

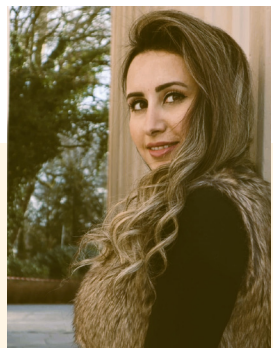
CO—Dwell
multicultural
community
cohabitation

CO—Living
CO—Working
as means for
cohabitation
between Dutch
starters and
newcomers



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Making picture beside heritage is an architect's obsession
The Fundatie museum, Zwolle, Netherlands

Acknowledgment

This book is made out of hard work and a year of research, discoveries, knowledge and design. Through that time many hands and minds helped to turn that work into one coherent project.

I would like to express my very great appreciation to the research Tutor Anne Kockelkorn who guided the research with knowledge and advice. I want also to thank my tutors who shared their knowledge during the design process Olv klijn and Ferry Adema.

My special thanks are extended to my biggest motivator and support, my parents and my fiancé Milad. I am extremely grateful for my brother Majd who has always encouraged me in my hardest time and who always believes in my real capabilities.

Lastly, I want to thank me for believing in me and for going through all that hard work and hard time, for accomplishing this study through all the difficulties I have been through.

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Introduction

The advanced housing design focused in 2022 on the ecologies of inclusion in the housing typologies of Rotterdam, Netherlands. Reaching a context that is socially inclusive for mixed social groups, ecologically sustainable and economically viable for the non-speculation cooperative housing model. That sheds light on the ecologies of vulnerable groups including humans and non-human species. The site is situated in Walenburghof, Blijdorp neighbourhood in Rotterdam. However, the Netherlands in the last few years is facing a housing problem. Therefore, the Studio's students conducted eight urban analyses to understand the current situation of the site's context.

The urban typologies analysis showed that the Blijdorp is one of the most well-structured neighbourhoods in Rotterdam. The municipality's plan is to raise the building

up around the centre and gradually low the skyline direction of the city's skirt. The district contains hybrids function with a dominant appearance of school on the studied site. The social analysis recognized residents from different ethnic backgrounds in the city as a whole and at the site in specific. Most of the citizens are well educated and open to the multicultural homogenous community. The site contains a Heritage of the Homobonus building situated at the northern corner. Walenburghof is adjacent to train lines and traffic intersections which causes noise pollution. It lacks public and relaxing spaces.

However, all urban analyses showed the current situation and potential whereas the economic politic analysis shows the current deficiency in the Dutch housing sector which forms the foundation of this research and design.

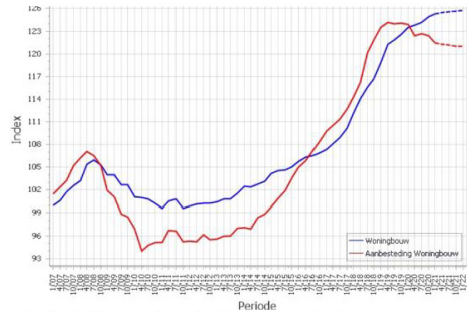


Political economic urban analysis

After analysing different urban aspects of the Blijdorp, Rotterdam context. I worked with the political-economic urban analysis group. This analysis demonstrates the economic tribulations that households are facing when entering the housing sector. We also elaborated on the governments' regulations and restrictions on the housing sector. This analysis focused on the three stakeholders: The renter, the buyer and the developer.

The developer:

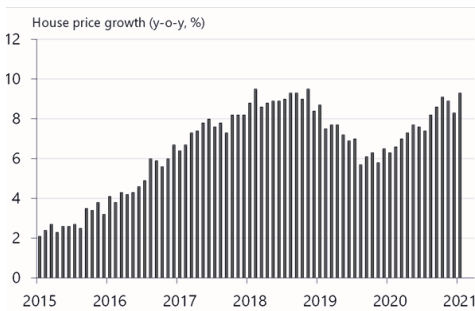
Land prices are growing significantly in the Netherlands during the last few years, it can hit a double in 2022. That causes a further expense to be disbursed on constructing a residential settlement. The regulations are periodically changed by the municipality, government and even European Union. Besides, the zoning modifications can endanger the project. The new Quality Assurance for Building Act (Wkb) will come into effect on 1 January 2022. This means more supervision during construction phases. The construction and building materials costs are likewise increasing due to the European policy on freight transport regarding climate change and CO₂. All those restrictions will lead to increasing in the investment amount, reducing the quality and quantity of social housing.



Aanbestedings- en bouwkostenindex woningbouw
Construction costs

The first-time house buyer:

Dutch banks supply Dutch inhabitants with mortgages for house purchases. The government provides the citizens with multiple pros which increased the demand for housing purchases such as no transfer tax for first-time buyers (18-35 Years), a Low mortgage rate and National Mortgage Guarantee (1% price). That compels the buyer to bid over to get that dwelling. Consequently, that ends by selling a house for a very high price. Thus, it is a double face investment where the government encourages and aids citizens to buy but at the same time, there is no sufficient quantity of houses. Flats and house prices are considered to be high in Rotterdam in general and in Blijdorp in specific because of its strategic location in the heart of the city which make the mission almost impossible for first-time buyers.



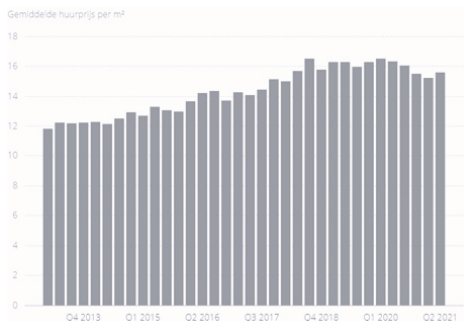
Houses prices, Netherlands

The renter:

This is the most vulnerable group especially if it is a new starter who has a limited wage.

The social housing rent

Most housing associations in the municipality of Rotterdam offer their social housing (up to €752.33 as a basic rent) on Woonnet Rijnmond. It requests a residential pass via the Woonnet Rijnmond website with which people can respond to all homes that are offered. This builds up the registration period, which increases people's chances of finding a home. The regulation set an income limit to enter a social housing where the annual income may not exceed 40,024 euros for an individual and 44,000 for a family (price level 2021). The priority in social housing follows a queue system, according to a registration time that might cost approximately 4 years and a half. That waiting time is considered to be long in all big cities including Rotterdam. There is a tiny chance of lotting houses. The rent is calculated according to the square metre price which is for the first time in 2021 rose the most in Rotterdam. Thus, entering social housing delivers large difficulties because of the regulations and the huge demand for social housing because it is affordable in comparison with the private free sector.

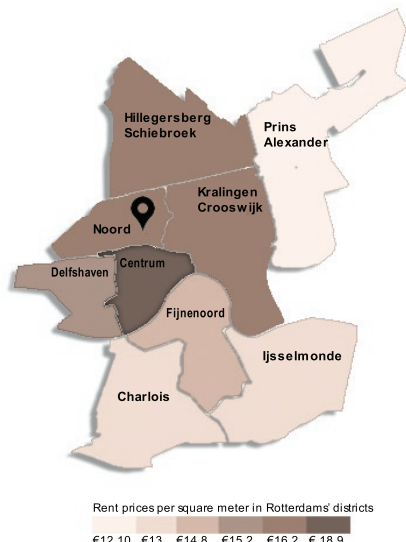


Social housing rent
Source: www.pararius.nl

The Private rental market

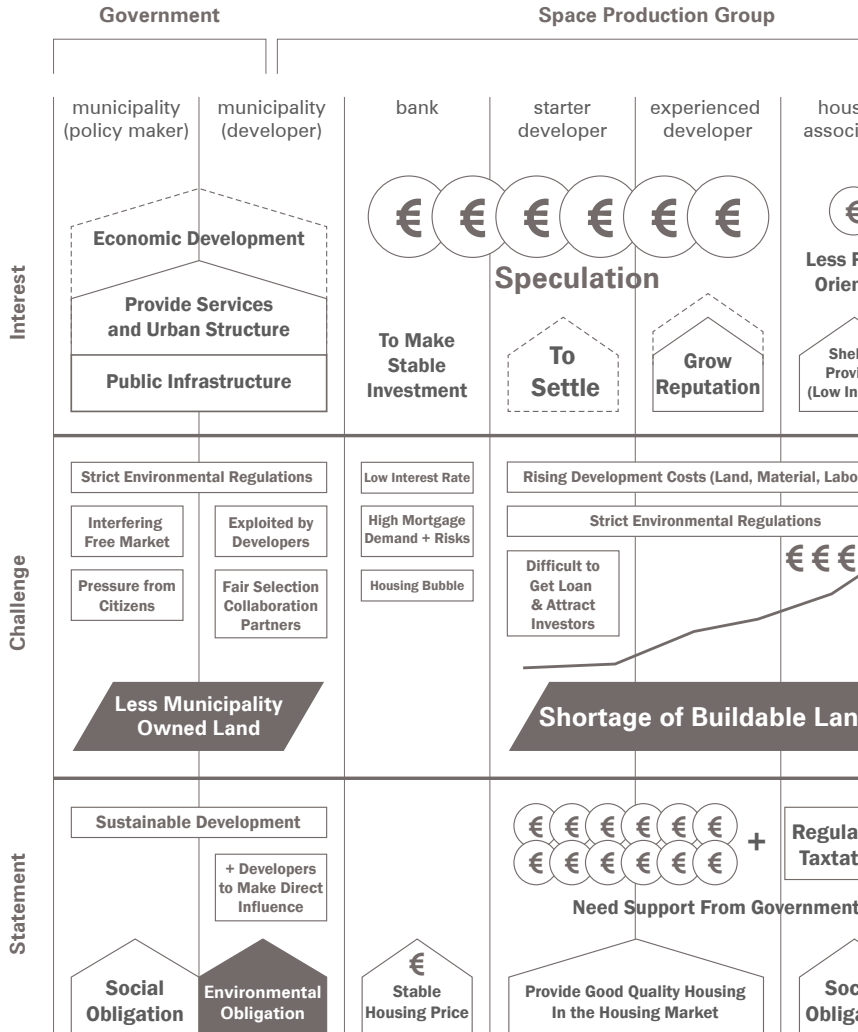
The private rental sector does not show any promising signs too. The conditions here are further complicated. Firstly, the renter should have an adequate income. There is no maximum limit for the rent price where it is evaluated according to the one square meter price in the free market. Lastly, there is no chance for governmental financial assistance. The figure shows the significant rise in the private rent prices. In the second quarter of 2021, a new tenant in the free sector of Rotterdam paid an average monthly rent of about €16 per square meter. For instance, the basic rent for a small apartment of roughly 40m² is $= 40 \times 16 = 640$ euros is just the basic rent, exceeding the service costs.

This situation leaves the low-income starters in a dilemma of what to do and how to enter the rental market. Therefore, this research and design will concentrate on the low-income group as a vulnerable group to be included in Rotterdam city.



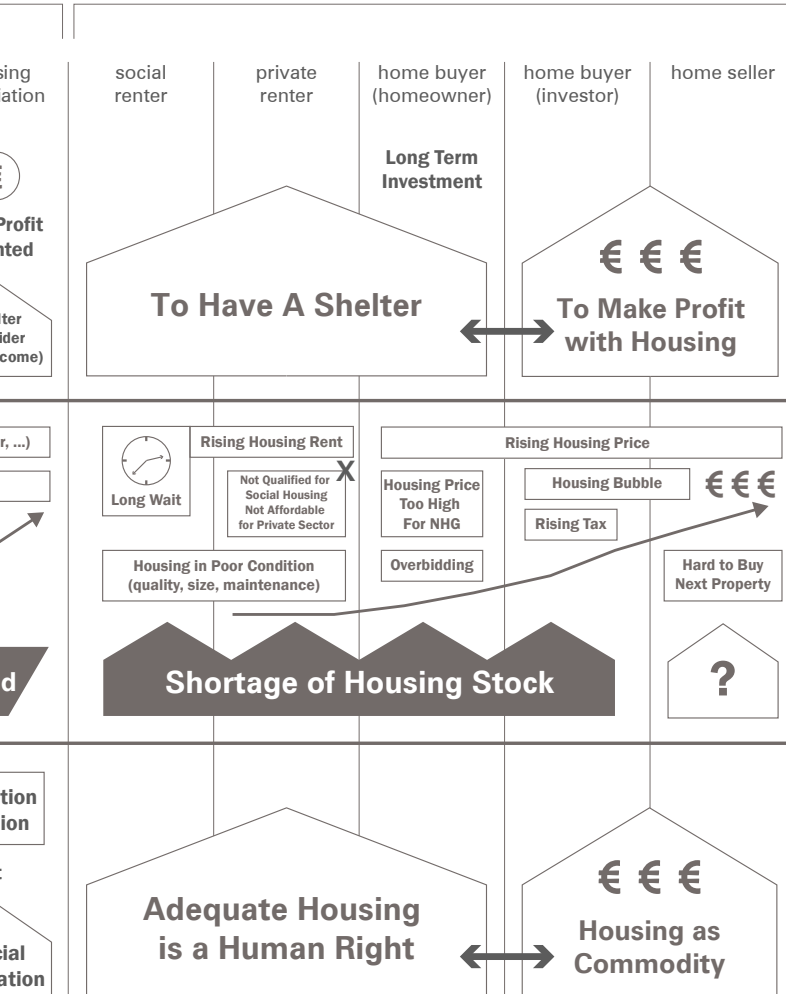
Private rental price per square meter
Source: www.pararius.nl - Edited by author

Urban Analysis: Political



Global Economy X Housing

Space Consumer Group



Cooperative housing model introduction

What if the cooperative housing model is introduced in the Netherlands?

The cooperative housing model is a non-speculative housing supplier actor that is well known in many European countries such as Switzerland. According to the formerly economic discussed obstacles in the Dutch Housing sector, introducing cooperative housing might solve the problem. However, there are some cooperative housings in the Netherlands, some of them are already established and some are new and under construction such as De Warren housing cooperative in Amsterdam. The benefits that a housing cooperative can introduce to the Dutch housing market are different from these of the social housing institutions. Going to the Zurich example. The cooperative housing there is legally required to be a non-profit association. However, they still get advantages in comparison to other housing associations because they obtain easier admission to the municipal lands over the city.

The logic and rules of all cooperatives might differ, but the main notion of non-speculation is critical in all of them. Many advantages can a renter gain from entering a cooperative. Most important is the permanent share. If a renter enters the cooperative with a specific income, he doesn't have to move out in case of wage modifications over time. That helps by building community and by building a sense of constancy among residents. Besides that, some cooperatives' rents can be subsidized such as the example of Kalkbreite, Zurich which you will find in the vision paragraph and in the Case study Kalkbreite section.

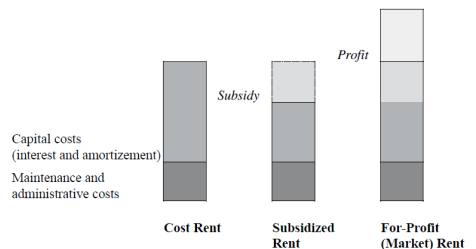
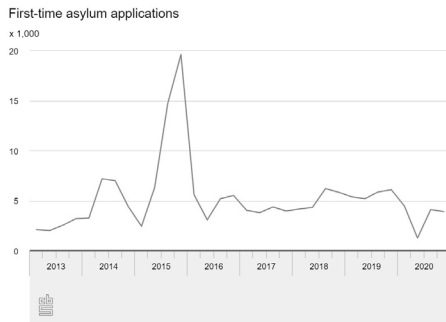


Figure: Composition of rent prices
Source: Urban Commons: Moving Beyond State and Market, 2015, Page, 185

Problem statement

Shelter and labour as underestimated basic rights and means for social cohabitation

The Netherlands is an overpopulated country and is a destination for international households. The population is growing in Dutch cities which is mainly caused due to immigration flow within the previous six years. (Statistics Netherlands, 2019) Rotterdam as the second biggest city seems to attract more immigrants because of its strategic location, its labour and educational potentials. The more vital reason that attracts newcomers to settle down in Rotterdam is its intercultural character (Council of Europe, 2016). Regarding the asylum seekers, the country witnessed a peak of asylum seekers advent approximately 20.000 of first application in 2015 (Statistics Netherlands, 2021a).



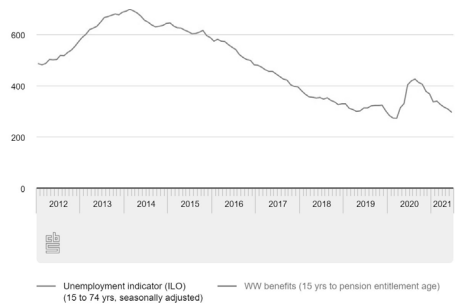
Percentage of asylum seekers' first-time application
Source: Central Bureau of Statistics, cbs

Asylum seekers have the right to housing when they obtain residence permits, thus, they should be accommodated by the government directly after obtaining the permits. (The Central Agency for the Reception of Asylum Seekers, 2015). In the last ten years housing crisis predominated the country. The Dutch government reformed the housing sector to make it further market-conform. That means stimulating tenure conversion such as allowing the transformation of social housing into owner-occupancy. Besides, the government allowed temporary rental contracts. That ended up by rose in the rents. That approach impacted low-income folk by hindering them to access the rental market. Dutch starters and newcomers encounter the problem of affording and accessing homes. In addition to the huge refugee percentage, further pressure put on the government to take rapid initiative of sheltering refugees (Czischke & Huisman, 2018). In that time, the government has already improved the One Million Home plan by 2030 to increase the housing supply (Séveno, 2021). However, this long-term plan could not solve the current problem of the enormous, needed home quantity for asylum seekers of 2015. Therefore, the government took a quick initiative to house them. That initiative was insufficiently studied and rapidly taken because of the peak. Consequently, asylum status holders are randomly allotted to social housing cross the country. These housing are not designed according to social integration factors of newcomers rather they are meant for native inhabitants. (Czischke & Huisman, 2018).

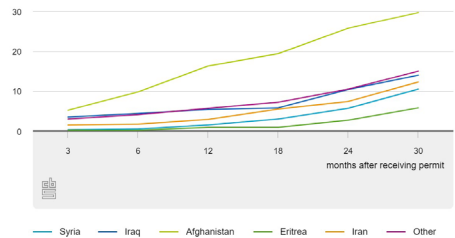
Particularly, in Rotterdam, the number of refugees accommodated is an average of 10.4 status holders per 10000 inhabitants in 2014. It increased to become 21.9 per 10 000 inhabitants in 2016 (CBS, 2014–2018). That initiative locks status holders in socially isolated homes where they do not know where and when to start. (Czischke & Huisman, 2018).

The other right for asylum seekers is working. But, because of the current isolated housing environment and the integration approach, refugees do not build social relationships with locals which leads to a very restricted network. Also, they do not grasp the work procedure in the new society. Therefore, they need more time to know where and how to commence working. That takes an average of five years and a half for 73% of the refugees to occupy a part-time job. (De sociale economische raad (SER), 2020) One the other hand, the unemployment rate increased in the whole country after the Covid-19 pandemic. Right after that, more than 300 thousand people were unemployed. This number considers as 3% of the whole labour force which is a considerable percentage which occurred in a short period of time. The unemployment rate rose from 2.9% before the Covid-19 to 5% . Although the 5% percentage is considered as rational unemployment percentage but it was a two third more in comparison with the former five years. (Statistics Netherlands, 2021b). Usually, refugees encounter difficulties in finding work or starting their own projects, beside that was the unemployment raise after the pandemic. Thus, many obstacles stand central such as the language barrier, fewer jobs' possibilities after Covid-19 and more vital they have no suitable network .

According to the CBS, they are not able to occupy paid jobs in the first year and a half after obtaining the resident permit. After that period was just 11% refugees employed in 2014 which differs according to the countries of origin. (Statistics Netherlands, 2018). To conclude, the main obstacles for newcomers' cohabitation with locals are the housing, integration and labour approach created by the current national approach in Holland i.e. no shelter based on social engagement, nor work based on economic, social and integrational benefits approach are invented in order to ease the integration of status holders. Therefore, this paper will tackle the problem of a smooth cohabitation between refugees and Dutch starters as the main target group.



Dutch unemployment percentage of Dutch residents between 15 and 74 years old
Source: Central bureau of Statistics, cbs



Percentage of worked status-holders after receiving permit
Source: Central bureau of Statistics, cbs

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Hypothesis of collective living and working approach

Accordingly, looking back at my city, Aleppo, the inhabitants used to live and work in the same environment. The urban tissue is filled with labour and housing opportunities. Consequently, that leads to significant social encounters ending with a sense of belonging to a certain community. (Academy of Architecture, Amsterdam University of the Arts, 2018).

According to Naomi Cleaver, an interior designer who specialised in communal living, the new shift towards shared spaces is the new solution for the 21st century's urban and architecture issues such as the inaccessible housing market, loneliness and rejection of minorities. She argued that co-living and co-working might be hailed as the sought solution of our century. This shared model has the power to retexture the current society in a manner that transforms it into a further collaborative society for all social groups. (Cleaver & Frearson, 2021)

Main and sub-questions

The research converges on the co-living and co-working model as means for cohabitation between different ethnic groups. The paper seeks proper awareness about the social integration methods needed for refugees and the spatial structure of co-living and co-working in relation to the social engagement approach between the different intercultural stakeholders.

The main question that will guide the research will be:

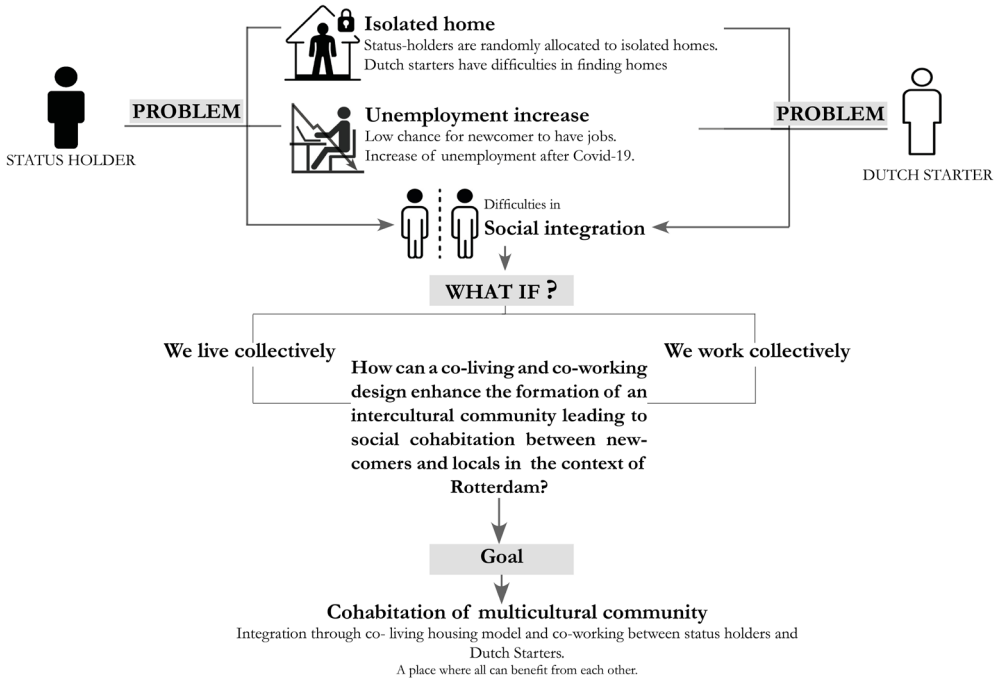
How can a co-living and co-working design enhance the formation of an intercultural community leading to social cohabitation between newcomers and locals in the context of Rotterdam?

To answer this question, the paper starts with the social domains of integration. Secondly, the spatial design of co-living space is elaborated to reach optimum design tools of living together. Thirdly, co-working's spatial power in invigorating communities in relation to housing. The sub-questions are:

1. How can housing and working influence refugees' cohabitation with the Dutch society?
2. How can co-living be designed in a manner that increases social interactions between status-holders and Dutch starters?
3. How can co-working be spatially articulated in relation to the housing environment and which social impacts does it have on community formation?

These questions response to the hypothesis of co-living and working as a social cohabitation intercession between residents from different cultural backgrounds.

Vision and hypotheses



Methodology

To achieve the goal of intercultural society cohabitation, this paper derives design's tool-kits out academic publications, books, interviews and references projects.

The first chapter elaborates in the target group's social necessities. Therefore I include political, social and a Dutch reference project. The political study converges on asylum seekers policies and accommodation approach in Holland. This knowledge is provided by the Immigration and Naturalisation Service and the Central Agency of Asylum Seekers Reception's. Then the social domain of integration are discussed according to *Ager, A., & Strang, A. (2008). Understanding Integration: A Conceptual Framework. Journal of Refugee Studies*. After that, I analysed a reference project in the Dutch context spatially and socially. By studying the initiative of housing Dutch and refugees together. According to the publication of *Integration through Collaborative Housing? Dutch Starters and Refugees Forming Self-Managing Communities in Amsterdam* which is written by D. Czischke and C. Huisman. Additionally, Dr. Carla Huisman is an interview partner in this research. I interviewed her because of her insights on refugees' housing policies in the Netherlands and because of her on-site study of the Startblok. She informed me with precious insights and conclusions about social integration which I included in 1.4. I also undertook ethnographic study and residents interviews.

Secondly, the initiative of co-living will be investigated historically in the Dutch context, spatially and socially. The historical study will

focus on the Centraal Wonen initiative which commenced in the late 60th. I studied, the Tanthof settlement in Delft as a case study, according to *the history of collective living*, written by S. Schmid that touched various examples of col-living initiatives worldwide. After that, the spatial study will focus on designing appropriate collective living space in relation to communal space according to *Spatial design & architecture for coliving number 7*. Published by the professionals of the Coliving Insights. Finally, I linked the historical and spatial findings with social arguments in a manner that translates better knowledge on how and why co-living could increase social interaction between different ethnic groups according to *Understanding Integration: A Conceptual Framework. Journal of Refugee Studies*.

Ultimately, I investigated the co-working's possibilities through urbanistic, architectural and social experiments. The urban shift towards co-working will be based on the publication of the The Scientific Council of European *Productive Cities*. It clarifies the new shift in the urban planning to re-introduce productions again in cities. The mix between housing and working is articulated in the article of Hoppenbrouwer, E., & Louw, E. (2005). *Mixed-use development: Theory and practice in Amsterdam's Eastern Docklands*. That shows the manner of creating hybrid environments in cities and covers different hybrids in many urban scales. I review the social impact of co-working according to *Spatial Configuration and Users' Behavior in Co-Working Spaces* By Ondia, E. P. et al. which examines case studies of collective space and its social impacts on employees.

Graphic novel's introduction

The graphic novel elaborates on the operational structure of the aimed intercultural community. It studies the housing approach of the young low-income/ just employed adults with collaboration between the housing cooperative, the municipality, and the COA "Centraal Organization for Asylum seekers Reception", and the architect

The graphic novel clarifies the contribution of the previously mentioned actors in reaching the goal of cohabitation between groups from different ethnic backgrounds. Similarly, it illustrates the proxemics of the future users, young status holders and Dutch locals, after five years of the project's accomplishment. How they use the space and which impact has the space on their productivity and cohabitation with others. The community will be self-organized by assorted commissions created and managed by residents who can with the rest of the tenants manage cases in the community.

The notion is: what if the housing cooperative is open to a multicultural community, which is a non-profit association, and provides young adults with a place in Walenburghof in the city of Rotterdam. This cooperative can lease the land from Rotterdam municipality. Nevertheless, the municipality subsidizes about 35% of the dwellings for newcomers which makes the rent cheaper approximately 15% compared to the base rents. (Dellenbaugh et al., 2015, P.185), similarly to the cooperative model of Kalkbrite, Zurich, Switzerland. (Genossenschaft Kalkbreite, 2018).

The allocated status holders are nominated via COA and Rotterdam Municipality, those residences fulfil the community vision, and they are suitable to be a member of the cooperative.

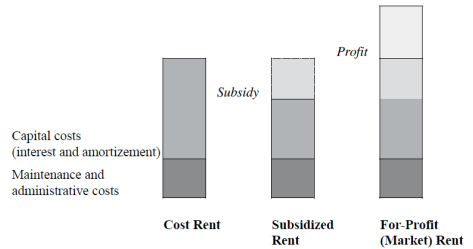


Figure: Composition of rent prices
Source: Urban Commons: Moving Beyond State and Market, 2015. Page, 185

The municipality and the cooperative delegate an architect who is originally a status holder to design the aimed project. The concept behind that is that the architect self has been through an integration process and he comprehends the users' needs and potentials.

The novel is based on research findings. However, the story is partly established on empathy because the main character has a similar situation as mine. The graphic novel will follow the integration journey of the main character, Ram, who recently arrived in Holland and obtained a residence permit. It will go along with the research chapters, by showing in each chapter the influence of those environments on the characters.



. Elsie: 24 years old
 . Dutch starter
 . Bachelor in social work
 . Employed in the Refugee Agency in the complex



. Ram: 25 years old
 . Syrian: status holder
 . Bachelor arts and sculpture
 . No job



. Almaz: 31 years old
 . Eritrean: status holder
 . Volunter in the residents administration commission
 . Part-time seller in the retail department



. Jan: 30 years old
 . Dutch starter
 . Master in Administration
 . Work full-time for the housing cooperative



Ram's dog

Illustration: Main character

01

Social integration of refugees

1. Refugees' social integration

According to the formerly stated problem of housing the low-income class, the housing shortage crisis and the refugee's advent to the Netherlands, the Dutch housing sector should fill those gaps. The refugees form a significant percentage of the low-income class and their integration and housing approach is questioned. (Czischke & Huisman, 2018, P.157-158).

Therefore, this chapter sheds the light on the refugee's coming to the Netherlands and the governmental housing approach. Also, it investigates the main integration domains for refugees. Finally, it examines the Dutch example of collaborative housing of refugees and locals. Those considerations shapes the response to the first sub-question **“1. How can housing and working influence refugees' cohabitation with the Dutch society? ”** To terminate the chapter with the graphic novel.

1.1 Refugees' arrival to the Netherlands

The Netherlands received in the last two decades a high percentage of asylum seekers. Between 1994 and 1997 peaked the number of refugees the 55000 people. The refugees in that period came mainly from Iraq, Afghanistan and Kosovo. It increased again between 2013 and 2016 to reach the 45000 refugees. (Vluchtelingen Werk Nederland, 2021)

Syrian refugees form the majority of asylum seekers in the last 10 years. The second large group of refugees currently applying for asylum in the Netherlands consists of Eritreans. Both groups are fleeing the military dictatorship in their country. In 2016 and begin of 2017, Syrians and Eritreans also formed the largest groups of refugees in Rotterdam. (IDEM Rotterdam, 2019. P.5) How many status holders are allotted to Rotterdam municipality? In total, 2,429 status holders were housed in Rotterdam in 2016 and the first half of 2017. 1,532 status holders have Syrian nationality. Furthermore, it concerns 244 Eritreans, 106 Ethiopians and 547 status holders with a different nationality. Besides 4000 stateless refugees who are also sheltered in Rotterdam. (IDEM Rotterdam, 2019. P.7) Accordingly, Rotterdam housed many refugees from different nationalities in the last 10 years. That goes parallel with the city inter-cultural identity. The city is a hyper-diverse city and has about 170 different nationalities. (IDEM Rotterdam, 2019. P.5-6)

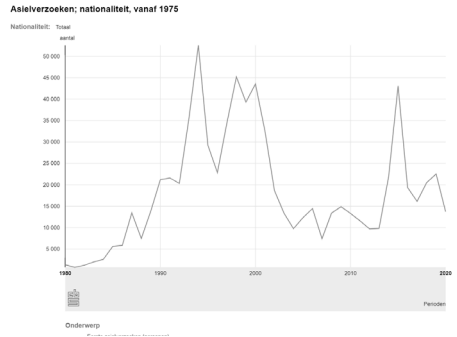


Figure: All nationalities asylum seekers in Holland between 1980-2020
Source: CBS, Centrale Bureau for Statics.

1.2 Current refugees' accommodation approach and its impacts on integration

But why are those numbers of refugees housed in Rotterdam municipality and what about other Dutch municipalities?

To answer that, it is vital to comprehend the asylum seekers' housing approach and how that influences their integration process in the new society. The asylum application procedure starts when the refugees arrived in the Netherlands. They apply for asylum permits and clarify the reason for their flights in the so-called hearing interviews with the immigration and Naturalization Agency (IND). (VluchtelingenWerk Nederland, 2022)

While they are waiting for IND endorsement about the asylum solicitation, they are usually allotted to 'AZC' asylum seekers centres. The responsible agency for refugees' reception in those centres is the 'COA'. During the waiting time for the residence permit, COA shelters adult newcomers and barely provides them knowledge about the culture and language, with a one-hour Dutch lesson a week. This waiting period in the AZC lasts between 3 months and 5 years. This time counts as wasted time in all refugees' life. Because they are isolated in AZC and know no manner to integrate into the new country. (Het leven in en rond een azc, 2019) That was what I experienced too. I was sheltered in the asylum centre for 6 months where I did not encounter any Dutch inhabitants and where I did not have any potential to learn the language. After acquiring the residence permit, refugees have the right for housing. They are

allotted to Dutch municipalities across the country by the COA. Every six months, the central government determines the number of status holders that each municipality must accommodate that depends on the municipalities' surplus venue. The COA role is to link refugees to municipalities. The municipality arranges social housing depending on the status holder's profile, i.e., the number of family members and health condition. (Huisvesting van statushouders, 2020)

However, that allocation approach is not based on the refugees' personal requirements for study or work. Rather, it is randomly established on the free room by municipalities. (Czischke & Huisman, 2018, P.157-158) The chosen dwellings for refugees are supplied by non-profit corporations who collaborate with the government. Those corporations possess the majority of the social housing premises in Holland. Recently, they intended to shelter people with low-income people who are facing difficulties in entering the private housing rental market. To shelter this class, they make use of waiting time which leads to an unacceptable waiting time of approximate 10 years in large cities. Refugees have direct access through the assigned municipality to those social housings. In 2015, the housing corporations formed an auxiliary plan for housing the huge refugee arrival. Therefore, the Dutch government made some relaxed rules in housing status holders. In response, Dutch government implemented financial measures and amended the legislation to enable refugees to be accommodated in shared housing and on temporary rental contracts,

1.3 Housing and work as fundamental domains of integration

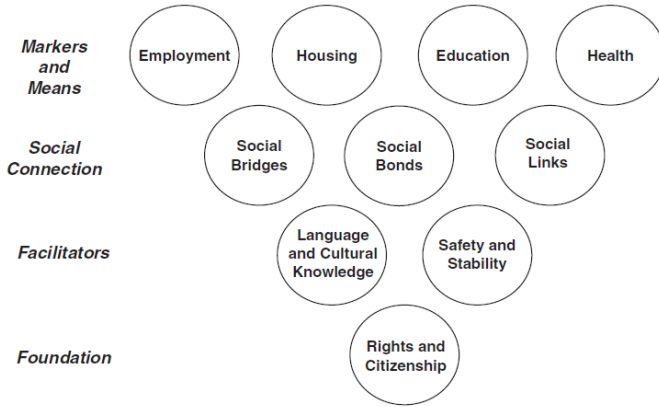
,as long as the refugees were re-assigned to an independent social housing with a permanent rent contract after a period of time. (Czischke & Huisman, 2018, P.157-158)

The social housing approach locks refugees in socially isolated dwellings in unprepared neighbourhoods for new-comers' social engagement.

Does housing influence refugees' integration and to what extent? what are the other domains that play vital role in refugees' integration?

Alastair Ager and Alison Strang investigated a conceptual framework of integration in 2008. They wrote about their finding in the article *Understanding integration: A conceptual framework*. They based their finding on four discrete elements: First of all, documentary and notional analysis; fieldwork in backdrops of refugee settlement. The secondary examination of cross-sectional survey data and verification. (Ager & Strang, 2008, P.170) Ager and Strang articulated the main domains of integration. They commenced with the integration's foundation which is rights and citizenship. The rights for refugees in human dignity, equality and freedom, independence, security, and justice. While citizenship is essential for integration. European countries have different approaches towards the nationhood of newcomers. For instance, in Germany, Citizenship depends on "ius sanguinis" (blood ties) rather than "ius soli" (birth in the country). Children born in Germany to immigrant parents are not instantaneously naturalized. Therefore, a high degree of cultural assimilation is commonly expected. That differs among European countries. The preceding research of Ager and Strang shows that to build a successful integration program, governments must explain policies on nationhood and citizenship, as well as the rights provided to refugees. Such concerns are critical to the normative framework that shapes refugee policy and how we define "successful results.

Conceptual Framework Defining Core Domains of Integration



Source: Understanding Integration: A Conceptual Framework (Ager & Strang, 2008, P.170)

Main Facilitators that ease the integration are language and cultural knowledge but also safety and stability. Language is the key to integration. In many European countries, language learning is about utilizing rough books. Whereas many refugees argued is more about communication with locals. Besides, the language teaching approach lacks cultural knowledge. For many people, personal safety was important. Refugees frequently stated that they could not feel integrated if they did not feel physically secure in a place. Often, acts of brutality or threats have shaped people’s overall opinions of a group. Stability is mainly clarified by the continuous stay and housing of refugees in one environment where they can build relationships with locals along the time. (Ager & Strang, 2008, P.176-179)

For instance, in Pollokshaws, Scotland, existing homeowners and refugees built social relationships, that connections had been ‘cut short’ when refugees had to moved away by municipality after just a short time. (Ager & Strang, 2008, P.180-184)

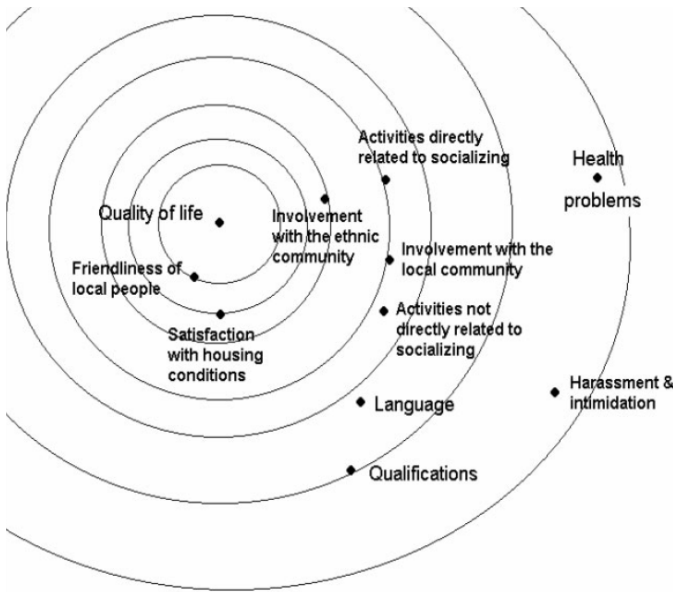
Social connection forms, according to (Czischke & Huisman, 2018), the main substantial domain of integration. This intangible area is the **absent link in obtaining a victorious integration** journey. (Czischke & Huisman, 2018, P.159). Those social connections are social bridges, links and bonds.

The social bridge is the connection with the host community. It refers to the social harmony between dissimilar ethnic groups and the magnitude of participation in the new society. Social bonds are refugees' engagement with a community from the same ethnic background or near family (bonding capital). They appreciated being close to family because it allowed them to share cultural traditions and retain established relationship patterns. They felt 'settled' partly because of this relationship. Social links indicate the connection between refugees and the state's structures, such as government services, are linked through social linkages. It also emphasizes the newcomers' ability to obtain government services. It was widely acknowledged that refugees' exceptional circumstances (lack of familiarity with their surroundings, inability to communicate in the local language, etc.) create barriers that require additional endeavour from both refugees and the wider community to achieve true equality of services' access. The following figure suggested the activity and involvement in the local society but also with the ethnic groups have the multi-dimensional influence of refugees integration. (Czischke & Huisman, 2018, P.177-181).

Ager and Strang articulate the markers and means of integration. Housing and employment compose as core means for integration, but why?

House environment has a well-documented impact on refugees' general physical and mental well-being, as well as their capacity to feel 'at home.' Local inhabitants and refugees both appreciated the continuity of ties associated with being 'settled' in a region over time. Because of the constant relocation of refugees, this system is frequently interrupted

An African women fled to Glasgow, UK
"Home is a place where to live and it is very different than house. In home, people find safety, stability and protection. Those are the main necessities for refugees" (Ager & Strang, 2008, P.172)



Relationship between Experiences and Activities of Refugees (referenced to Perceived Quality of Life)
 Source: Understanding Integration: A Conceptual Framework (Ager & Strang, 2008, P.179)

The most investigated area of integration is employment. Many relevant issues, such as promoting economic independence, future planning, encounters with members of the host society and providing opportunities to develop language skills, have consistently been identified as factors influenced by employment.

In comparison to other immigration groups, refugees are generally well educated. However, tribulations connected to the non-recognition of degrees and past work experience in the origin country stand as influential hindrances to work. Many refugees are unable to show validation of past capabilities, and even if they are able, firms may not accept them.

As a result, underemployment (defined as working in a low-paid job) is on the rise.

“Integration means work for refugees”
 A young African Rwandan women who fled to France (ECRE 1999, P.42).

Finally, Education and health consider also as vital means for integration, but housing and employment play further significant role. That is the reason of concentrating on housing and employment in this research, specifically the collective models.

Social cohabitation Reference project



Startblock, Amsterdam, Netherlands
2017
Source: www.startblokriekerhaven.nl

1.4 The Startblock as a successful or failed example?

The following opinion is based on an interview done with Carla Huisman who has been studying the Startblock for more than a year and a half and on her publication about the societal integration of refugees in this housing model. (Czischke & Huisman, 2018). The interview took place on 24, December 2021.

According to her close study of the tenants' experiences in the Startblock, she argued that this example was the first and most successful cohabitation example between status holders and locals in the Dutch context. She explained that also in her article *Integration through Collaborative Housing? Dutch Starters and Refugees Forming Self-Managing Communities in Amsterdam, 2018*. The Startblock includes 50% Dutch and 50% status holders. The uniqueness of this example is that it consists of different corridors which form different groups. Each group has its own two managers. However, the community is organized by itself with different commissions such as maintenance, administration and communication commission. Tenants mostly voluntarily do those tasks, but some tasks are done as parttime employment.

This interconnected organised structure aids the creation of a balanced community and helps refugees' integration process. (Czischke & Huisman, 2018).

Another reason for success is the large community. The Startblock supplies 463 bedsits and 48 shared apartments "The bigger the project is the richer pool of people you can choose from; This will ensure that residents will meet someone with same preferences" Carlo Huisman.

However, the Startblock Riekhaven is established as temporary housing for accommodating refugees who fled to Holland in 2015. It is designed from retrofitted container units that were originally used in a student complex in Houthaven, Amsterdam. The housing corporation the Key together with Amsterdam municipality initiated the notion of accommodating the coming refugees and solving Dutch students' issue of finding housing. They established Startblock Reikhaven in 2016 on the previous sport field.(Czischke & Huisman, 2018)



Carla Huisman

Carla is a sociologist, editor of *Rooilijn* and postdoctoral researcher at TU Delft, department MBE

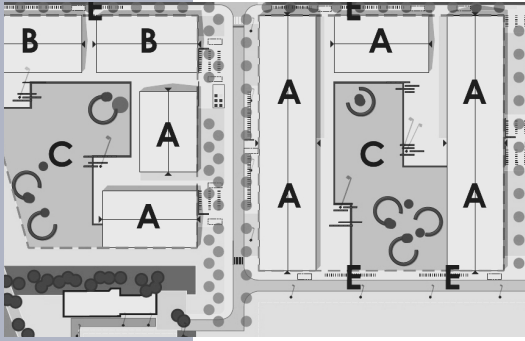
Carla Huisman is a sociologist and specializes in socio-spatial inequality. She conducts research into various issues, such as the growing uncertainty in living in the Netherlands and the influence of spatial distribution on the integration of refugees. Carla works as a postdoctoral researcher at TU Delft, Faculty of Architecture, Department of Management in the Built Environment, at the Co-Lab Research Hub.



Source: Facebook page of Startblok Reikhaven.
<https://www.facebook.com/startblok.riekerhaven>
 above: self-made swimming pool together, August 2020
 under: Syrian tenant is making Falafel "tradition Syrian dish" for his neighbours, Augusts 2020.

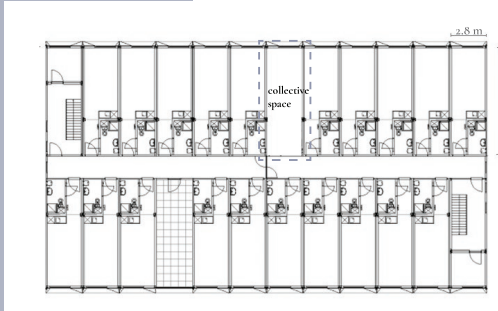
However, according to Carla and many tenants, I interviewed on 28-12-2021, the architectural layout was a hinder to successful integration. Mainly that occurs because of inadequate design for collective spaces. K.S a male Syrian tenant told me " I would rather have a bigger space to meet more people, I live in one corridor which consists of 20 tenants, and we only have a small collective room, I like the balance that ten of the group is Dutch and the other 10 is international, but that not enough, we need bigger space to gather. Usually, you see a small group of 5-6 people that can be welcomed in this small space and they are usually from the same ethnic background. But we do have a large communal space in the largest corridor where all tenants can meet". Many tenants see the spatial environment as a prison. Huisman siad" Too many contiguous units with a long narrow corridor. The adjacent walls are thoroughly closed which makes the spatial experience senses much further than a jail! Tenants feel disconnected from their neighbours"

The bright side is the tenants' willingness to do things together i.e., they organize workshops, festivals and meetings. The female J. Van. D, 25 years old, optimistically talked about the communal spaces " even though we have limited inner collective spaces to share but we do have the spacious previous sport field to utilize as outdoor collective space. We self-constructed a small swimming pool together in the former summer and we organize some workshops, playing time and testing other cultures' dishes"



Site:

Start block is consisted of 19 corridors



Floor plan
Each unit is 2.8* 8,5 m2. It has kitchenette and bathroom.

Each corridor has just one communal space, a taken out unite of the dwellings.
However, the complex has one big communal hall.

Source: StartboekRiekhaven.nl

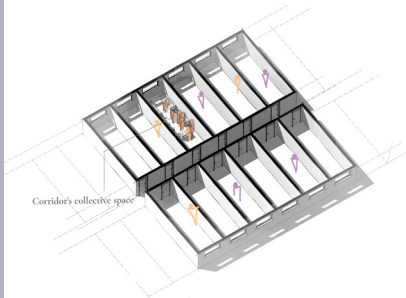


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22-12-2021

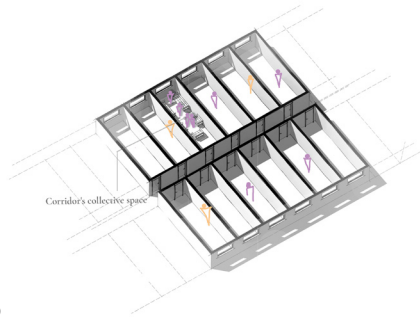


Source: Facebook page of Startblok Reikhaven.
<https://www.facebook.com/startblok.riekhaven>
right: activity in courtyard
left: communal space

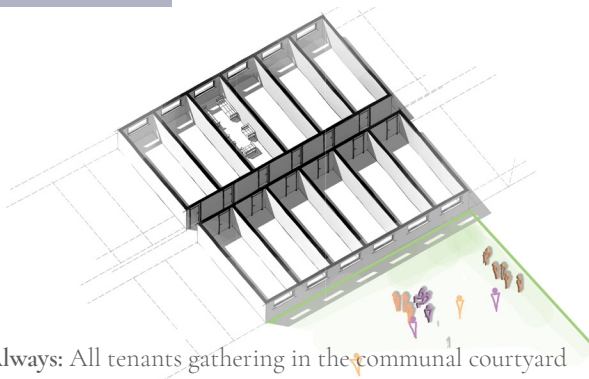
Communal spaces



Usually: Same ethnic background group



Sometimes: multicultural group gathering



Always: All tenants gathering in the communal courtyard

Source of the ethnographic study:
The use of the communal spaces analysis based on tenant's experiences.

Communal spaces
Ethnographic study

Legend

- Dutch
- newcomers

Because of the Startblock success, it has been mocked by numerous attempts in Holland. In 2018 The Place to be in Utrecht was constructed as a housing settlement for young Dutch and status holders by Mitros en Portaal housing corporation. (place2bu, 208AD). However, according to Huisman, this example does not deliver promising outcomes as the former example of Startblock Reikhaven because of the lack of organization. Also in Amsterdam, The Key housing corporation with Amsterdam municipality established another temporary Elzenhagen Startblock in Amsterdam North supplying 540 modular furnished units in 2019.

Ultimately, The Key corporation is now building a permanent Startblock in Wormerveerstraat, Amsterdam, it will be constructed by 2022 and it provides 48 single dwellings. This stands as the first permanent example of Startblock and it focuses on the proportion of 50% locals and %50newcomers. It bids spacious shared living room between all private cells (Weessies, 2020).



Collage: Evolution of the Startblock example in the last 6 years and how it ends with permanent housing model

Evolution of the Startblock

1.4.1 Literature says about the Startblock:

Reflecting on Ager and Strang's investigation of integration in 1.3, it can be noticed that the Startblock meets numerous social connections and bids two means of integration: housing and employment which is studied by (Czischke & Huisman, 2018).

Housing and employment as means for integration

The housing means is crystallized by providing affordable housing for refugee and Dutch starters in South Amsterdam. The contract is temporary for 10 years for young adults between 18-and 27. This housing settlement delivers residents a good kick-off. The employment means is established through various dimensions of work potential. The community is self-organized and requests input from all tenants. That input is deemed as work responsibility i.e, volunteer and paid part-time jobs. The essence of that is to stimulate tenants to self-organize their living environment. The settlement consists of 19 corridors. Each corridor has two managers, refugee and Dutch, who receive discounts on rent. Besides, there is a maintenance team of 5 tenants who also receive discounts. Another task is the project team of five tenants who work as paid part-time jobs. These small work potentials motivate the tenant to co-work and co-organize their community leading to a satisfactory functional community. (Czischke & Huisman, 2018. P.161).

Social Connection

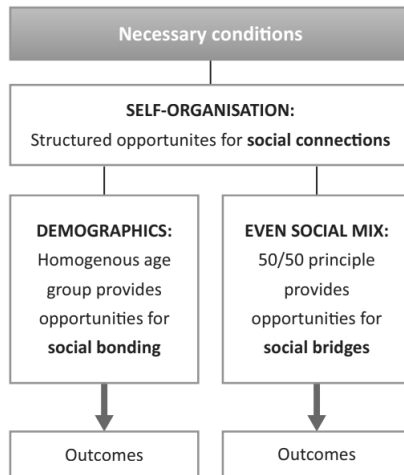
The precept of community formation is solidly embedded in the DNA of the settlement through frequent encounters between the residences. The social bridges, links and bonds are founded in the composition of the specifically chosen tenants.(Czischke & Huisman, 2018).

Social bridges are formed as a consequence of the 50/50 mix principle. The assumption clarifies that because of the even allocation of the studio as half of the refugees and half of Dutch, social bridges are established because of the intensive naturally happened social interaction. Bridging capital between newcomers and the host society. (See 1.3)

1.4.1 Literature says about the Startblok:

Social bonds are promoted through the demographic homogeneity between tenants who are from the same age and life stage. Both refugees and Dutch from various backgrounds have things in common according to their life phases. That motive the social bonds between the different groups but also between tenants from the same ethnic backgrounds.

Social links refer to the connection with the estate. The Startblok is situated in a well-linked spot by transportation. The presence of Vluctelingwerk Nederland agency assists newcomers in the integration journey. Furthermore, the daily encounter with locals helps refugees to form a better acquaintance with the culture and rules. (Czischke & Huisman, 2018. P.158-160).



Refugee integration in the Startblok model: analytical framework.

Source: Integration through Collaborative Housing? Dutch Starters and Refugees Forming Self-Managing Communities in Amsterdam, 2018, P.160.

1.5 sub conclusion

In this chapter, the literature shows that social connection to the host society plays a significant role in integration, similar to the social encounter that occurred in the work environment. These social interconnections bridge the link between the two groups, as analysed in the Startblock example. The cohabitation with locals builds social links, bonds and bridges between the two groups and eases the integration process. Therefore this research conducts a further investigation on collective housing and working in the next two chapters.

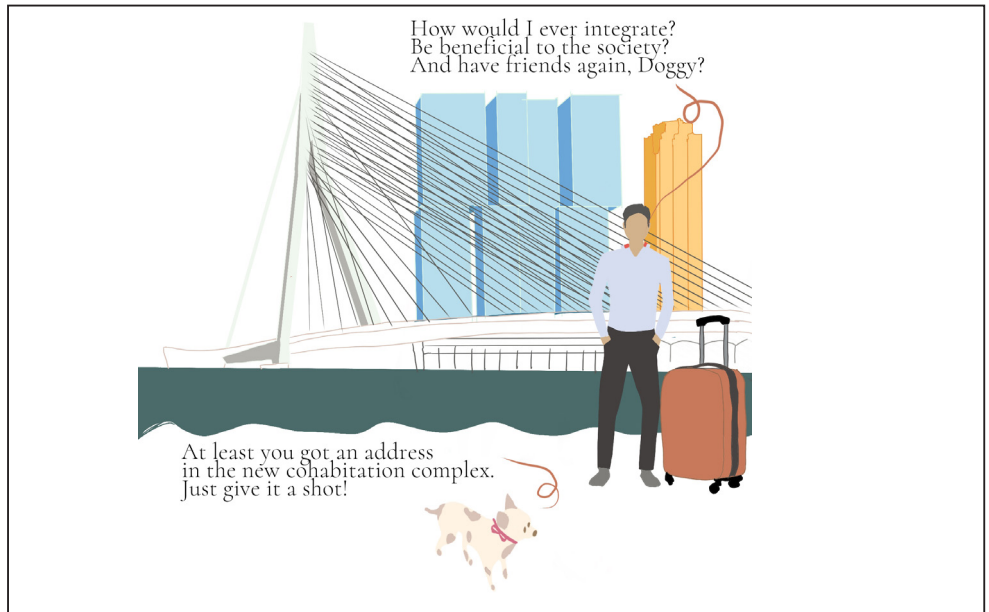
1.6 Graphic novel

Scene 1

According to the stated integration means in the first chapter, housing and employment, the perspective of the architect is to cohabitate locals and newcomers through collective living and working models. The architect himself was accommodated in an isolated social housing when he fled to Holland. Therefore, he believes that collectiveness smooth the integration process.

Ram obtains the residence permit and has right for shelter. The COA allocate him to Rotterdam municipality. After reviewing his profile as a young high qualified status-holder who wants to quickly integrate and be beneficial to society.

Ram's dilemma started after leaving the asylum seekers centre. How could he integrate? How will he ever feel at home again? How he will be beneficial for society again? He, as a newcomer, is very disappointed and does not feel optimistic at all about his new life. Ram has a dog, who presents his conscience and motivates him to socially integrate. Dog seems to be optimistic. He motivates him to go to his new address and give it a try. Because Ram got assigned to a co-housing project in Rotterdam which focus on newcomers' cohabitation with the new society. "That seems promising!!" Says Dog.



02

Coliving as a mainstream for social interaction

2. Co-living as a mainstream for social interaction

Co-living is a new form of cohousing that shed the light on the 21st issues regarding the lack of housing units especially in dense and overpopulated cities, such as Rotterdam. Moreover, it stresses the social issue of the nowadays fragile community that lacks a sense of belonging. Co-living is considered by many professionals in the urban and architectural sector as a remedy for the previously mentioned issues. (Cleaver & Frearson, 2021)

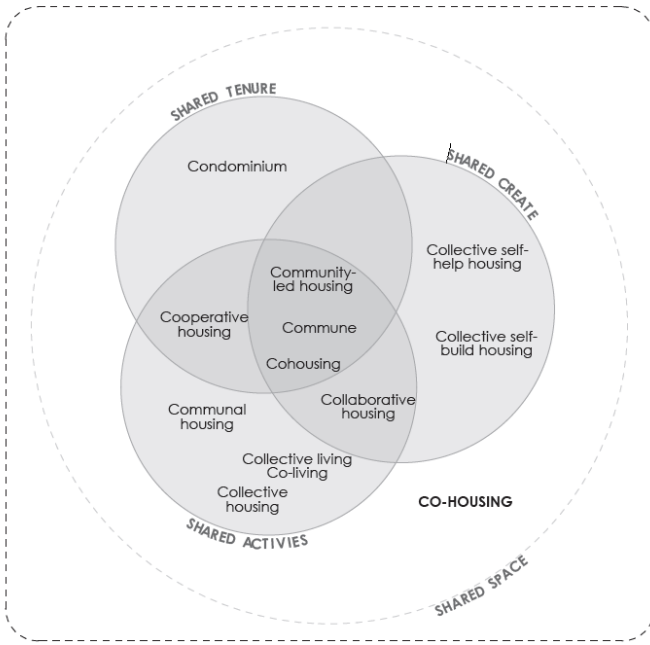
Co-living is an innovative housing approach that lacks to be studied further by scholarly research. This research suggests the necessity to study this model from distinct urban and architectural perspectives worldwide.

This chapter elaborates more on the coliving model. It concentrates on the history of cohousing and its category “coliving” and explores how and why this form became more vital recently. Then, the spatial and architectural tools of co-living will be studied. Thirdly, the socio impacts of this model are clarified. Lastly, it evaluates a Dutch example of cohousing “Centraal Wonen Tanthof”. To end up with tools that can conduct the design and with an answer to the second sub-question “. How can co-living be designed in a manner that increases social interactions between status-holders and Dutch starters?”

Coliving lexicon

Co-living is a category of co-housing. The co-housing initiative is based on collaborative creating and owning a residential space and on sharing some spaces. Whereas co-living is more about living together under one roof and sharing communal spaces, such as kitchen, living room, laundry, study, workspaces, and sometimes baths too. The only difference is that by co-housing the residents are usually the owner and creator of the place. Social wise, both focus on substantially engaging residents with the community in regular activities. (Babos et al., 2020, P. 4-14).

This research mainly focuses on co-living and its social impacts and spatial conditions. Co-living is a modern form of living where more than three biologically unrelated people live under the same roof with others who are like-minded and have the same goals and purposes in their current life stage. Where people have a minimum of private spaces, but a maximum of shared zones where they can execute daily routines. (Cleaver & Frearson, 2021, P. 8-10)



The co-housing sub-terms – social sharing-based categorization
 Source: Sharing-based cohousing categorization, 2020, P.16

	French	English	German	Dutch	Spanish
CO	<ul style="list-style-type: none"> Habitat groupé Habitat partagé Cohabitat Coopératives d'habitants Habitat communautaire 	<ul style="list-style-type: none"> Cohousing Housing co-op Intentional communities 	<ul style="list-style-type: none"> Wohngemeinschaft Genossenschaften Wohngruppe (für senioren) 	<ul style="list-style-type: none"> Samenhuizen (flamand) Woongroepen (voor ouderen) Collectief particulier opdrachtgeverschap Centraal wonen Zelfbeheer Bouwen in eigen beheer Kraken 	<ul style="list-style-type: none"> Viviendas cooperativas
AUTO	<ul style="list-style-type: none"> Habitat participatif Habitat autogéré Auto-promotion Auto-construction squat 	<ul style="list-style-type: none"> Self-help housing Self-managed housing squat 	<ul style="list-style-type: none"> Baugruppe Hausbesetzer 	<ul style="list-style-type: none"> Autogestionada Okupa 	
ECO	<ul style="list-style-type: none"> Ecohabitat Ecovillages Ecoquartiers 	<ul style="list-style-type: none"> Ecohabitat Eco-village Eco-district 	<ul style="list-style-type: none"> Ökodorf 	<ul style="list-style-type: none"> Eco-dorp 	<ul style="list-style-type: none"> Ecobarrio

Table. International terminology for cohousing
 Source:(Tummers, 2015)

2.1 The history of co-living

The Co-living movement existed through centuries in any historical constellation as a response to different motives. Those motives shaped a new iteration along the history was from either societal, economic, cultural, or technical impact of that epoch. In this paragraph, the main occasions of coliving through the history are discussed

Going back to the early commence of co-living BC, where nomadic ancestors lived and relied on each other in food production and protection, they always gathered as a community. (coliving.com, 2021) Then, the agricultural revolution around 10.000 BC gathered farmers in one settlement which was the first stone of sharing space, food and facilities together because these groups did not need to rely on each other for protection rather they stayed together willingly. (History.com Editors, 2021)

The medieval homes in Western Europe seem to have a shared living prototype according to the historian John Gillis. Societal and economic conditions were the reason for people to live together. Because they moved frequently, they did not have time or money to settle all services privately, therefore, they shared them. The 12th century was the initial notice of the monogamous couple in history. The difference with now, it was uncommon for couples to live alone usually they lived with family or friends. This was the situation till the industrial revolution in the 18th. Couples could afford home alone because of economic prosperity When the nuclear families are originated. (coliving.com, 2021)

After the industrial revolution in the 19th, there were endeavours for co-living again. The French theorist and philosopher Charles Fourier wrote publications about co-housing. His vision was about workers society who should work and live for themselves in their own land where they have private homes around communal shared space. This imagination was not realized until Jean Andre Baptiste Godin, an industrial leader and one of the Senate's members could implement this conception in Familistere in Guise, North France. Where he built massive multi-family dwellings and a manufactory. The workers owned and worked in the factory and maintained the communal spaces together. This specimen demonstrated a successful form of co-living. (Vestbro, 2008)

At the beginning of the 20th, life form was adapting. Families used to have a housemaid to take care of meals but that was not affordable for all social classes. Therefore, the concept of the Central Kitchen building spread widely in European capitals: Berlin, Vienna, Stockholm, Copenhagen, Zurich, Hamburg, London and Prague. The notion is that buildings must have a communal kitchen that residents can share, or where they can order meals from. The first accomplished settlement was built in Denmark, Copenhagen " Fick's collective", the building has the dumb-waiters system which allowed the food's tray to be transported from the central kitchen to the apartments. (Vestbro, 2000, P, 167-168)

Meanwhile, the Boarding House was very prevalent in the 20th because of the low rent expenditure. Residents have private rooms and share kitchens, baths and living rooms. This endeavour was because of the young adults who sought independence with a reasonable budget. (Vestbro, 2008)

Lastly, the cohousing initiative of the 1970th is the recent interpretation of collective living. It initially appeared in Denmark. They took the shape of multi family homes that surround a communal space. This Danish cohousing notion illustrated the modern cohousing movement in that stage. The uniqueness of this notion is that residents' willingness for living together. The cohousing vision is widespread in Europe in the 70th. (coliving.com, 2021)

The history of co-living in the Dutch context: Centraal Wonen

This movement was being followed in distinct European countries such as The Netherlands. In the late 60th, collaborative living groups created the so-called “Woongroepen”. It was followed by the commencement of the 70th, as a similar initiative of the Danish cohousing, by “Centraal Wonen” which implies cohousing in Dutch. (De Vietter & De Vletter, 2004)

The 60th was an epoch of conversion in Holland. Architectural wise, the normal form of family Dutch houses were viewed discontentedly by Dutch citizens. Dutch people craved another independent life form because of the change in family structure. (De Vletter, 2004) Family bonds were not essential anymore in comparison with bonds with a like-minded community. (Bakker, 2006)

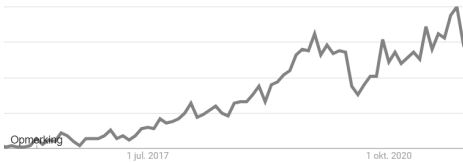
Many societal, political, environmental, and economic reasons shaped this dissatisfaction of Dutch citizens and let them seek another type of life. The prominent reasons were: Dutch people were looking to further democratic life and less hierarchy in their work but also in their homes, therefore they chose a life condition where they live with a community from the same life stage and where they have an equal say and share in space and decision. That is also applied to family bonds, developing affinities within a community or group became even more vital than relationships with family, specifically, by young adults. Furthermore, the upgrade of women rights on equality, labour, and the required life conditions where they could accomplish the household jobs but run work besides. Living in a community supplied them with a place where they shared domestic work. (Bakker, 2006).

Families saw disadvantages in the nuclear family vision, family group contain just the parents and children, because of the rare social interactions. Besides, the awareness about European consumerism and environmental concerns rose significantly in that period. Those societal, economic, political, and environmental concerns grew the necessity to adapt that independent life-form and transform it to a more shared life. The Centraal Wonen initiative was the answer in the 1970th (Bakker, 2006). This initiative was applied in different Dutch cities such as Zwolle, Rotterdam, Hilversum and Delft. The example of Centraal Wonen, delft, Tanthof will be analysed in the morphological analyses 2.5.1 in this chapter. (De Vietter & De Vletter, 2004)



Trouw newspaper article: the news about cohousing movement filled Dutch newspaper. This article demonstrates how the council committee planned to evolve the district Tanthof, Delft. They had a plan to build a cohousing settlement comparable to that in Hilversum. Therefore, they planned a visit to see how the cohousing settlement in Hilversum was functioning. Source: (Trouw, 1975)

To conclude what is learnt from the history review: the political, societal, and economic aspects have the say in the previous epochs to let co-living initiative be established. Likewise, in the 21st the environmental issue of nitrogen crisis, the urban densification needs, and the social humanitarian needs for being together, are now the departure points of the collective living notion's re-emergence.



The trend of using co-living term between 2011-2021 worldwide. The source is accessed in 22-12-2021
This term is used continually in the last six years.
Source: www.trends.google.com

In 2008 a banking crisis occurred which was followed by economic recession and the real estate bubble. That led to the emergence of the Occupy movement as a contrary movement to neoliberalism. This movement arose out of unhappiness with the inequality regarding the incomes and burdens' apportionment. Generation Z, the generation who becomes adult in the second decade of 21st century. Generation Z kept pressuring the housing market until these days. (Schmid et al., 2019, P.272-274) They seek independence within a city context in an affordable way and within a community where they can start the adulthood life-chapter. Therefore, the movement towards collective living for this young generation is based on the sense of belonging to a like-minded community. This model is usually associated with co-working spaces. Consequently, it is meant for single young professionals and creative workers (Schmid et al., 2019, P.272-274)

The model bids the minimum of private zone and provides the maximum of collective zones. Therefore, it is a method to just rent a small zone "the private room" and share the kitchen, living rooms, etc with others which makes it a very affordable manner of living. Besides its affordability and the formerly mentioned social reason, co-living is considered as an effective manner in living compact but still having access to all necessities by sharing them. Consequently, co-living is being disseminated faster in the 21st as a modern mode of living that is extracted from history (Babos et al., 2020).

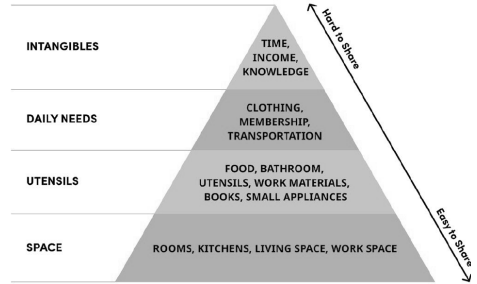
2.2 Co-living's spatial and programmatic design principles

The co-living model is spreading over the recent six years. It has managed to develop different spatial typologies that meet the social and economic principles of this initiative. Behind the coliving designs' principle stands a philosophy that centralizes the users' needs and requirements. Coliving design is usually perceived by its communal design and spirit. Because of its newness, this model explored innovative design principles but likewise is expecting challenges in the future. This paragraph will shed the light on most imperative spatial principle and design challenges. The architectural design principle will be reviewed in this research according to recent publications and studies.

2.2.1. Drive sharing to its limits

As discussed in 2.1, the two pillars of co-living are collectivity and sharing. Pushing residents to participate through design as much as possible is crucial. But realizing what can be shared and what cannot is further essential. (Co-living insights, 2021) Providing inhabitants with feasible shared options is vital. How far could sharing be pushed?

According to the sharing hierarchy, humans seem to easily share their basic amenities such as workspace, living room and kitchen. When it comes to more personal things, it can be clarified that it becomes harder to be shared such as bathrooms, books or bedrooms. Noticeable that the intangibles, time in particular, are problematic to be shared. Humans prefer to give more time for themselves. The design's role is to blend some daily basic actions such as laundry with collective space. In this example, tenants have the access to a private wash machine in a communal space. Consequently, residents still have to utilise the collective space, but they wash their clothes apart respecting their tendency of not sharing laundry and clothing with others. Thus, coliving design should contain collective space for only possible shared amenities such as kitchen, living room and workspace. Nevertheless, the spatial design should provide the hard shared utensils privately such as bathrooms. (Co-living insights, 2021, P.12-14)



The hierarchy of sharing
Source: Co-living insights, 2021, P.14. Credit: Art of Coliving

However, the international survey on coliving “One Shared Home 2030” which run across 144 different countries shows similar outcomes. This survey questioned 14000 individuals about their opinion on coliving and what they are willing to share. (Space10, 2018)

The majority tend to share services, utilities, kitchen, living room, study workspace.

The survey participants mostly prefer to have bathrooms and groceries privately.

Bedrooms are off-limits to be shared by all people.

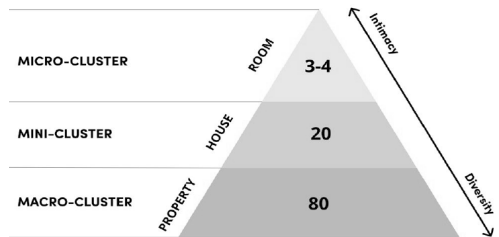
To live collectively it is essential to know the number of house-mates and the scope of the group a tenant will live in. Humans can build distinguishable relationship's sorts according to the community immensity they live or participate in. (Co-living insights, 2021, P.16-20)

Robin Dunbar, an anthropologist and evolutionary psychologist, investigated a model that illustrates the number of profound relationships and its limitation. Besides, the human ability to sustain such a relation within different group scopes. He distinguished between four sorts of relationships:

1. The family (5 connections): Humans with daily interactions. Deep relationship.
 2. The extended family (15 connections): Humans with trust and deep engagement in their personal life. Strong relationships.
 3. The Clan (50 connections): People form the personal living environment. They see each other often. They know each other mentality. Ordinary relationship.
 4. The extended network (150 connections): the person knows these people's interests and names, but they have a shallow connection. (Co-living insights, 2021, P.16-20)
- Dunbar argued that a profound connection can be created till 15 connections and this relationship would be substantial enough. However, connections with more than 50 show fragility and would not aid in building strong interaction .

The author of the book *Creating Cohousing* Charles Durrett suggested approximate 50 people in each collective cluster in order to increase the diversity but also have an accurate balance of connectivity. Creating intimacy among residents would be complicated with a cluster number of above 50 residents.

The determination of cluster size should be made according to the social aim and affordability of this design. If the design aims to create a giant community with a lot of connections the macro cluster (80 tenants) will function appropriately. If the goal is to build an intimate interaction between residents, then the microcluster (3-4 residents) is the best. Accordingly, the mini-cluster (20 tenants) works beneficially by sharing bigger scale communal spaces such as a study space. (Co-living insights, 2021, P.16-20)



Clusters size illustration according to number of residents
 Source: Co-living insights, 2021, P.19. Credit: Art of Coliving

2.2.3. Spatial design hierarchy

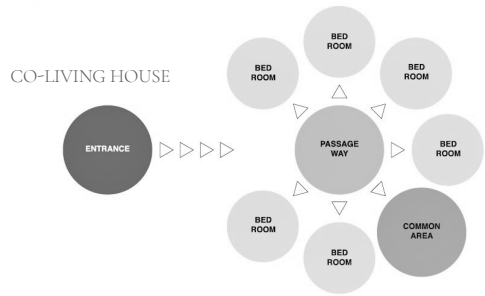
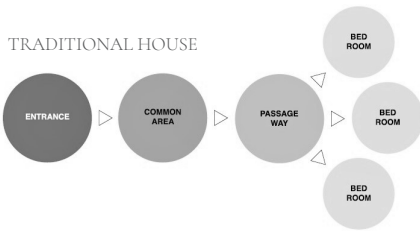
Nevertheless, a macro cluster can contain multiple mini and microclusters. For instance, a residential building that shelters 100 tenants in five stories. Each story has 20 residents. This example stands for an environment of a microcluster within a macro cluster where residents have the opportunity for strong and shallow connections to choose from. This is argued by Gui Perdrix, author, creator of the Art of Co and the Co-Liv the global organization of coliving professionals. He proposed a best intimate cluster is a range of 8-18 residents where people have the variety but also connectivity. It is an affordable and proper manner to share everything together. Contrastingly, sharing living spaces by larger clusters, more than 30, scatters the social connections. (Co-living insights, 2021, P.12-14)

Accordingly, the international survey on Shared Home 2030 ends with comparable results (Space10, 2018)

Many participants prefer to live in a small group between 4-12 person

In the coliving design, two elements play a vital role ‘access and privacy’. The building should have multiple access points connected to intermediate spaces to integrate hierarchy in the spatial transition: semi-public, semi-private and then private. The typical long hallways should be avoided instead, integrating spacious active intermediate space to increase the possible interaction in those spaces. Coliving and cohousing spatial design distinguishes from the conventional homes’ design.

In the illustration, in the traditional design, the order commences by the entrance, communal space, circulation (passage space) that lead to the private zone. However, that order modifies in cohousing design, it starts with an entrance leading to the passageway with a robust connection, mostly at the main axis, to the common area and then private zone. The common area is always embedded among private zone and with obvious access from the passageway. It can be concluded from the diagram the difference between the two designs is the common area location and dominance. In coliving design, the common area acts as a destination whereas in conventional design the common area acts as a transition between semi-public (entrance) and the private zones (bedrooms). (Co-living insights, 2021, P.22-28)



Spatial design hierarchy's difference between conventional home and cohousing
 Source: Co-living insights, 2021, P.25. Credit: Conner Moore

2.2.4. Design Challenges

Adaptable design challenge

Investments in a new residential model needs motives that encourage investors. The coliving is a relatively new design approach therefore investors needs proof of its viability. This affirmation needs time to be assured. This uncertainty should be solved by proposing another spare plan in case of the unsuccessful. Therefore, resilience and adaptability in the design are the keys. Floorplans of coliving should be designed resiliently that can be converted back to the traditional homes in any case. This method can secure investors to invest in this model until it proves its viability. (Co-living insights, 2021, P.28-31)

Privacy challenge

According to the One Shared Home 2030 survey, most people are concerned about privacy. Privacy is the major challenge of coliving design (Spacero, 2018). A layered privacy approach could help according to Common Design (Yoh, 2019). By distinguishing the intended privacy in each zone, as mentioned in 2.2.3, and differentiating that by space size, transition, and circulation, the privacy challenge might be solved. This is an influential issue that should be deeply investigated through the design stage.

Although this model lacks further studies, it seems to offer community-based design and it proves its affordability throughout history. But it still encountering issues such as privacy and adaptability that should be further explored. (Co-living insights, 2021)

2.3 Social engagement through coliving

Co-living crystallizes a balance between individuality alongside the community. It is a model that has existed around 2010 following its former collective model, the cohousing initiative of the 70th. This initiative is based on social motives. In contrast to the former nuclear family housing model (Schmid et al., 2019, P. 272-274).

Coliving residents' mentality:

Lifestyle modification and the necessities for independence in the 21st let humans strive for an affordable interconnected housing model. The formation of this model was a consequence of the young adult generation sought for independence within a like-minded community. Thus, it is an economic social-based initiative. For many young adults owning a fully furnished apartment with a kitchenette is a surplus. Besides, domestic work is seen as a supplement. Also, cooking is considered as a leisure activity. (Schmid et al., 2019, P. 195-199).

Coliving concentrates on sharing those tasks and it incorporates minimalistic private units interconnected with spacious adjacent shared spaces. This combination states tons of social encounters due to the time spent in the communal space such as a kitchen. (Schmid et al., 2019, P. 192-194).

Co-living is a convinced life-manner for singles and childless couples among workers and professionals who tend to socialize and to share. It encourages multicultural communities because of its openness to demographic diversity. (Space10, 2018)

A model based on social intentions:

Hence, urbanists claim the necessity for collectiveness rather than individuality. This is the retort for densification and social segregation that the nuclear family housing model left behind. Young adults of the working classes and professional endeavour collectiveness where they can share meals, costs, and thoughts. As a dynamic environment coliving is usually associated with co-working space which provides further social encounters. Social and ethnographic studies clarified the rise in solo-dwellers in the 21st because of the prosperity, those solos seek a balance between individuality and community's identity. Coliving strengthens individuality through community because of the specific community harmony of like-minded denizens. Residents can develop a broad range of interconnection because of the social interaction within the collective environment. (Schmid et al., 2019, P. 192-199). The social perspective behind the collectiveness in this model shows promising social-inclusive society and considered as a mainstream for social cohesion within intercultural community. (Cleaver & Frearson, 2021, P.50-54)

Communal spaces in the collective living model are becoming socialising and creativity hubs for international young workers and professionals. Residents come often from different backgrounds because what matters in entering a collective living community is based on the person's intention to be in a community that bids suitable milieu for culture and knowledge exchange. (Schmid et al., 2019, P.273)

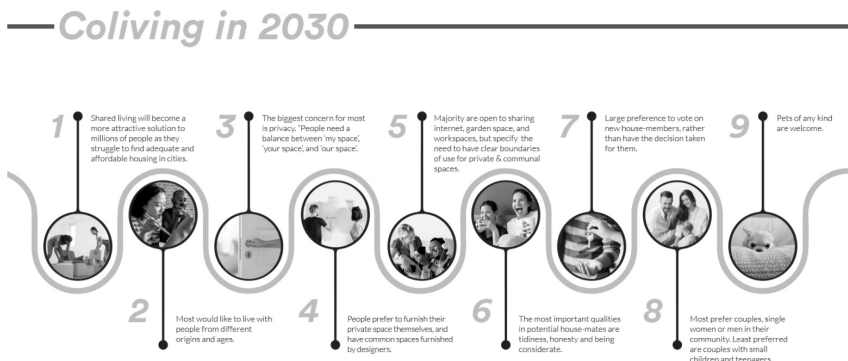
2.4 sub conclusion

To conclude, coliving is a living model that existed through history but in different approaches. The recent cohousing model has a lot of similarities with coliving. However, coliving focus more on social foundations and affordability by rising sharing level to its limit. Residents in cohousing usually co-own and co-create the settlement to enter whereas coliving is open for new neighbours with similar social intentions. It is deemed as a curative for the densification and living compact of the 21st.

It faces design and spatial challenges in this stage because of its newness, adaptable design could convince investors to implement this model further in the metropolitan tissue. (Coliving insights, 2021). The social intention is the core of this design

It faces design and spatial challenges in this stage because of its newness, adaptable design could convince investors to implement this model further in the metropolitan tissue. (Coliving insights, 2021). The social intention is the core of this design with a priority on communal spaces. It offers residents social interconnection and bids homes for similar like-minded communities.

Ultimately, the coliving model is being predicted to persist to disperse further because of its formerly noted economic and social values. (Schmid et al., 2019, P. 192-). Large cities will implement it further (Coliving insights, 2020)



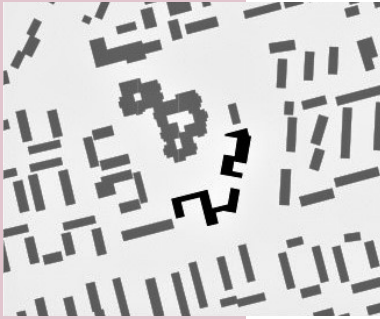
Coliving

2.5 case study morphological analysis



Tanthof, centraal Wonen, Delft, The Netherland
1981

© Flip Krabbendam



Tanthof Co-housing Settlement, Centraalwonen Delft

Location: Delft, Netherlands

Built year : 1981

Site area: 6875 m²

Height: 4 stories

Architect: Flip Krabbendam

Owner: Housing corporation “Duwo”

Amount of dwellings: 171 units, ordered into 13 residential groups and 4 clusters

This project is completely finished after approximately 10 years of preparation time. This project is designed with the future residents. It is realized in the social rental sector on behalf of the ‘Centraal Overleg Woningbouwverenigingen’ (COW).

It followed the design of Centraal Wonen in the Dutch context in the 70th. As other counterparts in Hilversum and Rotterdam. The design of those projects is structured in clusters. (Krabbendam, 2021)

The Tanthof Cohousing Settlement is a residential project consists of four clusters. It provides variety in shared space such as hobby rooms, meeting room, cafe and collective kitchen etc. The architectural perspective behind the design converges carefully on conveying private living spaces to collective zones where groups can collectively share facilities. The initiative aimed also to dissolve the isolation of families. The initiator, the housing cooperation and the architect, provide families with opportunity to occupy more than unite, but still share facilities with others. (Schmid et al., 2019.P.237)

Relevance

In the late 60th the perspective of Dutch citizens towards housing has changed radically. (De Vletter, 2004). The case of Tanthof Delft is an outstanding example. Therefore, this example is crucial to study in depth to understand the spatial structure and how that helps the social interaction between residents. Moreover, it is vital to acknowledge the operational structure and how that engages residents. Besides, it is a co-housing experiment that existed more than 30 years. Thus, it has obvious social outcomes of residents’ attitude.

Analytic criteria

Public
Collective
Private

Circulation
in relation
to shared
spaces

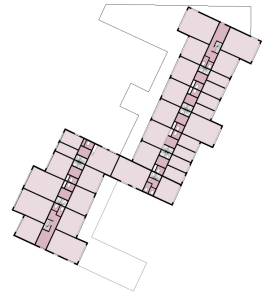
Communal
spaces

Dwelling
typology

Operational
structure

What to learn:
 The goal is to learn how that spatial structure is organized.

Analysis summary
 The spatial structure is arranged through different layers. Starting with public space accessible for the neighbourhood and then the collective spaces. Where shared spaces, staircases, wet cells, and other communal spaces are structured. Ending up with private unites.



Legend

- Public
- Collective
- Private

Analytic criteria

Public
Collective
Private

Circulation
in relation
to shared
spaces

Communal
spaces

Dwelling
typology

Operational
structure

What to learn:
 How the circulation is structured through different clusters ?

Analysis summary:
 The circulation is a linkage between the communal facilities with easy access from the entrances and the staircases to those collective spaces. Thus the circulation play a socio-connecting role.



⌚ Ground floor
 Drawn by author based on *Centraal Wonen and history of collective living Book*

Legend

- Public
- Collective
- Circulation

● ➔ Start route

Analytic criteria

Public
 Collective
 Private

Circulation
 in relation
 to shared
 spaces

Communal
 spaces

Dwelling
 typology

Operational
 structure

What to learn:
Which type of facilities can be shared?

Analysis summary:
The complex includes various social, labour and creative activities in the central area. Whereas all life-basics such as kitchen, laundry and bathes are widely embedded through floors. The total shared area is about a quarter from the whole site area, 1300 from 6700 m2. (Krabbendam, 2015)



Legend

- Hobby room
- Launderette
- Collective kitchen +dining and lounge
- Project rooms:
- Yoga, workshops, cafe, meeting rooms.

⌚ Ground floor
Drawn by author based on *Centraal Wonen and history of collective living Book*

Analytic criteria

Public
Collective
Private

Circulation
in relation
to shared
spaces

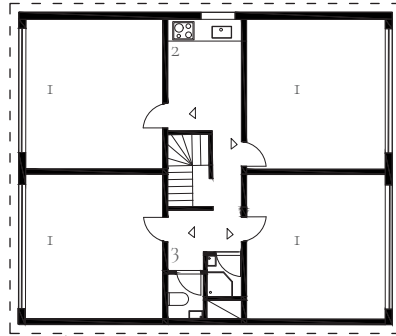
Communal
spaces

Dwelling
typology

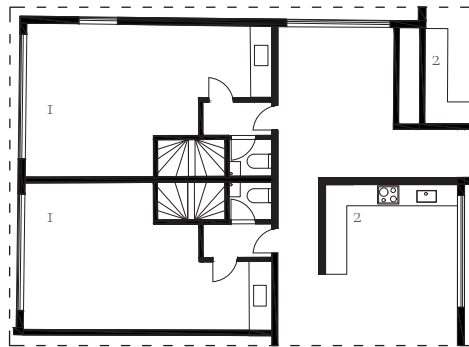
Operational
structure

Analysis summary

In all clusters, private rooms have been linked together through shared space. The area and the importance of this shared space distinguish according to the living facilities that are emended in private rooms. The typology 1, hosts all wet cells(toilet and bath rooms) and kitchen in the collective space because the private rooms does not have any of them. In the second typology, private rooms have the minimum of daily basics facilities, such as small kitchenettes whereas the specious and full kitchen is collectively shared.



⌚ Typology 1



⌚ Typology 2
 Drawn by author based on *Centraal Wonen*
 and *history of collective living Book*

Legend

- I Dwelling units (private rooms)
- 2 Shared kitchenette/ full kitchen
- 3 Shared (toilet, bath)

Analytic criteria

Public
Collective
Private

Circulation
in relation
to shared
spaces

Communal
spaces

Dwelling
typology

Operational
structure



Lounge area and discussion time
© Photographer: Erwin Mühlestein



Collective decision meeting
Source: Centraal Wonen website

Operational structure

It is a self-managed community by association between the cooperative and inhabitants. The operational structure gives opportunities to residents to be central in the manner in which the clusters operate. The residents are willing to participate. (Krabbendam, 2015)

There are commissions that organize the things in Tanthof. The commission focus and take care of 8 topics to handle: Money administration, new tenants administration, garden, Café, welcoming group, internet, trust commission and celebration commission.

Tenant are voluntary work as members in those commissions. Each year, there are two organisation meetings. (Centraal Wonen Tanthof, 2021)

Analytic criteria

Public
Collective
Private

Circulation
in relation
to shared
spaces

Communal
spaces

Dwelling
typology

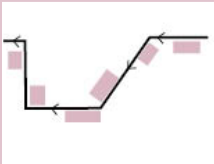
Operational
structure

Public

Collective

Private

The spatial structure is design through heirarchy, starting from public then collective and ending by private spaces.



The circulation is considered as a linkage between all collective space to increase social cohesion. It is also used as organization points.



The design offers tenants with variety of collective work, hobby and everyday-actions facilities. That minimize the individually needed for those facilities.



Dwelling typologies give residents privacy by including private room for each resident with a balance to the shared spaces.



The cooperation allows tenants to vote and to decide together.

Conclusions of the morphological analysis of Centraal Wonen, Tanthof



Organization method in the community

The picture is taken beside the communal living space along the circulation space
 © Basma Shahoud
 22-12-2021

Organization through circulation space

They manage and organize all domestic work on Sunday because all of them are free from work or study. They use a board on the circulation space to communicate.



Covered window of the collective kitchen

© Basma Shahoud
 22-12-2021

Privacy

The architect wanted to bind the collective kitchenette of the Unites behind with the circulation space. However, users had another opinion they covered the window. Because the four tenants missed a privacy buffer between the collective kitchenette circulation space, of the whole cluster.

On site observation



1. Shared kitchenette on the first floor is turned into main kitchen
© Basma Shahoud, 22-12-2021



2. Collective kitchen

Tanthof, Delft, NL
© Basma Shahoud, 22-12-2021

Too many collective kitchens

The settlement is provided by 13 collective kitchen and a lot of small kitchenette for each 4 unites on the first floor.

Creating so much quantity of kitchenette let the first floors' tenants do not use the collective kitchen of the Ground-floor, rather they use the small kitchenette as a main kitchenette.

In the interview with the architect Krabbendam, who lives on the first floor since the settlement is built, he mentioned that he does not use the collective kitchen on the ground floor anymore “ *when I moved to live here, in 90th, I used to use the collective kitchen on the ground floor with the former neighbours. Nowadays, new neighbours come from different age and interests. Besides, going downstairs for cooking is not easy anymore, so I think using a close kitchen is more efficient, so I turned the tiny kitchenette beside my room to a permanent kitchen by purchasing a small oven* ” Krabbendam in the interview of 03-01-2022.

Ethnographic analysis
Interviews and observation

The affirmation of collective space

I asked Krabbendam about what he would do if he could redesign the Tanthof settlement “*I would emphasis more on the communal space to make sure that pedestrians on street can notice the uniqueness of those space in comparison to the private dwellings.*” Flip Krabbendam.

He recommended the affirmation of collective space in the facade layout. Collective space should have another outstanding design to let visitors notice their uniqueness.



Tanthof, Delft, NL
Ordinary hidden facade layout of the communal spaces
© Basma Shahoud
22-12-2021

On site observation

1. Ethnographic investigations on the residents' frequent use of communal spaces and its impact on social interactions

The aim is to understand the residents' frequent use of shared spaces. In order to acknowledge the density of social interactions that are been created in that space which helps the community formation. Accordingly, this investigation helps in choosing suitable shared spaces to include them in the design.

Results

Too much collective space that are spreading over the clusters which leads to small groups formation, hence, it boosts the social interactions. That highly depend on the neighbours character in each cluster. In general, as Krabbendam mentioned, there is homogeneous relationships between all resident except one women, 43 years old, that lives on Ground floor. She mentioned "I do have my kitchenette and I do not come across anybody, I just use my front door which is adjacent to the street, so why I would make connection?":

Krabbendam "The design offer her all facilities individually within her unite which leads to less interconnection beside her antisocial attitude"

2. Residents' interviews, main questions:

- Why did you choose to live collectively?
- How do you evaluate the co-living experiences? Positively or negatively and why?
- How much time a day do you spent in the shared spaces? Do you use them by necessity or by willingness?
- Do you build friendship through shared facilities? How?
- Do you enjoy the social side of shared spaces? Why?

3. Interview with architect Flip Krabbendam

In 03-01-2022.



Tanthof, Delft, Netherlands

The frontdoor of private unite linked to the street creating individual circulation instead of collective one.

@ Basma Shahoud

22-12-2021



Philip Krabbendam is the designer of Centraal Wonen Tanthof, Delft. He is a number of residential communities and, as a member of the editorial board of 'Gewoon Anders', is involved in the National Association of Central Living. He designed Central Living Tanthof, delft In 2011, he obtained his doctorate at TU Delft for his research into qualities in the built environment that invite involvement

2.6 Learned architectural design toolkits and recommendations

Design toolkits derived from theory in chapter 2:

- Recommended cluster size 8-18 tenants. The small clusters can be embedded in macro cluster of 80 people.
- Main easily shared spaces are kitchens, living rooms, work and study space.
- Spatial structure starts with semi-public to semi-private (circulation space) that should be strongly interconnected with communal spaces then leading to private spaces.
- Adaptable design approach is recommended to convince operators and investors.
- A layered privacy design and a balance between collective and private is also recommended.
- Circulation plays socio-connector role.

2.7 Graphic novel

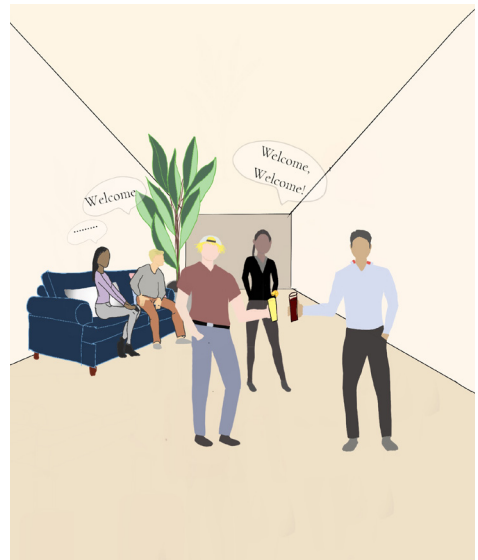
Scene 2

When Ram arrived at the settlement, a residence and the cooperative contact person guided him. Jan: a Dutch stater who works a full-time job by the cooperative, he aids new residents to settle down and arranges voting meetings to choose collectively new residents. He lives in the settlement because he owns a share in the cooperative and believes in the power of collectiveness.



Scene 3

The cooperative allocates a contact person who solve issues in the community as Jan. The community is self-organized and operates with diverse voluntary commissions composed of residents. For instance, the reparation commission is responsible for arranging reparation for all broken amenities. The welcoming commission holds meetings among residents to vote on the new-coming residents and they guide the new tenants. Almaz works voluntary by the resident's administration and arranged with the welcoming commission an event to welcome Ram. That happened in the lounge area provided by the design.



Scene 4

The architect's design approach is to provide residents with private bedrooms and bathrooms. Other daily routines are collectively shared, i.e. kitchen, living rooms, laundry, working and reading.

The tenor behind that is socially: to create a milieu for social interaction within all necessary amenities so that all residents utilize it and socialize. Economically, the cooperative will calculate the rent cost per usable area metre per person. The private zone plus the proportion of the shared spaces that are usable by this private unit costs are calculated. In this manner, tenants pay less rent cost because they share the collective spaces' cost. (Genossenschaft Kalkbreite, 2018)

However, Ram was sitting alone in his private room and closed himself off. Dog recommended him to go and have a look. Ram is hungry so he went to the collective kitchen to cook. He saw there Jan. He was eating with his girlfriend Almaz. Almaz is an Eritrean status holder and works as a seller in the retail department of the settlement. They invited him to eat together. Ram told them about his study and passion for the arts and sculpture. When Jan informed him about the Co-atelier in the settlement.

This was Ram's first social interaction in the community. It occurred in a collective milieu spontaneously.



03

Co- working as a community creator and creativity exchanger

3. Co-working as a community creator and creativity exchanger

To engage the intended target group of status holders and Dutch starters further in the community and to assemble a community that benefits from all residents' capabilities, the co-working model can be embedded in Rotterdam's metropolitan context.

This is investigated in this chapter. This chapter concentrates on the co-working model. It starts with the urban initiatives of the 21st, mainly the productive city and the shift towards shared working space. Then it studies the spatial toolkits of co-working design and its relation to housing. After that, this chapter focusses on the social value of the co-working phenomenon. Lastly, analyses of a case studies that combine the shelter-labour gene in its spatial design. The purpose of this chapter is to identify an answer for the third sub-question " How can co-working be spatially articulated in relation to the housing environment and which social impacts does it have on community formation? "

Co-working: lexicon

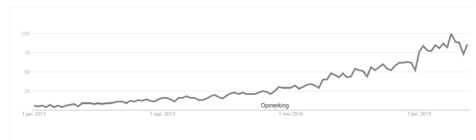
A co-working space is a place where more than three companies or individuals share that place entirely or partially. Co-working space is usually being rented to those companies by an external landlord or by an external cooperative. However, the participants can also cooperatively possess the place and co-work there. (Clever & Frearson, 2021, P.8)

3.1 The productive city and the new shift towards co-working

In the post-industrial era, factories and production functions were extracted out of cities. By necessity, urbanists add wisely some leisure, essential facilities and some public amenities such as restaurants or some offices. But the real production for non-professional workers has left the city and settled in its periphery. The new urban strategy after the industrial revolution has systematically excluded the program of production out of cities. The new metropolitan city is not considered an integral city anymore. Nowadays, urbanists notice the exclusion of labour possibilities for low-skilled workers who live in the metropolitan context. Besides, during the industrial revolution, the cities' urban planing focused on implementing housing, mainly the nuclear family typology. That led to further social segregation. Recently, those social and urban warnings are noticed by urbanists. Therefore, European cities argued on the new urbanistic approach "the productive city" which encourages the re-emergence of co-production again in cities. That does not include heavy production, but the small-scale factories are welcome again in the urban tissue. (The Scientific Council of European, 2017)

Introducing the co-production and co-working again in the city will lead to a sustainable context in which further possibilities for recycling, co-production, proximity to labour, and social interaction are substantially included.

Meanwhile, the sharing model spreads worldwide. Co-living, co-production and co-working are the contemporary urban approaches to confront gentrification and incorporate shelter-labour in a harmonious context in order to limit social segregation. Urbanists are welcoming co-working in dense cities to enhance the spatial compact working environment and to offer extra labour opportunities. There is a noticeable shift towards "Co" approaches. (Cleaver & Frearson, 2021, P.137-139)



The trend of using co-working term between 2011-2020 worldwide. The source is accessed in 22-12-2021. This term is used increasingly in the last eight years. Source: www.trends.google.com

3.2 the spatial relationship between labour and shelter

The re-introduction of work functions again to the current cities face, leads the urban design to welcome the mixed-use development again in the cities. A mixed-use project is defined by the Urban Land Institute (1987) as a cohesive plan with three or even more functionally and physically combined revenue-producing uses. (Hoppenbrouwer & Louw, 2005, P.970)

This development has been investigated well in the urbanism's practical sector whereas few have studied it deeply in the theoretical terms. Jan Jacobs discussed it theoretically in his book *The Death and Life of Great American Cities in 1961*. Jacobs argued that consolidating various uses in an urban mixed-use grain forms vibrant districts where all life-basics are situated in one grain. The main functions stand for employment, housing, recreation and transport. (Hoppenbrouwer & Louw, 2005, P.970).

This paragraph will shed the light on the housing and working uses in a metropolitan context. But what are the strategies to mix those uses? Alan Rowley demonstrated a conceptual model of mixed land use in his article "*Mixed-use Development: Ambiguous concept, simplistic analysis and wishful thinking?*" (Rowley, 1996, P. 85-97). Rowley linked those models to spatial scales: the scale of a building, block, district or the scale of a city. Rowley only focused on three-dimension whereas Hoppenbrouwer & Louw investigated a fourth dimension in *Mixed-use development: Theory and practice in Amsterdam's Eastern Docklands 2005*. The conceptual model of mixed land-use distinguishes between four dimensions of mixing land according to the formerly mentioned

spatial scales. (See figure).

Shared premises as a first dimension refers to multipurpose use at a specific location which is the scale of a building, such as premises in a building or apartment that are only utilized by one family. People are increasingly working from home which can be understood as a more private and informal approach of combining residence and working in a specific environment, home-working is considered as a perfect example.

The horizontal dimension refers to the scale of blocks, district and city. Where various blocks occupy different uses. The mix-uses are connected on the flat surface of those blocks. i.e., the first block holds housing, the second working and the last contains housing use again.

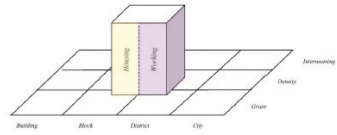
The vertical dimension refers to the scale of a block and building. Land uses are frequently vertically combined by clustering two or more functions over each other, with homes above stores being a well-known example. Because the ground surface is being utilized for more than one function, this layered use of land is commonly referred to as a hybrid development. (Hoppenbrouwer & Louw, 2005. P. 972-974)

The fourth dimension is the time dimension which is only studied by (Hoppenbrouwer & Louw, 2005). The authors saw the importance of including this dimension in Rowley's dimensions. The interweaving of land uses, or the extent to which urban services are spread within a confined region is a component of settlement texture that should be included. The scenario of a grocery shop that is divided

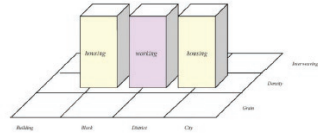
into four single units which are dispersed over a large region is a suitable illustration. Even though the four units all belong to the same type of land, the interweaving of functions in the territory grows as the number of territories grows but the type of activities remains the same which is the grocery function. (Hoppenbrouwer & Louw, 2005. P. 972-974).

Ultimately, the predilection for one dimension is mainly based on the targeted spatial scale of the mixed-use land. This means, for instance, if the wished effectiveness radius of mixed-use development is a city, then the horizontal dimension will function perfectly. Sometimes, more than one typologies are integrated together. (Hoppenbrouwer & Louw, 2005 .P. 974).

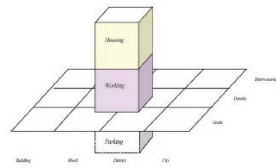
I. Shared premises dimension (point)



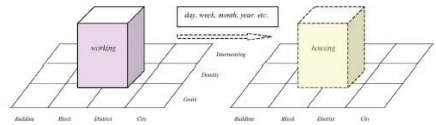
II. Horizontal dimension



III. Vertical dimension



IV. Time dimension



A conceptual model of mixed land use for four dimensions.

Source: Mixed-use development: Theory and practice in Amsterdam's Eastern Docklands(Hoppenbrouwer & Louw, 2005, P.973). It is based on Mixed uses and urban design (Roberts, M. & Lloyd-Jones, T. 1997)

It is coloured by author

3.3 Social engagement through collective working spaces

How does co-working environment cause social interactions? How does a co-working space lead to collaboration and knowledge exchange?

Those questions will be investigated through the study of “ Spatial Configuration and Users’ Behavior in Co-working Spaces” (Ondia et al., 2018). The proxemics is studied in two co-working spaces. The investigated co-working spaces are located in Chiang Mai, Thailand including Punspace Nimman and Punspace Tha Phae Gate.

The community is comprised of start-ups in the different tech industries. However, this research will focus on the results gained from the proxemics study in those co-working spaces. The ethnography techniques of the proxemics study concentrate on the focus, collaboration, socialise and learn fields.

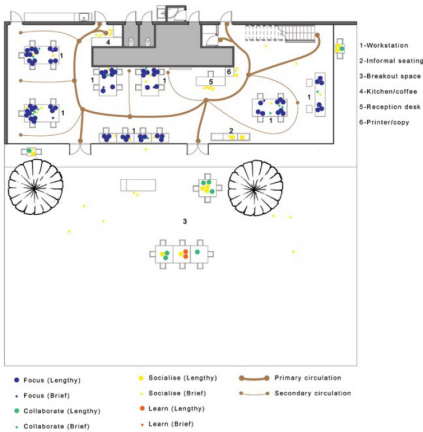


Figure 1. Behavioral map of users' activities at Punspace Nimman.



Figure 2. Behavioral map of users' activities at Punspace Tha Phae Gate

Behavior setting	Activities							
	Focus		Collaborate		Socialise		Learn	
	Frequency of activity	%	Frequency of activity	%	Frequency of activity	%	Frequency of activity	%
Workstation	74	100	12	60	14	25.5	-	-
Informal seating	-	-	-	3	5.5	-	-	-
Breakout space	-	-	8	40	17	30.9	2	-
Kitchen/coffee	-	-	-	7	12.7	-	-	-
Reception desk	-	-	-	7	12.7	-	-	-
Circulation routes.	-	-	-	2	3.6	-	-	-
Printer/copy	-	-	-	5	9.1	-	-	-
Total	74	100	20	100	55	100	2	100

Table 1. Frequency of users' activities in various behavior settings at Punspace Nimman

Behavior setting	Activities							
	Focus		Collaborate		Socialise		Learn	
	Frequency of activity	%	Frequency of activity	%	Frequency of activity	%	Frequency of activity	%
Workstation	108	99	18	69.2	17	18.7	-	-
Informal seating	-	-	-	17	18.7	-	-	-
Breakout space	1	1	8	30.8	8	8.8	2	100
Kitchen/coffee	-	-	-	12	13.2	-	-	-
Reception desk	-	-	-	12	13.2	-	-	-
Circulation routes.	-	-	-	19	20.8	-	-	-
Printer/copy	-	-	-	6	6.6	-	-	-
Total	109	100	26	100	91	100	2	100

Table 2. Frequency of users' activities in various behavior settings at Punspace Tha Phae Gate

Source: Spatial Configuration and Users' Behaviour in Co-working Spaces 2018

According to the shown proxemics study in the previously mentioned examples, breakout rooms in the first example of Punspace Nimman and the informal seat area in the second example carries a noticeable percentage of socializing behaviour. The difference in the socialising percentage between the two examples referred to the spatial arrangement. The size of the breakout space in the first example contributes to further social interactions. In the second example, breakout rooms are restricted in size which impeded the social interactions. On the other hand, in the second example, high social interaction proportion occurred in the informal seating venue beside the main circulation route. This can be concluded because of the provided amenities and its close orientation to the main entrance.

Although workstations carried significant social interaction in both examples, that does not occur in an extended period because of the need for high concentration in the workplaces. Namely, extensive interconnections for an adequate time are carried in breakout and informal seating spaces. (Ondia et al., 2018).

Users' collaboration has similar outcomes as the socialize percentage. The main productive collaboration occurred in workstations and breakouts. Employees of the two examples agreed on the productive information exchange in the co-working space and its amenities. Some users learn new knowledge about other labour sectors while they are using breakout rooms. They believe in the high knowledge exchange in coworking spaces. (Ondia et al., 2018).

What can be concluded from this proxemics study, co-working space highly promotes social interconnection between diverse professional backgrounds by providing a spacious venue for social interaction, collaboration and knowledge exchange.

Regarding the architecture role, attention should be paid to the size and the spatial structure in which spaces are organized. It is important to provide workers with spacious workplaces to encourage interactions. Also, break spaces and informal seating should be connected to circulation and well-furnished to allow big groups to gather and interact.

3.4 sub conclusion

According to what is investigated in the former chapter, it can be concluded that the metropolitan context needs to re-welcome the production and work potential again in its tissue. That is the new call for many European cities which is called the productive city. However, the mixed land needs to be further investigated theoretically as (Hoppenbrouwer & Louw, 2005) claimed. Although the theoretical investigation is lacking, practical wise there are numerous approaches to mixing lands. That is what Rowley, Hoppenbrouwer and Low attempted to clarify. There are four dimensions, and they differ according to the desired target area. Finally, introducing work possibilities to the current cities faces is becoming common. Consequently, collective workstations is being utilized and widespread in the last 10 years. Collective working spaces have numerous advantages discussed in 3.3 but the main stress is the social connection and knowledge exchange.

3.5 Work-shelter case study morphological analysis



Kalkbreite, Zurich, Switzerland
2014

© Martin Stollenwerk



Kalkbreite

Location: Zurich, Switzerland

Built year : 2014

Site area: 22900 m²

Height: 9 stories

Architect: Müller Sigrist Architekten

Owner: Kalkbreite housing co-operative

Amount of dwellings: 88 flats+ commercial and services

Cinema at the ground floor level open for the neighbourhood. It is designed with height of two floors and adjacent to the main street



© Martin Stollenwerk



Housing with relation to the courtyard

offices

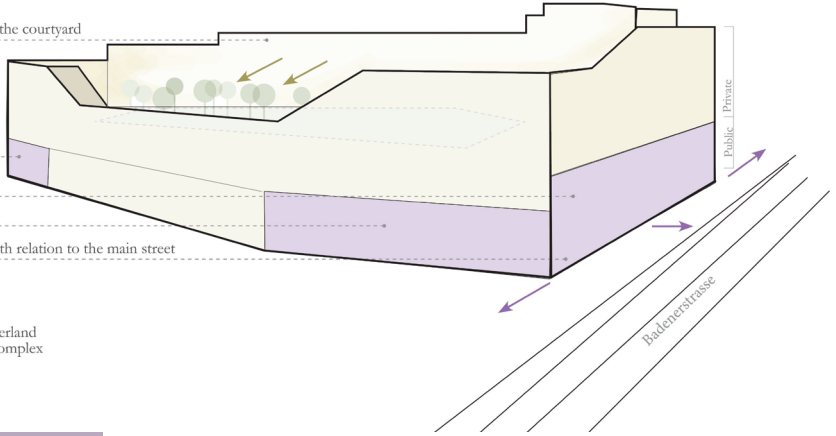
Mostly health care

Mostly offices and studio

Retail and commercial with relation to the main street

□ Housing
□ Working

Kalkbreite, Zurich, Switzerland
Residential commercial complex



Kalkbreite, Zurich, Switzerland, 2014

Residential commercial complex which links the site again to the city by providing vigorous commercial plinth and by adding public green courtyard. It follows the vertical dimension (see 3.2).

Analytic criteria

Housing
Working
relation

Public
Collective
Private

Communal
spaces

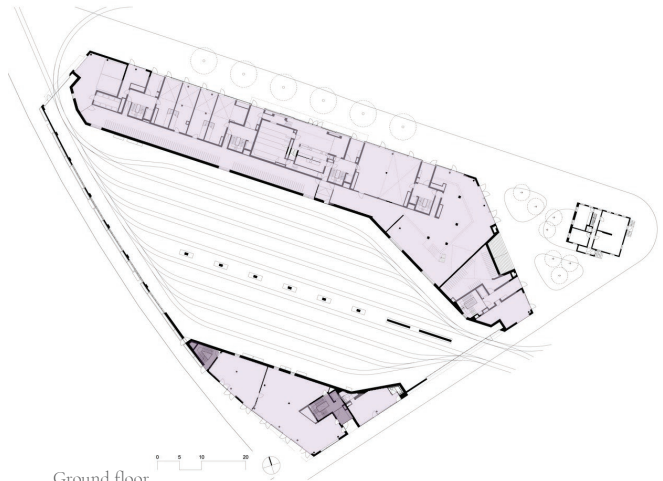
The complex start with open plinth to the public where it is occupied by various stores, shops, cafe and cinema. It offers the neighbourhood with important premises such as the health clinics and day care on the first floor.

Conclusion:

On the ground floor level and the first two level it supplies the area with a lot of accessible facilities to the public and then it gradually starts to contain more collective spaces for residents where the residential apartments are situated

Legend

- Public
- Collective



Ground floor
Source: A history of collective living, (Schmid et al., 2019). P.261



Second floor
Source: A history of collective living, (Schmid et al., 2019). P.261

Analytic criteria

Housing
Working
relation

Public
Collective
Private

Communal
spaces



Third floor
 Source: A history of collective living, (Schmid et al., 2019), P.261

Legend

- Public
- Collective

Analytic criteria

Housing
 Working
 relation

Public
 Collective
 Private

Communal
 spaces

Collective space in the residential floors.

Each residential floor has different communal spaces and premises. That provides large diversity for tenants.

Third floor
Source: A history of collective living, (Schmid et al., 2019). P.261

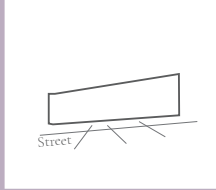


Analytic criteria

Housing
Working
relation

Public
Collective
Private

Communal
spaces



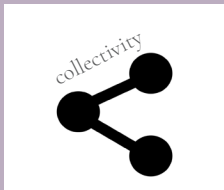
Open public plinth to the city as a welcoming gesture that re-invigorates the site.



Using the vertical approach to blend working and housing



Start from Public function, then collective blended afterwards with private spaces.



Balanced shared space.
Introducing the balance of sufficient shared space instead of surplus spaces.

Learnt conclusion from the Kalkbriete morphological analysis

3.6 Learned architectural design toolkits and recommendations

Implementing collective workstations is essential to assemble more robust social connections.

However, that can be mixed accordingly with housing development. For the scale of building and block, similar to the situation of Walenburghof planning, the vertical dimension works well similar to Kalkbreite example. To establish functional social interconnection between employees, the research reveals it is mainly occurred in breakout space that are linked to the workstation. To boost socialize activity it is fundamental to introduce those spaces in a balanced relationship to bureau space where the employee only focus on their work.

3.7 Graphic novel

Scene 5

Jan told Ram the opportunity to rent a diminutive zone in the atelier space and produce artworks that can be sold. Ram found that an appealing productive notion. However, Ram has the priority to rent in the co-working spaces because he is a resident in the cooperative. The rent contract might last from one to ten years, with an opportunity for an extension. (Genossenschaft Kalkbreite, 2018)



Scene 6

The architect provides the settlement with diverse co-working spaces that are meant mostly for tenants and they have the priority in leasing them. The co-working space distinguishes between production spaces e.g. clothing workshops and co-offices. The architect supplied the design with different work potentials so that each tenant can be productive. There is also a small department for Vluchtelingenwerk' Refugees Assistance Agency " that aids newcomers with all formal transactions.

In the Atelier Ram met Elsie who is passionate about sculpture and trying to learn. Ram introduced himself and told her about starting to make artworks, but he is facing a problem in getting permission to them. Elsie works in the Refugees Assistance department, and she can help. Ram offered her some time to teach her some art science



Scene 7

After helping each other, Ram managed to sell his artworks at the retail departure and he gets his first income in Holland. He helped Elsie by teaching her how to sculpt and she helped him by preparing all administration and official paper of selling products in the Netherlands.



4. Discussion and Conclusion

The housing shortage crisis which is elaborated in the problem statement section shows that because of this crisis low-income class face difficulties in accessing the rental market. That applies to refugees and Dutch starters. Refugees, especially after the first years of flight, have limited income because they struggle to commence working. Likewise, Dutch starters either have limited revenue or are unemployed specifically after the Covid-19's disadvantageous economic impacts on the work sector. The research aims to answer the main question of **“How can a co-living and co-working design enhance the formation of an intercultural community leading to social cohabitation between newcomers and locals in the context of Rotterdam?”**

Firstly, paragraph 1.1 clarified the arrival of asylum seekers to the Netherlands in the last 8 years. Consequently, this number with the existed housing shortage crisis led to the unfunctional housing approach of the Dutch government. Refugees are usually accommodated in typical social housing that is socially isolated and does not promote social cohabitation with the host society, as examined in 1.2. However, there are still some potentials investigated in 1.3. Ager and Strang, 2008, clarified means for integration: housing, working, education and health. In the example of The Startblock, the means of housing and working seems to work in 1.4. Which combines locals and refugees in an even mix in a collaborative self-organized housing strategy which leads to social interactions. It is considered as a successful vision by Carla Huisman. Currently, it has being followed with many similar

approaches across the country. Thus, housing refugees in collaborative and collective housing models works well for cohabitation with the host society. Besides, supplying them with work potentials can ease the integration process. In other words, housing and working help the integration and that can be implemented on the site of Walenburghof, Rotterdam. As an answer to the first sub-question. **“How can housing and working influence refugees' cohabitation with the Dutch society”**

Based on that, the vision was to co-house and co-work between the two groups. This was the guidance of chapters 2 and 3. The co-housing model existed years ago, and it has an innovative manner in the current decade. This unique housing approach requires to be studied further as it is detected in 2.1. Literature shows in 2.2 that the layout of co-housing distinguishes it from conventional one. The difference is the layout hierarchy. The co-housing design emphasises the communal spaces and links them favourably to the circulation space. Some housing facilities cannot be conveyed i.e., toilets, paths. People display dissatisfactory in sharing them. Socially wise, co-living promotes social connection. Because of the high percentage of shared facilities and communal space people encounter their neighbours. Ideally, the co-living settlement designers tend to house residents that can benefit each other.

Likewise, the example of Centraal Wonen Delft, Tanthof in 2.5, demonstrates the circulation spaces in relationship to communal spaces. However, this example has a variety of collective kitchens, laundry and living rooms.

Because of the large number of communal spaces some tenants use just a few. It is essential to design a balanced layout between private and collective. Also, to distinguish between those areas. The co-living design highly emphasises communal space which offers potential for residents' social interactions. As an answer to the Second question "2. How can co-living be designed in a manner that increases social interactions between status-holders and Dutch starters?"

Thirdly, the working development is coming back to be integrated into the city with the approach of the productive city as it has been articulated in 3.1. This combination can be implanted in various dimensions in the metropolitan context: Time dimension, vertical dimension, horizontal dimension and shared premises dimension, The chosen type of linking working to housing depends on the targeted spot. In the studied plot of Walenburghof, the vertical dimension will function.

Besides, co-working spaces provide employees with intensive social interactions and knowledge exchange as debated in 3.3. This is the answer to the sub-question of "How can co-working be spatially articulated in relation to the housing environment and which social impacts does it have on community formation?"

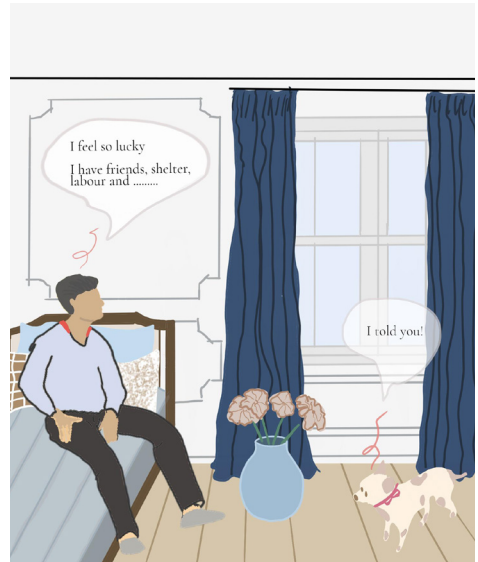
Finally, **cohabitation** between locals and newcomers could be function if the hosting environment stimulates that. Pursuing an environment where a lot of social interactions occur is a challenge by groups from different ethnic backgrounds. As an inspiration from the Startblock, it can be concluded that collaboration between tenants, **collective housing**, **co-working** and co-organizing potentials have eased the cohabitation between locals and newcomers. Consequently, the innovative manner of housing and working collectively can also boost **social interactions** in order to establish relationships between the two target groups. To conclude, housing and working are fundamental means for refugees to integrate into the new society and to cohabit with locals.

4.1 End scene of the Graphic novel

Scene 8

After all, Ram could occupy through the initiative of this cooperative, COA and Rotterdam municipality an affordable home. Through the design of the settlement, he made a lot of social interactions that leads to work potentials and a sense of belonging within this community.

Ram Feels lucky! He found friends, a new home and labour.



4.2 Graphic novel Conclusion

What can be concluded from this novel is that the right design, operational structure and initiators can lead to social cohabitation between different ethnic groups. It is vital to bid residents the spatial possibility to meet and socialize. In the case of starters, it is important to have initiators that believe in starters' capabilities in working and in creating a better society that is inclusive for all humans regardless of their ethnic backgrounds. Cooperative and some authority subsidies can aid starters to commence successful productive adulthood.

Urban Master plan

The Edge of inclusion

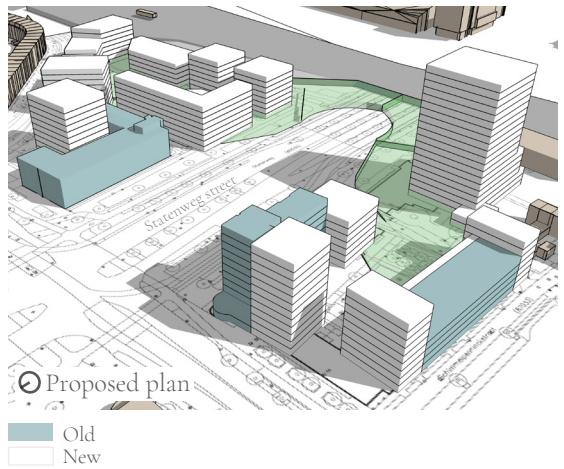
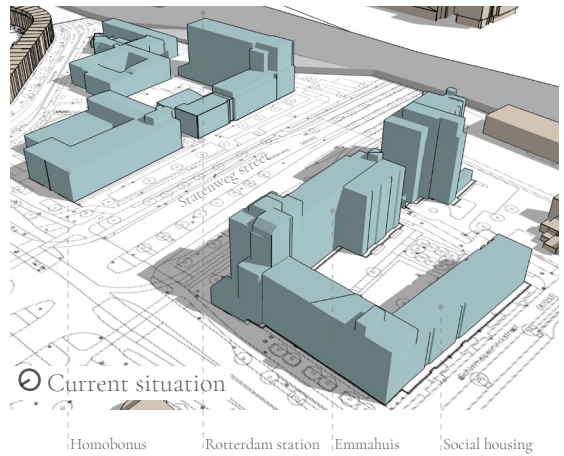
Urban context preservation and vegetation introduction

Blijdorp is situated in the district of Rotterdam Noord, the site appears to be completely disconnected from its immediate surroundings. As an example, even though it's located so close to the train station, The site appears to be completely disconnected from it.

The existing built blocks are miss-repaired, and are not designed to adapt to climate change, or to the ever growing demands for affordable, high quality housing. The building blocks awkwardly stand, without any public resting spaces, making the area highly inhospitable.

Noise and air pollution are also key areas of concern for the site, as it is surrounded by the train tracks leading to the station, and Statenweg street, a main road connecting Blijdorp and the north district with the city's centre, that essentially cuts the site into two islands.

There for the vision is to re-purpose the Homobonus building and preserve the Emmahuis and a the near social housing settlement beside the Emmahuis. New blocks are also added to supply further dwellings.



Vision

Green slope and new centre

The vision is to Create a resilient and dynamic center for the Blijdorp district, but also it goes beyond urban context to reach a nature remediation in a dense urban area such as the city of Rotterdam. Besides, redefining the campus area which is already on the site

These core ideas are what led to The Urban ForRest design plan. A design centred around a slope that introduces a forest edge, with different habitats for species and humans, meant to connect the two sites.

On the south side, the design begins with a dense forest, providing much needed shelter for a multitude of species, as well as a noise barrier and air filtration system for the adjacent buildings, mitigating part of the air pollution caused by the trains.

The trees that will be used are part of the existing local flora, to help with the growth of insect and local fauna.

Landscape connectivity is a critical concept in ecology. Species of plants and animals rely on connected habitats, also called 'patches'. Built and paved areas fragment these patches. Moving between significant patches of habitat is critical for maintaining healthy populations of organisms. Thus, these patches need to be inter-linked. For this reason, the two sites are connected by the forest, through the use of an eco duct situated next to the train tracks, above Statenweg.



Master plan

Site connections and pedestrian route

Under the slope, on both sites, parking facilities are placed, taking full advantage of the newly created space.

Moving towards the north, the forest gradually gives way to urban development. The continuation of the slope provides our unbuilt areas with green parks and recreation spaces, making the site a place you want to be in, a place you want to relax in, instead of a place you want to pass through in a hurry.

Reaching the far-northern part The Homobonus building, is re-proposed as Blijdorp center district. An area focused on creating a dynamic center for our neighborhood, filled with shops, workshops and community centres encouraging visitors coming from the station to go there by vigorous street the Stationsingel street.

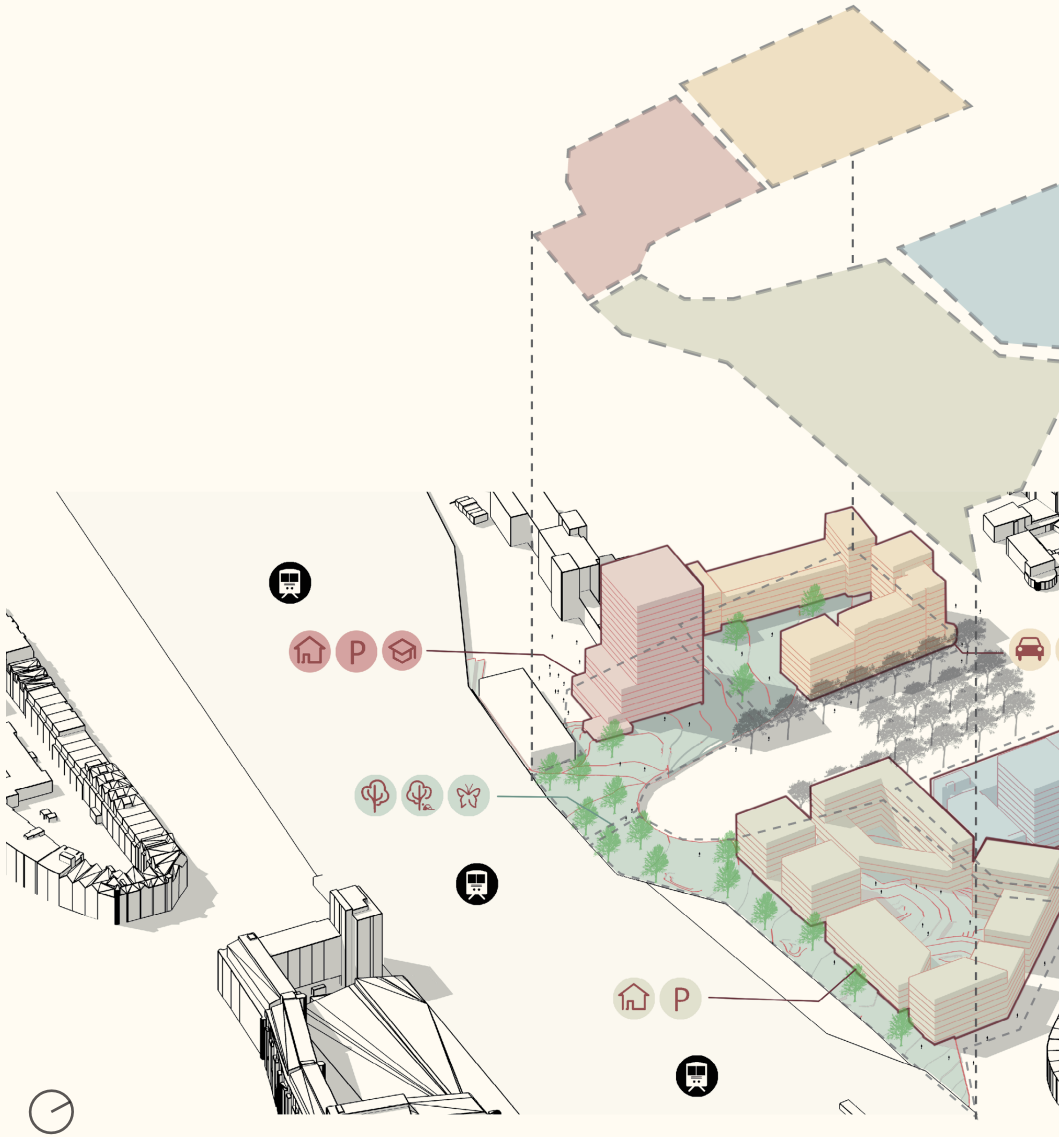
Also another connection is designed linking the site from the train station with the campus area.

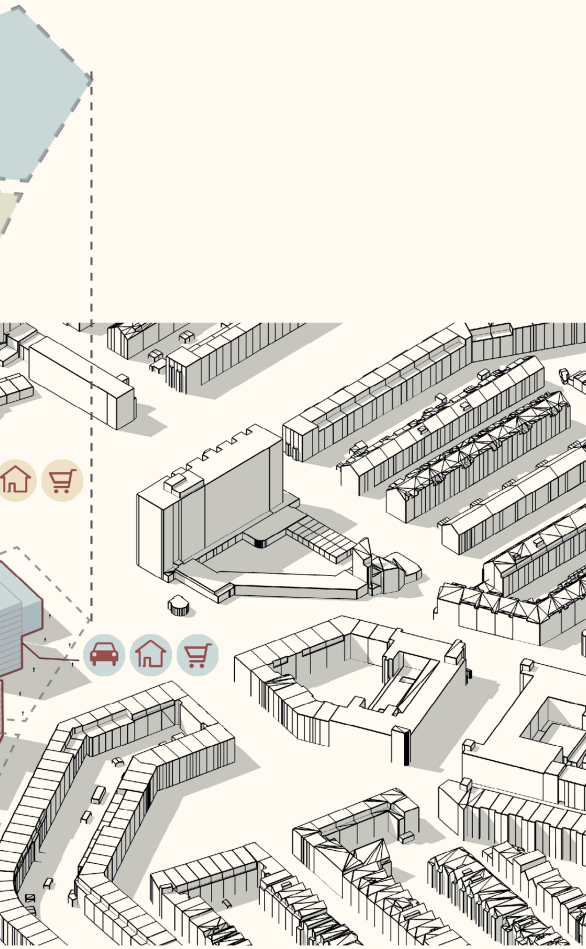


Campus and schools route

Master plan Program

Four quadrants





The site is split into 3 parts. The campus district, the residential district and the Blijdorp center district.

The campus district is in the South/West part, connected to the Rotterdam central station via the main “Campus line” pathway. Wolfert college is transferred to the plinth of the newly built tower, unifying the area and focusing it around education.

The residential district is on the South/East part, located near the train station. Buildings are placed in and around the forest, providing residents with a more peaceful environment, connected to nature.

The Blijdorp center district is in the top-northern part, near the main Statenweg junction. This area is more urban, giving room to a public plinth on the ground floor, with housing on the upper floors.

Master plan

Plot choice





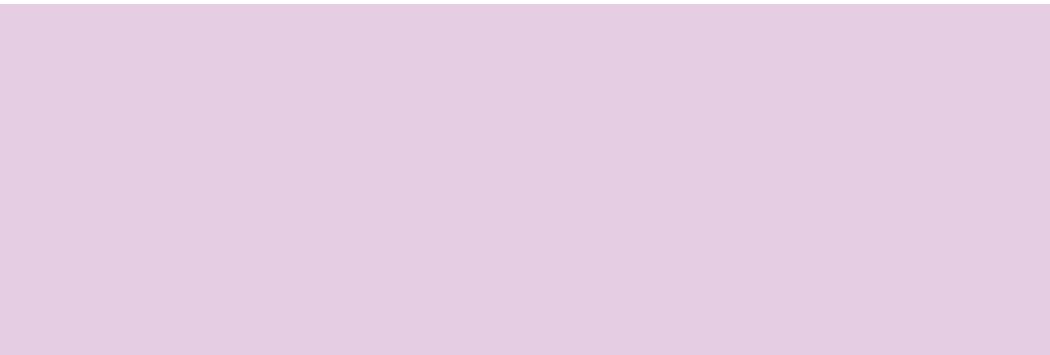
The chosen plot is located in the residential quadrant. It is adjacent to the Stationssingel street linking the station boulevard with the newly designed Blijdorp centre. It is also adjacent to the edge of the green forest functioning as a transition area between the urban environment and the green one.

This building provides the area with room for public activities on the ground floor level and with private functions on the upper floors. It also merges the street with the green forest created by the green slope.

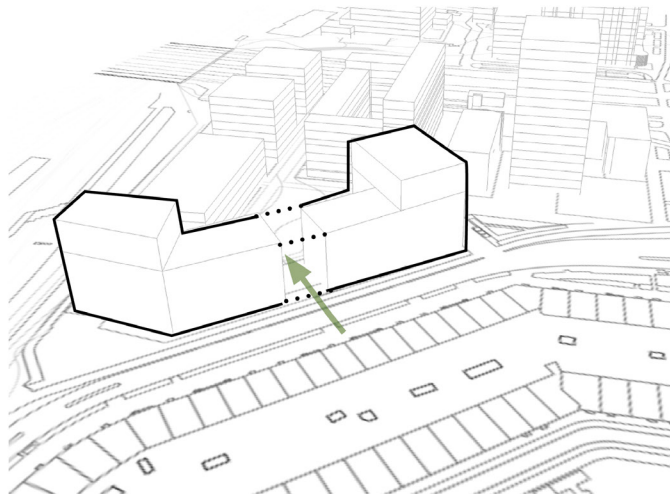
The plot area is **3200 m²**. This allows a built envelope of **2300** square metres. It gives room for a height between 6 to 10 floors. Respecting by that the traditional housing row on the other side of the Stationssingel street. The plot is also connected to two squares one is near the green slope and the other near the new centre to give residents and guests a room for urban activities in public space.

Co-Dwell Design

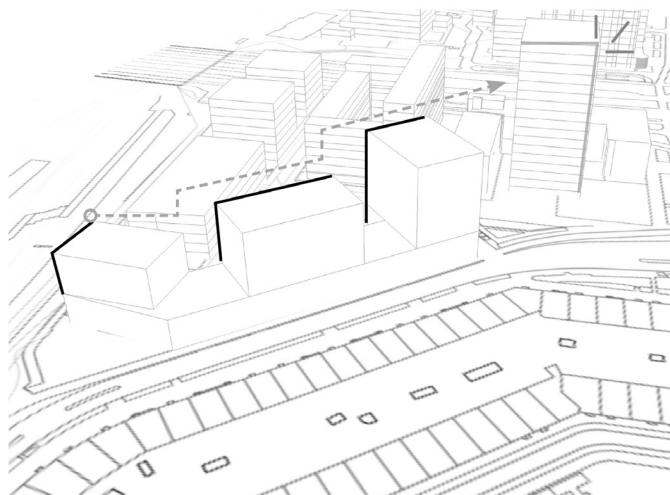
A home for multicultural
community cohabitation



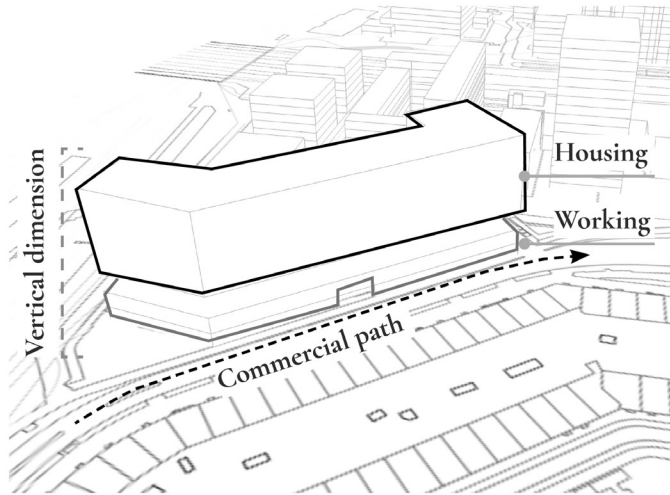
Urban Study: building's relation with surrounding according to different users and different functions



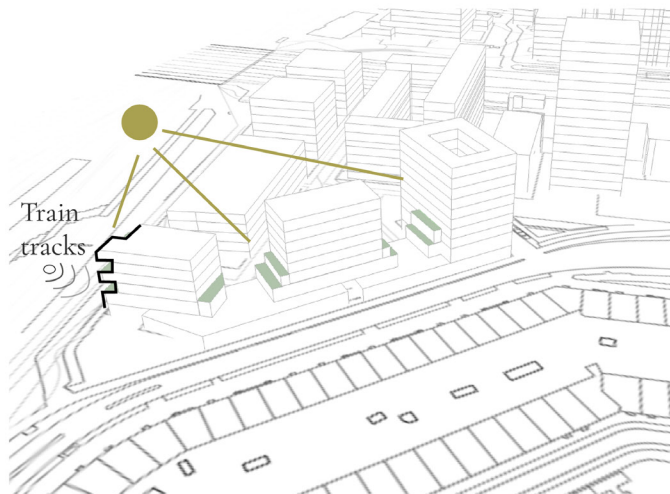
1. Unify the volumes in one building and preserve the entrance to the green forest



3. Creating three macro clusters to enhance the community social connection. The gradual height is a manner to draw the attention into the Centre. It starts by low volume adjacent to the green slope and rise up to the Homobunos centre.



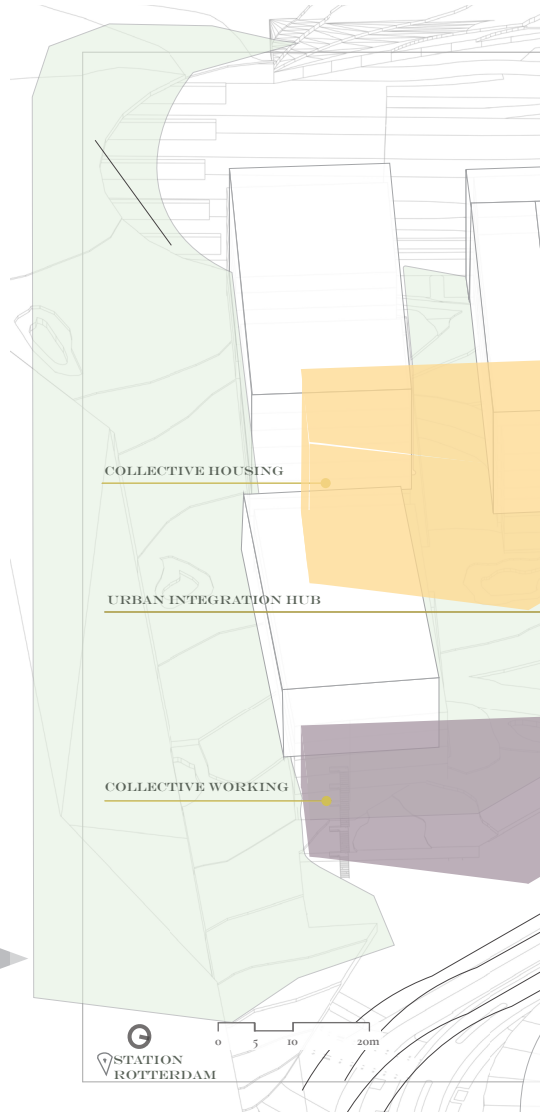
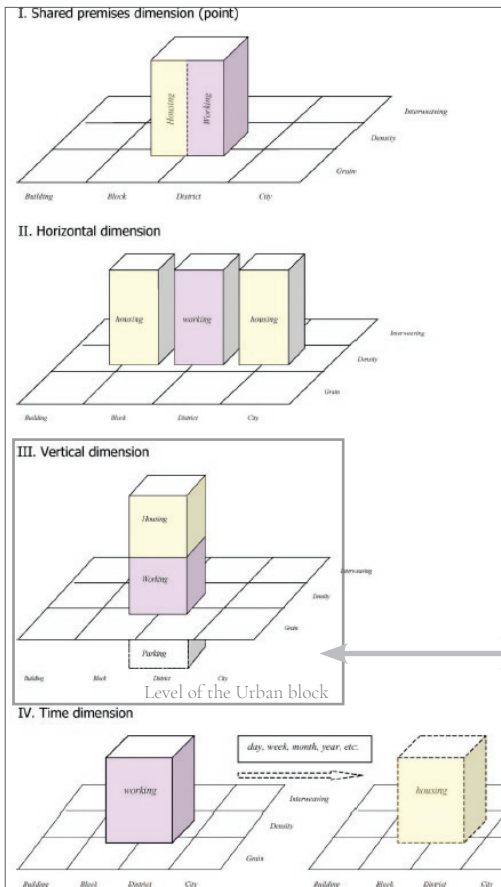
2. Vertical dimension of mix-used where housing is above the working function which is connected to the street level to create public plinth as a continuation of the new centre.



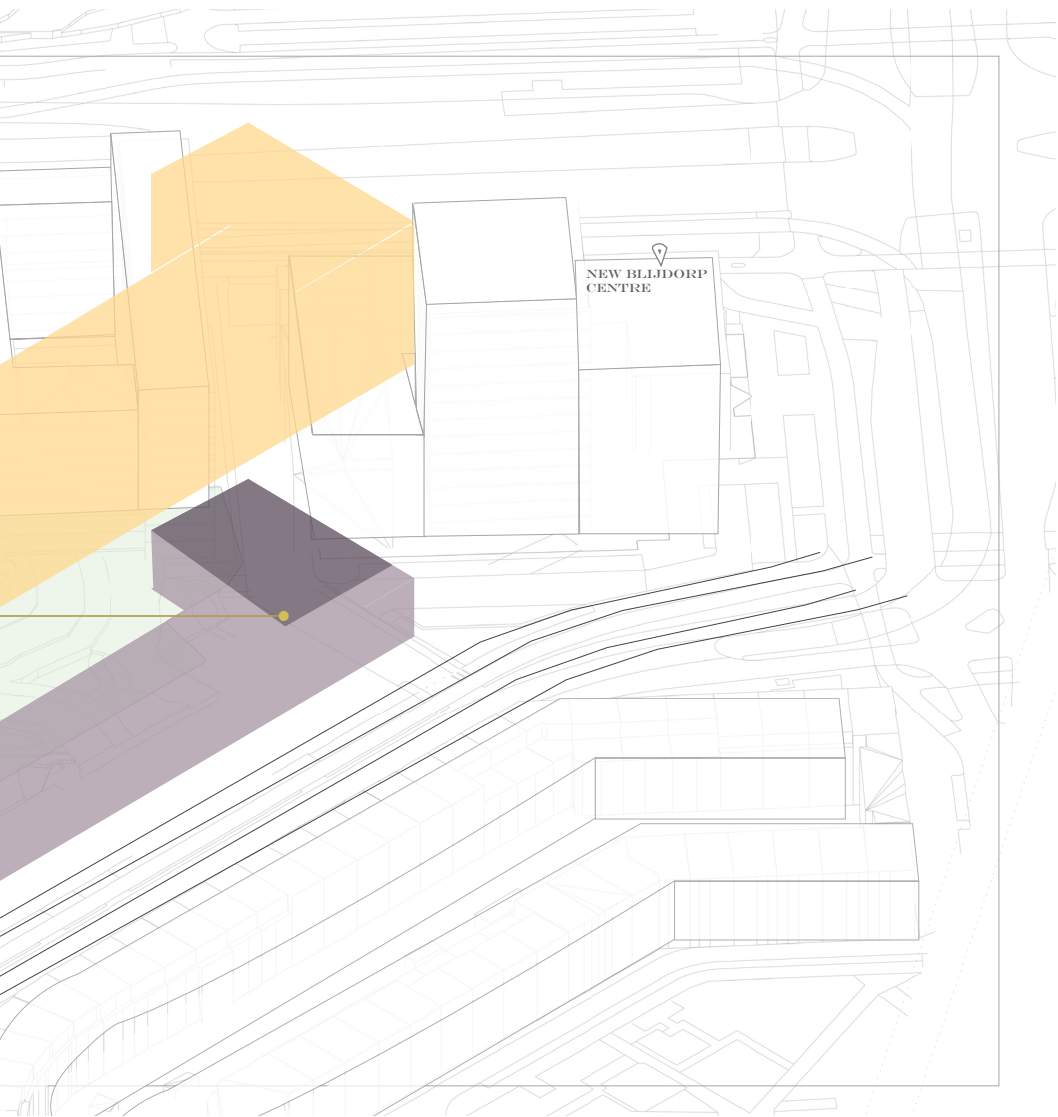
4. The sectioned, volumes have the most possible chance of southern sun and they accommodate green roofs for urban farming towards the south. For noise reduction, a buffer zone made of green roofs and collective spaces is integrated.

Urban Study Spatial relation between working and housing.

The integration of working and housing into one hybrid building is made according to the research. The Vertical typology is chosen accordingly. Which introduces the labour amenities on the first part of the hybrid and then above the residential function. This typology links the hybrids' plinth with the public and makes it further accessible. (Hoppenbrouwer & Louw, 2005, P.973).

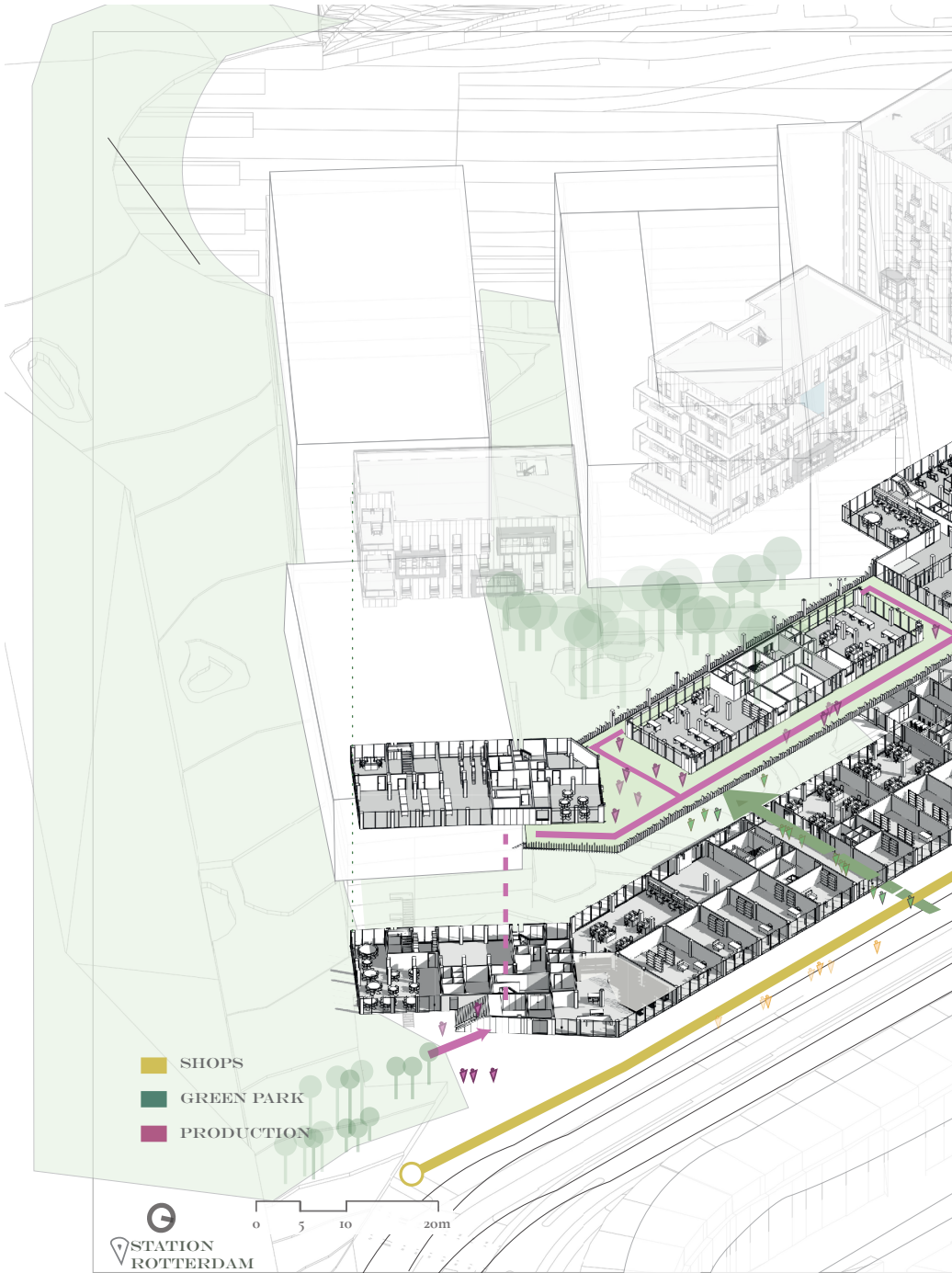


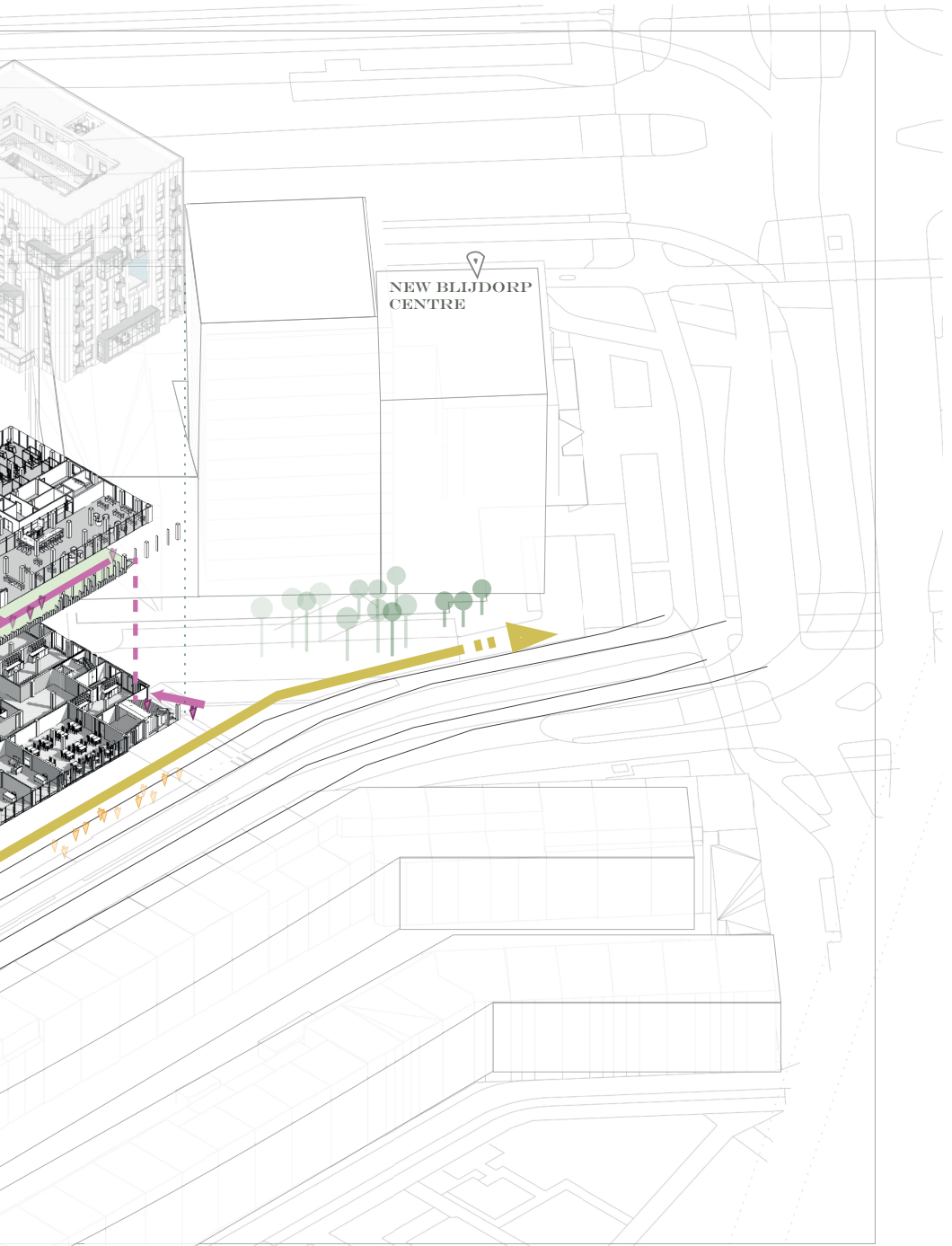
A conceptual model of mixed land use for four dimensions
 Source: Mixed-use development: Theory and practice in Amsterdam's Eastern Docklands(Hoppenbrouwer & Louw, 2005, P.973).

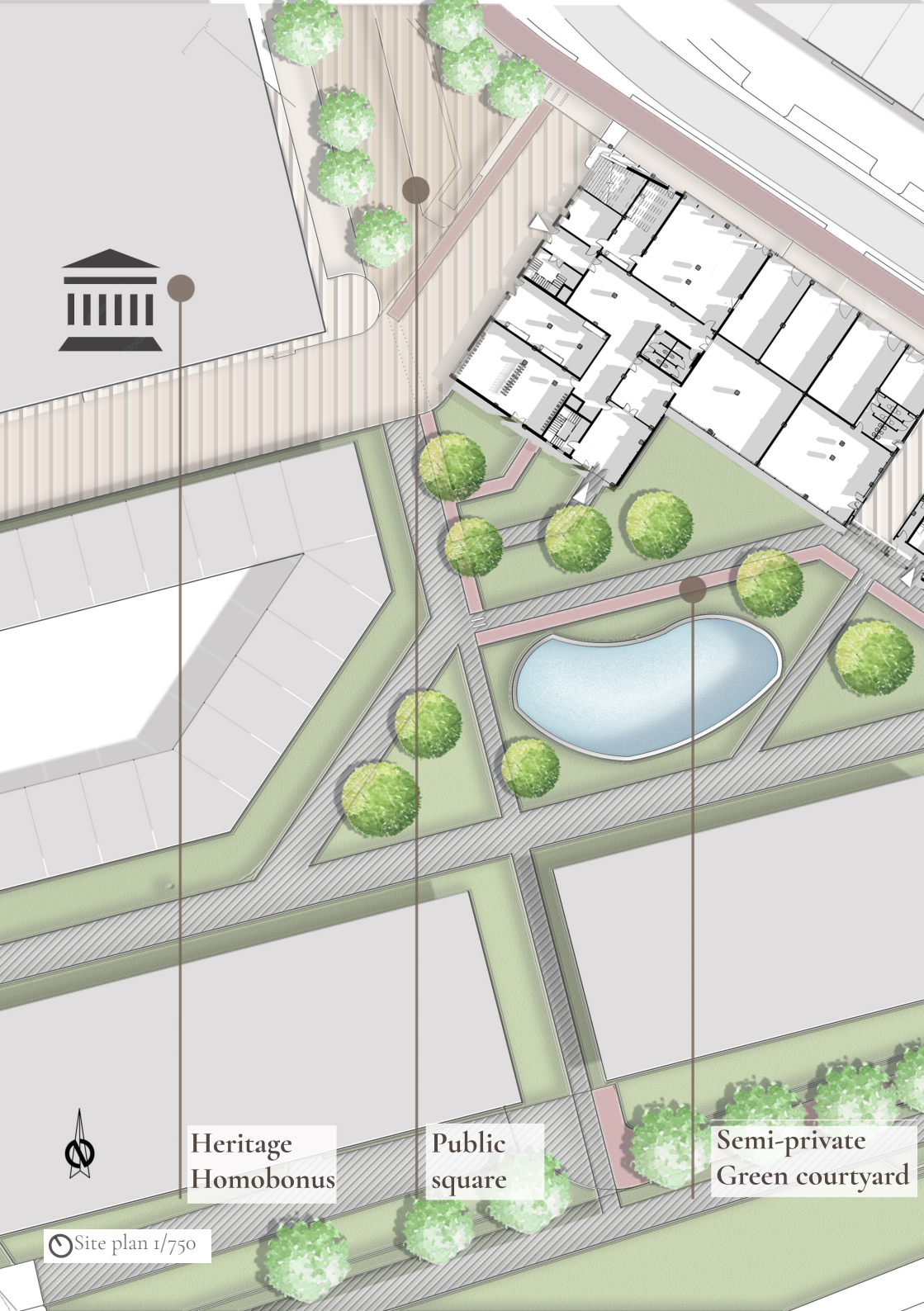


NEW BLIDDORP
CENTRE

Urban Study: building's relation with surrounding according to different users and c



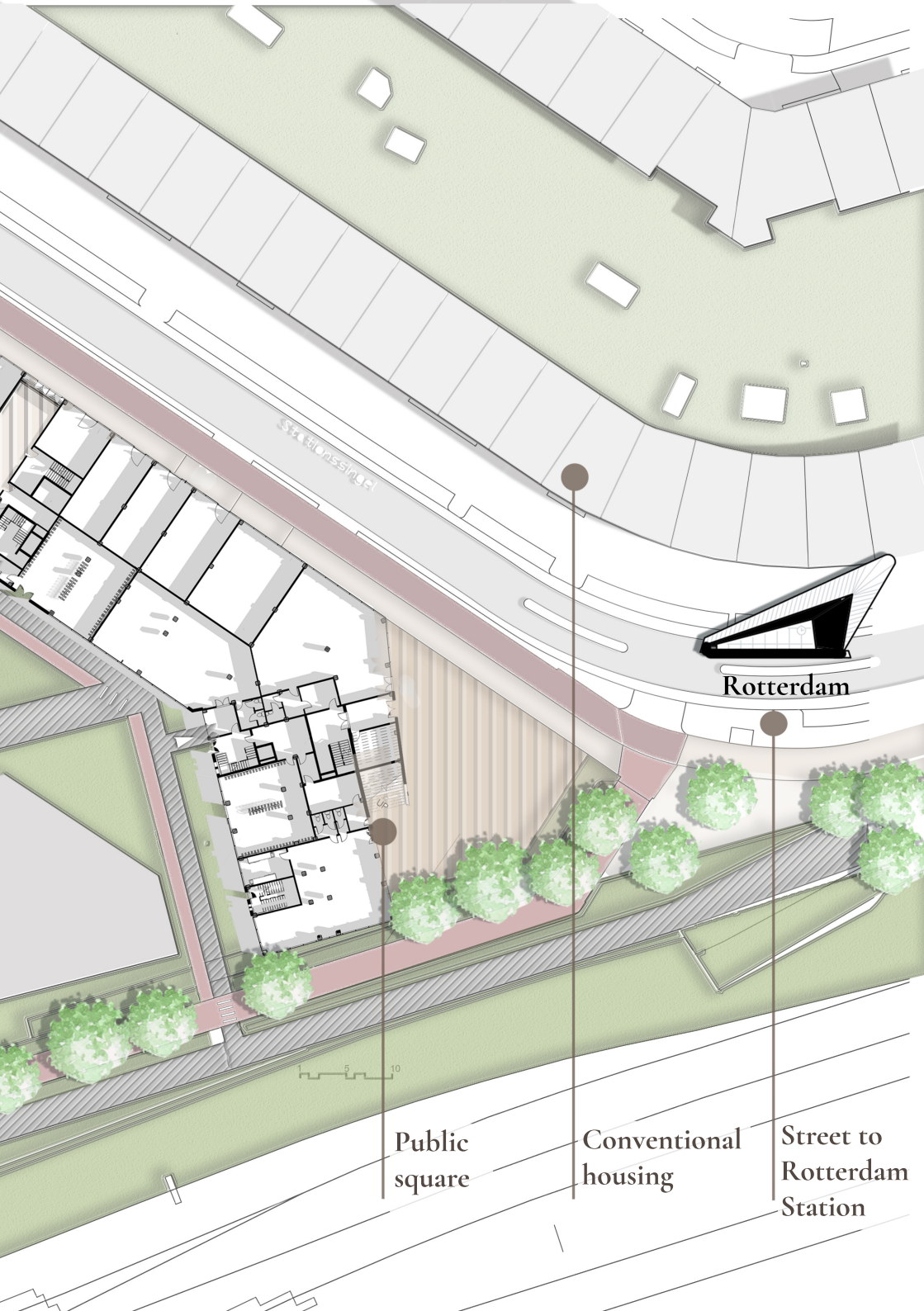




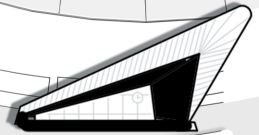
Heritage
Homobonus

Public
square

Semi-private
Green courtyard



Stationsplein



Rotterdam



Public square

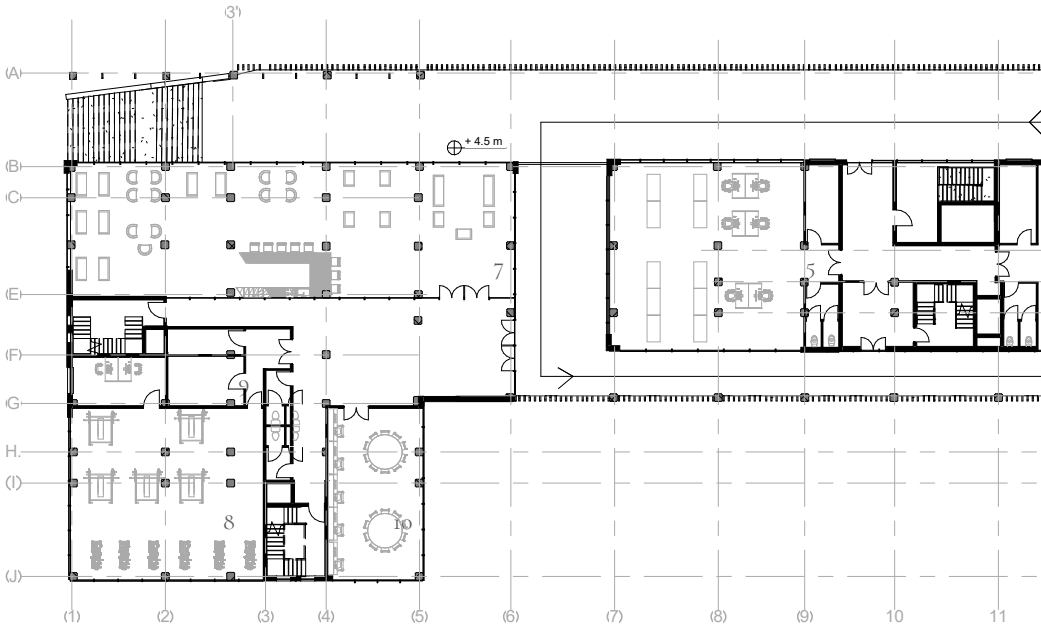
Conventional housing

Street to Rotterdam Station

WORKING DESIGN

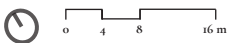




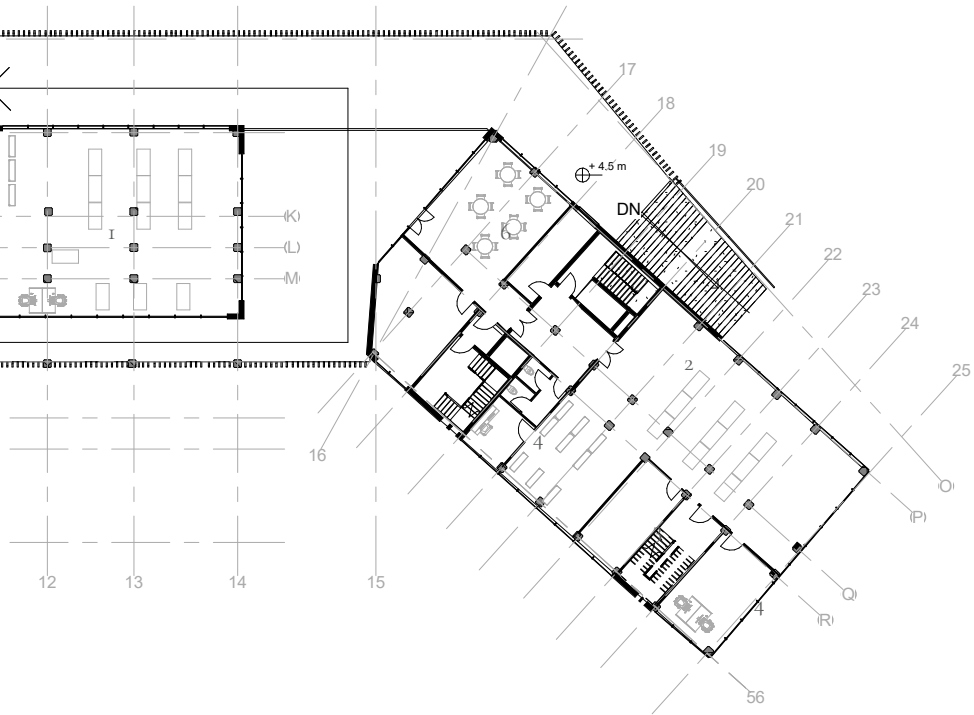


- 1 Sewing workshop
- 2 Home decoration workshop
- 3 Finishing room
- 4 Administration
- 5 Jewellery workshop
- 6 Cafe corner
- 7 Public lounge area
- 8 Public Gym
- 9 Dressing room
- 10 language exchange

First Floor: Production 1/400
 Second street: collective production zones



The **productive city** idea is to reintegrate the production environment again into the city. This idea is recently being welcomed in many European countries. See chapter (research- co-working- the productive city). But the challenge was which industry or production can be implemented into the site of Walenburghuf. The site surroundings are mainly residential, commercial, education and small industry like car repair services. Thus, labour on this site is already known.



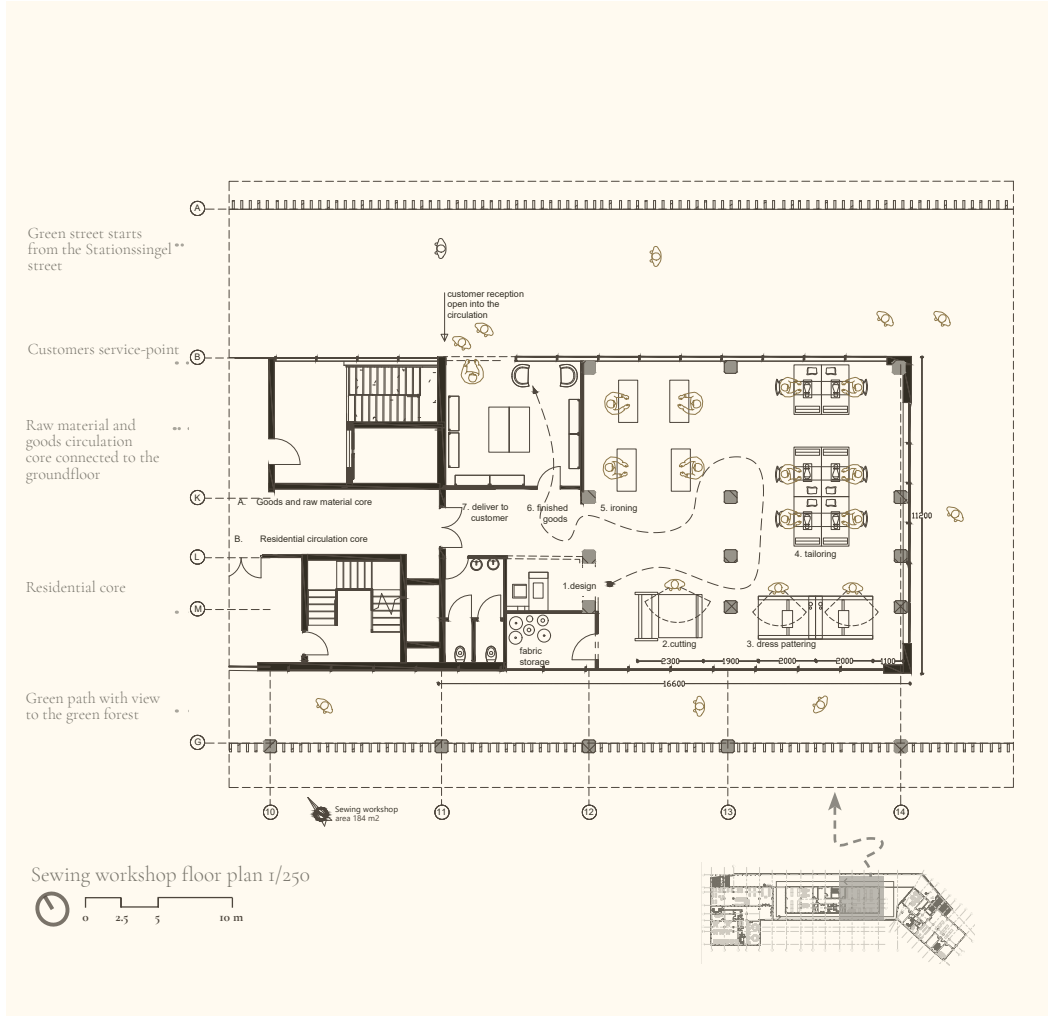
In combination between the urban analysis and the productive city notion, I integrated small and light production zones. They are three and have spacious room for a co-working approach. These production spaces are sewing, home-decoration and jewellery workshops. The specific two **reasons** for choosing these three functions are:

- 1- easy working-manually functions that do not require many linguistic qualifications. That bids newcomer and accessible manner of collective working.

- 2- these sorts of production are considered light-noise-producer which is very critical for the residential environment above.

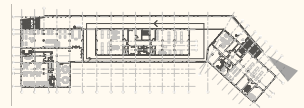
Additionally, this public street has another public that can be shared with residents to create an integration urban hub. These functions are places where international people can exchange language and culture. It is a place where they benefits each other. It contains mainly, lounge area for conversations and coffee, language exchange room and Fitness club.

Sewing workshop design



The production space is designed to enhance the relationship of customers and visitors with the worker-residents. In other words, the plinth of the production level is fully transparent. In this manner, the customers can walk through and around the production environment and see how these products are home-made, in which manner what are the raw material and the quality. This is a convincing manner to stimulate a bigger quantity of orders and purchases. This can be seen in the floor plan of the sewing workshop example. Shoppers can walk and see the whole production process and they also have the opportunity to enter the custom service point and order their wishes easily. This design encourages the social connection between the working residents and the public.

Entrance to the production level



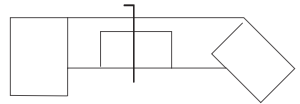
The entrance to reach this point is clearly connected to the public squares adjacent to the complex. They are open welcoming squares to invite more people to go up and see the magic of hand-made products. Underneath, is the commercial transparent plinth which invigorates the site furthermore and invites more shoppers and public.

This inviting street aims to attract more people to buy from the working residents. Because the target group is a low-income community, thus, stimulating them to start a job and to buy and earn money is critical. Therefore, it is vital to attract further people to purchase their hand-made products.

Section: relation production and working environment with the site and the residential environment



South- North section 1/400





Central urban forest at the backyard

Public circulation around the Production area

Co-working Space with link into the green forest which increases the workers' consternation

Production zone
The jewellery workshop

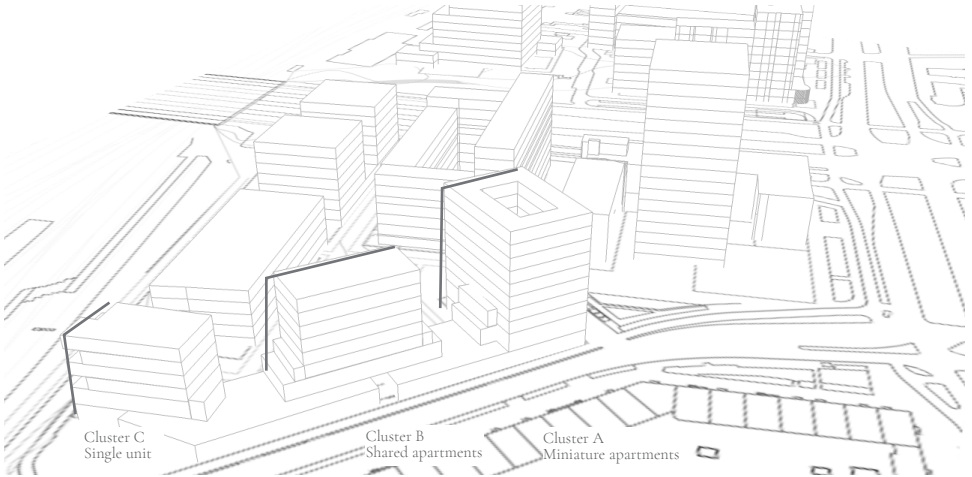
Urban integration hub: Lounge area



Impression of the production street



HOUSING DESIGN



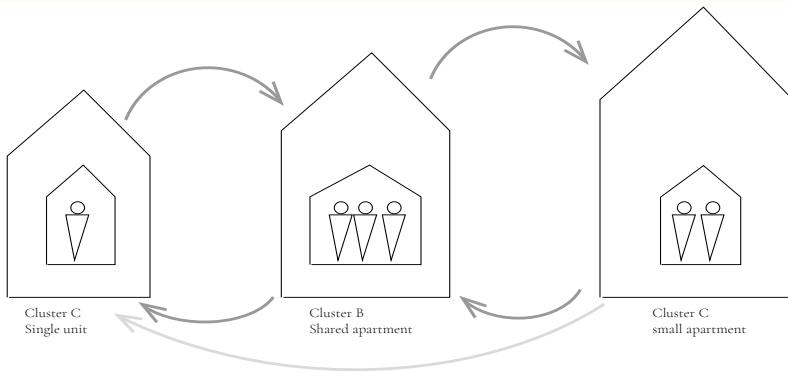
Clusters typologies

Three macro clusters typologies

The target group includes: Young ambitious **youth between 18-30** who want to start a new independent life-chapter among other like-minded households. It is meant for Dutch starters who can not afford home alone but they are willing to shared with others. Also, for young newcomers who want to integrate and live together with locals to integrate and to be beneficial for the new society.

Dwellings mobility

The project consists of various housing typologies. They differ in size, in sharing scale and stay-time. However, there is always accommodations that precisely suits a resident depending on the conditions. For people who want to start a collective living model but still have there own unit, cluster C is optimal. Others who want to stay there for permanent stay in apartment, cluster A is suitable.



Short stay

Long stay

Housing mobility depending on resident's life-phase
(independent single- with friends- couple- divorced)

Dwellings mobility



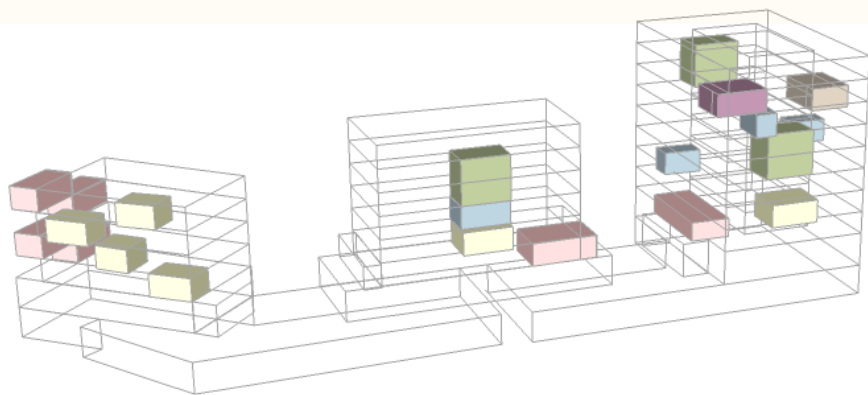
Circulation typologies

Circulation

The circulation differs between clusters in order to create variety in housing typologies. It is a corridor typology in the cluster C that continues along all units. In cluster B a corridor typology is implemented which links the four apartments together. In cluster A, it is a gallery typology along a roofed green atrium.

Coloured collectivity

The distribution of collective space and its functionality differs among the three clusters. These difference is homogeneous with the type of collectivity each cluster provides its dwellers. See next chapter.



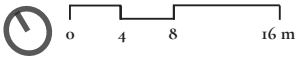
Collective amenities program in all clusters

 Living room	 Hobby room
 Kitchen	 Library
 Laundry	 Outdoor terrace

Residential floor plan



Typical Residential Floor plan 1/400
Third level



- 1 Collective living room
- 2 Kitchenette
- 3 Co-kitchen
- 4 Co-laundry
- 5 Urban farming



Cluster C

Single unit



Typical Residential floorplan Cluster C



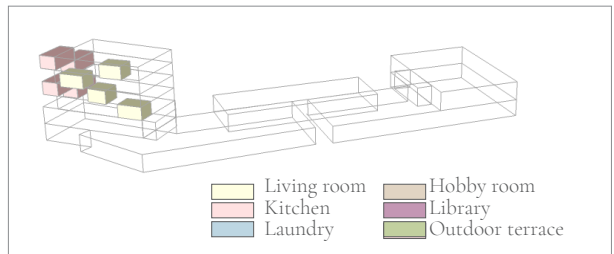
- 1 Collective living room
- 2 Kitchenette
- 3 Co-kitchen
- 4 laundry
- 5 Urban farming

Cluster C Dwellers profile

Dwelling typologies
Scale of sharing
Shared spaces
Amount of dwellings
Accommodation type

Single starters, digital nomads or workers, employed/ unemployed.
Single unite, with double bed and bathroom
Scale of floor (**mini cluster** in each floor)
All daily needs (living and kitchen rooms)
40 dwellings
Temporary stay

This cluster provides residents with independent spacious room including bathroom. But all daily activities such as cooking and activities in the living room are shared together with all households in the same floor. Each floor has one big living room, one kitchen and dining corner and urban farming space connected to the kitchen. However, the laundry is shared by the whole cluster, which is founded in the fourth level.



From the diagram, it can be seen that each floor has its living room, kitchen and dining area connected to the urban farming outdoor space. The cluster is linked to co-production on the first floor and co-working spaces on the ground floor. It has its bicycle storage and entrance.

Cluster B

Shared apartments



Typical Floorplan Cluster B



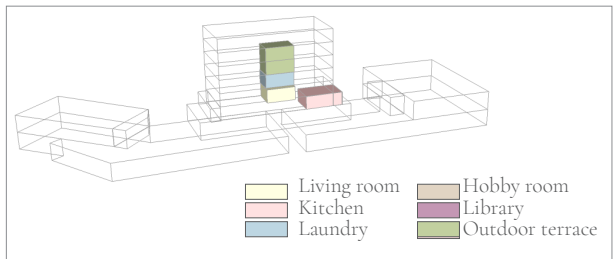
- 1 Collective living room
- 2 Kitchenette
- 3 Co-kitchen
- 4 laundry
- 5 Urban farming

Cluster B Dwellers profile

Dwelling typologies
Scale of sharing
Shared spaces
Amount of dwellings
Accommodation type

Single starters, digital nomads or workers, employed/ unemployed.
Shared apartments of 3-4 bed sits
Scale of apartment (**micro cluster** in each flat)
All daily needs (living and kitchen rooms)
24 apartments+ one flex unit
Temporary stay

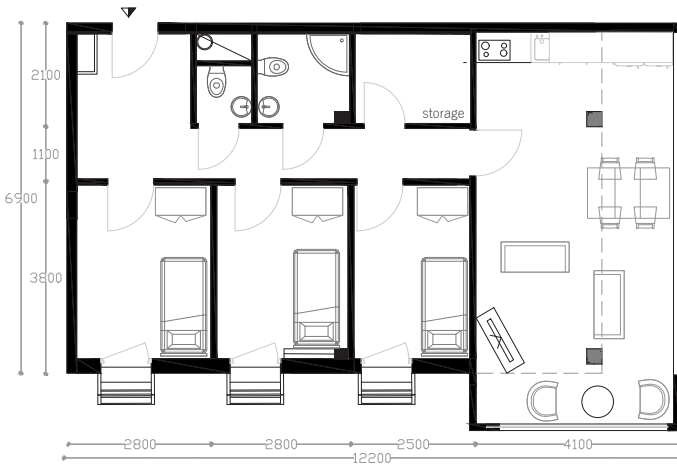
The cluster consists of many apartment . they are meant to be shared among households that are singles and want to share an apartment's environment with others. Each resident has his own sleeping room and he shares the living room, dining and bath room with co- dwellers. This typology has the typology of shared spaces in small scale and bigger one on the scale of a whole cluster.



The digram demonstrates how the whole cluster shared 4 amenities including living room, kitchen, outdoor and laundry space. The cluster is linked to co-production on the first floor and co-working spaces on the ground floor. It has its bicycle storage and entrance.

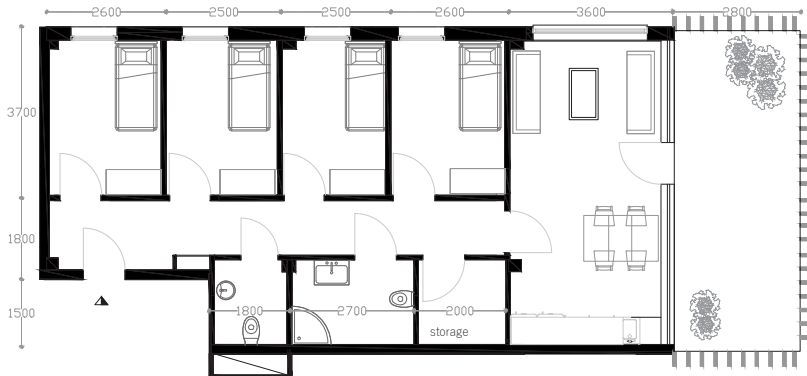
Cluster B

Dwellings typologies



Shared apartment typology with 3 bedsits (B1)
Dwellers: 3 singles
Area 90 m², rooms 10.5 m²

Scale 1/200

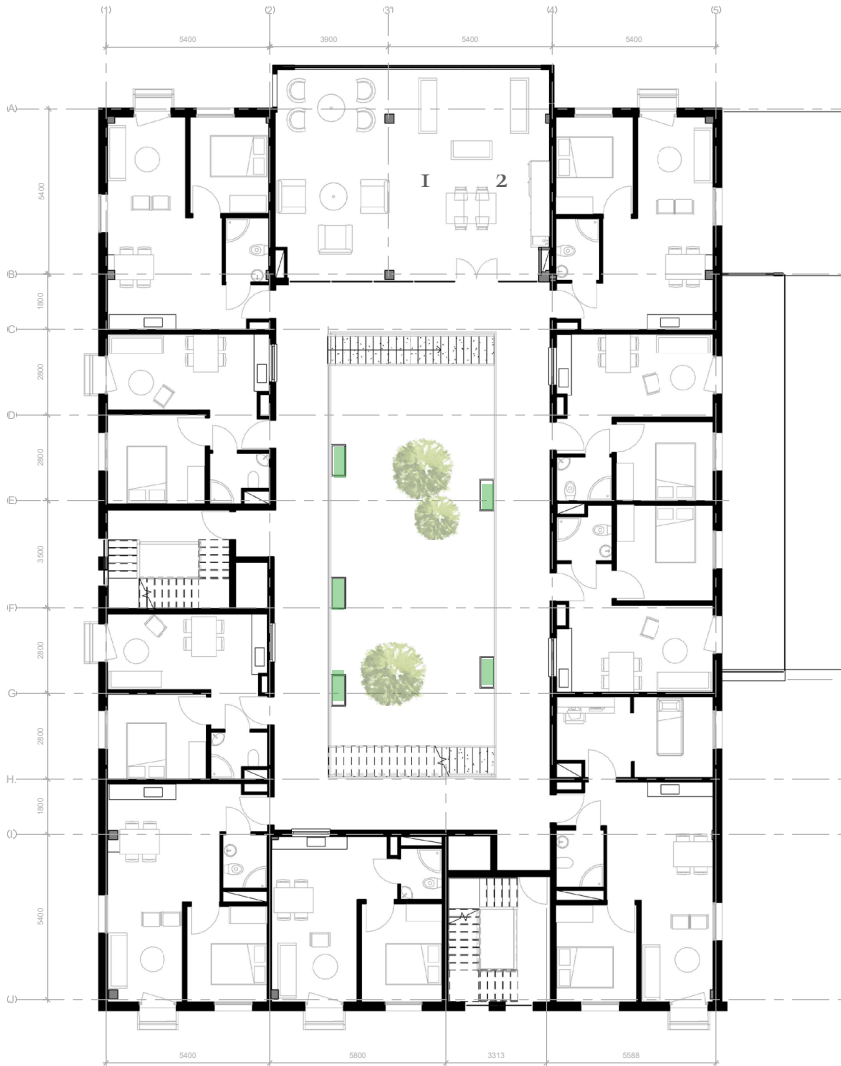


Shared apartment typology with 3 bedsits (B2)
Dwellers: 4 singles
Area 94 m², rooms 9.5 m²

Scale 1/200

Cluster A

Miniature apartments



Typical Floorplan Cluster A



- 1 Collective living room
- 2 Kitchenette
- 3 Co-kitchen
- 4 laundry
- 5 Urban farming

Cluster A Dwellers profile

Dwelling typologies
Scale of sharing
Shared spaces

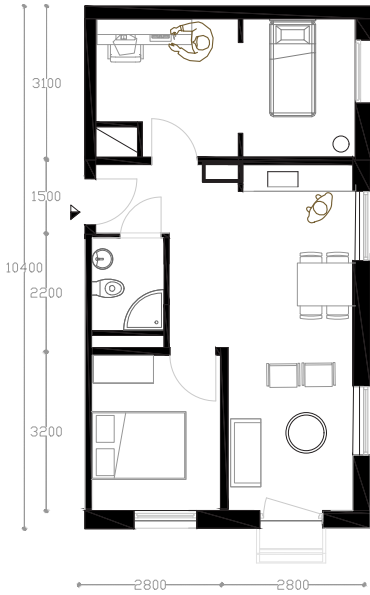
Amount of dwellings

Accommodation type

Young couple starters, digital nomads or workers, employed/ unemployed.
Small apartments of 1-2 bedrooms
Scale clusters (**macro cluster**)
Additional amenities and big living room and kitchen 2
7 2 bedrooms flat + 70 one bedroom flat + 2 flex unit
Permanent stay

Cluster A

Dwellings typologies



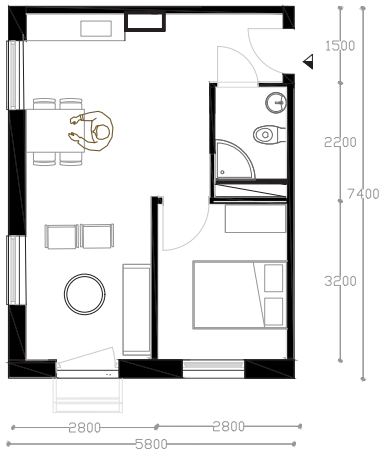
Small apartment typology two bedrooms(A1)
 Dwellers: couple-singles
 Area 58 m²

⌚ Scale 1/200



Small apartment typology one bedroom(A3)
 Dwellers: Childless couple- single
 Area 34 m²

⌚ Scale 1/200



Small apartment typology one bedroom (A2)
 Dwellers: Childless couple-single
 Area 42 m²

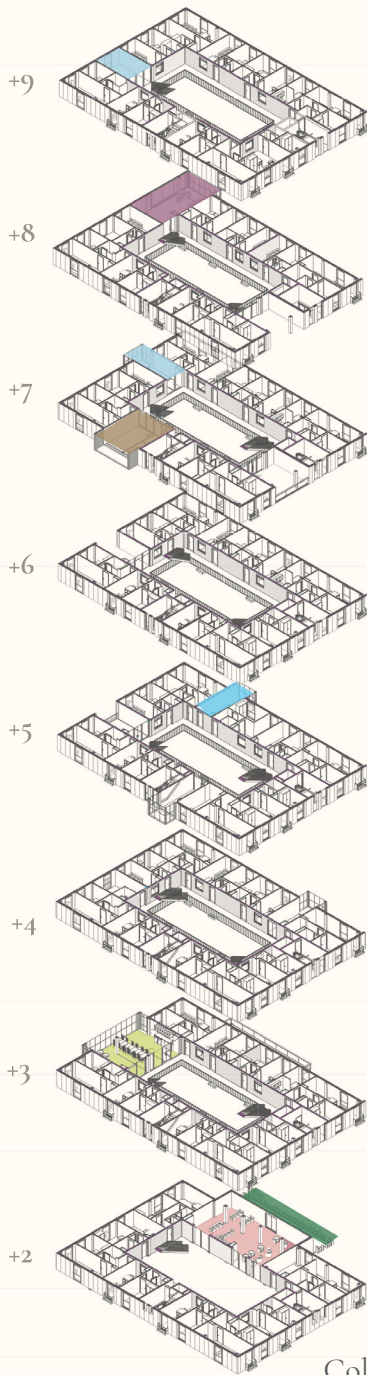
⌚ Scale 1/200

housing

89.8 %

collective

10.2 %




- legend
- living room
 - kitchen
 - library
 - hobby room
 - laundry
 - Urban farming

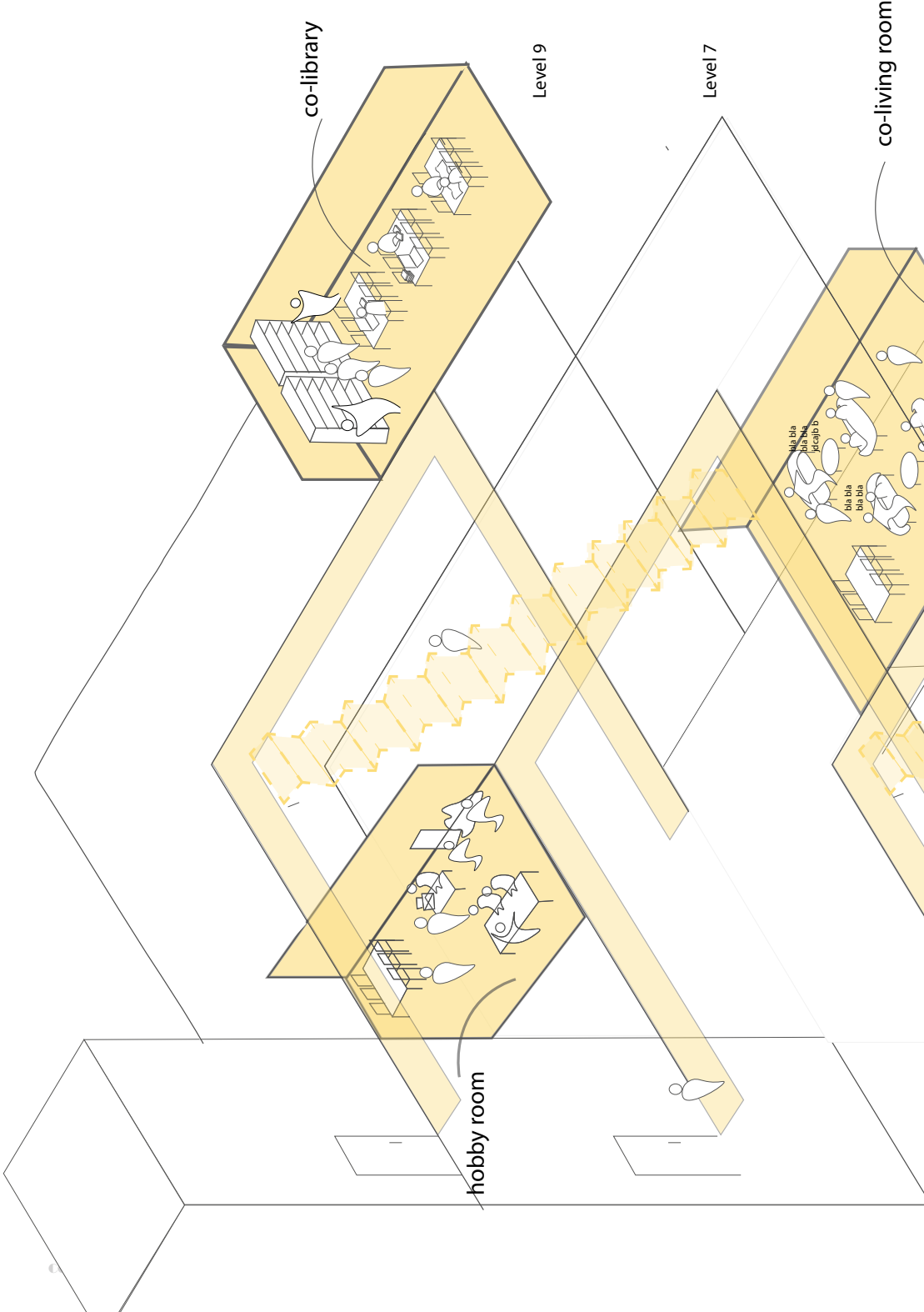
Collective program of cluster A

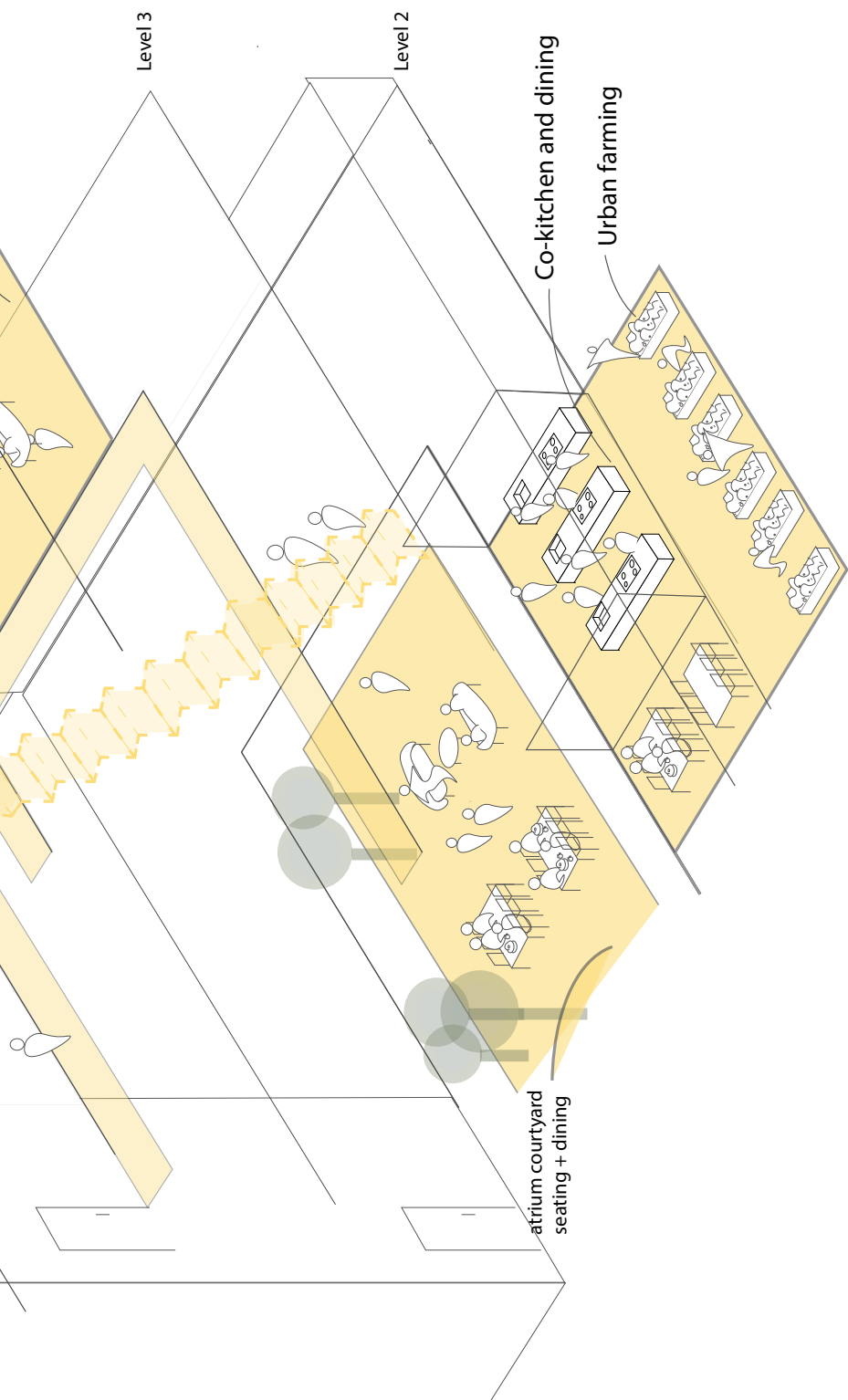
Looking up-impresion atrium





Timber atrium provides residents with a home-like environment. It also bids the opportunity to meet a neighbour and make social encounters. The majority of dwellings have a kitchen window toward the atrium which makes the social encounter even easier and more spontaneous. Besides that the ground floor of the atrium is meant for informal seating places and meetings. Thus people walking to their apartments have a significant chance to see other residents. Greenery integration is wisely implemented on the ground floor of the atrium but also plant pots along with the whole space. Light entrance is handled by placing a prominent glazed roof and transparent wall for all collective spaces including the outdoor space which is the height of two floors, this makes the sunlight access more straightforward.





Relationship between shared spaces and circulation
Co-housing atrium







Cluster A atrium

Transparent welcoming shared spaces inner facade

Op
tow
mo



Open kitchen window
looks towards the atrium to create
more social encounters

Bamboo veneer provides home-
like sphere and feeling

Proxemics study

Proxemics is the study of how space is used in human interactions. For example, authority can be communicated by the height from which one person interacts with another. If one stands while the other sits or lies down, the person standing has placed himself or herself in a position of authority. (Health Professional and Patient Interaction -Ninth Edition ,2019, Pages 141-165).

But what is a proxemics study?

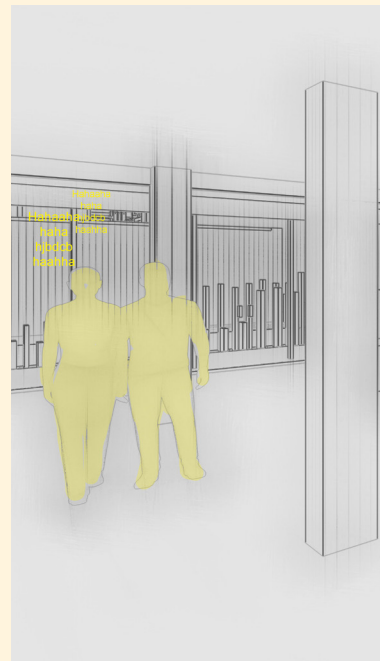
Proxemics is the study of how people unconsciously structure the space around them. This structuring varies with every culture. North Americans, for example, maintain a protective “body bubble” of space about 2 feet in diameter around them when they interact with strangers or casual acquaintances. Violators of that space are considered intruders and cause the person to become defensive. In the Middle East, no such bubble exists, and it is proper to invade this area. In fact, not to do so may be interpreted as unfriendly and aloof. Arabs prefer to stand close enough to touch and smell the other person. Americans, however, if forced to stand close together, as on a crowded subway, will use their eyes (i.e., distant gaze) to maintain a more proper distance. An arm’s length is a good measure of the appropriate personal distance for most people. A wife can stand inside her husband’s bubble, but she will be unhappy if another woman invades this sphere of privacy, and vice versa.

Research finding on people use of co-working spaces:

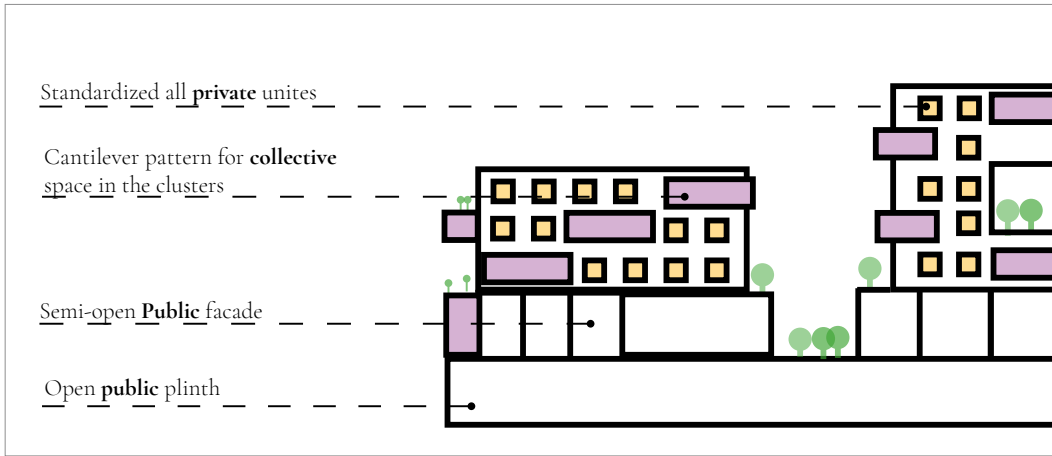
It is vital for integration because labour is a key for smooth integration ‘To me integration is work, if we work, we are integrated’ (ECRE 1999, P.42). ‘co-working space highly promotes social interconnection between diverse professional backgrounds by providing a spacious venue for social interaction, collaboration and knowledge exchange.’ (Ondia et al., 2018).

Research finding on people use of co-living spaces:

‘Coliving strengthens individuality through community because of the specific community harmony of like-minded denizens. Residents can develop a broad range of interconnection because of the social interaction within the collective environment.’ (Schmid et al., 2019, P. 192-199).



Facade design principle



Collective outdoor space

Collective living room

Private unit

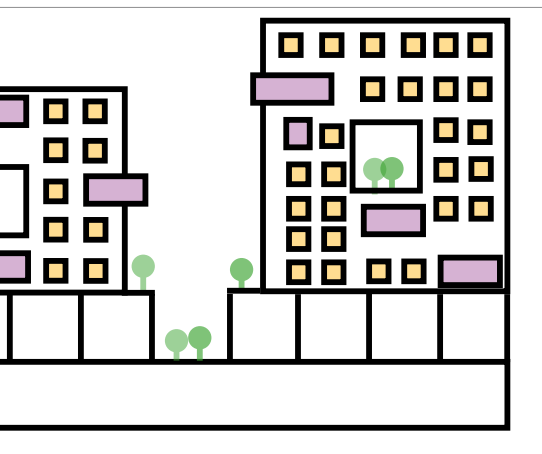
Customer services

Production street

Public commercial plinth

Public entrance to the green forest





Firstly, the idea behind the design is taken from the advice of the architect Flip Krabbendam who advised to emphasise the collective spaces. Secondly, it has driven out the equality idea of equality and unity between and among all households.

All dwellings are patterned in a similar layout and material. This is a symbol of equality and similarity between all residents who live behind this façade regardless of their ethnic backgrounds. The communal spaces have another cantilever pattern and texture.



Exterior facade cladding material choice

Cultural-environmental choice



The black brick as Dutch and European material. It is also very sustainable material



Bamboo panels. Wood is natural material and it is **international spread**. It gives home-feeling



The material choice is based on the cultural and environmental aspects of each material. For the facade cladding bamboo panels will be used because the wood is **international** used. To link the building to its surrounding the Brick as **Dutch** material will be used. It is applied on all collective-cantilever space to emphasize them in the facade.

Interior wall cladding material choice Cultural-environmental choice



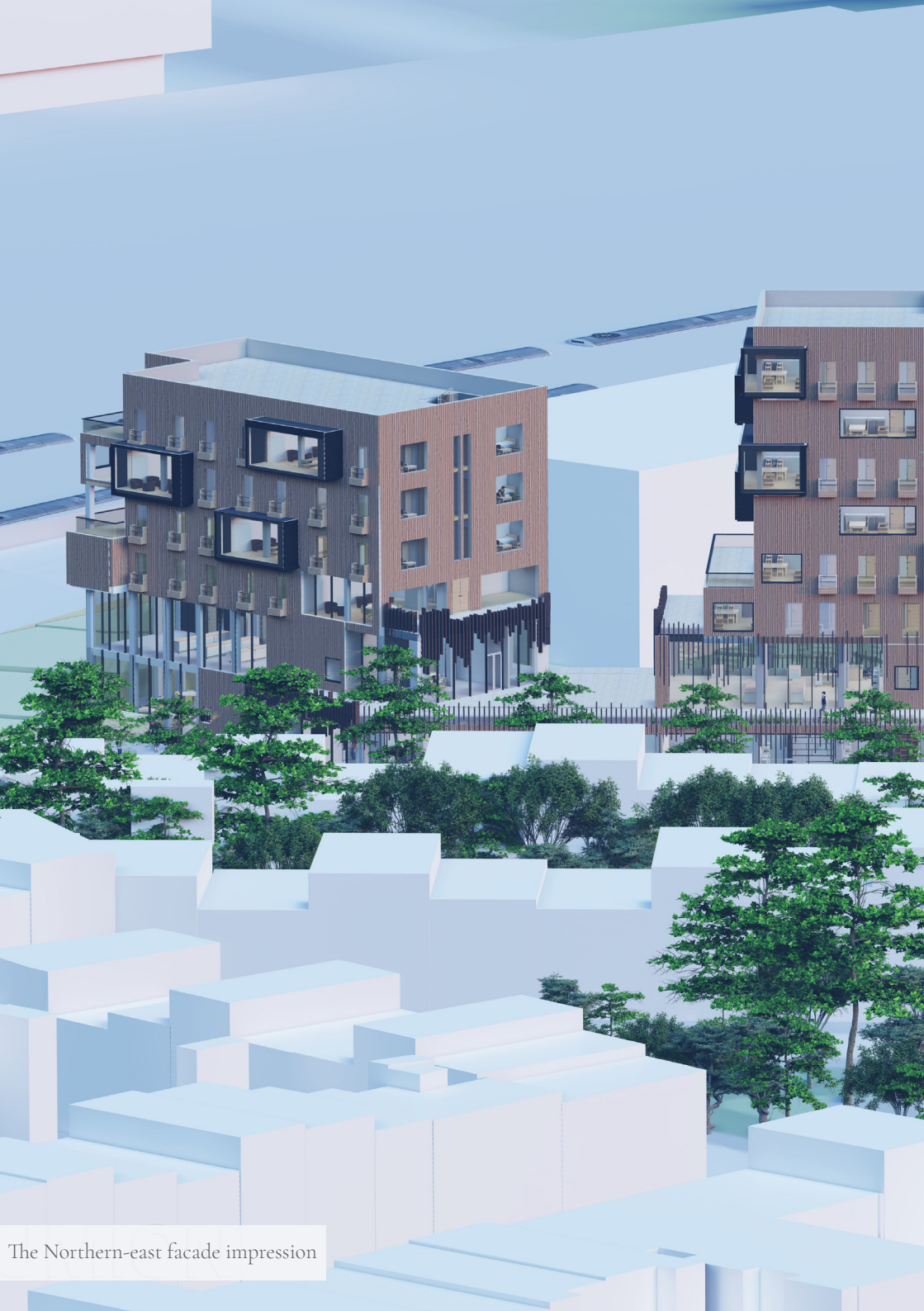
Natural stone application on all indoor shared spaces

Majority of refugees are coming from Middle east and Africa. The local raw material in the Middle East is the natural stones because it is widely provided and founded all over that region. Therefore it is well known and has relation with the cultural environment of the housing spaces there. Therefore, it will be associated with all indoor cladding of the shared spaces in the project.

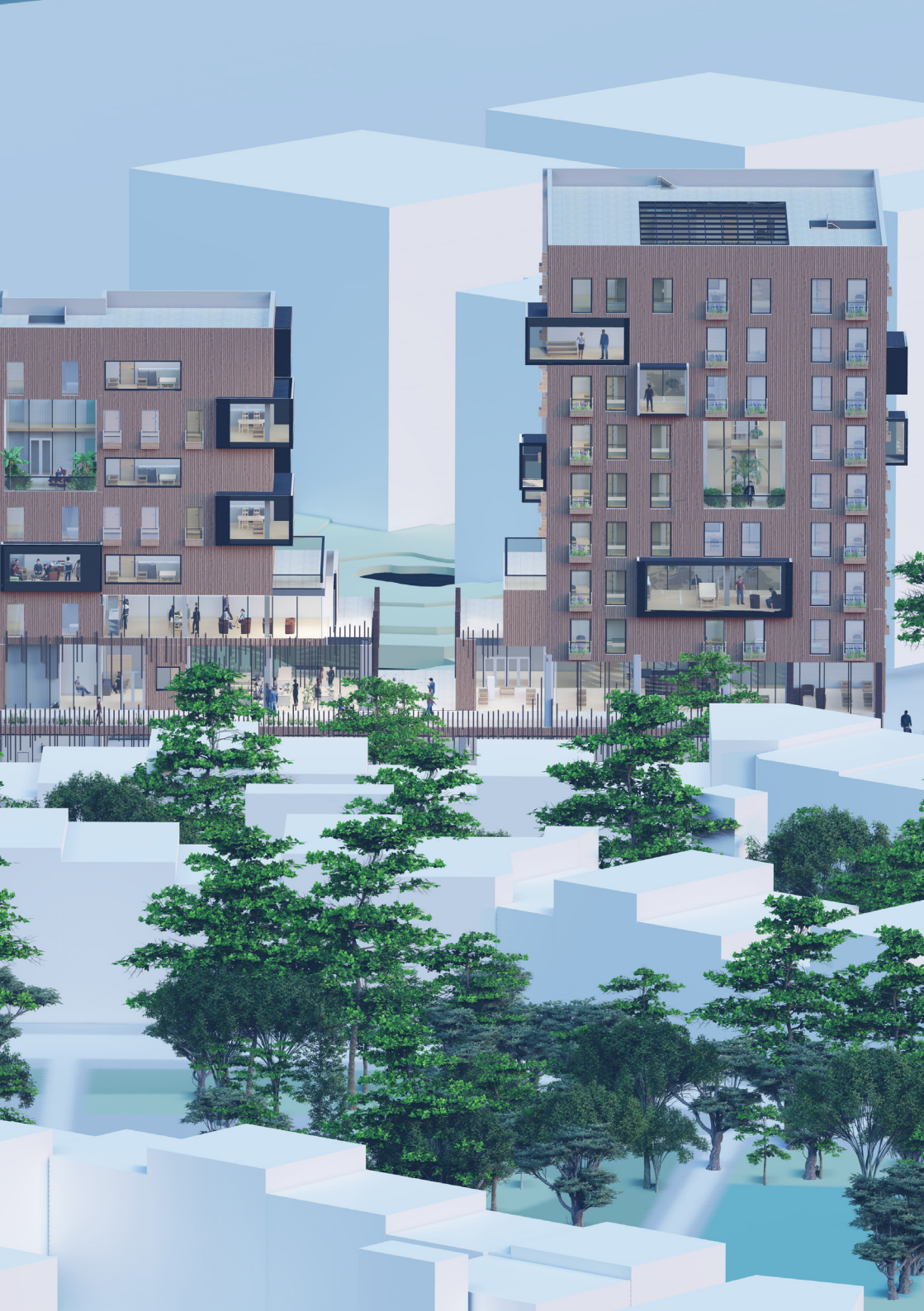


Rammed earth panels application on all outdoor shared spaces

In Africa the local known material is rammed earth. It is widely used in all housing building. Unfortunately, it is complicated to be produced for multi story complex. Because it needs long time to dry. However, there is a firm in California who scusseded to produce rammed earth panels that can be easily assembled on the site."Rammed Earth Works firm". This material is super sustainable to.



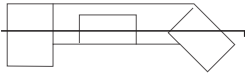
The Northern-east facade impression



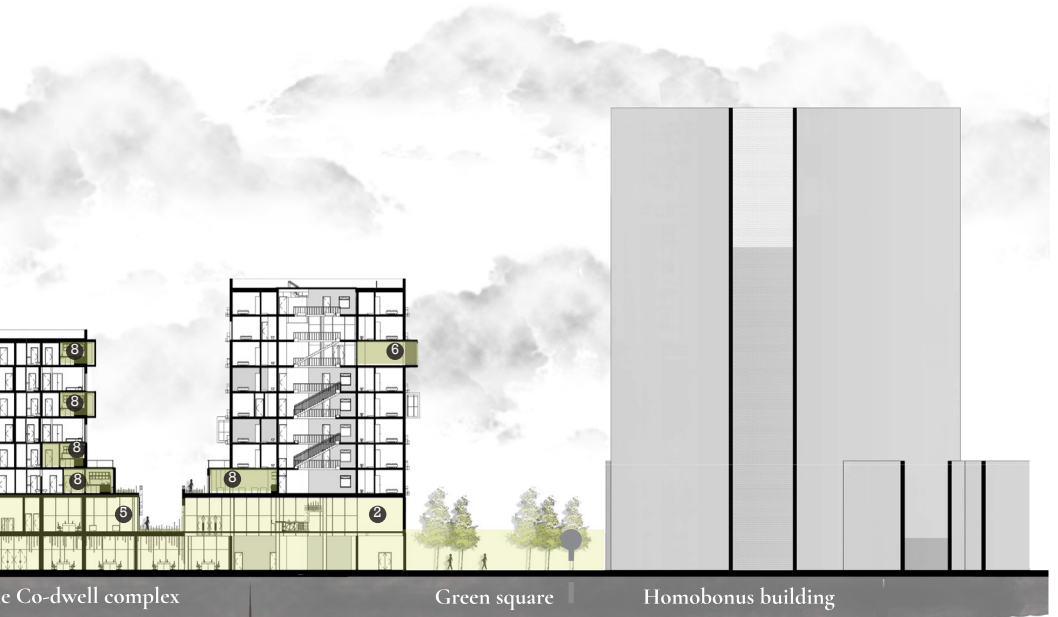
The accessibility an



- ① Circulation Core
- ② Urban integration hub
- ③ Co-production
- ④ Catering
- ⑤ Co-working space
- ⑥ Shared hobby room
- ⑦ Shared Living Room
- ⑧ Shared living and kitchen
- ⑨ Second street level



Southern-east square

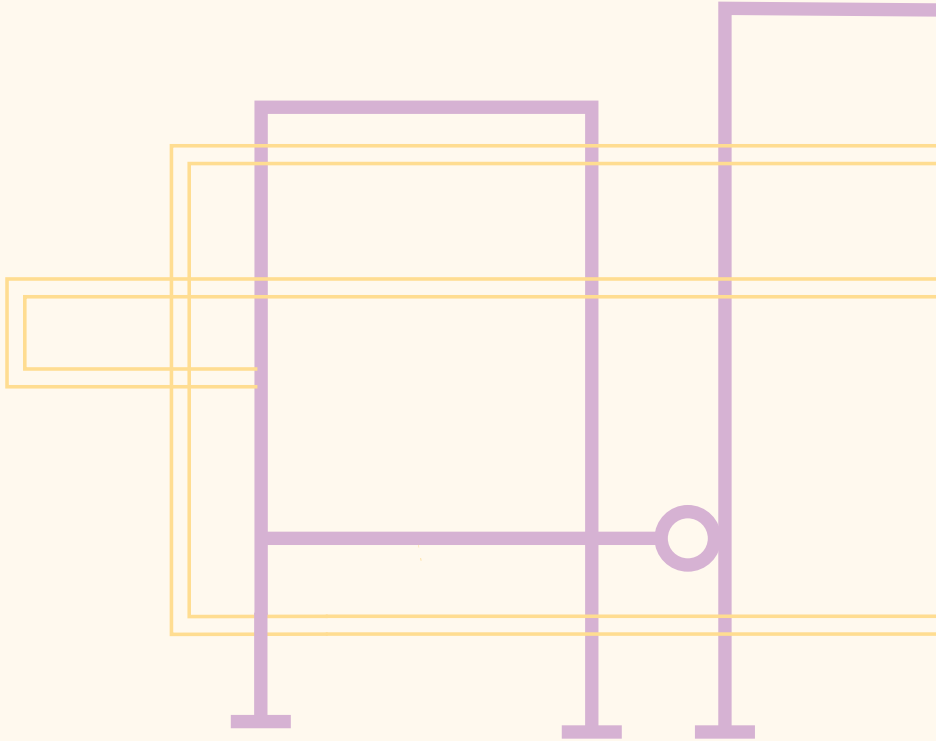


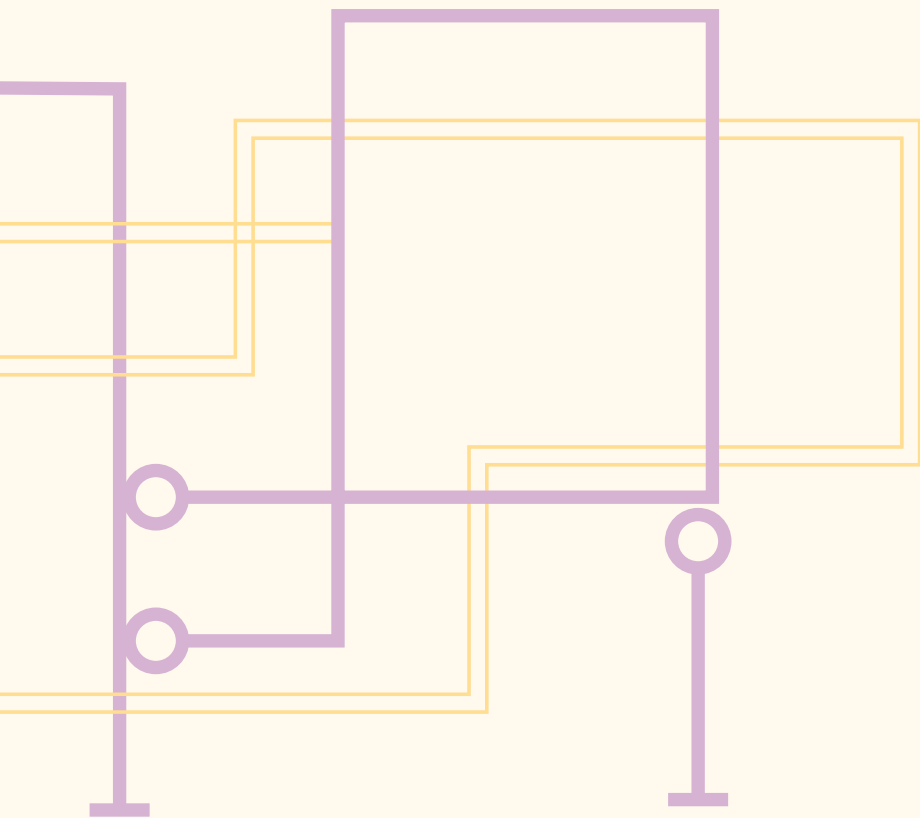
Northern-east square





Building technology





Sustainable structure choice

Cross laminated timber

CLT in the Eco-system

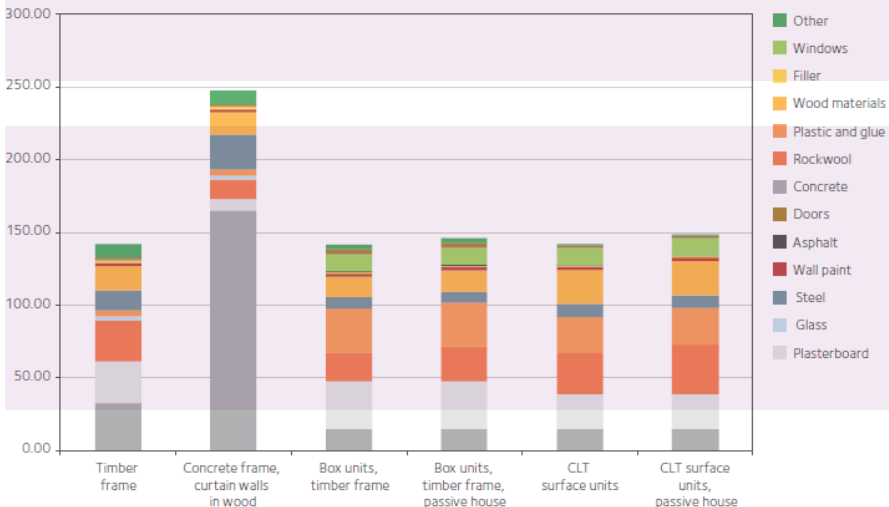
When compared to other construction materials, the use of wood is consequently advantageous from an environmental, mental, and climate standpoint. To begin with, CLT production is a low-energy process.

Second, by-products (wood shavings and wood debris) are utilized to generate energy, which is then used to heat drying kilns, for example, lowering the demand for fossil energy during the manufacturing process. Sustainable forestry means that forest exploitation does not exceed growth, raw materials are regularly replenished, and wood may be returned to the eco-cycle without releasing damaging greenhouse gases into the atmosphere.

CLT usages advantages

Wood is a natural, renewable resource that is produced locally to save transportation costs. Production by-products are used to generate energy, and the manufacturing process produces very little trash. The material retains carbon dioxide throughout its lifetime and can be utilized as a bio-fuel to replace fossil fuels at the end of it. See the figure of Co2 emissions.

Carbon emissions (kg CO_{2,eq}/m² housing development)



Source: CLT handbook, CLT structures – facts and planning, 2019

Sustainability of bamboo

As facade cladding and blinds-railing approach

Bamboo advantages and benefits according to MOSO® biggest supplier in Europe



hard & sustainable

Bamboo Panels, Beams, and Veneer have a hardness and density comparable to or greater than the best hardwood products, making them appropriate for use in heavy-duty applications. All goods have a Brinell hardness of $>4 \text{ kg/mm}^2$.



Fire-proof

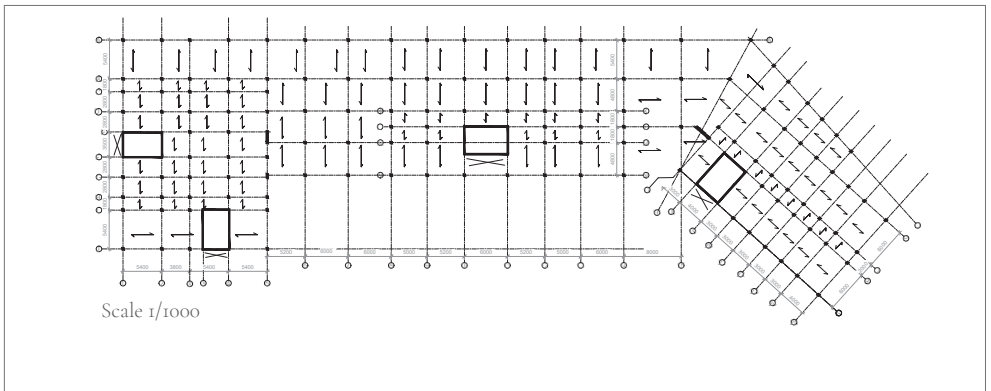
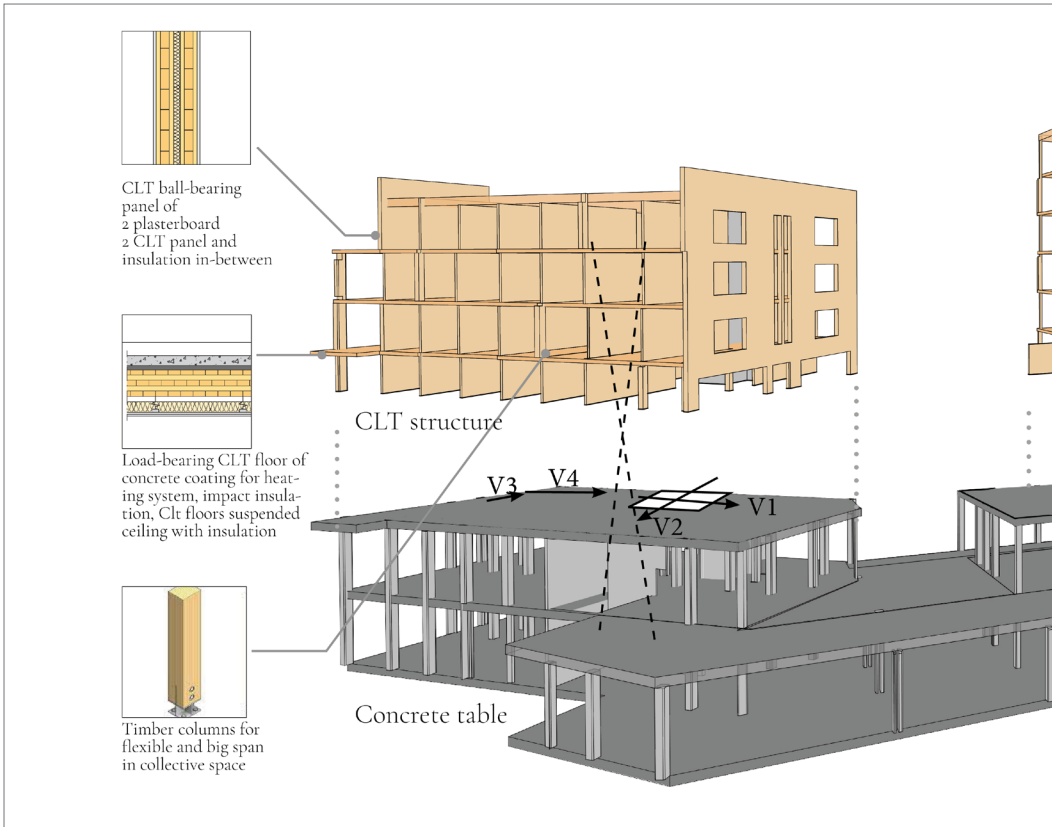
Bamboo High Density® has a fire resistance class of B-s1-d0 according to EN 13501-1, making it ideal for public applications.



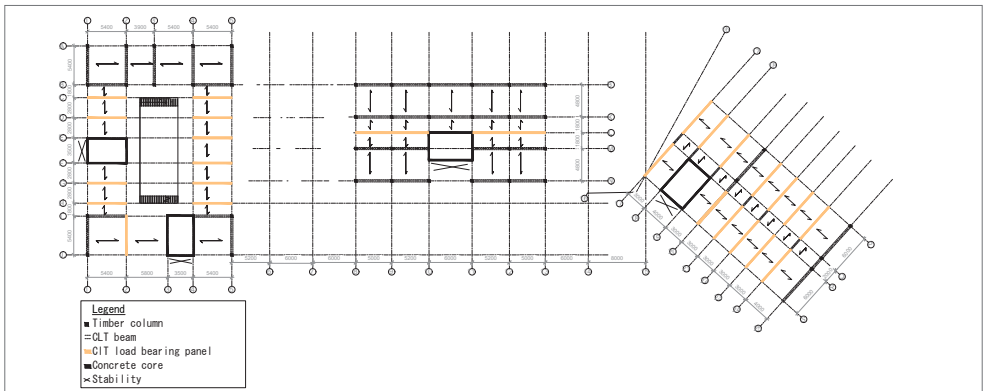
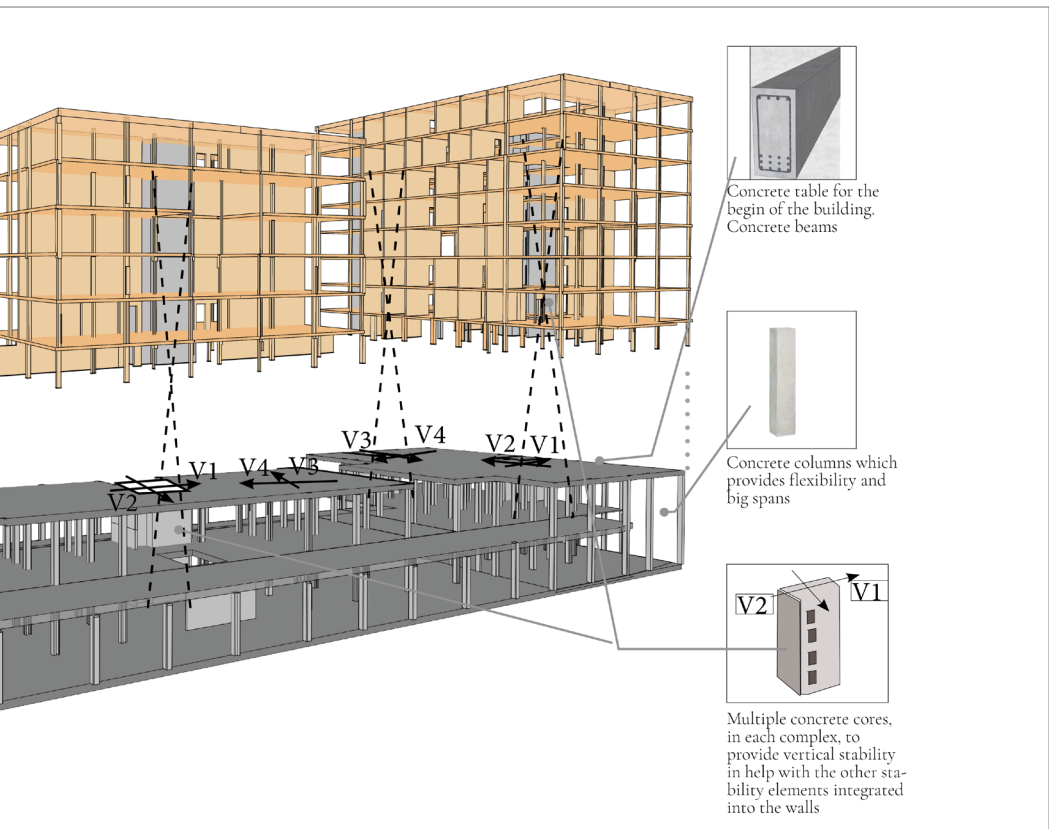
Endless resource

Bamboo is one of the world's fastest growing plants. After 4-5 years, each stem can be harvested, and the plant continues to develop.

Structure grid plan and diagram

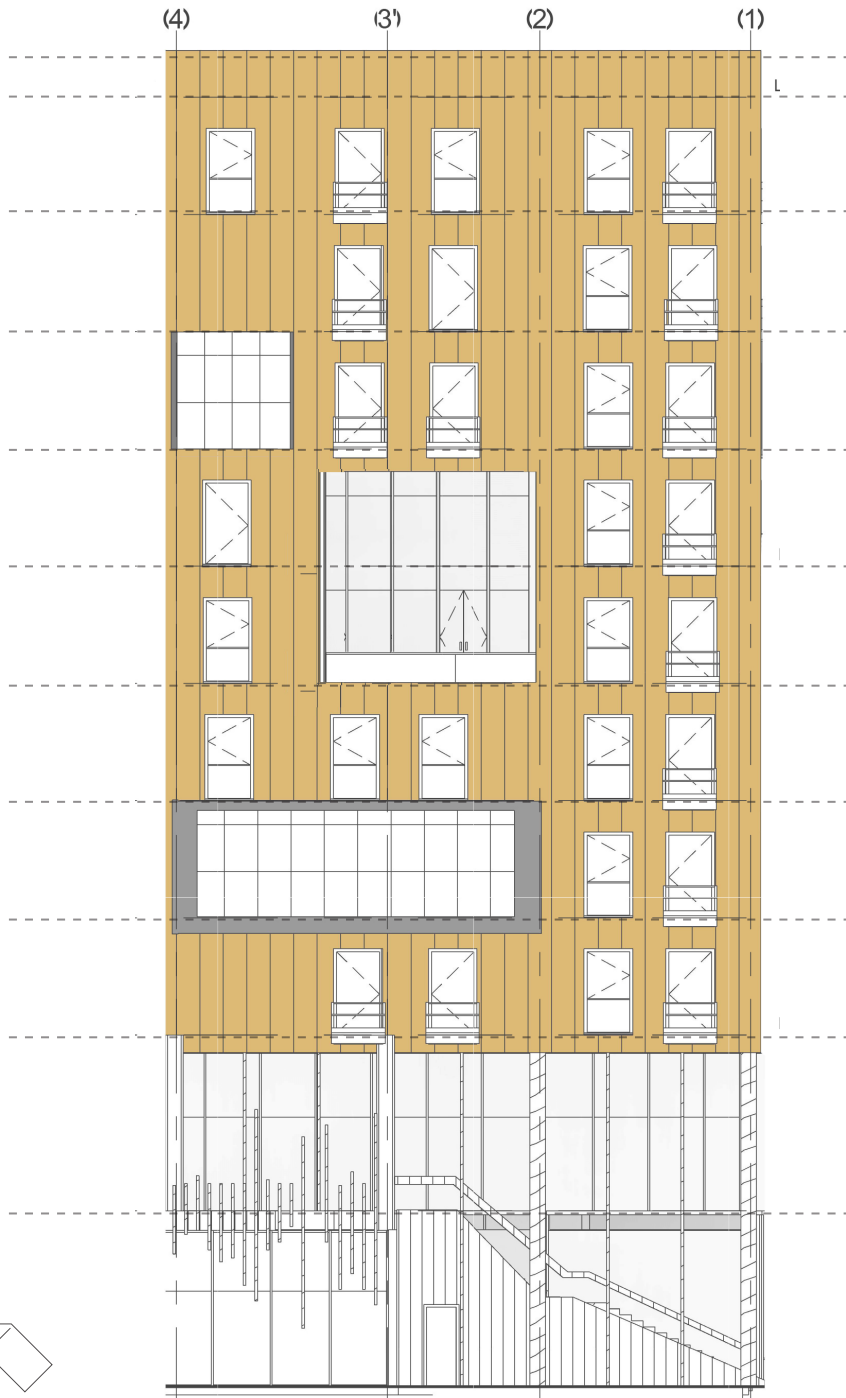


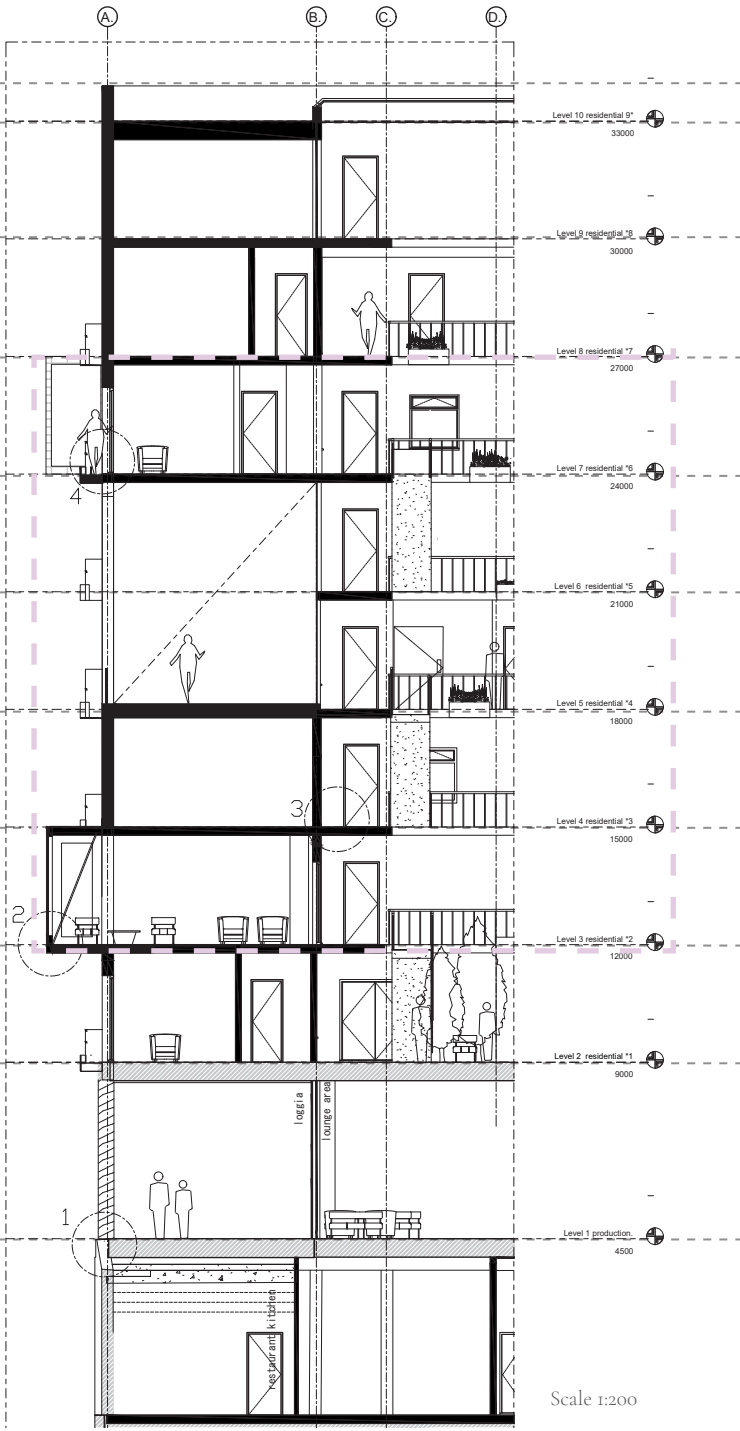
Concrete table big spans: The concrete table is chosen because of the big span that offers to the design. This is particularly implemented on the ground and first floor where retail, catering, working and production spaces are found. These spaces need to be spacious. the concrete's features provide those spaces with big spans.



CLT affordability And sustainability: The structure is selected according to the sustainability and affordability which can decrease the construction costs and consequently the rents for the low-income group. CLT is considered to be easier and quicker to assemble on the site which saves some costs in comparison to other construction methods. However, the other reason is because of its flexible use in the future in which the clt panels can be reused in other buildings and can be fixed.

Technical
facade
section



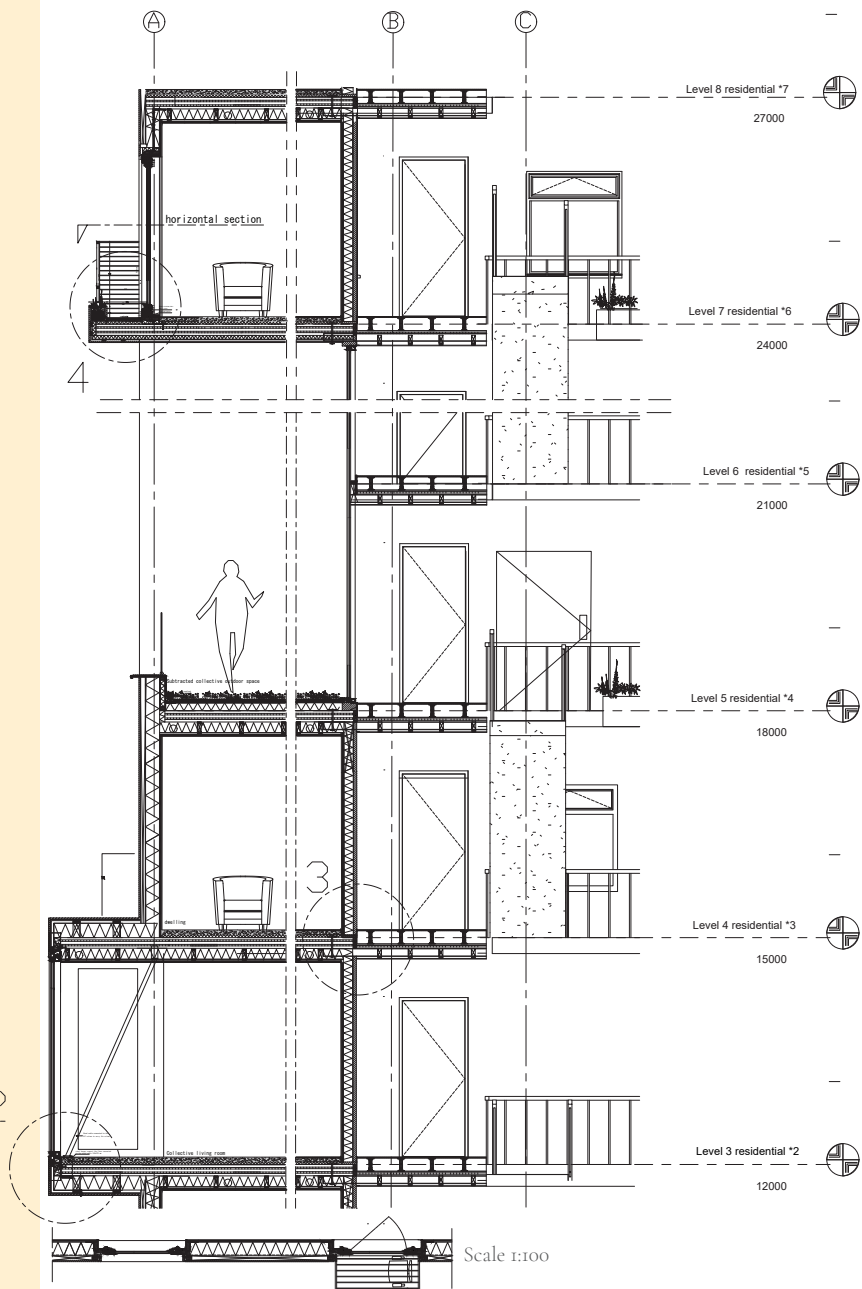


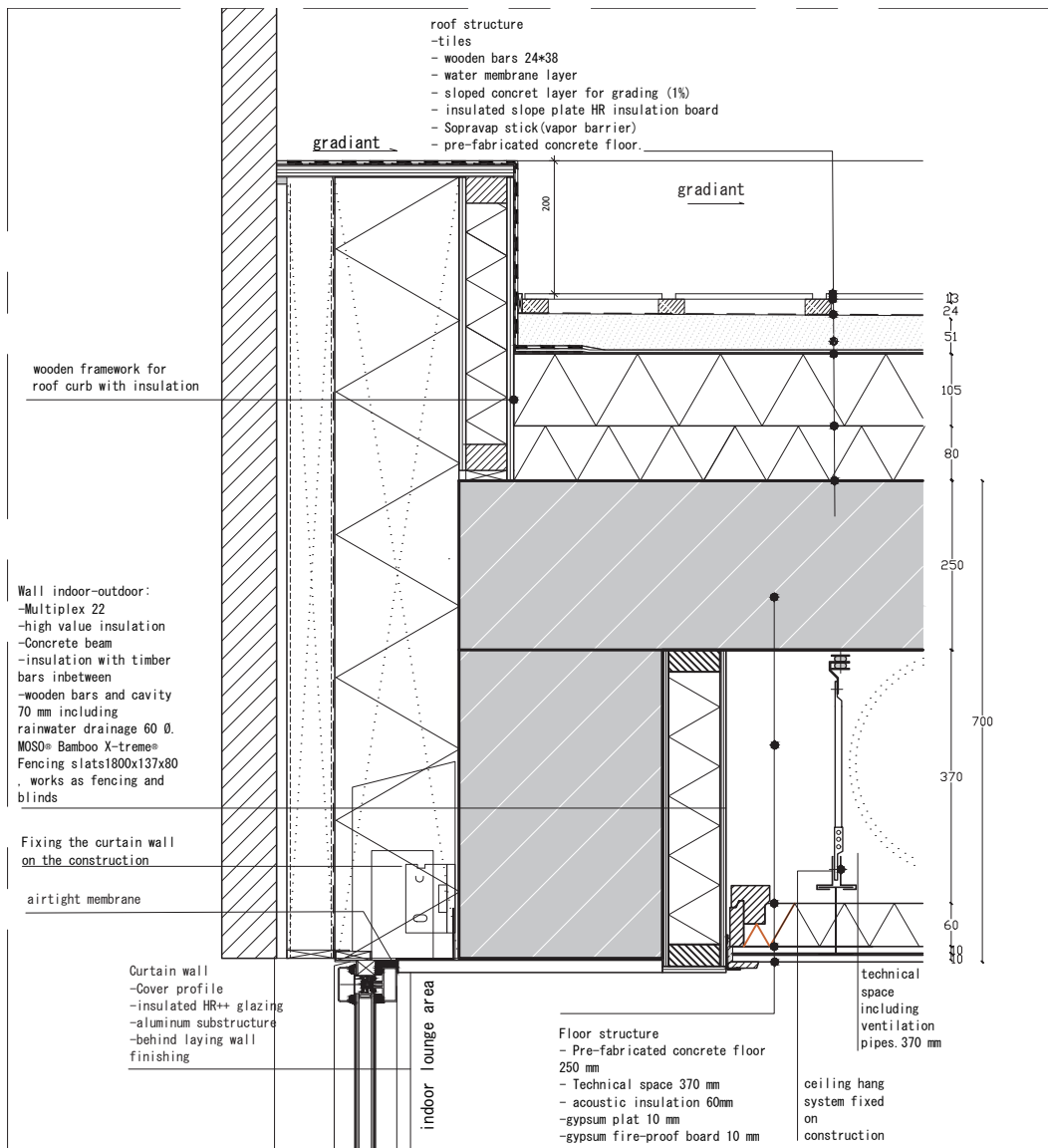
Scale 1:200

Facade impression



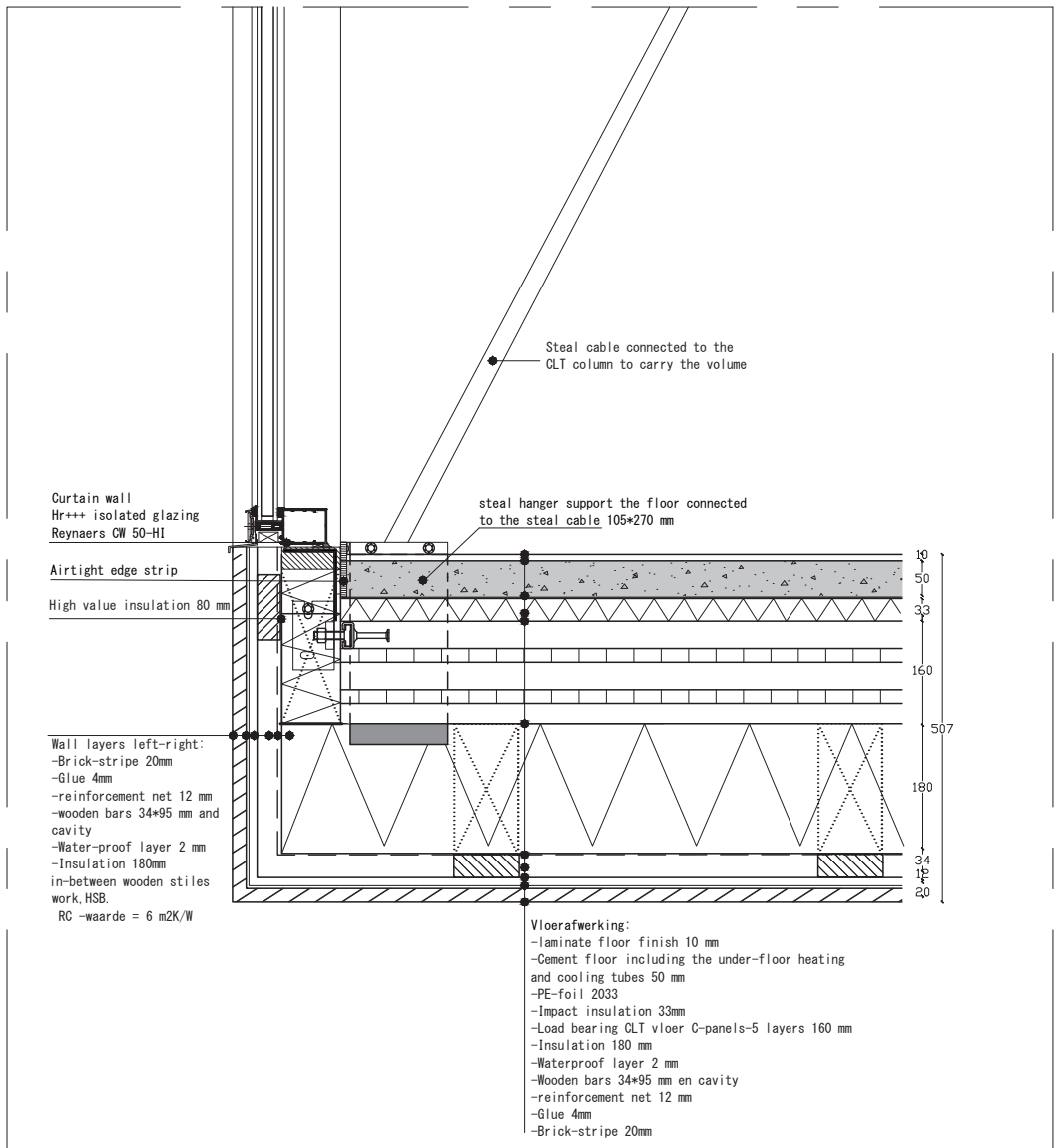
Facade fragment and horizontal section





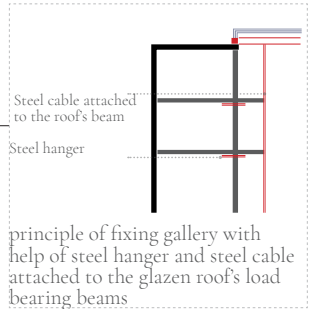
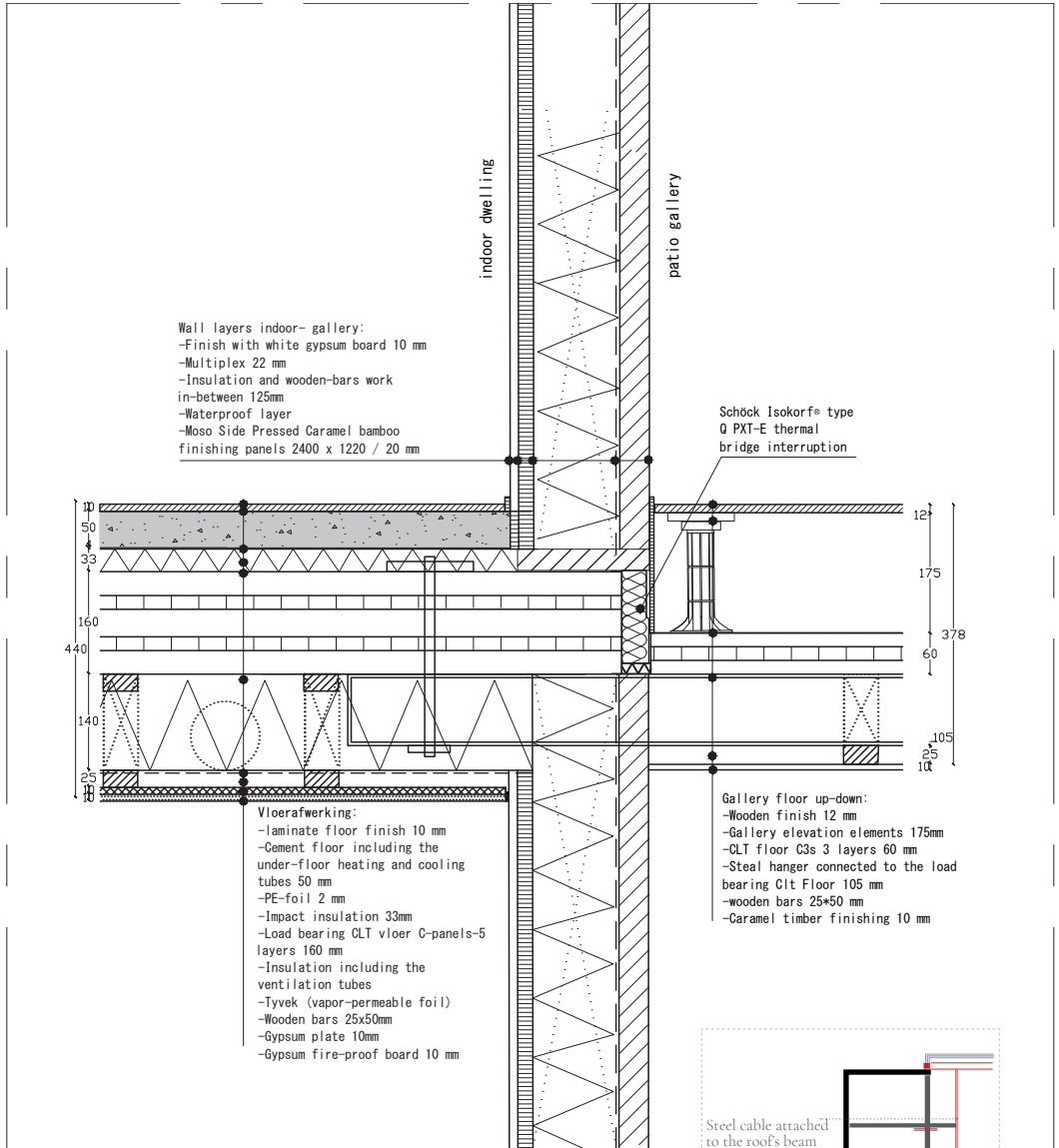
Detail 1: The production street loggia and the noise insulation of the production area underneath

Scale 1:10



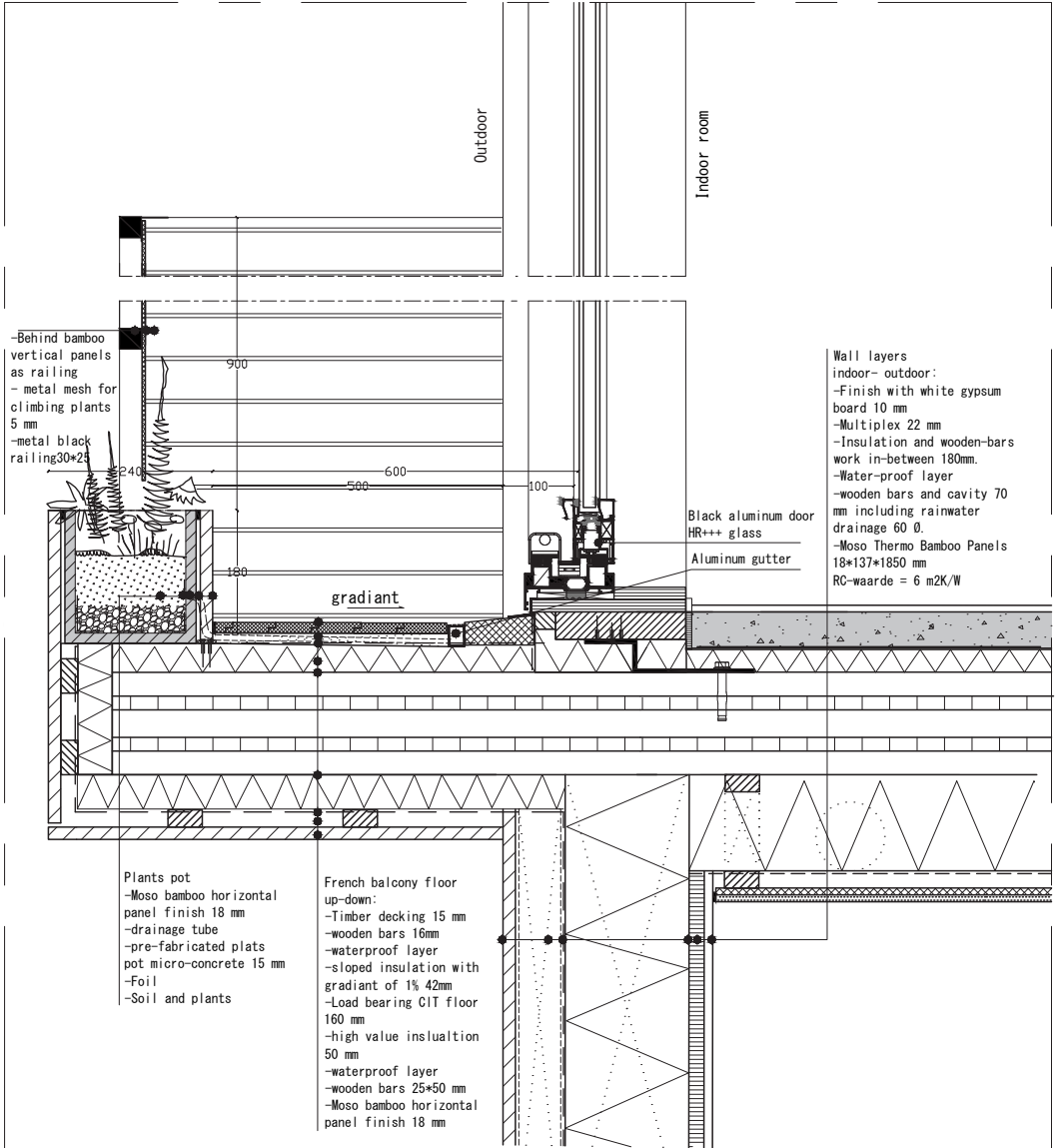
Detail 2: Cantilever fixing of the collective living-room space

Scale 1:10



Detail 3: The atrium's gallery fixing approach

Scale 1:10



Detail 4: dwelling's French balcony fixing with the plants pots

Scale 1:10

French balcony digram and floor plan

The majority of the spaces are collectively shared including the outdoor spaces. However, in the design there is still room for private outdoor space demonstrated in the idea of small French-balcony-like in each unit (single unite, the sleeping room in the shared apartments and the small apartments. Where residents can:

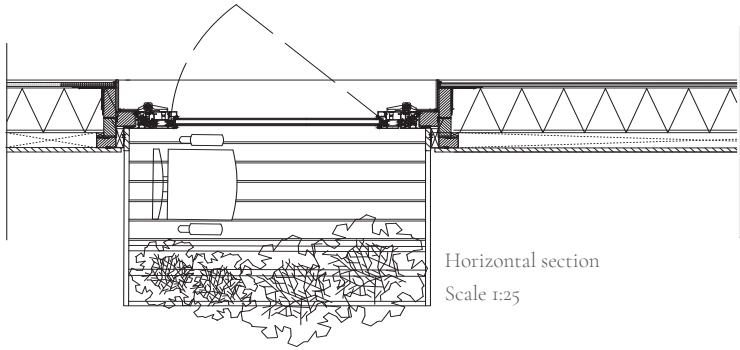
Have a view on the city

Private sitting outdoor space

Gardening

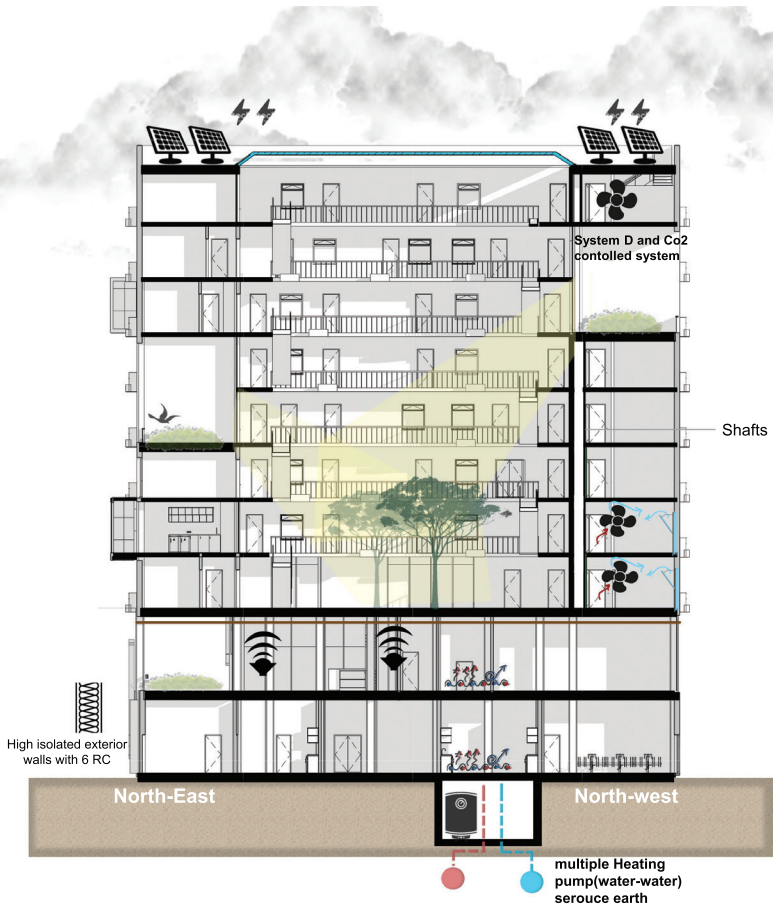
Living room

Horizontal section



Horizontal section
Scale 1:25

Climate and installations design



Using high value noise insulation in the first two floors to stop the noise from the production area to the residential, beside using acoustic pland-fond system

noise insulation from production area



Anhydrite floor for heating and cooling connected with the heat pump and heat exchanger, there are multiple heating pump in the complex located underground, also at the floor, for the case of losing heat, re-warming item is used on each floor in case of collective boiler for collective dwellings

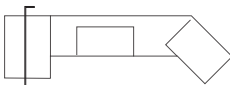
Heating and cooling



System D and Co2 contolled system

System D ventilation system in climate zone 2: using mechanical output and input. System D is connected with Co2 concentration system which will automatically work regarding the CO2 level in the active spaces such as exhibition, restaurants...+ possible natural ventilation in dwellings

Ventelation system D



Reflection

This reflection is accomplished according to the graduation manual highlighting five different aspects about the design process.

1. The relationship between graduation topic, the design studio and the architecture master track

Analysing the site of Walenburghof, Rotterdam and the housing situation in Holland, clarifies major problems such as the inaccessible rental market for low-income groups, mainly Dutch starters. Additionally, in the last seven years, Holland witnessed a huge refugee influx which put further pressure on the housing sector. The main architectural intention of this studio, but also as a new housing model in the Netherlands, is to introduce the cooperative housing model as a non-profit settlement that aids the low-income group and guarantees an equal housing right for all residents. The Co-Dwell research and design focuses on examining this model as a solution for offering a home to newcomers and Dutch starters.

2. The relationship between the research and design in the graduation project.

Research forms the foundation of my project's interests and fascinations. By the research, the main faced problems in the housing sector were identified. I focused on the political-economic issues and the social ones. After identifying the problems in the rental housing sector mainly: the long queue to enter a social housing, by social housing is a limited group sheltered focusing on the very low-income and ignoring the middle income (starters) and also

the social segregation between the different target group, especially from different ethnic backgrounds. However, the research about refugees' integration into the Dutch society shows the possibility of better integration through two main means which are housing and working. That stimulates the research, and the questioning of the new housing model Co-living which is a new stream that has currently emerged out of the Co-housing model in the 70th. The research shows the possible social encounter of this model and the big number of shelters that can be supplied in small plots according to this model. Furthermore, the research elaborates on spatial principles applied specifically in the Co-living housing model. That leads to the spatial hierarchy in the project's design. The other integration means is the working as the research shows. In the theoretical framework, multiple typologies of linking housing and working were identified according to the scale of the targeted plot. This helped the design to connect the two elements in an urban successful manner. Thus, research guides the design spatially and mentally by helping understanding the spatial needs of co-living model and the spatial needs for social cohabitation.

3. The research insights and approaches leading to design principles.

Firstly, the theoretical framework elaborates the key means for newcomers' integration in the text of Ager, A., & Strang, A. (2008). *Understanding Integration: A Conceptual Framework*. *Journal of Refugee Studies*. This literature opens the eye to creating an environment for integration as a task for this project. Another piece of literature was

Co-living insights, 2021. This literature clarifies the manner of collectively sharing residential spaces. It enriches the projects with many design principles such as the size of the cluster, which amenities to share and the spatial hierarchy of a co-living's floorplan and layout. Additionally, the literature of Hoppenbrouwer, E., & Louw, E. (2005). *Mixed-use development: Theory and practice in Amsterdam's Eastern Docklands*. *European Planning Studies* enriched the design of the manner of mixing two functions. It demonstrates the mixed-use evolution and its various typologies according to the aimed scale of a particular space.

Secondly, I accomplished morphological analysis on three case studies. The first case is The Startblock, Amsterdam. This case study shows the cohabitation between Dutch starters and newcomers. After the analysis, the pros and cons were identified and how that can be applied or enhanced in my project. The second morphological analysis was Tanthof settlement, Delft. This is a historical example of the co-housing example in Holland from 80th. Studying its well-functioning and unsuitable features permits designing a better collective environment to live in. The third example was Kalkbriete, Zurich. This example is situated in a similar metropolitan context. It links housing and working together in a fantastic spatial design. It is created by a cooperative housing association similar to the stakeholders in my project. This example enriches my design choices about how to link the site into the context and what is the manner of creating a hybrid building.

Thirdly, I accomplished an ethnographic analysis of the Startblock. That helps me understating the best architectural manner to create an environment for people from different ethnic backgrounds. Even though the architecture aspect lacks better spatial principles, these shortages aid me to acknowledge how

the spatial and social aspect of such examples works. Besides that, I was in the real field where I understood the spatial experiences of users and their opinions about that. Furthermore, I accomplished another ethnographic study about the Tanthof settlement. This study opened the eye to the manner of a co-housing spatial arrangement, which spatial amenities are best to share and what is the users' experience of the co-housing model.

Lastly, I made an interview with the architect of Tanthof Flip Krabbendam and I took his advice into the account during the design process, reflecting that on the Façade and floorplan layout but also on the design and the number of collective spaces. I also made an interview with Carla Huisman, a Dr. studying the Startblock and the social integration in the Dutch context. Who elaborates many spatial factors that are essential for social cohabitation.

4. The project's relationship with the social, professional, and scientific issues.

This gradation project examines a new method of housing which is the collective model. It is a new popular manner to live with because of individuals' economic hinders. This model counts as a cheaper model of housing in comparison to the independent housing models. One vital aspect is its social impact. This model is a creator of social encounters because of its collectively. This is a method to heal the social segregation between groups from different backgrounds. The professional role behind this approach is to give stakeholders opportunities to arrange their spatial and social environment within one community. However, this approach is worldwide spread in the last ten years, but it still needs further academic and professional investigation. My project and research contribute to this field. It also contributes to the new vision of collective housing as an example for Rotterdam that might be a solution for the housing issues.

5. Ethical issues and dilemmas connected to the research

My research touches on a very sensitive topic of living collectively with people from other cultures. This topic is not well studied or built in the reality. That caused some hesitation and fear of touching upon this topic especially because of the lack in sources. But, because of my ethnic background and because of the integration process I have been through in the Netherlands, I tried to investigate that from a professional and architectural perspective. According to my research and the studied case study of The Startblock, I see potentials in applying the co-living housing model because it might solve the social, economic and cultural housing issues according to the accomplished research.

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Co-Dwell is a project that emphasizes the co-living and co-working model as means for social cohabitation between Dutch starters and newcomers in Rotterdam as a multicultural city. It concentrates on smoothening the integration process of newcomers through involvement with the local community. The intention is to create an environment where people can benefit from each other's knowledge and cultural experiences. A cooperative housing model will bring this idea to the reality with a subsidy from Rotterdam municipality. The two actors would supply the target group by affordable collective dwellings and collective work possibilities to give them a good start.