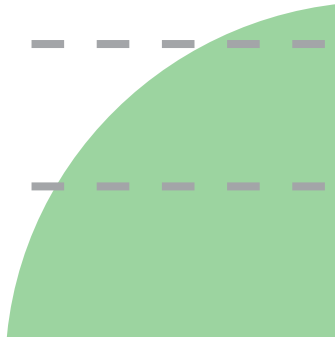
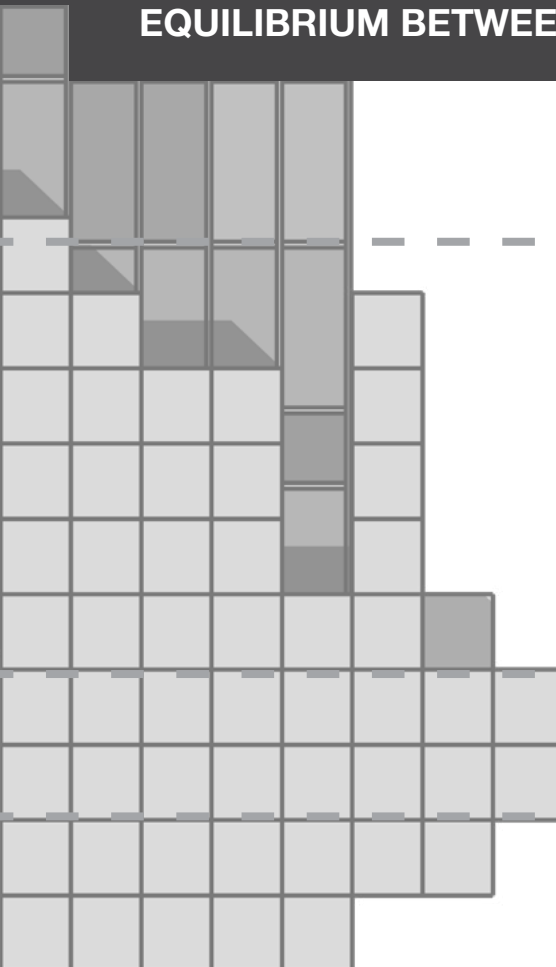


ECOLOGY OF LIVING TOGETHER

EQUILIBRIUM BETWEEN HUMANS & SPECIES IN THE BUILT ENVIRONMENT

research report



T H E M E :

Discovering the possible architectural interventions in aiding in a balanced habitat of shared and secluded spaces between different human households and species in an existing building in the urban context.

AR3A010 - Research Report
AR3AD100 - Advanced Housing Design - Ecology of Inclusion
Alexander Hessels - 5002435
03-04-2022
Tutors: Anne Kockelkorn, Klaske Havik, Olv Klijn

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BACKGROUND INFORMATION:

This research is being done to assist the graduation studio of Advanced Housing Design, “to develop an urban housing laboratory that is socially inclusive and ecologically sustainable and economically viable under the premise of long-term non-speculation”¹. The project site is Blijdorp, Rotterdam, and contains different structures, functions and residents. A new master plan has been drawn by the ‘ecology’ group which I was part of. This plan and more importantly my individual plot for the graduation project design is used as the main scene for this research.

Whereafter two topics from a given list (one for ecology and one for inclusion) have been chosen to continue working with and do research in. For me the topics are:

Ecology: Cohabitation with other species.

Inclusion: Creating diversity by including different and changing household types.

¹ Course Guide, Kockelkorn, A. Klijn, O. (2021) Advanced Housing Design, Ecologies of Inclusion



[01] Masterplan of the site by the Species group. Indicated is my individual plot with the adjusted existing structure.
Made by: Species group



INTRODUCTION

Urban Metabolism

Recently climate change and sustainability has been a much used topic. In recent years “nature” is again an important part of the social agenda, due to global urbanisation. However, we can no longer assume that nature is a force that will selflessly and without human help propel history as Marx and Engels liked to believe. Nor can we trust that keeping the planet’s ecosystems in order – the core idea of metabolism – will propel history in obvious and effective ways¹. In his research on Metabolic urbanisation: the making of cyborg cities, Erik Swyngedouw writes i.a. about how nature becomes urbanised through proliferating socio-metabolic processes. A socio-metabolic process is a set of flows of materials and energy that occur between nature and society². Whereas a cyborg (cybernetic organism) city could be seen as a natural living thing enhanced by engineering and technology. A term popular from the 80s and 90s, like the blockbuster movie Blade Runner (1982). Nonetheless once more significant with the present need for sustainability. Erik Swyngedouw concludes his research with the following:

“The socio-naturally “networked” city can be understood as a giant socio-environmental process, perpetually transforming the socio-physical metabolism of nature. Nature and society are in this way combined to form an urban political-ecology³, a hybrid, an urban cyborg that combines the powers of nature with those of class, gender, and ethnic relations. In the process, a socio-spatial fabric is produced that privileges some and excludes many, that produces significant socio-environmental injustices.⁴”

1 In Oase nr. 104 : Fragments of a Changing Natural History of Urbanisation, the authors write about the urban metabolism. Addressing that technology has helped us in our urban environment however also placing this, for us self-evident, automated metabolism into the background. Meanwhile humans have become so dependent on this system that the real qualities of natural metabolism are being missed or even forgotten. source: OASE 104: The Urban Household of Metabolism (2019)

2 Manuel; Toledo, Víctor M. (2014). The Social Metabolism: A Socio-Ecological Theory of Historical Change

3 Urban political ecology is a conceptual approach that understands urbanisation to be a political, economic, social, and ecological process, one that often results in highly uneven and inequitable landscapes. Source: www.oxfordbibliographies.com

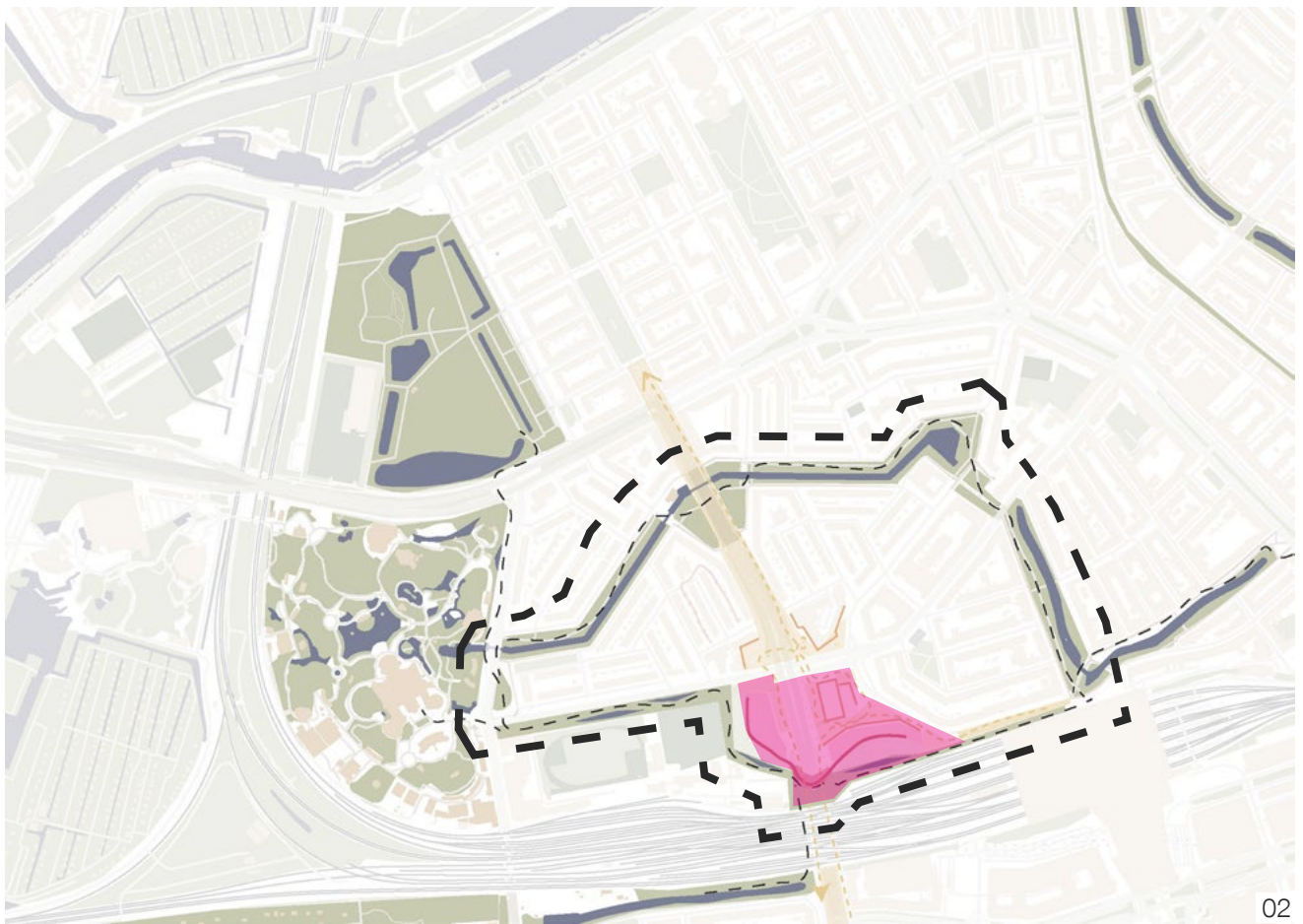
4 Swyngedouw, E. (2006). Circulations and metabolisms: (Hybrid) Natures and (Cyborg) cities. Science as Culture

Swyngedouw argues that struggles of urbanising nature is more than a technological and engineering problem (the physical aspect of it). The political meaning of nature is of equal importance (the social aspect), if sustainability is to be combined with a just and empowering urban development benefiting all inhabitants. Swyngedouw sees this as a way of urban development that returns the city and the city’s environment to its citizens.

For the urban development strategy, my group⁵ introduced a notion of circulation by connecting the urban greeneries surrounding the neighbourhood of Blijdorp, Rotterdam. Not only a green connection for the human residents of the city, but also for all other species that inhabit Rotterdam. A hybrid space for humans and nature on a bigger scale, promoting a just and inclusive urban environment, accessible for all inhabitants. What interests me specifically is what happens on the smaller scale of this urban strategy. The place of architecture and engineering, where we have to design the new housing units for humans. A place where I think that not only the flow of these humans but also other species could finally inhabit. In my case this smaller scale is an existing structure [03] of which one half is demolished in favour of the masterplan. A concrete tunnel form structure consisting of repetitive social housing apartments. So in this research I will delve into the metabolism of one building inhabiting the differing human users, representing the social aspect. While also adapting to possible other species inhabitants, representing nature. Trying to form concluding matters through architectural interventions. A challenging mission, clustering different habitats in an existing monotonous building.

In order to be able to carry out the urban plan and guarantee its qualities we, the ecology group, decided to demolish a large part of the existing buildings. As a result, the existing residents of the whole project area have to abandon their homes. A great number of these existing household types are elderly people from the elderly home and students from the student housing.

5 The Ecology group, as stated in the background information. Page 6.



02



02

03

[02] Notion of circulation, connecting the urban greeneries surrounding the neighbourhood of Blijdorp. In pink shown the project location.
Made by: species group
[03] Aerial picture of the existing social housing structure. source: Google/maps

SPECIES IN THE BUILT ENVIRONMENT

I'm quite fascinated by the fact that other species inhabit our urban cities and even adapt to it¹. But one could ask the question if the urban context is a healthy space for them. Less than two km away from Blijdrop, Rotterdam, one can spot foxes in the streets. Due to this the artist Florentijn Hofman made a 5 metre high fox statue in the city of Rotterdam [04]. But there is also a second meaning to it, for the fox is holding a plastic bag in its mouth². The more the cities grow and expand, the less nature we leave. Concerning this the WFUF (World Forum on Urban Forests) made a "call for action" and brought to attention the following:

*"For the first time in history, over half of the world's population lives in towns and cities, a proportion projected to reach 68 per cent by 2050. For urban dwellers, our wellbeing and often, our livelihoods, depend on the many services provided by healthy, natural ecosystems in and around our towns and cities. However, as urban areas rapidly expand, land use planning is too often inadequate, failing to take full account of nature's benefits."*³

This is also important for a country like the Netherlands, where the land has been mostly man-made throughout the decades. Counting to only 26% un-touched initial and human-made nature of the country's surface, that including the inland waterways⁴. This ecology research is not a call to create a green urban utopia, but to have a better understanding of a possible relationship between architecture and nature benefiting not only ourselves. I do believe that we as (future) architects should at least take other species into consideration if we want to design a sustainable urban context with nature.

Integrating habitation for other species could be effective and should fit within human housing design. For example: 86% of the registered

addresses in Rotterdam have a residential function⁵. So imagine if these habitats would be (re)designed with cohabitation in mind. That would mean that 285.605⁶ dwellings could, in some way, be nature inclusive.

Sir Patrick Geddes (1854-1932) was a Scottish biologist, sociologist and pioneering town planner that emphasised the interdependence of culture and nature⁷. His lessons can be split into two factors. The first being the need for transdisciplinary education as a facilitator of cultural change (what I see as the social aspect). While his second lesson is the integration of our human settlements into the natural conditions of their particular region (what I see as the physical aspect). The fact that individuals like Geddes already emphasised, more than a centuries ago, the importance of nature in our urban environments and our culture means that it's definitely not a recently emerged ideology. Nevertheless there are differences between his time period and the period we are in right now. Geddes wrote about possible town planning theories that could benefit both humans and nature. But as stated earlier our cities have already grown so much that they house more than half of the human population. In such a manner that there is less nature left for our cities to even adapt towards. While also in the present-day many different species are getting extinct⁸ and even thrive more in our human made urban areas. Considering my research and project of transforming an existing building will probably be mirrored to Geddesian lessons. For it will not be the integration of our human settlements into the natural conditions but the nature (the species) into our urban conditions. Yet trying to follow the principle of Geddes' lesson for unity of culture and nature.

5 BAG - Kadaster. (2021).

6 Statistics from the municipality of Rotterdam. source www.allecijfers.nl

7 In his paper, Wahl writes about the lessons of Geddes and its potential in sustainable developments on different levels of the urban political-ecology. Source: Wahl, D.C. (2005). Design and Planning for People in Place: Sir Patrick Geddes (1854-1932) and the Emergence of Ecological Planning, Ecological Design, and Bioregionalism

8 In January 2005 an International Conference on Biodiversity highlighted the fact that we are currently living through a global mass extinction of species at a rate comparable to the disappearance of the dinosaurs 65 million years ago. Source: El Pais, January, 25th, 2005, p. 28.

1 Dell'Amore, C. (2016, 18 april). How Wild Animals Are Hacking Life in the City.

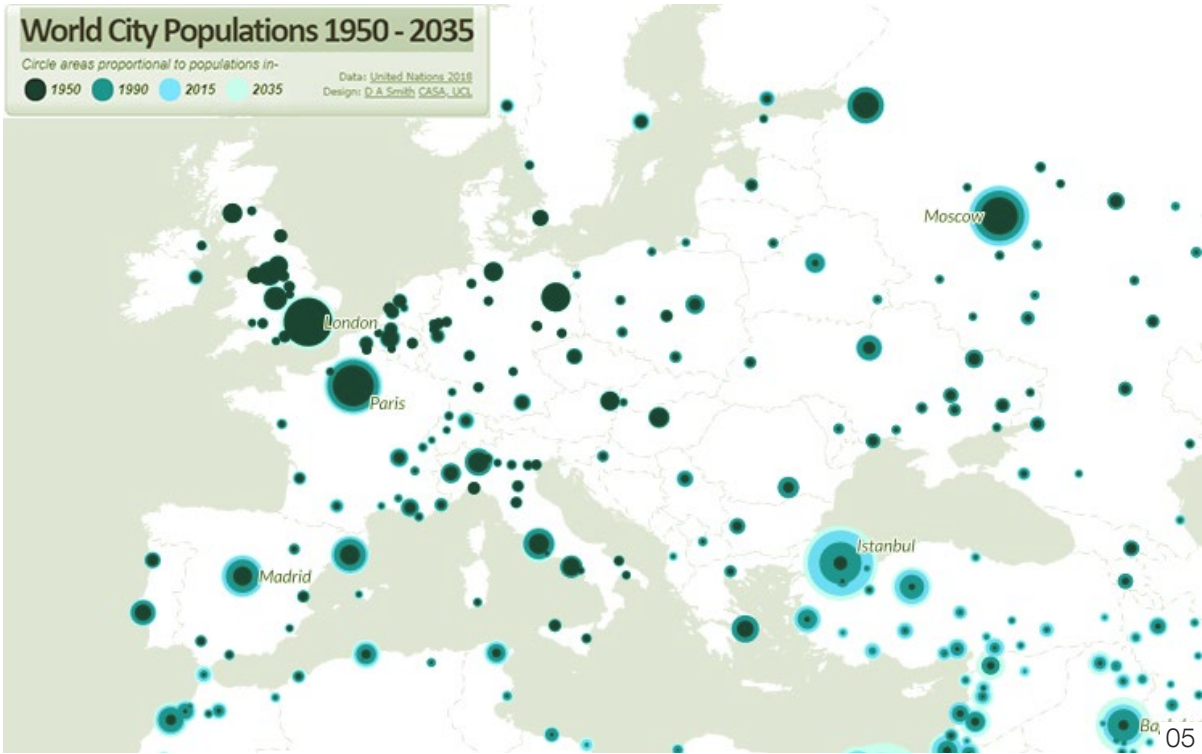
2 Klapmuts, A. (2020). Mysterie opgelost: dit doet de vos met zijn plastic tas op de Schiedamsesweg.

3 World Forum on Urban Forests. (2018). WFUF, greener, healthier, and happier cities for all: A call for action.

4 Aandeel beschermde natuurgebieden in Nederland | Compendium voor de Leefomgeving. (2010). Rijksoverheid.



04



05

[04] Bospolder vos (2020) -
 Studio Florentijn Hofman, Photo: © Frank Hanswijk

[05] World city populations 1950-2035. Proportional population of cities since 1950.
 Source: www.luminocity3d.org/WorldCity (data by United Nations 2018)

COOPERATIVE HOUSING IN FAVOUR OF DIVERSITY

Even Though the housing percentages show a high number that doesn't mean there is enough housing for the people of Rotterdam and the Netherlands. During our studio discussions and presentations our graduation studio group discovered the increasingly unfavourable state the Dutch housing market is turning into¹. Due to the housing scarcity, rent rises considerably to such a point that social housing rent can go up to 750 euros. If the income of one is too high then the private sector is another option but without numerous advantages such as housing allowance given by the government. The private sector is often so unprofitable that buying a house could be more advantageous. But then another problem arises due to this housing shortage. When bidding on a house commences, some offer much more than the asked price in order to beat other contestants. This leads to the financially less fortunate people missing out on a home while the more wealthy people or even investors get the dwelling. Soon my fellow students and myself will experience this housing market as starters. Due to this I want to broaden my knowledge and find possible solutions for this matter.

To facilitate this just and inclusive hybrid, of people and nature, there is a need for a housing system that allows such assimilation. Nowadays there is a housing shortage and the available housing being far too high priced, the chance for housing corporations to even consider financing and incorporating species into the building can be seen as slim. This is where Cooperative housing comes into play. Cooperative housing organisations think carefully about what they want for their future living environment and aren't reluctant for unconventional architecture². So if the cooperative housing group has an interest in other species it can be possible to incorporate them into the housing design. An example of this is De Warren Cooperative housing [07] in Amsterdam that is being built at this moment of writing. It is a sustainable apartment complex where people and animals should feel welcome³.

Another important aspect of cooperative housing is the importance of shared spaces. The rising land prices makes shared spaces more attractive, considering that the financial burden is then shared between the entire housing group. For example sharing some of the facilities like a washing machine or tumble dryer. Leaving more square metres left for other functions. Or creating larger shared (outdoor) spaces and gardens instead of smaller private spaces. So if there is a possibility for a bigger collective (outdoor) space, that same space could also be accommodated by other species.

In their book about the potential of collective housing, *Collective Housing - a new habitat for living in Brussels*(2021), Joren Sansen and Michael Ryckewaert write in the introduction:

*"This book supports the idea that dense, urban habitats should rely on housing that is truly 'collective'. Or in other words, housing construction should transition from simply producing 'multi-family housing' to 'collective housing'."*⁴

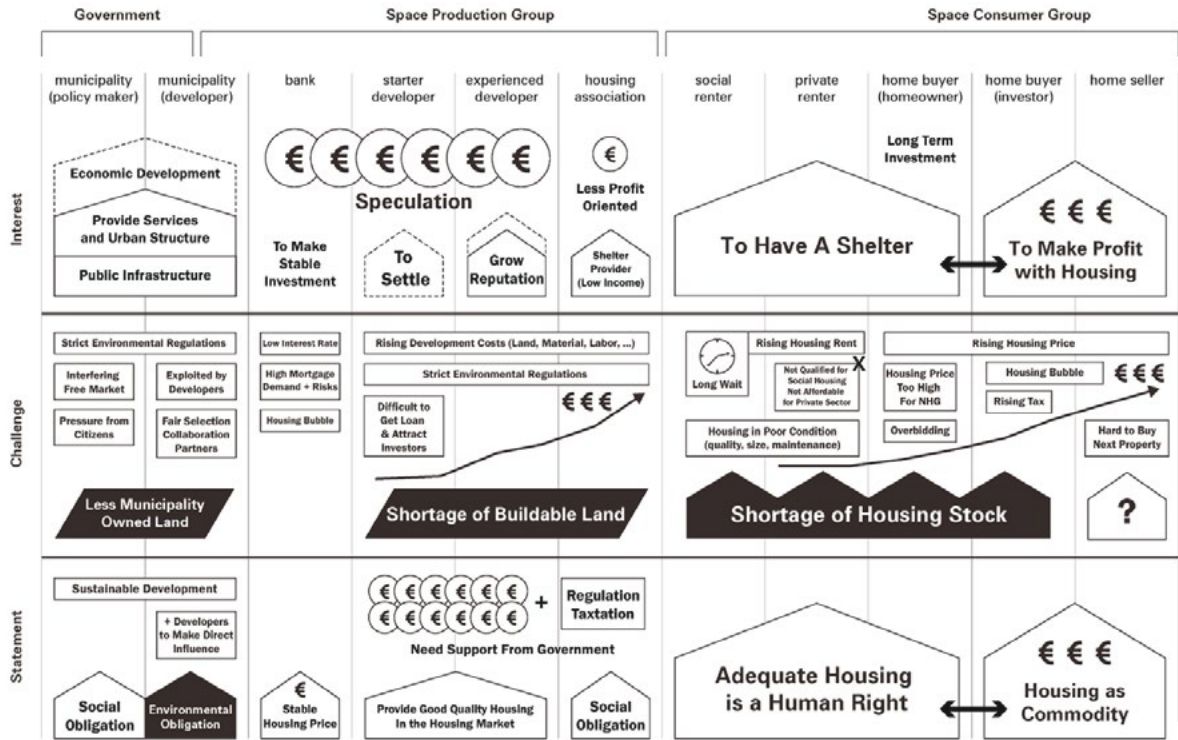
In their selection of case studies in the city of Brussels, Sansen and Ryckewaert realised the different mismatches between the habitants needs and desires and the existing housing. So due to this they argue that housing production needs to adapt, increasing in its quality and liveability, diversify and democratise towards housing developments that are more demand-centred. Hence researching different and changing household types and social groups inside one building. Delving into the possible establishment of cohabitation, not only between the human habitants but also between humans and species.

1 Group Work of the Urban analysis. (2021) AR3AD100 Advanced Housing. Ecology of inclusion. chapter: Political economy

2 Kockelkorn, A., & Schindler, S. (2021). Cooperative conditions. A primer on Architecture, Finance and Regulation in Zurich.

3 A statement by De Warren group on their internet site. source: <https://dewarren.co>

4 Sansen, J., & Ryckewaert, M. (2021). *Collective Housing. A New Habitat for Living in Brussels*. VUBPRESS. introduction p. 9 & Conclusions on collective housing projects p. 115



06



07

[06] Part of the group work of the Urban analysis. Concluding the interest, challenge and statement of the political economy for housing in the Netherlands and our project site. (2021) AR3AD100 Advanced Housing. Ecology of inclusion. chapter: Political economy

[07] De Warren artist impression, design by Natruified-architecture.

THE PROBLEM STATEMENT OF COHABITATION

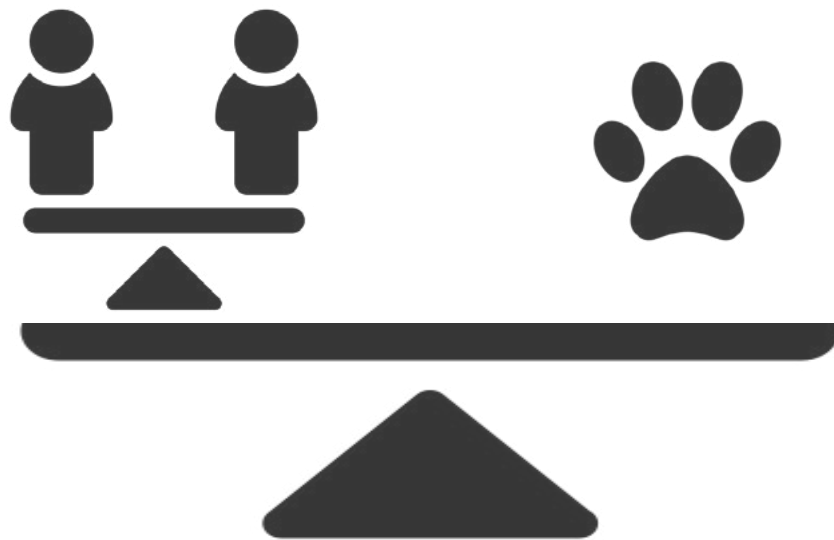
The three different household types that will be present in the building are students-, family- and elderly households. When combining these different household types and thus social groups with different species, one might think of all of the positive aspects it could add to housing units. But then again, a mix of different habitational interests and needs could also result in conflict and an unpleasant living environment. So to avoid misunderstandings and friction between the habitants I want to know how to use architecture in aiding in a balanced cohabitation. So due to this the next research question will be the leading theme in this research:

How can architecture and housing design support a balanced inclusive cohabitation of species and humans of different household types and social groups?

sub-questions:

- 1: How to gather and maintain a durable community of diverse household types and social groups in one building.
- 2: Which possible spatial needs and desires of the users are applicable for a balanced cohabitation?
- 3: What design interventions can be used to organise and influence the way of cohabitation between the users?

In the first chapter 'Architecture and community building' I will mostly look into the theoretical aspect of cohabitation. Researching how such a differing group could live together and form a neighbourhood or even a community. Using theories, knowledge and data from different professionals and organisations in this matter. While closing this chapter with a short introduction of the fictional users that I foresee composing this community. In the second chapter 'Programming habitation' I will research the possible needs and desires of the human and species users on a habitational level. Bridging the theoretical to the practical by visualising all the gathered knowledge in a diagram representing the transformed existing structure. The third chapter 'Design interventions' will be about practical habitational examples. Analysing architectural case studies for human habitation and engineering methods for housing species.





CHAPTER 1

Architecture and community building

CASE STUDY - WINDSONG CO-HOUSING

Architects: DYS architecture
(Davidson, Yuen, Simpson)

Location: Vancouver, Canada

Year planned: 1990 (Start of the initiative)

Year built: 1998

Program: 34 dwellings + collective spaces and gardens

Building typology: ensemble of row houses

Client: WinSong cohousing Construction
Cooperative Association + Northmark Projects

Extra: Though being cohousing, WindSong is not a cooperative housing project. All the dwellings are individually owned.



Situation (no scale)



Community making

The WindSong Cohousing is an exceptional case study to observe an, already more than 20 years, thriving cohousing community that is also stimulated by architecture. Especially due to their multigenerational habitants counting up to almost hundred people. A community that consists of newborns and all the way up to the elderly. Habitants of different social and professional occupations, ranging from students to teachers, actors to musicians, doctors to retail workers, with all of them having different interests. Due to these different interests and skills makes helping each other possible.

While listing through their official website¹, it quickly became apparent that the community is very proud of their way of habitation. Here they state the interests they all share, caring for each other and the world. This interest resulted in having a communal vision and mission. Their vision is to have this multigenerational community where neighbours know, trust and care for each other. Respecting each other's uniqueness. Also taking responsibility not only for themselves, but for the community and the environment. While the mission is to build a coherent community that promotes a sense of being part of a whole. Something that is done through common facilities and encouraging communication and participation.

To maintain a coherent community they instated a community management that meets every month to discuss issues. But also physical participation like administration work, cleaning and maintenance through what they call the community contribution system (CCS). It is even expected for the habitants of WindSong to attend monthly meetings.



Own organic garden



film nights & book discussions



fitness & sports events



holiday meals & cultural celebrations



plays and talent shows



birthdays, weddings & other special occasions

Some of the social interactions

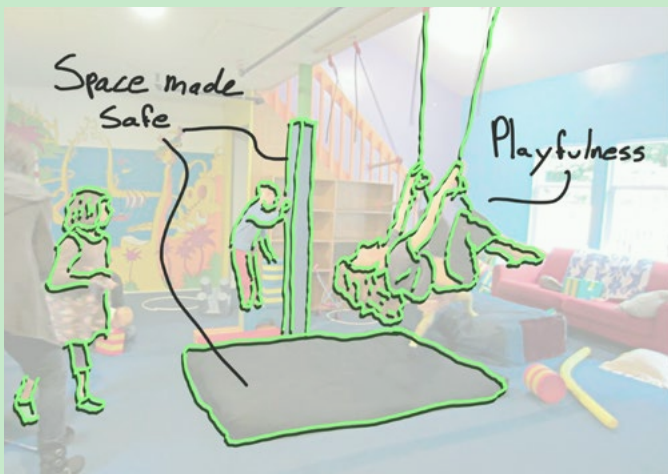
¹ Official website of windsong cohousing, source: <https://windsong.bc.ca/>



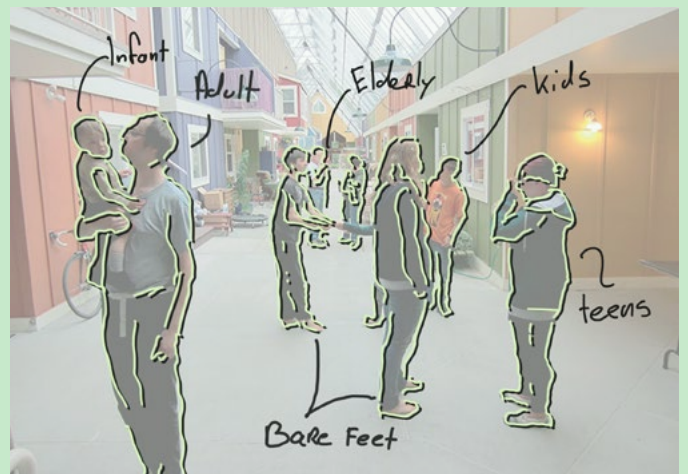
[08] View from inside the atrium shortly after completion.
source: DASH: Building Together (2012)



[09] View from inside the atrium after each resident decided on a color for their own facade. Emphasizes that individual wishes are still respected.
source: DASH: Building Together (2012)



[10] Shared space made specifically for the kids of Windsong to play in a safe environment.
source: by author, picture taken from: DASH: Building Together (2012)



[11] The glass atrium as a safe meeting place no matter the age or if one wears shoes or not.
source: by author, picture taken from: DASH: Building Together (2012)



[12] The communal vegetable garden, a place for young and old.
source: by author, picture taken from: DASH: Building Together (2012)



[13] The circulation space in the centre of the building turned into an art gallery. An example of one of their social interactions
source: by author, picture taken from: DASH: Building Together (2012)

Influence of architectural interventions

“Such a quite vibrant and close group is possible due to the atrium where the houses are closely placed to create a safe and social environment” a quote from one of the residents of WindSong, demonstrating the importance of architectural interventions for this community¹. The project can be described as an assemblage of row houses connected to a closed inner street. While in the centre a cluster of collective functions is placed where the habitants could meet and enjoy their social interventions.

The connecting street atrium is covered by a glass roof. This makes social interaction always possible, regardless of time and weather conditions. Due to the different household types and their architectural

planning, the connection between the houses and the collective street vary. For 6 houses the porch acts as a small buffer between dwelling and street, while for most houses the street connects directly to their main entrance. Dwelling sizes range from 64m² up to 150m². Kitchens face the community street while living rooms and master bedrooms are at the rear facing green spaces. This compact design results to some degree in a cosy small village whilst also using a smaller ground area, leaving more space for the surrounding nature.

The dwellings come in 3 sizes:
 1 bedroom + den (on one level)
 3 bedrooms (on two levels)
 4 bedrooms (on three levels)

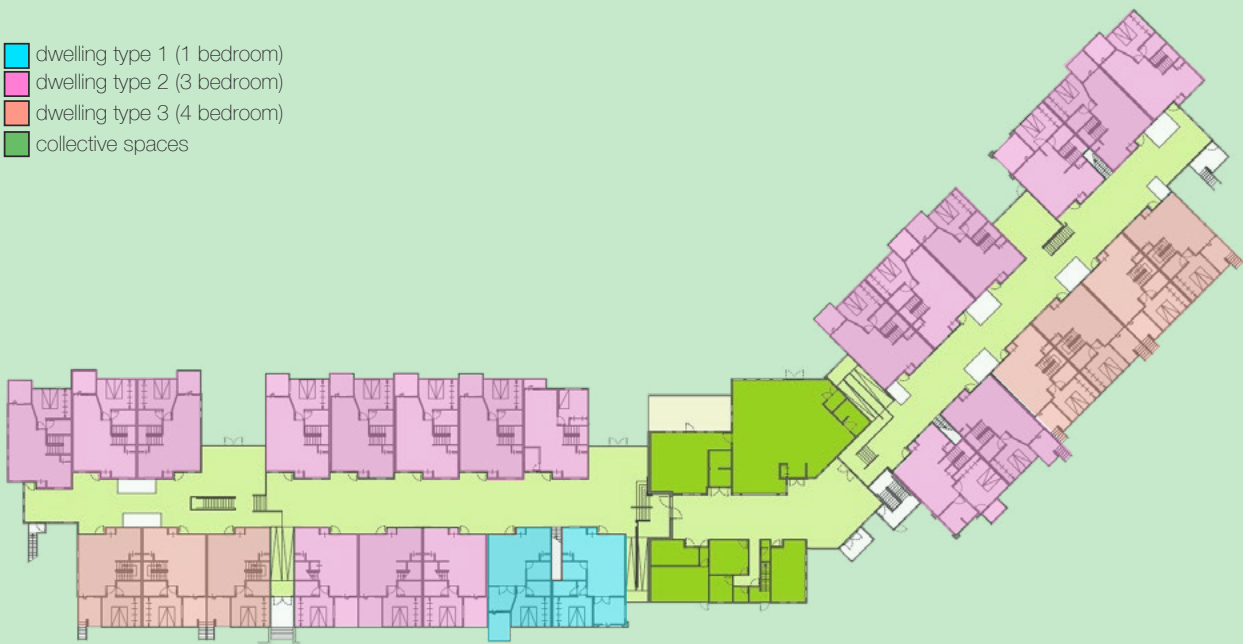
Durrett, C., & Mccamant, K. (2011). Creating Cohousing: Building Sustainable Communities. WindSong Cohousing - community Under glass, Using Space to Create Sustainable Community, (p.185)

“Our vision is to create and sustain a multigenerational community where neighbours know, trust and care for each other.”

- Windsong (website homepage)

Legend:

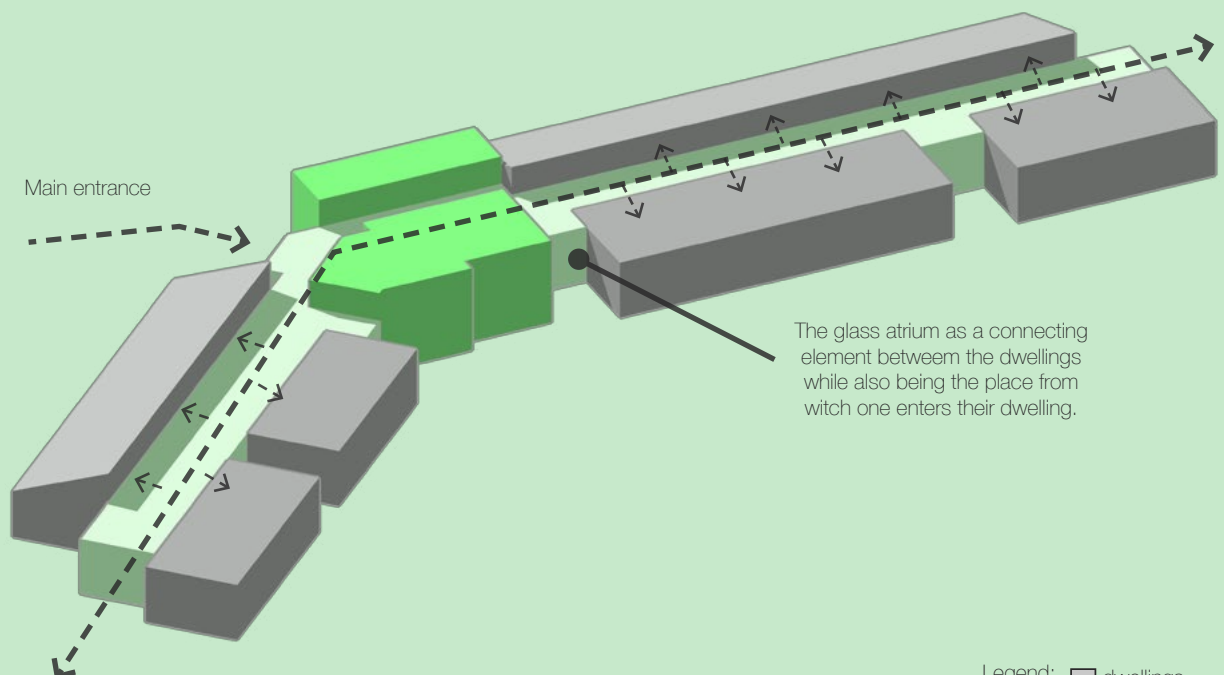
- dwelling type 1 (1 bedroom)
- dwelling type 2 (3 bedroom)
- dwelling type 3 (4 bedroom)
- collective spaces



[14] 1st floor - dwelling types

source: floor plan used taken from: DASH: Building Together (2012)

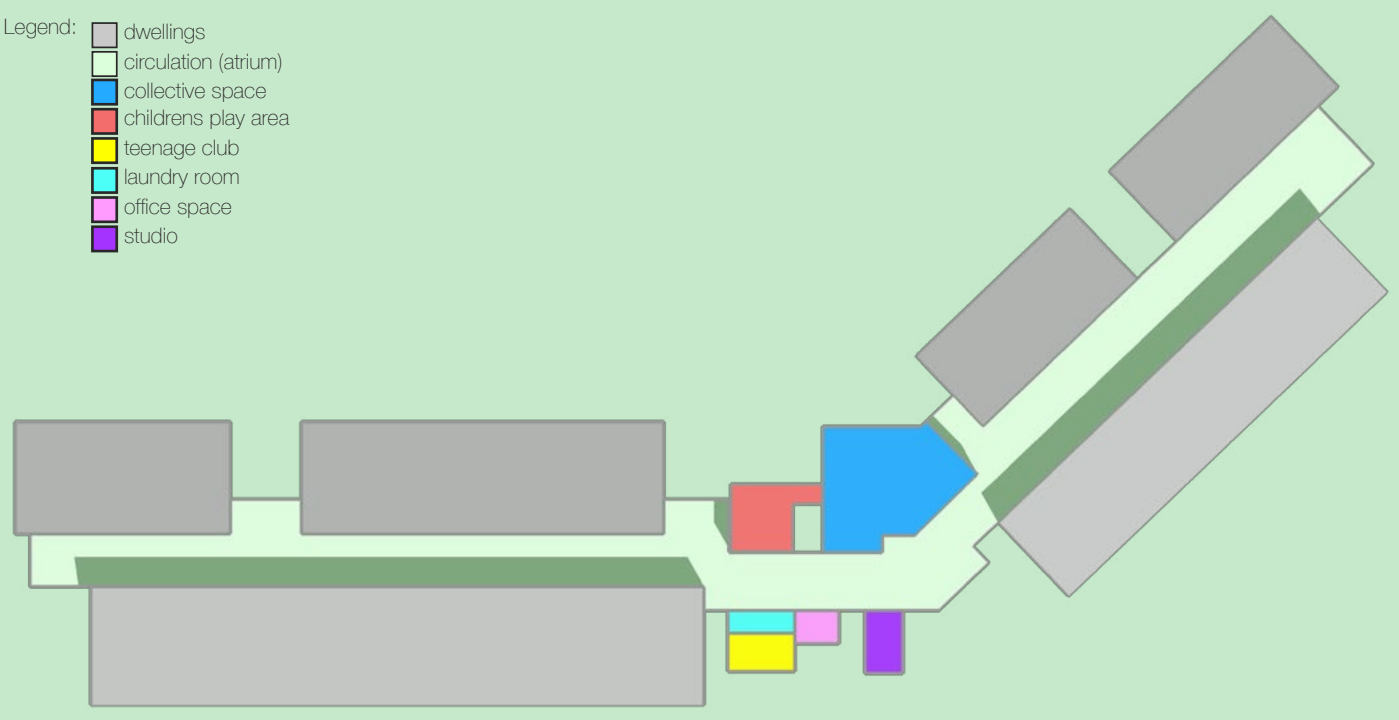




[15] The inner street atrium
 source: 3D made by author, floor plan used taken from: DASH: Building Together (2012)

- Legend:
- dwellings
 - circulation (atrium)
 - collective spaces

- Legend:
- dwellings
 - circulation (atrium)
 - collective space
 - childrens play area
 - teenage club
 - laundry room
 - office space
 - studio

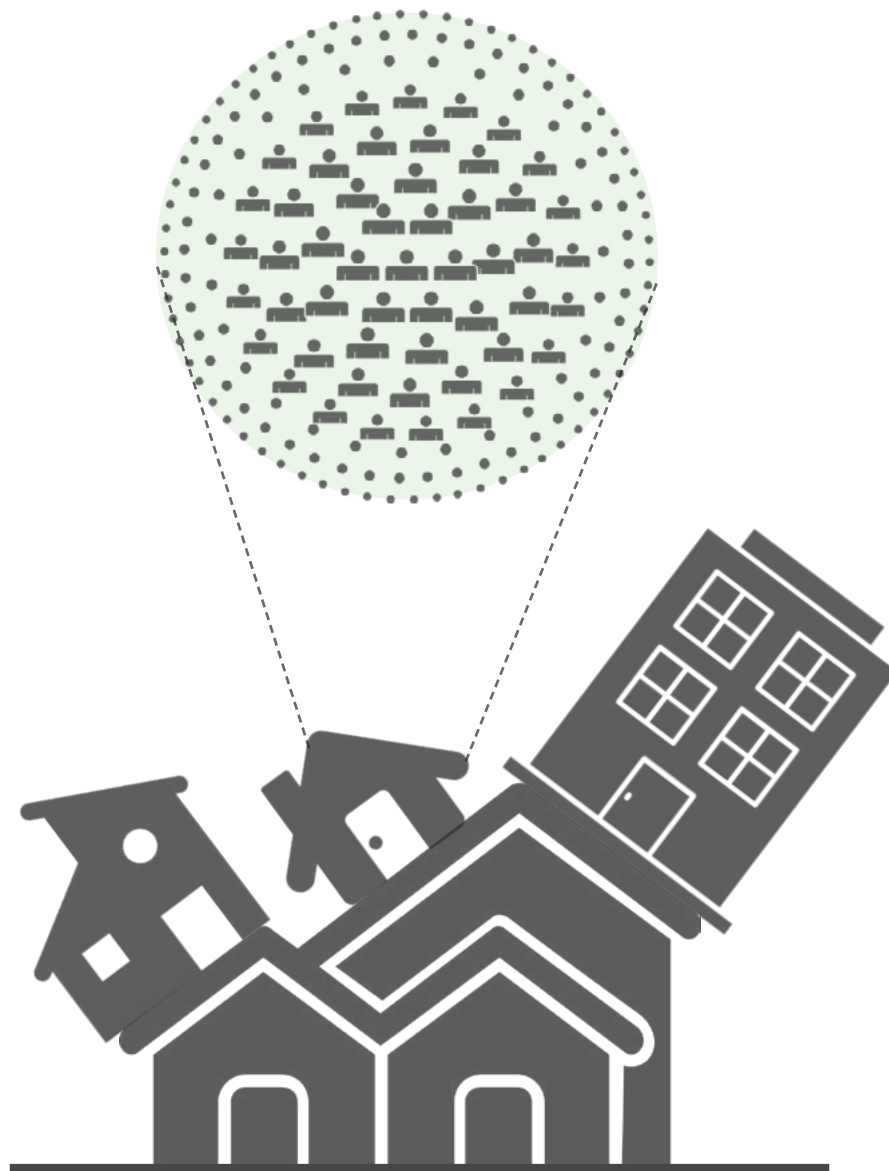


[16] The different sized collective spaces in the centre.
 source: 3D made by author, floor plan used taken from: DASH: Building Together (2012):



NEIGHBOURHOOD AND COMMUNITY

Architecture can play a role in building a thriving community lasting over several decades, as seen in the WindSong case study. That's why I argue for a better understanding of the needs and desires for collective habitation over long periods of time, especially when it comes to the thresholds between the private and collective spaces. In this chapter I'm going to start with praxeological research, for the sake of clarifying the significance of different household types and social groups in one building. Understanding why such different users might come together, if all. To make the research more tangible, a fictional, though plausible, profile of the human habitants will be set up by myself. This profile will consist of different activities and needs throughout the day.

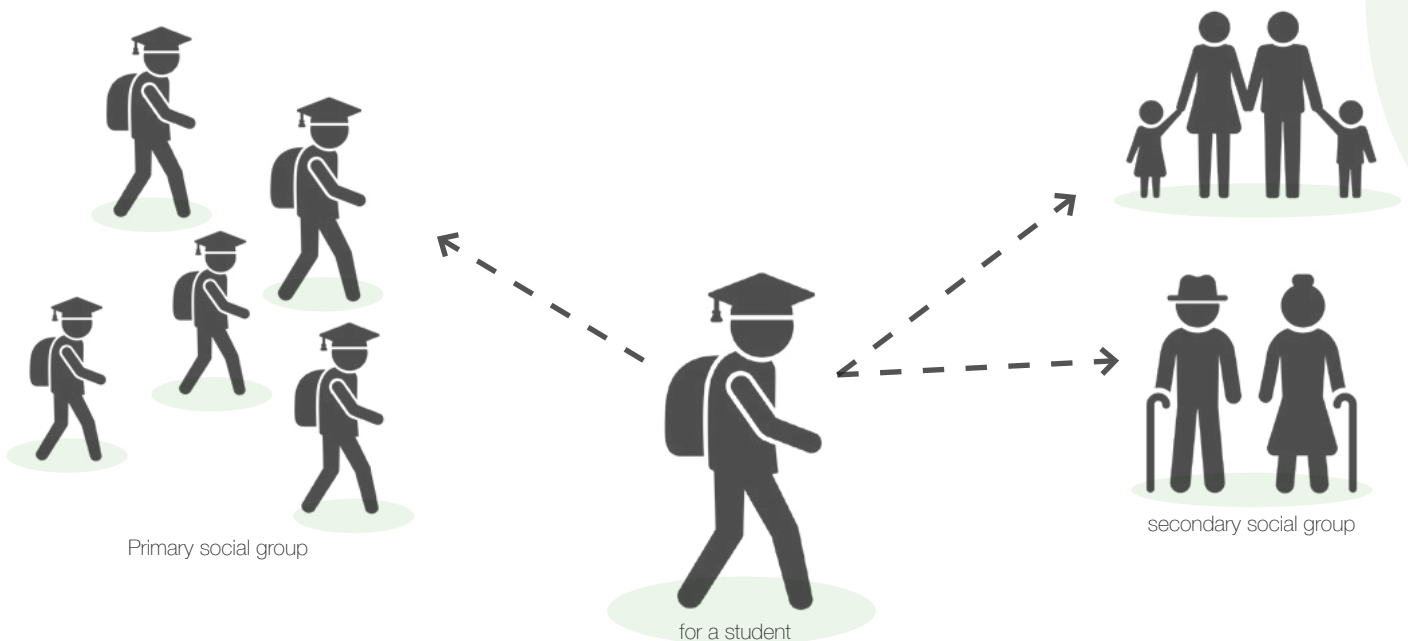


Social groups

Psychologist William Fielding Ogburn (1886) defined a social group as two or more individuals that come together and influence one another. For example a family living in one household, a group of co-workers or a group of classmates¹. When integrating different household types in a single building unit you can assume that they will also form different social groups. There are different theories about what types of social groups exist. But for this research I will use the theory of American sociologist Charles Cooley (1864), dividing the groups into a primary and a secondary. According to Cooley, the function of a primary group is often for a longer period of time in which the individuals have the same end goal. A group in which, often on a psychological level, the individuals offer each other comfort and a source of support and encouragement. While the secondary groups are larger than the primary, the relationship here is impersonal but their goal is identical. Therefore making the relationship temporary. When taking

the project's household types (students, elderly and families) as an example, we could say e.g. that all the students make up their own primary group which then can consist of smaller specific social sub-groups. Their goal is the same, wanting to finish their studies and finally graduate. Whilst also sharing the same day to day interests like chat, party, dine, mentally support each other, etc.. While the family and elderly households can be seen as secondary social groups for the students. All the different household types have in this case the same end goal of having a habitat in the same building. Although their day to day interests won't always be the same, making a long lasting relationship most of the time irrelevant.

¹ source: <https://www.studyandexam.com/social-group-types.html>



[x]Schematic of how for a student his/her fellow students belong to the primary group, while the family and elderly belong to the secondary

Soft City

"First life, then spaces, and buildings last."

- Jan Gehl (Soft city building)

Psychology is a field of its own concerning the possible relations between different people. At the end of the day my project demands an architectural and thus a physical approach. In the book *Soft City Building* (2019) the architect, urbanist and writer David Sim addresses the challenges of our constantly densifying cities and urges us to spend our time with others, in what he calls "life between buildings". The text takes a viewpoint on a city scale, while my research focuses only on what is happening in one building. However I consider the design project as a small city in itself. I feel that the differing context scale won't affect the true intentions of David Sim's *Soft City Building*¹. For this I looked into three chapters of this book; 'Being neighbours', 'Soft is hard to break' and 'Nine criteria'.

Being neighbours:

The first chapter of the books starts with the importance of the meaning of Neighbourhood, for it is a state of being in a relationship. Not just between people but also between people and place, or even people and the planet. Being neighbours doesn't come naturally as each individual has its own needs, norms and values. While cohabitation can lead to positive things it is also possible that it can lead to conflict. Yet the most simple way to optimally benefit from society is by being close neighbours.

Soft is hard to break:

Later on Sim answers his question of why some settlement lasts and others fail. Even without the careful planning by architects and designers a place can last and thrive through time. A result of the close-knit communities of that place and their responsiveness to the evolving needs of their habitants. He argues the importance of the

connection between people and nature and people to place, though the most important one is the connection between the people themselves. Only when people come together can they truly explore their possibilities for a long lasting and prospering relationship.

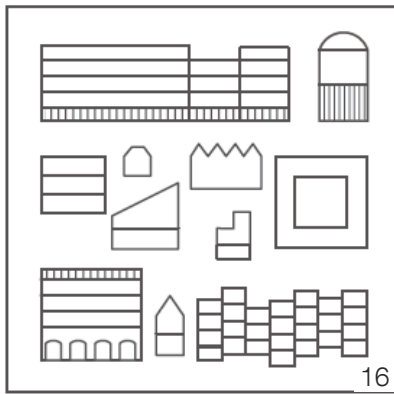
Nine criteria:

The last chapter in the books shows nine criteria to assess the quality of an urban built environment. Though all nine criteria have their own gravity, I want to emphasise only 4 of them due to their relevance for this research:

¹ In the introduction Sim argues that the current challenge of increasing urbanisation gives an opportunity to make cities work better and be places of beneficial interaction and platforms for connection, consciously juxtaposing the differences as they densify and diversify. source: Sim, D. (2019). *Soft City*. Introduction, p6.

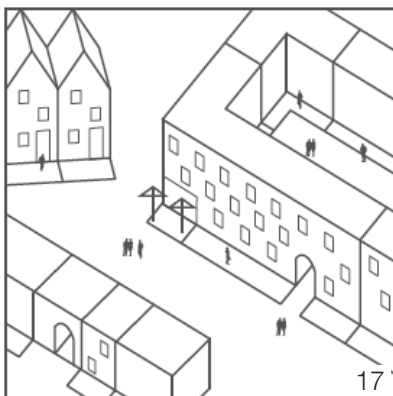
Diversity in built form:

Juxtapositioning differences creates diversity by a balanced total. It seems quite a paradox, but needed for a sustainable and resilient society. Like accommodating different kinds of people (social groups) through the usage of diversity in spaces within a building. Nevertheless, making sure these separate elements function as a greater whole. So in other words, smaller different divisions, plots, typologies etc. should form one complete sense of place. A feeling of identity for both the individual as for the community.



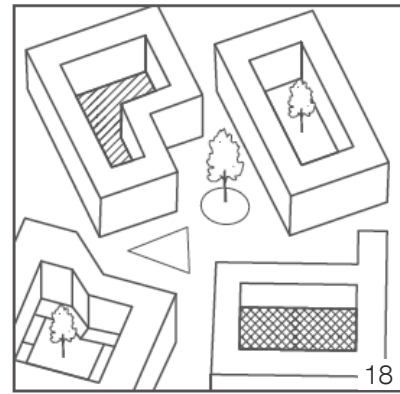
A sense of control and identity:

A design should offer a possibility for individuals or even groups to, in some sense, control the spaces surrounding them. This could be a collective used staircase for a small exclusive group that shares the interest of living in the same space, resulting in better acquaintances, mutual respect, tolerance and strictness. But also buffer zones between private and public/shared space allowing each household its own identity through small trinkets or personalisation.



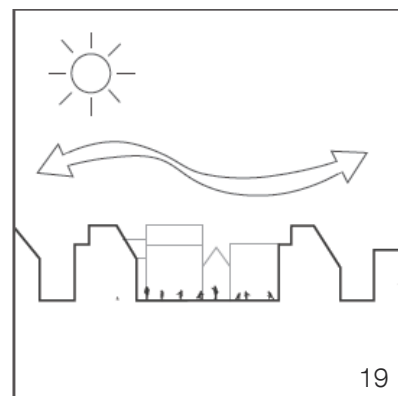
Diversity of outdoor spaces:

Outdoor spaces provide a vital and extra useful living space in our dynamic urban contexts. Different outdoor spaces create potential possibilities for different activities not only the specific activities but all of the everyday activities. These spaces should be easy to access for everyone and be enjoyable to spend time at. They don't have to be specific and static as they could also function as a hybrid space, connecting the inside with the outside.



A pleasant Microclimate:

Spending time outdoors between buildings and getting physical comfort out of a good microclimate can compensate for confined habitation, typical for urban life. Thus when designing the built environment one should consider attempting to soften the weather and not denying or changing it, through small details e.g. useful openings like a french balcony or big stable/barn doors could connect a whole room with people with the outside life.



[16] Diversity in building form, [17] A sense of control and identity, [18] diversity of outdoor spaces, [19] A pleasant micro climate source: Soft City (2019)

Commons

Forming relationships between different individuals in the same vicinity could lead to a place evolving into a close neighbourhood, no matter if it's this relationship that is formed in a primary or secondary social group. But why should such a relationship form in the context of this research project? To have a clearer view about this I inquired about the work of Amanda Huron and her book *Carving Out the Commons* (2018). Huron writes about examples of housing cooperatives in Washington, D.C. and civic activism in re-claiming commons¹ in the urban context. What is interesting is that Huron writes that this civic activism comes at a point of crisis. Emphasising that deep human bonds of caring and mutual aid are forged in times of crisis and through collectiveness. Regardless if these individuals were total strangers before that. Nevertheless after that comes another dilemma, having to maintain this collective. Huron mentions multiple challenges to be addressed, like financial and inclusivity aspects, but what I want to highlight is the participation aspect. The members of the collective have to reckon with the fact that they now need to work together with people unlike themselves. And it is precisely the recognition of the crisis and their intentions for the collectivity in the beginning that leads to a continuation for the future. So examining the context of my research project's situation, the need for habitation in general can be seen as the 'crisis'. This crisis could work as an agent in bringing the different household types and social groups together for cohabitation and form a community bond. This gives an insight that people do need each other, which could lead to a thriving habitat as seen in Windsong Cohousing case study.

¹ The term Commons in this text means: the non-commodified, collectively governed resource. In this research I associate it with habitation.



USERS PROFILE

Students:

The students that inhabit are of short stay, usually no longer than a few years and sometimes no longer than a year. This results in a continuing change of users that makes creating a close neighbourhood or a human bond, as Sim and Huron propose, quite difficult.

The students have changing and irregular lifestyles and day/night cycles affected by changing class schedules and deadlines. The beginning of a semester can be less intense while in the end periods of intense study sessions could develop. In addition some need a part-time job to pay their rent and fixed costs, making their lifestyle even more irregular throughout the whole day.

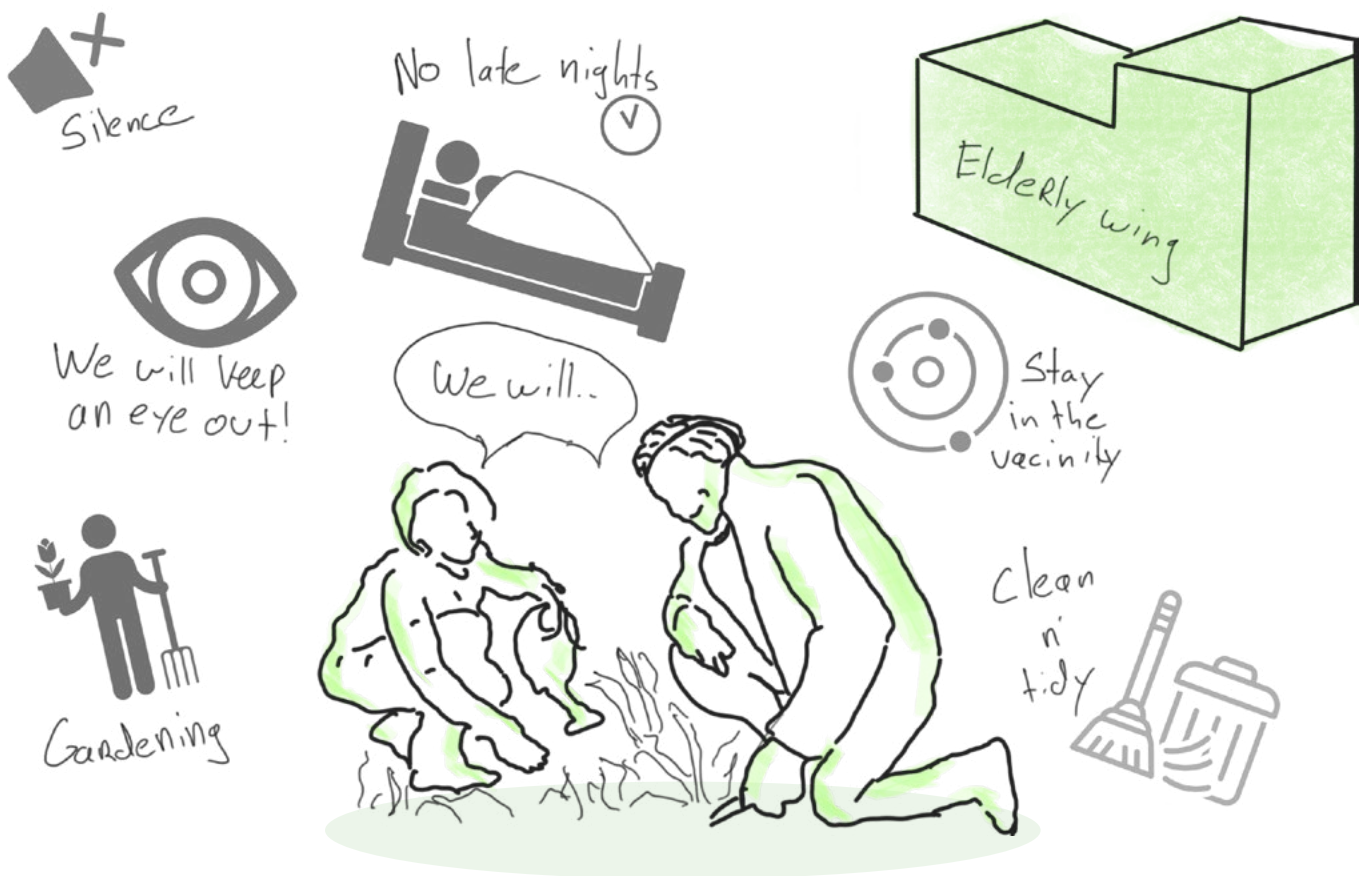
When not occupied with studies or work a more social lifestyle can be present in and around the dwelling. From hanging out with their friends and fellow students to having parties that could last all night.



Elderly:

The time that elderly will inhabit the complex can vary, mostly depending on their health. That makes them slightly more suited in ensuring a close neighbourhood than with the students.

The user profile of the elderly contrasts with the students. The elderly are rather static and remain in the vicinity of their dwelling or the building. Mainly through the influence of others or with help, they will leave the area to do some activities. This ensures that the elderly can often be found in and around the complex and could assist in accomplishing a sense of control. Elderly are the perfect users to have “eyes on the street” to ensure a safer neighbourhood, as I was told by my teachers during my study.

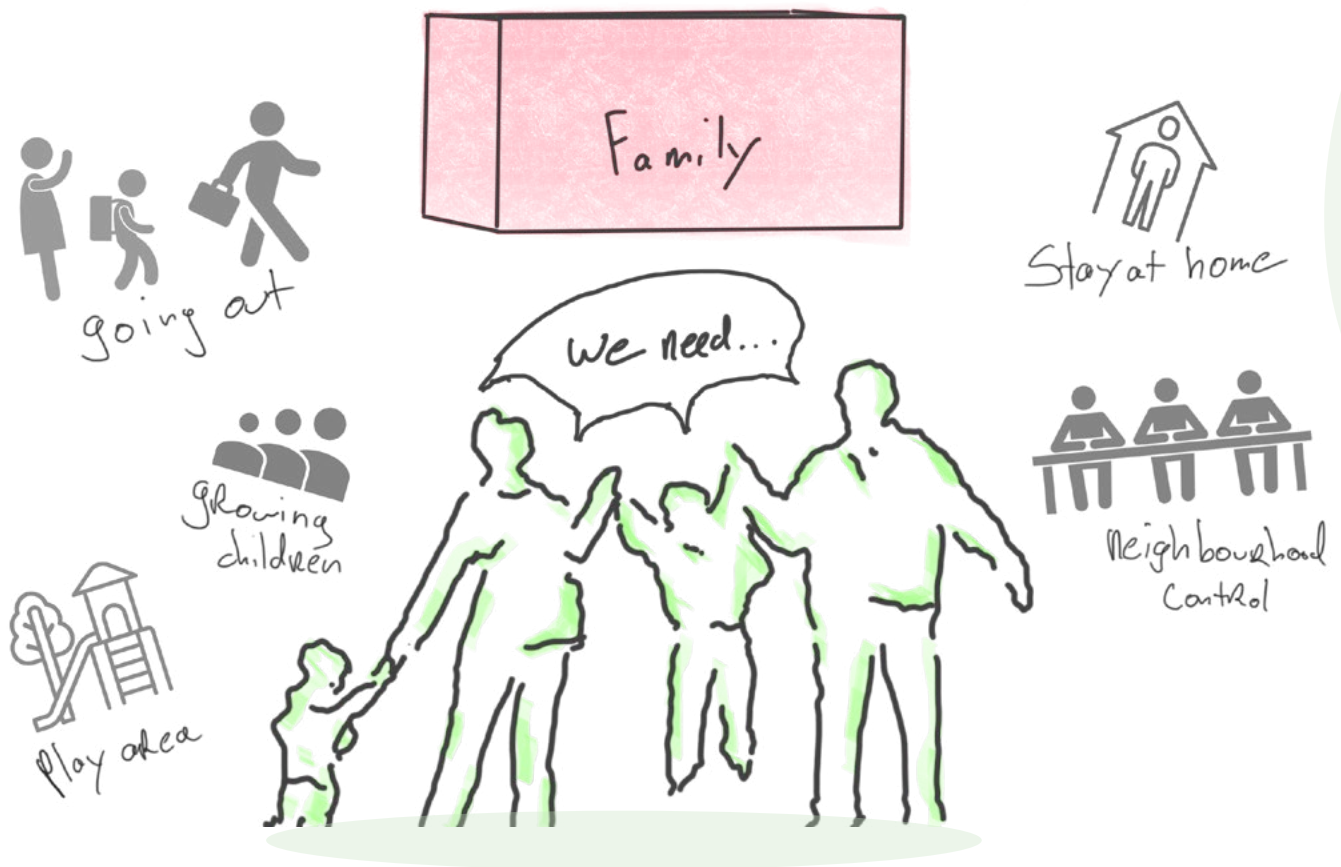


Families:

The family household consists of at least 3 people making them the largest user group of the building. They inhabit the building for the longest period until the children grow old and leave the household while the parents could stay or even move to a elderly unit in the building. Their long occupation of the habitat means that they could play an important role in the creation of a close neighbourhood.

For this research I assume that 1 of the parents works outside the house from approx. 9 to 5 and is therefore less present during the working week. From primary school up to and including the end of their studies, the children will often spend the morning and afternoon outside the house. The only person who remains largely in the vicinity of the building is the home parent acting as the core of the neighbourhood.

Children mature while growing up, meaning that their needs and interests change throughout their life while living in the same place. From learning their first steps and playing outside, to hanging out with friends and returning home late.





CHAPTER 2

Programming habitation

CASE STUDY - HOOGHOUT CPO

Architects: ANA Architects (Ir. Bas Hoevenaars)

Location: Amsterdam, Netherlands

Year planned: 2016

Year built: 2021

Program: 20 dwellings (+ commercial restaurant & hotel)

Building typology: Stepped blocks

Client: Bouwgroep Het Hooghout

Extra: Hooghout is a Collectief Particulier Opdrachtgeverschap (collective private commissioning). The circulation spaces and inner courtyard garden are collective while the dwellings are individually owned.



Situation (no scale)



Designing for different wishes

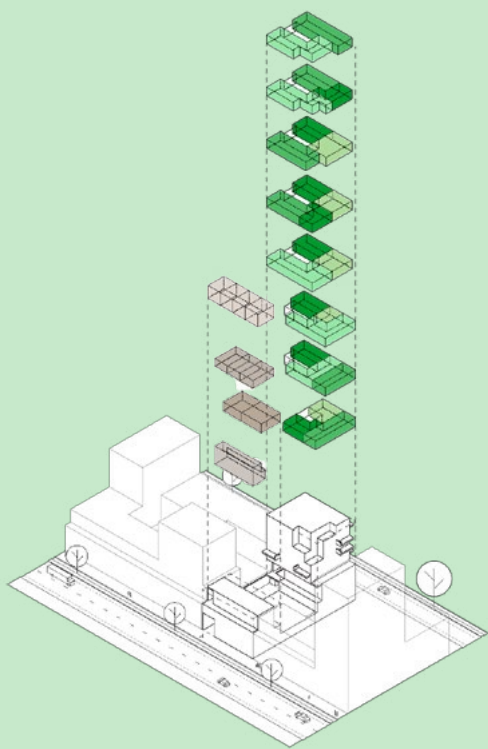
The Hooghout project had a rough start, it kicked off in 2016 and was mostly finished at the end of 2021. The collective consists of a group of people who did not really know each other well before the project. During the process some people quit the project, which resulted in new individuals willing to participate. All this culminated in an even more complex design process due to all the different and changing wishes of the residents. To have a more explicit result I conducted an interview with the architect of this project Ir. Bas Hoevenaars. Asking him about his design process while integrating the different wishes of the habitants. Followed up by an interview and a visit with one of the habitants, Maurice van Erven, to evaluate his side of the story regarding the relation between the design process and the finished building.

It was clear from the beginning for Bas to have a flexible structure between dwelling and commercial space. Designing two separate buildings divided by the shared courtyard garden. One to incorporate the dwellings of the cooperative and one for a future commercial function. For this purpose a column grid hull was constructed following the openbuilding.co manifesto. Open Building is a group of Dutch architects, engineers and developers dedicated to extending the lifespan of buildings, significantly lowering the ecological footprint and creating

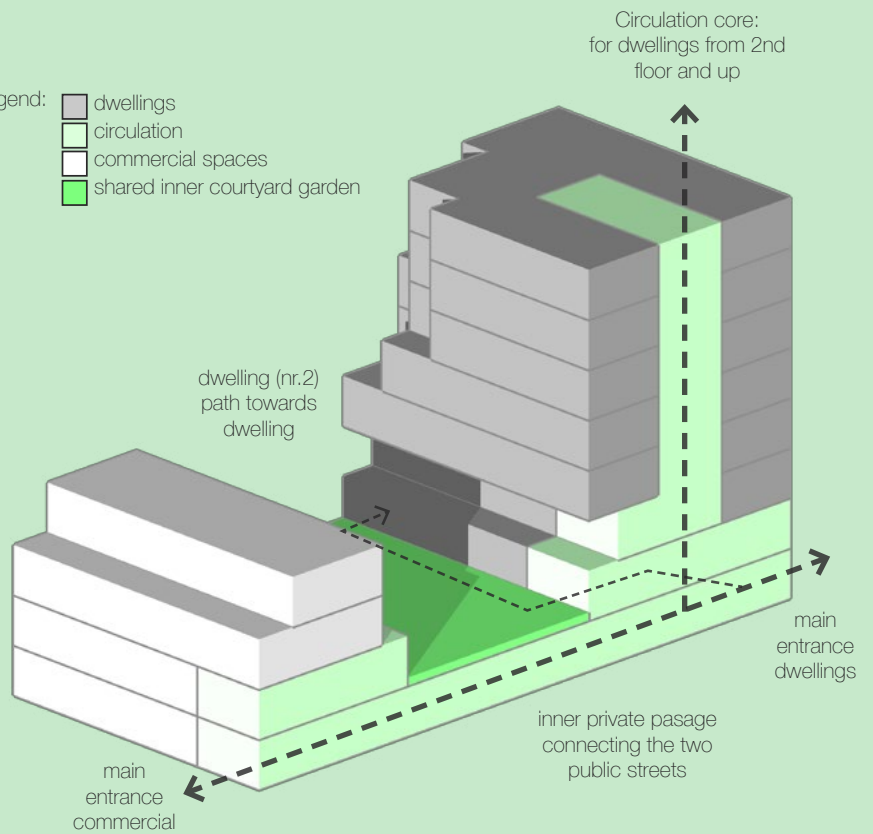
healthy communities¹. This allowed further infill by the desirable dwelling amount and types for each floor. Mostly determined by the financial feasibility of each resident said by Maurice. Additionally adding flexibility for possible changes in the future. This process culminated in a back and forth communication between the architect and the habitants. With each step working from the big scale down to the possible personal wishes. A process that was challenging but helpful as said by Bas. But Maurice wished to have had even more clarity due to his lack of engineering and architectural knowledge that sometimes led to misinterpretations.

Bas argued for an important intervention of setting up a system in advance for various architectural interventions such as future shafts and entrance points. It was important to make these architectural interventions clear to the future residents so that the different wishes fit within the certain frameworks and not interfere with each other. By involving the user during the design, it can result in a more natural "home feeling" due to the personal touch. Resulting in a more satisfying result, a notion mentioned by Bas. Nevertheless, the more different habitats are involved the more complex the project becomes. Makes having an architectural framework to work in

¹ ANA architects are a part of the Openbuilding.co group and thus follow the same mindset of designing and building for the long run. Source: <https://www.openbuilding.co/>

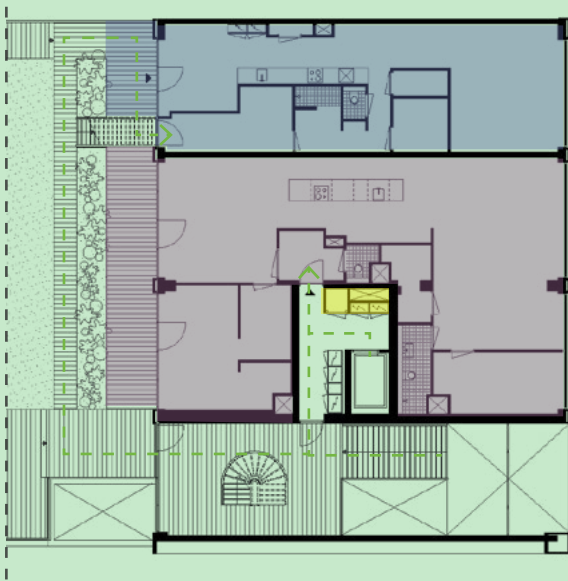


Legend:
 dwellings
 circulation
 commercial spaces
 shared inner courtyard garden



[20] In green the different dwellings, in grey the commercial spaces
 source: ANA Architectes

[21] Building circulation & program
 source: 3D made by author, floor plan used: made by ANA architecten



[22] left: Floorplan, 1st floor. Dwelling 2 is not directly connected to the core circulation.
 [23] right: Floorplan, 5th floor. Diverse dwelling sizes, determined by the residents capital
 source: made by author, floor plan used: ANA architects

Legend:
 dwelling 1, 1st floor
 dwelling 2, 1st floor
 dwelling 3, 5th floor
 dwelling 4, 5th floor
 shared facilities
 dwelling 5, 5th floor
 circulation

even more important. But that didn't guarantee an all to fair division of the available space. An example of this is the dwelling (nr. 2) on the 1st floor, on the far side of the building [21 & 22]. Due to the complex puzzle of the different dwelling sizes, Bas had to resort to unconventional floor planning. Dwelling 2 is not even directly connected to the core circulation and the dweller has to enter the core circulation from street level, then go up one floor with the elevator to after going outside into the collective garden to finally enter the apartment.

Before one enters the building plot from the public street, you enter the newly designed inner private passage that runs from one public street to the one on the other side of the plot. Creating a soft transition between public and private. This private street is designed on the plot scale that connects both the dwelling and the commercial building, but is now mostly used to store the bicycles. From this inner passage, different organic connections arise between the spacious entrance points and the courtyard garden. Resulting in smaller interconnecting spaces where light and air flows through whilst also creating possible interaction as Bas intended it to be. So the first and second floor are designed for possible interaction, while the higher floors are efficiently designed for maximum dwelling utilisation. Nevertheless this organic connection can confuse people entering for the first time. Maurice mentioned many postmen being lost in this collective puzzle of stairways. While walking there myself I could later experience this phenomenon of a lost postman walking past the main entrance into the inner courtyard. I could argue that the quiet royal size of the stairways [24] (not the main route) makes one not realise the main entrance towards the core circulation being the small door on the right of these huge stairs.

Between the front door of a dwelling and the vertical core is a semi-privat  buffer zone. Regardless of not being part of a dwelling it is still in a way shared between the households on that floor. You could find some small personal belongings like shoes, bags or trinkets that personalise that space. The dwellings on the lower floor with a terrace have a direct connection with the collective courtyard

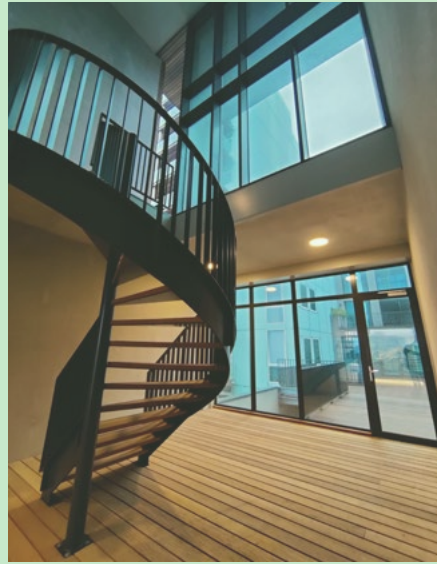
garden. While these terraces are private it probably won't feel as private for the dwellers there [27].

In one of the earlier design concepts the commercial space was designed to act as a community centre for the entire neighbourhood. A very expensive intervention, as Maurice told me, and so it was eventually turned into a commercial hotel that is currently being realised. In the main building, each floor has a cupboard with a shared washing machine that creates an interesting dynamic [30]. A space where the different households do their laundry with sometimes habitants even leaving their front doors open, generating a collective interaction as said by Maurice. An intervention that is only possible with 3 to 4 dwellings on each floor, where it is easier to be more acquainted with your neighbours as mentioned by Bas. After Maurice gave me a tour through the building and escorted me to the elevator we were met by his two neighbours talking. When the doors of the elevator were closing I could spot a glimpse of Maurice joining their conversation.

There is not much that can be found in Hooghout concerning nature and species inclusivity. The only element present to not benefit only the human habitants but also the other species is the collective courtyard garden. Nevertheless I was told by Bas that during the design phase, the collective showed interest in incorporating other species. In the early design nest boxes were designed into the facade and placing a butterfly habitat roof. However the construction already took longer than was planned, which meant that the costs were already rising. This resulted in leaving out these architectural interventions for species habitation in the final design.



[24] Sight one sees when entering the premises. While the main entrance is to the right (no in the picture)
source: own photo



[25] Spiral stairs on the first floor. An unnecessary luxury not often used, the opinion of Maurice.
source: own photo



[26] Sight from the 2nd floor circulation terrace towards collective garden and the commercial spaces (future hotel).
source: own photo



[27] Circulation terrace, collective or private space...? Even Maurice has his doubts.
source: own photo



[28] Sight from the collective garden towards the dwellings on the 1st and 2nd floor.
source: own photo



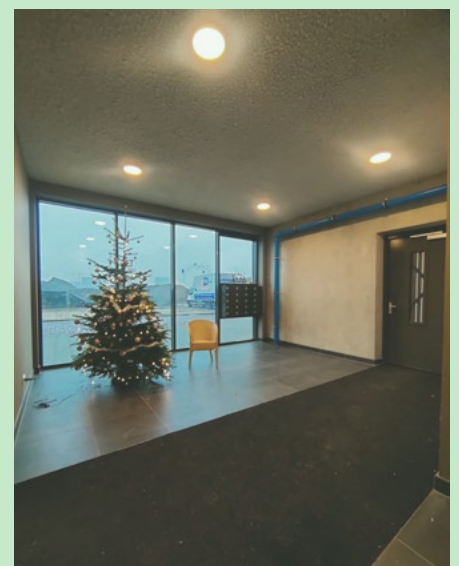
[29] Children's chalk drawings in the collective garden. Possible friction? At least not for Maurice
source: own photo



[30] Space for shared facilities on each floor. Maurice and his neighbors make good arrangements regarding use.
source: own photo



[31] circulation spaces used by kids to play ball games. Another unintended usage that could lead to possible friction?
source: own photo

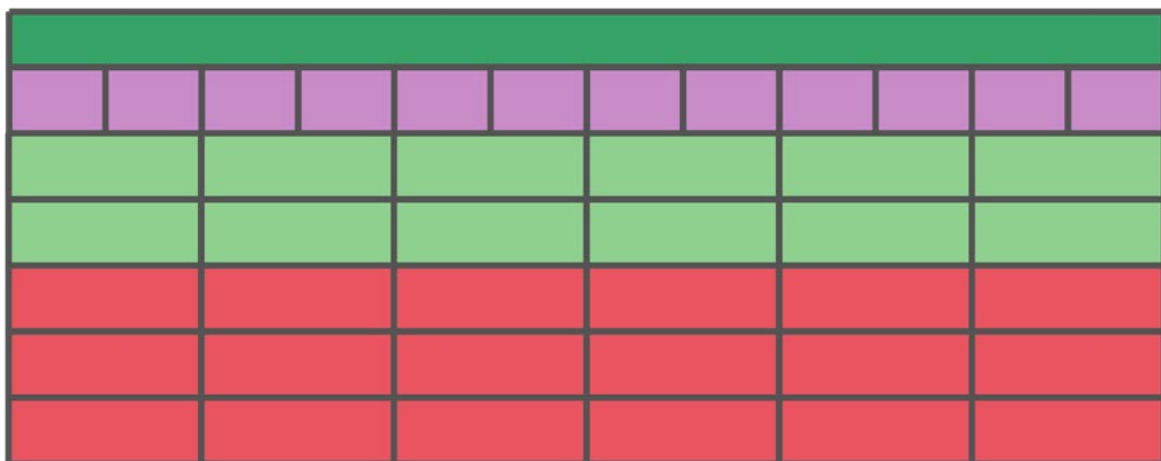


[32] Christmas tree places by Maurice led to other dwellers to place some of their own Christmas trinkets in the collective spaces
source: own photo

THE HUMAN HABITANTS

I believe it's only proper to incorporate the existing users as much as the new design allows, due to losing their homes with the realisation of the new master plan. While also making sure the new dwellings are at least as good as the existing student and elderly units.

To enhance diversity of households but moreover answer the needs of the current housing market in the Netherlands a family household type has been added. This results into three contrasting household types not only because of the sizes of the dwellings and users, but also due to the differing time of occupancy as has been stated in the users profile in the previous chapter. The different students can change yearly, the families would occupy the dwellings for a longer period, while for the elderly it is tough to say. This information acts as a base for the design programming [33] with the intention that the research transforms this base into a diagram of a possible balanced urban ecology.



Legend: ■ species
■ students
■ elderly
■ family

[33] The used schematic base for the design program in the form of the existing structure cross section.
source: Author

Students:

To clarify some general needs of the students in the Netherlands concerning housing, I used the Dutch student housing monitor from the year 2020¹. One-room apartments at (the edge of) the centre, of at least 20 square metres are popular with students. When students have to make a decision, it appears that housing costs have the greatest influence on their ultimate choice. Thereby it comes that the city of Rotterdam is one of the cities with low student housing availability.

When looking at the living space features one can clearly say that more than half of the students reside in a room with shared facilities. While 26% reside in a single-room dwelling and the rest in a multi-room dwelling. The average size of rooms with shared facilities is 17 square metres. One-room houses are slightly larger with an average of 23 square metres. Multi-room homes are significantly larger at 68 square metres.

In the current situation, there are relatively many small living spaces in dwellings with shared facilities and one-room apartments, while many students have a clear aversion to this. Also it can be seen that housing costs are the most important factor when choosing a room with shared facilities. Though students would rather pay an average of 120 euros extra to live in a one-room house instead of a room with shared facilities. For sharing of facilities there is a clear preference to minimally share bathroom facilities, while having a less strong preference for the number of people they want to share a kitchen with.

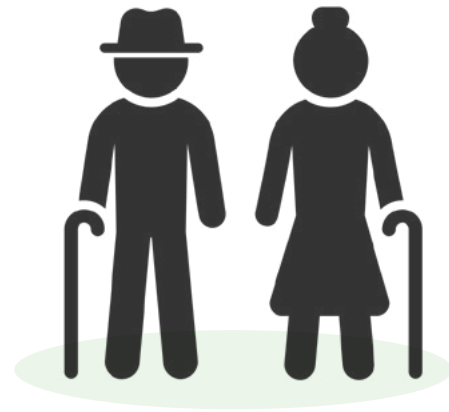
The project location in Blijdorp is in close proximity to the city centre, which would mean higher costs per m². So to minimise the costs while having the ideal location would mean that the use of collective spaces could bring an outcome.



¹ Kencés - kenniscentrum studenten huisvesting, (2020). Landelijke monitor studentenhuisvesting 2020

Elderly:

The Dutch CBS released statistics for the habitational wishes of elderly (55+)¹. Flats, apartments and townhouses are popular with people over 55, mostly due to the absence of stairs inside their dwelling and no need to take care of the garden. Furthermore a pleasant home of their own, followed by a pleasant living environment are by far the most frequently cited reasons for not wanting to move as long as their health situation allows it. Although it's not stated what a pleasant living environment actually means, it's hard to say if other people in the neighbourhood add to the positive value. When asked about a situation where independent living turns out to be no longer possible, more often elderly choose to live in a care home than living with their children(-in-law). This could mean that a pleasant home and environment could mean the possibility of having the freedom for their own needs and desires while not being a burden to someone.



The municipality of Amsterdam released in 2019 a housing plan for the elderly of Amsterdam². It is stated that the amount of elderly that live independently want to live more closely together, such as in a residential community. This accounts mostly for single elderly. Older people are taking more initiatives themselves for independent clustered living. This form of housing also offers the elderly the opportunity to live in a mixed environment living with other target groups or even different age categories. Despite that this plan concerns the elderly living in Amsterdam, I expect not much difference for the elderly of Rotterdam. This statement of the municipality endorses the cohousing of elderly with other age groups, being in favour of what this research(project) is trying to achieve.

1 The Centraal bureau voor de statistiek (english: Central Bureau of Statistics) released an article describing the current living situation of people over 55 and their wishes and needs for the future (Publication date: 2020).

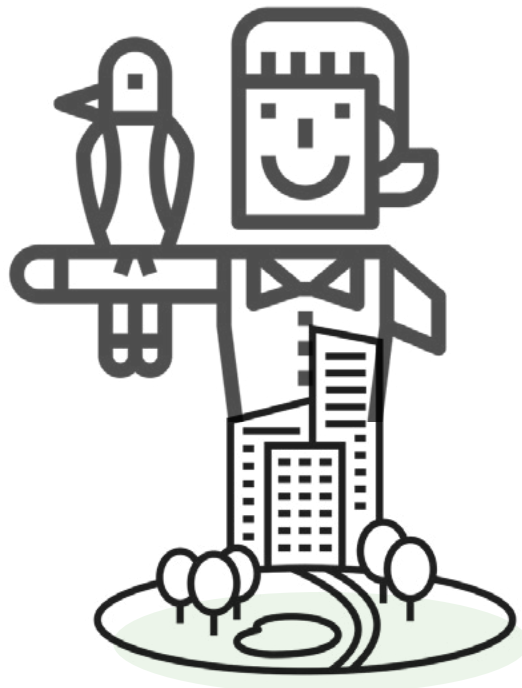
2 Programmaplan Ouderenhuisvesting 2019 - 2022. (2019)

THE SPECIES HABITANTS

As architects we can hardly control users to utilise architecture precisely the same way as we intended to. This will probably be even more the case when trying to incorporate habitation design for species. Nonetheless I made a selection of species based on their presence in the city of Rotterdam, their important role in nature and/or a need to help them thrive in the Urban hybrid and avoid becoming extinct.

I chose the House sparrow, Serotine bat and Honey bees. These three species can have a positive effect, a symbiosis, with the green corridor of the urban Masterplan. The Bees ensure the pollination of the different fauna in the area, while the bats and house sparrows can feed off the insects living there. But to ensure a balanced habitat for both man and species I dived deeper into their behaviour and habitational needs. Using the knowledge from the book *Making Urban Nature*¹ to eventually also implement them into the diagram of a possible balanced urban ecology.

¹ *Making Urban nature* (2017) is a book by Jacques Vink, Piet Vollaard and Niels de Zwart where they dive into promoting nature inclusivity in the urban context.



House sparrow (*Passer domesticus*)

Size: 14-16 cm

groups size: live in groups

Active: Throughout the year

danger/displeasing: Could be seen as pests due to their intake of seeds from gardens



Birds are the most visible and audible animals of our urban context. This probably results in most of the people living in the cities being pleased with their presence. Many different bird species can be found in the cities, nevertheless progressively more species find it difficult to thrive here. Losing nest possibilities due to our new way of building. Sometimes even through unnecessary technical interventions like overdimensioned bird laths or the way solar panels block nesting chances. This also counts for the house sparrow. The house sparrow can be found all over the world and there are records dating thousands of years ago of these birds associating with humans¹. Since the late 20th century the house sparrow numbers in the Netherlands have drastically decreased. In the present day the numbers have improved a bit, nevertheless the house sparrow is put on the red list of endangered birds in the Netherlands.

The house sparrow stays near its breeding ground for the winter. They can build their nests in various places but still prefer buildings. They feed mostly on seeds and nuts, while they feed their young with insects. We humans can help them thrive by supplying food through all seasons and plant hedges and evergreen plants for them to hide and sleep in.

¹ "The current, virtually worldwide distribution of the house sparrow (*Passer domesticus*) is a result of its commensal relationship with humans. It has been suggested that long before the advent of agriculture, an early glacial advance resulted in two disjunct ranges of ancestral house sparrows" taken from: Sætre, G.-P.; et al. (2012). "Single origin of human commensalism in the house sparrow". *Journal of Evolutionary Biology*. 25 (4)

Serotine bat (*Eptesicus serotinus*)

Size: 6-8 cm

group or single: Can difere, but breed in colonies.

Active: throughout the year but hibernating during winter.

Danger/displeasing: Some bats in the Netherlands are infected with rabies, but shouldn't affect humans if no unnecessary risks are taken.



All bats across Europe are strictly protected by the EU habitats directive. In the Netherlands there are approximately 20 different species, of which half can be found in the cities. One of them is the Serotine bat, or what the dutch call a 'laatvlieger' that translates into 'late flyer'.

What is interesting about bats and their habitation is that they don't build their own nest but find their residence in existing cavities, this of course includes man made buildings. This is most important for the bats living in our cities. They find their habitat in attics, the cavity inside walls and cracks behind facade boarding. These small and hard for humans to reach places is a popular place for them to nest or for their winter stay. Though, same as for the house sparrow, due to our new building technologies and our drive for sustainable buildings, it gets harder for them to find habitation in the cities.

Each bat needs a place to stay during the day. Other than that bats have three types of habitats, changing throughout the year, each for a different function. A place to find a mate, a place to nest and form a breeding colony and the last one a place for the winter stay.

The access size for their living space should be at least 1.7cm and at least three metres of the ground. That way it's harder for predators and cats to reach them. Also there shouldn't be any obstacles like tree branches or illumination in a radius of 3 metres from the entrance. Once they are inside a cavity they will find the most optimal spot for themselves. For the Serotine bat that would be a warm spot.

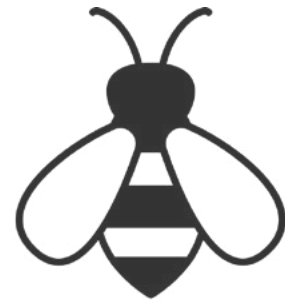
Honey bee (*Apis mellifera*)

Size: Male: 1,5 cm, female 1,2 cm, Queenbee 1,8 cm. (hive size: 55x40x25xcm)

Group size: from 10.00 to well over 60,000 bees.

Active: throughout the year but hibernating during winter.

danger/displeasing: When a bee feels threatened, it can sting and could lead to allergies.



Insects play an important role in the food chain between the primary producer (plants) and the consumers (higher animals). But another importance for them, that indirectly influences us humans, is their role in pollination of different plant species as well as our food crops. Due to the extending agriculture and use of pesticides result in less diverse nature. This has such a big impact on nature and makes the urban context a more attractive place for habitation. Although insects aren't always loved, think of the wave of mosquitos enclosing our illuminated houses at night. Nevertheless they are indispensable.

The bee is one of the insect species that plays a huge role in pollination, but could use our help to thrive in our urban context. Especially the honey bee, because they are kept by humans and are therefore completely dependent on us. Mindless placing of honey bee boxes could result in problems due to competition with the wild bees.

The honey bee is a social species that lives in colonies. There is a strict division in tasks inside a colony. In the winter periode the queen and female bees reside in the hive while the males are chased away. The males(drones) have an approx. size of 1,5 cm, while the females(worker bees) are 1,2 cm. The worker bees are the ones exploring the surroundings for the gathering of pollen.

DIAGRAM OF AN URBAN ECOLOGY

Human habitants

Partition of household types:

While in the social analysis I saw that some elderly liked having the children from neighbouring schools around, it's not always nice. For example there was a huge comotion between the elderly and trespassing youngsters in the Emma house adjacent to my project site¹. So to be safe the students are placed at the other end from the elderly. This way the shared spaces in between can act as a mutual place to meet if the need occurs, while their own building wing can stay their place of comfort. This results in the Family dwellings to be placed between the other two. The students are placed towards the busier roadside, while the elderly towards the calmer inner courtyard.

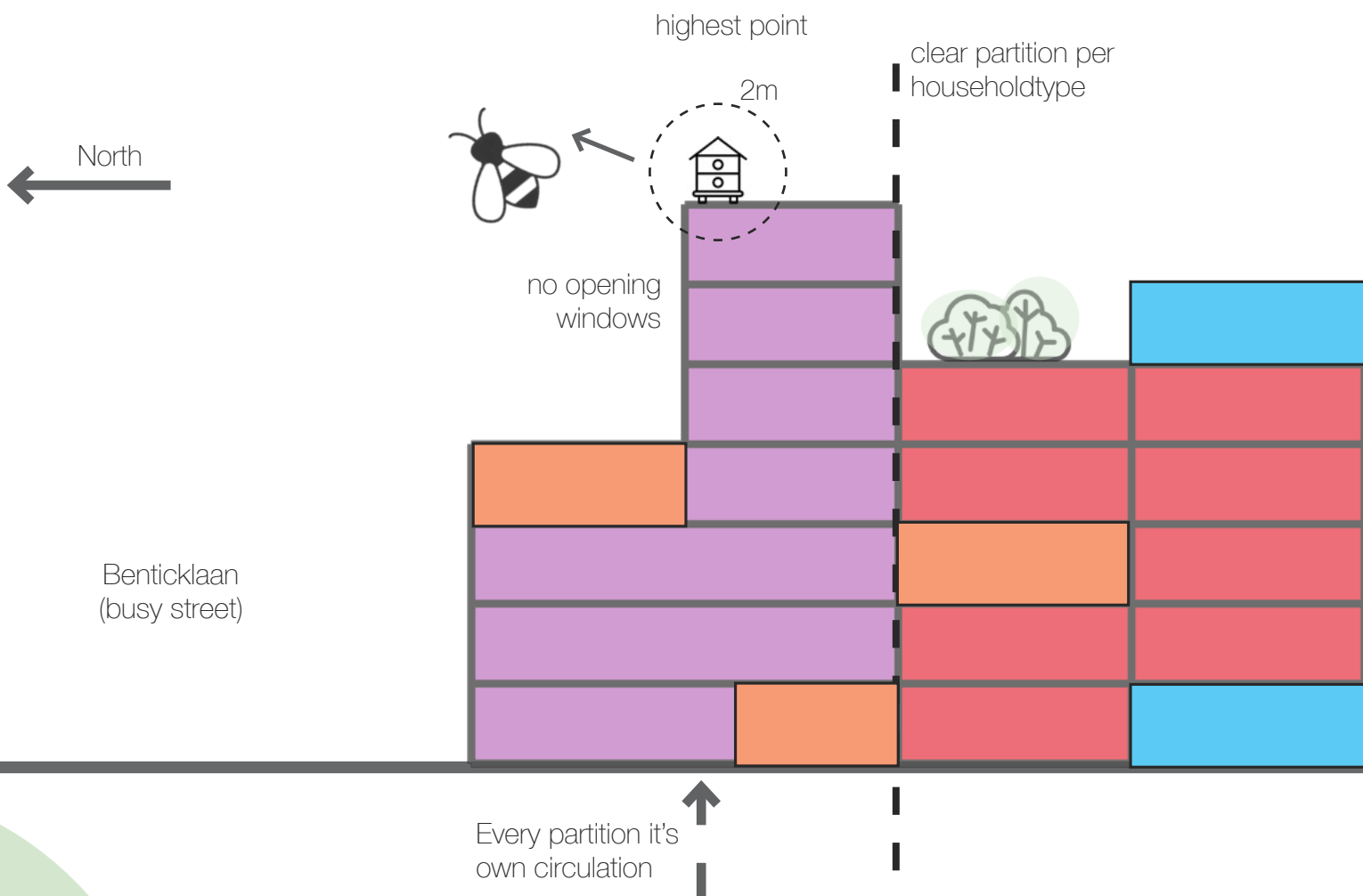
Own circulation for each household:

Due to the different lifestyles and day/night cycles the habitants will leave and enter the building at different moments throughout the day. To minimise noise and activity the circulation can be separated between each user.

Collective and specific shared spaces:

Another aspect of the different lifestyles and day/night cycles are their interests and needs. Concerning this a division can be set up between collective spaces that are accessible for all the households of the building and shared spaces specifically for the different social groups that are located in their own partition.

¹ News article AD, Seniors are tired of smoking and noisy youth in their service flat: 'We no longer dare to go into the hallway' (2021)



[35] An minimalistic diagram visualising a possible urban ecology transformation of the existing structure following the insight gained from the research and the feedback given by the studio tutors.

Species habitants

Serontine bats:

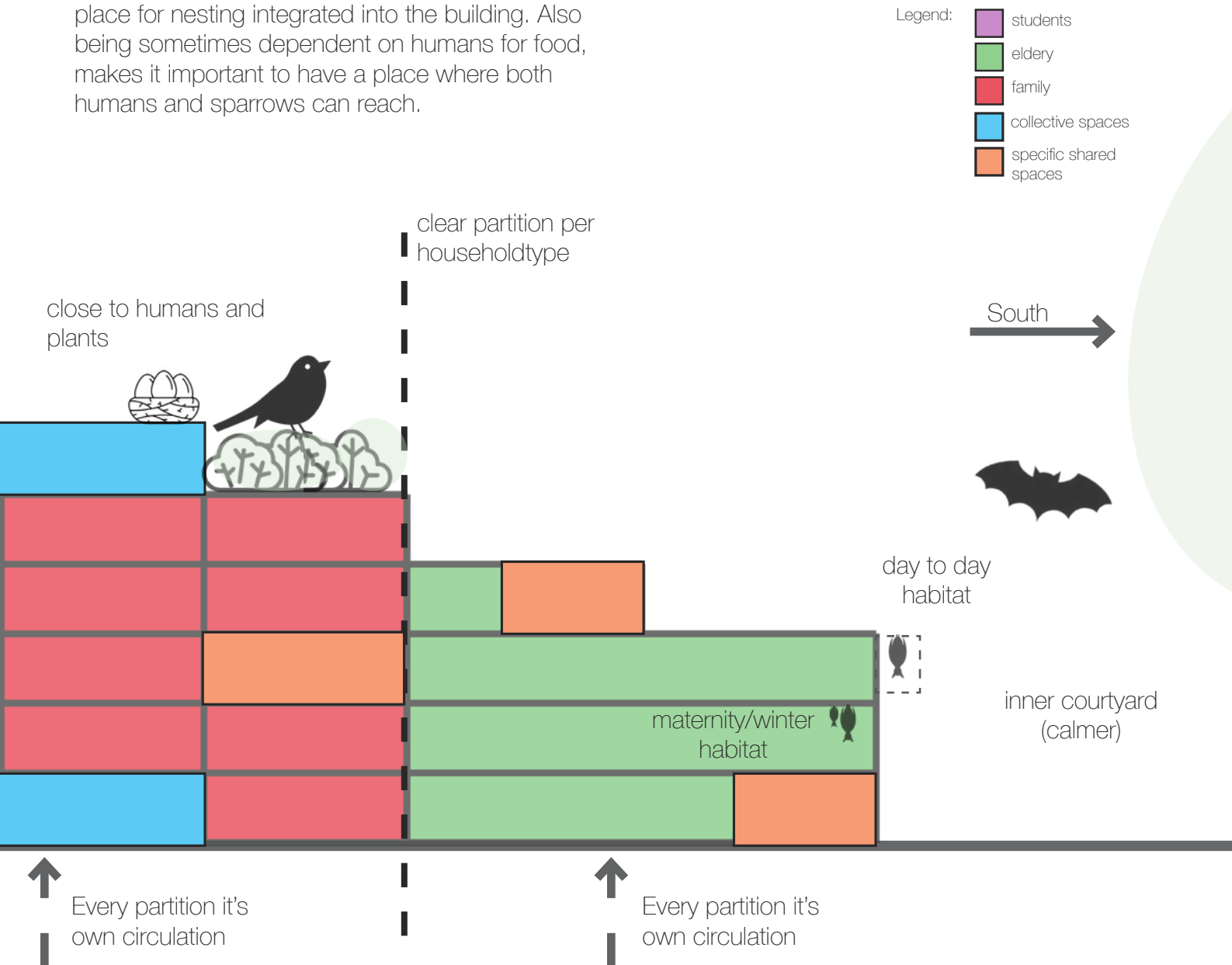
Positioning of bats in and around the building can be made specifically for their day to day use and has more flexible placement options. While long stay or maternity/winter shelters are permanent spaces and should be placed on the South-West facade where the sun can warm their habitat.

House sparrows:

For the House sparrow there are two types of places needed in and around the building. Enough greenery and bushes to hide and sleep in. While the second one is a more permanent place for nesting integrated into the building. Also being sometimes dependent on humans for food, makes it important to have a place where both humans and sparrows can reach.

Honey bee hive:

The best placement of the hive is somewhere where the human habitants won't be present. But it should be a place where a beekeeper can enter. The hive should have about a 2 metre radius around the entrance for the bees to fly out. To have less possibility of contact with the habitants, the hive entrance should be pointed away from human habitation. Or placing the hive somewhere high.





CHAPTER 3

Design interventions

ANALYTICAL CRITERIA

Now that the theoretic framework and its followed up schematic description has been contrived I can move up into the study of architectural interventions. In this chapter I use realised, and thus proven, architectural projects as case studies concerning the research theme and user groups. The analysis of the case studies are based on my own findings as well what other specialists wrote about it. For this I analysed the following buildings:

- Jeanne Hachette & Jean-Baptiste-Clement
- Cité du Grand Parc
- Ourcq Jaures

In order to insure a coherent analysis and to set up a narrative throughout all the used case studies, I use the following analytic criteria for housing design:

- Different dwelling typologies, household types and social groups.
- private, collective, public as well as semi-public/ semi-private areas.
- places or elements in the building that contribute to the production of collectivity
- Circulation / movement inside the building;
- Connection with / space for nature and other species.

After analysing the case study for human habitation I switch up to existing architectural interventions for species habitation. Starting with some bigger projects and then switching slowly to smaller projects or even engineering elements. For some I even construct possible usage in human housing architecture.



[36]: Ivry-Sur-Seine , [37]: Cité du Grand Parc, [38]: Ourcq Jaures
source: [36]: photographer unknown, [37]: © Philippe Ruault, [38]: © Philippe Ruault

CASE STUDY - JEANNE HACHETTE & JEAN-BAPTISTE-CLEMENT

Architect: Jean Renaudie

Location: Ivry-Sur-Seine, France

Year planned: 1969

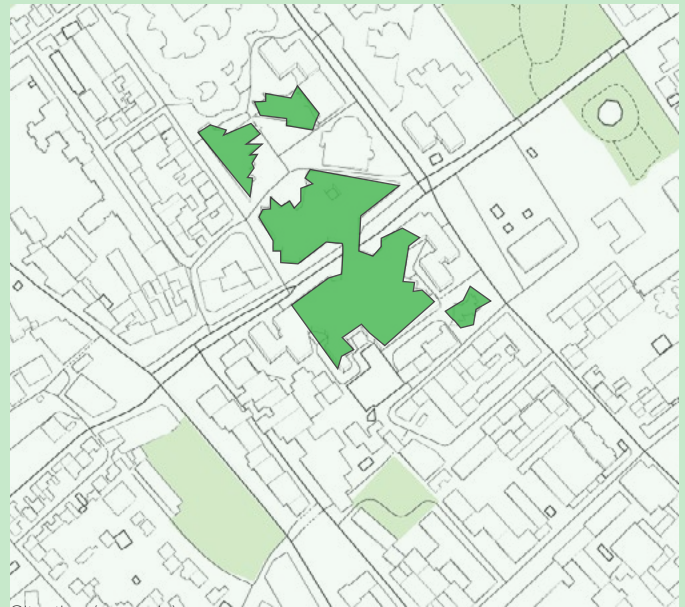
Year built: 1975

Program JH: Commercial centre, 40 apartments

Program JBC: 10 duplex apartments

Building typology: Stepped blocks

Client: Housing corporation

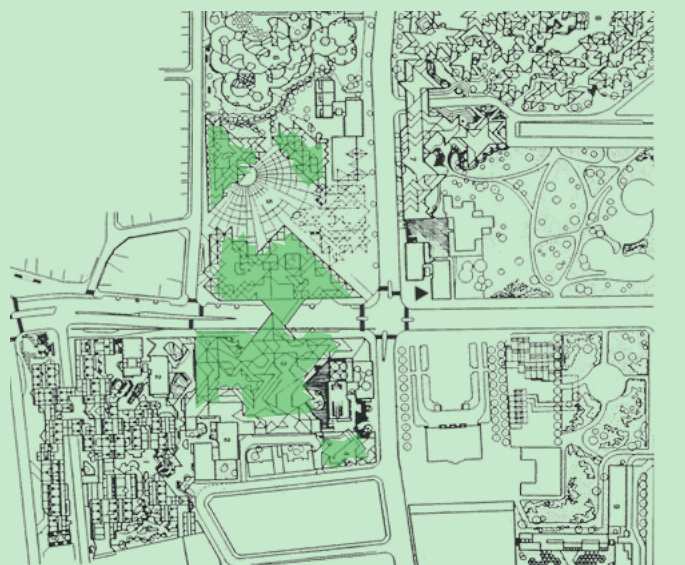
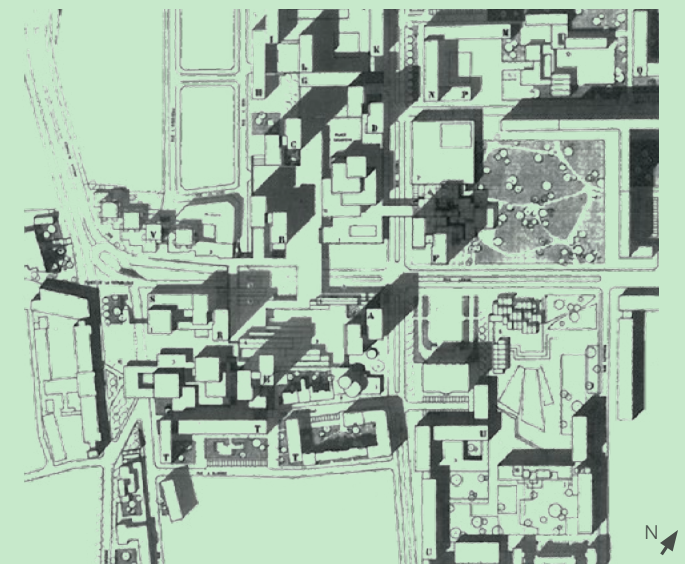


Situation (no scale)

Jeanne Renaudie was a French architect famous for his complex and unique housing design that reflects the extraordinary possibilities of structuralist architecture. Especially his triangular apartment complexes Cassanova (1972), Jeanne Hachette (1975) and Jean-Baptiste-Clement (1975) in Ivry-sur-Seine. These projects acted not only as habitat for humans, but also for nature that he incorporated into the stepped terraces filled with greenery. Highly noticeable in the autumn and summer periods.

Jeanne Renaudie was a lifetime communist and strived for his architecture to be available to everyone's needs and to provide residents with a healthy habitat in the densely populated urban region. The municipality of Ivry-sur-Seine, being communists, wanted to renew their neglected city centre with newly built social housing units and approached Renaudie's wife René Gailhoustet for this. Due to the scale of the project and the communist municipality, she asked Renaudie to help her with this urban renovation.

For this research I used Jeanne Hachette (JH) and the Jean-Baptiste-Clement (JBC) building due to their similarity and being in close vicinity to each other. These buildings cover most of Renaudie's ideals and have a broad amount of available literature and documentation.



[39] top: Earlier modernistic masterplan (unknown scale),

[40] bottom: executed master plan with the influences of Jean Renaudie (unknown scale)

source:



[41] The green utopia in an urban context.
source: © Léopold Lambert



[42] The possible interaction between terraces on different levels.
source: © Lorenzo Zandri

Jeanne Hachette

Jean-Baptiste-Clement

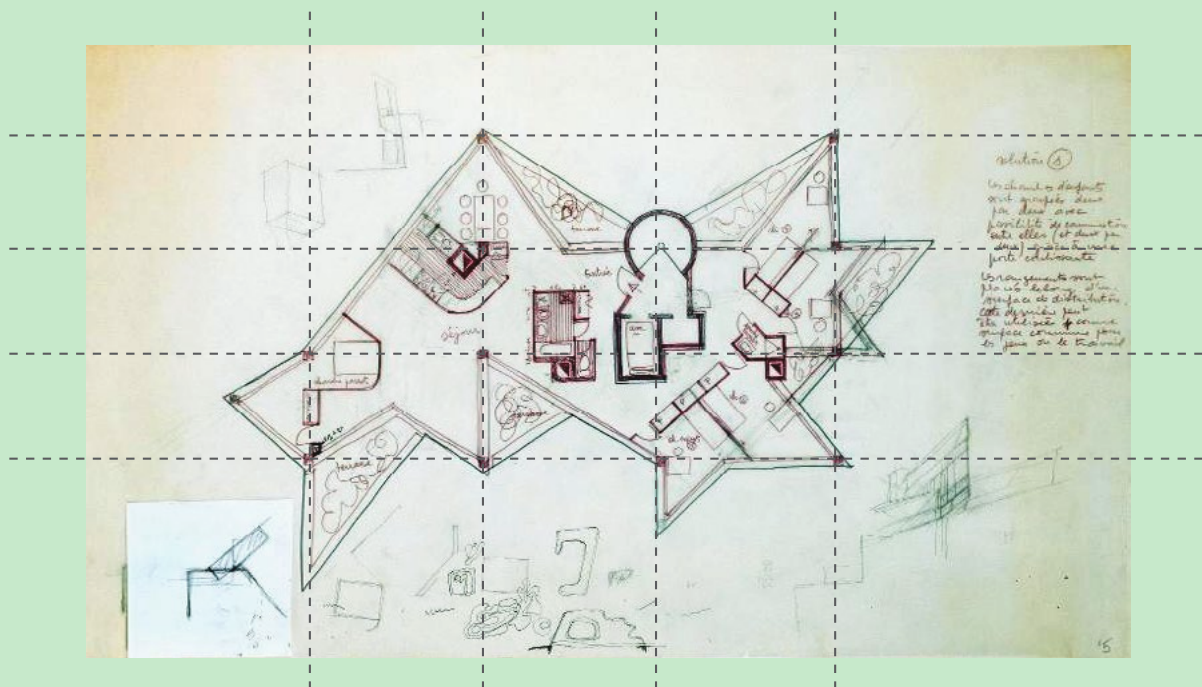


[43] Satellite image of the Ivry-Sur-Seine centre with bigger Jeanne Hachette and smaller Jean-Baptiste-Clement highlighted.
source: Google/maps

The buildings present an eminently complex and quite unique aesthetic. Nevertheless the rationale underlying the structural grid gave Renaudie the needed freedom to create the diverse dwellings types he envisioned himself [44]. While examining the different apartment types throughout the whole building it is hard to say that there is a specific logic to it. It appearance as if Renaudie lets his imagination carve out the different dwelling types that fit in the formed structure. An example of this is the public accessible outside stairs going up the building, but leading into nothing more than a dead end [45].

The entrances to the dwellings all connect to the shared internal main entrance. Due to the slim amount of apartments being grouped to each inner circulation core on each floor, results in less anonymity between the inhabitants. This organic inner gallery space makes for a place where unexpected encounters between fellow residents can occur.

The unique forms do not only result in interesting dwelling types but also in a by-product of curious interspaces with interesting atmospheres. While some are used as a place to meet or place for greenery, others result in uninviting dark places [46]. Nevertheless most of the inhabitants claim that they never have felt unsafe in their neighbourhood; they have none of the problems some of the other banlieues¹ surrounding Paris had to deal with².



[44] A floor plan sketch by Renaudie for the Jean-Baptiste Clement building. Where his unique layout is made around a logical grid structure of an underground carparking garage.
source: © Jean Renaudie

¹ Banlieue means a suburb of a large city in French.

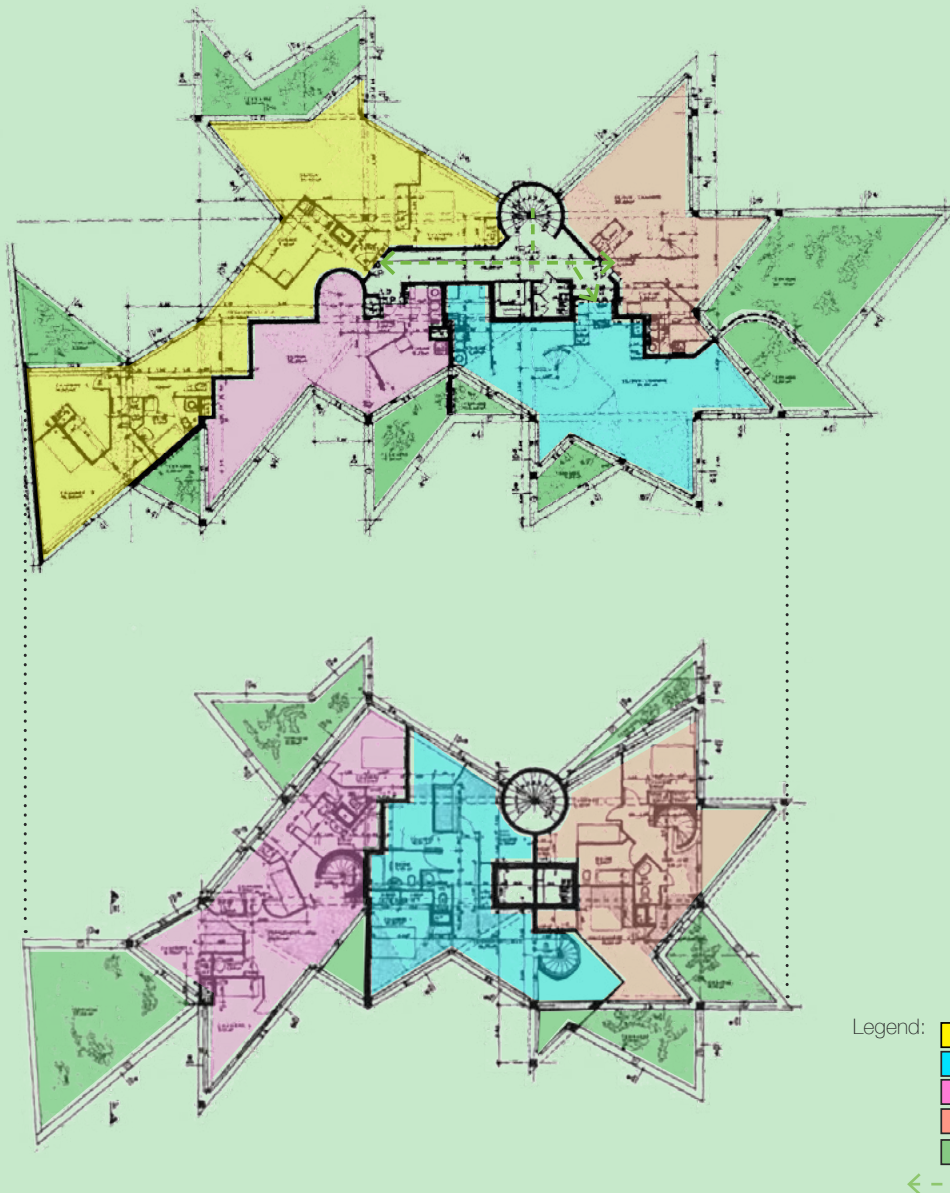
² While writing the text about Jean Renaudie, Zoetmulder visited the site of JH and JBC. Conducting different interviews with both Renaudie's wife and various residents at the sites.
A. Zoetmulder, (2018), Local Heroes #16 Jean Renaudie 1925 - 1981, March



[45] One of those public accessible stairs, leading towards private spaces.
source: © Lorenzo Zandri



[46] One of those uninviting dark places
source: © Lorenzo Zandri



- Legend:
- dwelling 1
 - dwelling 2 (maisonette)
 - dwelling 3 (maisonette)
 - dwelling 4 (maisonette)
 - private terrace
 - ← circulation

[47] 3rd (top) & 4th (bottom) floor plan of JBC, 3 maisonette dwellings + 1 single floor dwelling
source: © Jean Renaudie

Maybe the most important architectural intervention, concerning this research theme, used by Renaudie in these projects are the terraces. These extensions of the living rooms offer the opportunity to make the dweller aware of what is happening outside their 'private' habitat. Not only the changing weather or time of day but also nature as a whole. Be it the plants that grow or the birds and other species using them for their own habitational purpose.

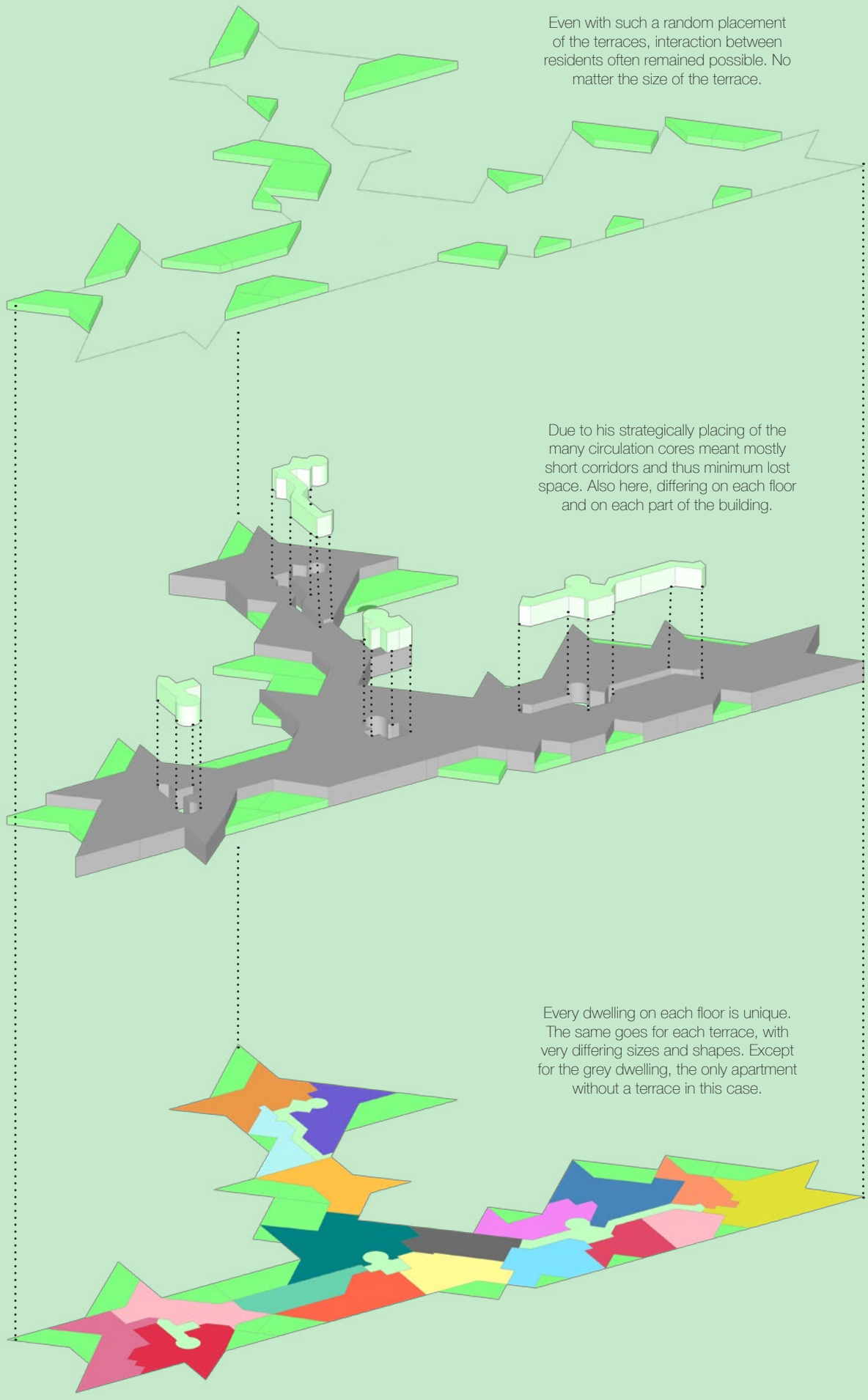
Having the possibility to have such a small private 'green utopia' in a social housing unit can be seen as a luxury in such a densely urbanised area of the Paris region. This architectural intervention is clearly appreciated by the habitants living there. One of them stated that: "It is a pleasure to be surrounded by greenery instead of by the city when you return home"³.

Another aspect of the terraces is the possibility for social connection between people on different elevations. This is possible due to the stepped architectural typology of the buildings. This can also be seen as a double edged sword. Especially in the winter period when the sloping greenery that acts as curtains is absent resulting in lack of privacy because people living in the apartments above could easily look in.

Key takeaways for own design:

It is quite impressive how a social housing complex can be so unique while also being designed as habitation for other species living in the urban context. The uniqueness is a result of irrational design on a rational grid where the terraces play an important role for the residents and species as well as for the cityscape of Ivry-Sur-Seine. A design element that is difficult to incorporate in an existing building, but certainly not impossible.

³ A. Zoetmulder, (2018), Local Heroes #16 Jean Renaudie 1925 - 1981, March (p.28)



Even with such a random placement of the terraces, interaction between residents often remained possible. No matter the size of the terrace.

Due to his strategically placing of the many circulation cores meant mostly short corridors and thus minimum lost space. Also here, differing on each floor and on each part of the building.

Every dwelling on each floor is unique. The same goes for each terrace, with very differing sizes and shapes. Except for the grey dwelling, the only apartment without a terrace in this case.

[48] Top: extruded terraces, middel: volume of one floorplan with extruded circulation spaces, bottom: each different dwelling type is coloured. (A typical triangular floor plan by Jean Renaudie. Though it is unclear which exact building this is.) source: 2D-3D made by author, floor plan used: made by Jean Renaudie

CASE STUDY - CITÉ DU GRAND PARC

Architects: Christophe Hutin architecture, Frédéric Druot, Lacaton & Vassal

Location: Bordeaux, France

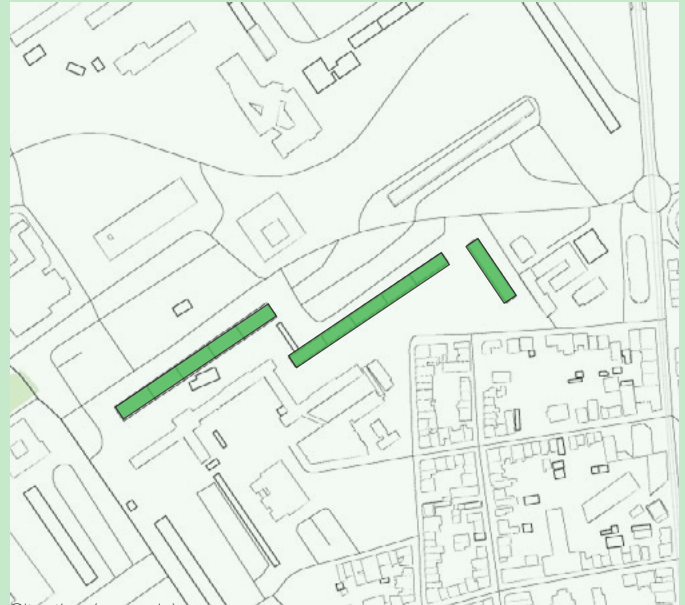
Year built: 1960's

Year restoration: 2016

program: 530 dwellings

Building typology: Slab building

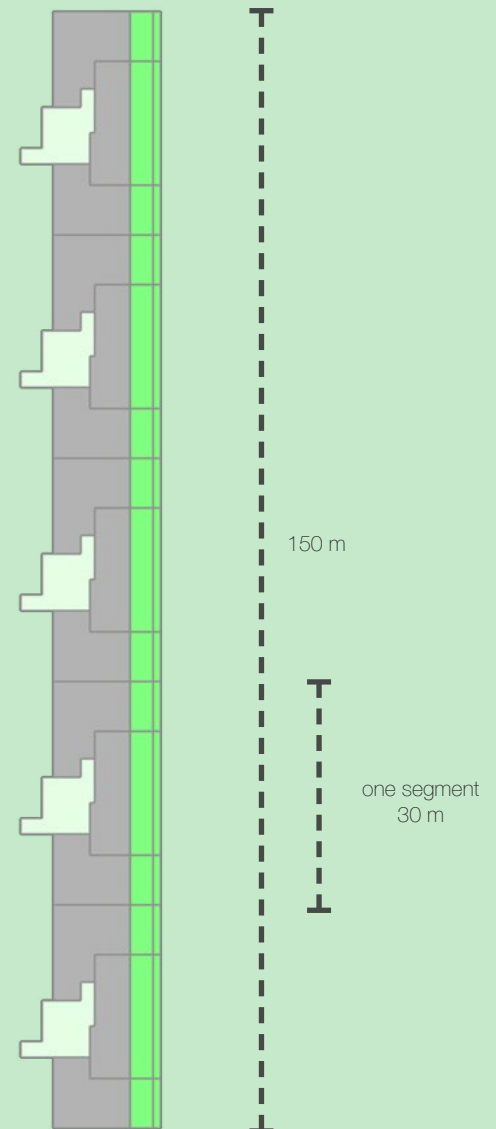
Client: Aquitanis O.P.H. de la communauté Urbaine de Bordeaux (CUB)



In the French city of Bordeaux a large-scale transformation project has been realised, consisting of three social housing complexes. Instead of demolishing and rebuilding, a way has been found to preserve the existing structure. Giving the building and the 530 apartments a second life by adding floor space in the form of a winter garden extension to the facade. Minimising cost and construction waste. The project consists of two 150m long x 15 stories high slabs and one smaller 60m long x 10 stories high slab. For this research I will look into the bigger slab complex.

The context of Cité du Grand Parc can be seen as a classic French Banlieu consisting of gigantic modernist concrete slab buildings for mass social housing. Coupled with this mass construction was the systematic rehearsal of the apartments. A stamp of 3 different apartment types per floor in 1 segment was continuously repeated [53].

Being a social housing complex it doesn't give the best first impression and is often criticised. Nevertheless the architects plead that even such building types can acquire high qualities of habitation when handled with care. Resulting in social housing that has equal dwelling qualities as middle or even high class housing has.



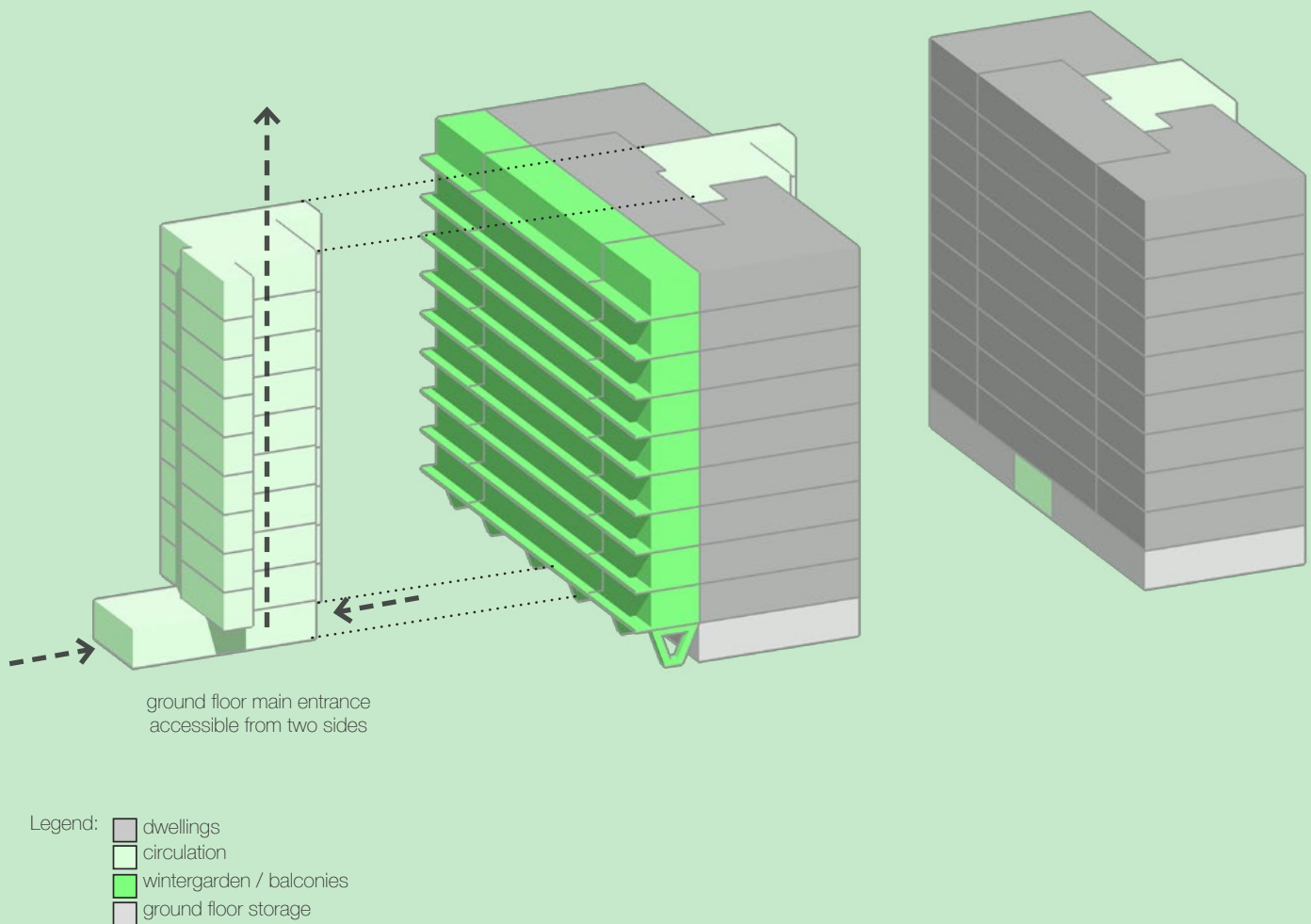
[49] One complex made up of 5 segments
source: 3D made by author, floor plan used: Lacaton & Vassal



[50] Old (left) v.s. new facade (right) (the smaller building slab)
source: © Philippe Ruault



[51] New Vertical circulation on the back side.
source: © Philippe Ruault



[52] One segment of the bigger slab buildings. left side: circulation core, middle: new situation, right: old situation
source: 3D made by author, floor plan used: made by Lacaton Vassal Architectes

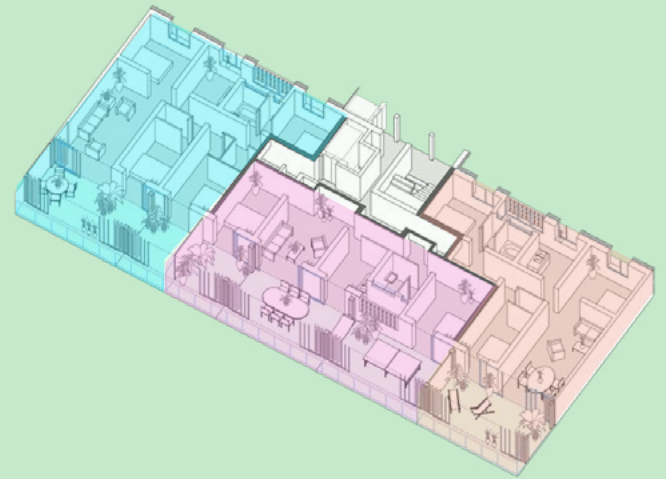
These structures have little to no collective or shared spaces. Only the main entrance and vertical circulation is shared between the dwellers of each segment. The moment one enters the main entrance you are in the semi-private space, after which entering a house one enters a private space.

With the extension of the housing units there would maybe be an option to create an opportunity for collective or shared space. Although the architects chose to divide this between the houses and create a clear barrier between each other to keep privacy. Only the balconies can provide certain interaction between two apartments outside the core circulation.

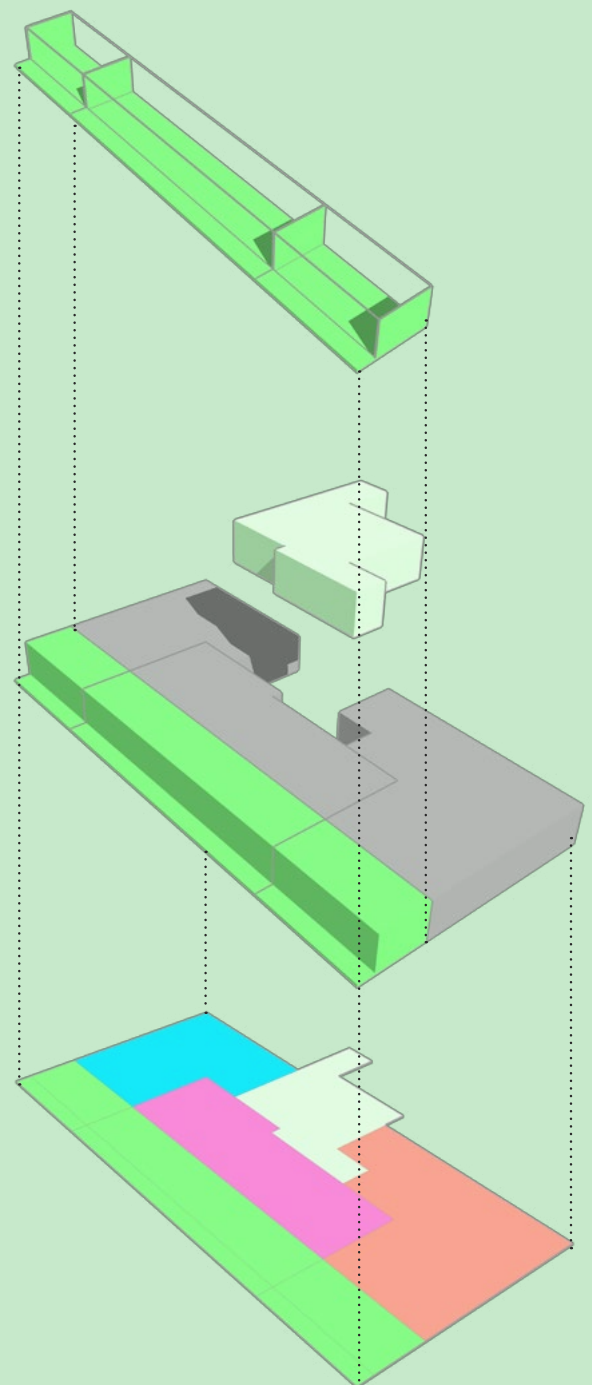
The buildings in Cité du Grand Parc have been realised with only a single goal and that is mass housing. Housing for humans and thus not for other species. Therefore no elements for other species' habitation can be found here. Although the extension could have been designed with species inclusivity in mind. One can now only imagine what the new facade would look like if greeny and species were integrated. Or one could just photoshop it [58].

Key takeaways for own design:

This case study shows the great potential of carefully transforming an existing structure without being complicated. An addition that in this case mainly works to the advantage of the human inhabitants, but can easily be made for multiple other functions like habitation for species. This project shows that transformation can be cheaper than new construction and thus minimises demolition waste. Which may leave capital for the incorporation of species or creation of collective and shared spaces.



[53] Impression of the extension made by the architects source: Lacaton & Vassal



- Legend: ■ wintergarden + balcony
- Dwelling type 1
- Dwelling type 2
- Dwelling type 3

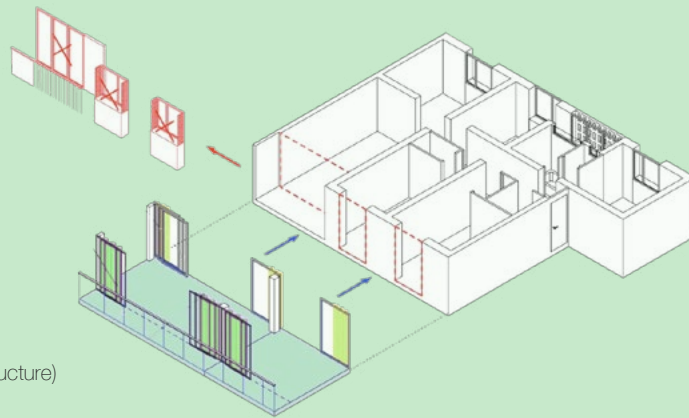
[54] Bottom: Schematic floor plan of the 3 dwelling types, Middle: Volume of one floor segment, Top: The addition to the dwellings source: 3D made by author, floor plan used: Lacaton & Vassal



[55] Extension of the existing rooms, not always maximum filled
source: © Philippe Ruault



[56] Extension of the existing rooms
source: © Philippe Ruault



[57] No big intervention made to the existing (structure)
source: Lacaton & Vassal



[58] Impression of Cité du Grand Parc with a species inclusive transformation
source: made by author - Photo © Philippe Ruault

CASE STUDY - Ourcq Jaures

Architects: Lacaton & Vassal

Location: Paris, France

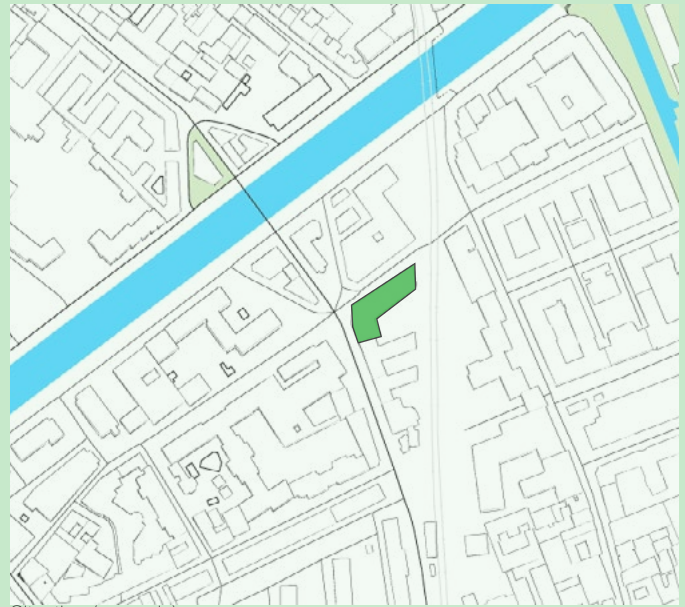
Year planned: n/a

Year built: 2014

Program: 30 social housing apartments + 95 student swellings + Medical apartments & retail

Building typology: fragment building block

Client: Société Immobilière d'Economie Mixte de la ville de Paris

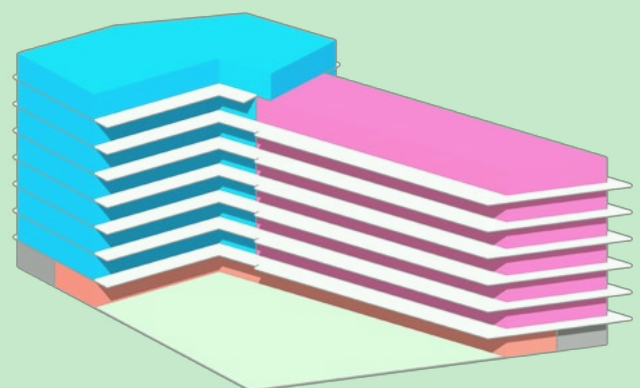


Situation (no scale)

Lacaton and Vassal created an L-shaped apartment complex in the North-East of the city of Paris. In a dense district bordered by the Ourcq canal and the existing, out of use, railroads [63]. The building includes both students and social housing, with the addition of 6 permanent elderly dwellings [59]. The Architects split the building into two parts. The short side of the L-shape is made higher and houses the students. While the longer part of the L-shape has the social housing units.

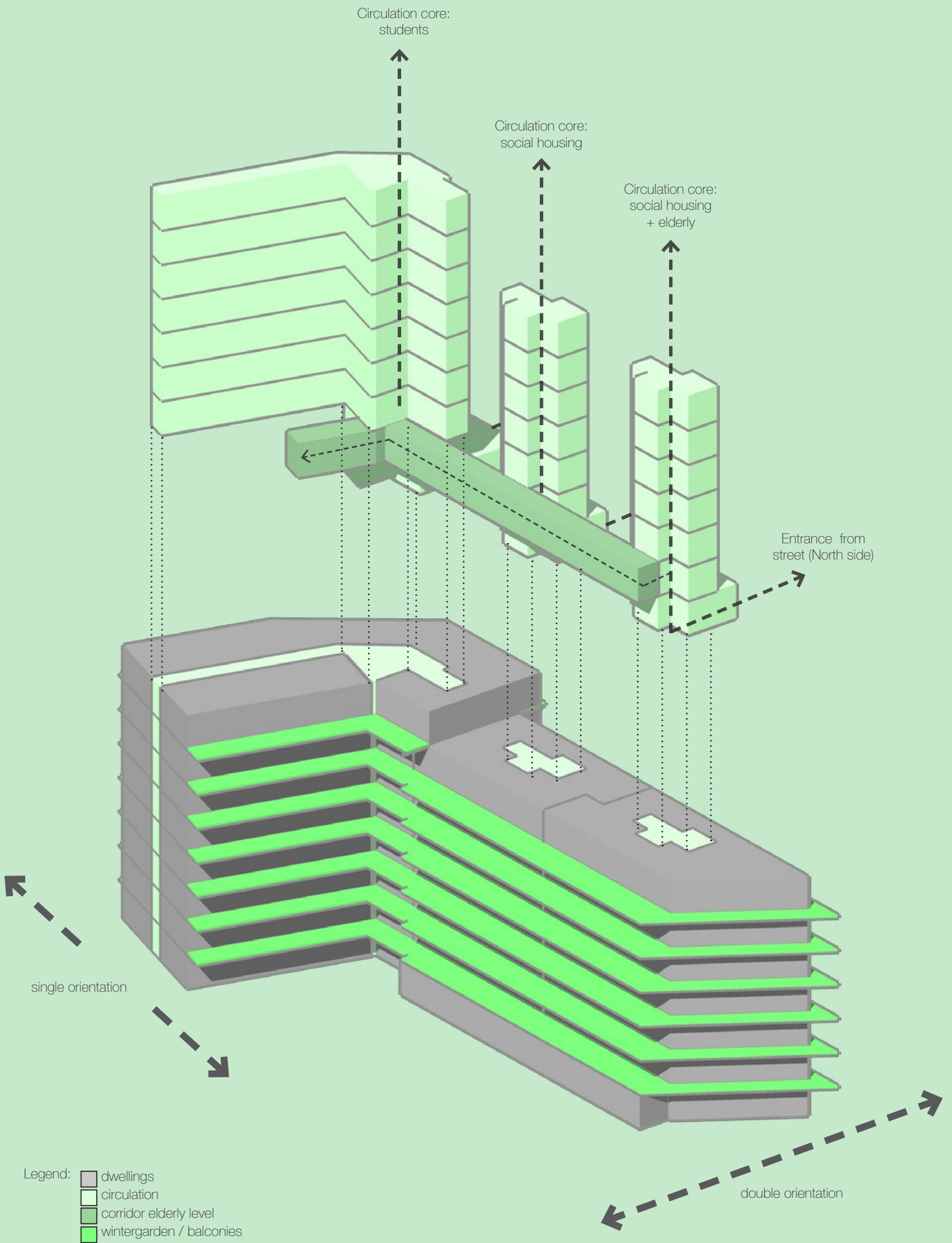
The social housing units are double oriented. While the living room and the kitchen have a lookout at the calmer inner courtyard (South side), the bedrooms are placed towards the street side with a busy road intersection (North-West side). The rooms on both sides of the facades open up to winter gardens that act as buffers between inside and outside. The wintergardens differ in depth with the one on the south side being the largest with it's 2.1 metre depth, followed by another metre deep balcony. The smaller 1-room student housing units are not double oriented due to their size. While the dwellings on the street side have a balcony, the dwellings on the inner courtyard side open up to the bigger winter garden extending into a balcony. The 6 permanent residents of the special care home program are placed on the ground floor towards the south, benefiting from the inner courtyard garden.

The splitting of the household types in different parts of the building led to the vertical circulation also being split up [60]. Creating one circulation core with adjacent long corridors for the student housings. While the social housing part of the building has two circulation cores. Each core is shared by 2 to 3 dwellings, resulting in shorter and less densely used circulation space. The only difference is that the elderly use the furthest social housing circulation core to get to their level, where a corridor enclosure connects all the units and shared spaces.



Legend:
■ commercial space
■ student dwellings
■ social housing
■ elderly housing

[59] Different households Program
source: 3D made by author, floor plan used: Lacaton & Vassal



[60] Building circulation & wintergarden + balconies extension
 source: made by author, floor plan used: Lacaton & Vassal

The inner courtyard garden acts as a shared outdoor space, excluded from the public where different residents could meet if needed [61]. Due to the building being split up, it gave the possibility of including shared spaces to be used by specific households [65]. For example, the students have shared spaces on several floors that are an extension of the corridor access. This principle has also been applied to elderly homes. Although the social housing units outside have no other shared spaces outside of the garden.

The balconies and winter gardens are the extensions of the private spaces, giving the possibility to extend habitation to the outside [64]. Creating the appearance of a contiguous separate but collective outdoor context. This can be seen when perceiving the building from both the inner courtyard as the street side.

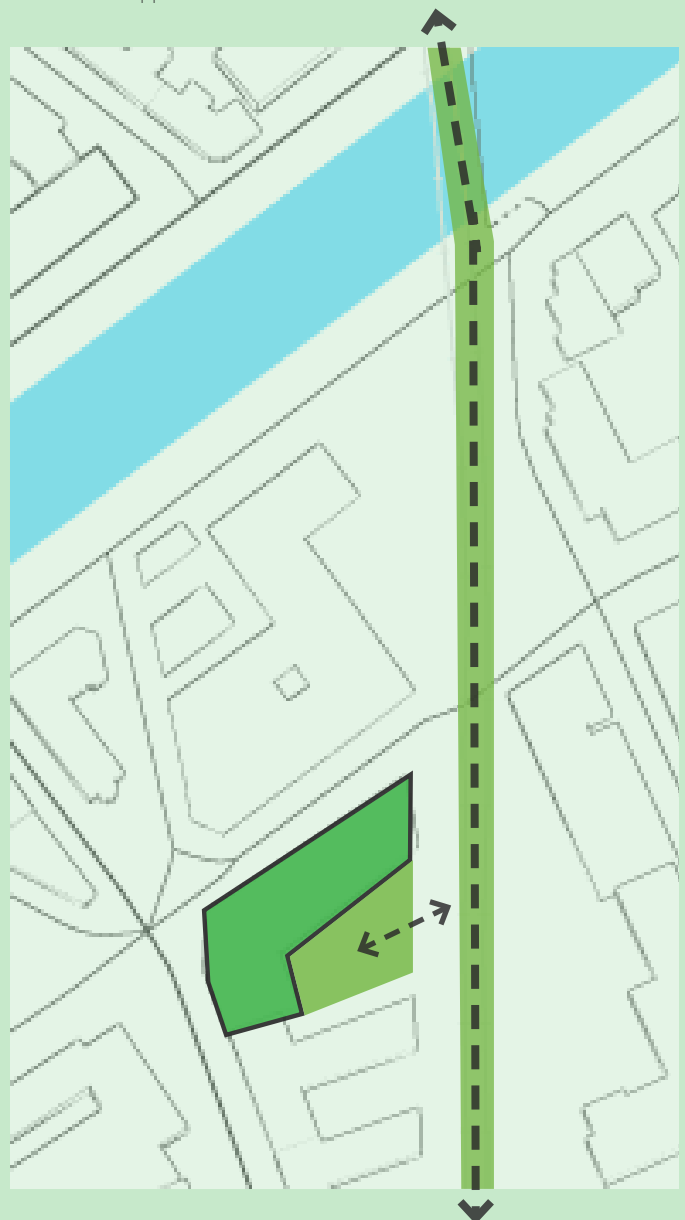
The building itself has no elements or spaces that are specifically made to house other species. Even the 5th facade, the roof, is almost bare and is not made into a green roof. The only element is the garden of the inner courtyard. The garden borders the old unused railway where wild vegetation started growing. An element that could act as a green corridor and connect the garden to other green patches in the vicinity [62].

Key takeaways for own design:

Housing two very different household types with different housing needs in the same building can be challenging. Nevertheless the architects made this possible using only one architectural design principle/methodology. Dividing the building into parts for each household type with their own circulation system, while the building presents itself as one whole. Creating a place that can be shared by all residents while also (shared) creating spaces for each specific household type.



[61] Garden in the inner courtyard
source: © Philippe Ruault



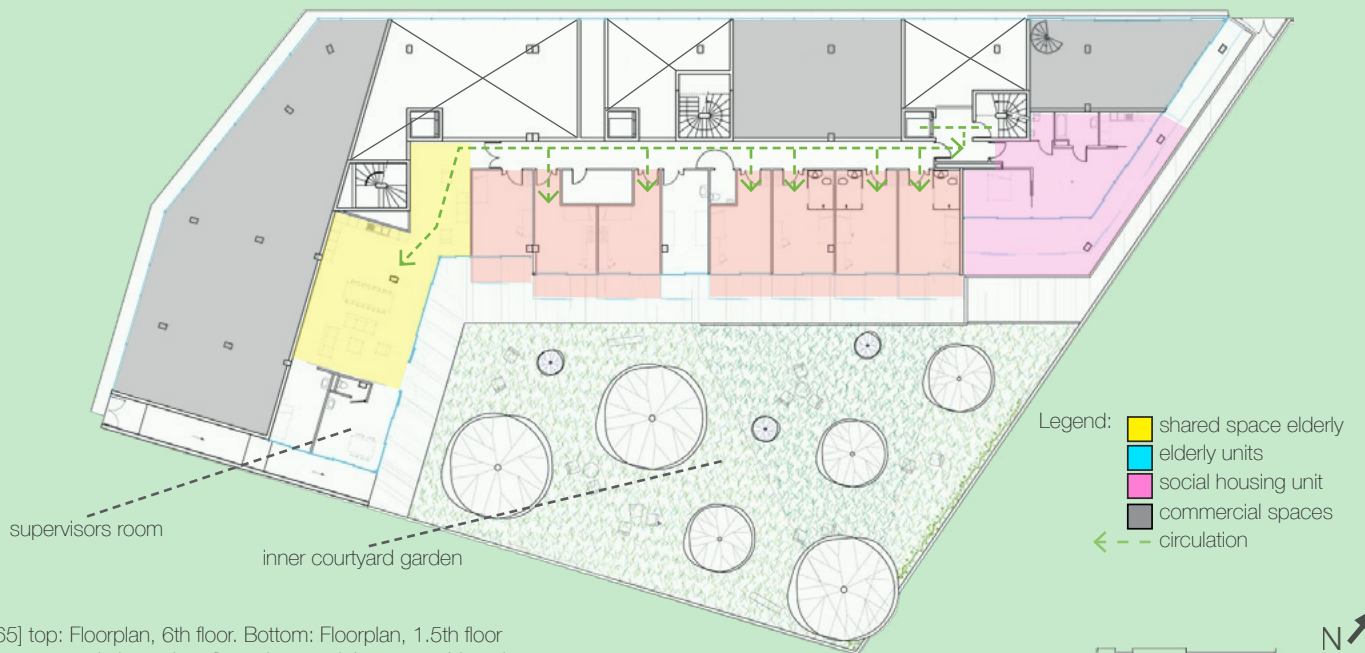
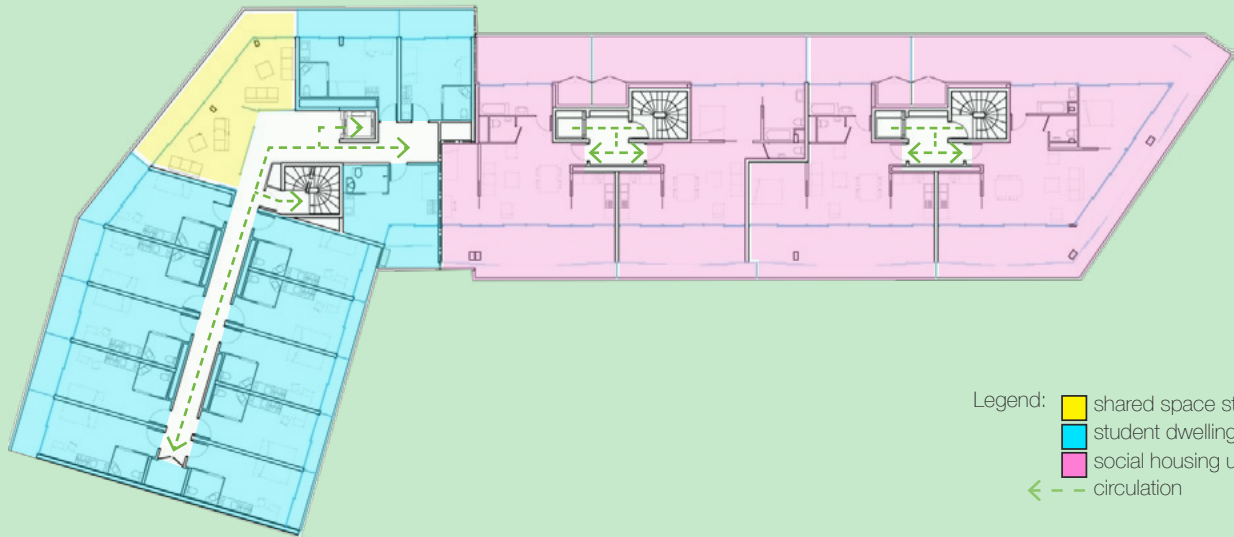
[62] Old Railways as green corridor connection.
source: Google Maps



[63] Old railway passing Ourq Jaures
source: © Philippe Ruault



[64] Wintergarden as an extension
source: © Philippe Ruault



[65] top: Floorplan, 6th floor. Bottom: Floorplan, 1.5th floor
source: made by author, floor plan used: Lacaton & Vassal

ARCHITECTURE FOR SPECIES HABITATION

Vleermuis brug (bat bridge)

Architect: Next architects

Location: Monster, Netherlands

Year built: 2015

Program: Pedestrian and bicycle bridge

Material: Concrete deck, wood & brick railing

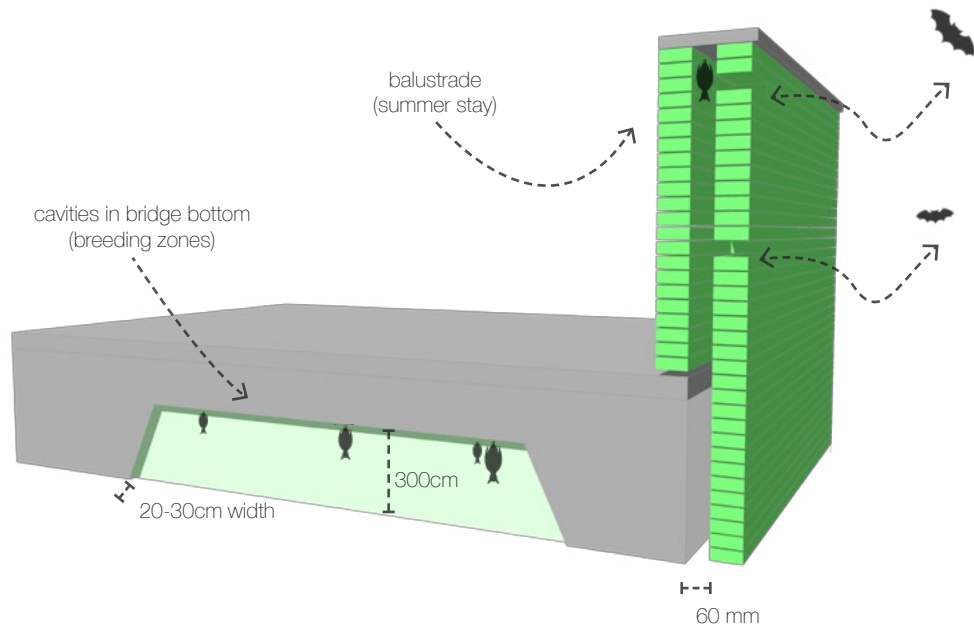


[66] cavities on the bottom side of the bat bridge
source: NEXT Architects

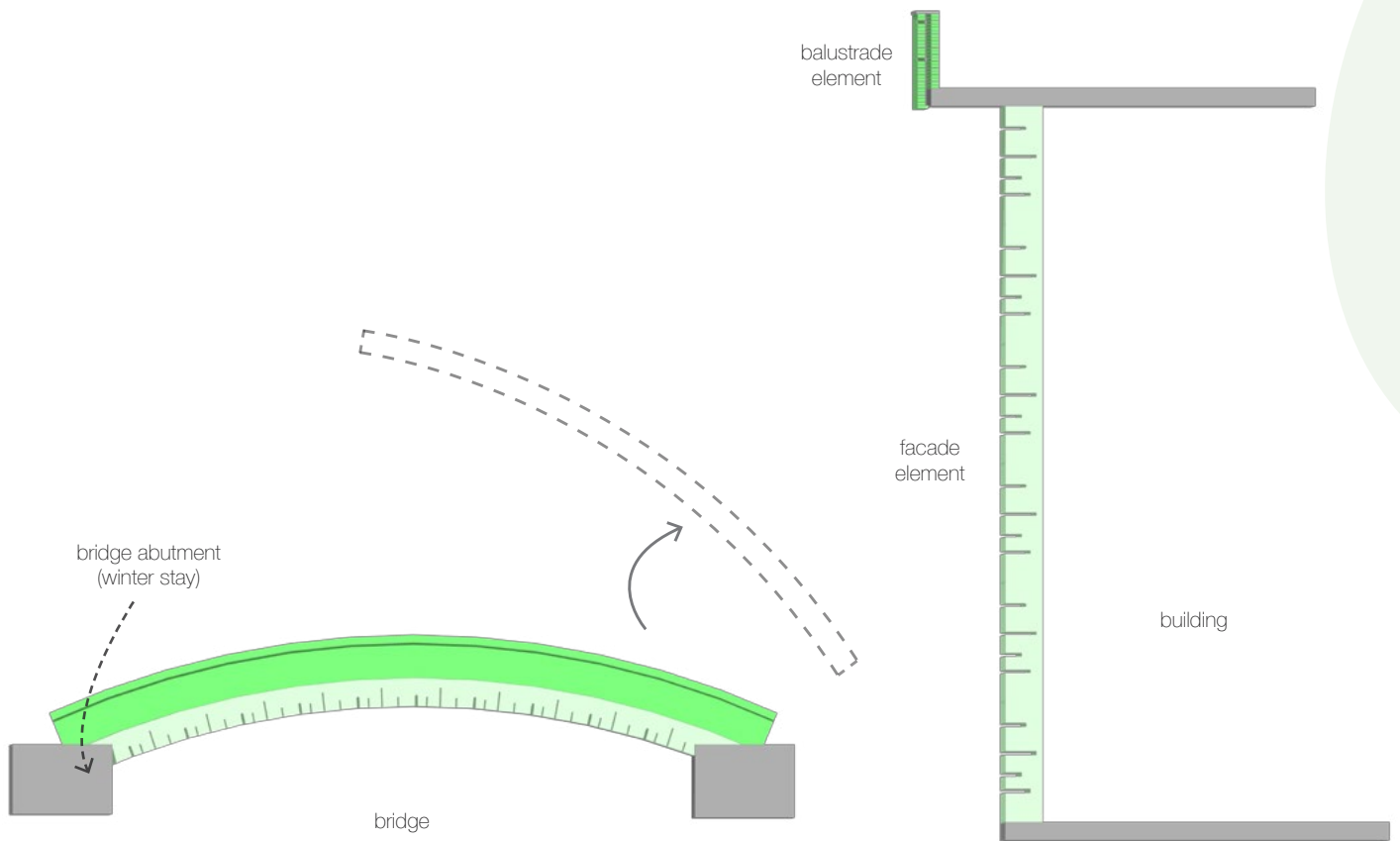
In the bridge there are three specific parts designed for the habitation of bats. The bigger air chambers in the constructive part of the bridge act as breeding zones. The bridge abutment can be used for winter stay. While crevices on the bottom side of the bridge and the cavities in the balustrade act as summer stay. Due to the use of dense material like concrete and brick, the bridge warms up during the day and keeps the bats warm during the night.

Key takeaways for own design:

The crevices could be integrated in concrete facade elements on the sunny sides of a building, away from windows and other openings used for human habitation [68]. Also when balustrades are needed in and around the building, they could be designed in such a way to house bats during the summer.



[67] 3D image of the bat bridge
 source: made by author - information from: Making urban nature (2017)



[68] 3D impression of the bat bridge elements transformed into architectural interventions for buildings
 source: made by author - information taken from: Making urban nature (2017)

Bat tower

Design: The Cloud Collective & Natuurinclusief

Location: Boekelo, Netherlands

Year built: 2016

Program: New habitation for the purpose of relocating existing bats.

Material: Brick bottom facade, wood cladding top facade. Inner walls made of sand-limestone.

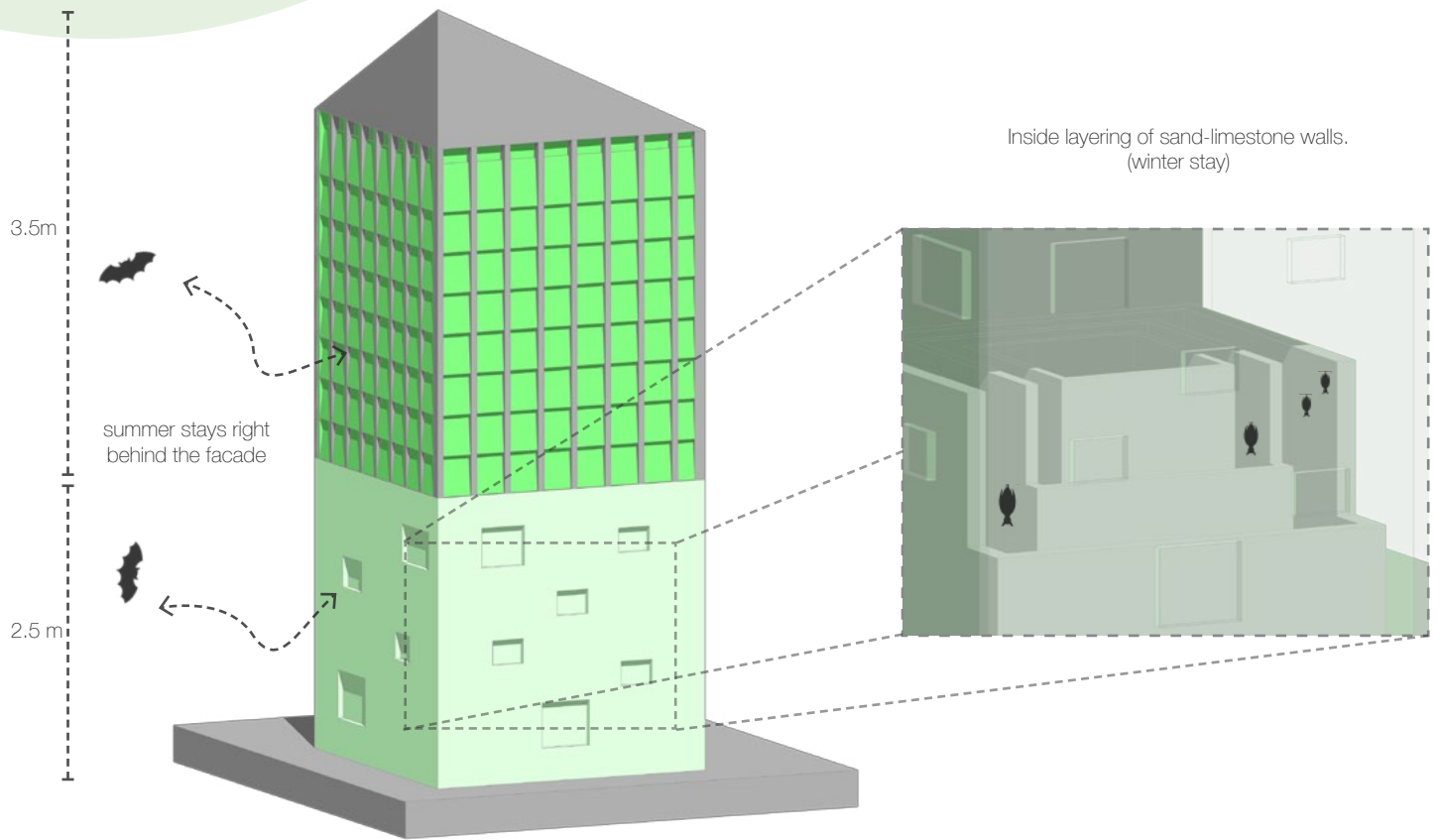


[69] Bat tower
source: Faunus Nature Creation

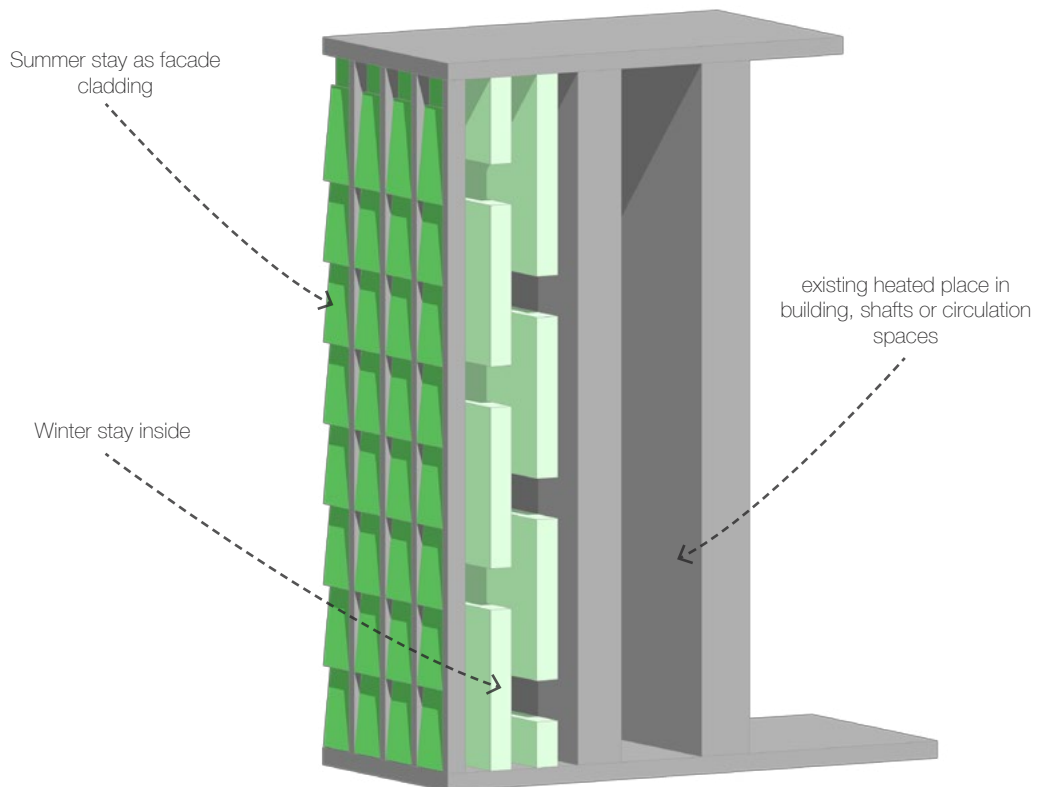
By constructing a new highway, the existing bats at that location were in need of a new habitat. This was done by a 7 metre high, 3 by 3 metre building, specifically made for the bats. Several entrance possibilities have been incorporated into the facade and roof of the building. There are gaps between the wooden roof cladding and extra open head joints in the masonry walls. The chosen materials are placed with a rough finish for better grip. The building inside serves both for longer stays such as maternity and winter stays as well as summer stays. Inside the bottom part of the building there are smaller layers of walls (like a Russian matryoshka doll) that store warmth for the winter. While the upper part of the building is hollow, something that is preferred by bats.

Key takeaways for own design:

This building could be made in different sizes or forms and placed on or around the project building to house bats in the form of an add-on element. Or the used engineering techniques could be integrated into the building facade or roof for a more inclusive design. For example [71] the summer stay spaces can be integrated into the facade while also acting as an entrance for the bats. While behind this, layers of walls can be placed near places that are warm like air shafts and circulation spaces. Where these walls can store heat and act as a winter stay.



[70] 3D impression of the bat tower.
source: made by author - information taken from: Making urban nature (2017)



[71] 3D impression of the bat tower technique used in a housing architecture.
source: made by author

Sky Hive & Bat Pole

Design: Bee Collective

Location: Various locations in the Netherlands

Year built: First one placed in 2012

Program: Preserving bees and bats in the urban context, while also raising awareness.

Material: steel pole.

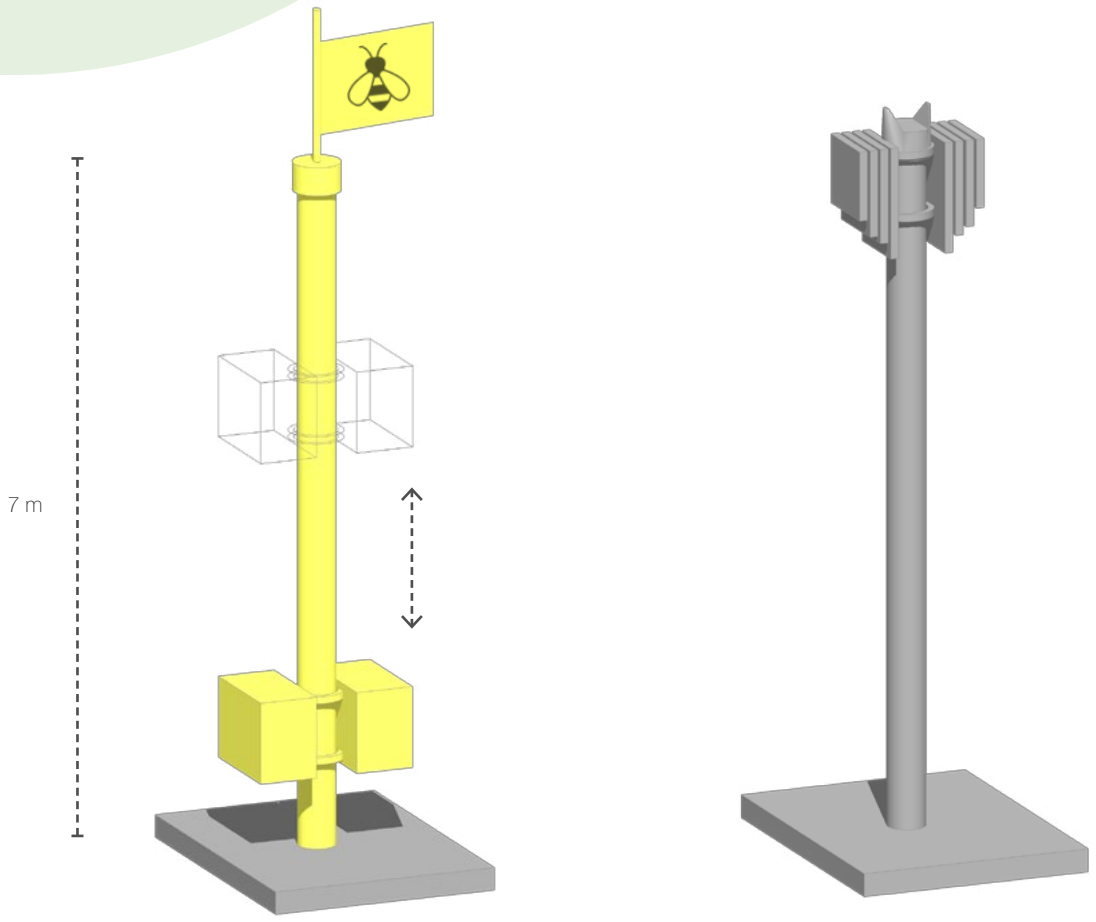


[72] Sky Hive (left) & Bat Pole (right)
source: Bee collective

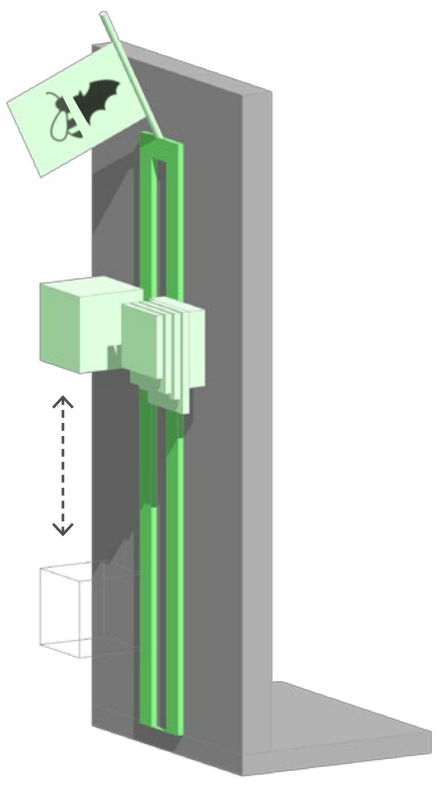
Due to their importance of pollination and thus directly also our food production, the Bee collective wanted a new way of keeping bees in the urban context. Not only by placing bee hives, but also to raise awareness of their importance. For this they designed the Sky Hive. A Beehive attached to a steel pole that can be lifted up and down. This way it won't take much space on ground level, while also minimising confrontations. Following the same principles of the Sky Hive, they also designed a bat pole to house bats in the city while also raising awareness.

Key takeaways for own design:

Due to the easy-to-place design of the posts, it is possible to position them in different places as long as a person can easily reach them when needed. Because the Hive and Batbox are moved up and down on rails, a pole is not always necessary. A similar rail system could also be attached on the side of a facade [74].



[73] 3D impression of the bat tower.
 source: made by author - information taken from: Making urban nature (2017)



[74] 3D impression of the Sky Hive or Bat pole hooked to a rail system on a wall.
 source: made by author

Bird roof tiles & bird loft

Design: BMI Monier

Location: n/a

Year built: n/a

Program: Roofing

Material: Tiles: Concrete or ceramic, Loft: plastic



[75] Bird roof tile (top) & bird loft (bottom)
source: BMI Monier

BMI Monier is a manufacturer and supplier of building materials for pitched and flat roofs. In collaboration with Vogelbescherming Nederland, they have developed two elements for housing the house sparrow. The first is a house sparrow tile. A roof tile in the shape of bird houses, in which the house sparrows can nest. The second is a specially developed bird loft that ensures that the sparrows cannot get under the roof, while giving the ability to nest beneath the lowest roof tile.

Filter Factory

Design: Isaac Monté

Location: n/a

Year built: 2013

Program: Birdhouse

Material: used cigarette filters



[76] Finished birdhouse made of sigarete filters
source: Isaac Monté

The Filter Factory project is a statement on cigarette discarding behaviour by smokers. The filters from cigarettes are transformed into a single piece birdhouse to be placed where needed. The nicotine in the filters protects the birds from parasites and insects, while the plastic has a heat insulating effect. An interesting way in which recycling can work for the benefit of species and their habitational needs.

Vulkan Beehive

Design: Snohetta
Location: Oslo, Norway
Year built: 2014
Program: Beehive
Material: Wood



[77] The large Vulkan beehives
source: Snohetta

The Filter Factory project is a statement on cigarette discarding behaviour by smokers. The filters from cigarettes are transformed into a single piece birdhouse to be placed where needed. The nicotine in the filters protects the birds from parasites and insects, while the plastic has a heat insulating effect. An interesting way in which recycling can work for the benefit of species and their habitational needs.

Filter Factory

Design: Omlet

Location: n/a

Year built: n/a

Program: Beehive

Material: plastic



[78] beekeepers working on the Beehaus
source: Beehaus - Omlet

The Beehaus beehive is a simple and flexible way of beekeeping. The plastic tray on legs can be placed in the garden or on the roof. It is designed to be easy and straightforward to use. An opportunity for beginners to become a beekeeper both in and outside the urban context.



CHAPTER 4

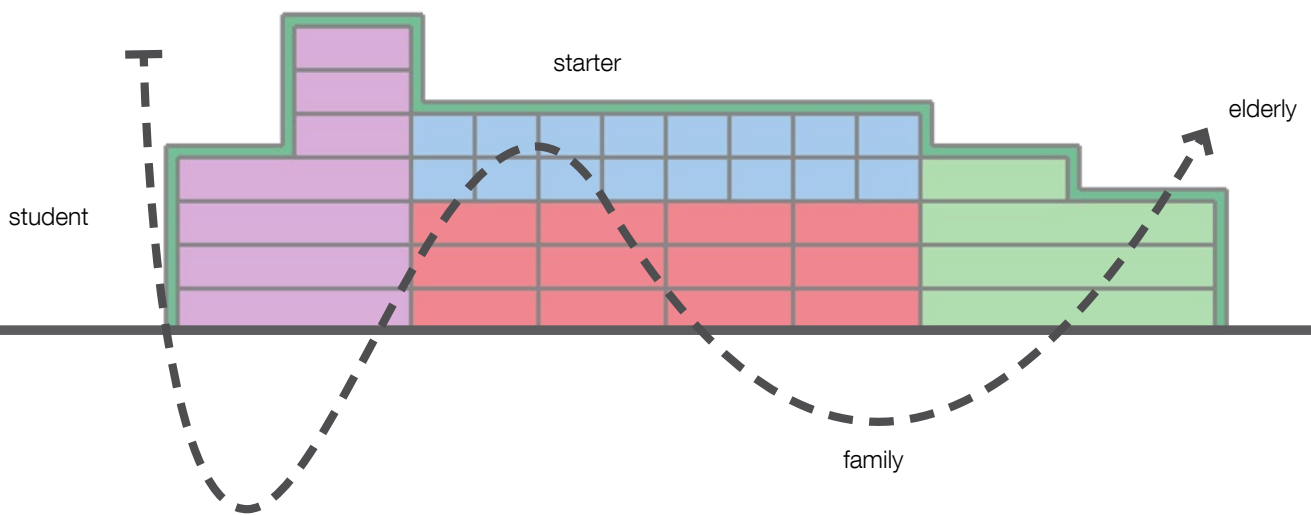
Reflection

The two chosen topics came from a given list and were not the topics I imagined myself to focus on during my graduation project/research. Nonetheless these two chosen topics piqued my interest and that was the reason for choosing them. They were engraved so deeply into the process that my design was influenced and maybe even guided by it without even realising it.

Placing the focus on the different habitats and their needs gave me a framework to work in while keeping me away from a tunnelvision of countless architectural possibilities and interventions. It led me into finding a balance not only for the program (the research) but also within the physical building (the design). From the bigger scale of the building in general to the different ways of circulation and the smaller scale of the different dwelling types and shared spaces.


An important aspect of the project is ofcourse the challenge of transforming the existing structure. The research should help in finding ways of creating diversity in a monotonous structure, nevertheless most of the chosen case studies were focused on the diversity aspect and not the struggles of working with an existing structure. This somewhat ensured that the challenge of the existing building was pushed into the background. The research without a doubt helped in creating a framework to work in but If the project site consisted of a free plot, the design project might have drawn and integrated even more from the information gathered from this research. The way it is now some elements will be nothing more than an addition to the existing structure in the form of a facade and not a fully integrated design intervention.

The performed research and the context of the existing structure is just one possible ecology of living together.



- Legend:
- species
 - students
 - elderly
 - family
 - starters

[79] At a later stage I decided to add a fourth household type in the form of the starters in order to create a community that has the possibility to inhabit the building from the early to the final stages of life.
source: Author



CONCLUSION & DISCUSSION

CONCLUSION

It is crucial to understand that the challenge is not only an equilibrium between the human and the species habitants, but also between the different household types and the social groups there. WindSong Cohousing can be seen as the benchmark example of a project that thrived for years due to a close community inhabiting it. This marks the importance of not only designing the architecture but also building a community.

These communities can even consist of different social groups and household types with their wide range of needs and preferences for habitation. Social groups that exist which consist of both primary and secondary groups. A situation where all of them may have the end goal of a balanced habitation, but can also share the same interests inside their primary group.

As much as standard repetitive dwellings are the way to go, it is shown and said many times that a difference in habitat types could have a positive effect on the long term. Not only inside a community but also for the whole neighbourhood.

Nevertheless there can also be struggle. The crisis, in this case the existing unbalanced housing market in the Netherlands, can help to start a community or even a fully functioning collective. This is of course followed by the need of maintaining this collective. Even if the common crisis is habitation, that doesn't mean that's enough to keep a community going through time. Like at WindSong Cohousing a clear interest other than just habitation is present to keep the neighbourhood together but also enough space for the community to interact.

The bigger a community the more control is needed. What could be an important factor for a balanced habitat is not necessarily the constant connection between all the inhabitants, but certainty and knowing each other to have a sense of social control. Creating smaller sub-communities for the different social groups could result in easier acquaintances and better social and collective interaction. This can be achieved by designing a divided circulation space inside a building that only

a few dwellings share on each floor like in Ourcq Jaures.

This immediately comes with an optimum programming of the different users into the building. A clear division and split building circulation would be the tool in preventing conflict on a daily basis when interaction on neighbourhood scale is not needed.

As said the creation of a community is an important aspect, so creating spaces for such a community is of equal importance. Here as well a division between different collective spaces can benefit a conflict free habitation. Making sure there are collective spaces where the community can thrive as a whole, but also spaces focused on a specific social group where they can express their interests and needs and make the sub-groups even more close.

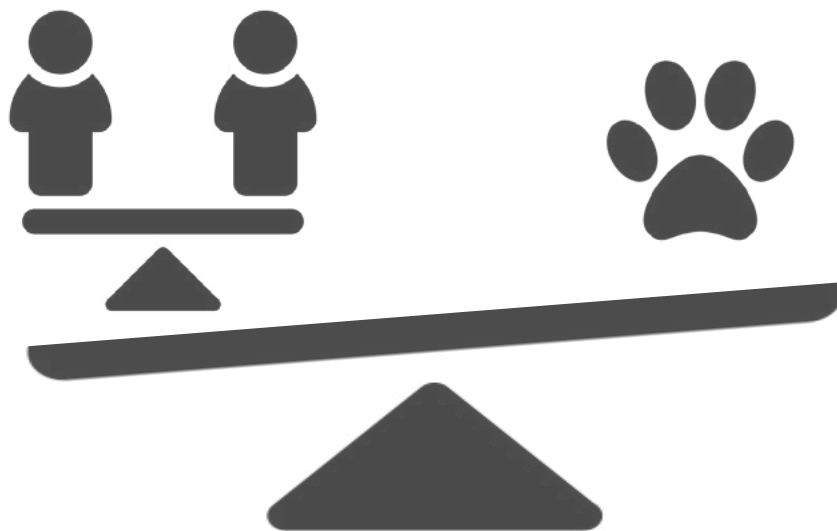
The human habitats act as the core of the building, literally the inside spaces. This leaves the facades and roof to be inhabited by the species. Due to them being influenced by seasonal conditions and weather their habitational needs can change throughout the year. This way orientation and distance between each other and the humans using the outside spaces is of importance.

Integration of bat habitation into the built environment is quite diverse. Due to their active time at night, means that there is less possibility for conflict between humans and bats. Especially when they snuggled away deep where no humans can or will go. Bat habitation for a larger scale of bats species is very much possible. No real reason to specifically design just for one type.

The habitational needs of bees are on the one hand a lot easier because they live in a colony in a hive. Nevertheless, it needs to be placed at the right distance from people. Also, a beekeeper is needed who has to come to the bees to take care of them.

The house sparrow has been around humans for thousands of years. So as long as their basic needs are met there is a high probability they will settle next to humans.

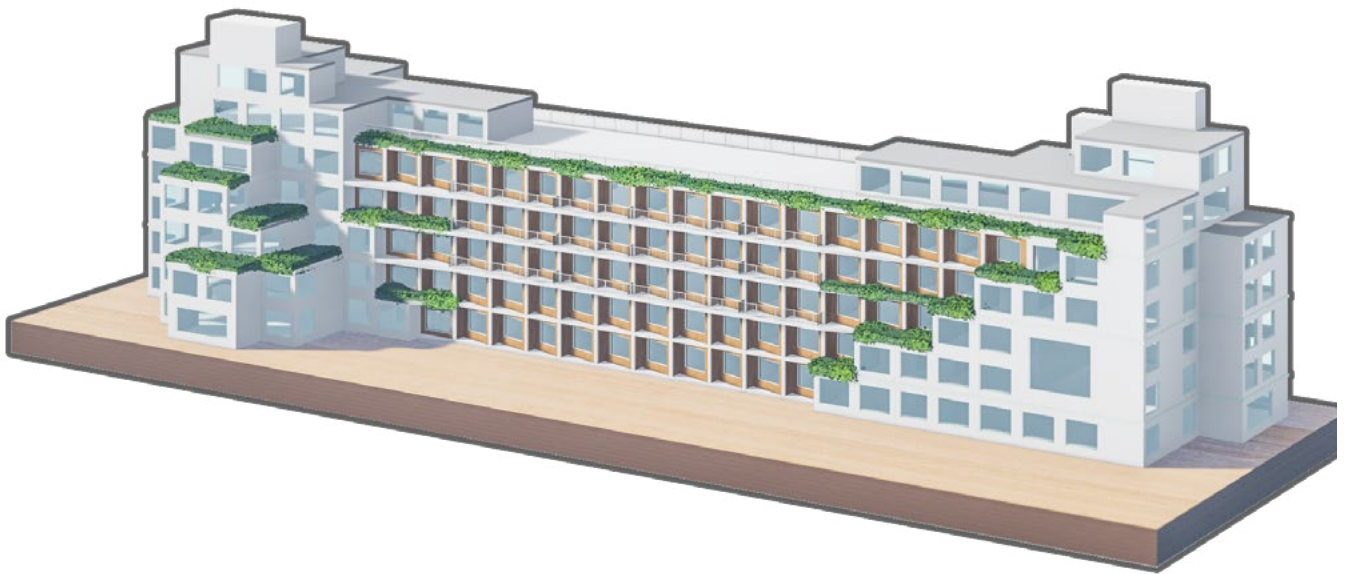
Even if the building is species inclusively designed, that doesn't automatically mean that these species or any species at all will inhabit the building. Meaning that finding a balanced habitat for both humans and species stays challenging. Nevertheless, designing towards this balance is possible through architectural tools and elements.



DISCUSSION

While setting up the research plan, the wish to map out how the different households and species would use their habitat throughout the day seemed reasonable. Although while trying to develop this it turned out nothing could be further from the truth. After all, there are so many different variables between users as well as for their interests and their activities on a daily basis. This made the situation used in this research to be a very specific situation, mostly based on the user profile and the used sources.

Although this problem is mainly related to the human user, the habitational needs of the species can also be seen as very abstract. Incorporating species in the built environment for cohabitation is a still fairly new phenomenon making it awfully difficult to make certain statements about this. Also the knowledge we have about the species with regard to habitation in the urban environment leaves something to be desired for them to be included into our urban context the way we see fit. Researching their specific needs and creating a proper habitat for them may seem reachable on paper, but that doesn't have to be true in practice.



[80] An artist impression of the project design at the P3. Already showing design interventions from the case studies.
source: Author



APPENDIX

DESIGN BRIEF

Project statement:

While conducting the urban analysis we decided the building on my site should without question be demolished. The building radiated a negative vibe due to the state the facades were in and looked like nothing special worth keeping. Nevertheless, while realising our urban Masterplan we gave the building the benefit of the doubt. It is there anyway, so why not try to reuse as much of it as possible to be part of a sustainable urban development. After acquiring the technical drawings of the building and studying them it became clear that the building had more potential than initially was speculated.

The main concern that was critical to the master plan was to demolish the short side, so the green corridor could be continued in the future. Leaving the long part along the Schimmelpenninckstraat to be transformed.

The endeavour I now had to undergo is coming up with a transformation design that turns the existing building into an establishment worthy of a place in this contemporary Masterplan. The challenge is to transform the existing repetitive structure into one that fits the habitational needs of different household types, social groups and species. Finding out how the new differing target groups could take advantage of an existing building.

The aim of the design is to find cohabitational equilibrium in the urban context. Where a fair distribution of habitation space could ensure a thriving and close neighbourhood. A place where different households can find their needed habitat for their specific moment in life. This urban development could be adapted in other existing areas in Rotterdam that mainly consist of one household type or social group. A development that could change a monotonous and isolated neighbourhood into a close community of different social groups and household types.

Role of the project:

The main role for my site is ensuring the possibility for the green corridor to continue without the transformation standing in its way or even blocking it. Another aspect is the housing tenure of the existing users whose existing homes are planned for demolition for the good of the Masterplan. So the initial task for my site is purely for habitational purposes.

Dweller profile:

The future dwellers consist of the existing residents of student housing and elderly housing that need new habitation. To enhance diversity of household types but moreover bolster the housing market the family and starter household types are added.

- The existing students
- The existing elderly
- Family households
- Starter households

Collective spaces:

Collective spaces that will be found in the new design can be divided into 3 categories:

- 1: Collective space for all (Roof atrium/garden)
- 2: The collective spaces for specific household types/social groups
- 3: Shared/collective spaces used for smaller sub groups in the building.

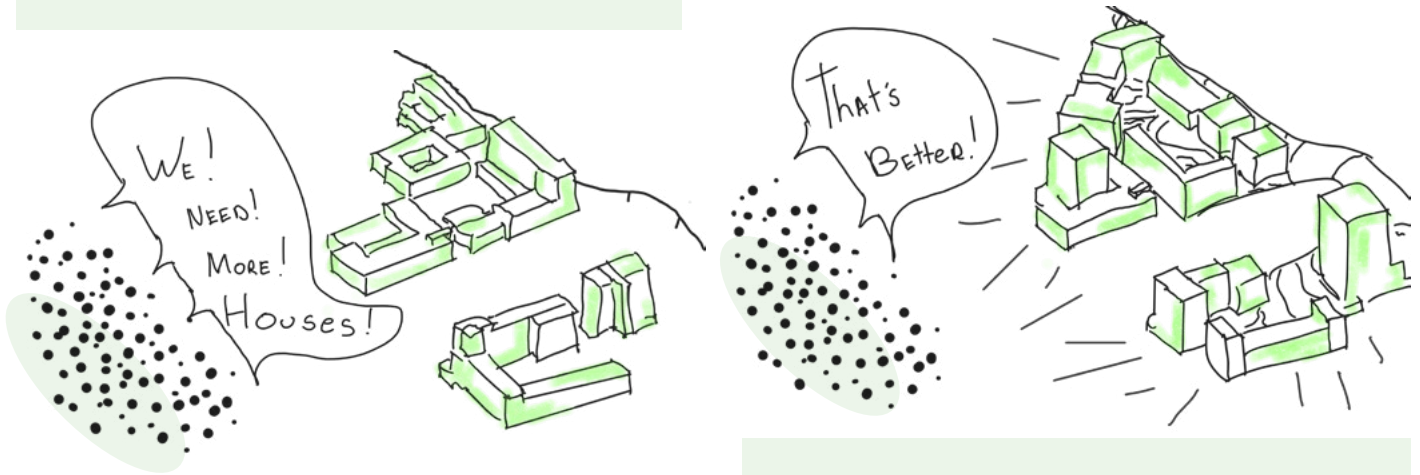
Due to the different users and social groups, a division in collective and shared spaces is made. As a result, the users do not necessarily have to use the same shared spaces due to their different interests and lifestyle. Also adding smaller spaces like entrance passages where shared facilities like washing machines etc. could be placed. This creates even closer sub-groups between dwellings that are in vicinity to each other.



GRAPHIC NOVEL

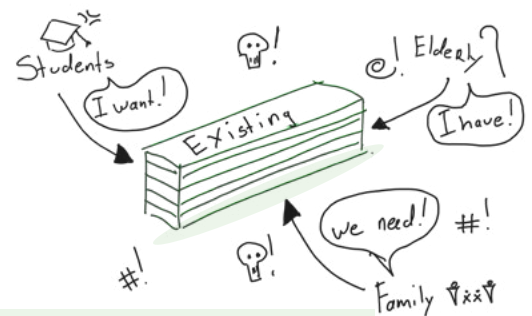
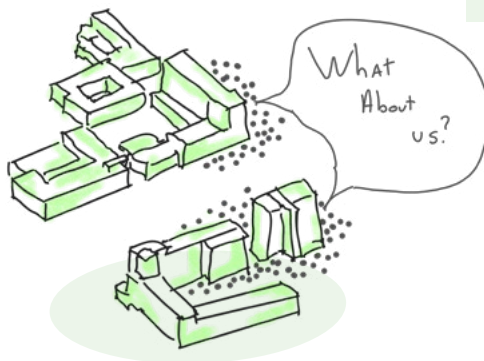
CHAPTER 1 - Programming

With the current housing market places like the project site could use an upgrade.

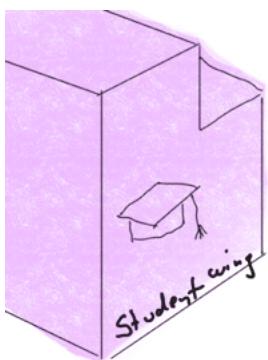


With the new design comes a higher densification and efficiency. To the joy of many.

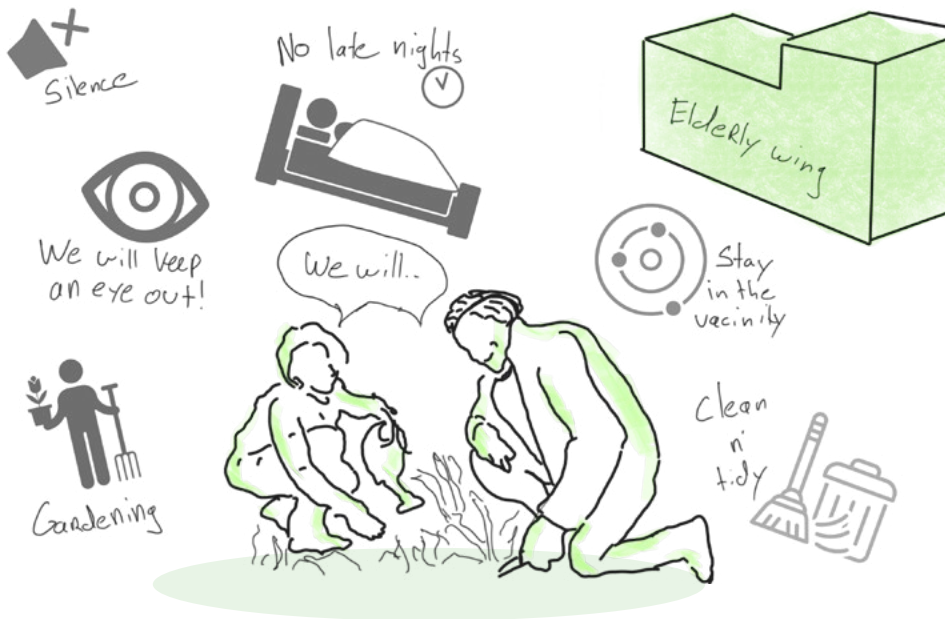
But in this new master plan many of the new buildings are not designed for the existing students and elderly.



As their last resort they will get a place in the existing building on my plot. A challenge due to their habitational diversity while using an existing monotonous building.

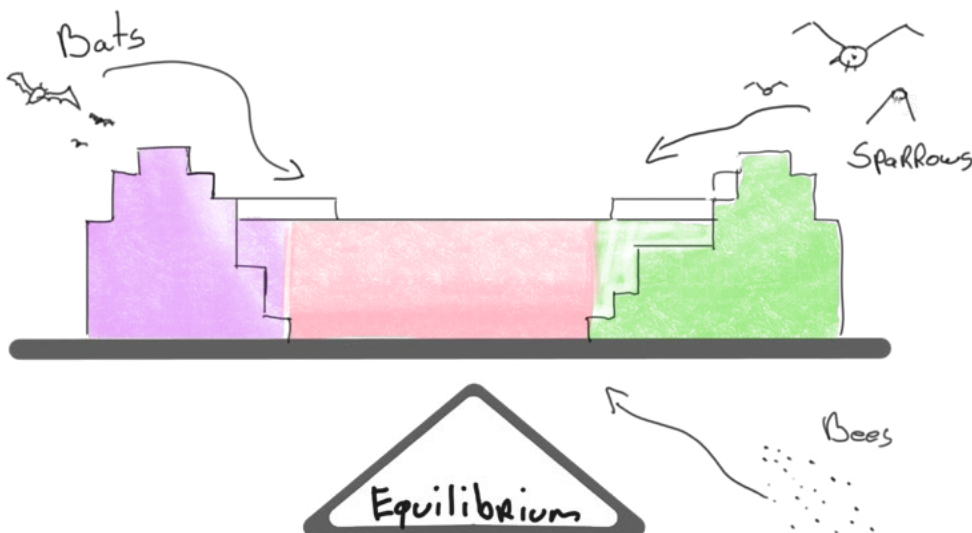


The students have changing and irregular schedules. They mostly are of short stay, not much longer than a few years. Sometimes even no longer than a year. This results in a continuing change of users.



The user profile of the elderly contrasts with the students. The elderly are rather static and remain in the vicinity of the dwellings. Mainly through the influence of others or with help, they will leave the area to do some activities. This ensures that the elderly can often be found in and around the complex and could guarantee a sense of control.

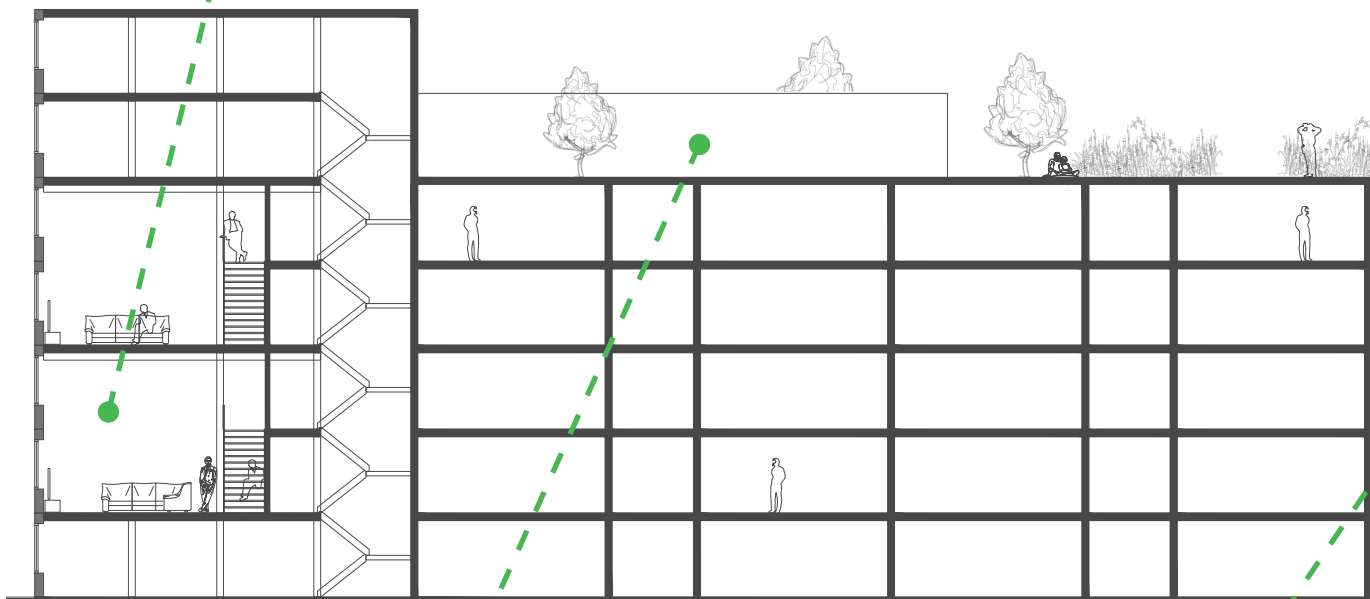
Family Households inhabit the building for the longest period until the children grow old and leave the household. Their long occupation of the habitat means that they could play an important role in the creation of a close neighbourhood. The dynamic in a family is also diverse. One goes off to work, the other stays at home, while the children have school.



Now that a way of creating a balanced multitudinous building with the different households is found it is time to look into the addition of species and how the neighbourhood will unravel in the future.

CHAPTER 2 - Architecture and programming

While their bedrooms are rather small, the students can get together in the bigger shared living rooms. A specific place accessible only for students where they can carry out their specific lifestyle.



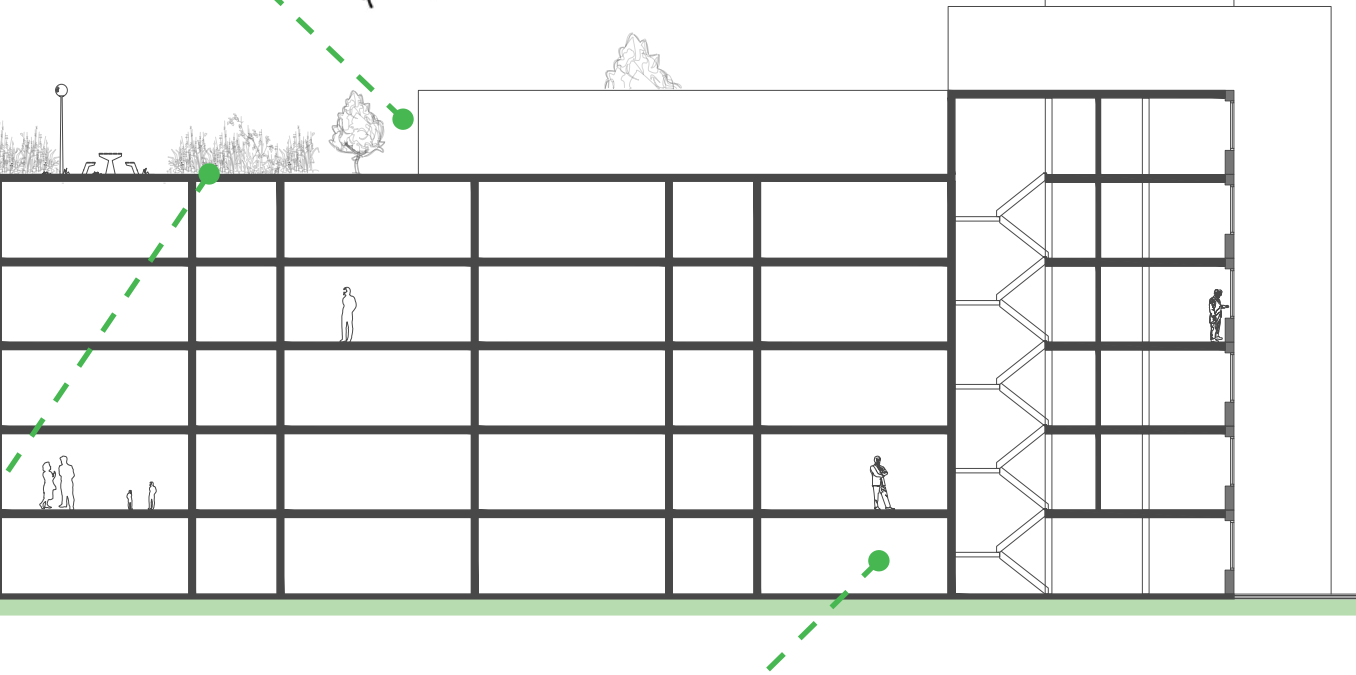
A walk through the common areas gives the opportunity to think about the future. Walking past the hidden bats behind the facade, one can see different activities around the shared spaces....



...For example the elderly who are busy keeping the common areas tidy as they like it. Some can be seen gardening here and there or taking care of the bee hives.



....Or the playing children from the family dwellings downstairs. Being intrigued by the nesting birds on top of the roofs and greenery.



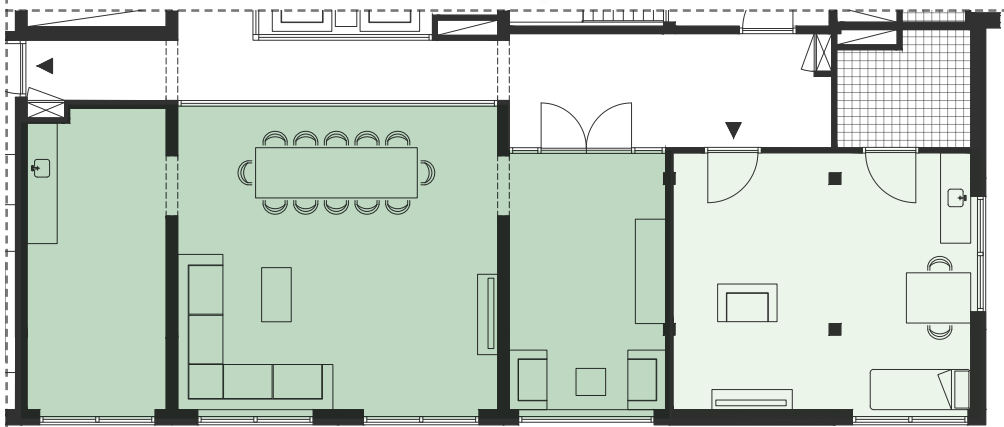
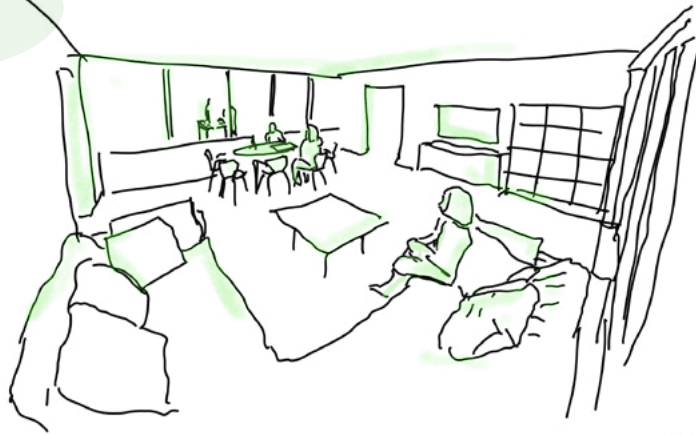
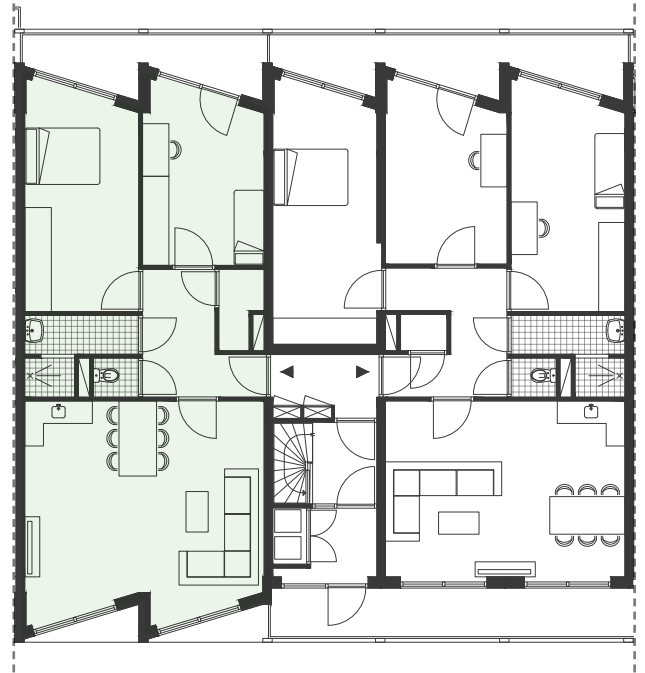
So if such a community is one's cup of tea on a daily basis there is a possibility to even be a part of this community on a longer term. As long as there is a place of course.

CHAPTER 3 - The habitants

One can move in to a bigger maisonnette dwelling with their young family, located on the first few bottom floors. More bedrooms and bigger spaces for all needed habitational purposes. The groundfloor units even have direct access to the inner courtyard



When the children move out of the household there is more space left than needed. Also more free time is left but it happens that young elderly don't know what to do with it. This is where the young elderly dwellings come into play. They can use the shared facilities of the elderly care but keep living on their own.



While in 30-35 years from now one can live in the elderly care wing. Rooms that are designed for all the habitational needs of elderly people. A small or medium sized dwelling unit with big shared living rooms to interact with the other elderly or even other dwellers in the building.



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Used pictograms are from TheNounProject if not mentioned otherwise:
<https://thenounproject.com/>

Satellite picture of case studies:
<https://www.google.nl/maps/> + <https://snazzymaps.com>

Introduction

Masterplan of the site by the Species group.
Made by: Species group

Notion of circulation.
Made by: Species group

Aerial picture project site/
source: www.Google.com/maps

Bospolder Vos (2020) Studio Florentijn Hofman
Photo: Frank Hanswijk

Proportional population of cities since 1950.
Source: <https://luminocity3d.org/WorldCity/#4/46.83/13.45> (data by United Nations 2018)

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Chapter 1

WindSong Cohousing
Pictures & drawings source:
DASH: Building Together: The Architecture of Collective Private Commissions (2012)
<https://dash-journal.com/dash-08-building-together/>

Soft City
Drawings source:
Sim, D. (2019). Soft City: Building density for everyday life.

Chapter 2

Hooghout CPO
3D illustration dwelling types & plan
source: ANA Architectes
pictures 24-32
source: author

The human inhabitants
Schematic cross section drawing
source: author

Family plan
source: ANA architects & BPD
<https://www.ana.nl/portfolio-item/family-plan/>

Diagram of an urban ecology
Schematic cross section drawing
source: author

Chapter 3

Jeanne Hachette & Jean Baptiste Clement
drawings source: Jean Renaudie
<https://www.centrepompidou.fr/en/ressources/oeuvre/c88XpBp> <https://thefunambulist.net/editorials/ivry-sur-seine-architectural-genius-renee-gailhoustet-jean-renaudie-paris-banlieues>

Pictures:

source: Lorenzo Zandri <https://divisare.com/projects/346825-jean-renaudie-renee-gailhoustet-lorenzo-zandri-za-ivry-sur-seine-social-housing-project>

source: Léopold Lambert

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source: photographer unknown

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Cité du Grand Parc

Pictures by Philippe Ruault, drawings source: Lacaton & Vassal

<https://www.lacatonvassal.com/index.php?idp=80#>

Ourq Jaures

Pictures by Philippe Ruault, drawings source: Lacaton & Vassal <https://www.lacatonvassal.com/index.php?idp=75#>

Architecture for species habitation

Sky Hive & Bat Pole

Pictures source: Bee collective, <https://beecollective.eu/>

Bat tower

By Faunus Nature creation, source: <https://faunusnature.com/portfolio/teesinktoren/>

Bird roof tiles & bird loft

Pictures source: BMI Monier, www.monier.nl

Filter factory

Pictures source: Isaac Monté, <https://www.isaacmonte.nl/filter-factory>

Vulkan Beehives

Picture source: Snohetta, <https://snohetta.com/project/186-vulkan-beehive>

Beehaus

Picture source: Omlet, www.omlet.co.uk



INTERVIEW QUESTIONNAIRE

Interview

Project: Hooghout

Questions for the architect Ir. Bas Hoevenaars

1: Could you tell me about the process of designing a building for different household types with different wishes? How did this function in the beginning of the design process and what remained of it in the finished project?

2: To what extent did you think about different future use(rs), when designing for the specific wishes of the existing users?

3: Was it possible to find a balance in the design that would please everyone's wishes? If so, what were the necessary architectural interventions needed for that?

4: What are the pros and cons of designing specifically according to the different wishes of the users, from designing a standard plan without influences of users.

5: What did you learn from this experience and what would you do differently in the future with a similar project?

6: To what degree did possible social interaction play a role in this while designing circulation throughout the building.

7: How do the private spaces relate to the collective spaces?

8: What is your opinion, being an architect, about CPO projects in this time of shortage of houses?

9: What is your opinion when it comes to incorporating other animal, insect and plant species in architecture in the urban context?

10: If you had to incorporate other species (like bees, bats or small birds) into the design, would the existing design concept allow for such users and why? If not, what design interventions would need to be adapted?

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Questions for the client and resident Maurice:

- 1: What reason led to a wish of having a building designed to the specific wishes of each user?
- 2: To what extent did you all agree on setting up the individual wishes? Was there a limit, or a scale for each wish set up?
- 3: To what extent do the household types and social groups differ in the collective?
- 4: To what extent has the CPO looked at creating a community?
- 5: How is it determined which and how many collective spaces are needed?
- 6: How important was the creation of collective spaces or places for social interaction?
- 7: Which spaces/architectural interventions have had a positive or negative effect on the social cohesion of the residents?
- 8: Which spaces/architectural interventions do you miss that would have a positive effect on social cohesion?
- 9: Has the CPO ever considered including other animal, insect and plant species in the project? If yes/no, why?
- 10: If you were to participate in a CPO project again in the future, what things would you do? have done differently, especially when it comes to social cohesion?