive for designing a common structure and a common culture of living which fulfills a major part of the most important needs of those people at that place, all in a sustainable way.

SHARED FLAT
A shared flat is a single living unit inhabited by people whose main objective is to share living space and infrastructure (usually no intentional community because of lack of growth and/or relatively little commitment to communal structure).[19]

▲
17. Vestbro D (ed.) (2010) Living Together – Co-hous- ing Ideas and Realities Around the World. Stockholm: Royal Institute of Technology Division of Urban Studies in collaboration with Kollektivhus NU.

▲
18. Tummers, L. (2015). The re-emergence of self-managed co-housing in Europe: A critical review of co-housing research. Urban Studies, 53(10), 2023–2040. https://doi.org/10.1177/0042098015586696

19. Eurotopia booksearch. (2022). Eurotopia.Directory. Retrieved March 28, 2022, from https://eurotopia.directory/booksearch

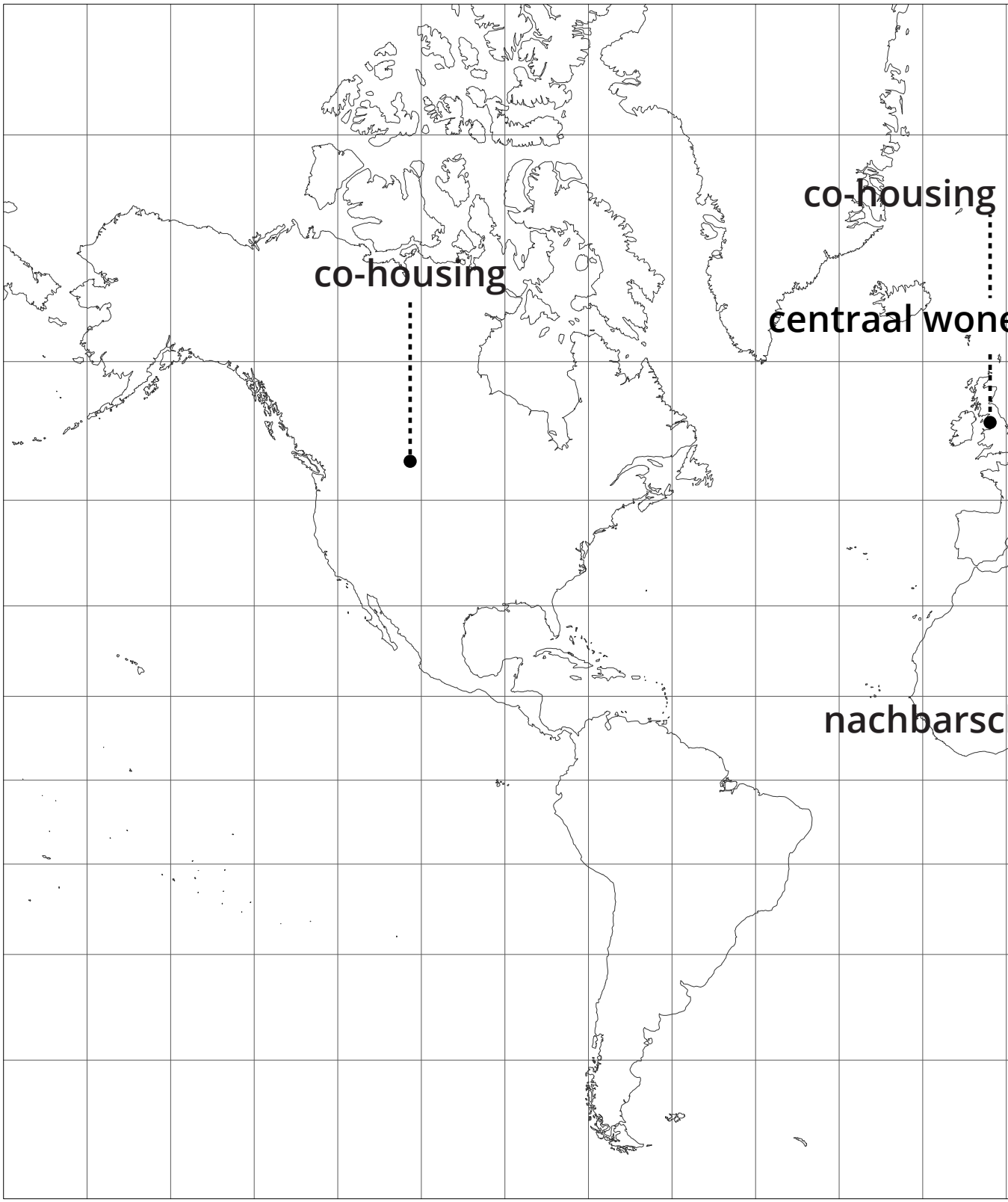
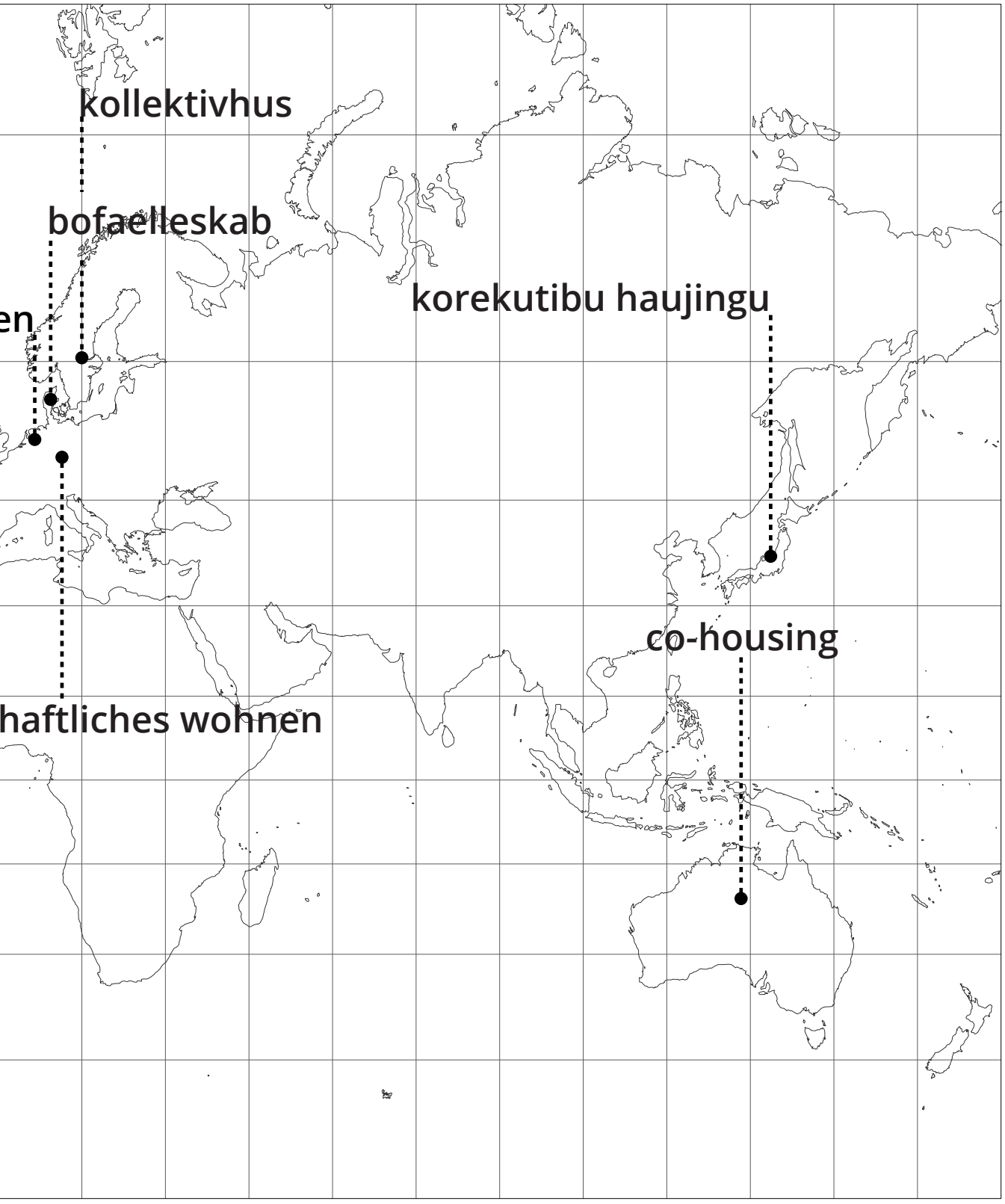


Fig.6. Worldmap of co-housing terminology


kollektivhus
bofaellesskab
en
korekutibu haujingu
co-housing
haftliches wohnen

3. METHODOLOGY

3.1 METHODS AND METHODOLOGY

CAUSE

This study integrates two scales of societal challenges and looks for a possible strategy in; co-housing. On a national scale the challenges the Netherlands is currently facing are the housing crisis and the deterioration of post-war neighborhood on a social and physical level. To gain insight into these challenges and to develop the design tool necessary to address them a literature study on housing development is done to determine what has already been tried and to get a sense of the history of the places where the intervention is going to take place.

OPPORTUNITY

To better understand post-war neighborhoods, case studies are collected and a literature study is done to define general physical and social aspects of these neighborhoods and to understand where the opportunities and challenges in densification of these neighborhoods lie as well as to get a sense of the scalability of the design solution proposed after the research and design brief is finished.

At the same time challenges on a more local scale of IJsselmonde need to be taken into account. On this local scale the challenges are studied and analyzed through interviews with residents to get a sense of the problems and challenges the residents of IJsselmonde are facing and how site specific they are. This will also determine the scalability of the proposed design intervention to other post-war neighborhoods in the Netherlands.

During this study the challenges on the national scale will be addressed while also taking into consideration the input of local residents through interviews to gain a sense of coinciding problems and work towards a solution. This input is then used to investigate design solutions in which the social and spatial needs of the residents are combined with co-housing.

STRATEGY

Co-housing is the proposed strategy to on the one hand densify the post-war neighborhoods and on the other reinvigorate and create an overall sense of community within these neighborhoods while still suitable housing for current residents and new target groups.

Meltzer (2000) states the importance of participation with residents for acceptance of proposed design solutions.

'If criteria to 'design community' cannot be formulated in a generic way, the interaction between initiators and architect(s) becomes all the more important. For example, when future residents are involved in the design process, there is 'more acceptance' or 'less conflict' once the building is inhabited.' [19]

An in depth study of the history of co-housing, their social benefits, spatial conditions and design aspects through categorization of co-housing case studies provides design tools and how to achieve the social benefits for each target group through design.

Three case studies are selected for a more in-depth analysis. The three projects have different morphologies, group sizes and circulation which gives a broader view of new co-housing design.

From these three topics and research area's the question and sub-question are answered.

▲
20. Meltzer G (2000) Cohousing: Verifying the importance of community. Journal of Archi- tectural and Planning Research 17(2): 110–132.

	ORIGIN	SCALE	TOPIC
	CAUSE	NATIONAL SCALE	HOUSING CRISIS
	OPPORTUNITY	LOCAL SCALE	POST-WAR NEIGHBORHOODS | IJSSELMOND
	STRATEGY	OVERALL STRATEGY	CO-HOUSING
INPUT	• literature study • demographics analysis		
	• interviews with local residents and professionals • Typological research • site analysis (group work)		
	• literature study • typological research • comparative research • case studies		
OUTPUT	Who to build for? (typologies, target group) Define program Define level of densification.		
	What is possible within the existing urban structure? What do local residents need? General aspects of post-war neighborhoods Define site		
	What type of co-housing is beneficial for local and new residents? Design terminology Define level of co-housing		

Fig.07. Methodology diagram

4. POSTWAR NEIGHBOURHOODS

4.1 POST WAR HOUSING DEVELOPMENT

After the end of World War II, the Netherlands faced a severe shortage of housing due to the widespread destruction caused by the conflict. Of the 2.1 million homes in the Netherlands, 864.00 were destroyed during the second world war of which 25.000 in Rotterdam and many more were damaged. The housing crisis which was a result of the war and the baby boom shortly after called for a repair and expansion plan of the Dutch built environment and a visionary approach on how to restructure the built environment. After the second world war the public housing sector in the Netherlands was strongly centralized as was the ideology of the *'maakbare samenleving'*. The ideology that the government can bring about social change with strong interventions.

The housing crisis was a high priority issue for the government after the second world war and many politicians labeled it as '*Volksvijand nummer 1'* . They all promised to ramp up housing development but this turned out to be much harder then expected. In 1962 the housing shortage was still estimated by the *Economisch Instituut voor de Bouwnijverheid* (EIB) at 280.000 which was more then the housing shortage of 260.000 in 1945. The lack of materials, workers and capital caused the housing shortage to grow even further after the war. The building sector in the Netherlands was still using prewar construction techniques while other European countries developed new ways to construct buildings and where using a more standardized and industrialized construction methods.

During the second world war architects already knew the housing problem was not only a quantitative problem but also a quality and financial problem. In 1943 the BNA (Bond voor Nederlandse Architecten) released the report *Richtlijnen voor de woningarchitectuur*. This report set guidelines for the minimum quality and dimensions for housing and was meant to guarantee a minimum quality. In practice these minimal quality guidelines were used as the maximum for cost efficiency by developers.
Another struggle for the housing sector was funding. The housing sector was unattractive for investors which led to disappointing results in housing development for many years. The government also put an artificial cap on the maximum rent price which was based on the rent level in 1939 making exploitation of newly built dwellings impossible at the time. During the 1960's the Dutch housing development finally ramped up due to government policy and the implementations of new building techniques from other countries. The production of 95.00 dwellings in 1964 continued to rise to 155.000 in 1972.[1]

4.2 THE GALLERY FLAT

The implementation of the *Woningwet* in 1901 had to provide better housing for workers.
Large worker neighborhoods were planned and the focus was mainly on functionality of the dwellings. In the 1920 the 'Amsterdamse School' made its entrance and with its more decorative brick ornamentations. This new decorative style had to make way for the introduction of the new way of building: 'het nieuwe bouwen' where the focus was mainly on light, air quality and spatial orientation.

In 1921 Michiel Brinkman designed the Justus van Effencomplex. Although these were also worker homes they were designed to provide better housing quality and a lot of attention was put into the day-to-day use for the workers such as wide gallery for outdoor space, a bath house for the residents and the orientation towards the green inner garden. This project was one of the first steps towards

▲
1. Ministerie van Onderwijs, Cultuur en Wetenschap. (2019). De typologie van de vroeg-naoorlogse woonwijken. Publicatie | Rijksdienst Voor Het Cultureel Erfgoed.

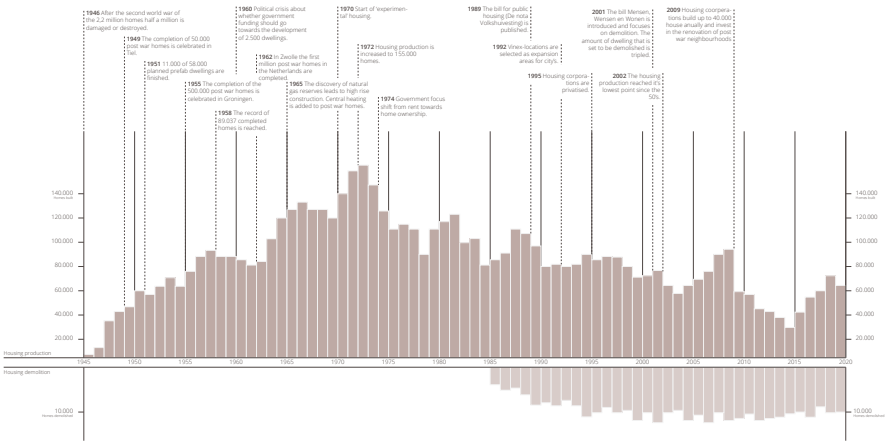


Fig.08. Housing development and demolition between 1945 and 2020.

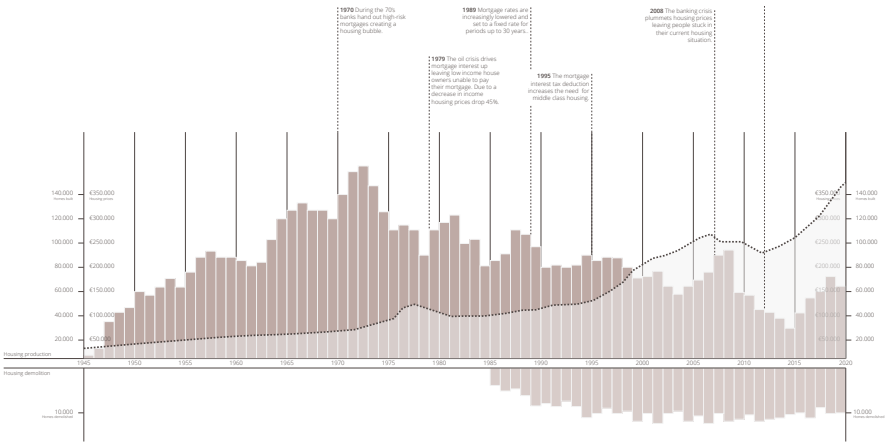


Fig.09. Dutch housing price development.

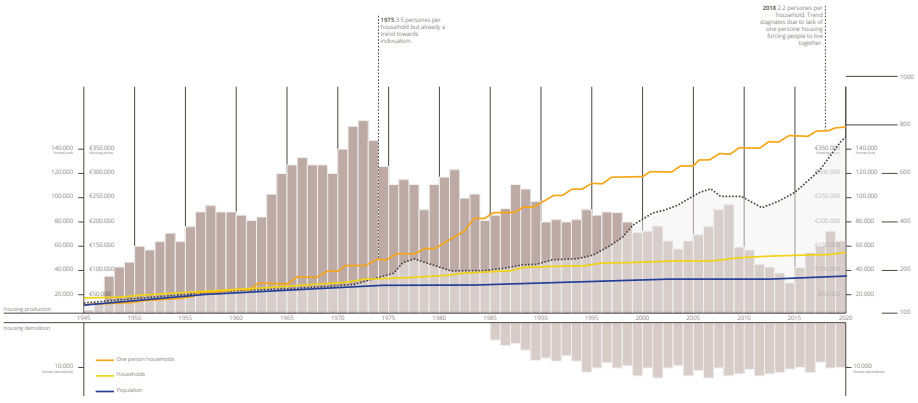


Fig.10. Demographic development by household composition.

the more traditional Dutch gallery flats, later on the son of Michiel Brinkman would design one of these Dutch gallery flats, the Bergpolderflat.

This gallery flat was designed in 1934 by J.A. Brinkman in collaboration with W. Tijen and L.C. van der Vlugt. The flat was constructed in steel with prefabricated concrete slabs. This construction method of prefabricated slab elements made construction cheaper and quicker and could be applied on a large scale. After the second world war this method was used on a much larger scale to provide quick and affordable housing. This method also allowed the dwelling in these gallery flats to be larger making them more suited for families with them often having three bedrooms. The flats at the time provided large family housing with a view in a green environment but were not the ideal family housing they aspired to be. The flats often felt too big with too many people sharing an entrance. This leads to people not feeling part of a community or neighborhood.

The public space often consists of large open fields and is too vast and suited for human scale to engage with. The buildings are often poorly insulated making the indoor climate in the dwelling uncomfortable and expensive to heat.
These physical aspect as mentioned above are not the only reason why the gallery flats are often not the first choice for inhabitants but also the socio-economic problems often associated with living in a gallery flat. The physical disadvantages of these flats often leads to people moving in and out of them more frequently which has a negative effect on the sense of community within these flats causing a downward spiraling effect.[2]

▲
2. Hageman, M., & Derwig, J. (2007). De Nederlandse architectuur: 1000-2007. Thoth.

Fig.11. Justuf van Effenblok designed by Michiel Brinkman.

Fig.12. Bergpolderflat designed by .A. Brinkman in collaboration with W. Tijen and L.C. van der Vlugt.

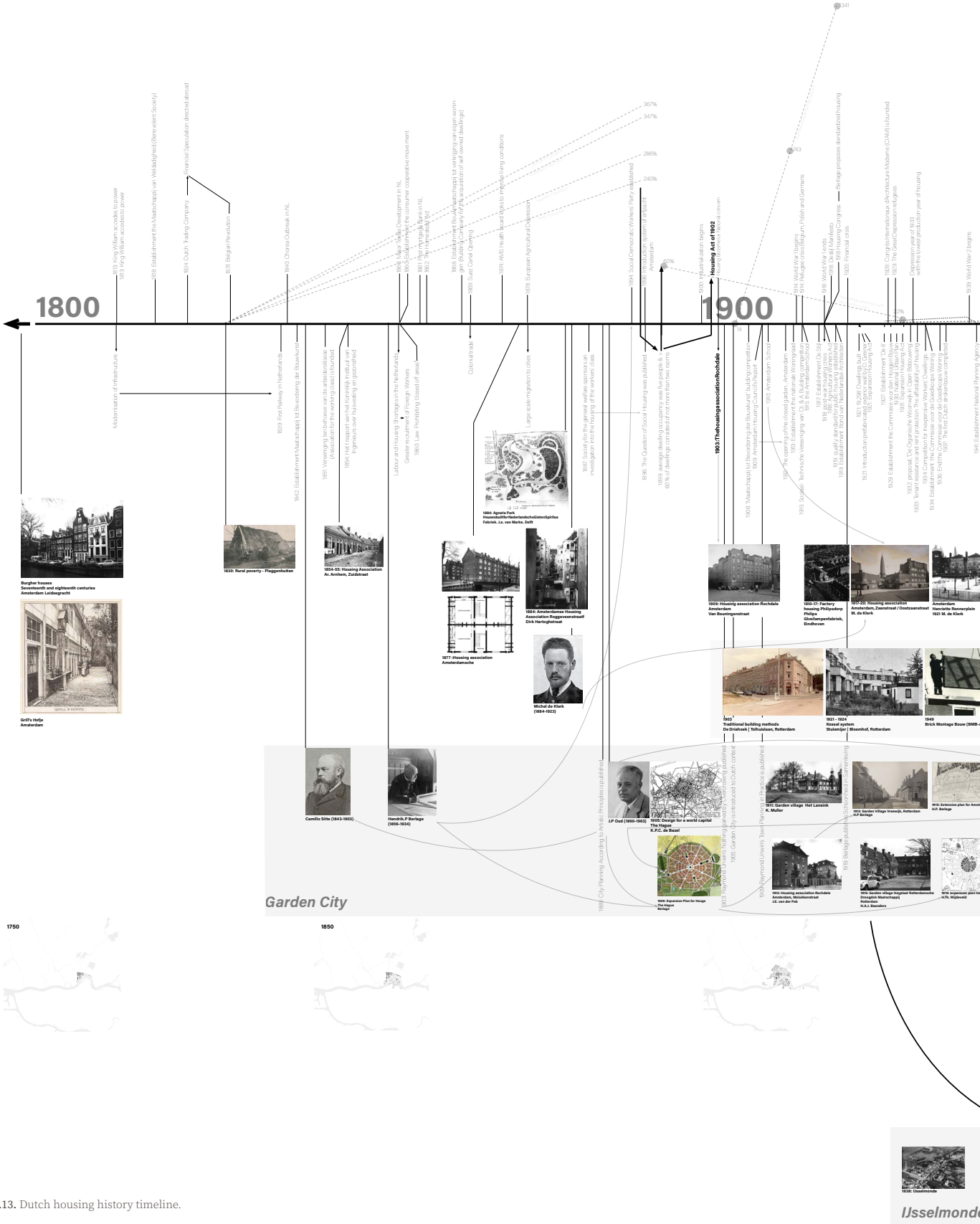
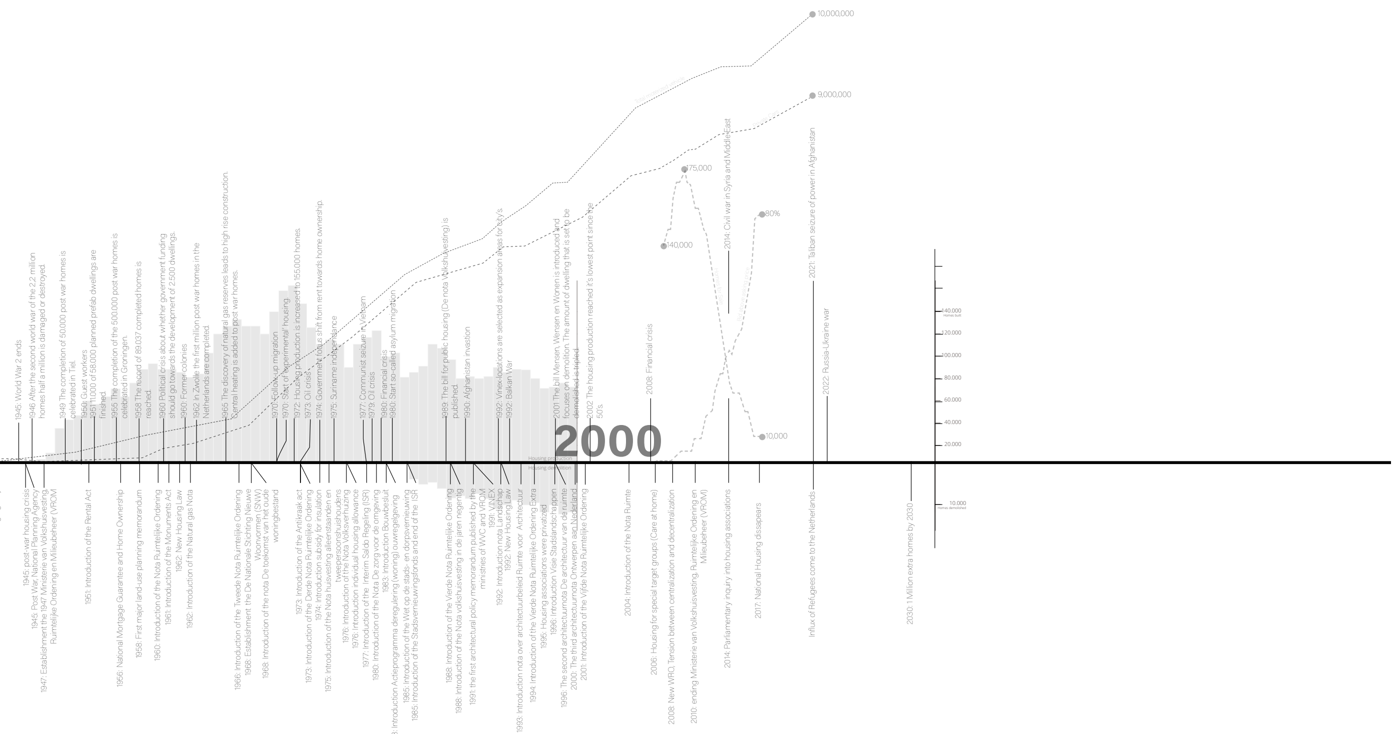


Fig.13. Dutch housing history timeline.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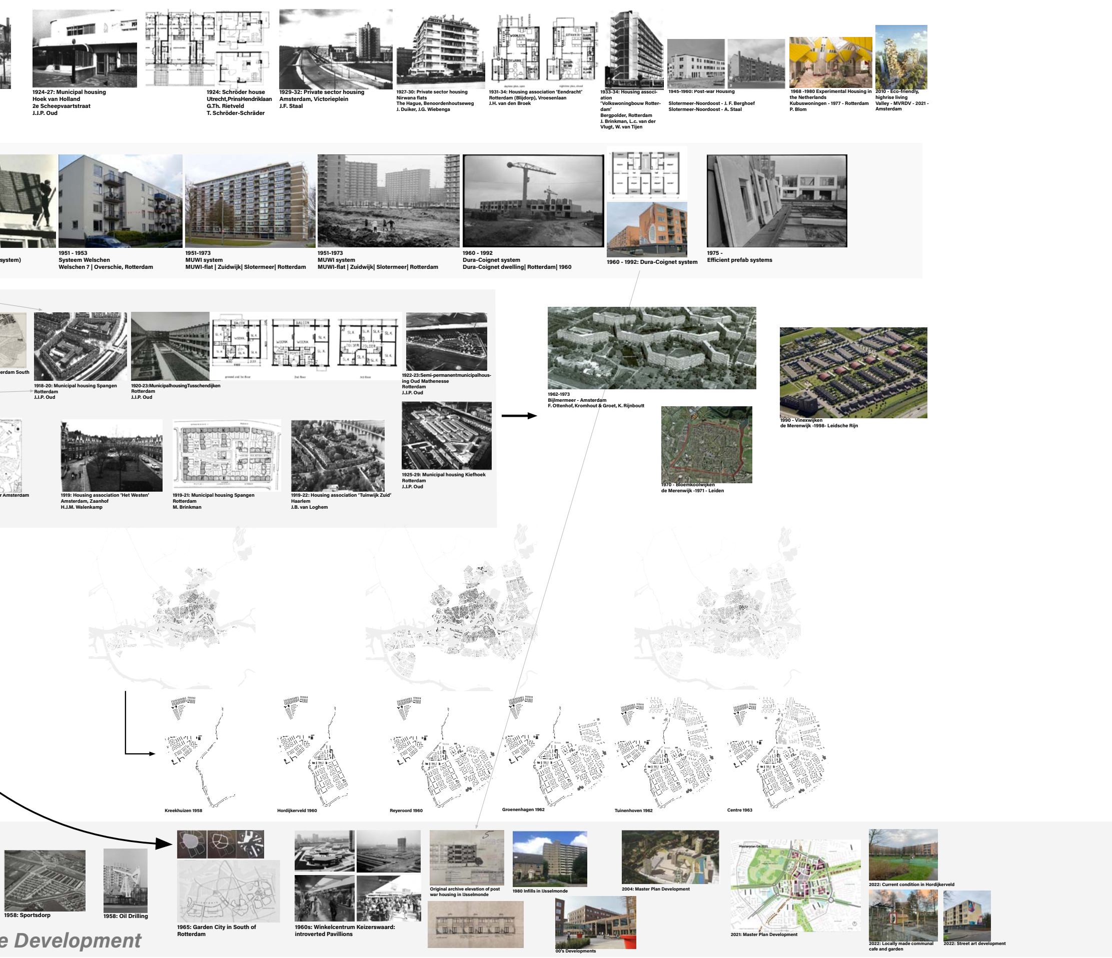

e Development

4.3 THE 'WIJKGEDACHTE'

The efforts of fixing the housing crisis after the second world war also rekindled the negative views of large cities by the urban planners, architects and sociologists which already predated the second world war. They deemed city life as undignified and unfit for human beings. To deal with these "unihbatibale" cities the ideology of the 'Wijkgedachte' was developed. The 'Wijkgedachte' was already introduced in the Netherlands during the 20's as an structuring principle for urban planning but was further developed by the *Studiegroup Bos* under supervision of ir. A. Bos in the book *De stad der toekomst, de toekomst der stad* (1946).
The book contains guidelines for the development of post war cities based on the *wijkgedachte*. Eventually the ideology of the *wijkgedachte* did not match the current societal issues but did turn out to be a great tool for structuring facilities such as shops, schools and churches within an urban development.[3]

The study group Bos saw the Wijkgedachte as a solution for the anonymity caused by city living. These ideas were further developed and published by W. F. Geyl in his book '*Wij en de wijkgedachte*'. The hypothesis was that the wijkgedachte would provide a stable community and neighbourhood within a fast developing larger city structure. Geyl called for a better sense of community within the different scales of the urban fabric such as neighbourhood, city part or city which surrounded the family.
The neighbourhood was the place for day to day contact and neighborly sense of community. This is also the sphere where a child would make its first contact with the outside world and other kids. The neighbourhoods in Geyl's Wijkgedachte was the place for living. Young, old, large and small families living within the same cluster and doing groceries there and going to school there.
Moving up one scale the 'Wijk' or city part is made up of several neighbourhoods and is grouped around a city center. In the city center the facilities which who cater to a larger group then just one neighbourhood are located such as a church, high-schools, not everyday shops etc. The parks, sport facilities, and gardens should be located on the borders of these city parts to create a buffer zone between the traffic and the inner part of the neighbourhood according to Geyl.[4]

Although some were critical, the wijkgedachte became a popular discourse and many neighbourhoods were designed with these ideals in mind. However, due to the construction standardization and commercial interests the *wijkgedachte* often got reduced to a tool for structuring the facilities a community needed and the other ideals where abandoned.
During the 1950s it became apparent that the improved welfare gave a much bigger action radius to residence than just the neighbourhoods leading to critique by sociologist Jaques van Doorn who pointed out that it was not realistic to detach the neighbourhood community from the rest of society.
What remained of the wijkgedachte is a

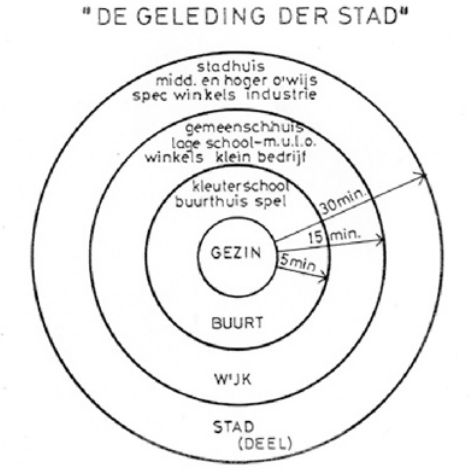


Fig.14. Diagram of the facilities and their proxmity

▲
3. Ministerie van Onderwijs, Cultuur en Wetenschap. (2019). De typologie van de vroeg-naoorlogse woonwijken. Publicatie | Rijksdienst Voor Het Cultureel Erfgoed.

▲
4. Ministerie van Onderwijs, Cultuur en Wetenschap. (2019). De typologie van de vroeg-naoorlogse woonwijken. Publicatie | Rijksdienst Voor Het Cultureel Erfgoed.

framework for neighbourhood teams and social workers in these neighbourhoods. It seems the wijkgedachte and sense of community is felt more by the professionals working within the neighbourhoods then the people living there.[5]

4.4 THE EMERGENCE OF POST WAR NEIGHBOURHOODS

Many of these post war neighbourhoods were designed according to the 'Wijkgedachte' principle. This principle had to make the scale of large housing development that was needed more suited for humans by putting the focus on the neighborhood as a place with which people could identify themselves and have a sense of community within the larger whole such as a city. Each neighborhood was made up of different dwelling and building types for different social classes and age groups. The idea was that a person could move within the neighborhood during their life time to a dwelling that provided their needs for that particular age without having to leave their familiar community. The urban planning of these neighbourhoods according to the 'Wijkgedachte' lead to neighborhoods we now identify as post war neighborhoods.[6]

Due to the housing crisis after the second world war the housing development had to be fast. The stamp like neighbourhoods structures of four stories high flats combined with two stories row houses could be easily copied and repeated, saving time making urban plans. During the 60's this way of copy pasting urban plans continued with the addition of high gallery flats for more densification.

Fig.15. Diagram of the different scales and it's facilties.

5. Van Meijel, L. H. D. V. L. /. (n.d.). De naoorlogse wijk in historisch perspectief : de praktijk.

6. Geyl, W. F. (1949). Wij en de wijkgedachte (nr. 1 in de serie "Plannen en voorlichting"). Uitgave V. en S. te Utrecht.

The urban structuring principle of the *'Wijkgedachte'* embraced by the architects associated with *'Het Nieuwe Bouwen'* movement. This caused these neighbourhoods to have a straight and rectangular structure. They designed efficient floor plans and rational building plots which gave the neighbourhoods their characteristic symmetry.
Another feature of the post war neighborhoods is the amount of public green with which it was designed. The open plot structures of the neighourhoods created large spaces between the buildings which were filled up with green to provide a view from the buildings and for people to enjoy. Facilities such as shops and schools were distributed within the neighborhood and often placed in these green zones.
Post war neighborhoods often had a strict segregation between work and housing and a hierarchical network of roads within them made up of main roads creating a border for the neighborhood, smaller roads within the neighborhood and bike and pedestrian paths.[7]

During 1997 the image of the post war neighborhood as presented by the media was predominantly negative. The critique was that these neighborhoods where to mono-functional with gallery flats where people felt unsafe to be out in public and the housing typologies were too homogeneous creating a downward social spiral.

The idea of the neighborhood as an social and physical unity and urban concept has become obsolete. The existing post war neighborhood were unable to adapt to the change of people becoming less and less physically attached to a place or neighborhood and seeking out places where their specific needs were better provided. Therefore the main strategy for renovation these neighborhoods was often demolition of the existing flats and building new high segment units to improve the socio economic position for the whole neighborhood.[8]

Although demolition often seems like the obvious approach for these neighborhoods we often are demolishing well working smaller communities within them and should maybe look at a more nuanced approach. When looking at the opportunities these neighborhoods provide and the fact that they are already there another approach might be more suitable.

- The post war neighbourhoods mainly consist of one family homes.

- It has a lot of public green and water structures compared to other neighborhoods with the same density.

- The neighbourhoods road network is often well connected to city centers and within the neighorhood.

- At the border of urban areas & mixed functions.

- The ribbon shaped structures leave a lot of room for new development.

▲
7. Geyl, W. F. (1949). Wij en de wijkgedachte (nr. 1 in de serie "Plannen en voorlichting"). Uitgave V. en S. te Utrecht.

8. Ministerie van Onderwijs, Cultuur en Wetenschap. (2019). De typologie van de vroeg-naoorlogse woonwijken. Publicatie | Rijksdienst Voor Het Cultureel Erfgoed.

4.5 CASE STUDIES OF POST WAR RENOVATION STRATEGIES

The cases studies selected for post war renovation strategies in this chapter focus solely on renovation strategies with a building concept approach. This includes modification on the outside or too the building morphology or circulation principle. Other fields of case studies would include looking at a master plan approach for post war renovation strategies or a more zoomed in floor plan modification approach for these type of neighbourhoods.

The master plan approach is left out of this report because the input for the new master plan is based on specific site analysis of the location of IJsselmonde.
The floor plan case studies are not integrated within this report because the floor plan analysis for the design input is derived from the co-housing case studies in chapter 6.3.

URBAN RENEWAL EUROPAREI

Built:
1967-1971
Architect:
unknown
Typology:
Gallery
Place:
Uithoorn, Netherlands

Renovation:
2002-2012
Architect:
Atelier Kempe Thill
Strategy:
Wrapping

The Europarei in UIthoorn, Netherlands is a housing estate from 1960s, consisting of nine slab buildings with a total of 1.100 apartments. The architectural task pursued by Atelier Kempe Thill was to make a completely new design for all of the facades, to create extensions for the central halls, to renew the technical equipment, and to make various changes to the floor plans of the apartments. The realized design was developed together with the residents. The logistics of the building process was related to the fact that the inhabitants stayed in their apartments during the renovation period. [9]

Fig.16. View of the old facade.

Fig.17. The new facade.

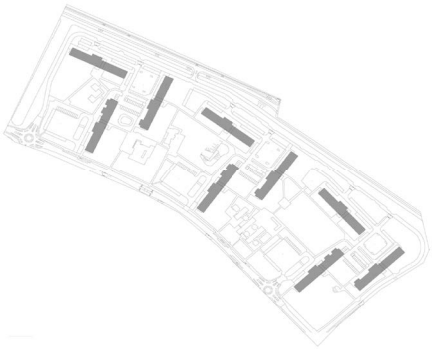


Fig.18. Urban situation of Europarei.

▲
9. Thill, A. K. (z.d.). Atelier Kempe Thill | 0020 Urban Renewal Europarei. Atelier Kempe Thill © 2015. https://www.atelierkempethill.com/0020-urban-renewal-europarei/

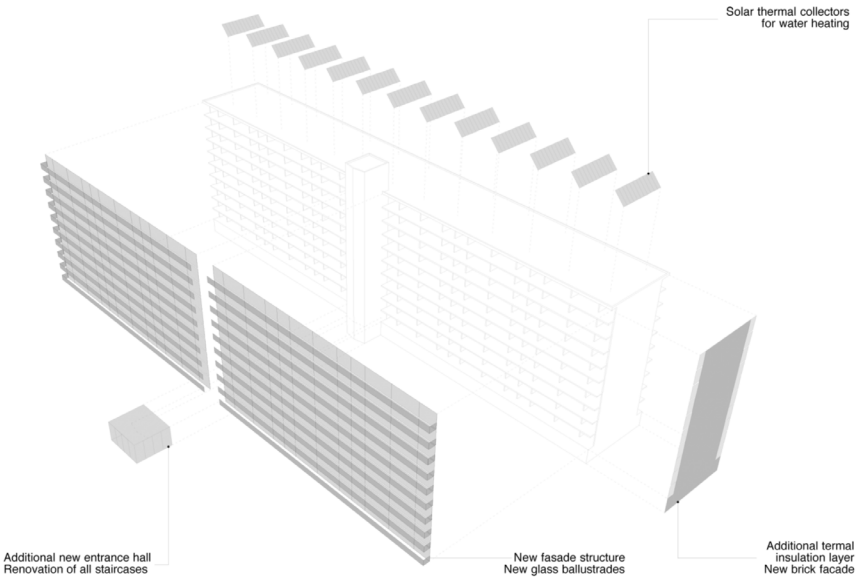
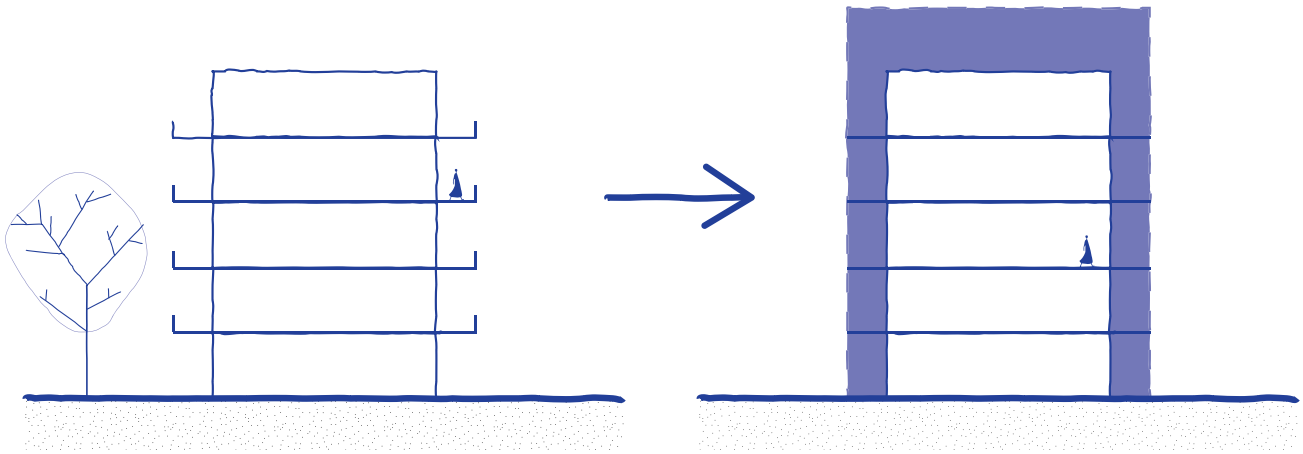
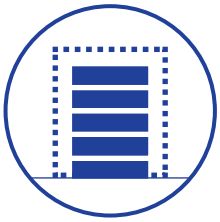


Fig.19. Diagram of the new facade structure.





Wrapping approach: Wrapping the flat in a layer of insulation, giving the flat an extra layer of thermal and sound insulation by widening the gallery.

FRISSENSTEIN EN FLEERDE

Built:
1968
Architect:
Kromhout en Groet
Typology:
Gallery
Location:
Amsterdam, Netherlands

Renovation:
2003
Architect:
Duinker, van der Torre
Strategy:
Maisonette

The restructuring of Amsterdam's Bijlmermeer is largely taking place around Bijlmerdreef. In the F-buurt, which is located right next to the shopping center 'De Amsterdamse Poort' and close to Bijlmer station, parts of the existing honeycomb flats Fleerde and Frissenstein have been maintained and renovated to a high standard. The Bijlmerdreef has been lowered in height and is now a long strip of mid-rise buildings.

The 2-storey plinth has been rearranged with ground-level maisonettes. The entrance hall is double height and more open. The closed balustrades of the galleries and balconies are replaced by glass paneled fences. On the view side with transparent glass and on the gallery side with light-colored glass panels, so that the flats are shown as a colored surface from the Bijlmerdreef. The newly built single-family homes and the existing Fleerde flat together form an ensemble. Within this new ensemble are parking spaces at ground level that are used by the residents of the new building and the flat. The parking deck functions as a roof terrace for both the new homes and the plinth homes of the flat.

Frissenstein stands as an independent disc in the public space with a new block next to it with single-family homes and covered parking spaces for the flats and for the new building. The houses have the living floor on the first floor on the wooden terrace on the roof of the parking spaces. Trees have been planted in the middle of both garages, which grow through a void in the roof. The new single-family homes use the same materials as the plinth of the flats, so that the flats and new buildings connect with each other.[10]

Fig.20. The Bijlmer facade.

Fig.21. Frissestein smaller scale building.

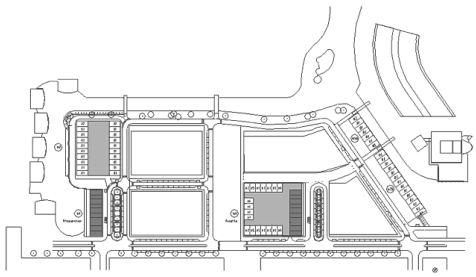


Fig.22. Urban situation.

▲
10. DvdT - Frissenstein en Fleerde, Renovatie en nieuwbouw F-buurt -. https://www.dvdt.com/project.php?n=3,1,92,-1&t=0

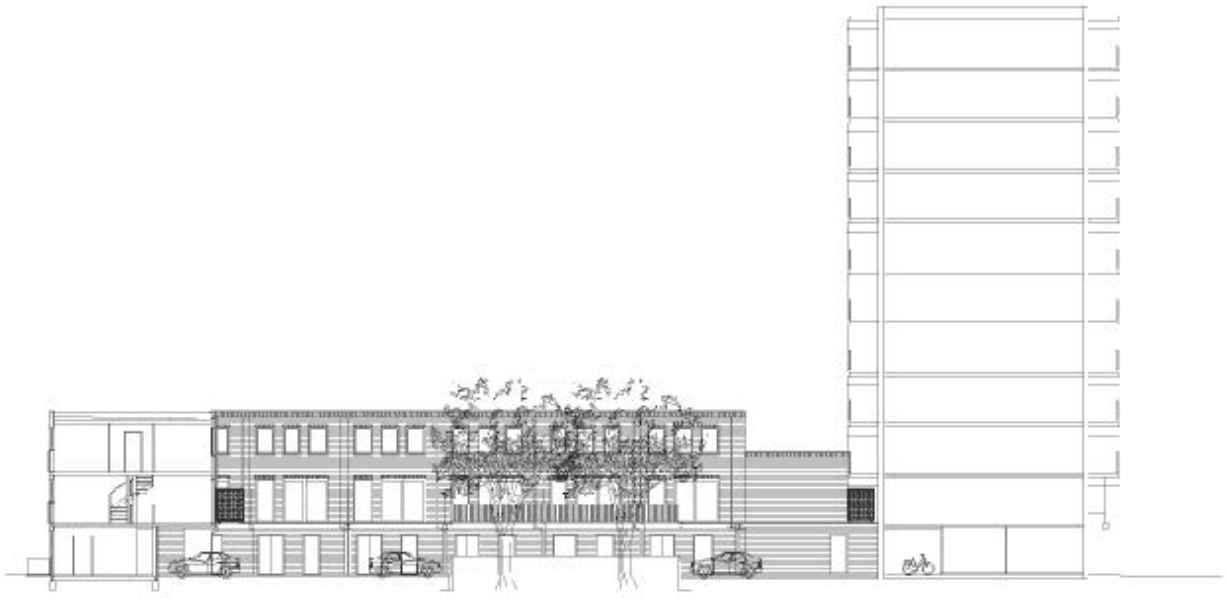
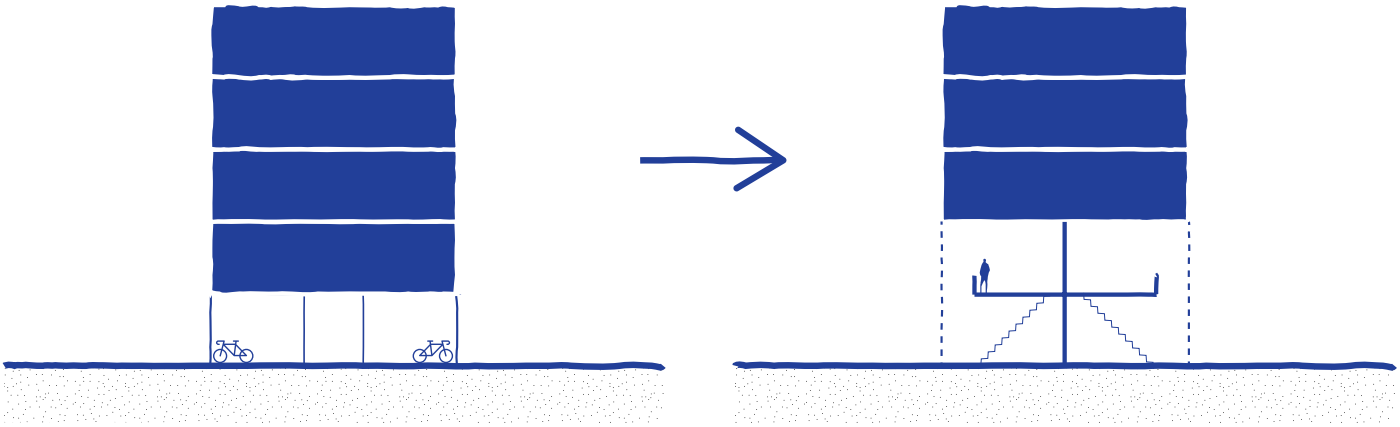
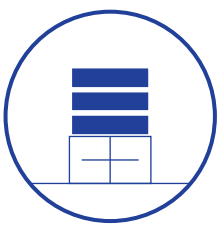


Fig.22. Section of and view of the newly built attachament.





Maisonette approach: creating maisonettes by removing the ground storage units. This approach creates new typologies in flats where the structural walls can't be perforated.

COMPLEX 312

Built:
1986
Architect:
Zanstra, Gmelig Meyling en De Clerq Zubli
Typology:
Gallery
Location:
Dordrecht

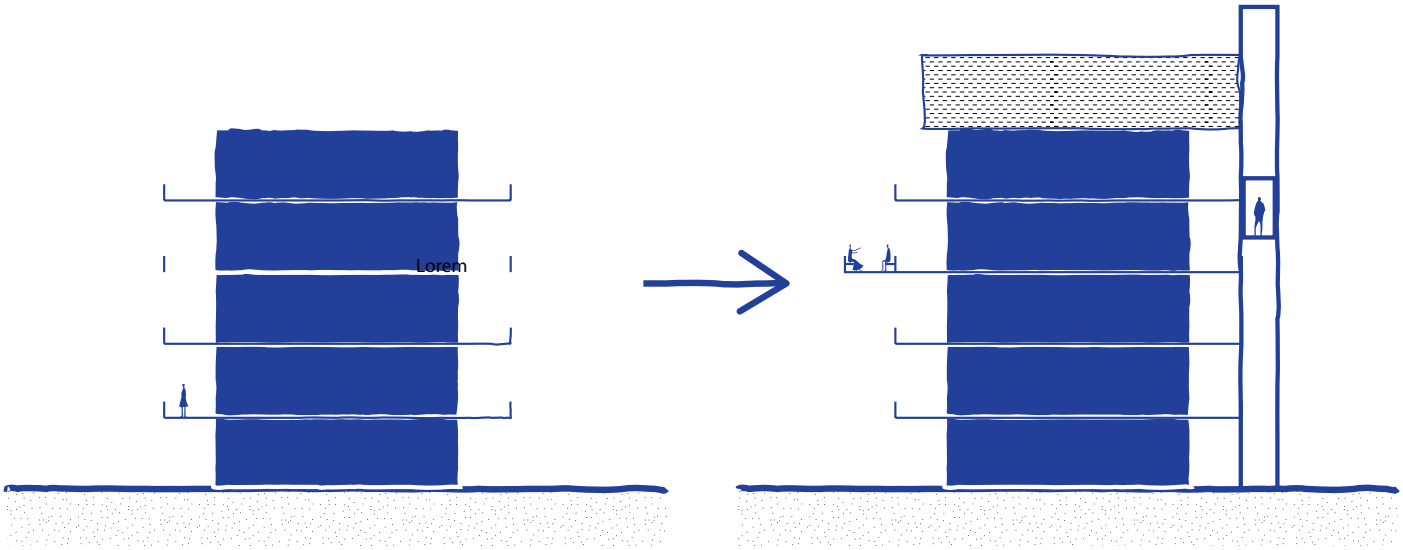
Renovation:
2004
Architect:
XX architecten
Strategy:
Extension

In the neighborhood Sterrenburg a project consisting of twelve buildings needed renovation. Complex 312 with seven floors was redeveloped from rent to owner-occupied housing. Daan ter Avest who worked for XX architects was in charge of the redevelopment plans of all twelve buildings. The plan mostly consist of redesigning the entries of the buildings, adding elevators and adding penthouses on top of the building to diversify the dwellings.
At some of the flat an extra balcony is added to the gallery as a meeting space for residents.[11]

Fig.23. The penthouses on top of the old roof.

Fig.24. The new facade and elevator.

▲
11. Tellinga, J., Hofland, H. J. A., & Nederlands Architectuurinstituut. (2004). De Grote Verbouwing. Uitgeverij 010.



Extension approach: Adding penthouses on top of the flat. This finances the elevator which is accessible for all residents.

Extending the gallery balconies to create meeting areas for residents in their building.

PHILIPSLAAN

Built:
1959
Architect:
Kuiper, Gouwetor, De Ranitz Nispen
Typology:
Porch
Location:
Roosendaal

Renovation:
2002
Architect:
Rijnvos Voorwinde Architecten
Strategy:
Porch to gallery

Three apartment blocks located on the Philipslaan in Roosendaal have undergone a renovation and change in typology. Sand-blasted glass panels have been mounted on the street side for the dated looking trespa facade panels. To make the buildings suitable for elderly people to live in, the porches have been replaced by lifts and galleries on the rear. Bridges connect the free-standing gallery with the entrances of the houses and, due to their generous size they offer extra outdoor space in addition to the balconies. A new zinc-clad volume is sandwiched between two short apartment buildings and offers space for a meeting space with the central entrance below.[12]

Fig.25. External view of the new gallery.

Fig.26. The inside of the new gallery with bridges to the front doors.

▲
12. Philipslaan, Roosendaal - Voorwinde Architecten. (2017, February 15). Voorwinde Architecten. https://voorwindearchitecten.nl/project/philipslaan-roosendaal/

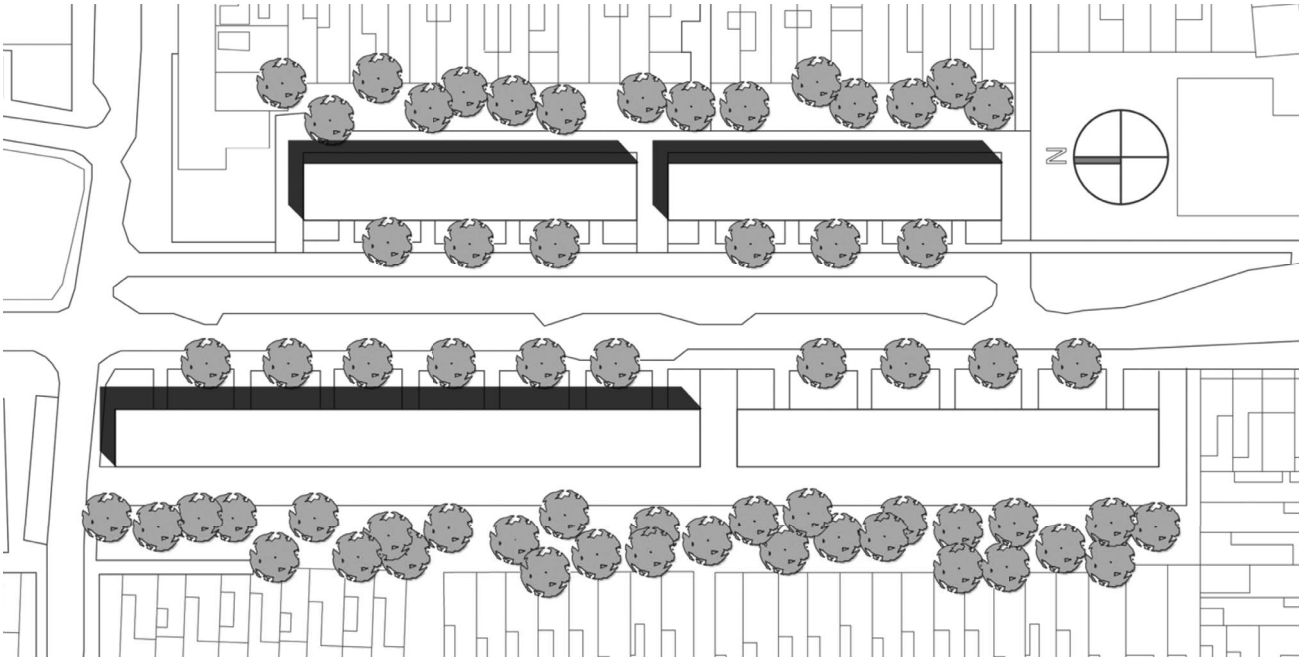
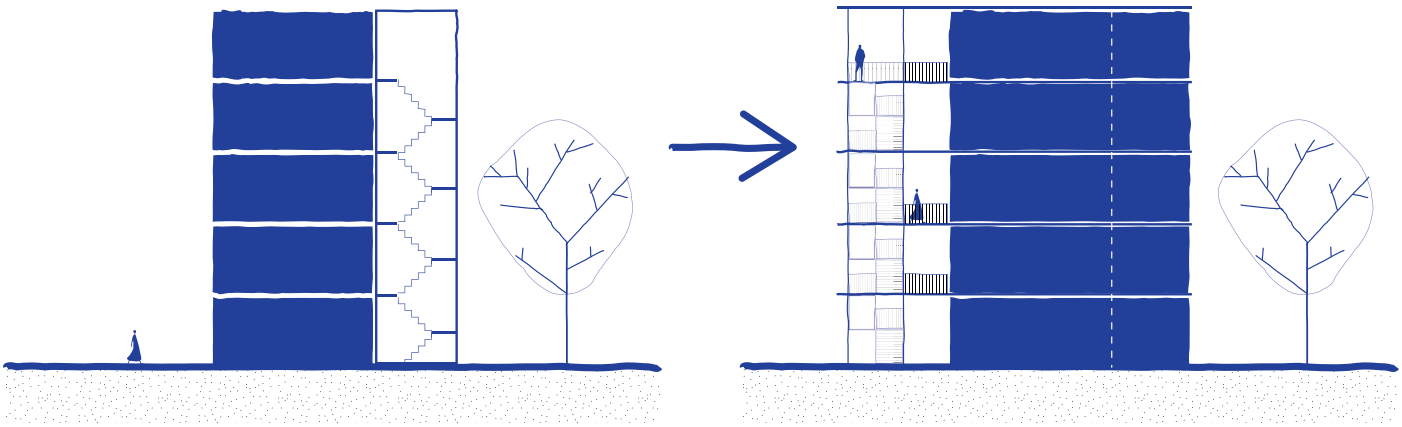
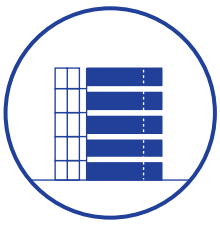


Fig.27. Urban situation.





Porch-to-gallery approach: The staircase of the porch flat is added to the dwelling and a outdoor gallery is attached to make the dwelling accessible. The gallery is placed 2,5m from the facade creating bridges and a buffer zone between the dwellings and the circulation zones.

EEMSTEIN, ZONNESTEIN

Built:
1970
Architect:
Architektenburo Bakker
Typology:
Galleryflat
Location:
Zwijndrecht

Renovation:
2004
Architect:
Kokon Architekten & Ingenieurs
Strategy:
High-rise

Two flats in Zwijndrecht, the Eemstein and Zonnestein consisting of 444 rental apartments are transformed to high-end owner-occupied housing and assisted living faculties for the elderly. A balcony is added to all dwellings and the exterior of both buildings is redone. The two buildings where originally not connected, as part of the renovation a 22 story flat is added to connect the two buildings and to add another 78 dwellings to the project. On top of the two existing buildings two floors are added with 56 terrace dwellings. This renovation focuses on elderly and their ability remain self-sufficient.[13]

Fig.28. The new towers on the corner hinges the existing buildings.

▲
13. Tellinga, J., Hofland, H. J. A., & Nederlands Architectuurinstituut. (2004). De Grote Verbouwing. Uitgeverij 010.

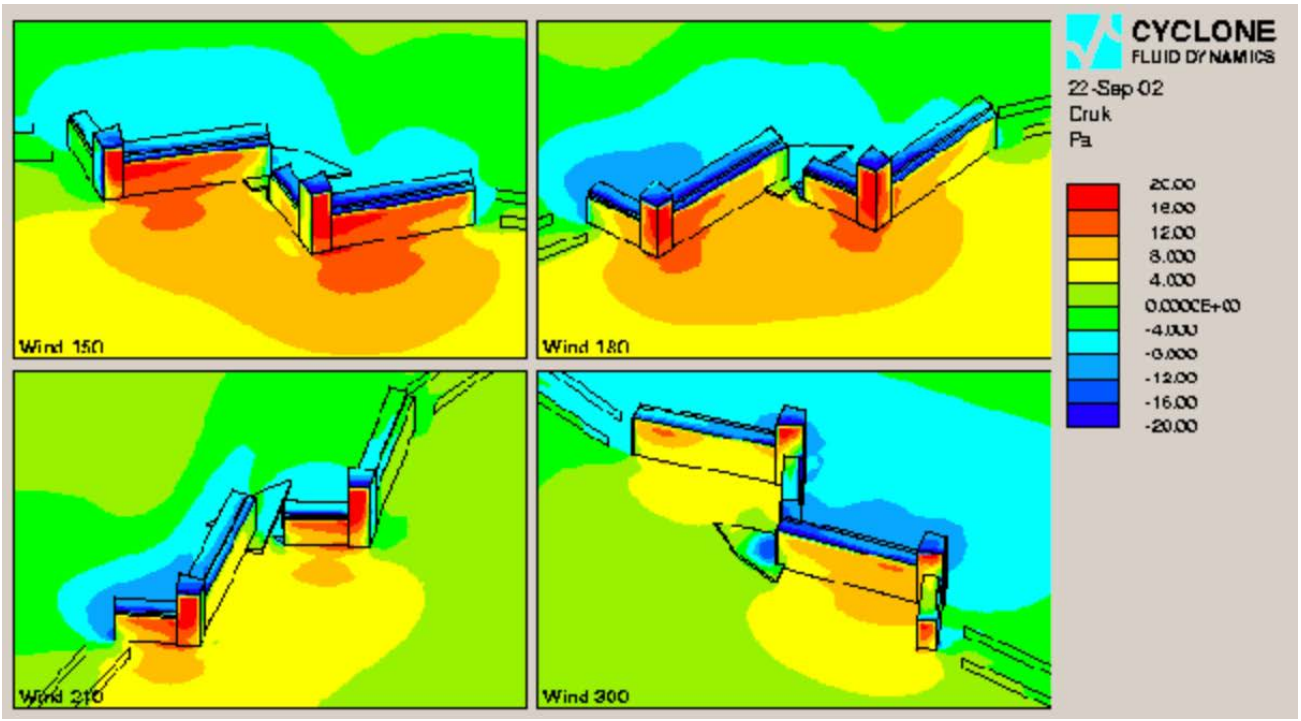
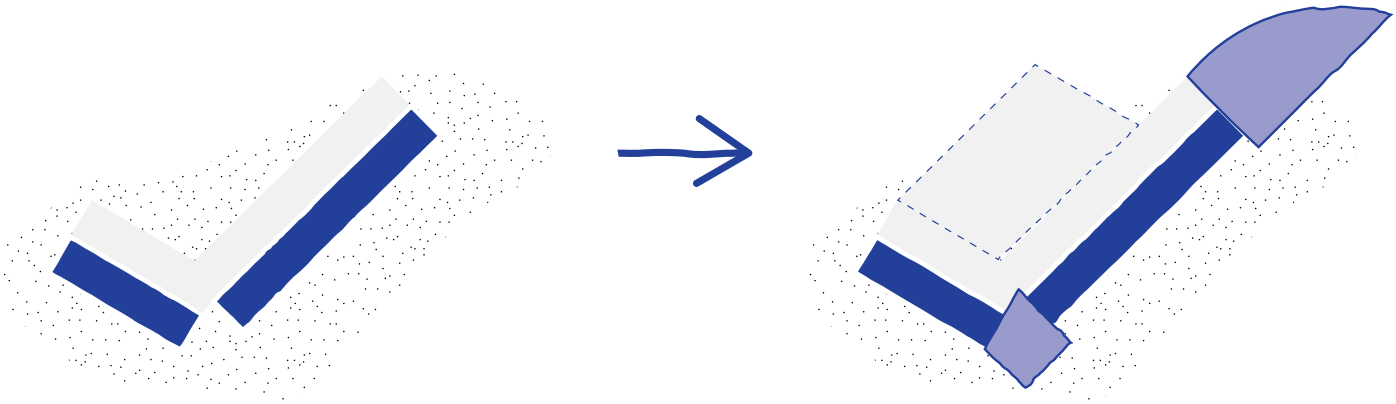
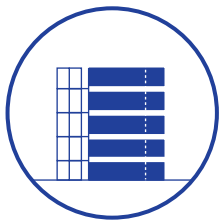


Fig.28. The addition of the towers creates a different air flow along the buildings.





Porch-to-gallery approach: The staircase of the porch flat is added to the dwelling and a outdoor gallery is attached to make the dwelling accessible. The gallery is placed 2,5m from the facade creating bridges and a buffer zone between the dwellings and the circulation zones.

PENDRECHT

Built:
1953
Architect:
Nefkens
Typology:
Gallery
Location:
Rotterdam

Renovation:
2002
Architect:
Karelse van der Meer Architecten
Strategy:
Demolition

Urban designer Lotte Stam-Beese designed the urban plan for Pendrecht (1949-1952) in consultation with modern architects from the architectural group Opbouw. She took the diversity of urban life as a key point and proposed an urban structure in which high and low building blocks are situated in a strict pattern of straight streets. She deemed the garden city-like set-up unsuitable for modern housing production.

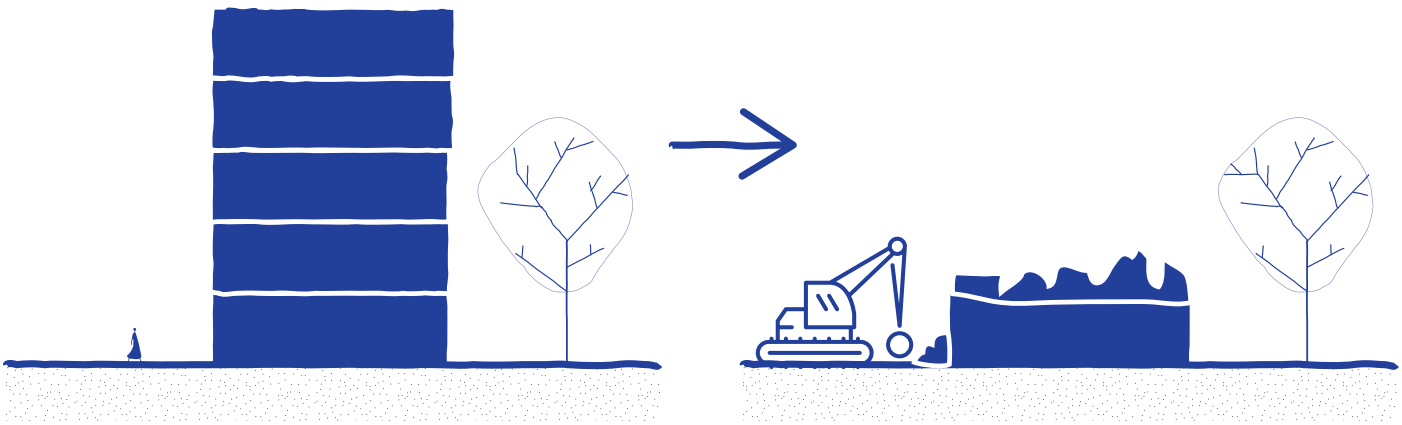
Essential in Pendrecht's pattern are the repeatable residential units of approximately 90 homes each. The housing unit is the smallest module of the urban plan with a mix of homes for large and small families, the elderly and single people. Traffic streets and quiet 'play streets', together with park strips and communal gardens, offer a variety of public spaces.

The garden city of Pendrecht was iconic for its new way of building and designed by Lotte Stam-Beese. The demolition and new development was financially necessary. For the new design the original footprint was used. Variety in building hight was added to allow for densification and the addition of 60 apartments. The mid-rise blocks each consists of twelve dwellings.[14]

Fig.29. The stamp like structures of Pendrecht

Fig.30. The new and more dynamic urban plan.

▲
14. Tellinga, J., Hofland, H. J. A., & Nederlands Architectuurinstituut. (2004). De Grote Verbouwing. Uitgeverij 010.



Demolition approach: Due to the bad quality of some of the postwar buildings it is more efficient to demolish and build new then to renovate them.

4.6 CONCLUSION OF POST WAR RENOVATION STRATEGIES

At the turn of the century most of post war development had been in use for nearly 50 years and was in dire need of renovations. This was due to the construction quality and fast building method in which they were designed but also because of the societal changes and ways of living.
Although the post war development can be seen as quite homogeneous in construction method and style with its tunnel concrete system, panel facades, galleries and ribbon like structures, the renovation of these buildings was not as straightforward as one would expect for such an industrialized and standardized housing method. A wide variety of strategies was implemented in attempts to make the post war building ready for the next century. The strategy which was chosen often depended on the state of the building and on the development plans of that specific area. When a renovation strategy was chosen this often included a change in the variety of typologies within one building, upgrading the facade and insulation and making the building more accessible by adding elevators or completely changing the circulation method. Unfortunately we have to conclude that more often than not demolition of the post war structures was the most feasible option which was often met with great resistance by the residents and the destruction of a bit of Dutch housing history.

The renovation strategy of the post war buildings is dependent on the context in which it is in. Smaller renovation can add quality to the existing residents but does not address the overall problems which these buildings have. Larger renovation with added typologies can attract new target groups but can also displace current residents.

DEMOLITION

WRAPPING

MAISONETTE

EXTENSION

HIGH-RISE CONNECTION

PORCH-TO-GALLERY

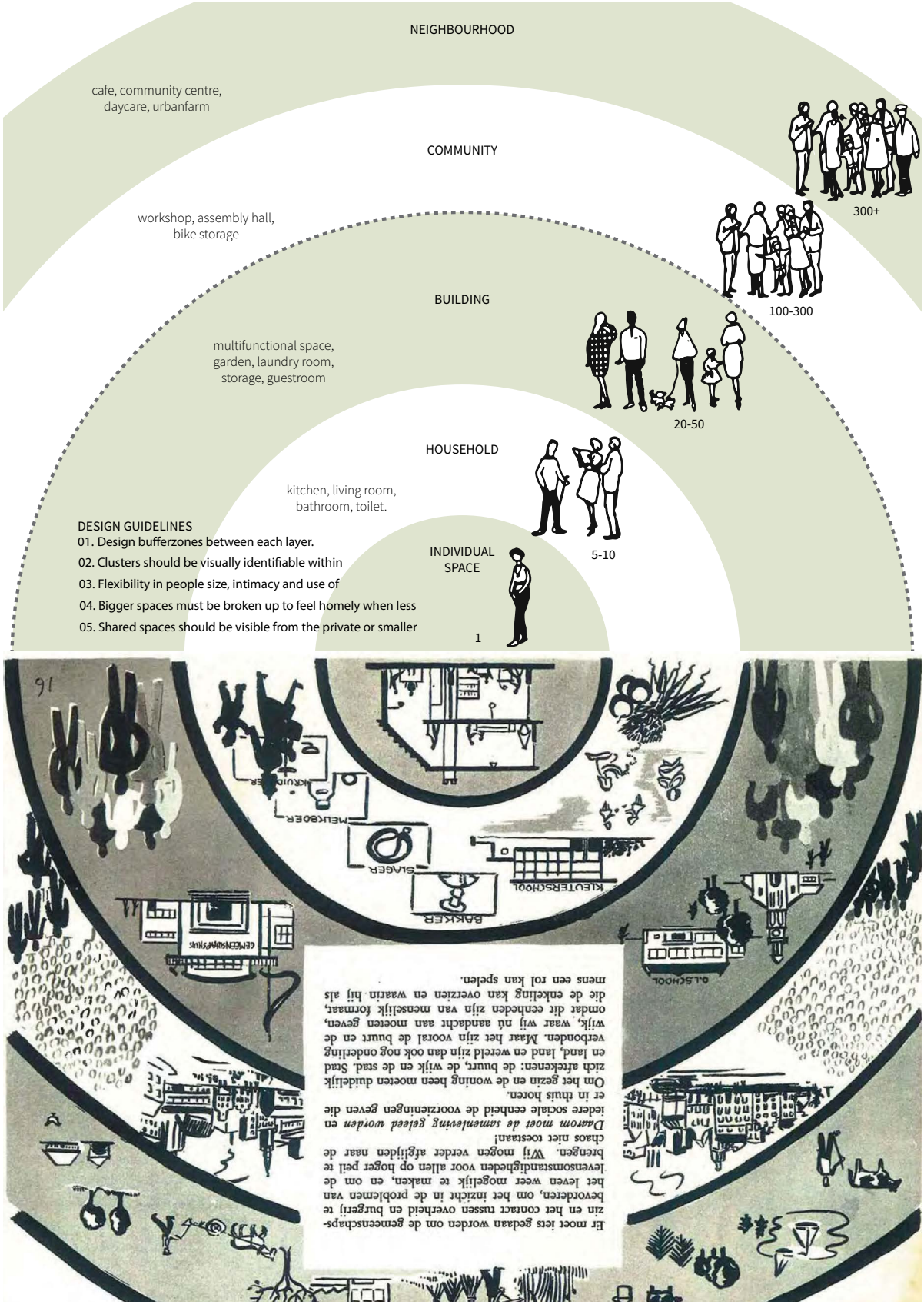


Fig.31. The Wijkgedachte for co-housing.

5 HORDIJKERVELD, IJSSELMONDE

5.1 A BRIEF HISTORY OF IJSSELMONDE

Rotterdam Zuid

During the first half of the twentieth century the area of Rotterdam Zuid, now known for neighborhoods such as Hoogvliet, Pendrecht, Zuidwijk, Lombardijen en IJsselmond, consisted of agricultural bowl shaped Polders who were separated by dikes.

The construction of the Maashaven led to an economic growth and an influx of people originating from Zeeland and Noord Brabant who moved to Rotterdam for work. To provide housing for these new inhabitants the city of Rotterdam annexed the municipality of Charolais just across the bridge and along the Maas. In an effort to provide housing the neighborhoods Afrikaanderwijk, de Bloemhof, Tarwebuurt, Carnissebuurt and Charlois were constructed. Due to their proximity to the harbour and industrial activity and the bad quality of the dwellings these neighborhoods were unsuccessful and did not appeal to the native inhabitants of Rotterdam.

In 1921 M.J. Granpre Moliere, P. Verhagen and A.J.th.Kok designed the urban plan for first Tuindorp as an extension for Rotterdam-Zuid.The concept of the urban plan was to integrate nature into the city and to relate to the rural surroundings by designing a fan like structure. Within this fan each neighborhood had its own character surrounded by green borders. The plan was not executed but remained the key concept for further urban developments after the second world war.

In 1938 Witteveen en Verhagen presented the plan Het streekplan IJsselmonde, an investigative study of the driving factor in the development of IJsselmonde. Rotterdam was divided into four industrial zones and Rotterdam-Zuid remained a residential area which needed to be developed and connected to Rotterdam to provide housing. During the second world war construction and planning came to a stop.

At the end of the 50th Rotterdam concluded that with the addition of Overschie, Schiebroek, Zuiderwijk, Pendrecht and Lombardijen the housing shortage was not resolved. Densification in the north of Rotterdam was not possible so the decision was made to add a fourth neighborhood in the south; Groot IJsselmonde.
In 1957 the urban plan voor Groot IJsselmonde en Lombardijen was made by Peter van Drimmelen. This plan concluded the urban expansion towards the south Rotterdam.

Between the four neighborhoods in the south some distinctions can be made. Zuidwijk has a staggered urban composition with clear organization of neighborhoods; Pendrecht is mirrored repetition surrounding a ‘core’, Lombardijen and Groot-IJsselmonde are a concentric composition inspired by antroposofie.[15]

PETER VAN DRIMMELEN

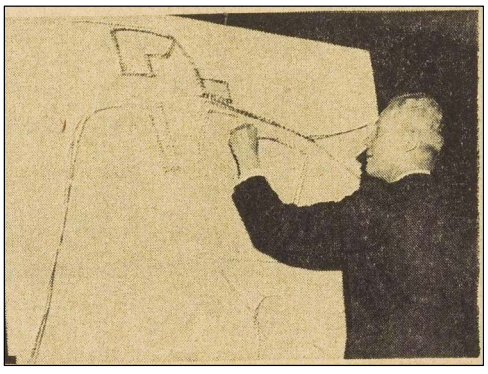


Fig.32. Peter van Drimmelen at work

Van Drimmelen started to work for *De Rotterdamse Dienst voor Stadsontwikkeling* under

▲
15. Blom, A., Jansen, B., & van der Heide, M. (2004). De typologie van de vroeg-naoorlogse woonwijken. Rijksdienst Voor De Monumentenzorg.

Fig.33. *'Gelede Stad'* diagram

Cornelis van Traa (who designed the city's postwar reconstruction plan) in 1947. Van Drimmelen was, like many of his contemporaries, inspired by several theoretical concepts developed mostly in the US and the UK around the start of the twentieth century that searched for solutions for the dense, unhealthy and unhygienic workers' living conditions in rapidly industrialized cities and regions. At the core of these concepts was not only health, but also community and socialisation.[16]

Gelede Stad

The 'Gelede Stad' of W.F. Geyl from Rotterdam municipal office *Gemeentelijke Werken*, based on the neighborhood unit ('wijkgedachte') as developed by Clarence Perry and the Garden City concept of Ebenezer Howard. The 'wijkgedachte' is a model of social order in the city, ranging from the house, the neighborhood, the district to the city. It rooted in Dutch urban planning through the so called Groep Bos, a group of architects and civil servants founded by Alex H. Bos, director of the *Rotterdamse Dienst voor Volkshuisvesting*. Geyl's concentric organization ranged from house to neighborhood to district to borough to city and functioned as a counteract on the desocialization and individualization of city dwellers. This process of recovering humanity and collectivity could not be implemented top down, but had to be created bottom up, for which this scheme was considered to be the katalysator – De typologie van naoorlogse wijken.[17]

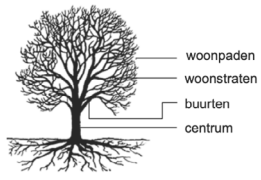


Fig.34. Hierarchy of networks

Tree Structure

Based on the Gelede Stad, Drimmelen designed IJsselmonde (and Lombardijen) on the structure of a tree, or the human body. The center was the trunk, or the heart, from where branches *(wijken)*, twigs (*woonstraten*) and veins (woning) ran out.

Fig.35. Face-face group

Face To Face group

C.H. Cooley, a community in which everybody knows each other face to face counts 300 to 600 people. To achieve this village-like characteristic, Drimmelen subdivided the neighborhoods/districts into two '*woongroepen'*, divided by a neighborhood garden (buurttuin).

He considered the neighborhood too large as an entity to create the sought after community feeling. He was inspired by the face to face group and in Lombardije, he divided each neighborhood into two 'woongroepen' of 350 to 500 dwellings.

Van Drimmelen was inspired by Austrian philosopher Rudolph Steiner and his antroposophical ideas. Perhaps more than his contemporaries, Van Drimmelen focused on the individual and his development in life. People should feel free, children should grow up in an environment that supports their development. He saw the neighborhood as the social training territory for kids – here they could learn how society works.

Van Drimmelen states that people should be able to find relief from daily life and hectic cities in their living environment. They need relaxation, recreational living. In every phase of life, they should feel at home in their neighborhood. Especially children, who gain impressions here that are decisive and formative factors for the rest of their lives.[18]

16. Blom, A., Jansen, B., & van der Heide, M. (2004). De typologie van de vroeg-naoorlogse woonwijken. Rijksdienst Voor De Monumentenzorg.

17. Geyl, W. F. (1949). Wij en de wijkgedachte (nr. 1 in de serie "Plannen en voorlichting"). Uitgave V. en S. te Utrecht.

18. Blom, A., Jansen, B., & van der Heide, M. (2004). De typologie van de vroeg-naoorlogse woonwijken. Rijksdienst Voor De Monumentenzorg.

Sportdorp
1918//1942

Kreekhuizen
1958

Hordijkerveld
1960

Reyeroord
1960

Fig.36. Development of IJsselmonde

Groenenhagen
1962

Tuinenhoven
1962

Center
1963

Development
2022

5.2 DEMOGRAPHICS OF IJSSELMONDE

Currently post war neighbourhood of Groot-IJsselmonde has 61.075 inhabitants and counts 28.867 households which makes the house hold composition an average of 2,11 people per household. Of These 28.867, 43% are one person households (12412) and 15% are single parents with children (4330). This is higher then the average of the neighbouring Rotterdam where single parent household make up 11% of the population. [19]

IJsselmonde has an above average amount of non western migrants (40%), elderly above 65 (18%), social rent (51%) and low income workers (40%) compared to Rotterdam. These are indicators for socio-economic problems and vulnerable groups. This is also reflected in the overall score the resident give the neighbourhood in surveys and in the housing prices. With almost all the housing stock in the mid to lower segment of the market and no high segment housing it IJsselmonde provides little opportunities to attract new target groups.[19,20]

Although IJsselmonde has a high employment rate the balance between work opportunities within IJsselmonde and households indicates that 75% commutes outside of IJsselmonde for work. This is also reflected in the percentage of the building stock that is occupied by housing 75%. This lack of facilities creates a ghost town effect during the day.[21]

▲

19. Wijkprofiel Rotterdam. (2022). https://wijkprofiel.rotterdam.nl/nl/2022/rotterdam/ijsselmonde/ijsselmonde

20 Wonen in Rotterdam. (2023), Wonen in Groot-IJsselmonde | Start je zoektocht op Wonen in Rotterdam.

21. Wijk IJsselmonde (gemeente Rotterdam) in cijfers en grafieken (bijgewerkt 2023!) | AlleCijfers.nl.

Fig.37. Age composition

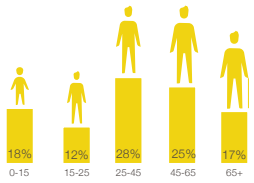


Fig.38. Family composition

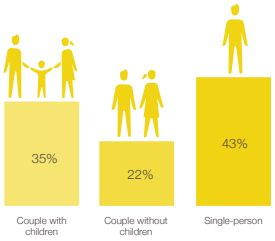


Fig.39. Nationality

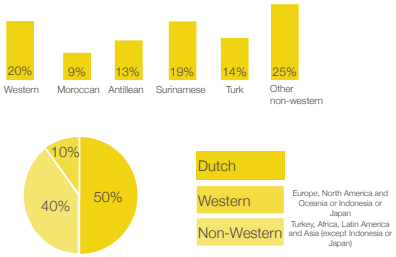


Fig.40. Rent vs. Sale

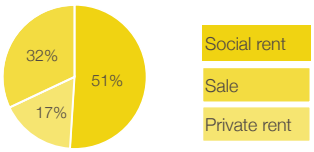


Fig.41. Income

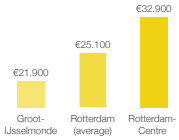


Fig.42. Education

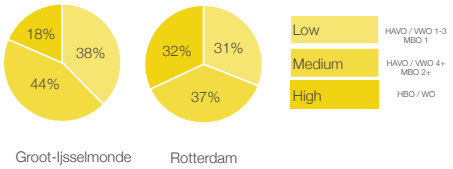
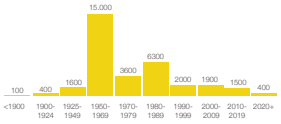
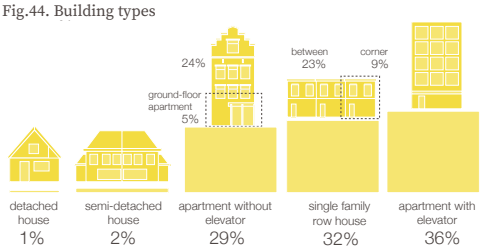


Fig.43. Building age



the buildings were constructed after the bombardments around the '60

Fig.44. Building types



5.3 HISTORY OF HORDIJKERVELD

The History of Hordijkerveld starts in the late 50's and beginning of the 60's. Sandwiched between two rows of mid rise flats are two story family homes with large green spaces running in the center. Hordijkerveld is one of the seven pebble leaves that Peter van Drimmelen designed for *Stadsuitbreiding en Wederopbouw* of Rotterdam.
The seven petal leaves are placed around the heart of neighborhood IJsselmonde. Each connected to the heart through a main road leading towards the center and a main road circling the pebble as a whole. The pebbles of the urban design are separated by green zones with roads leading towards the center.

Fig.45. Extra space for water was part of the renovation plan for Hordijkerveld.

In 1961 construction of Hordijkerveld started. The previously discussed ideologies of Van Drimmelen are well recognizable within Hordijkerveld. The mid rise flats create a border on the west and east side of the neighbourhood within a structured variety of low rise housing. This

Amphitheatre-like ensemble of buildings. Due to the large building plots and distance between buildings Hordijkerveld is an exceptionally green neighborhood which was also part of van Drimmelens ideologie. The green structure should enhance the social interaction and thus the sense of community within the neighborhood. The green structures which created the borders between the neighborhoods he described as 'free space' with a wild character.
By densifying the green in these zones they were distinguished from the green zones that run within each neighborhood. The internal neighborhood green was meant as a playground for teenagers and the communal neighborhoods gardens were for the smaller kids to play as well as recreational space for the elderly.

The two story family homes in the middle of Hordijkerveld each have their own garden adding to the green character of this already green part of IJsselmonde. How diverse the different sections of mid rise and low rise are, within themselves the architectural diversity is very low. In the time that the urban plan for IJsselmonde was drafted the first standardized housing production methods were introduced.
These standardized construction methods were brought to the Netherlands by *Dura* who refitted the French *Coignet system* to meet the Dutch housing standards. This new construction method was fast but not well suited for variation.[19]

The flats in IJsselmonde constructed with this Dura-Coignet System were designed by architect Ernest Groosman. Tunnel-like concrete structures are stacked and finished with a facade element also out of concrete. All dwellings had the same floorspace of 70m^2 and initially had no central heating. Other than Zomerland or Reijeroord who were constructed by different contractors Hordijkderveld was very homogeneous within each

▲
22. Van Der Horst, C. (n.d.). Historie Hordijkerveld 1

building type and had very little variation.

In 2000 Hordijkerveld was due for renovation. Parts of the low rise had already been renovated by then but almost all dwellings were too small and did not meet the current standards. The monotony of the dwellings and architectural expression also did not help with attracting new inhabitants or investment.[20]

The housing corporation Vestia made plans to demolish a large part and build new and bigger homes. But when the plans for demolition became public it caused an outrage by the residents. The resistance was so strong that Vestia had to make a new plan and came up with *Masterplan Hordijkerveld*. This plan included not only the buildings but also the public green zones within the neighborhood. Some of the green zones were completely re-done. To address the water problem which causes swampy areas within the neighborhood a new water structure was added in the center of Hordijkerveld crossing from north to south dividing it down the middle.[21]

Fig.46. Prefab elements of the Dura Coignet construction system

Fig.47. New construction of Hordijkerveld next to the old dike houses.

Fig.48. Extra space for water was part of the renovation plan for Hordijkerveld.

▲

23. Hage, K. (2005). Van Pendrecht tot Ommoord (1st ed.). Thoth, Uitgeverij.

24. Van Der Horst, C. (n.d.). Historie Hordijkerveld 1

Fig.49. Part of east ribbon flats of Hordijkerveld are decorated.

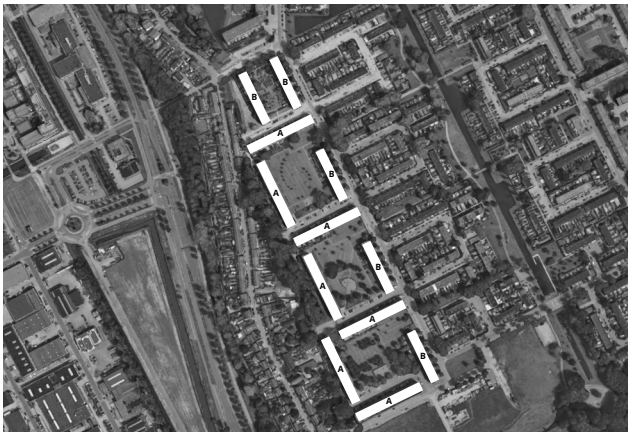
Fig.50. The backside of the flats faces a large open green space but the connection is very abrupt.

Fig.51. The porch flats on the east side of Hordijkerveld as seen from the row houses in the middle.

Fig.52. The smaller scale row houses in the middle of Hordijkerveld.

Fig.53. The large open courtyard in-between the gallery flats along the Huniadijk. Also chosen location for the design strategy

Fig.54. The row houses have their own front garden.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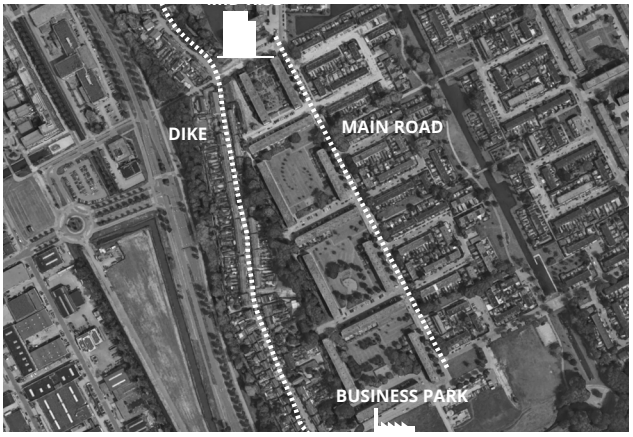

DIKE
MAIN ROAD
BUSINESS PARK


01
02
03
04

5.4 SITE ANALYSIS HORDIJKERVELD

Site analysis of the selected site within IJsselmonde, Rotterdam is a critical step in the architectural design process that involves evaluating and understanding the physical, social, cultural, and environmental characteristics of a site. It provides crucial information that informs the design decisions and ensures that the resulting architecture is responsive, sustainable, and harmonious with its surroundings. Site analysis is not just a technical exercise, but also a creative and holistic approach that lays the foundation for a successful architectural design.

Hordijkerveld is one of the petal leaves of the flower-like shape of Groot-IJsselmonde and is an archetype of a postwar district built in the early 1960s. Well known for its green, open space, watery and accessibility. After the original plan for Sportdorp it was the first part of IJsselmonde that was developed after the second world war. It is a mix of larger ribbon stamps with a courtyard configuration and low rise family homes with gardens. The family homes are encapsulated on both sides by the mid-rise gallery flats. The site for the design concept is located on the west side of Hordijkerveld and is part of a large courtyard ensemble along Huniadijk. The site is marked by its vast open courtyard and long gallery facades. The height of the building is remarkably low compared to the amount of open space between the buildings. Eacht courtyard is blocked off from one another by a gallery flat which prevents the connection between the whole ensemble.
The courtyards along the Huniadijk each have a different function from, playground to private garden to just a patch of grass in the middle which suggests that they each provide a neighbourhood function beyond just the blocks that surround them but the urban plan is in no way set up that the courtyard invites the rest of the neighbourhood in. The transition from the wide artery street towards the centre which is the Huniadijk towards the inside of the courtyards seems very abrupt and leaves little room for transitional zones from public to private. Either you are in the private courtyard or you are on the public street. The courtyard and the relative low rise building does however have a large potential for densification and improvement due to the amount of in-between space they provide. The typical stamp-like ensemble also provides a relevant case study for the renovation strategy of other post war neighbourhoods such as Lombardijen to the west of IJsselmonde making the concept more scalable.

The mid rise gallery flats along Huniadijk initially provided around 821 homes varying in size from two bedroom apartments to 4 bedroom apartments. In 2007 Vestia decided to demolish part of the stamp ensemble in the south of Hordijkerveld to develop higher segment family homes, 288 homes were demolished and up to this day no new development has taken place.

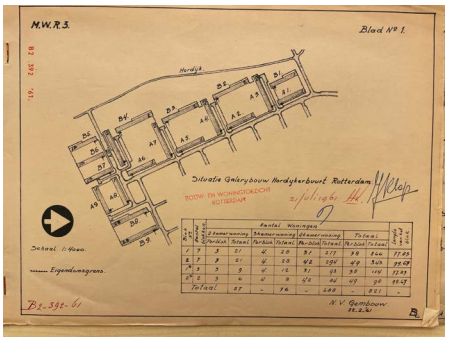


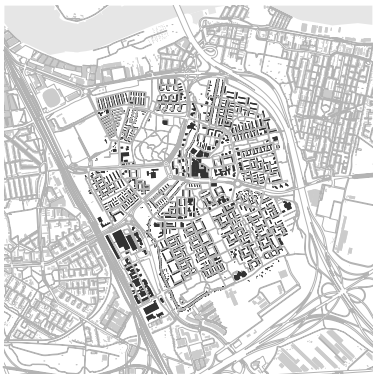
Fig.55. Urban plan and number of dwellings of the Huniadijk gallery flats.

Upon doing the ethnographic research and site visits the repetitiveness of the facade and anonymity that it created was experienced by us and confirmed by residents. Due to the scale and lack of variation orientation was hard between the different courtyards and little to no interaction or personalization of

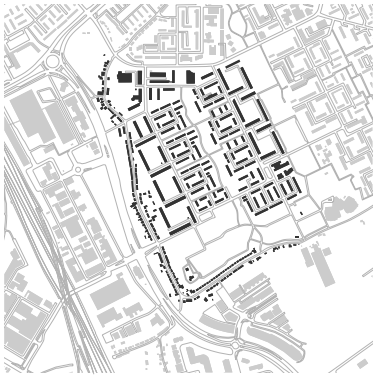
peoples homes was registered. This not only makes way-finding between the courtyards hard but also within one building block itself. The size and repetitiveness of the sometimes 99 meters long flats with the same facade and balconies adds to the sense of anonymity which residents experience.

The ground floor of the flats are used for storage space making the facade closed and entrances to the gallery are only located on the both sides of the flat. This makes the ground floor unsuited for social interaction and reflects the already large curb up to the first floor.

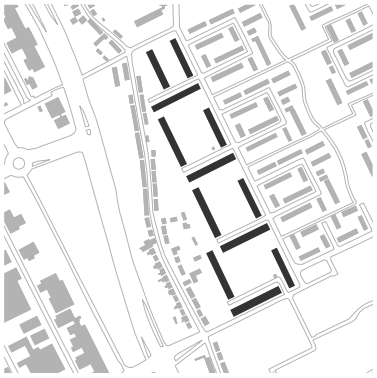
The overall quality of the building is simple but seemed recently renovated. Although the main structure remained the same the paint and facade panels looked fresh and well maintained as did the public space. The renovation however did not address any of the larger problems of scale and repetitiveness.



IJSSELMONDE



HORDIJKERVELD



HUNIADIJK

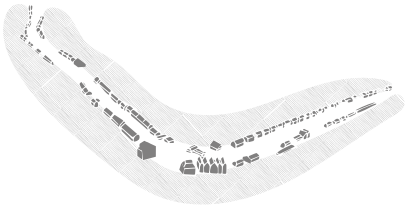


Fig.56. Old dike structures in Hordijkerveld.

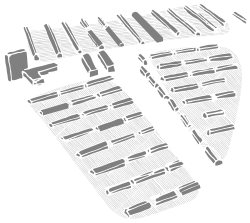


Fig.57. Small row houses - Sportdorp

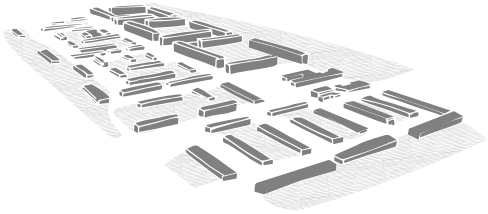


Fig.58. Gallery flats and low rise family homes - Hordijkerveld

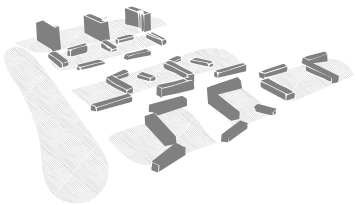


Fig.59. High-rise and mid-rise combination - Zomerland

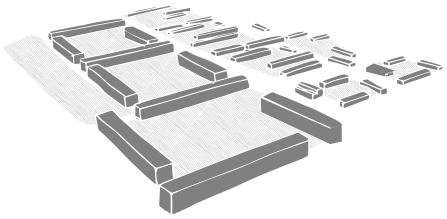


Fig.60. Courtyard ensemble along the Huniadijk

5.5 ETHNOGRAPHIC RESEARCH

Ethnographic research is an essential tool for architects to gain insights into the needs, preferences, and behaviors of the people who will use their designs. Ethnography is a qualitative research method that involves observing and interacting with people in their natural environments to understand their cultural norms, values, and practices. In architecture, ethnographic research helps architects design buildings that are responsive to the needs and expectations of the communities they serve.

As part of our group research on IJsselmonde we had to get a sense of the people of IJsselmonde who inhabit this place and who are directly connected to this place. By creating a fictional ethnographic novel based on interviews we did with inhabitants we tried to catch a cross section of the inhabitants that live there and highlight their different opinions of their neighbourhood.
The interviews were conducted by talking to multiple people throughout Hordijkerveld on the street or in the community centre. The interviews had more of a conversational style than a prefixed questionnaire which made the data not usable for quantification but provided input for the ethnographic novel. From the people who interviewed we picked two opposite views on Hordijkerveld and created an ethnographic novel based on a day in their lives.

The ethnographic novel helped in showing the two sides of residents that inhabit Hordijkerveld and why their views are so different. On the one side you have the elderly residents, the people who have been living there for over 50 years, they raised a family in the neighbourhood but their kids moved away and are now still living here. In their view the neighbourhood has had a rapid decline and became an anonymous place for them where they are having a hard time to feel the connection with the place and the people that they had in previous years. One of the residents explained that the turnover rate of residents is very high now, which makes it hard to form bonds with neighbours but in that same sentence also admitted that he was not so keen on taking on invitations of new neighbours.
When asked about their living situation most elderly residents mentioned this anonymity problem and feeling unsafe in the public space focusing very much on factors outside of their homes. When asked about their homes most of them were quite happy with their own homes.
The elderly tended to gather in the community center and commute between their homes and the centre on a daily basis.

The other view on Hordijkerveld is that of the immigrants. Most of them have not been living here for more than 10 years and they are mostly housed in the gallery flats that create the east and west border of Hordijkerveld. Their view is quite the opposite of that of the elderly. Most of their issues are with their own homes not being up to standard while they are quite happy with the public space and find it easy to communicate with their neighbours. In contrast to the elderly residents they often still live with their family in a much smaller space then the elderly who are mainly housed in the row houses in the middle of Hordijkerveld.

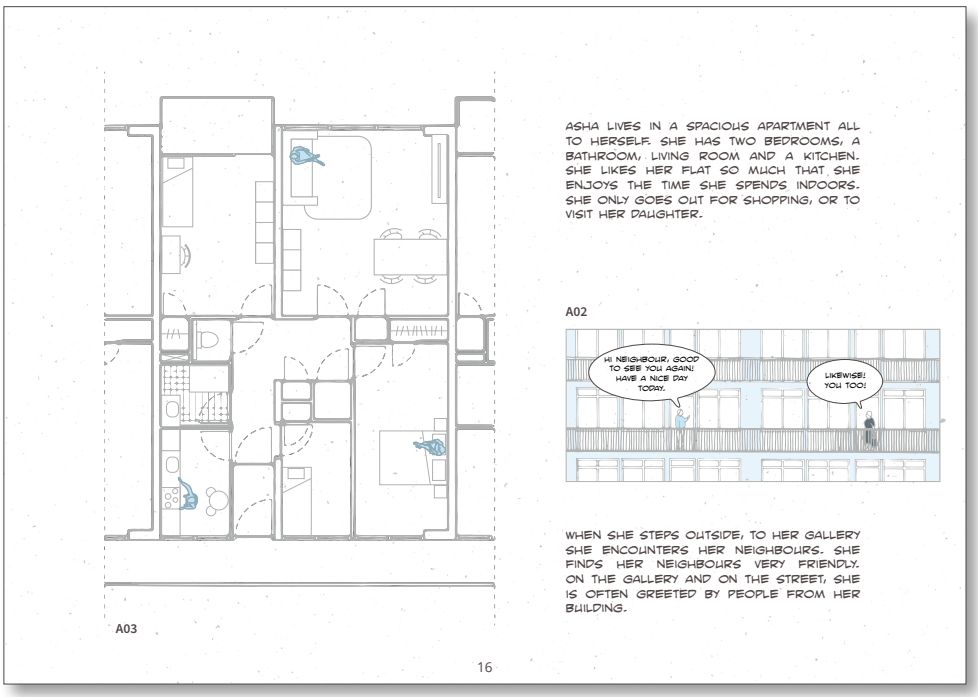


Fig.61. Pages from the ethnographic novel

5.6 CONCLUSION OF THE SITE ANALYSIS

The challenge of Hordijkerveld and Groot-IJsselmonde is to develop a spatial strategy implementing a new mix of functions on site to revitalize the local economy and other characteristics of the post-war neighbourhood philosophy in the perspective of the twenty-first century to attract new residents but remain continuous about it's current residents and their place there.

■ The mixing instead of segregating functions like the current situation makes for a better flow through the neighbourhood. How does work take place in an area like this and how are facilities introduced?

■ New target groups call for new economic program complementary to the existing communal economic program.

■ Use the existing green and blue structure to connect the public life of existing residents and the new. What functions could the blue and green zones have to make them a more integral part of the new urban plan?

■ How to bring the old and young together? In what way can we connect these two target groups inside a home and in the public space, strengthening the overall sense of community.

STRENGTHS

- mixed urban morphology

- ‘natural’ borders

- large green zones between the buildings and different morphologies

- In-between spaces

WEAKNESSES

- lack of public functions

- hierarchical road structure devides the neighbourhood

OPPORTUNITIES

- low rise

- existing green structures

- destinction between interior and exterior in each neighbourhood. (courtyards)

THREATS

- no mixing between the inhabitants

- vast green spaces with no function outside of the building stamps

Fig.62. SWOT analysis of Hordijkerveld.

6 COHOUSING

6.1 A BRIEF HISTORY OF CO-HOUSING

The earliest ideologies of co-housing can be traced back to 1506 the Englishman Thomas More published the book "Utopia" where he described a society where neighbourhoods had shared facilities and shared dining rooms. His book was a critical response to the society of his time. During the industrialization Robert Owen introduced the idea of the parallelogram society were groups of 2000 inhabitants from the industrial and agricultural sector would share facilities and where provided with equal rights. The facilities would consist of large dining halls, libraries, school, sporting facilities while the individual dwelling would be modest.

During the early 19th century Charles Fourier wrote books on his ideal society which he called *Falanstere*. He described workers living together in 'social palaces' inspired by Verseille where they could work and be provided with facilities like schools, theatre, collective kitchen, dining halls and gardens.

Fig.63. A conceptual drawing of Falanstere.

Inspired by the early Utopian socialist the Swedish author Carl Jonas Love Almqvist wrote about the 'Universal Hotel' where women would divide the housework to have more time to work jobs and have more freedom within a marriage. Carl Jonas Love Almqvist explained:

"Is there anything more wasteful, stupid and twisted than each household busying itself with preparing meat and vegetables for its own meals? Now every household has to have its own kitchen. In a large town, these are the equivalent of a foodstuff industry employing thousands of people."

During the first decade of the 20th century the Central Kitchen Buildings emerged in Europe. Families would share a central kitchen from which they could order food located in their building. The individual dwelling was built without a kitchen and food would be delivered to the apartment by a food lift. This idea of collectivizing the maid tasks failed. During the 1930 and 1950 co-housing was mostly developed in Sweden. One example in Marieberg consisted of 194 apartments with a communal dining hall which functioned like a restaurant for the inhabitants. A system of meal tickets was implemented to ensure inhabitants using the restaurant facilities. At first a lot of families with children inhabited these apartments but as the living standards in Sweden increased families moved out and single mothers moved in. For them this way of housing was very welcome because it

Fig.64. Woman ordering food from the kitchen.

saved time and they could organize an communize the child-care.[1]

From 1968 communal living was pushed forward by young people who looked for new forms of living. Their ideas were a response to the standard family of the time and a way to divide the care task equally between man and woman. This "Working Together" model replaced the service based "family hotel" model which by that time had all been renovated to regular apartments. Stacken in Gothenburg was the first self-work model building to be built in 1979. Stacken attracted a lot of young people who were enthusiastic about the idea of co-housing but all had different interpretations of what that meant. This led to conflict and a lot of them moved out shortly after.

Prästgårdshagen in Stockholm saw co-housing as a more practical solution rather than one for ideological change. By reducing the apartment size by 10% large communal rooms could be placed in the building with facilities such as central kitchen, a dining hall, a laundry, a children's playroom, a meeting-room, a sauna, a photo-lab, a carpentry, a pottery workshop and in the cellar a music room. The maintenance of the building was also done by the residents keeping the rent low.[00]

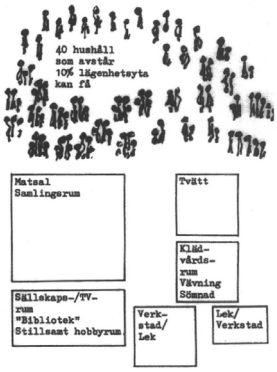


Fig.65. Facalities that are gained when reducing the apartement size by 10%.

During the early 1980 a new form of collective housing arose in Sweden. This was driven by the organizational obstacles and isolation in residential environments many woman faced as 83 percent of the woman in Sweden in the eighties where employed. While being employed woman still had to maintain the household putting them under a lot of strain trying to combine a job with family routine. The isolation came from the lack of social networks and a low degree of neighboring which are still noticeable today but where also common in the large-scale housing communities of the sixties.[00]

The new form of collective housing where private units complimented by common rooms with shared facilities such as a large kitchen and dining room. This form of collective housing is based around people preparing and sharing a meal together and caught on in Sweden during the 90's. Mostly young families and single mothers where drawn to this new form of collective living as they felt is provided a safe and supporting environment for themselves and their children. The social life and relationship to neighbors encourages solidarity and mutual support, making everyday life more comfortable.[2]

▲
1. Vestbro, D. U., & Horelli, L. (2012). Design for Gender Equality: The History of Co-Housing Ideas and Realities. Built Environment, 38(3), 315–335. https://doi.org/10.2148/benv.38.3.315

▲
2.Krantz B., Lindén, K. P. (1994) Forms of collective housing, forms of living alternatives.

Co-housing communities vary in size, design, and governance structure, but they all share a common goal of creating a more socially and environmentally sustainable way of living. Co-housing communities often have a mix of private homes and shared facilities, such as common houses, gardens, and playgrounds. They may also have shared meals, shared work spaces, and shared decision-making processes.

Co-housing communities have grown in popularity in recent years as more people seek out alternative living arrangements that priorities social connections, sustainability, and community involvement. Co-housing has been shown to have positive impacts on mental health, social connections, and environmental sustainability.

The history of co-housing is a story of people coming together to create intentional communities that priorities social connections, sustainability, and community involvement. Co-housing has evolved over the past several decades, but it remains a popular alternative living arrangement for people seeking a more social help or a more sustainable way of life.

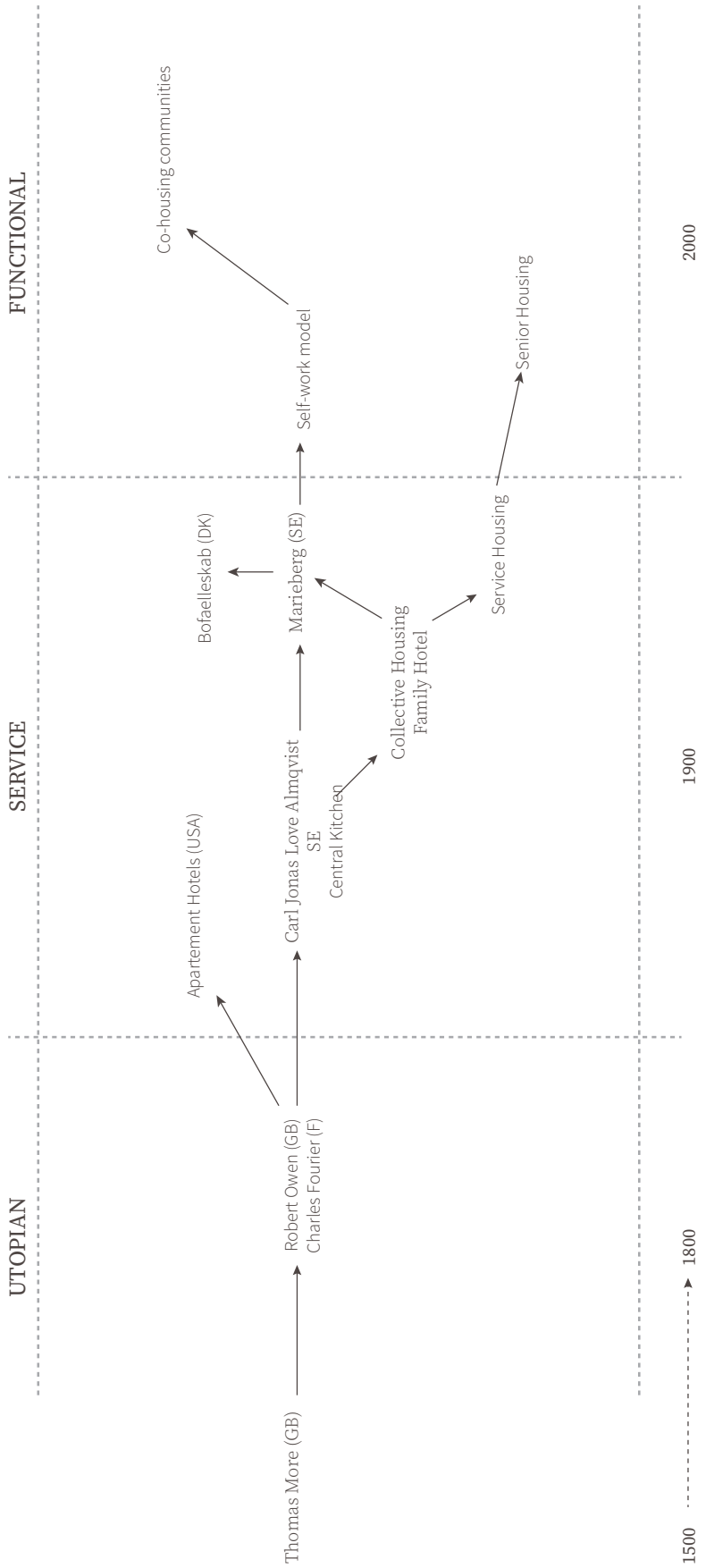


Fig.66. TImeline of the development of cohousing

6.2 WHO TO BUILT CO HOUSING FOR?

Co-housing is a collaborative approach to living that promotes social interaction, mutual support. Target group analysis is a critical component of any successful co-housing project, as it helps to identify and understand the needs, interests, and preferences of potential residents. In this way, it ensures that the community is designed to meet the specific needs of its future residents, leading to a more cohesive and successful community.

Ensuring community compatibility: Co-housing communities are built on the principle of shared living, so it is crucial that the potential residents are compatible with each other. Target group analysis helps to identify residents who share similar values, lifestyles, and interests, which is essential for the success of the community.

Meeting the needs of the target group: Co-housing communities are designed to meet the needs of their residents, which can vary depending on their age, family structure, and other factors. Target group analysis helps to understand the needs and preferences of potential residents, allowing the community to be tailored to meet these requirements.

Building a strong sense of community: Co-housing communities rely on strong social connections and a sense of belonging to thrive. Target group analysis can help to identify potential residents who share a desire for social interaction and community involvement, which can lead to a stronger sense of community and a more fulfilling living experience.

Maximizing the benefits of shared resources: Co-housing communities often share resources such as common spaces, gardens, and other amenities. Target group analysis can help to identify residents who are willing to participate in the maintenance and use of these resources, ensuring that they are fully utilized and enjoyed by the entire community.

By looking at the *demographic changes* of age groups up to 2050 in the Netherlands we can see an increase in the amount of elderly residents and a decrease of the age group of 20 to 65. This rise in elderly ultimately increase the amount of care that is needed and therefor should be taken into consideration when building new homes.

The *demographic changes* are then translated into different *target groups* which we find in todays society. Without quantifying the target group data it is harder to say what group housing developments should be focused on but when looking back at the demographic change we can assume that families, elderly and singles should be the main focus.

The *target groups* are then split into *target sub-groups*. A student can live at home with it's parents or in student housing. Elderly can be single or with a partner. Families can have two parents or single parents. The *target groups* as categorized in the first section is a simplified version and does not reflect the variety of households in todays society.

From the different *target groups* we also derive a co-housing ambition which is explained later.

The *target sub-groups* are then clustered according to logical combination based on their daily routine needs and representation in society. An empty nester has experience with children and therefor more inclined to help a single parent. A starter has more or less the same interests in facilities as a student. By making these *housing clusters* we can group

different *target groups* and make symbiotic clusters.

By defining each *target groups* we can also say what their motivation for co-housing or *co-housing ambition* might be and index them. For student the co-housing might be more of a financial solution then for families. Single parent might seek co-housing for more autonomy by relying on community based child care.

Each of the *co-housing ambition* can be translated into a shared facilities or amenity that should be provided within the housing project. These create a physical basis or program of the a *co-housing cluster*.

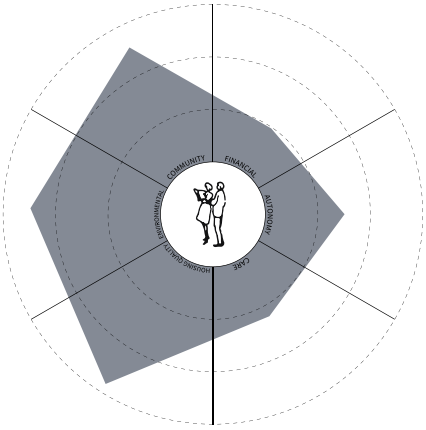
The *housing clusters* are translated into expressive residential landscapes which takes into account the desired co-housing facilities of each *target groups*. The organization is random and more conceptual but is used a starting point for the co-housing design on the site of Hordijkerveld

To understand the different target groups which make up todays society we first have to define them and look at their housing needs. This may seem like an arbitrary exercise but it provides useful insight about what to focus on when designing for a diverse cluster. Based on their housing needs a diagram is compiled to visualize their co-housing ambitions and what each groups hopes to gain from co-housing.

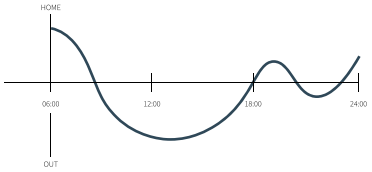
COUPLES

When it comes to lifestyle, couples may have different priorities in terms of location and amenities. For example, some couples may prefer to live in an urban area close to work and entertainment, while others may prioritize a quieter suburban or rural location. Couples may also have different preferences when it comes to the size of their home, with some preferring a cozy apartment or small house, while others may want more space for entertaining or future family plans.

A starter home is a smaller home or condominium bought as a first home. Properties typically have two bedrooms or fewer (or are a small three-bedroom). They also don't usually have all the amenities you might want or they might be in a less-than-ideal location. This is a popular option with younger home buyers because it's less expensive and you can get it without waiting years to save up for a down payment.



CO-HOUSING AMBITIONS

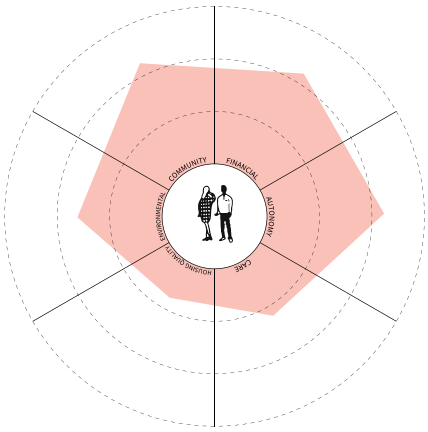


DAY IN THE LIFE

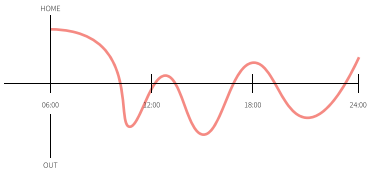
STUDENTS

For college or university students, proximity to campus is often a top priority, as it allows for easy access to classes, study groups, and extracurricular activities. On-campus housing may be a good option for students who want to be close to the action, while off-campus housing can provide more independence and privacy. Students may also want to consider their transportation options, such as access to public transportation or parking for a car or bike.

Budget is also a significant consideration for students, who may be juggling the cost of tuition, textbooks, and living expenses. Affordable housing options, such as shared apartments or student housing complexes, can help students stretch their budgets while still providing a safe and comfortable living environment.



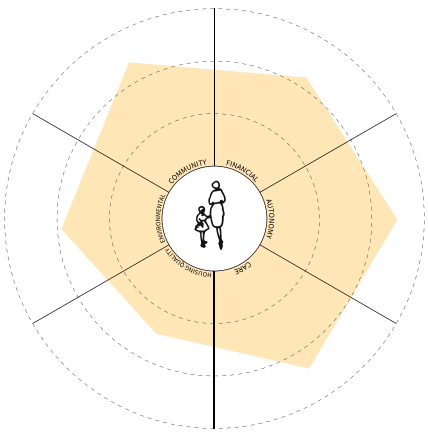
CO-HOUSING AMBITIONS



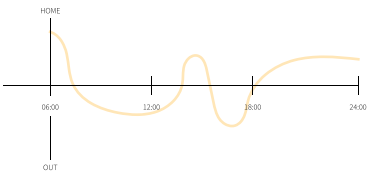
DAY IN THE LIFE

SINGLES

The size of the home should be appropriate for the single person's lifestyle and budget. Depending on their lifestyle and personal preferences, singles may want certain amenities in their home, such as a gym, pool, or outdoor space. Other important amenities may include laundry facilities, parking, and storage.
The cost of housing is an important consideration for singles, who may be living on a single income. A good home for singles should be affordable and fit within their budget, allowing them to live comfortably without stretching their finances too thin.



CO-HOUSING AMBITIONS



DAY IN THE LIFE

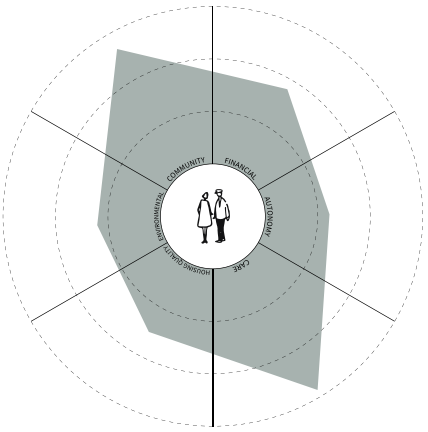
ELDERLY

Housing needs for the elderly can vary depending on their health, mobility, and social support. Generally, the elderly need a safe, comfortable, and accessible place to live that meets their physical and emotional needs.

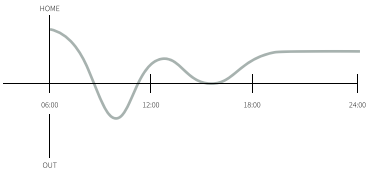
When it comes to physical needs, the elderly may need a home that is designed to accommodate mobility issues, such as wider doorways and hallways, grab bars, and non-slip flooring. They may also need a home that is located in a safe and accessible area, with easy access to public transportation, medical facilities, and community resources.

Emotional needs are also important for the elderly, who may benefit from living in a home that is connected to a supportive community or has access to social activities and resources. They may need a home that allows them to maintain their independence while also providing opportunities for socialization and companionship.

Other important factors to consider when meeting the housing needs of the elderly include affordability, security, and ease of maintenance. The cost of housing is an important consideration for the elderly, who may be living on a fixed income. Security is also important for the elderly, who may be vulnerable to scams or other forms of exploitation. Finally, ease of maintenance is important for the elderly, who may have difficulty with household chores or repairs.



CO-HOUSING AMBITIONS

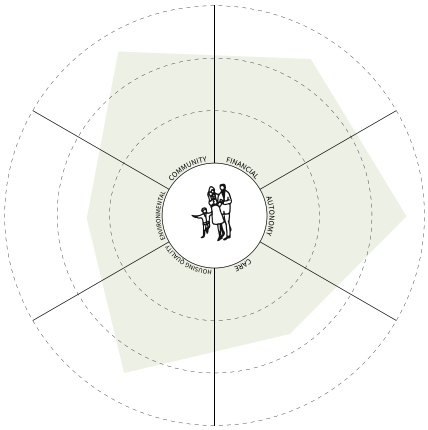


DAY IN THE LIFE

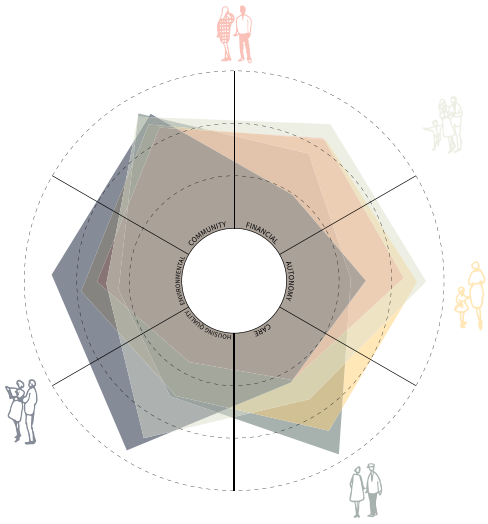
FAMILIES

A family is a group of two or more persons related by birth, marriage, or adoption who live together; all such related persons are considered as members of one family. Housing needs for families can vary depending on the size of the family, their income level, and their lifestyle. Generally, families need a safe, comfortable, and affordable place to live that meets their basic needs for shelter, privacy, and security.

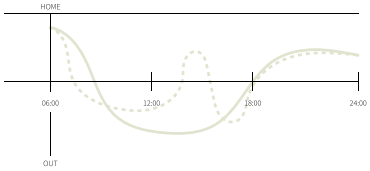
When it comes to the size of the family, larger families require more space and may need multiple bedrooms, while smaller families may be able to manage with fewer rooms. Families with young children may need a home with a safe outdoor space for play, while families with teenagers may need a home with private spaces for each family member to retreat to.



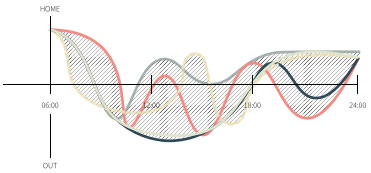
CO-HOUSING AMBITIONS



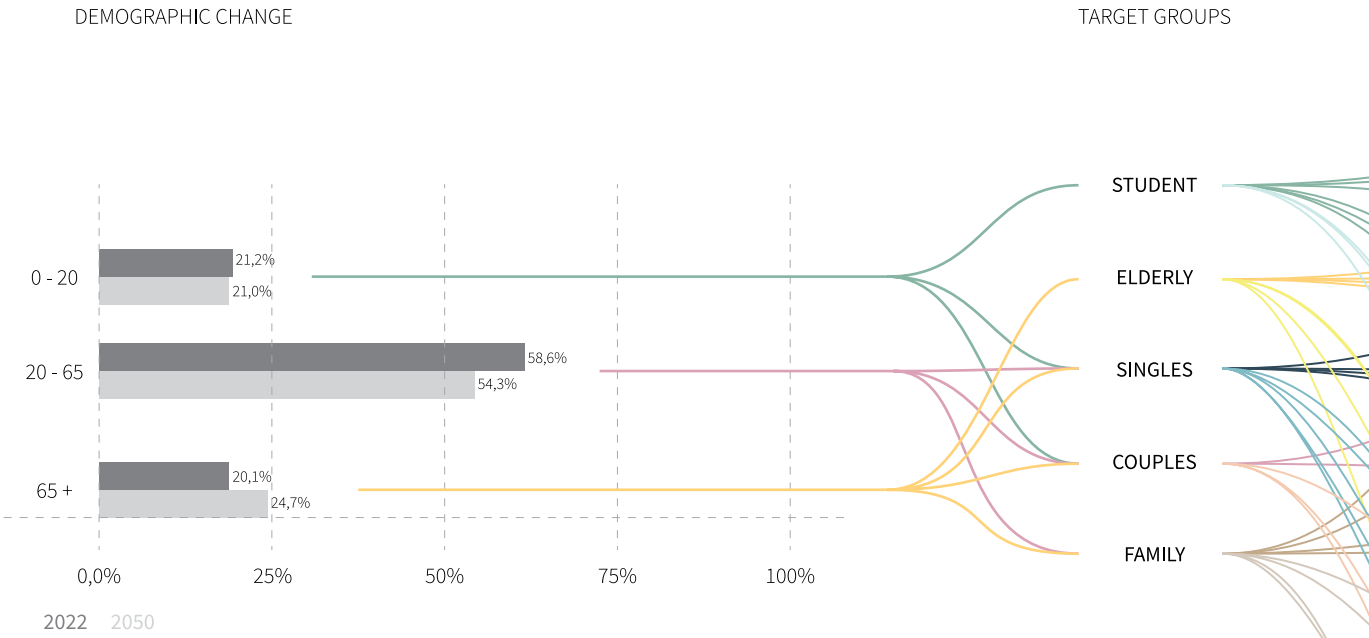
CO-HOUSING AMBITIONS



DAY IN THE LIFE



DAY IN THE LIFE



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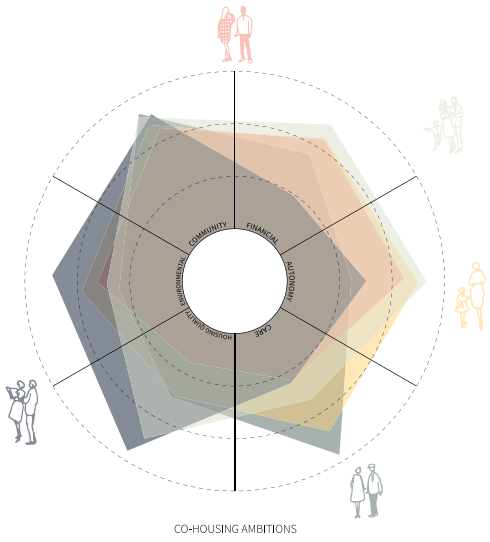


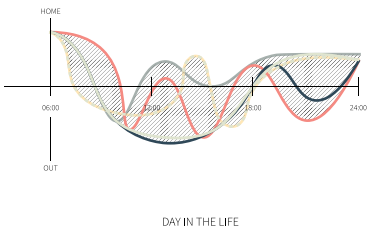
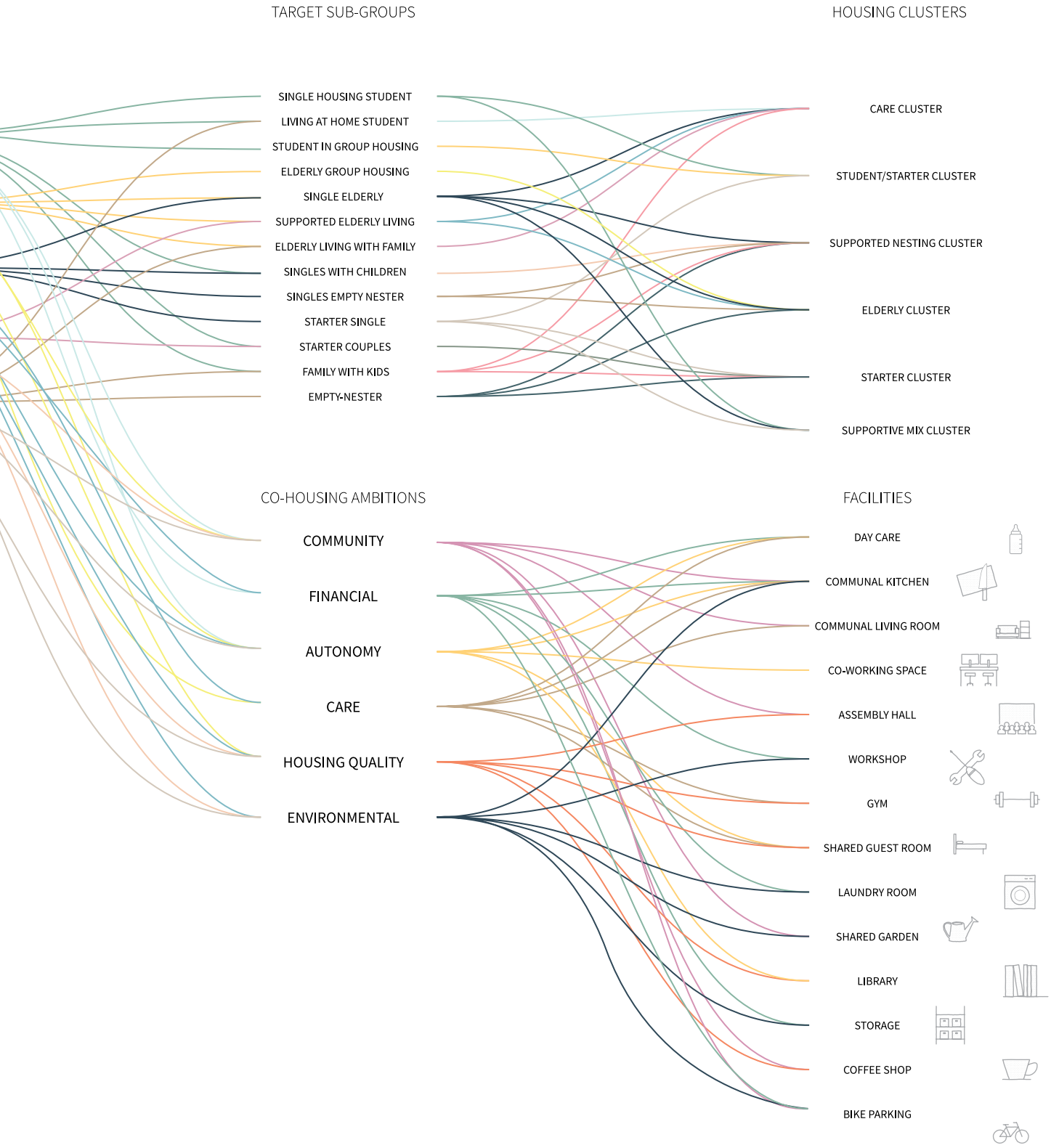
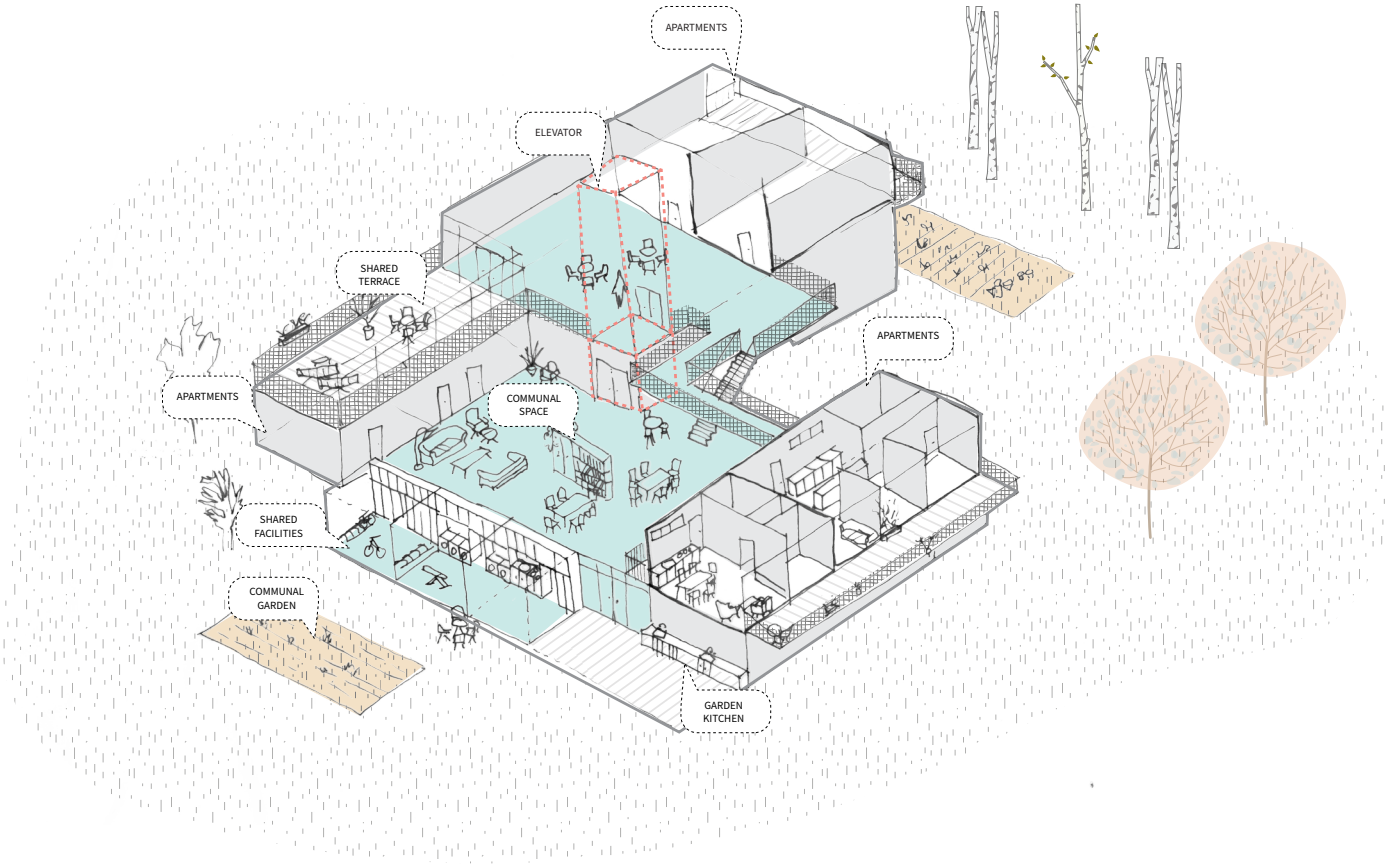


Fig.67. Flow diagram of the demographic changes and how they are translated to cluster and functions.


TARGET SUB-GROUPS
HOUSING CLUSTERS
SINGLE HOUSING STUDENT
LIVING AT HOME STUDENT
STUDENT IN GROUP HOUSING
ELDERLY GROUP HOUSING
SINGLE ELDERLY
SUPPORTED ELDERLY LIVING
ELDERLY LIVING WITH FAMILY
SINGLES WITH CHILDREN
SINGLES EMPTY NESTER
STARTER SINGLE
STARTER COUPLES
FAMILY WITH KIDS
EMPTY-NESTER
CARE CLUSTER
STUDENT/STARTER CLUSTER
SUPPORTED NESTING CLUSTER
ELDERLY CLUSTER
STARTER CLUSTER
SUPPORTIVE MIX CLUSTER
CO-HOUSING AMBITIONS
FACILITIES
COMMUNITY
FINANCIAL
AUTONOMY
CARE
HOUSING QUALITY
ENVIRONMENTAL
DAY CARE
COMMUNAL KITCHEN
COMMUNAL LIVING ROOM
CO-WORKING SPACE
ASSEMBLY HALL
WORKSHOP
GYM
SHARED GUEST ROOM
LAUNDRY ROOM
SHARED GARDEN
LIBRARY
STORAGE
COFFEE SHOP
BIKE PARKING

CARE CLUSTER

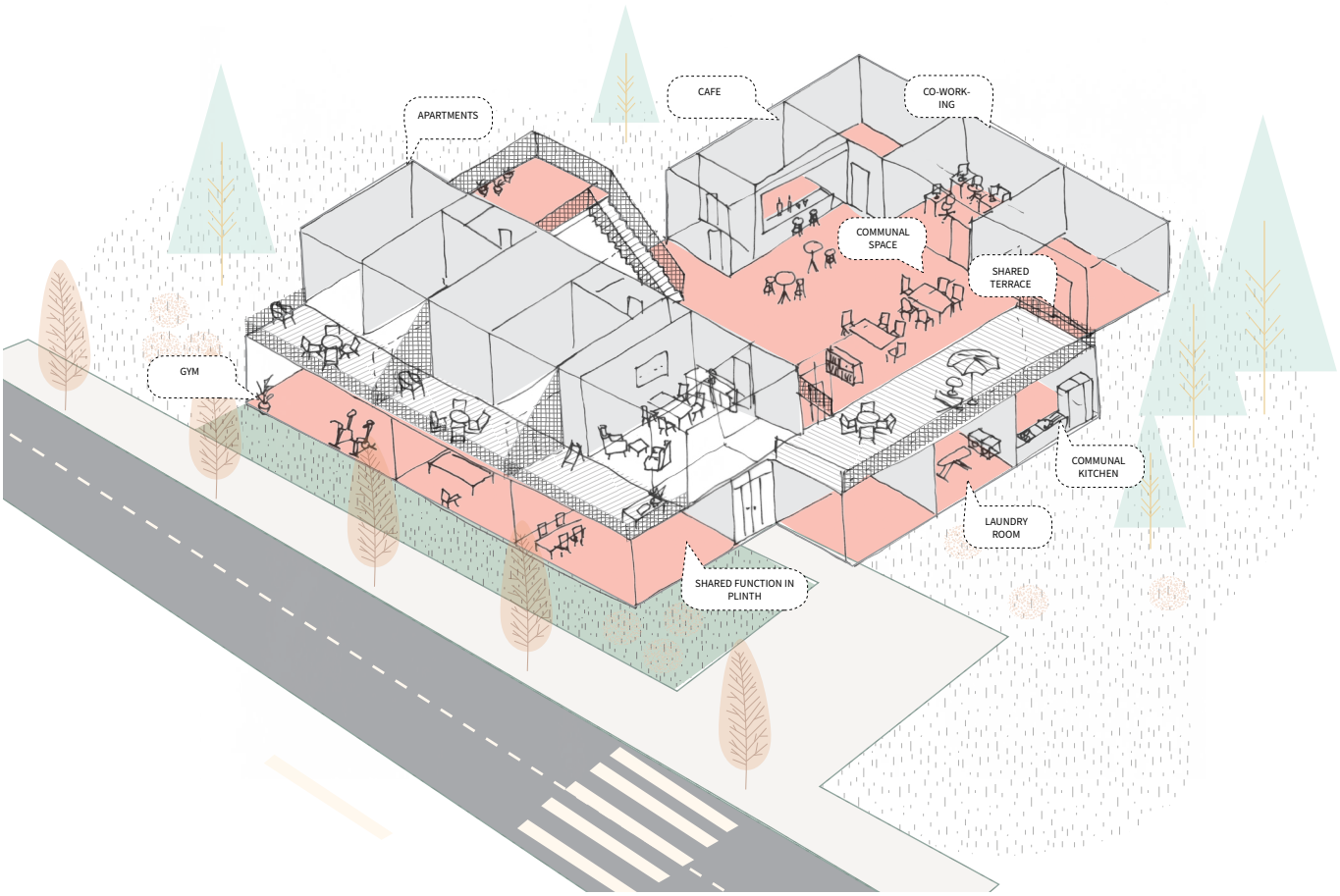


CARE CLUSTER

The care cluster provide housing for elderly in need of care as well as elderly who have a more autonomous lifestyle. The individual housing units are organized around a central communal space to make them easily accessible and feel like an extension of the home rather then a place you have to go to. This in return provides some social control which is beneficial for the elderly and their care takers.

An elevator is essential for elderly to make utilize the whole building and to reach every shared facility. Outdoor spaces are both shared and private with facilities as a communal garden and outdoor kitchen.

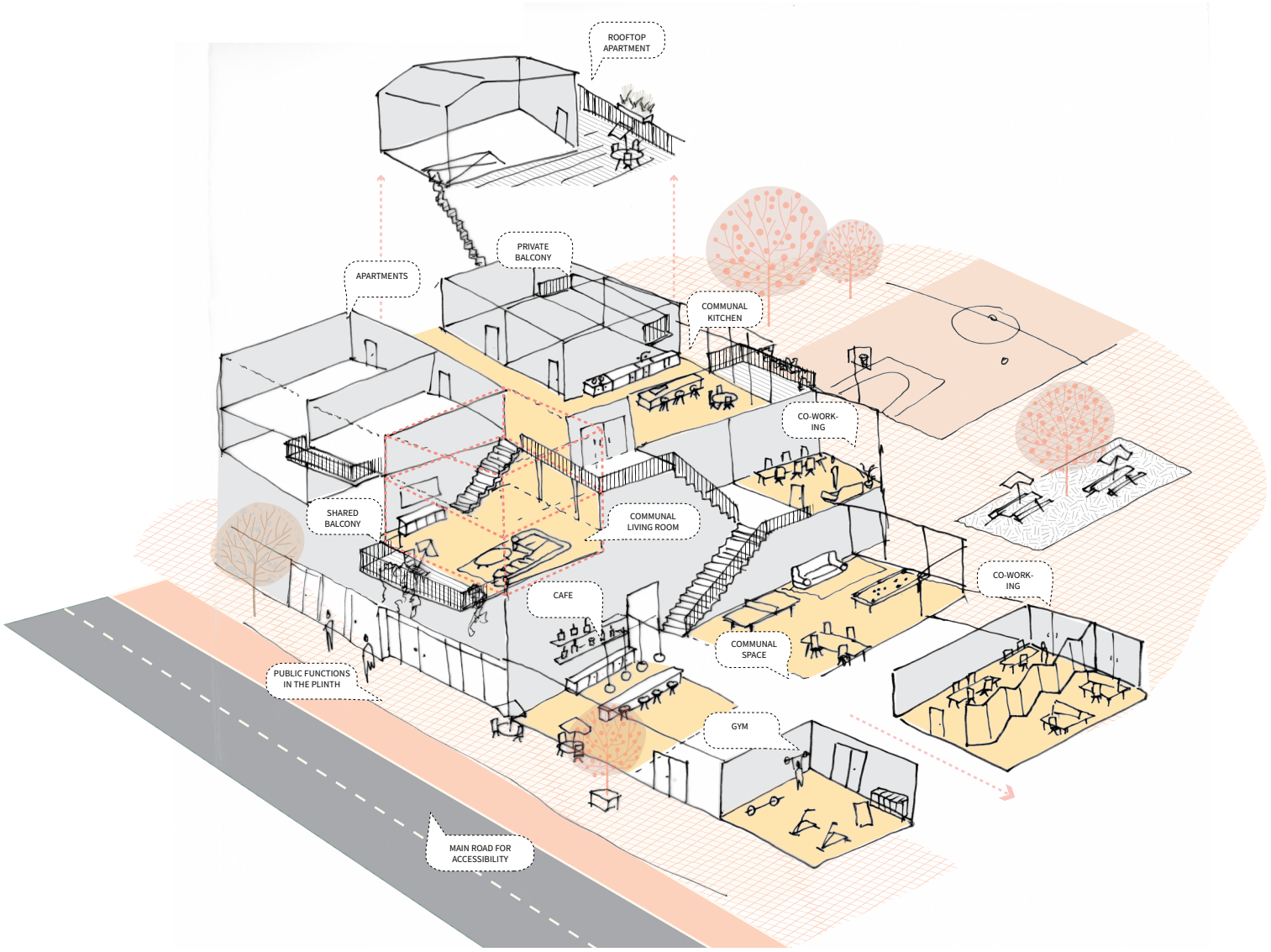
STARTER CLUSTER



STARTER CLUSTER

The starter cluster defines itself by focusing on individual housing quality and adding extra facilities to cater interaction outside of the individual housing program. Facilities such as a gym a cafe make the this cluster appealing to starters. Shared kitchen and other more individual housing facilities are also part of the shared program but are an extra to the individual kitchen. Starter tend to seek out interaction but also a higher standard of housing quality.

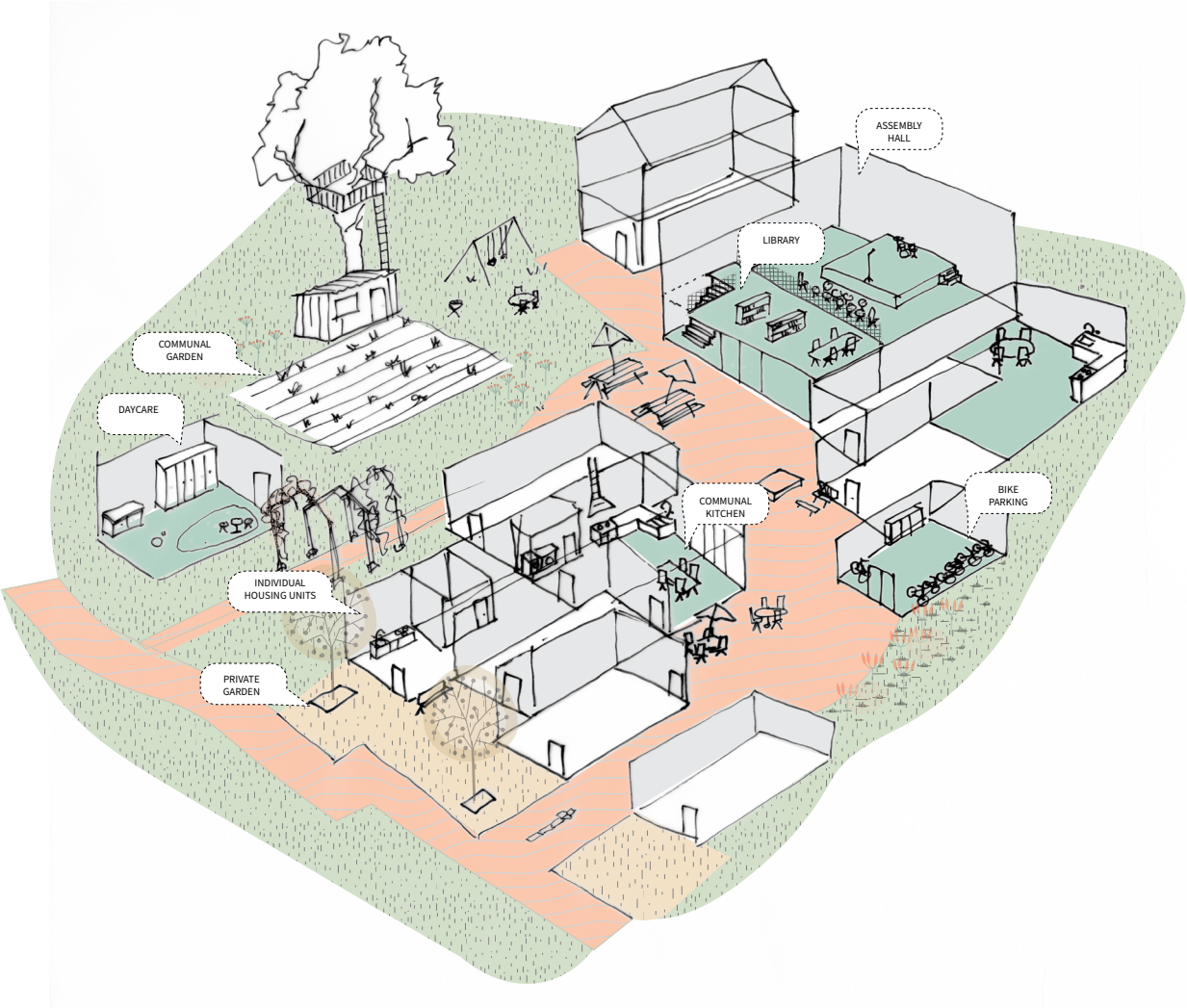
STUDENT STARTER CLUSTER



STUDENT STARTER CLUSTER

This cluster defines itself by its vibrance a fluent transition from public to shared to private. Shared facilities are placed through the whole building and are not floor specific. On the ground floor public function and shared building functions can mix inviting outsiders to come into the more private zone. The placement along the street matches with the connectivity student and starters seek and make them ideal for mixing with a more public program.

SUPPORTED NESTING CLUSTER



SUPPORTED NESTING CLUSTER

Loosely spread out units which create a small scale and divers public space for children to play and to discover while parents and elderly can keep an eye out from their homes. Family housing alongside empty-nesters or elderly housing with small scale shared facilities such as a laundry room or shared kitchen to create a place where the child also can attended to by other members of the co-housing cluster freeing up time for the parents. To stimulate interaction between the cluster larger shared facilities such as an assembly hall or library are placed through the community.

6.3 CO-HOUSING DESIGN CASE STUDIES

The design of co-housing communities has evolved over time due to changing social, cultural, and environmental values.

This thesis explores the feasibility and benefits of co-housing communities through case studies of existing projects. The research methodology for this thesis is based on a literature review and case studies of co-housing communities from urban morphologies and sizes. The case studies are selected to illustrate the variety of co-housing design and their design principles.

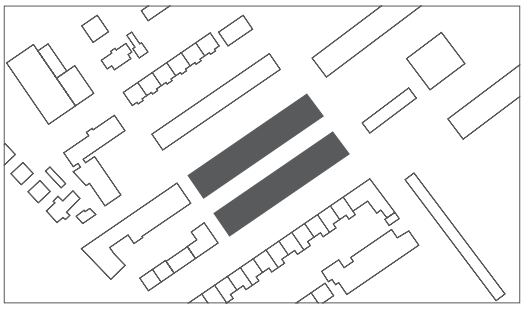
In the case studies we will be looking at building morphology, facilities, circulation principle and relation of the individual units two the communal spaces. On a more detailed level floor plans of individual units will be analyzed and their ratio of individual and shared space.

From each of these case studies a conclusion for the design proposal is derived.

COOPERATIVE HOUSING FLEUR DE LA CHAMPAGNE

Adres:
Areal Blumenstrasse, Biel
Architect:
Weyell Zipse Architekten
Building periode:
2021
Circulation typologie:
Porche
Dwellings:
90 (7650m^2)
GFA:
12450m^2
Sharde facilities
4800m^2
Ratio of shared space
38%

Two compact buildings form the simple basic structure of the urban structure ***Fleur de la Champagne***. On General-Dufour-Strasse stands the five-story building of the GURZELENplus cooperative, in which all the apartments as well as public spaces, stores and restaurants are distributed. Opposite is the two-story building of the SIV Center Foundation. The urban setting creates a valuable, multifunctional open space between the two buildings that is also permeable to the public. An urban gap that becomes a central communal place for the residents of the foundation and the cooperative. Protected from the motorized traffic of the street, but at the same time open at both ends, this space is the interface and gateway to the neighborhood.
Whether family living, cluster or residential community, the proposed apartment types have in common the central arrangement of communal spaces. This is where people cook, eat, play, discuss. When someone enters the apartment, he passes through these spaces; people greet each other, hug, sit down with them, get involved in a conversation, exchange information. The same happens when leaving the apartment. The living, dining and cooking area is the heart of any apartment, and thus supports the formation of community.[3]



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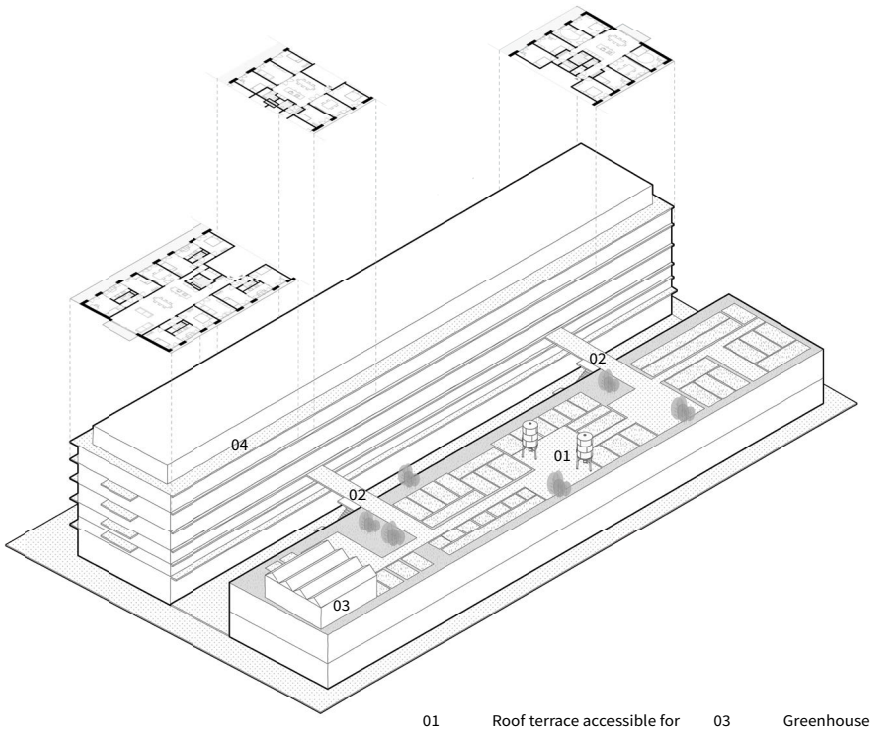
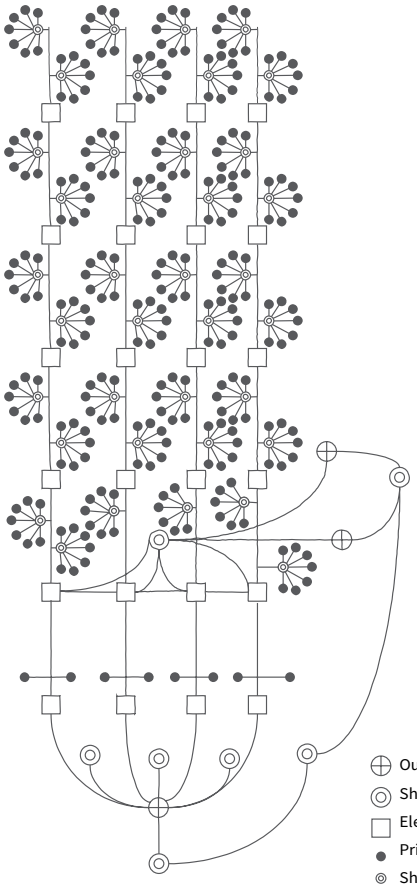
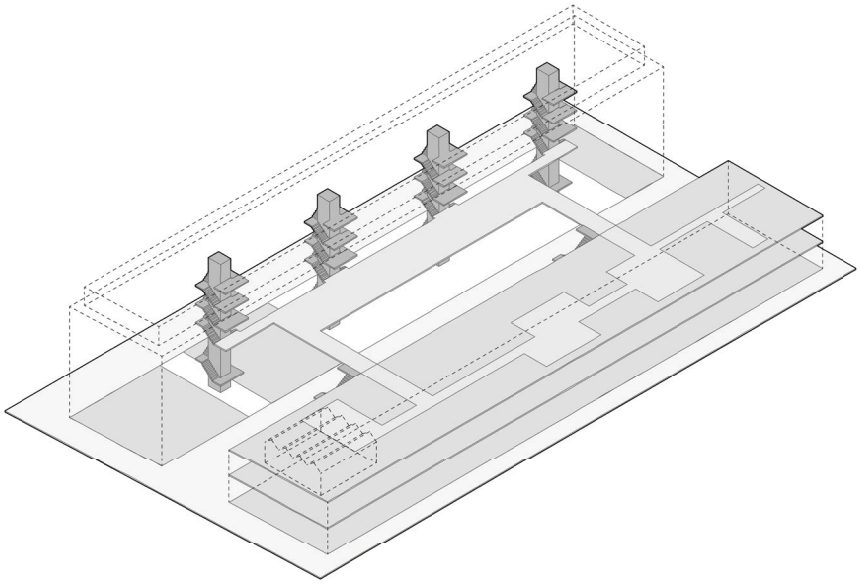
3. Cooperative Housing Fleur de la Champagne | Weyell Zipse. (n.d.). https://weyellzipse.ch/en/project/genossenschaftliches-wohnen-fleur-de-la-champagne/



01	Roof terrace accessible for residents and visitors	03	Greenhouse
02	Bridge connecting the facilities building with the residential building	04	Private roofgarden for residents

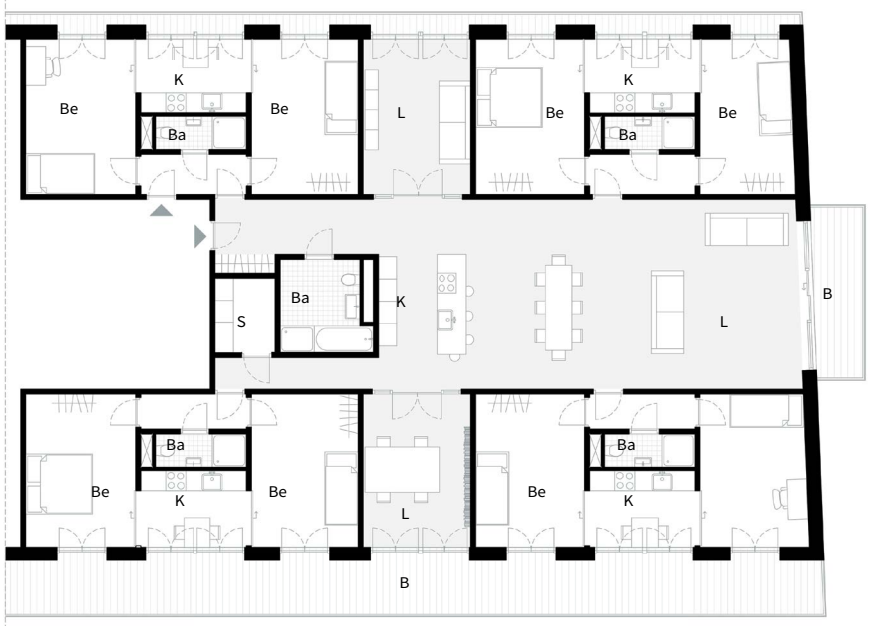


- Outdoor space
- Shared space
- Elevator
- Private apartment
- Shared space in apartment

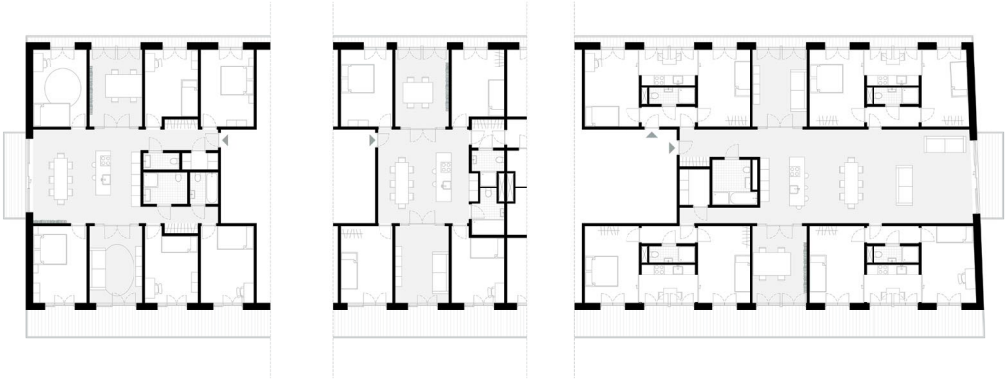


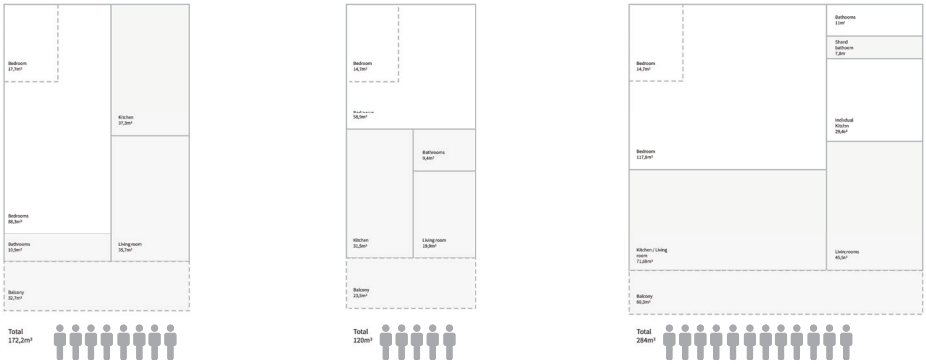
- Shared space
- Circulation space
- Outdoor space

Be	Individual bedroom	B	Balcony
Ba	Bathroom	H	Hallway
K	Kitchen	S	Storage
L	Living room	O	Office /guest room
T	Toilet	☐	Shared space

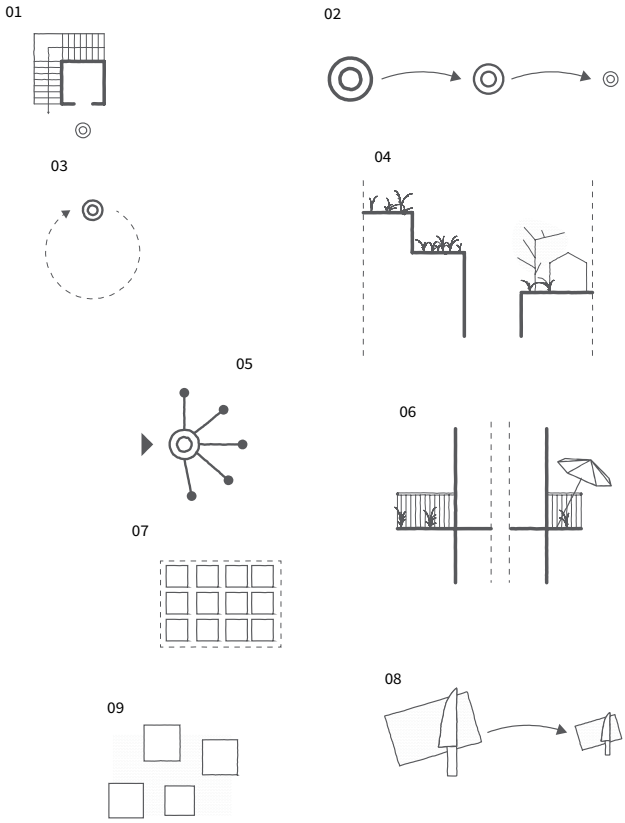


Be	Individual bedroom	B	Balcony
Ba	Bathroom	H	Hallway
K	Kitchen	S	Storage
L	Living room	O	Office /guest room
T	Toilet	☐	Shared space





COOPERATIVE HOUSING FLEUR DE LA CHAMPAGNE | BIEL



01 Shared facilities located near elevator, bridge and stairs.

02 Hierarchy in the shared facilities from publicly accessible to more private.

03 The shared spaces have an circular accessibility connecting them to the rest of the building.

04 Roofs are utilized for shared green zones for residents.

05 Shared spaces within apartments are central and have access to the front door

06 Each apartment has private balcony for individual rooms and occasionally an extra shared balcony.

07 Equal individual room size per co housing unit.

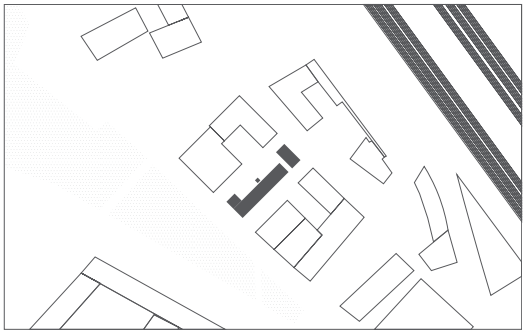
08 Smaller private facilities when larger shared facilities are available.

09 Shared space within one co housing unit are divided into multiple smaller spaces but always connected.

GLEIS 21

Adres:
Bloch-Bauer-Promenade, Vienna
Architect:
Einszueins Architektur
Building periode:
2015 - 2019
Circulation typologie:
Gallery
Dwellings:
35 (2.761m^2)
GFA:
4.804m^2
Sharde facilities
650m^2
Ratio of shared space
13%

The housing project ***Gleis 21*** is located in the up and coming neighborhood Sonnwend. The building strives to be a multi generational housing project. This is mostly expressed by the diversity in typologies and shared facilities. On the ground floor a cafe and co-working spaces are located and on the roof a large kitchen and library make up the shared facilities. The circulation principle is a gallery with stairs on both ends and an elevator in the middle. Enlarged sections of the gallery creates spaces for people to inhabit the gallery create their own area. This creates interaction between the residents and gives liveliness to the gallery. The dwellings all have at least two facade sides and mainly have an open living room and kitchen. All dwellings have a private balcony on the backside.[4]



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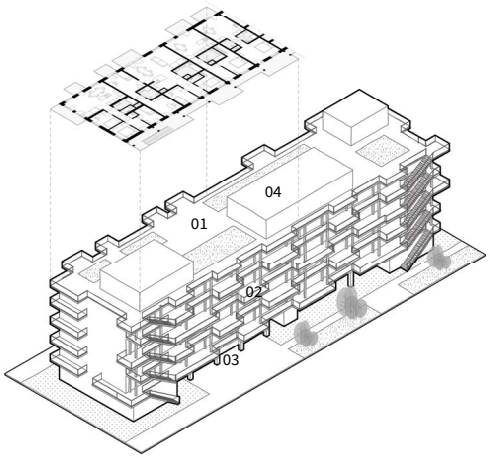
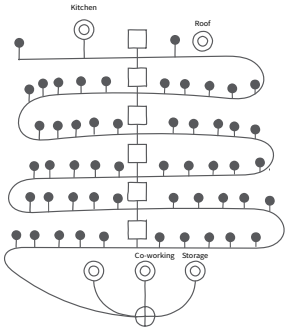
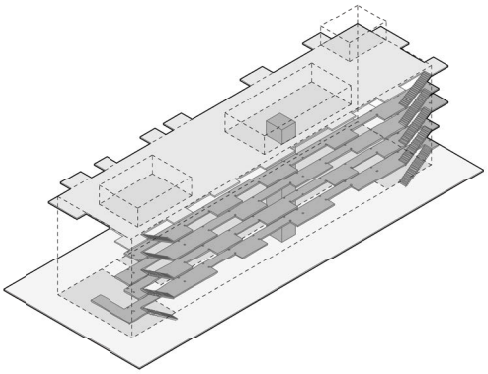
4. Gleis 21. (2022, August 29). Einszueins. https://www.einszueins.at/project/baugruppe-hauptbahnhof-gleis-21/



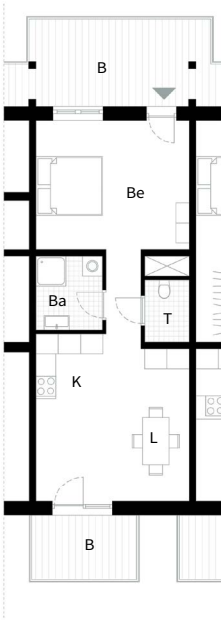
01	Roof terrace accessible for residents and visitors	03	Shared facilities on the ground floor
02	Shared gallery balconies	04	Shared facilities on the roof

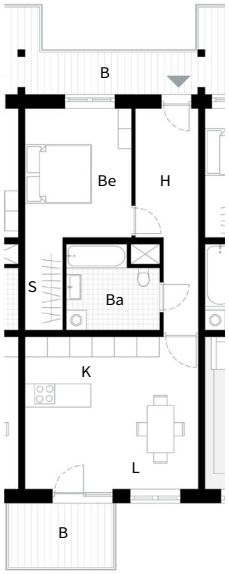




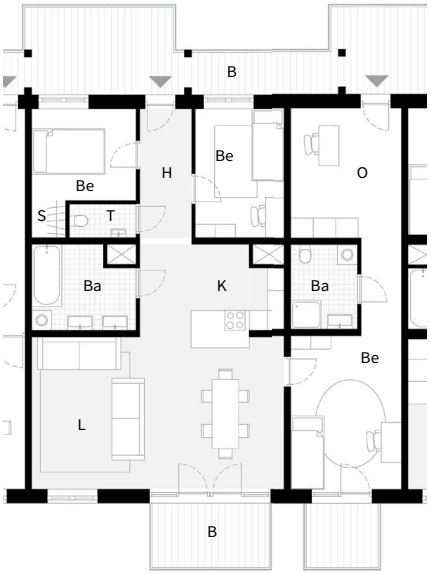
Outdoor space
Shared space
Elevator
Private apartment

Shared space
Circulation space
Outdoor space

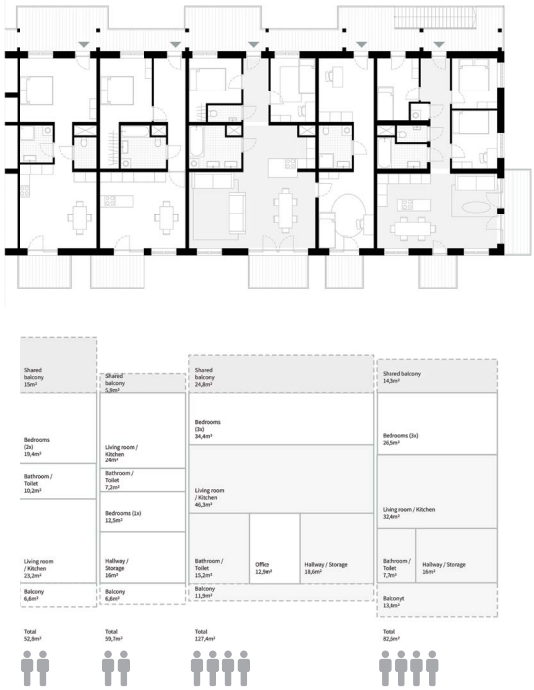




Be	Individual bedroom	B	Balcony
Ba	Bathroom	H	Hallway
K	Kitchen	S	Storage
L	Living room	O	Office /guest room
T	Toilet	□	Shared space



Be	Individual bedroom	B	Balcony
Ba	Bathroom	H	Hallway
K	Kitchen	S	Storage
L	Living room	O	Office /guest room
T	Toilet	□	Shared space



GLEIS 21 | VIENNA

01 Gallery with room for private space to inhabit.

02 Hierarchy in the shared facilities from publicly accessible on the ground floor to more private on the roof.

03 The shared spaces have an circular accessibility connecting them to the rest of the building.

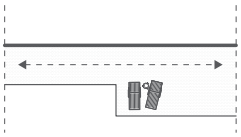
04 Roofs are utilized for shared green zones for residents.

05 High diversity in apartment size.

06 Each apartment has private balcony and a public balcony on the gallery.

07 Flexible extra apartments that can be added.

01



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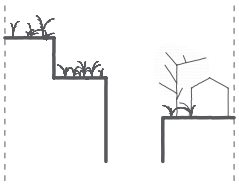
03

04



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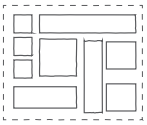

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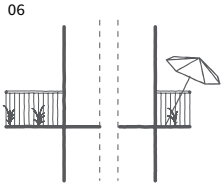

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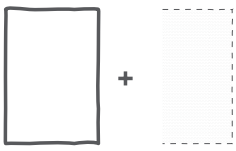
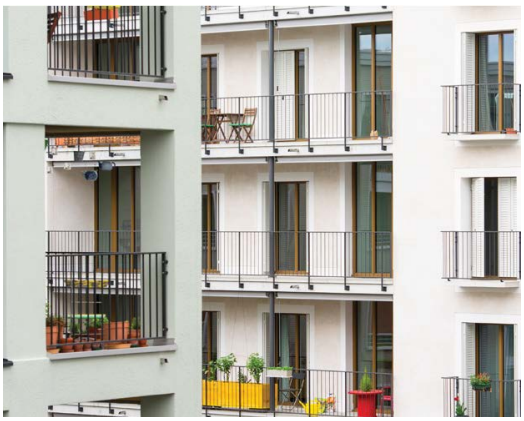
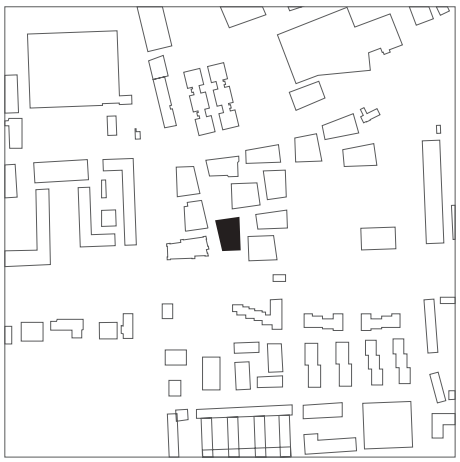


MEHR ALS WOHNEN

Adres:
Dialogweg, Zürich
Architect:
Duplex Architekten AG
Building periode:
2013–2015
Circulation typologie:
Central staircase
Dwellings:
11 (2.846m^2)
GFA:
5.310m^2
Sharde facilities
1990m^2
Ratio of shared space
41%

House A is part of one of the thirteen blocks by the residential community ***Mehr als Wohnen***. The blocks all have central staircases and provide apartments towards each facade. This creates a very high density housing complex with a large variety of facilities. The dwellings of House A are of a 'Großwohnung' typology. Within a larger dwelling small housing units are placed. The in-between space that is created by these individual units is suited for shared functions such as a living room and large kitchen.[5]





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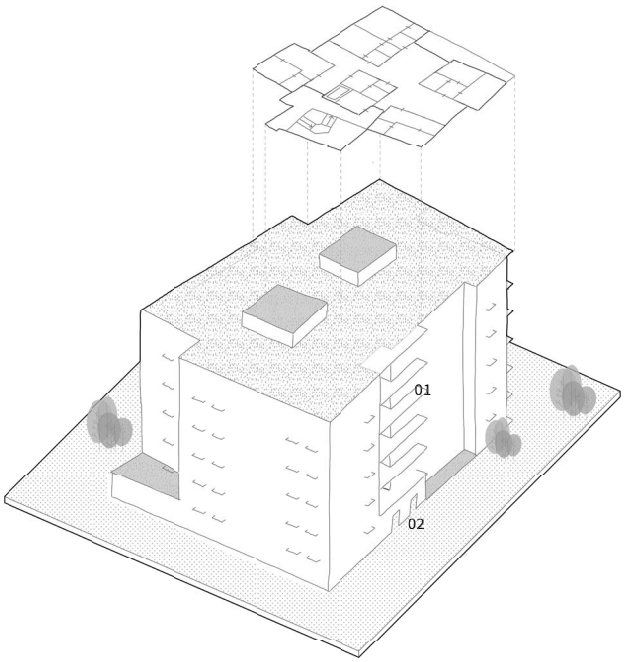
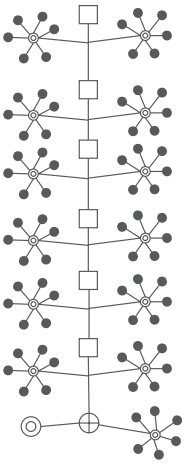
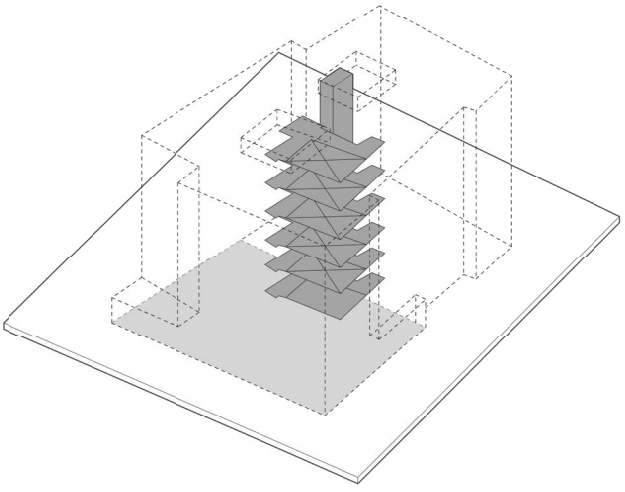
5. Duplex Architects. (n.d.). https://duplex-architekten.swiss/en/



01 Private balconies

02 Public entrance / residential entrance

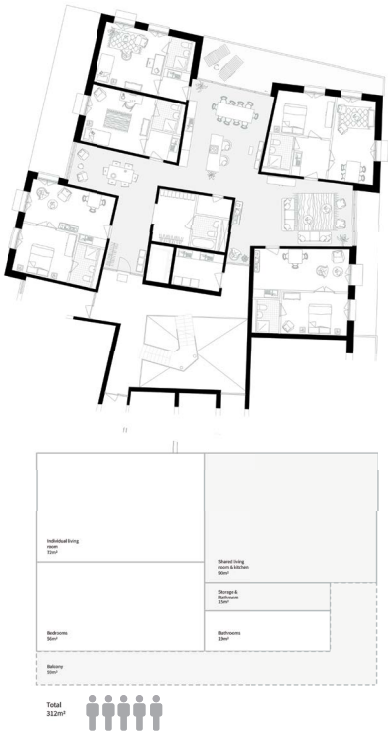




Outdoor space
Shared space
Elevator
Private apartment
Shared space in apartment

Shared space
Circulation space
Outdoor space

Be	Individual bedroom	B	Balcony
Ba	Bathroom	H	Hallway
K	Kitchen	S	Storage
L	Living room	O	Office /guest room
T	Toilet	□	Shared space



MEHR ALS WOHNEN | ZÜRICH

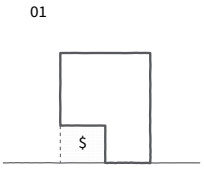
01 Rental spaces on the bottom floor.

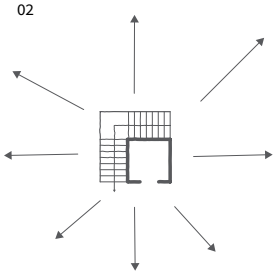
02 Central circulation for engagement.

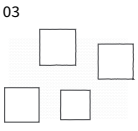
03 The shared space is shaped by the individual units.

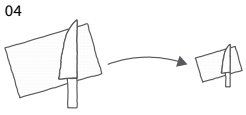
04 Smaller private facilities when larger facilities are available

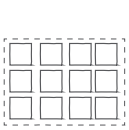
05 Equal apartment size











6.4 HOW TO DESIGN FOR CO-HOUSING

The basics of comfortable housing

In order to live in a comfortable environment, daylight is essential. A room with two or three directions of daylight is preferable to one with only one direction. In apartments, outdoor space extends the indoor space towards the outside when the weather permits, creating a greater usable area and a more comfortable air quality. Modernist avant guardian architects introduced these basic principles in Europe in the early 1920s. These fundamentals still remain relevant today and are often minimized and seem to be forgotten in contemporary housing developments.

Outdoor Space

A lot of emphasis is placed on the outdoor space and its equitable distribution in co-housing projects. To provide equality, it is important to provide everyone with a view that is of high quality. This often achieved through a courtyard concept with the front doors oriented towards the middle. Often dwellings which are located in the corners or at the end of building blocks and who do not have access to a courtyard are provided with extra balconies and are compensated with sunlight entry from multiple orientations. Shared outdoor spaces can be distributed more freely as they are shared and therefor the same for everyone.

Fig.68. Private and shared balconies, Spreefeld.

Equality

In all units the same basic qualities of daylight, ventilation and outdoor space should be met. They can vary in the way they are achieved but the quality should remain the same. A co-housing cooperation often revolves around the question of 'how would we like to live?' and not 'how would I like to live?'. The design process of a co-housing project leaves very little room for individual customization beforehand because this would compromise the equality of the individual units if everyone specific needs would have to be taken into account. Changes in individual households often means moving within the co-housing complex to a larger unit with the same basic qualities but also moving to a smaller unit when a household becomes smaller. Some co-housing cooperation have a mandatory move policy for its residents to ensure this equality in spatial use.[6]

Fig.69. Designing the interior and ensuring quality throughout the whole building, Kalkbreite.

Comfort

Because of the smaller unit sizes co-housing often puts more emphasis on high quality of built in furniture and facilities. This

▲
06.Lengkeek, A., & Kuenzli, P. (2022). Operatie wooncoöperatie (1st ed.). Trancityxvaliz.

includes the orientation of towards daylight, the spatial experience between shared space and individual space, built in furniture and high quality bathrooms and kitchens and double height ceiling. This provides a high standard housing within a small space. Uniform design of these built in furniture pieces and orientation provides unity and equality throughout the building.

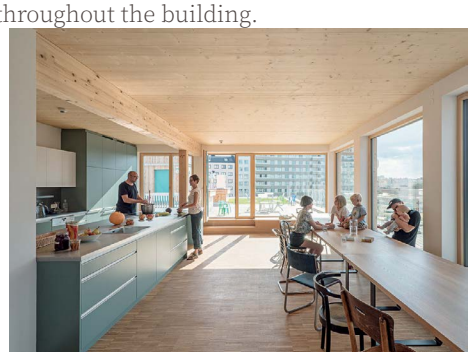


Fig.70. Well designed shared spaces, Gleis 21

Smart sharing

Sharing things that you don't need everyday is often practiced within co-housing communities. This makes it possible to create smaller units which makes it possible to have more units within a the same building. Shared facilities can also be of a different category or luxury than any of the individual units would have outside of a co-housing cooperation such as a gym or library. Facilities such as guestrooms are often shared within co-housing with the possibility of renting out the room when it is not used and generating some income. The shared facilities are often also a place for social interaction therefore it is important to make them attractive and high quality. Facilities such as laundry rooms and bike storage need to be designed with care and have the same spatial quality as the other shared facilities within the building because this is where the social interaction takes place and it incentives sharing.

In some projects even the storage of certain items is an opportunity for sharing. Tools, winter gear, a canoe can be placed in this communal storage. Prioritizing use over possession. The functionality of these spaces is often flexible. If it is not used it should easily be changeable to something else which the community needs. Therefor the design needs a certain amount of flexibility to make changes in the shared program possible.[7]

Fig.71. Making utility spaces appealing for interaction, Fleur de la Champagne.

Circulation

The spaces such corridors, stairwells, atrium's are often used for more than just circulation in co-housing projects. Paying attention to the design of these places makes them more attractive and stimulates interaction. Widening the corridors and sound proofing them enables kids to play there and enlarging outdoor galleries makes them more than just a means to get to your front door. These spaces often function as transitional zones between the public domain and the private domain within the built environment.[8]

"When creating a collective house, one quality is thus of basic importance: the balance between

▲
7. Lengkeek, A., & Kuenzli, P. (2022). Operatie wooncoöperatie (1st ed.). Trancityxvaliz.
8. Lindén, K. P. (1992) Community and privacy in the Swedish collective house.

community and privacy." (Linden,1992)

Through analysis of case studies Palm Linden (1992) finds that today's collective housing spatial organization provides for individuality rather than the communal life of the group. She finds that in the example of the Tradet collective house people are more inclined to inhabit the common areas that are on the upper floor because they feel more private and secluded. The people living on the ground floor dwellings do not have this experience and feel much less part of the collective group due to less interaction upon coming and going.

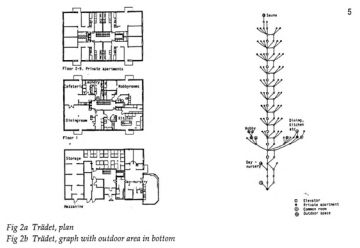


Fig 2a Trådet, plan
Fig 2b Trådet, graph with outdoor area in bottom

Fig.71. Circulation principle of Tradet.

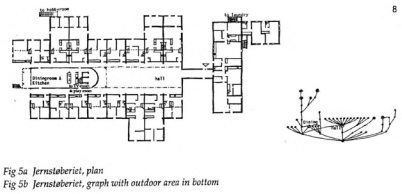


Fig 5a Jernstøberiet, plan
Fig 5b Jernstøberiet, graph with outdoor area in bottom

Fig.72. Circulation principle of Jernstoberiet.

The common rooms in Tradet are situated on the ground floor with the idea that inhabitants have to pass them when entering the building. This makes the common rooms accessible to outsiders and results in the common rooms often being locked. In case of the Stacken housing the common rooms have been placed further within the building at a harder to reach place for outsiders resulting in the common rooms being used more spontaneously and inhabited more.

In the case of Jernstoberiet housing the common room is placed in the middle surrounded by dwellings giving the common room a lot of direct accessibility to the dwellings and a lot of social control in the common room making it unwelcome to outsiders.
The Yxan example shows that although it has its common rooms located at the ground floor the distance between the outdoor and the private rooms is equal making the common rooms very integrated in the building and usable for residents. The circulation route is designed in such a way that there are always three routes out making exploration possible and reduces segregation of the residents through exit routes.

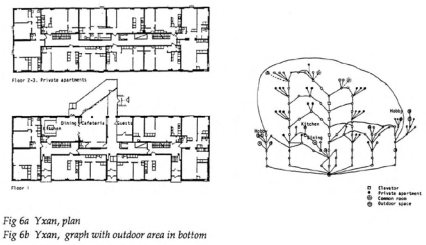


Fig 6a Yxan, plan
Fig 6b Yxan, graph with outdoor area in bottom

Fig.73. Circulation principle of Yxan.

The Yxan example shows that although it has its common rooms located at the ground floor

the distance between the outdoor and the private rooms is equal making the common rooms very integrated in the building and usable for residents. The circulation route is designed in such a way that there are always three routes out making exploration possible and reduces segregation of the residents through exit routes.[9]

Typology & Flexibility

The inhabitants of co-housing projects are not just the family oriented households any more and even these families have become smaller and more flexible in their composition. The diversity of group compositions is endless and each has their own spatial needs and diversity is necessary, while the equality in mind. In larger co-housing projects this diversity is easier to achieve and provides the residents with flexibility when the household composition changes. This ability to move within one community is space efficient as households who shrink aren't left with extra rooms and can make room for expanding households.[10]

Fig.74. Diversity in cohousing structures within the same building, KOOGRO.

San Riemo, in München developed by Kooperatieve Grossstadt (KOOGRO) is the example of a diverse co-housing project. The high flexibility is achieved through some ground rules and a set grid system. Each floor consists of three lanes. In the middle lane the stairs, kitchens and bathrooms are located with two equal lanes with 14m2 rooms which can be private or shared. By linking private rooms and shared spaces a diverse pattern emerges on each floor making this form of co-housing highly flexible to future changes.[11]

Fig.75. Individual modules with a larger shared space, Zollhaus.

Another spatial approach can be found in the project Zollhaus by Genossenschaft Kalkbreite. The concept of 'Hallenwohnen' consists of large empty halls where residents built their own units. These units can have multiple stories and often combine living and working within them. Inspired by the squatters scene in Zurich each resident can build their own individual unit within this space. Bathrooms and kitchens are provided and communal. The individual units are placed on wheels so they can be rearranged in space making the collective space highly flexible.[12]

A

Fig.76. Carved out common spaces creates a vertical and horizontal shared space.

▲
9. Lindén, K. P. (1992) Community and privacy in the Swedish collective house.
10.Lengkeek, A., & Kuenzli, P. (2022). Operatie wooncoöperatie (1st ed.). Trancityxvaliz.

10. Fromm, D. (2012). Seeding Community: Collaborative Housing as a Strategy for Social and Neigh
bourhood Repair. Built Environment, 38(3), 364–394. https://doi.org/10.2148/benv.38.3.364

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11. SUMMACUMFEMMER, Büro Juliane Greb · San Riemo. (n.d.). Divisare. https://divisare.com/projects/445152-summacumfemmer-buro-juliane-greb-san-riemo

12. Krabbendam, P. (2023, March 8). gemeenschappelijk-wonen-hoe-ver-kun-je-gaan. https://www.dearchitect.nl/271714/gemeenschappelijk-wonen-hoe-ver-kun-je-gaan

similar spatial design but with a very different intent is the LT Josai Shared House in Japan by Naruse Inokuma Architects. The shared and individual spaces were studied simultaneously and, by laying out individual rooms in a three-dimensional grid, multiple areas, each with a different sense of comfort, were established in the remaining shared space. While the entrance hall with its atrium and dining table space are perfect for gatherings of multiple people, the corner of the living room and spaces by the window are great for spending time alone. The kitchen counter is suitable for communication between a relatively small number of people. At the same time, the individual rooms, which seem to have the same character in plan, are all different due to their relationships to the shared space, defined by characteristics like their distance and route from the living room.[13]

Neighbourhood development & densification

Very little research has been done on the effect that collaborative housing has on a larger neighbourhood scale. Most studies focus on effect they have on the community within. From the limit sources there we find some positive effect although they still mostly apply to the residents of the collaborative housing themselves. Collaborative housing often is designed to be more open towards the public creating more interaction with people from the neighbourhood. Some of the shared facilities that a co-housing group has can also be made accessible to the neighbourhood extending the shared community beyond just the residents of the co-housing project. Residents of co-housing project are by their way of living more used to organizing and partaking in group activities and organization. This also makes them more engaged within the whole neighbourhood strengthening the sense of community among al its residents.

Neighbourhood revitalisation project who use cohousing as strategy have shown that the placement of the shared facility on street level and emphasizing them within a larger architectural language of a neighbourhood is important. The edges and in-between spaces where co-housing connects to the rest of the neighbourhood can allow for lingering, for views and for social interaction.[14]

"The type of urban setting is not as strong a factor in the neighbourhood collaborations as the design balancing residents' ability to have their community common space while also creating opportunities for interaction in front or along the edges of the property, connecting to the wider community." (Fromm, 2012)

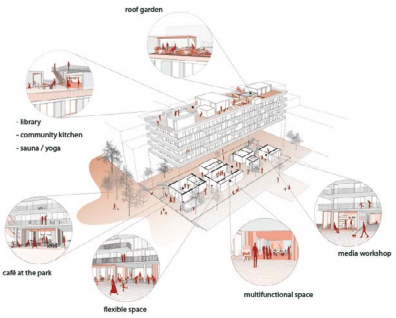

Fig.77. Adding facilities for a wider reach then just the residents. Gleis 21.

The mix of residents is important for the long lasting resilience of a co-housing community. More senior oriented co-housing communities have shown to decrease in common activities as the residents age so a well balanced age mix is preferred. Attracting younger residents requires different qualities. Younger families focus more on neighbourhood facilities and good school close-by. This resident group however faces a different challenge to collaborate then the senior which is free time. With the right size

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13. Aguilar, C. (2020, August 7). LT Josai Shared House / Naruse Inokuma Architects. ArchDaily. https://www.archdaily.com/497357/lt-josai-naruse-inokuma-architects?ad_source=myad_bookmarks&ad_medium=bookmark-open

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and integration a co-housing project has the potential to establish community networks within neighbourhoods.[00]

"Rather than viewing collaborative housing as appealing to a limited minority of constituents, a collaborative development can be viewed as a hive of community, with benefits that extend beyond its walls". (Fromm, 2012)

Seperation of the car

In Danish co-housing design the car is often intentionally separated from the private dwellings. This leads to greater opportunity to interact with other resident while walking through the community. This separation of car and dwelling also requires less space on a site for cars and leaves more space for gardens and gathering places facilitating social interaction. Creating spaces for social interaction also leads to increased security due to the presence of people there. The absence of cars and roads provides the opportunity to connect dwellings with smaller pedestrian paths which creates a great play area for children and for adults to experience spontaneous interaction with neighbors.

To provide oversight on these pathways the highest activity area of the house should be overlooking them. More often then not this is the kitchen, creating a visual connection between the kitchen and the pedestrian paths provides security and safety for the children and a sense of connection towards the whole community.

Fig.78. Making the public space playful and fit for interaction.

Community size

In The co-housing handbook (ScottHanson, 2005) it is stated that the ideal co-housing community size is between 12 and 36 individual units. Smaller then 12 the community becomes to intimate and the shared facilities to expensive. However smaller groups between 6 and 12 units work well in urban area's where the group is less dependent on each other for social interaction and facilities are more common to be in the neighbourhood. A community of 36 and above becomes more anonymous and it remains hard to connect with everyone. These types of communities work in rural or suburban areas where there is less social interaction from outside.[15]

Fig.79. A residents meeting in the communal space, Spreefeld.

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15. ScottHanson, C., & ScottHanson, K. (2005). The Cohousing Handbook: Building A Place For Community. New Society Pub.

6.5 CO-HOUSING CONCLUSION

In general:

Designing for cohousing involves creating spaces that encourage community interaction while also providing private spaces for individual residents. Here are some general steps that can be taken to design for cohousing:

- Consider the common spaces: Cohousing communities typically have shared spaces, such as kitchens, dining areas, and outdoor spaces. When designing these spaces, it's important to think about how they will be used and how they can encourage social interaction. Therefor these spaces need to be designed with care.

- Create private spaces: While common spaces are important, residents also need private spaces where they can retreat and have their own space. Design private living spaces, such as bedrooms and bathrooms, to provide adequate privacy and comfort.

- Foster sustainability: Cohousing communities often prioritize sustainability, so designing for energy efficiency, water conservation, and sustainable materials can be important.

- Promote accessibility: Cohousing communities are often intergenerational, so designing for accessibility is important. This can include things like wheelchair accessibility, clear sight lines, and appropriate lighting.

- Consider the neighborhood context: Cohousing communities should be designed to fit into their neighborhood context. Consider the scale of the surrounding buildings, the architectural style, and the existing infrastructure when designing the cohousing community. The facilities that are integrated within the cohousing should match with the target group. Shared facilities can also have a bigger impact beyond the direct users and can have neighbourhood function.

By taking these steps, designers can create spaces that foster community and promote a sense of belonging for cohousing residents which is essential to make cohousing communities work and create a mutual beneficial relationship in sharing space.

7 CONCLUSION

As the current Dutch housing stock lacks to fit with today's societal housing needs and trend towards individualism and diversity of household compositions, architects are left with the question how to design for the future within an already existing fabric. Within this research report a problem statement was formulated from which a densification strategy was developed that would touch on each of the topics an architect would face upon designing for such a context. To combine these problem statement a research question was formulated as follows:

How can co-housing be designed to reinvigorate and densify post-war neighbourhoods in the Netherlands?

To answer this question a series of subquestion where identified.

• What are post-war neighbourhoods?

Post war neighbourhoods can be defined as neighbourhoods that were built between 1945 and 1970. A post war neighbourhood must have 50% of its housing stock built within this period or have at least an average of 500 homes which are built in this period. In the Netherlands this qualifies a total of 1800 neighbourhoods a post war neighbourhoods which results in about 1.8 million homes or 21% of the Dutch housing stock. Making post war neighbourhoods a significant part of the Dutch housing stock.
These homes were built out of necessity after the second world war in a great effort to provide quick and affordable housing. The standardized methods used such as the *Dura coignet* system made development fast but not durable, prone to changes in housing needs.

Some of the opportunities that post war neighbourhoods provide are:

■ The post war neighbourhoods mainly consist of one family homes.

■ It has a lot of public green and water structures compared to other neighbourhoods with the same density.

■ The neighbourhood's road network is often well connected to city centers and within the neighbourhood.

■ At the border of urban areas & mixed functions.

■ The ribbon shaped structures leave a lot of room for new development.

These opportunities and the significance of post war neighbourhoods within the Dutch housing stocks makes them a key factor within the Dutch housing crisis.

• What design strategies can be used to reinvigorate post-war neighbourhoods?

Although the post war development can be seen as quite homogeneous in construction method and style with its tunnel concrete system, panel facades, galleries and ribbon like structures, the renovation of these structures is not a clear cut path for architects. A wide variety of strategies has already been implemented in attempts to make the post war building ready for the next century. The strategy which was chosen often depended on the state of the building and on the development plans of that specific area.
The chosen renovation strategies often included a change in the variety of typologies within one building and neighbourhood, upgrading the facade and insulation and making the building more accessible by

adding elevators or completely changing the circulation method.
Unfortunately we have to conclude that more often than not demolition of the post war structures was the most feasible option which was often met with great resistance by the residents.

The renovation strategy of the post war buildings is dependent on the context in which it is in. Smaller renovation can add quality to the existing residents but does not address the overall problems which these buildings have caused by their outdated construction methods and building standards. Larger renovation with added typologies can attract new target groups but can also displace current residents. This research has mostly been focused on the physical building scale of the renovation for the post war flat. Research into the more social factors that make these neighbourhoods problematic would provide more tools for a renovation strategy. As for now these tools are based on the site analysis of the chosen site Hordijkerveld and are therefore context specific.

These ambitions are:

■ The mixing instead of segregating functions like the current situation makes for a better flow through the neighbourhood.

■ New target groups call for a new economic program complementary to the existing communal economic program.

■ Use the existing green and blue structure to connect the public life of existing residents and the new.

■ Bringing the old and young together. In what way can we connect these two target groups inside a home and in the public space, strengthening the overall sense of community.

• Who should we build co-housing for?

Co-housing has since its beginning been a tool to empower marginalized groups within society. Its first introduction focused on workers, providing them with facilities and schools for their children and later on for single mothers for whom co-housing was a way to gain autonomy and enable them to work. It was then pushed forward during the 1960's by new ideas about standard family compositions and the division of household tasks between gender roles in the so-called "Working Together" model.

Co-housing communities are built on the principle of shared living, so it is crucial that the potential residents are compatible with each other. Target group analysis helps to identify residents who share similar values, lifestyles, and interests, which is essential for the success of the community and to create symbiotic relationships. Seeing the expected demographic changes in the Netherlands the age group of 65+ is rapidly growing resulting in pressure being put on the healthcare system. Co-housing can relieve some of this pressure by designing for symbiotic clusters where an exchange of different age groups takes place. This does not mean that co-housing should be designed only for elderly but for a symbiotic mix of groups who provide essential care tasks for one another through co-housing.

• How to design co-housing for different target groups?

All of the basic qualities for daylight, air quality and outdoor space that make good housing also apply to co-housing. Where co-housing differs from regular housing is

the emphasis that is placed on the shared facilities. To create a thriving co-housing community interaction and communication between residents is key. This interaction takes place in the communal spaces and shared facilities where residents meet. Therefore it is essential that these places are designed with care and have quality. Utility spaces such as a shared laundry room need to be designed beyond just their utilitarian function but provide a place where people can interact.

Co-housing is often perceived as a trade-off of losing private space to gain communal spaces. However the communal spaces can be facilities that otherwise would not be possible to have as an individual household in this setting and therefore diversifies the access to facilities for each household. Co-housing should focus on the facilities that each household can gain by giving up some of its private space and create a program that fits according to the needs of each target group. Diversity and equality seem contradictory but are essential within a co-housing community. Diversity in typology is needed to provide for a broad spectrum of household composition but maintaining the same quality standards for access to outdoor space, daylight and placement within the building is essential.

7 REFLECTION

DISCUSSION & RELEVANCE

My choice for this graduation studio of Advanced Housing Design Densification Strategies was motivated by my experience with previous dwelling studios during my master at the TU Delft where I encountered working from large master plan scales towards detailed dwelling plans and how through all these scale the human scale and social interaction remained a central part of the input. In dwelling I see a great potential to create positive societal change across a wide demographic in an area where margins are small but small changes can have a significant impact on those who need it most. The topic of creating housing and densification within an existing post war fabric, which the studio focuses on, is also relevant at the moment and is an issue that we as a society are probably dealing with for the next decade at least. Therefore this graduation project is also a way to familiarize myself with a topic that I will encounter upon entering the work field after graduation. Therefore I also felt a responsibility towards myself to engage with the topic and am grateful that I could do so through my graduation.

In this graduation research we combined a location with it's own local problems and the national issue of housing shortage and looked for strategies to improve the built environment on both of these scales. In my chosen strategy is co-housing because of its potential to bring about social interaction and mix different target groups while providing an efficient spatial solution for densification. The experience of combining national problems such as the Dutch housing crisis with more local problems such as the socio economic problems of IJsselmonde, which are often present in the post war neighbourhoods, remained challenging throughout the whole graduation process. It highlighted the importance of having a broad spectrum of knowledge as a designer to make the right choices. This is needed to identify key factors that create problems and learn about the history to make design decision and avoid mistakes that have already been made in the past.

Researching three topics (co-housing, post-war neighbourhoods, Dutch housing crisis) to create the framework proved to be challenging but felt necessary to create a design solution that would be transferable from a local situation to a larger scale. Each topic could be a thesis topic to research on its own and therefore I felt that I could only touch on each subject very briefly and not with as much depth as I would have wanted to. But dropping any of these subjects felt wrong because the whole premise of the research would be changed and the three topics are intertwined with one another and can't be isolated. The challenge was deriving design solutions from each of these topics and combining them to solutions that would be beneficial on all three scales.
To make this research relevant on a broader societal level as a strategy to revitalize post war neighbourhoods the scalability of the proposed strategy is very important. It should be transferable from a local situation to a general strategy outside of Hordijkerveld. However this generalization of the reinvigoration strategy was much easier to formulate on a master plan scale than on a building or site scale where local issues tend to take the upper hand.

Through the research I gained a lot of insight into the problems the Dutch housing sector is facing and where they originated from. The proposed densification strategy achieves its goals in many ways but further development and case study in other post war locations is

needed to strengthen the scalability of the strategy to other neighbourhoods in the Netherlands.
The repetitive building stamp and lack of typological diversity also invited a copy and past approach for the whole neighbourhoods but that would have been a mistake as diversity in strategy is also needed. Therefore the strategy should contain ambitions on a master plan-, local- and building scale and if one of these ambitions is to diversify the dwelling typologies then copy and past solutions are unsuitable.

GUIDANCE & MENTORING

The research and design are very much influenced by the tutors input and group work done at the beginning of the studio. Although I had a hard time remaining focused on the topic and consistently working on the design and research I very much appreciated the involvement of the tutors and the input at whatever stage I was currently at.
The group work felt detached from the assignment at first but turned out to be a key factor in integrating the design strategy within the local situation. Sadly the group work was not very inspiring upon producing it and a lack of motivation for it was noticed all around because of the lack of results it yielded for the individual design assignment at first. The ethnographic research was by far the most interesting and engaging group exercise. Although everyone was being reluctant at first the exercise helped in truly engaging with the place and made the assignment feel real. As mentioned before, what I see in the field of dwelling within architecture is a potential to design with the people who have to inhabit the place. A home and neighbourhood in that sense is something deeply personal and intimate and demands a great deal of respect when alternating it.

The passion for the research topic was shared by the tutors and it was inspiring and motivating every tutoring to discuss new ideas, sources and methods. After doing the research I found it hard to get back into the designing mindset, because the research was not completely done yet and had so far not given a clearcut approach as a basis for the design. I found it hard to make even the simplest design proposal as I had the feeling I had to justify every pen stripe with my research. The design tutor gave me the confidence to start designing again on a more intuitive level, not directly linking the design to the research but through reverse engineering it. By drawing the dwelling spaces unconsciously a lot of the researched topics were conceptualized in drawings and could be linked to the research afterwards. Through this I strengthened my confidence in making the design and trusting on the balance between making design decision on processed research such as the one in the report and research which is done and subconsciously absorbed and can be applied intuitively. This subconscious knowledge however needs a method in order to be expressed and that is what I found in the conceptual landscape drawings.

PROCESS

The graduation process as presented during the P2 was very clear and structured but did not account for the difficulty of combining the outcome of all three topics and finding the right balance between what conclusion should be dominant and therefore leading in the design. Do you design for a local situation? Or should you be led by a broader societal interest which might have a negative effect on the local residents and is it possible to find a win-win situation. On this topic I am still in doubt if this is the role of the architect or if this is too broad of a topic for the architect to weigh societal interest accordingly.

However the architect should be able to be aware of the broader societal context as well as the local situation.

During the research the gravity of the design input and my point of view shifted depending on the current topic of research. As we started the graduation studio with researching the Dutch housing crisis and its history the hypothetical design proposal headed more towards densification and maximizing housing for new target groups to cater for the Dutch market in order to deal with the issue of the housing crisis. However while doing the ethnographic research and engaging with the people of IJsselmonde through interview and site visits a very different design proposal was emerged, one that put more emphasis and considerate of the local situation and the relationship the resident have with their built environment up to point where the design intervention it would only benefit them. It created a certain respect for the place of intervention which I have not experienced in other projects before. For me as a designer the flaws of the post war buildings were very evident because of my architectural background and research on this topic during the graduation. But hearing people talk with passion about how they perceived their built environment made the place seem very fragile and evoked a certain carefulness in the design to not lose the connection the local residents had with their neighbourhood. Finally, I found it very helpful and reassuring that a lot of Architecture firms and publications are researching one of the topics of my research currently underlining the importance of the problem statement. KAW with *Ruimte zat in de stad* develops intervention strategies for post war neighbourhoods, in *Operatie wooncoöperatie* by Arie Lengkeek and Peter Kuenzli a strategy for co-housing in the Netherlands is laid out and on the renovation of post war neighbourhoods already a lot of literature existed as this topic is not so recent. Books such as *De grote verbouwing* by Jacqueline Tellinga tracks the renovation and demolition of post war neighbourhoods and describes the vast variety of renovation strategies that have been tried over the years. The literature gap of co-housing as a neighbourhood densification and reinvigoration strategy especially in a post war neighbourhood context is what makes this research relevant and still makes me excited. Unfortunately due to my own planning and struggle with the topic I think I have not delved deep enough to provide adequate solutions beyond the local situation of Hordijkerveld and therefore further research is needed.

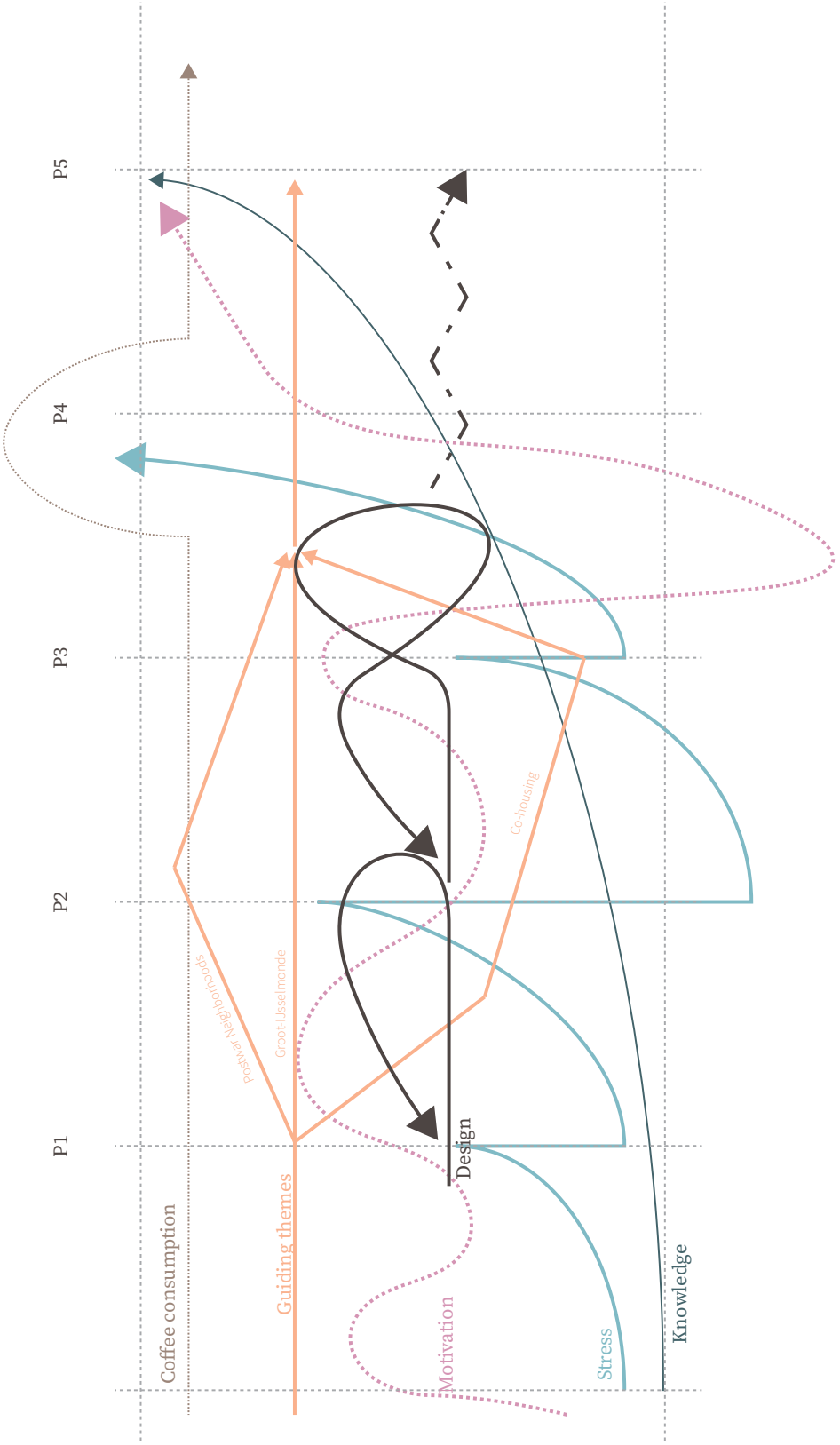

Fig.80. Graduation process

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Fig.63. Vestbro, D. U., & Horelli, L. (2012). Design for Gender Equality:The History of Co-Housing Ideas and Realities. *Built Environment*, 38(3), 315–335. https://doi.org/10.2148/benv.38.3.315

Fig.64. *ibid*
Fig.65. *ibid*
Fig.66. *by author*
Fig.67. *Sánchez, D.* (2023). Coop Housing at River Spreefeld / Carpaneto Architekten + Fatkoehl Architekten + BARarchitekten. ArchDaily.

Fig.68. *Gallery of Kalkbreite* / Müller Sigrist Architekten - 3. (n.d.).ArchDaily. https://archdaily.com/903384/kalkbreite-muller-sigrist-architekten/5bb8c539f197ccfdd500000d-kalkbreite-muller-sigrist-architekten-photo

Fig.69. *Gleis 21* - einszueins. (2023, April 17). Einszueins. https://www.einszueins.at/project/baugruppe-hauptbahnhof-gleis-21/

Fig.70. https://www.poolarch.ch/projekte/2021/0442-fleur-biel/&refPage=Projektstand&filter=Wettbewerbe&browse=browse

Fig.71. Palm Lindén, Karin (1992b): Community and Privacy in the Swedish Collective House. *Lund: University of Lund* (available at http://www.kollektivhus.nu/uppsatser.html).

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Fig.74. *SUMMACUMFEMMER*, Büro Juliane Greb · San Riemo. (n.d.). Divisare. https://divisare.com/projects/445152-summacum femmer-buro-juliane-greb-san-riemo

Fig.75. Krabbendam, P. (2023, March 8). *gemeenschappelijk-wonen-hoe-ver-kun-je-gaan*. https://www.dearchitect.nl/271714/gemeenschappelijk-wonen-hoe-ver-kun-je-gaan

Fig.76. *Aguilar, C.* (2020, August 7). LT Josai Shared House / Naruse Inokuma

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Fig.77. *Gleis 21* - einszueins. (2023, April 17). Einszueins. https://www.einszueins.at/project/baugruppe-hauptbahnhof-gleis-21/

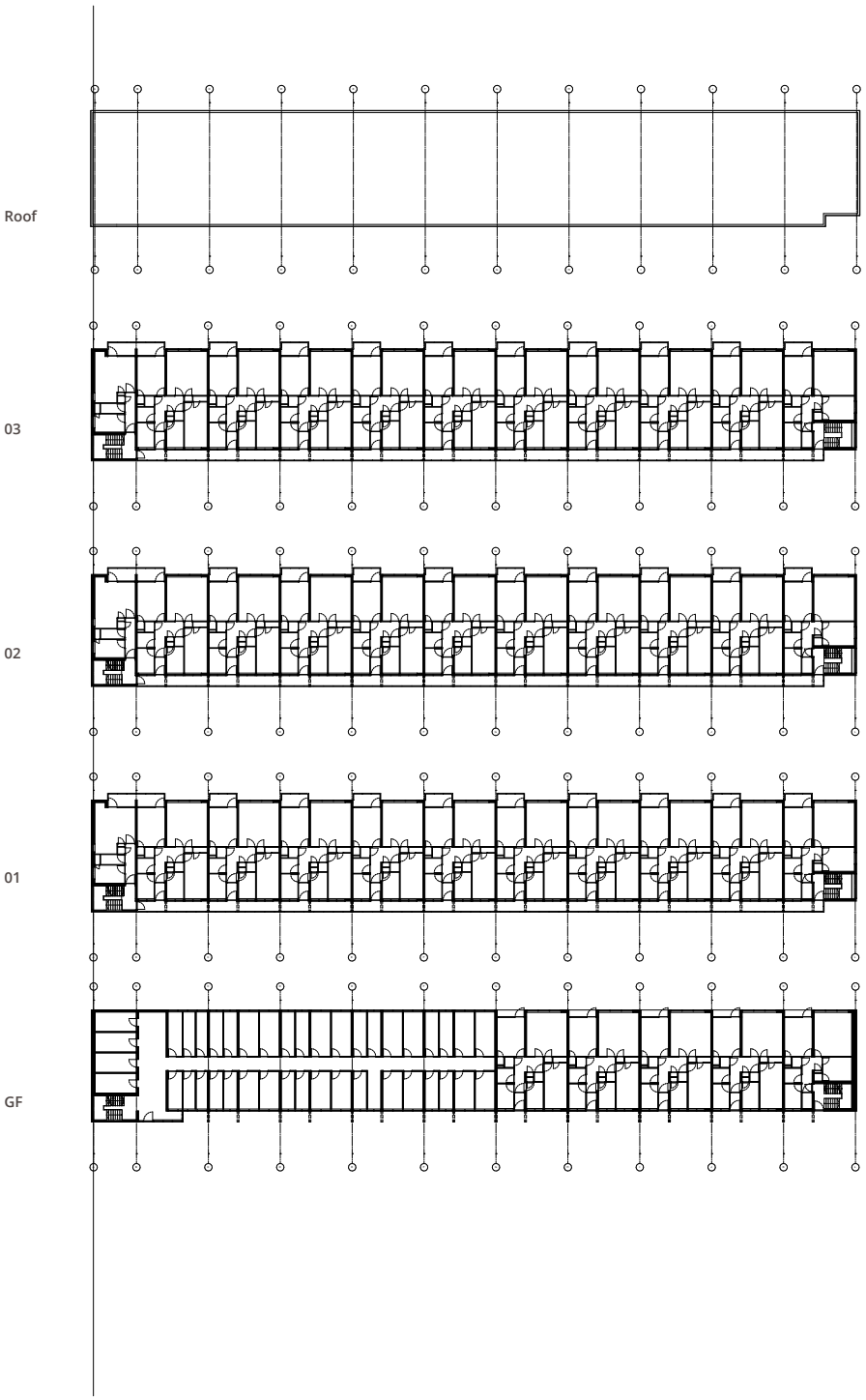
Fig.78. Lengkeek, A., & Kuenzli, P. (2022). *Operatie wooncoöperatie* (1st ed.). Trancityxvaliz.

Fig.79.*Sánchez, D.* (2023). Coop Housing at River Spreefeld / Carpaneto Architekten + Fatkoehl Architekten + BARarchitekten. ArchDaily.

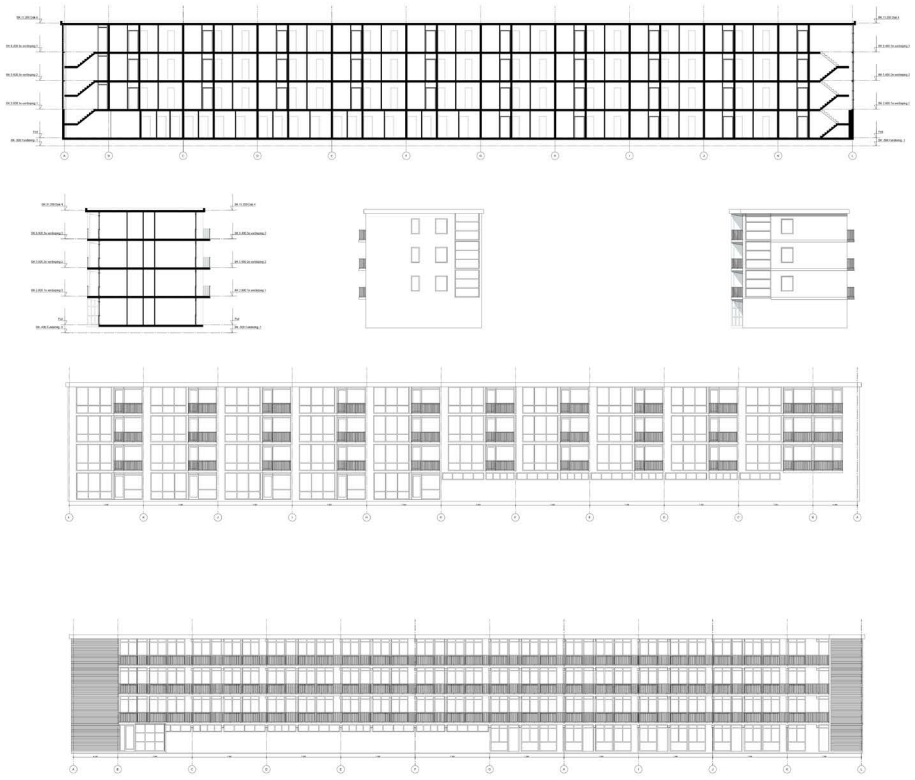
Fig.80. *by author*

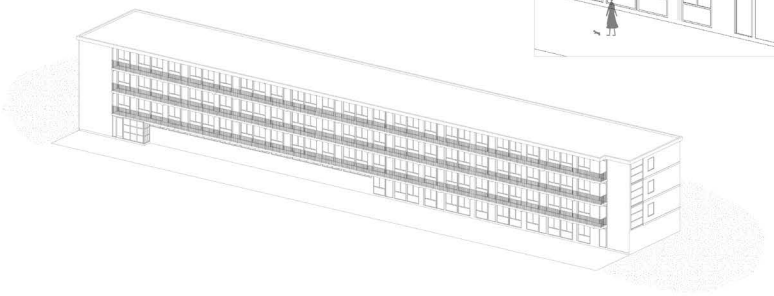
10 APPENDIX -
A.Building analysis, Hordijkerveld

Block type I
Floorplan

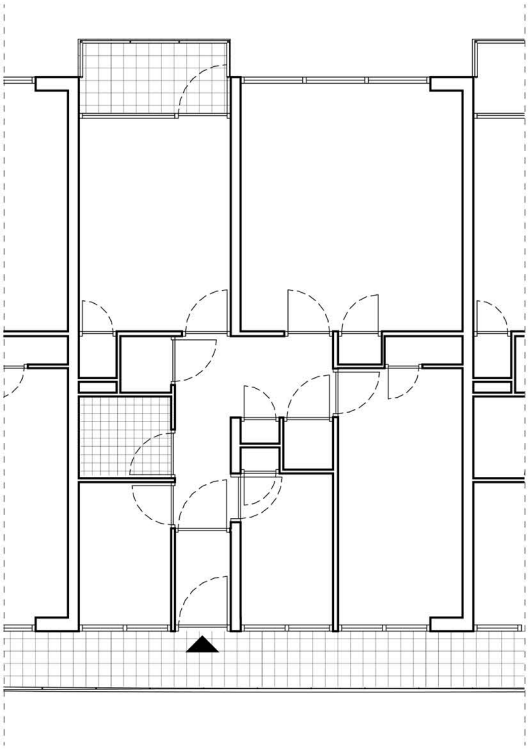


Block type I
Axo + section + facade





Block type I
Floorplan



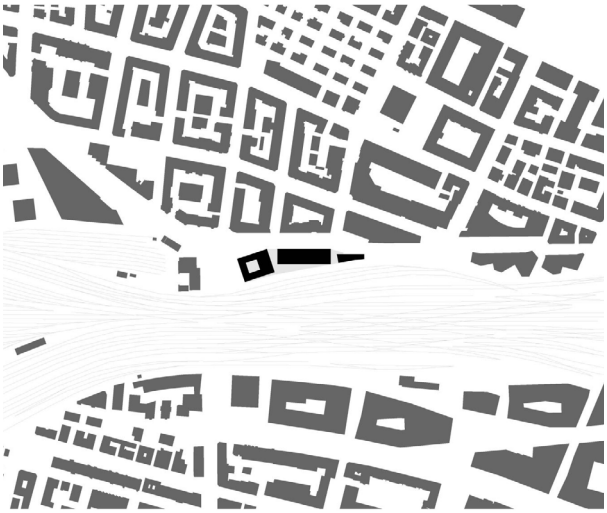
APPENDIX - B. Co-housing case studies P2

	Name	Location	Context	Architect	Client	Year	Type of Co-Housing	Guest room	Hobby room	Office space	Multifunctional space	Daycare	Bike storage	Netto Usable Floor area (NUF) m2	Collective space percentage (%)	Collective space m2	number of dwellings	Top down/Bottom up	Circulation
1	Brüggläcker	Zurich, CH	Suburban	BS+EMI	BAHOGE	2014	Co-housing		X				X	3752	8.90%	307	30	Bottom up	Porch
2	Buchegg	Zurich, CH	Urban	Duplex Architekten AG	Wadenberg	2018	Co-housing				X			12183	2.20%	257	110	Bottom up	Porch
3	Gleis 21	Vienna, AT	Urban	einszueins Architektur	Verein 'Wohnprojekt Gleis 21'	2015	Co-housing				X			4126	19.10%	650	35	Bottom up	Galley
4	Grünmatt	Zurich, CH	Suburban	Graber Pulver Architekten AG	Familienheim-Genossenschaft Zurich FGZ	2014	Co-housing				X			21457	4.10%	887	155	Bottom up	Porch & ground floor acces
5	Holunderhof	Zurich, CH	Urban	Schneider Studer Primas Architekten GmbH	GBRZ	2018	Co-housing				X	X		10719	3.70%	392	95	Bottom up	Porch
6	Mehr als Wohnen	Zurich, CH	Urban	Duplex Architekten AG	Baugenossenschaft 'Mehr als Wohnen'	2015	Co-housing				X	X		5310	41.30%	1999	11	Bottom up	Atrium
7	Quartierhaus	Vienna, AT	Suburban	feld72 & transparadiso	WoGen. Wohnprojekte-Genossenschaft	CUC	Co-housing				X			5380	29%	1282	51	Bottom up	Porch & gallery
8	San Riemo	Munchen, DE	Urban	Arge summacumfemmer Buro Juliane Grieb	Kooperative Grossstadt eG	2020	Co-housing				X	X		3333	24.10%	716	29	Top down	Porch
9	WagenisART	Munchen, DE	Urban	bogevischs buero architekten & stadtplanner GmbH / SHAG Schaaf Hartmann Architekten GbR / Architektburo Christian Kohler	Wohnbaugenossenschaft Wagenis eG	2015	Co-housing				X			14589	8.20%	1131	136	Top down	Porch
10	Zolhaus	Zurich, CH	Urban	Etzmann Fischer Partner AG, Zurich	Genossenschaft Kalkbreite	2020	Co-housing				X	X		9413	11.50%	661	55	Bottom up	Porch & gallery
11	Cohousing Neigh	Hoogvliet, NL	Urban	van Bergen Kolpa Architecten	Estrade projecten, Rotterdam	2010	Co-housing				X						44	Top down	Ground floor acces
12	Narkomfin	Moscow, RU	Urban	OSA Group	Communal house	1932	Communal house				X						54	Top down	Galley
13	Elandshof 6	Amsterdam, NL	Suburban	Bastiaan Jongerius Architecten	-	2012	Co-housing				X						6	Bottom up	Ground floor acces
14	Wandelmeent	Hilversum, NL	Suburban	Leendert Johannes de Jonge, Bernard Wendt	Stichting Woningcorporatie Het Gooi	1977	Co-housing				X						54	Bottom up	Ground floor acces
15	Vrijburcht	Amsterdam, NL	Urban	Hein de Haan / CASA Architecten	Stichting Vrijburcht	2007	Co-housing				X						40	Bottom up	Porch
16	Doyle Street Col	Emeryville, US	Urban	Gunkel Architecture		1992	Co-housing				X				15%		21	Bottom up	Ground floor acces
17	Southside Park C	Sacramento, US	Urban			1993	Co-housing				X				11%		40	Bottom up	Ground floor acces
18	Nanterre Co-Ho	Nanterre, France	Urban	MdO architectes, Tectône		2015	Co-housing							158			21	Bottom up	Ground floor acces
19	60 Richmond Ho	Toronto, CA	Urban	Teeple Architects		2010	Co-housing							9249			85	Bottom up	Corridor
20	Coop Housing a	Berlin, DE	Urban	BARarchitekten, Carpaneto Architekten, Fatloehl Architekten		2013	Co-housing							7400	15%	1110	64	Bottom up	Corridor
21	Swan's Market	Oakland, US	Urban	Pyatok Architects	CHFA	1997	Cohousing							5574			20		

	Name	Kitchen	Laundry room	Garden	Cafe	Storage	Guest room	Hobby room	Office space	Multifunctional space	Daycare	Bike storage	Netto Usable Floor area (NUF) m2	Collective space percentage (%)	Collective space m2
1	Brüggläcker		X					X				X	3752	8.90%	307
2	Buchegg		X	X						X			12183	2.20%	257
3	Gleis 21	X		X	X	X				X			4126	19.10%	650
4	Grünmatt						X			X	X	X	21457	4.10%	887
5	Holunderhof		X			X			X	X	X		10719	3.70%	392
6	Mehr als Wohnen		X			X			X	X			5310	41.30%	1999
7	Quartierhaus			X					X	X			5380	29%	1282
8	San Riemo		X	X	X	X	X		X	X			3333	24.10%	716
9	WagenisART			X	X	X		X		X	X		14589	11.50%	1131
10	Zolhaus				X	X	X		X	X	X		9413	11.50%	661
11	Cohousing Neighbourship			X											
12	Narkomfin	X													
13	Elandshof 6		X												
14	Wandelmeent			X			X								
15	Vrijburcht						X	X							
16	Doyle Street Cohousing						X		X						
17	Southside Park Cohousing		X	X					X						
18	Nanterre Co-Housing	X							X				158		

ZOLLHAUS / Zurich, CH / 2020
Enzmann Fischer Partner AG, Zurich

Restaurant, cultural functions, rental space, multi functional rooms, daycare, storage, roof garden, guest room



Small unit size with shared facilities in between. The urban location makes more public functions possible.

GRÜNMATT/ Zurich, CH / 2014
Graber Pulver Architekten AG

21457 m2
4.10%
887m2
155

a neighbourhoods approach to co-housing.

MEHR ALS WONEN / Zurich, CH / 2015
Duplex Architekten AG

5310m2 (NUF) / 41.30% / 1999m2

Using the in-between space as collective space while maintaining individual units.

WANDELMEENT / Hilversum, NL / 1977
Leendert Johannes de Jonge, Pieter Weeda

Clustering of functions

Clustering facilities to housing groups creates little communities within a larger community.