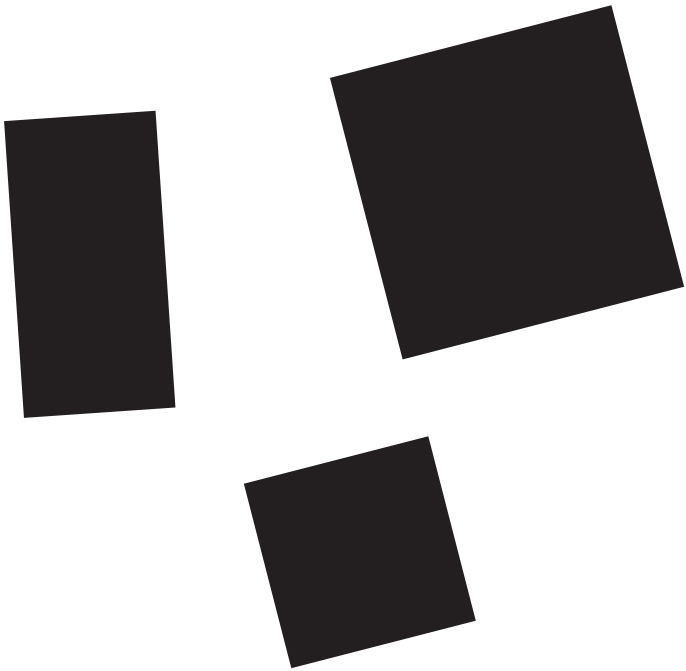

Blij-keuken

Redesigning the Fat Type Housing with Kitchens for Social Making

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01

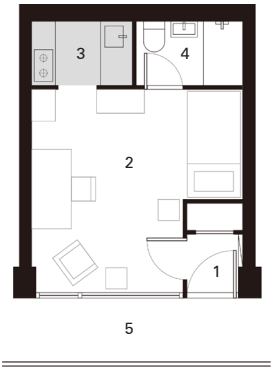
Introduction

1.1 Research Motivation

My research motivation for kitchen in dwelling space came from my personal experience living in Dutch student housing. When I first arrived in the Netherlands, I moved into a student house built in the 1960s. The kitchen is located on a tiny corner of the studio room as a separate space, connecting the living area with a gate. The compact living unit with predetermined furniture and functions is suitable for only one person. Any extra user would interfere with the movement of the dweller. Because of such a layout, I seldom invited friends over. It was a difficult and isolated moment for me during the lockdown.

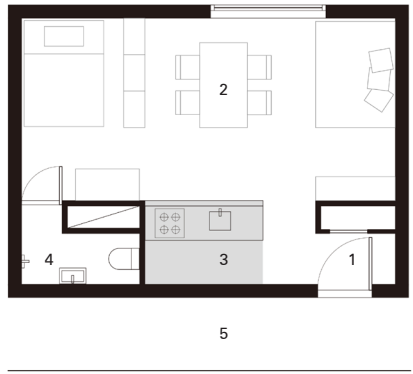
After living there for eight months, I moved to another student house. Apart from the fact that the room is much larger, the arrangement of the kitchen and bathroom allows the units to have greater spatial flexibility. The kitchen is next to the entrance, separated from the living space with a low wall at chest height. The kitchen has a good view over the whole room, which allows the person who cooks to continue interacting with people in the living space. Furthermore, the kitchen has a long working surface. It is then possible to have two people preparing food simultaneously.

The kitchen lays the foundation of social interaction and conducting domestic tasks in a house. Apart from preparing meals, the kitchen also plays a definitive role in the social making in the dwelling space. The experience with these two kitchens inspired me to explore kitchens in different housing types and further introduce the knowledge to future housing design.



1 Entrance
2 Living Space
3 Kitchen
4 Bathroom
5 Gallery

0 0.5 1 2m



1 Entrance
2 Living Space
3 Kitchen
4 Bathroom
5 Corridor

0 0.5 1 2m

Fig. 1 Floor Plan, Previous Studio Room, made by the author
Fig. 2 Floor Plan, Current Studio Room, made by the author

1.2 Problem Statement

Post-Pandemic Living

The pandemic since 2019 had a significant impact on how people live and behave. According to The Economist, people's activity regarding transport, leisure and business has primarily decreased compared to pre-covid eras, even after most of the covid restrictions are lifted (Economist, 2021). This suggests that people are accommodating to a hybrid lifestyle of online and offline. In other words, people spend more time at home now. Working from home is becoming a norm, and the domestic realm is expected to serve as a production space. In this regard, the dwelling space needed to be rearranged accordingly. Meanwhile, what brought along with the pandemic was the mental health crisis. According to Gallup, seven in ten people were reported mentally struggling or suffering globally (Gallup, 2021). In the Netherlands, people experience more anxiety, loneliness, sadness, and stress than they did before the pandemic (Statista, 2021). Such mental health issues has even been exacerbated by the changing demographic in big cities, such as solo dwellers or empty nested homes. As the size of Dutch households is gradually shrinking (Statista, 2021), the sense of togetherness and moral support should be built from the community level.

Gender Inequality

The Dutch government had shifted from the classical welfare state to a "participation society" due to modern networks and the need to reduce the government deficit. The new framework of participation society requested people (who are able to) "to take responsibility for their own lives and environment (Rijksoverheid, 2013). " The decentralized social welfare would put more pressure on the traditional caretakers in households, particularly women. Nowadays, the traditional female gender role is still prominent in the Netherlands. Women spend almost double the time per day on domestic tasks than men on average (OECD, 2014). This fact suggests that women are still massively responsible for social reproduction. Although women entering the workplace is not a rare phenomenon anymore, the stereotyped social gender role still hinders women's career development. As a result, women tend to have part-time jobs rather than to develop their lifetime professional careers (Expatica, 2021). To deal with gender equality towards women, both the culture of gender roles and the workplace of social reproduction require changes.

Housing Crisis in the Netherlands

The housing crisis in the Netherlands has been intensely discussed in recent years. In the past five years, housing prices in

the Netherlands has undergone a steady growth of 10% per year on average (CBS, 2021). The stunning phenomenon on the owner-occupied homes was a mixture of encouraging policy, low mortgage rate, growing rent price, and the emergence of investors. In short, the crisis was caused by the commodification of housing. The home seekers could either move away from the city center or aim for smaller houses with compromised conditions. Whereas good quality housing and low house price seem impossible to coexist in the Dutch housing market, such an idea was already realized in cooperative housing in other European cities. The non-profit-oriented cooperative housing fulfills the need of dwellers financially and, through collaboration, builds up communities with social purposes. The precondition of non-profit allows experimenting with new ways of living. One extraordinary example is the Fat Type Building. "Fat Type" is a nickname for the mid-rise building in the shape of an oversize cube, up to 30 meters in depth with a relatively substantial volume. The Fat Type is a successful building type in the "Zurich Model" of cooperative housing with solid social motivation. As a still rarely explored building type, the Fat Type could potentially be the subject of the housing experiment in the Netherlands.

To deal with the issues related to shifting dwelling pattern, gender inequality, and housing crisis, a new set of housing design strategies should be introduced. These strategies, by positioning kitchen as the pivot point of constructing social interactions, seek to reimagine the housing type of the Netherlands in the forthcoming decade.

1.3 Research Questions

The research was divided into two parts: The Typologies of Kitchens and the Fat Type. The research structure helps to build up the understanding of how the kitchen is a space that critically demonstrates social and cultural context. Based on the relationship of the users and the spatial hierarchy of the kitchens, I categorized the kitchens into three: private modern kitchen of the 20s, shared kitchens of the 70s, and urban kitchens of the 2010s. The three types of the kitchen were sampled from three particular historical moments to capture the evolution of the kitchen and its projected ideas over time. Furthermore, to explore how the kitchen's design could have an impact on the design of the Fat Type.

Main research questions:

1. How could private modern kitchen of the 20s, shared kitchen of the 70s, and urban kitchen of 2010s enlighten the kitchen and housing design in the 2020s of Netherlands?

1) How did the industrialized equipment and optimization of efficiency in the private modern kitchen in the 1920s provide opportunities for gender equality and the shift of social gender roles?

2) How did the concern of care and sharing in the 1970s contribute to the shared kitchen and co-housing design?

3) How did the urban kitchens in the 2010s respond to the late capitalist society and become social support in communities?

2. How does the potential of the three types of kitchens impact future housing design in the Fat Type buildings in the Dutch urban context?

1) What are the urban characteristics and spatial qualities of the Fat Type?

2) How can the tradition of Dutch housing design shape the design of the Fat Type buildings?

3) How can the three types of kitchens provoke new housing design for the Fat Type buildings?

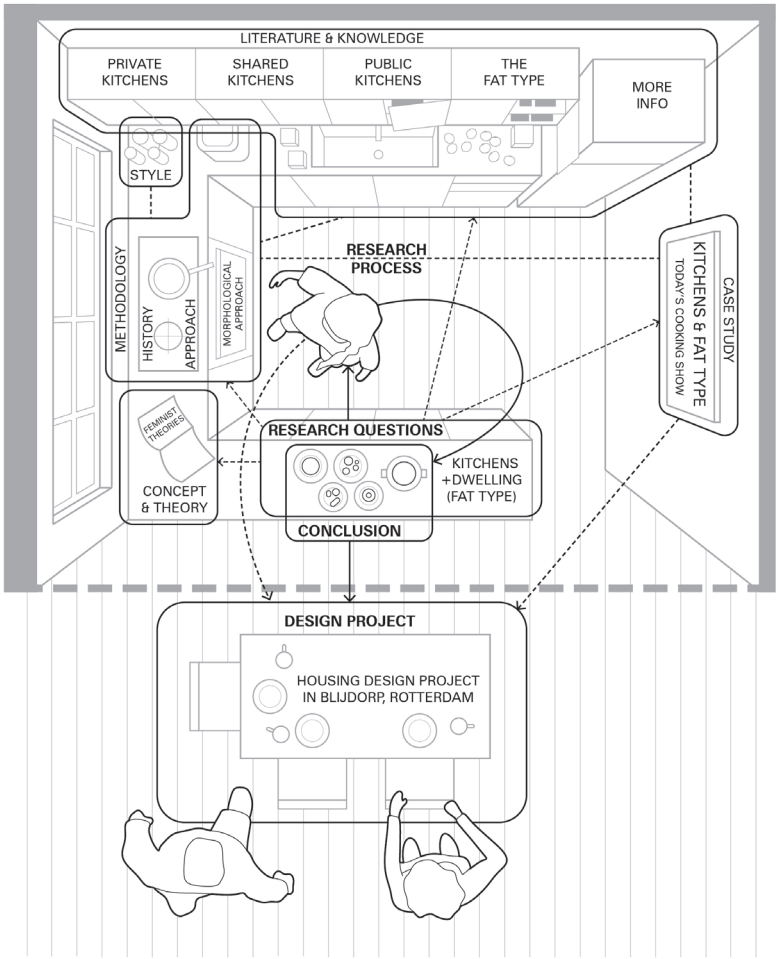


Fig. 3 Research Diagram, made by the author

1.4 Research Framework

The Three Kitchen Constellations: Historical Approach

The historical research aimed to understand the specific historical settings of the critical moments in the evolution of the typologies kitchens. The research should provide programmatic and conceptual grounds for housing design. The relationship between the historical context and design could be much more depicted through the proposed, built, and used examples of kitchens. I used mainly literature study to learn the cultural, economic, political, and even technological background. The selected literature series are mainly feminist theories related to kitchen and housing. Furthermore, I apply morphological analysis of the examples to depict how the socio-political connotation at specific moments of history has been transferred, projected, and materialized in the design of kitchens.

For the private modern kitchens of the 20s, I used two case studies, Frankfurt Kitchen (Margarete Schütte-Lihotzky, Germany, 1926) and Malcom Willey House (Frank Lloyd Wright, USA, 1934), to explore the relationship between women's struggle in kitchens and the kitchen design in this period. For the shared kitchens of the 70s, I used two case studies, Sættedammen (Theo Bjerg, Denmark, 1972) and Stacken (Siv Carlsson, Sweden,1979), to explore the shared kitchens in co-housing. For the urban kitchens of the 2010s, I used two case studies, Collective Kitchen in Lima (*Comedor Polular*, Peru, 1980s) and Children's Cafeteria (こども食堂 , Japan, 2012) to explore the formation of urban kitchens. Most cases selected for historical research were examined with morphological analysis to link the cultural ideological intention with spatial production.

The Fat Type: Morphological Approach

The case studies served as essential source of knowledge to thematic research on kitchens and "The Fat Type" spatial organization in urban situations. This part of research provides insights on building types and spatial design principles for the design phase.

A critical aspect of morphological analysis is to study the urban situation for architecture design in the next stage. To introduce the Fat Type on-site, I studied the Cooperative Mehr Als Wohnen (2015) in Zurich, where the Fat Type buildings are the dominant building type on site. With a similar geometry, Mehr Als Wohnen established different housing typologies, including single apartments, family apartments, cluster apartments, and hotels. Five groups of architects produced thirteen playful, divert yet harmonious buildings with predetermined principles.

Additionally, to contextualize

the Swiss Fat Type into Dutch urban conditions, I studied the rare Dutch Fat Type housing, Botania (2002) and Myriad in Funen (2009). In combination with the historical approach, this part of the research seeks to identify the housing traditions in Dutch houses, which could be further applied in the design phase.

The analytical criteria for the typo-morphological analysis focuses on circulation space, urban facade and open space, and housing units. In addition, the research investigates the spatial organization and spatial quality of the Fat Type and how the social aspects were taken into account.

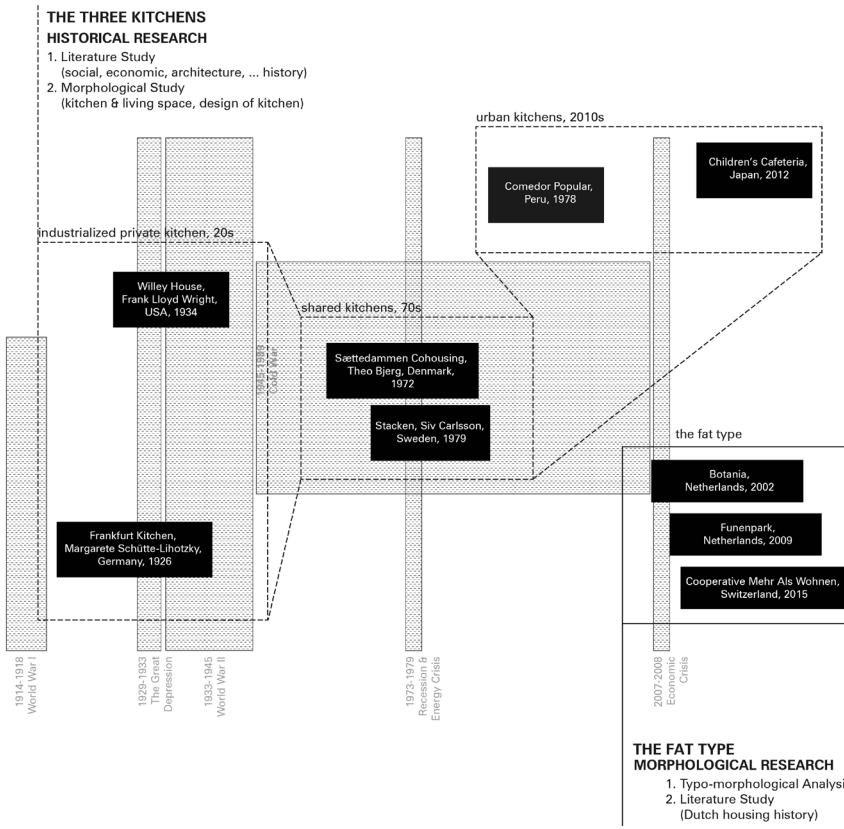


Fig. 4 List of Case Study with Timeline & Research Methods, made by the author

02

The Three Kitchen Constellations

2.1 Private Modern Kitchens of the 20s

In this research, I defined the private modern kitchens as the domestic kitchen equipped with technological devices that appeared after the 1920s. A private modern kitchen is installed inside a private household and is exclusively used by the members in the house where it situates. The location and spatial configuration of private modern kitchens and the users meant for these kitchens are inextricably related to the social, economic, and technological context when the kitchens were built. Particularly how women, the social reproduction labor, were expected to act in these kitchens.

This chapter explores how architects reflected the historical context in kitchen designs. Each project's focus would be its historical background and further discussion on its central design concept, spatial quality, and protagonist.

Frankfurt Kitchen

Margaret Schütte-Lihotzky's specialty in the rationalized industrial private kitchen began way before her iconic Frankfurt Kitchen. In the 1920s, the recent graduate Lihotzky worked for the Viennese Settlement Office and took part in designing some of the settlements among many other prominent architects. Inspired by Christine Frederick's *The New Housekeeping; Efficiency Studies in Home Management*, Lihotzky demonstrated domestic tasks' rationalization in her Core-Houses design. The Core-Houses were designed in phases to accommodate dwellers with different financial statuses and family sizes. Both "Live-in Kitchen" of the early phase and "Cooking Niche" of the later stage demonstrated how industrialized, prefabricated cooking equipment and their arrangement could bring convenience in a kitchen. The time-saving kitchen encourages dwellers to spend more time on other tasks, such as food production (Hochhaeusl, 2013).

Because of her success in the Vienna Settlement projects, Schütte-Lihotzky was invited by Ernst May to the New Frankfurt Development (Schütte-Lihotzky & Zogmayer, 2004). May, too was amazed by the benefit produced by the scientific management. Together with Schütte-Lihotzky, they believed that the rationalization could bring liberation to the working-class women they designed for (Jerram, 2006). In the large housing construction from 1925 to 1930, Schütte-Lihotzky was assigned to design the kitchens in these family houses. With her experience in the Core-House and further close collaboration with manufacturers, Schütte-Lihotzky made Frankfurt Kitchen the first standardized and mass-produced industrial private kitchen in history.

1. Efficiency

Frankfurt Kitchen was designed to solve an upcoming problem at the time: the emerging middle-class and working-class women's

dilemma between personal career development and their obligation to run a household. By rationalizing housework, women could balance their duo identity as production and social reproduction laborers. The size of the kitchen was much smaller than before, thanks to the technological cooking devices and prefabricated storage system. A smaller kitchen also helps to minimize the unnecessary movements while working and lower the construction budget and rent. The concept of efficiency also reflected how many tasks the user could do at a time. The housewife in the kitchen could even look after her children through a ninety-centimeter wide sliding door when she cooks.

2. Spatial Quality and Materiality

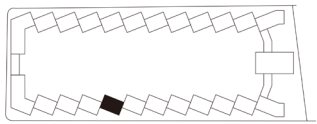
Another critical challenge that stood at the center of the Modernism movement was hygiene. The kitchen was consciously designed to be a "working kitchen" to separate the smoke and smell of cooking. An external window guaranteed proper lighting and ventilation for working. Wooden cabinets with doors prevented dust. The work surface was made of wood with linoleum, and the walls were covered with tiles for water resistance and easy maintenance in the kitchen. The blue-green color scheme of the kitchen was deliberately picked to be fly-repellent.

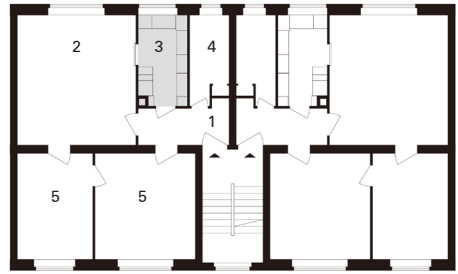
3. Protagonists of Frankfurt Kitchens

The users of the Frankfurt Kitchen are well depicted in the short film *The Frankfurt Kitchen* (1927). A middle-aged housewife wearing an apron moved from one end of the room to another in the traditional kitchen. She seemed occupied by all the laborious cooking process, and all her time and energy could only be dedicated to such domestic works. On the other hand, the new Frankfurt Kitchen expected to have another type of woman to run the household. A young woman with a trendy bob hairstyle and summer dress elegantly worked in the kitchen. Thanks to the efficiently organized function and systematic storage, the young woman could easily manage all the domestic tasks after a long day's work in the office. The swivel chair allowed her to do her work in a sitting position, a continuation of her day job behind the desk as secretary. She represented the women of the new generation, who was no longer bind solely by her domestic duties.

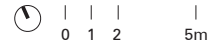
Malcom Willey House

In 1932, Nancy Willey sent a mail to Frank Lloyd Wright's publisher of his book *An Autobiography* to plead for his help to design a small home in Minnesota. After a week, Wright quickly replied to her, stating, "Nothing is trivial because it is not *big*." And neither the smallness of the project nor the distance could hinder his help as an architect (Wright, 1932). Wright struggled to





1 Entrance Hall
2 Living Space
3 Kitchen
4 Bathroom
5 Bedroom



1 Gas Stove
2 Countertop
3 Cook Box
4 Fold-Down Ironing Board
5 Food Cupboard
6 Swivel Stool
7 Work Surface
8 Garbage Drawer
9 Draining Board
10 Sink
11 Aluminium Storage Bins
12 Cupboard for Pots and Pans
13 Broom Closet
14 Heater

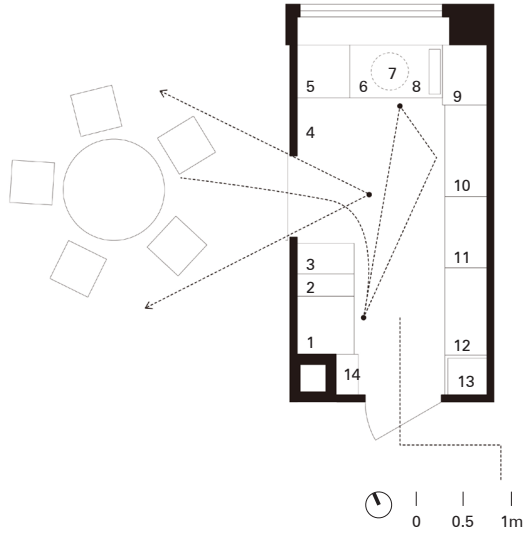


Fig. 5 Housing Unit Floor Plan, Bruchfeldstrasse Settlement, New Frankfurt, made by the author
Fig. 6 Frankfurt Kitchen and Equipments, made by the author

Fig. 7 User of traditional kitchen & new Frankfurt Kitchen, Frankfurt Kitchen (Paul Wolff, 1927)

Fig. 8 Frankfurt Kitchen, Reconstructed in MAK Vienna, 1990, MAK Vienna

find a client to bring in cash flow during the Great Depression. Apart from his financial status, Nancy's well-formed, tempting depiction of the lot and her admiration of Wright's talent also made a prestigious and successful architect make up his mind to take the relatively small and low-budget project.

The young couple (in their early-mid 30s at the time) could afford to build their own home at a limited budget but certainly could not afford an extra helper in the home. The lifestyle of the educated, middle-waged couple was very different from the wealthy clients Wright used to work with. As a result, the service space, particularly the kitchen, needed a fresh approach.

1. Vista, Continuity and Natural House

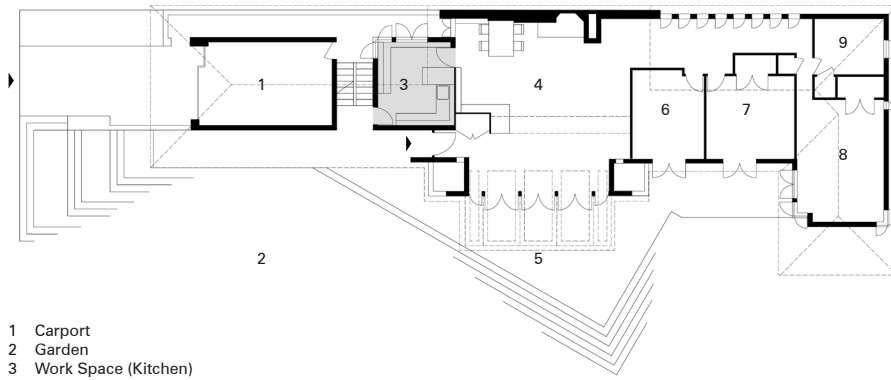
Wright's approach of the Usonian house emphasized the horizontal continuation of space, the interior vista. He intensionally removed partition walls within living spaces except from the service and sleeping rooms in his design projects. In most cases, kitchens were treated as laboratories and belonged to servants. As the middle-class couple could not afford a servant to run the household for them, Mrs. Willey needed to take the domestic tasks herself. In order to allow her to engage parties while preparing food for guests, Wright included the kitchen in the continuation of living space subtly separated them with shelf places with wine glasses. The critic described the kitchen's unusual yet creative design as "the glass window instead of the glass slipper for Cinderella" (Mumford, 1938). Other features such as the Dutch door (a type of door that could open the top of while the bottom half remain shut) and the small door for the telephone also assisted the social functions and strengthen the idea of transparency.

2. Spatial Quality and Materiality

The kitchen was roughly 3 meters by 3.5 meters, which is a more generous size than Frankfurt Kitchen. Inspired by Taylorism, Wright valued efficiency in his design. As he often called the kitchen "workplace", he described a small kitchen should be "as completely appointed as a chemist's laboratory" (Wright, 1896, p.34). Wright's idea could be observed from the smart arrangement of cooking stove, preparation (sink), and storage, the so-called "kitchen work triangle," was somehow established. The kitchen was designed with a relatively high ceiling, painted light yellow like other parts of the house. Two openings were placed at the kitchen corner, providing air and visual continuation from the living room. The combination of Cherokee red linoleum wall and work surface and the wood shelves harmonized with the brick interior in the living room.

3. Nancy Willey and Her Kitchen

Nancy Boyd Willey was an environmentalist and preservationist. She graduated from Barnard College with a Bachelor's degree in New York, where she met Malcolm Willey and later



1 Carport
2 Garden
3 Work Space (Kitchen)
4 Living Room
5 Terrace
6 Study
7 Bedroom
8 Master Bedroom
9 Bathroom

0 1 2 4m

Living Room Side

Kitchen Side

0 0.5 1m

Fig. 9 Floor Plan, Malcom Willey House, made by the author
Fig. 10 Kitchen Elevation, Malcom Willey House, made by the author

married in 1924. As a women who received higher education, Nancy Willey could not stand the life of an ordinary housewife. Through the work of supervising the new house project, she had several intense discussions with Wright. The collaboration with her triggered Wright's creativity. One intriguing detail is the phone closet. A small door was installed on the kitchen partition to allow users to talk on the phone while cooking (Sikora, 2017).

In the mid-30s, people could not appreciate such design. Her mother disliked the exposure of a "messy room," while her friends joked that she could "pretend she was playing piano behind the glass partition." However, in her later interview, Nancy Willey seemed quite proud about her elegant domestic scene of a "servant-less home." (Ibid.)

Discussion

The two private modern kitchens' overarching theme was the intention to support housewives. With innovative technology solutions, including elevation of spatial quality in kitchens, transparency, and connection to the living room, women could handle their duo identity as housewives and paid workers. However, it was shocking that these proposals were not intended to liberate women from their obligations and social gender roles. Women could not find excuses to relax anymore after their long workday because they could easily manage the domestic tasks with the state-of-the-art modern kitchens. The pursuit of women's capability to work outside their homes aligns with the main appeal of first-wave feminism, which asked for only equal rights without equal responsibilities. The kitchens' technological evolution also generates a new image of kitchen, with the impression of hygienic, shiny, efficient, and well-dressed pretty housewives.

The two private modern kitchens depicted families from two distinctive social classes, resulting in two very different strategies and architectural expressions. In the New Frankfurt Development, Schütte-Lihotzky designed standardized, mass-produced, and affordable kitchens for working-class women. Apart from designing the user experience, the economic considerations had been discussed most in her writings. This concern was reflected in the spatial result of the kitchen: small and compact to minimize both the body movement and the rent/cost. So tiny that it could only fit one housewife at a time. On the other hand, Wright's Malcon Willey House kitchen was designed for an affluent middle-class family. It was a kitchen explicitly tailored to the need of Nancy Willey. Only the middle-class lifestyle could stimulate such a design: a kitchen with social functions.

The private modern kitchen was the first step to emancipating women from their harsh domestic working conditions. They provoked further discussion and criticism of the nuclear family and what should be the best for women, families, and communities.

2.2 Shared Kitchens of the 70s

For the sake of this research, I define the shared kitchen as an independent kitchen shared by multiple designated households inside a community, often in the form of collective housing or co-housing. It has a strong connotation of collectivity—the idea of collectivity, care, and sharing lies in the center of the shared kitchen. Furthermore, the development of the shared kitchen is long associated with the social reproduction role of women in the domestic realm. If the industrialized private kitchens emphasize the rationalization of housework for housewives, the idea of shared kitchens fundamentally challenges the housewives' responsibilities.

History of Co-housing & Shared Kitchen

In the late 19th century USA, material feminists argued that only the spatial transformation of the domestic workplace could bring women true social equality, economic justice, and environmental reform (Hayden, 1982). These transformations should happen in both the household and the neighborhood. The social reproduction labor who does housework should be paid. Their proposals are based on centralizing domestic work such as kitchens, childcare, and laundry and separating these functions from home (Ibid). The material feminist movement ended in the early 1930s when the single-family homes were mass-produced, and the collective living was accused of communist and un-American.

Centralized housework and childcare were realized in Scandinavia in the 1930s collective housing. In Sweden, collective housing (*kollektivhus*) was advocated by Architect Sven Markelius and social scientist Aval Myrdal to emancipate women. The collective house has centralized services provided by employed staff, including meal preparing, child care, laundry, and room cleaning (Vestbro, 1997). Because of labor division between staff and tenants, collective housing was viewed as a bourgeois lifestyle. During the cold war, the nuclear family was viewed as an ideal family mode to stay opposite to the communists' communal living. Housewives were again put back to their private kitchens.

From utopian settlements to collective housing, what lies in the center of each proposal is the kitchen shared by all the dwellers. Each proposal reflected the advocator's view on gender, class, and political beliefs. The protagonists in these kitchens were enslaved people, maids, employed staff, and paid housewives. The intention to allow women to enter the labor market became prominent in the co-housing proposals since the late 19th century. It is no coincidence that feminists made the proposals from different waves of feminism movements. In these proposals, the collectivized housework was mainly concentrated

in an independent kitchen, usually at the center of the community and visible to everyone. The visibility of housework through architectural design could bring appreciation to the social reproduction labors and the community's identity.

Swedish Co-housing in the 70s

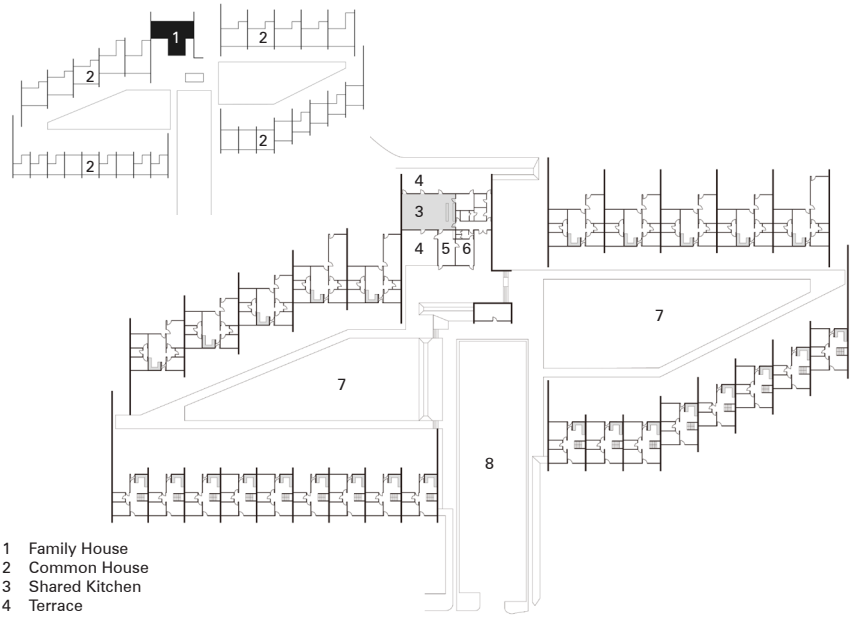
The concept of communal living was brought up to discussion again in the 1960s as more women became paid laborers. The single-family model promoted by the government could not provide balanced life for women. In contrast to collective housing, the Swedish feminist group BIG (*Bo i Gemenskap*, Live in community) proposed a "self-work model" to the responsibilities with the new collective housing model (Berg *et al*., 1982). They argued that the caring system's "intermediate level" should be introduced through co-housing, a new level between the private sphere and society. The "self-work model" made its way to the public and municipal support because it also dealt with housing affordability. BIG's planning principle states that an ideal community should contain 5-50 households. In terms of housing units, the private units should be 10% smaller and compensated with a substantial amount of communal facilities without increasing costs. In the new model, tenants were obligated to do housework, often cooking in a communal kitchen and cleaning in a communal space. (Vestbro, 1997) According to Vestbro's research, in the Swedish co-housing, the share of women is higher than 50%. This indicates that women benefit from the shared and consequently reduced housework and child care (Vestbro & Horelli, 2012, p. 332). Women's employment rates are also higher in countries where housework sharing is relatively high. However, the success of co-housing was limited by mainly the patriarchal society: the male-dominated society that refused to reshape its social gender structure (Ibid, p.333).

Stacken

Stacken was the first co-housing project that followed the design principle of BIG. The building was initially finished in 1969. During the 70s, the area had many empty apartments due to the housing crisis. As a result, the municipal housing company experimented with the "self-help model" and invited potential residents to participate in the redesigning process. The collaboration gave the ten-story building a new life in 1979. The Stacken contained a central kitchen, dining room, and nursery for children on the 5th floor, indicating the communal facilities were meant for the tenants only (Vestbro, 2014). Other facilities, such as cafes, saunas, and shops, were placed on the ground floor for public access. Stacken also introduced new housing types such as collective apartments. The newly proportioned private/shared relationship attracted people who looked for an alternative lifestyle.

1 Apartments
2 Dining Room
3 Shared Kitchen
4 Scullery
5 Play Room
6 Guest Room
7 Toilet
8 Elevator

0 1 2 5m



1 Family House
2 Common House
3 Shared Kitchen
4 Terrace
5 Noidy Room
6 Quiet Room
7 Communal Garden
8 Carport

0 5 10 25m

Fig. 11 5th Floor Plan, Stacken, 1979, made by the author
Fig. 12 Ground Floor Plan, Saettedammen, 1972, made by the author

The collectivized housework and child care attracted mainly adults with children to move in. However, it failed to attract the older target group because it eventually could not take over the public welfare service provided by the Swedish government (Maiztegui, 2019).

The shared kitchen was in an old apartment with a scullery, separated from the central staircase and the dining area by partition walls. The existing structure of the building restrained the layout of these shared spaces. Many residents complained that such an arrangement discourages informal kitchen use and poor maintenance due to a lack of sight (Hejstacken, 2013).

Danish Co-housing in the 70s

Parallel to the Swedish co-housing experience, Danish people also started to rethink their ways of living. Facing a similar social and political context, the Danish co-housing sought an alternative housing model not to make women available in the labor market but to challenge the existing, conventional single-family (Hansen, 1979). In 1967, a newspaper article written by psychologist Bodil Graae "Children Should Have a Hundred Parents," was published. She argued that children were born into a world regulated by adults and had no freedom to play and explore. Through a new form of neighborhood, children could have a hundred parents to take care of them to play freely. (Graae, 1967) A year later, in his article "The missing link between utopia and the outdated single-family house," Danish architect Jan Gudmand-Høyer visioned a new housing form composed of several individual housing units to foster 'interplay between common and private spaces, and could only be achieved by the collaboration of families (Gudmand-Høyer, 1968). These two strong statements encouraged people to build their own homes and gave rise to the *bofællesskaber* (living community), which was later coined with "co-housing" in English.

Sættedammen

The first co-housing driven by the two articles of Graae and Gudmand-Høyer was Sættedammen. Residents came together with the consensus to break the isolation of single-family homes. Twenty-seven family houses of one to two stories high were built as clusters around communal gardens. Kitchens and entrances of the family houses were placed facing the gardens to look over the children and notify any guests entering (Bendixen,1997). The heart of the community is the common house (*fælleshuset*), which stands independently at the center of the master plan. Due to the limited budget, the exact programs of the common house are not clearly defined. It contained a large room with a kitchen, a noisy room, a quiet room, and communal facilities such as a laundry room. The family houses and common house were designed with modules.

The modular system aimed to rationalize the construction, lower the cost, and to maximize the flexibility of use in the future.

Although the programs of common house were undefined, the placement of the shared kitchen was concrete since the beginning. The shared kitchen is fully equipped with professional ovens, a dishwasher, a cooking stove up to six burners, and a storage space wall. The kitchen was designed to be an open kitchen, allowing instantaneous interaction between the cooking and dining groups. The wooden interior and the low ceiling also created a sense of intimacy and coziness. The dining area could be extended to the garden with openings access to outdoor decking areas. Weekly base collective cooking and dining had become a critical bonding moment for the community

Discussion

Both had the similar result of breaking the division of the nuclear family, the two projects had quite different focuses and arguments. Swedish co-housing projects were built based on the belief to emancipate women and establish an intermediate level of the caring system. In addition, the house chores could be collectivized through shared facilities among the residents. This arrangement also further economized the living costs. Danish co-housing projects, however, intended to create a larger community outside nuclear families, believing it to be the "natural" way of living.

The two different focus and argumentations also led to a different architectural performance. The Swedish co-housing projects, like Stacken, often had a more experimental spatial arrangement to achieve collectivity. It also mostly appeared in a more compact and dense building block (Vestbro & Horelli, 2012, p. 329). On the other hand, the Danish co-housing projects, like Sættedammen, are typically composed of low, village-like clusters (Larson, 2019).

Both co-housing examples highlighted the importance of the shared kitchen in a community. A successful shared kitchen should come in a moderate size to accommodate all the residents but compact enough to generate intimacy. In addition, it should situate at the center of the community, visible from all the housing units and central circulation.

2.3 Urban Kitchens of the 2010s

I define the urban kitchen as the kitchens situated inside the neighborhood, organized and shared by the vicinity. The connections built upon the urban kitchen are on a community level. An urban kitchen can provide communal, social, and educational functions on a non-speculative basis.

Anna Puigjaner, a Spanish architect and researcher, pointed out the "urban kitchen" phenomenon as an answer to the late-capitalist society and an impact on the digital sphere in the last decade (Puigjaner, 2021). These urban kitchens, which are built outside the collective housing, share food with people in need and build alternative social support networks. The Collective Kitchen in Lima, Peru, and the Children's Cafeteria in Tokyo, Japan, are two typifications among such movements. The Collective Kitchen program in Peru began in the late 1970s as part of the movement addressing food scarcity and the empowerment of women. And the Children's Cafeteria, initiated in Tokyo in 2012 after the prolonged economic stagnation and the 311 Earthquake in 2011, tried to fight against the high child poverty rate and the decline of social mobility that comes along. Both initiatives share specific characteristics, such as bottom-up structures, volunteering labor, and externalizing domestic works while responding to different social and urban contexts. The urban kitchen is an extension of social welfare and can serve as the pivot of other community care providers to achieve social inclusion.

Collective Kitchens in Lima

In Peru, around 1978, small organizations of collective cooking emerged, usually as stands in front of markets to easily collect leftovers and donations. As the precursors of the Collective Kitchen bloom in Peru, these organizations were in response to the political corruption and economic recession and had become a social and political symbol soon. However, the most profound influence of the Collective Kitchens on Peruvian society is to improve gender equality through opening up the once the privacy of a home, the kitchen, and turning it into a public space.

The very first Collective Kitchen was formed in Lima's Las Comas and El Agustino neighborhoods. With the aid of some NGOs and Catholic organizations, a group of local women started to organize the community's food production. They used their kitchens (and still do) as the primary spaces to prepare food for the public at a reduced price. Such a gesture provided the collective cooking group members opportunities to access some public issues and thus gain voices throughout the process. Beyond food distribution, the Collective Kitchens in Peru have a clear educational role to "develop critical awareness, literacy, and a sense of belonging, to improve health education,

to obtain personal income, etc. (Puigjaner, 2019)." Today, there are roughly 2400 urban kitchens in Lima (similar to the density of public school), meaning Collective Kitchens has become part of the urban infrastructure and citizen's everyday life (Puigjaner, 2021).

As more and more collective kitchens appeared in Peru, the incompatibility of this typology and the legal system was exposed. During the 80s and 90s, the Peruvian government tried to expand the Collective Kitchen to some small-scale financial initiatives. Such attempts of turning households into economically productive units seldom worked out because of failure to guarantee consistent quality and a lack of complementary policies. However, it did facilitate the evolution of the Collective Kitchens to reach beyond its sphere and establish connections with other public and social welfare programs in the neighborhood. For instance, Vera and Bravo's bakery of Virgen de Nazaret started as one of the Collective Kitchens founded under the US wheat surplus and survived until today due to the collaboration with local schools.

As the development of the modern kitchen in post-war society has marginalized women's political agencies and reinforced economic dependence on men, spaces like Collective Kitchens progressively challenge the existing social stratification by externalizing the domestic kitchen and actively engaging in public affairs. Through repurposing the private kitchen in relation to its social and urban context, the Collective Kitchen program realized women's empowerment and showed how important the domestic space could play a role in shaping the community.

Children's Cafeterias in Tokyo

Children's Cafeteria (こども食堂 , *Kodomo Shokudo*) is a series of programs that provide kids places to eat and socialize. Founded by the Japanese restaurant owner Hiroko Kondo(who also coined the term), Children's Cafeteria is a symbolic bottom-up movement to address poverty in Japanese society. The role of Children's Cafeteria as an externalized domestic space, the kitchen, can be examined in two aspects. First and foremost, the diner functions as a terminal distribution of the governmental food welfare policy tackling the widening wealth gap. Moreover, it serves as a substitute socializing and educational place for disadvantaged families.

Japan, currently holding around one million tons of rice stockpiles, has struggled to distribute food for a long time. This is massively due to the lack of a specific target group and bureaucracy. As a grass-roots movement, the emergence of organizations like Children's Cafeteria helps to fill in the final gap between governmental subsidies and people who need them. Currently, hundreds of such eateries, many of which operate in community centers, restaurants,

Tokyo Metropolitan

Area:	2194 km2
Population:	37.4 million
Number of Urban Kitchens:	143
Average Service Territory:	15.34 km2/kitchen

Lima Metropolitan

Area:	2819 km2
Population:	10.88 million
Number of Urban Kitchens:	2384
Average Service Territory:	1.18 km2/kitchen

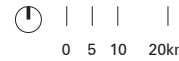


Fig. 13 Urban Kitchen Density Analysis, Lima & Tokyo, made by the author
Source: Research by Anna Puigjaner (2021)
Statistics from Children's Cafeteria Network (2022)

and even private houses, are loosely tied by Children's Cafeteria Network through internet. The association acts as the liaison between the officials and diners that shares information about policies, experiences, and resources. Meanwhile, it mediates idle public spaces with food providers as urban renewal and redevelopment.

Additionally, initiatives like Children's Cafeteria function as an extended socializing and educational space outside school and family. As the survey commissioned by the Japanese government reveals that the country has a poverty rate of 14% for children and 50% for single families (Ministry of Health, Labour and Welfare, 2015), Children's Cafeteria offers underprivileged kids an alternative value system for their future. Every diner has a unique program reflecting its locality and demography. Some places function as an after-school caretaker; some invite children to prepare the meals together; still, some try to attract more people from various age groups such as adolescents or the elderly to increase engagement.

When it comes to implementing social welfare policies, there can be a significant gap between the plan and how it has been achieved. Fortunately, programs like Children's Cafeteria demonstrate the capability to carry out the last mile. As this kind of urban kitchen works towards distributing food to where it is needed and propagating alternative definitions of social value throughout the city, it amplifies the kitchen as a social reproduction apparatus. It thus creates new opportunities for designing public and community spaces.

Discussion

Both urban kitchens began with strong social motivations to assist those who have difficulties with the essential resource: food. As their service scale gradually expanded, these urban kitchens formed a network of social infrastructure that gained political attention. In the case of Lima, members of the Collective Kitchen were able to access political issues. Kodomo Shokudo, on the other hand, also raised the attention of politicians. In 2021, the Japanese Prime Minister Kishida and the Declining Birthrate Minister Noda visited Kodomo Shokudo in Tokyo to gain knowledge for future policymaking (Yomiuri News, 2021). As the action from bureaucracies could take years to reach people, local initiatives like urban kitchens could react to the need instantaneously.

From the documentation of the two urban kitchens, it is not difficult to notice that most of the participants were women. In both Peruvian and Japanese cultures, the gender stereotype of women and gender inequality are still prominent nowadays (UN Women, 2022). The care action should not lie in one particular social group but should be shared. More people are invited to cook and serve by externalizing

the domestic space and kitchen. The impression of the kitchen could also shift to a more diverse workplace.

From the collective kitchens in Peru to the Children's Cafeterias in Japan, urban kitchens represent the potential and flexibility to use private space to benefit the community's welfare. Nevertheless, as the pandemic has exposed the vulnerability of the existing social support network and a new type of interaction and inclusion is in demand, a spatial typology that transgresses the knowing social construct is what needs to be introduced to the contemporary living environment.

2.4 Discussion

The function of kitchens in private households has already shifted from the workplace to social space. What used to be seen as backstage now has become the main stage of our daily lives. Often described as "the heart of the home," kitchens at homes represent independence, privacy, and dignity. In the early private modern kitchens, women seemed only to have the option to do their housework fast or with fun. The contemporary private kitchens provided both options, yet the house chores still need to be carried by someone; and often, women. Projecting the historical context of the Scandinavian co-housing in the 70s, striking similarities could be observed: the decentralized social welfare policy, the women's increasing appearance in the public sphere, and the urgency to introduce a new type of neighborhood for various types of households. The co-housing model seems to be the best example regarding social inclusion and social sustainability. Nevertheless, it does not mean we should duplicate the model from the 70s. Contemporary co-housing must deal with more sophisticated issues in today's society, such as refugees, aging society, isolation, COVID-19, and housing affordability. In the 2020s today, more technological devices have been invented to elevate people's living quality. In the time of isolation, the "intermediate level" of care could be the best network to help. People could be connected on a larger scale with the virtual network. The three levels of kitchens–private, shared, and urban–should be considered one coherent system. It has a coherent argument for sharing responsibilities, gender equality, and caring for one another.

A solution to contemporary challenges in co-housing could be critically placing and sizing these three levels of kitchens. In an ideal co-housing situation, the sense of independence could still be kept by minimizing the private kitchen inside the housing unit. The more sophisticated meal preparing tasks would be collectivized or allocated in the shared kitchen in the community. The "intermediate level" care of the co-housing has a territorial restriction, and it is necessary for the intimacy and safety inside the neighborhood. The "caring system" territory could be expanded further to the metropolitan scale. The development of the media sphere has allowed communities to expand and connect beyond on a much more significant scale. The urban kitchens demonstrated how the technological advancement of the digital world could impact our physical world; furthermore, how the bottom-up action of care could gain political attention and empower the civilians.

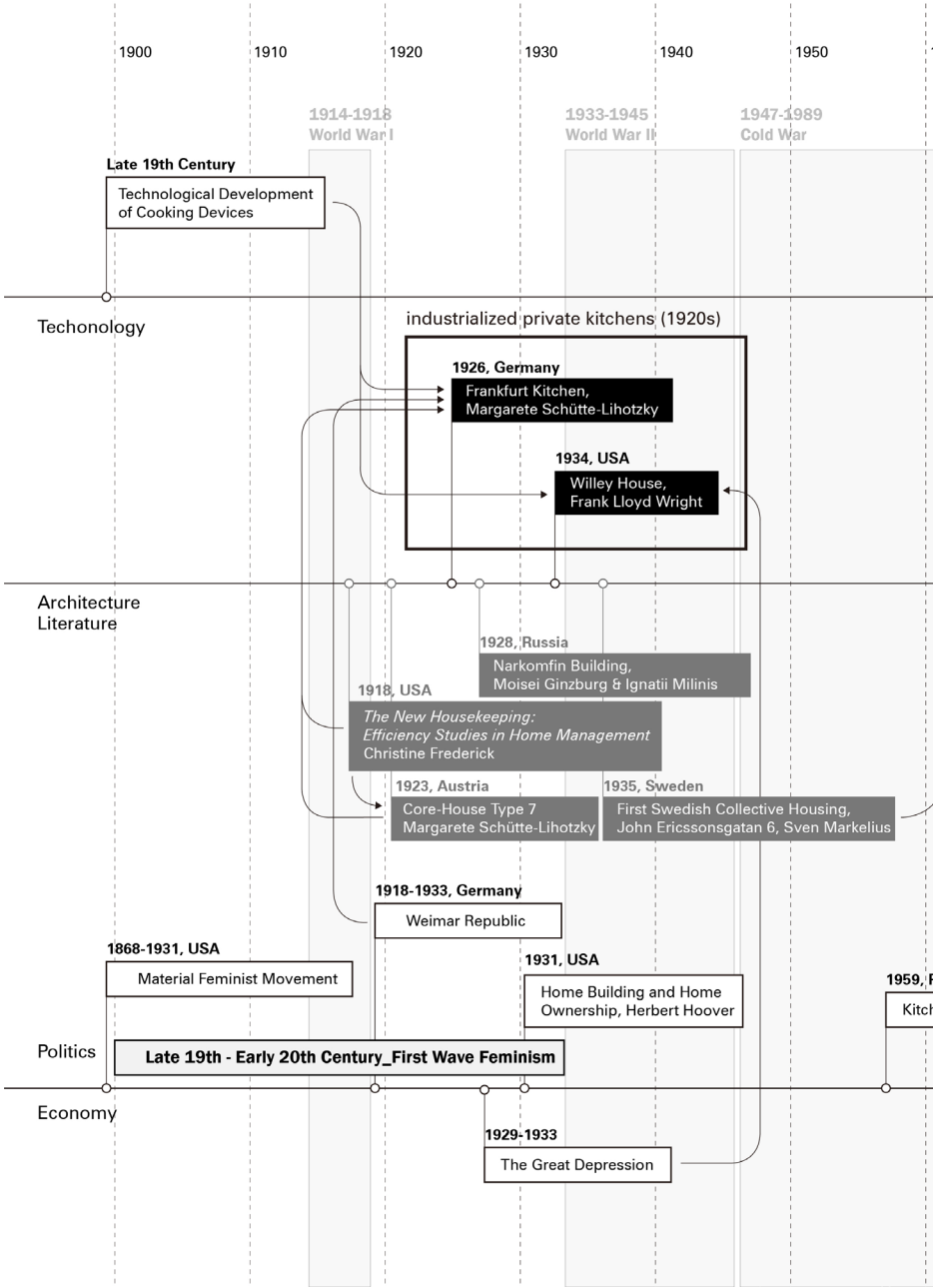
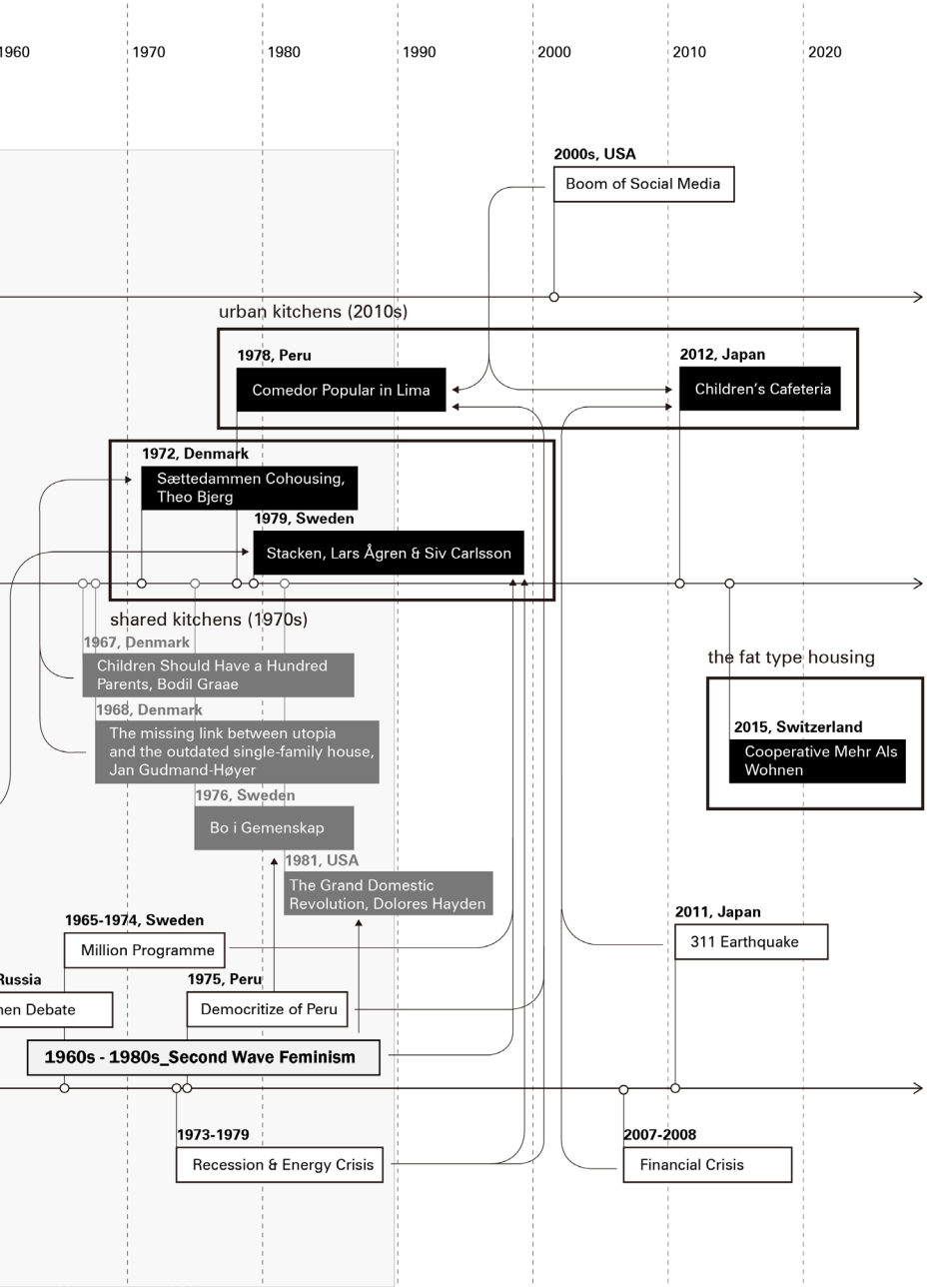


Fig. 14 Research Conclusion Diagram, The Three Kitchens, made by the author


1960
1970
1980
1990
2000
2010
2020
2000s, USA
Boom of Social Media
urban kitchens (2010s)
1978, Peru
Comedor Popular in Lima
2012, Japan
Children's Cafeteria
1972, Denmark
Sættedammen Cohousing, Theo Bjerg
1979, Sweden
Stacken, Lars Ågren & Siv Carlsson
shared kitchens (1970s)
1967, Denmark
Children Should Have a Hundred Parents, Bodil Graae
1968, Denmark
The missing link between utopia and the outdated single-family house, Jan Gudmand-Høyer
1976, Sweden
Bo i Gemenskap
1981, USA
The Grand Domestic Revolution, Dolores Hayden
the fat type housing
2015, Switzerland
Cooperative Mehr Als Wohnen
1965-1974, Sweden
Million Programme
2011, Japan
311 Earthquake
Russia
hen Debate
1975, Peru
Democritize of Peru
1960s - 1980s_Second Wave Feminism
1973-1979
Recession & Energy Crisis
2007-2008
Financial Crisis

03

The Fat Type

3.1 Characteristics of The Fat Type

The Fat Type as a housing type was proposed, named, and systematically designed in Mehr Als Wohnen (Duplex Architekten & Futurafrosch, 2015) for the first time. Moreover, as a successful building type in the "Zurich Model" of cooperative housing, the Fat Type could be seen in many Swiss cooperative projects such as Zwicky Süd (2016) and Zollhaus (2021). In this chapter, I will use Mehr Als Wohnen as a case study to explore the characteristics of the Fat Type.

Mehr Als Wohnen is an experimental settlement in Hunziker Area, Zurich. Formed by 54 cooperatives, the project aimed to set up new standards for housing construction where the cooperative idea for the future is implemented. As its title suggested, Mehr Als Wohnen pursued good quality living standards beyond spatial and physical bases to create socially, economically, and environmentally sustainable communities. In her article Wer teilt, hat mehr (Those who share has more), architect Anne Kaestle, co-founder of the Duplex Architekten, argued that a new type of housing that balance between private and shared areas should be the answer to the less affordable and increasingly densified housing situation in Europe. (Kaestle, 2016, p.125) The Fat Type was then proposed as an experimental building type to test out new living forms.

Categorizing the Fat Type

As a very deep volume, it is crucial to solving the issue of lighting and ventilation in a Fat Type. I identified three key factors in the Fat Type: dwelling unit, subtractions, and circulation, and categorized the thirteen buildings accordingly. The dwelling units are mostly placed along the facade to guarantee natural lighting, while the service space such as bathrooms and toilets are located close to the center of the volume. The subtraction refers to the "cut" in the cubical shell to ensure optimal lighting for the apartments. According to the planning principle, 12% of the volume needs to contain "air" (Häuser im dialog, 2015). Finally, the circulation space in Fat Type buildings stands for more than access from the street to the door. It serves as an atrium, ventilation channel, and social space simultaneously. Based on the variation of the three factors, I chose Haus A, Haus G, and Haus K as my main focus to analyze.

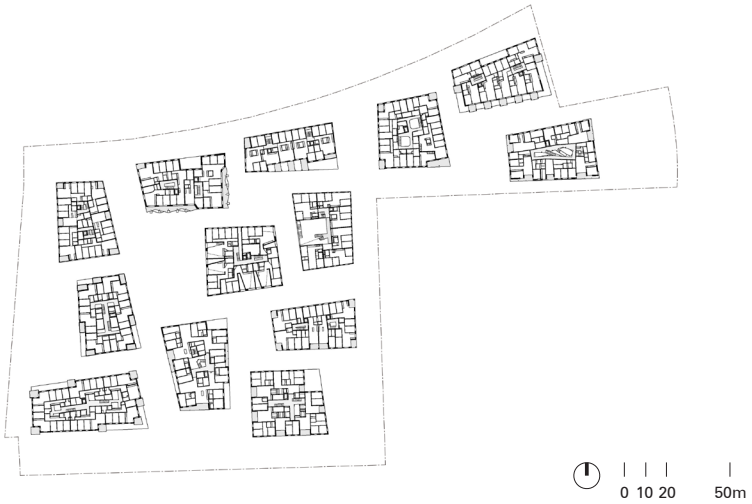
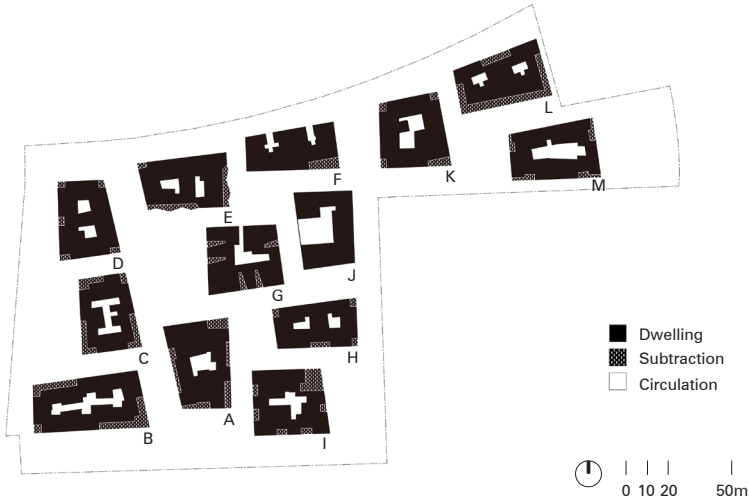


Fig. 15 Standard Floor Plan, Mehr Als Wohnen, made by the author
Fig. 16 Open Space & Program Analysis, Mehr Als Wohnen, made by the author



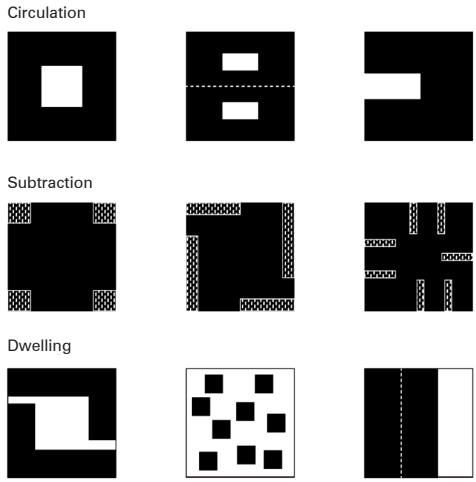


Fig. 17 Masterplan of the Fat Type Buildings, Mehr Als Wohnen, made by the author
Fig. 18 Categorizing the Fat Type, Mehr Als Wohnen, made by the author

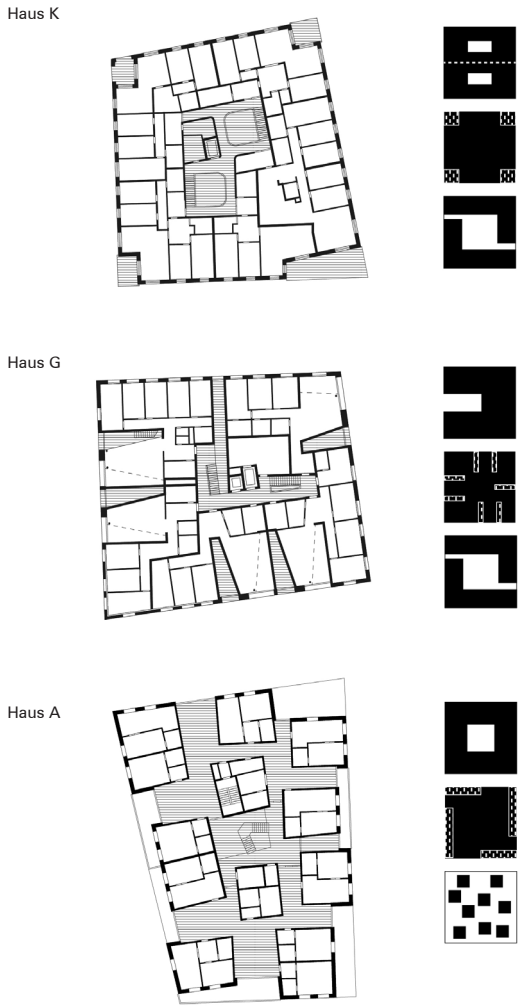


Fig. 19 Choice of Case Study: Haus K, Haus G & Haus A, Mehr Als Wohnen, made by the author

Facade and Open Space

In the master planning of Mehr Als Wohnen, streets and squares were created by the placement of the Fat Types. Apart from the dimensions, the characteristic of the open space was also generated through expression on the building facade. As the planning principle stated, the facade facing the square should support the public space's accentuation and stand out from other facades facing other directions (Häuser im dialog, 2015). From the facade analysis of Haus A and Haus G, it is evident that the facades facing the square have more solid, complete surfaces while facades facing streets have more geometrical variations, featured with balconies or setbacks. The facade of Fat Types also reflects its inner spatial structure. In the case of Haus G, the striking L shape openings on the facade highlight the double-height shared living space in the housing units, giving a solid identity to both the building and the open space.

Vertical Circulation

Architects and developers usually pay little attention to circulation space in profit-oriented housing simply because it generates zero monetary value. However, in cooperative housing such as Mehr Als Wohnen, circulation space was appreciated for its potential social functions. The three Fat Type, Haus A, Haus G, and Haus K, demonstrate different design approaches in vertical circulation and highlight several challenges. On an urban scale, the transition from street to door needs to be deal with the publicness or privacy of open space. As ground floor space is designated for public or communal functions, it is vital to separate the visitors and dwellers. The vertical circulation is obligated to fulfill building codes for fire safety while promoting social interactions among the dwellers on a building level. The circulation space in the three buildings only took up around 10% of its total floor area. On an interior level, the geometry and materiality of vertical circulation space determine how light, air, and sound perform. The three cases' smooth concrete surface created intimacy and a cave-like atmosphere in the corridor yet generated many echoes.

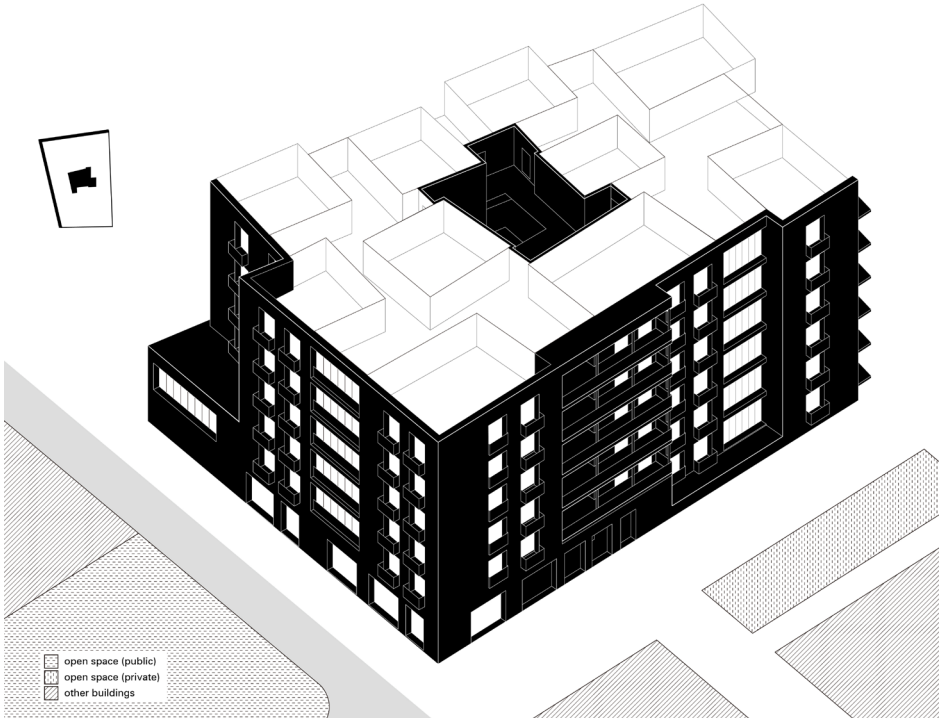


Fig. 20 Study of Facade and Open Space, Haus A, Mehr Als Wohnen, made by the author

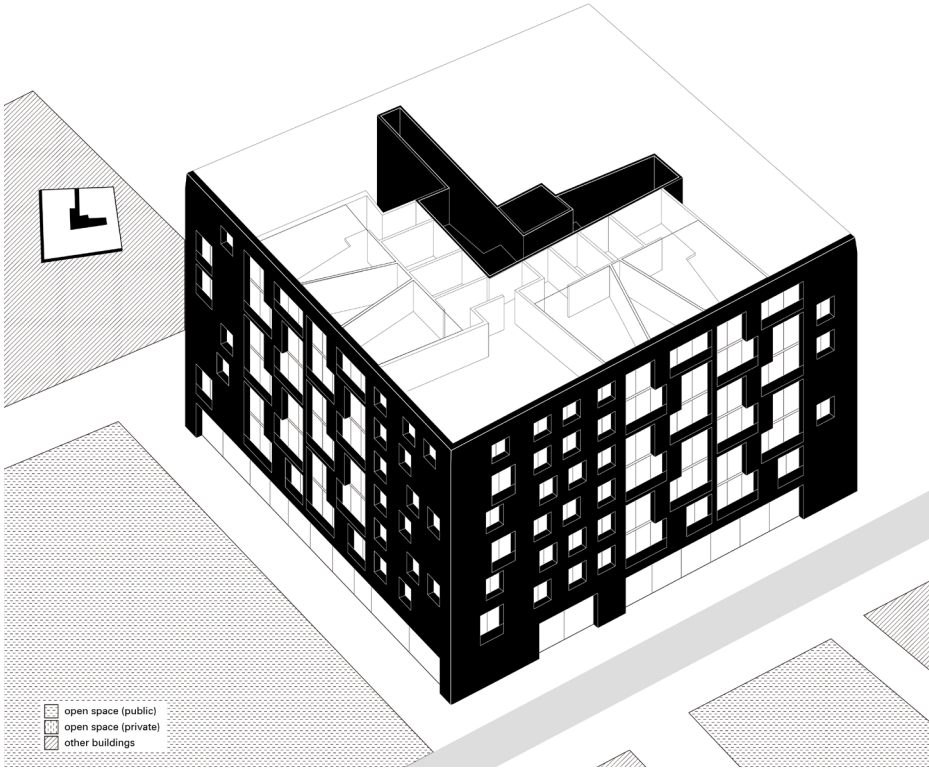


Fig. 21 Study of Facade and Open Space, Haus K,
Mehr Als Wohnen, made by the author

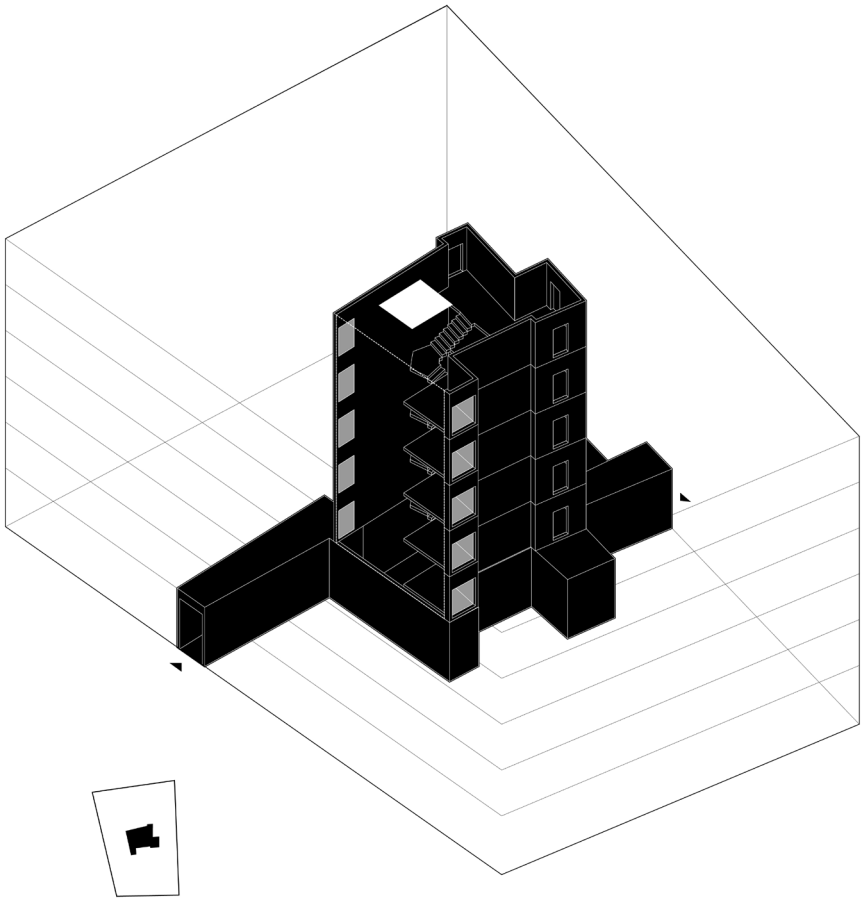


Fig. 22 Study of Circulation Space, Haus A, Mehr Als Wohnen, made by the author

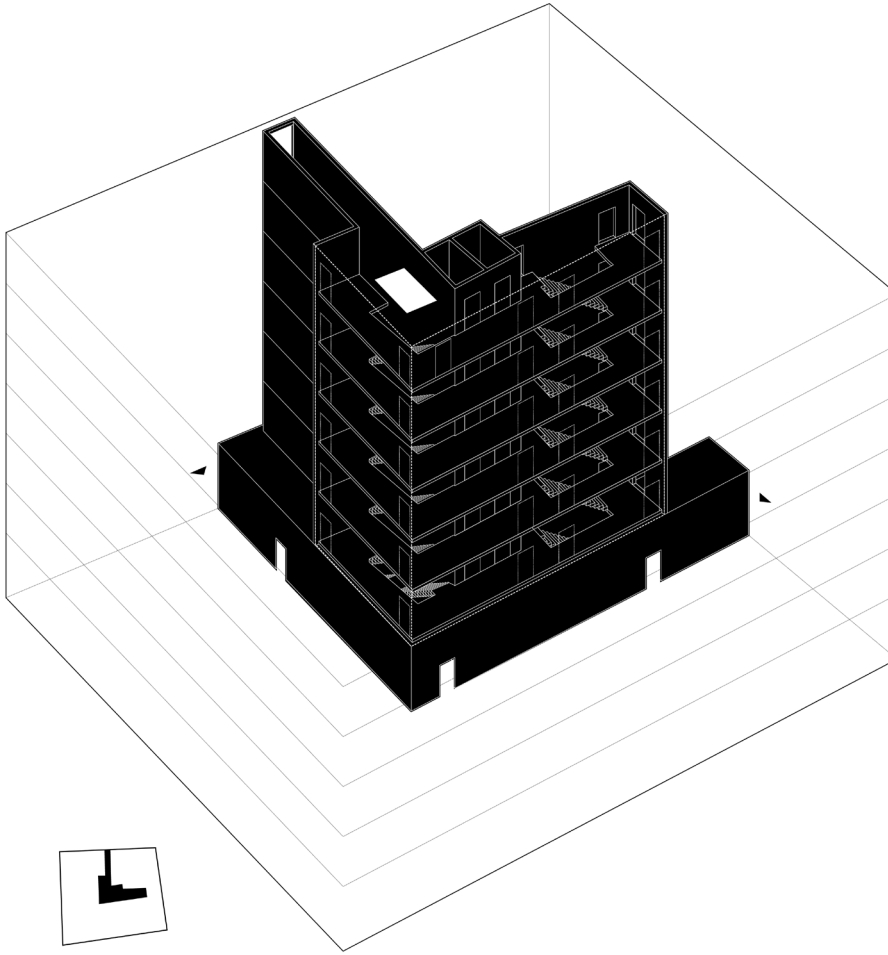


Fig. 23 Study of Circulation Space, Haus G, Mehr Als Wohnen, made by the author

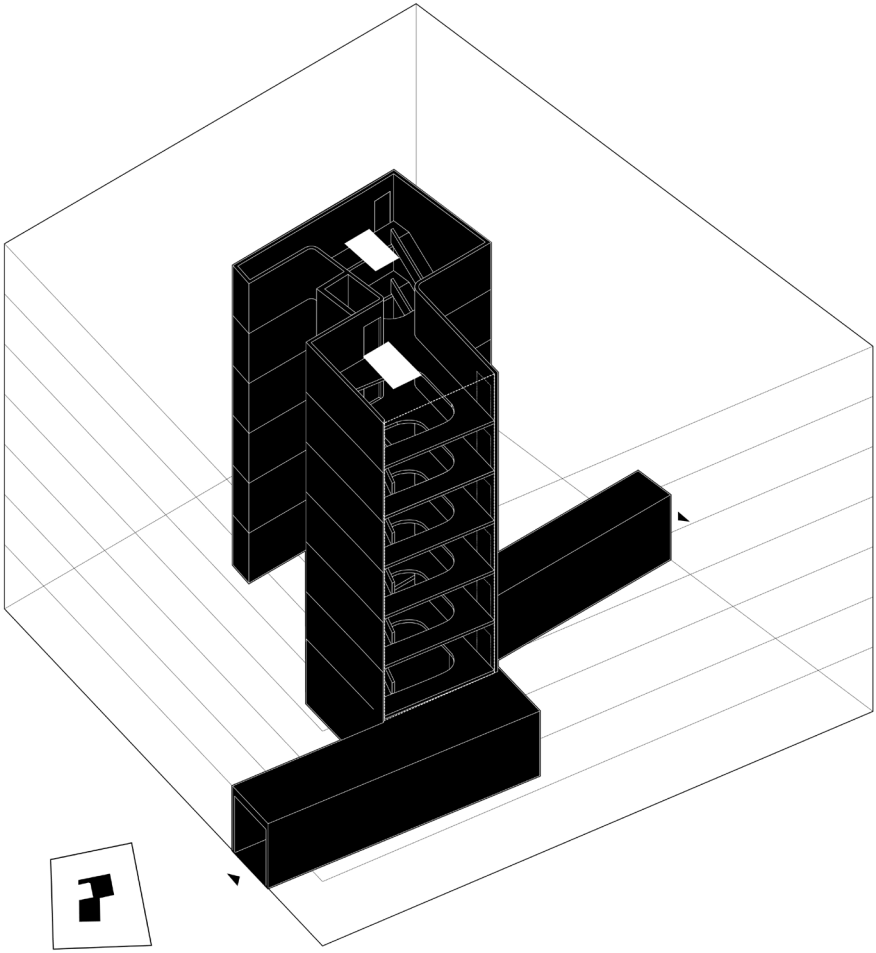


Fig. 24 Study of Circulation Space, Haus K, Mehr Als Wohnen, made by the author

Housing units

The housing units were designed to cope with affordable rent. Private units were shrunk and compensated with generous shared living space, mainly shared kitchen and living room. The consideration of sharing living space is not purely economic but intentionally designed to stimulate social interaction between dwellers. Take house A unit, for example. The size of individual units is around 37 square meters, but each dweller could freely use the 125 square meters of shared living space. Aside from the generosity of size, the architects often treat the shared spaces with the most care. While the private units are as banal as a square room with decent natural lighting, the shared space has the most exciting spatial quality.

Discussion

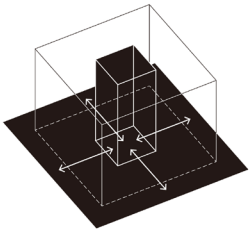
Design principles learned from the morphological analysis of the Fat Type could be categorized into three levels: urban, building and interior. On the urban level, building facades need to respond to their surroundings. A central theme or concept should be introduced to cope with the gigantic surface of the Fat Type. Such a concern could affect the building itself and its environment. In the case of Mehr Als Wohnen, the planning rules stated that the facade facing a square should stick to the envelope to enclose an urban plaza. The prominent pattern of collective space on Haus G also gave identity to both the building and the open space.

On the building level, the most critical aspect should be the spatial organization of different programs, particularly on the circulation space. The circulation space should be efficient in the movement and should also stimulate social interactions among residents. A corridor should not be simply a corridor. A well-designed circulation space could lay a foundation for the future neighborhood to thrive.

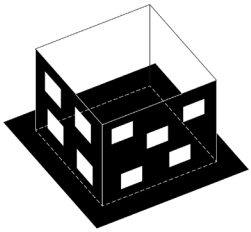
Finally, on the interior level, the main focus should be the spatial quality of the housing units. As a building type introduced to cope with density, the size of the block challenged the architects to provide compact yet good-quality housing. This immense volume also inspired architects to experiment, to test out more innovative solutions.

Fig. 25 Study of Dwelling Unit, Haus A, Mehr Als Wohnen, made by the author

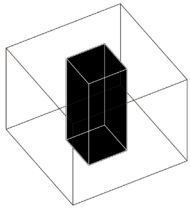
Fig. 26 Study of Dwelling Unit, Haus K, Mehr Als Wohnen, made by the author
Fig. 27 Study of Dwelling Unit, Haus G, Mehr Als Wohnen, made by the author



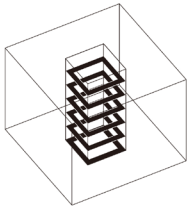
Relation to Public Space



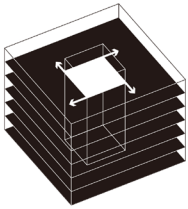
Facade



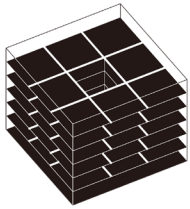
Core Efficiency



Spatial Quality



Circulation to Dwelling



Density

Fig. 28 Design Principles, The Fat Type, made by the author

3.2 Adapting The Fat Type in the Dutch Urban Context

Even though the Fat Type is still relatively rare in Dutch cities, some successful examples are still to learn from. In this chapter, I used two case studies, Botania, Amsterdam (2002) and Urban Villa Myriad, Amsterdam (2009), to explore how the Dutch architects approach the massive volume with the Dutch urban context and house traditions in mind. I called these examples "Dutch Fat Type" to distinguish them from the "Swiss Fat Type" discussed in the previous chapter. Located in central Amsterdam, the project Botania faced the challenge of the size of the building block (33X55m). Architect Frits van Dongen ingeniously combined three typical housing types to achieve a well-balanced density and spatial quality. On the other hand, Urban Villa Myriad is one of the 16 urban villas in Funenpark. The volume of Myriad (20X28m) is predetermined by the urban masterplan designed by van Dongen. While a solid central core could easily be the solution, architect Dick van Gameren reintroduced the grounded-ness in Dutch house traditions in contemporary housing, giving both the traditions and the deep volume a new touch. In both cases, architects used the extreme depth of Fat Type to establish new variants of typical Dutch homes. I structured this chapter concerning the three elements of the Fat Type to discuss the Dutch house traditions and how they were interpreted in the Dutch Fat Types.

Facade

Large windows. White window frames. Red bricks. These are the most commonly seen facade elements of Dutch housing. It is derived from the traditional townhouses in big cities such as Amsterdam. During the 17th century, Dutch merchants began to build houses on the canal front for thriving trade activities. The weak soil conditions required these houses to be built tightly next to each other. The land parcel ended up narrow and deep to accommodate as many houses in a row as possible and a direct reflection of the building materials. The main structure was built in wood, which needed to import from nearby countries. The width of the townhouse was determined by the most accessible and affordable size of the timber, ranging from four to six meters. The demising walls between houses functioned as load-bearing walls and were made of bricks for fire safety (van Gameren, 2021). As a result, the facade of the townhouses could be built without structure meanings, allowing the desired large opening to be installed. According to the carpenter's drawings from the 17th century, the wooden window frames were fixed on the beams before filling in bricks into the facade wall (Fanelli, 1978, p.21). This building method and the architectural expression became the most iconic image of the Dutch cities. These facades marked Dutch house traditions' economic and technological connotation and strongly reflected the yearly

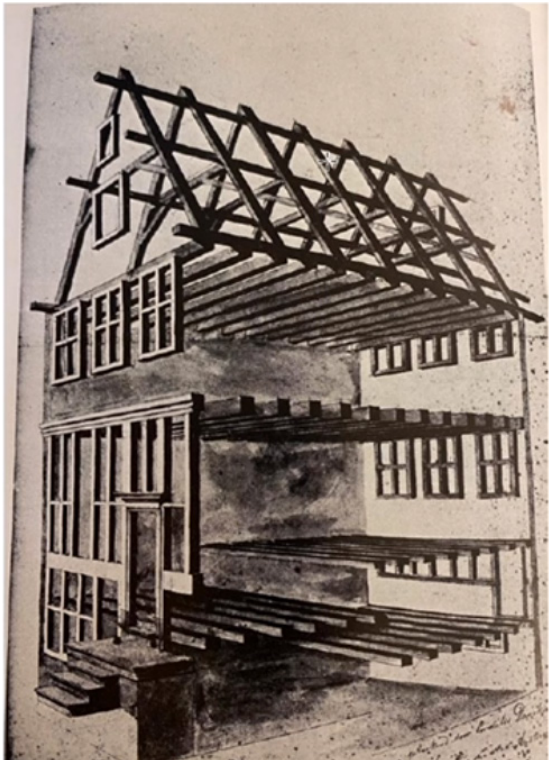


Fig. 29 17th Century Carpentry Dutchh Townhouse Construction Drawing, Source: Lecture Material of Dick van Gameren (2021)

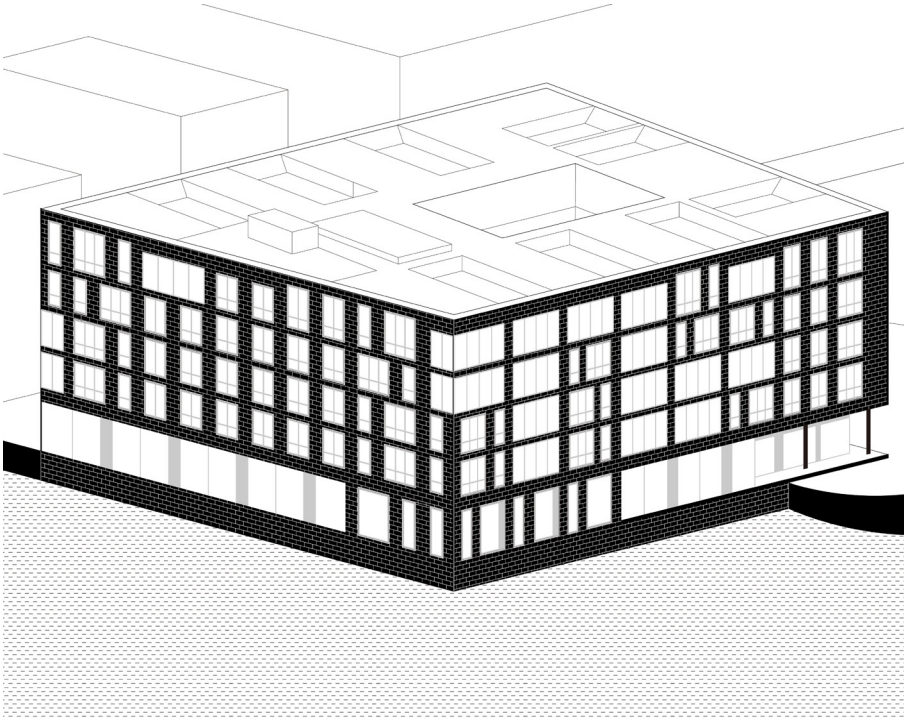


Fig. 30 North-East and North-West Facade, Botania, made by the author

long cloudy climatic conditions. These factors came together to shape the culture of openness. From the street, pedestrians could look into the windows of the townhouses. The residents also enjoyed such transparency, feeling unnecessary to hide their private lives with curtains (Brokke, 2020). The projections of dwellers on the windows also became part of the Dutch housing facade.

Although the building technology has dramatically evolved through time, many Dutch homes were still built with traditional materials, measurements, and expressions. This phenomenon could be observed in Botania in Amsterdam, the Dutch Fat Type. The combination of red bricks and white frames gave an impression of an extra large-sized townhouse. The substantial openings, once again, were placed on the facade to cope with the deep, thick volume. Only private dwellings have openings to the facade, as the daylight should be prioritized for the housing. The openings are also significantly more prominent than the Swiss Fat Type.

Interestingly, the Swiss Fat Type facade design varied according to internal space (shared or private) and external open space (plaza or street). In contrast, the Dutch Type focused on responding to the orientations in response to the quality of natural lighting. For instance, more loggias could be observed from the southern and western facades.

It is clear that big residential facade openings are a significant part of the Dutch building tradition. The facade openings are so important that they are crucial to examine in practice. The size of a window should be directly proportioned to the floor areas of the room it situates. When introducing the Fat Type into the Dutch urban context, it is vital to understand such a prescribed element.

Circulation Space & Grounded-ness

Derived from the townhouses in Dutch cities, the "grounded-ness" dwellings that are directly accessed from the public domain (often streets) have a long tradition in Dutch housing (Komossa & Aarts, 2019). The direct front door access developed from the functions of the townhouses. Traditionally, the merchants would use the front part of the townhouse (*Voorhuis*) as shops, thus needed to be inviting to the customers from the street. Such a building tradition is particularly intriguing because it is an arrangement of the building that has a strong relationship to the urban conditions. Italian architecture historian Giovanni Fanelli pointed out that the Dutch architects often engaged in different levels of design had made the architectural decisions related to urbanscape or townscape. This idea could be well observed in the successive experiments on the doorway entrance space (Fanelli, 1978, p.21).

One of the recent projects that successfully articulates the concept of grounded-ness is the Myriad in

Funen (2009). In Myriad, architect Dick van Gemeren focused on the challenge to bring grounded-ness together in a smaller version of Fat Type. The building was vertically divided into three sections; each section was assigned one housing type. The section on the ground and first floors has six maisonettes and could be accessed from the open space and a private internal street. The second section of the second and third floors has five apartments on each level. On the top two floors, the third section has six free-standing maisonettes connected through a small "square in the air" (van Gemeren, 2021). This arrangement could only be achieved by the unusually deep floor plan of 20 meters.

In Botania, the architect had an opposite strategy of entrances. Like many Dutch houses in the past, the idea of grounded-ness was abandoned to build denser. Instead of a gallery, the residents will enter their homes through corridors. However, due to the lack of natural lighting and the choice of materials, the corridors appeared to be eery and uninviting.

Grounded-ness may be interpreted as how a house is situated in an urban setting. This relationship could be implemented with multiple scales. Apart from providing a sense of independence to households, the variations of grounded-ness also became a means to insert the public sphere, or at least an intermediate level of publicness, into a private complex. In the case of Haus A in Mehr Als Wohnen, the floor plan of the private rooms scatters like houses; the corridor runs in between these rooms as a street. Introducing the street inside the housing unit solves the issue of the dark areas in the Fat Type and generates a new vista over the households, and invites the residents to get socialized in the "streets" (Herzog, 2016, p.62).

In the circulation analysis from street to the door, typical housing design rationalized the circulation space, leading residents back to their private rooms efficiently. This arrangement could be seen in Myriad, Botania, Haus G, and Haus K. In contrast, Haus A invited residents to pass through multiple levels of shared spaces before entering private units for more human contact.

The grounded-ness highlighted a long existed building tradition since the 15th century. Dutch architects experimented with this concept for decades and attempted to bring forward new architectural performance. Introducing the concept of grounded-ness into a Fat Type could be challenging because it is not a conventional Dutch housing building type; however, it also opens up new opportunities for future architecture design.

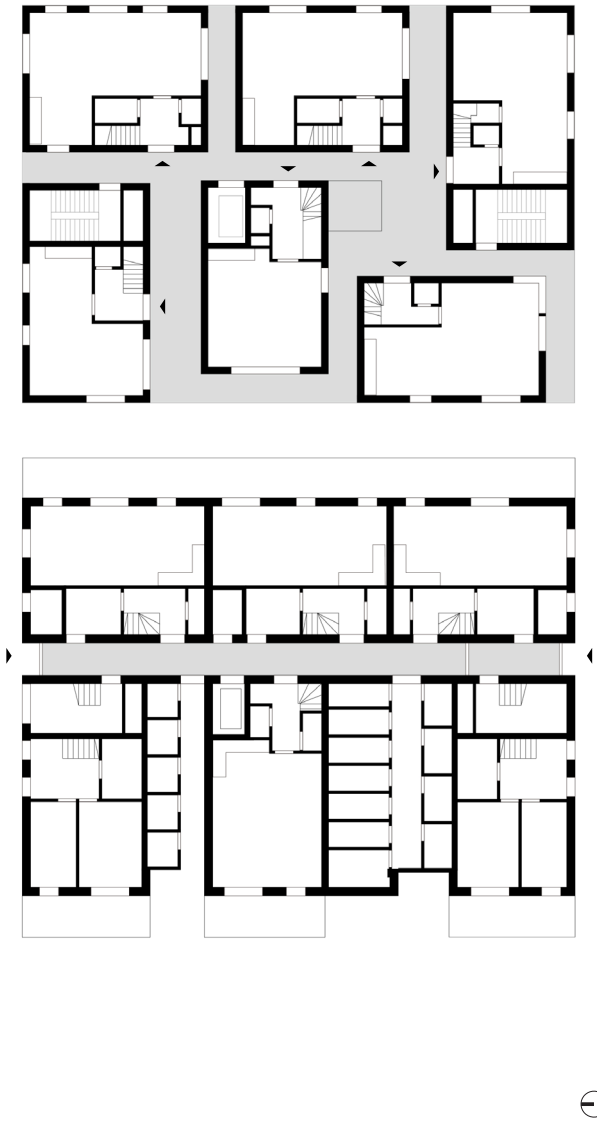


Fig. 31 Floor Plan, Myriad, Funenpark, made by the author

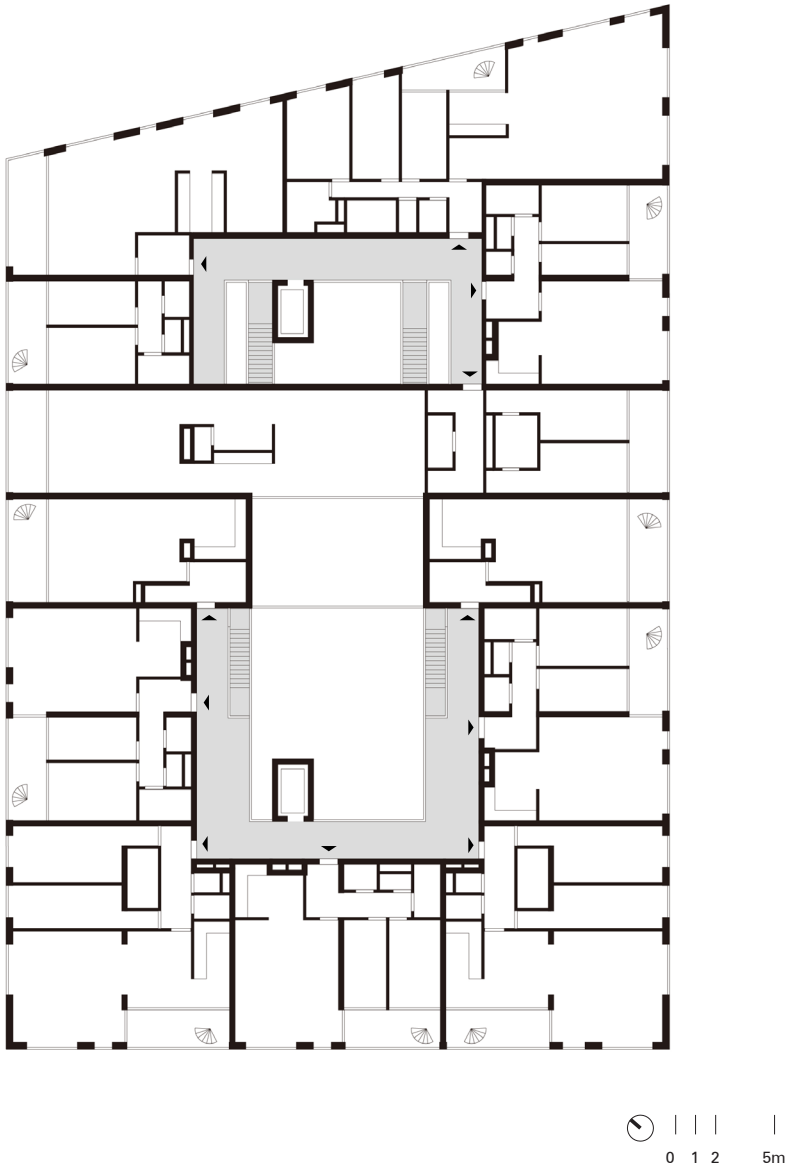


Fig. 32 Top Level Floor Plan, Botania, made by the author

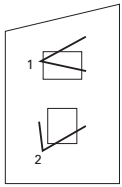


Fig. 33 Photos of Circulation Space, Botania,
Credit: https://www.fritsvandongen.nl/nl/botania/

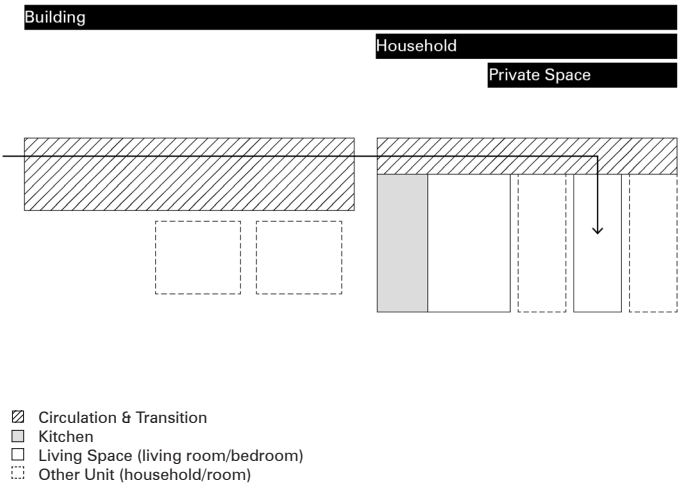
Housing Typologies

The repetitions of housing typologies are related to the pursuit of urban planning and the increased industrial production of housing in Dutch cities (Fanelli, 1978, p.22). In the example of Botania, Architect Frits van Dongen played with two successful housing typologies to deal with the challenge of the enormous building block. Overall, the five-story building block comprises mainly Type B (three-room apartments with a core on one side) and three Type LH (a long-shaped apartment with a core at the center) in the center of upper levels. The rationalized combination of the two types formed stepped terraces for the upper floors and created an unusual yet grand hall for entry.

Botania showcased the adaptability of these housing typologies with the architect's creativity. Therefore, starting with housing typologies could be a good strategy for approaching the Fat Type. Furthermore, the spatial quality in outside apartments, such as circulation space, requires equal attention.

Discussion

The structure of three elements (facade, circulation, housing typologies) creates a back and forth discussion between Swiss Fat Type and Dutch Fat Type. The facade of Swiss Fat Type critically reflected the internal space, while the facade of Dutch Fat Type focused on bringing more natural light into the rooms. Circulation space in Swiss Fat Type is carefully curated to encourage social interactions. In contrast, circulation space in Dutch Fat Type is greatly economized, despite the long existed tradition of groundedness. Both Swiss and Dutch Fat Type successfully established an impact and dense building block with an eclectic mix of housing typologies. Notably, apart from all the Dutch building traditions, the Dutch Fat Types stood very differently from the Swiss ones in terms of tenure type. The result could be observed in all three elements. By comparing these projects, the research helped generate proposals emphasizing Dutch building traditions and social connotations in the future design stage.



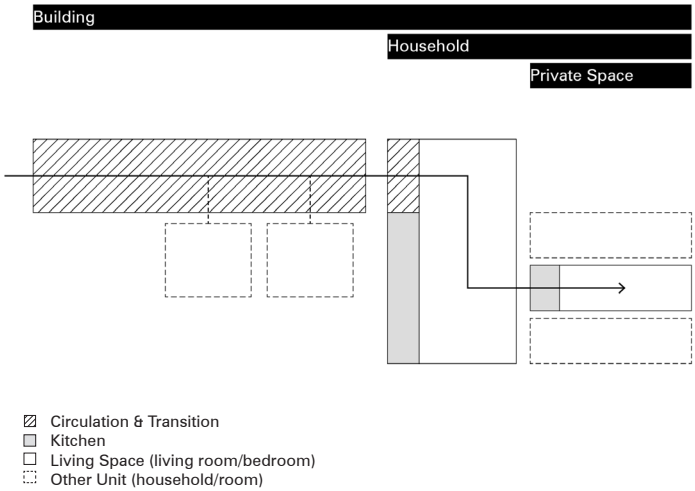


Fig. 34 Typical Housing Complex Spatial Hierarchy (From Public to Private), made by the author
Fig. 35 Haus A Spatial Hierarchy (From Public to Private), Mehr Als Wohnen, made by the author

3.3 The Kitchen Constellations and The Fat Type

The research into the three kitchen constellations provided a comprehensive understanding of the functions, architectural performances, and social connotations of three types of kitchens from the past to modern days. It is concluded that the kitchen should be a place for social making, providing care and sharing beyond its original meal preparing function. The placement of the shared kitchen in the community particularly aligned with the initial idea of the Fat Type: a new type of housing that balances between private and shared areas as an answer to the less affordable and increasingly densified housing situation in Europe. Although the starting point of the Fat Type seems to be purely economic, it contained the notion of care that only a well-connected neighborhood could achieve.

The research on the Fat Type provided guidelines for architectural practice. The three main elements (facade, circulation, and housing units) responded to the three scales (urban, building, and interior) of design. Furthermore, these three scales of design were interconnected with the three types of kitchens (urban, shared and private) and their target groups. Therefore, the architectural design could have a more systematic approach through such hierarchized understanding in both programs and building space.

The two central themes also implied that only a specific form of tenure type could host such a composition of dwelling. Like the examples in Mehr Als Wohnen, the non-profit-oriented cooperative housing gave way to experimental typologies and allowed the typically unprofitable collective functions to existing. The emphasis on social functions of the kitchen/dining space could only be implemented in such a setup. This decision also resonated with the ambition to cope with the housing crisis in the Netherlands.

04

Urban Masterplan

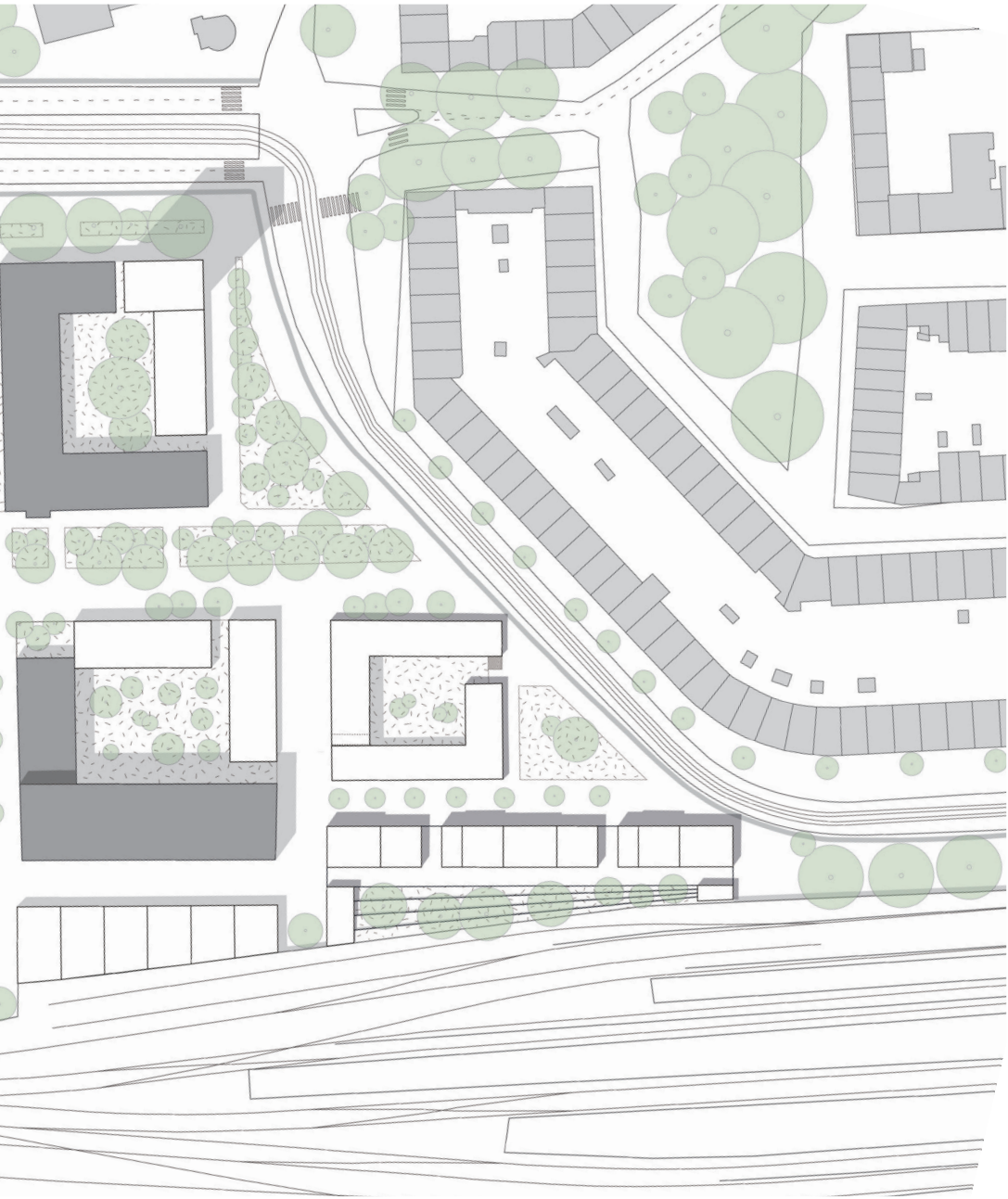
As a group, we observed the spatial issues on our site in Blijdorp. The plot is separated by the fast, noisy, and wide Statenweg. The vehicle-occupied space is so prominent that some areas seem almost industrial. Schools lack pleasant open space and transitional space between schools and housing. The students would hang around and take over the pedestrian space during the lunch break, awkwardly invading residents' front doors. The middle ground between the two most prominent user groups on-site is strangely missing.

We call ourselves the "social group" for the urban masterplan design because our planning approach focuses on social inclusion. The first strategy is to keep all the dwellers and communities on-site, mainly elderlies and students. We added families and single adults as different target groups because one is becoming more challenging to live in cities while another is estimated to increase in the coming years. The second strategy is to implement interactive programs and open spaces to trigger positive interactions. Through clear zoning of campus, residential and commercial, each user group could have comfortable territories and mixtures.

Based on our four ambitions: defined urban fabric, neighborhood center, healthy living, and social sustainability, we created zones with defined open space and volumes based on the idea of human scale. Human scale refers to human-centered planning, which stands opposite to car-oriented city planning established in the Modernism era. In order to promote healthy living and walkability, car parking spaces were placed on the east and west ends of the site, leaving the central areas only for bikes and pedestrians. The commercial zone to the north aimed to become a neighborhood center, as historically planned. The east and west plots are now connected by a lifted park "green axis" to stimulate the social exchange from both ends and a better route for school children.

Fig. 36 Rotterdam Noord, made by Urban Strategy Group Social Group

Fig. 37 Urban Masterplan, made by Urban Strategy Group Social Group



05
Design

Design Brief

Situating at the center of Rotterdam, the project envisions a neighborhood where everyone is given care and help. In times of solitude and everyday struggle, neighbors could reach out their warm hands. From public to private, this project positions kitchens on the interfaces of spaces in different scales. Through the action of cooking and dining, a new mode of interactions loosens the existing social construct and establishes a network of care. By rethinking the arrangement of homes and community through the three kitchen constellations in the Fat Types, the project aims to bring forward new ways of living that cope with the issues of post-pandemic living, gender inequality, and housing crisis.

Project Role in Urban Masterplan

As my plot is adjacent to the proposed green axis and campus zone, my project serves as an essential transition zone between schools and parks. The Building envelopes were intentionally designed into three independent volumes, the Fat Type (30X30M) and two smaller Chubby Type (16X30M & 20X20M), to generate a variety of open spaces. The research topic of kitchens (mainly urban kitchens) sits in nicely in this location to promote social exchange between residents and students. The green axis connected to the Rotterdam Centraal station further became this inviting gesture.

Project Target Group & Housing Typologies

As the problem statement suggested, my target group would be mainly families, starters, and other special types of dwellers have needs for care such as inter-generation homes and single parents. The three buildings' housing typology are cluster apartments, maisonette, and studios. The proposed housing typologies are all equipped with private kitchens, shared kitchens, and an urban kitchen. The three volumes contain 9400 square meters of floor areas and roughly 120 housing units (120-180 dwellers).

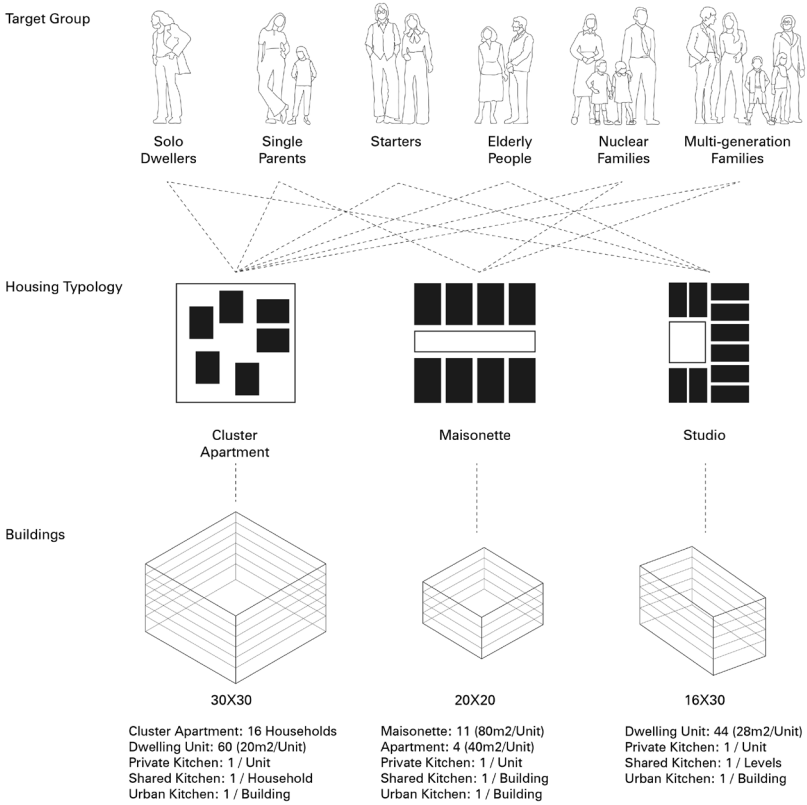


Fig. 38 Diagram for Housing Typology & Target Group, made by the author

Design Concept & Strategy

Urban Level: Surrounding and Urban Kitchen

The planning of the three volumes began with analyzing the characteristics of the open spaces around them. The larger open spaces could be seen as plazas (public), while the narrow and linear open spaces were categorized as streets (communal). Different programs, service routes, and service facilities on the ground floor could be placed accordingly. In the center of the three buildings, a plaza was formed by three surrounded urban kitchens. These urban kitchens functioned as restaurants during normal days, but are flexible to convert its layout for collective cooking and dining events

The landscape design was based on the principle of "edible landscape", emphasizing the connection between food consumption and production. Fruit trees around the complex offered shading and provide habitats to other species. The dense greenery became a real luxury in the city center. The landscape invited residents, students, and Rotterdammers to participate in the eventful cooking and dining activities. The welcoming public programs in the prominent location were intended to make the action of social support more accessible for those who wish to join.

Building Level: Circulation Core and Shared Kitchen

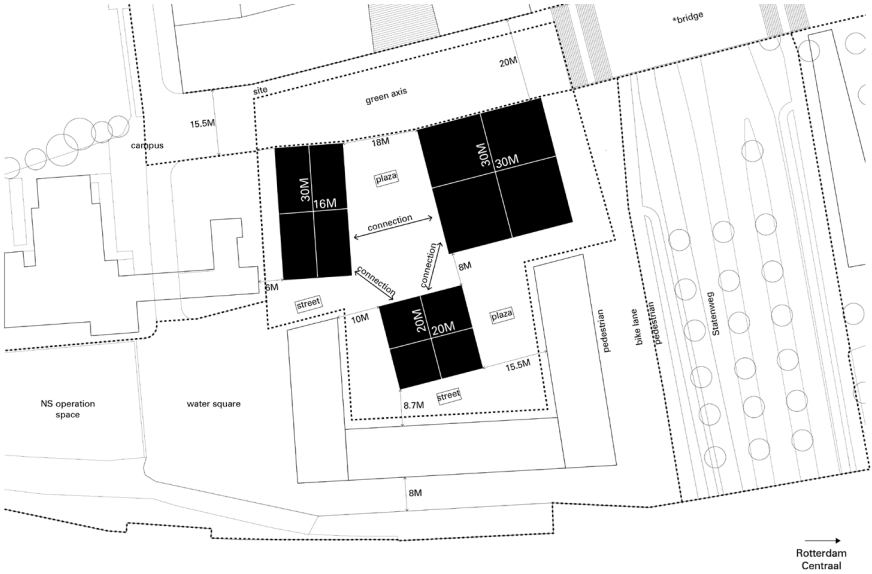
The building level aimed to propose a systematic approach for the three buildings. In order to highlight the social function of kitchens, the circulation core was designed as a coherent void space that visually and spatially connected the urban kitchen on the ground floor with all the shared kitchens on each level. Based on the idea that the kitchen is a relatively public zone, the neighbors could greet and see one another while going home or cooking. The circulation core also created an intriguing inner facade, which I called the "kitchen facade." Kitchen facades were made of solid, heavy materials, which linked to the impression of a chimney. The materials should be carefully picked to optimize the natural lighting in the deep, fat building block. Apart from the physical component, the smell generated by cooking and the noise made by movements would also be the essential features of the circulation core. The visibility of these shared kitchens could encourage the resident to collectivize their housing chores and look after one another from time to time.

In contrast to the kitchen, facades were the "urban facades." They were made of light, transparent materials which resonated with the large opening of traditional Dutch housing. As a result, residents could relax in their private space, away from the busy kitchens.

Interior Level: Housing Typologies and Private Kitchen

The design project focused mainly on the Fat Type. In this building block, I implemented the cluster apartment to host a variety of household types. The proposed cluster apartment inherited the concept of grounded-ness, introducing "streets" or a transitional space into the apartments. The feature of the "streets" could produce independence for each household and enable personalization. Furthermore, the minimized private kitchen, or kitchenettes, were placed at the entrance of the individual units, leaving the living areas extended to the urban facade while an integrated shelf-bed system allowed the dwellers to modify the layout of private rooms according to their needs. Designed furniture placed in the private units provided independence and quality living space for residents.

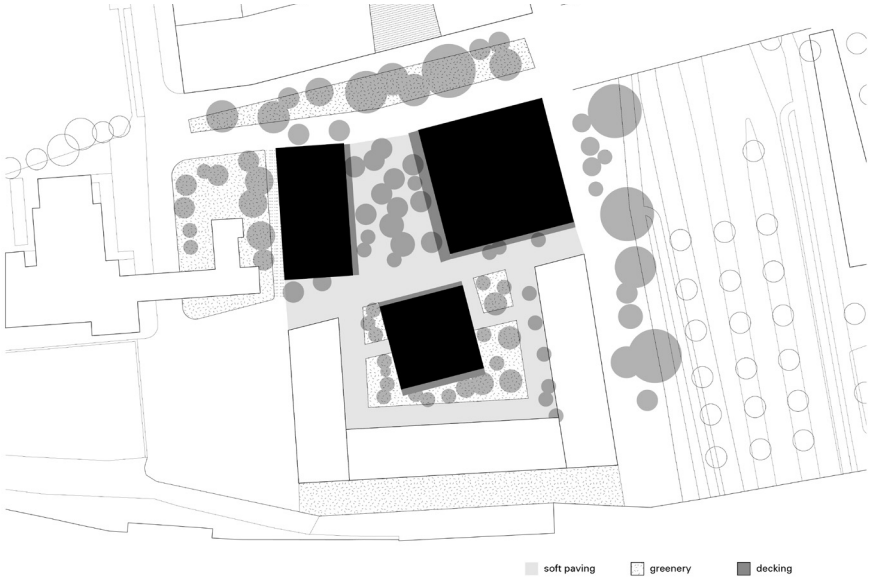
1



2

Fig. 39 Building Planning Strategy, made by the author
1) Zoning Map 2) Open Space and Ground Floor Functions
3) Landscape 4) Service Space and Circulation

3


soft paving
greenery
decking

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biking route
fire brigade
service route

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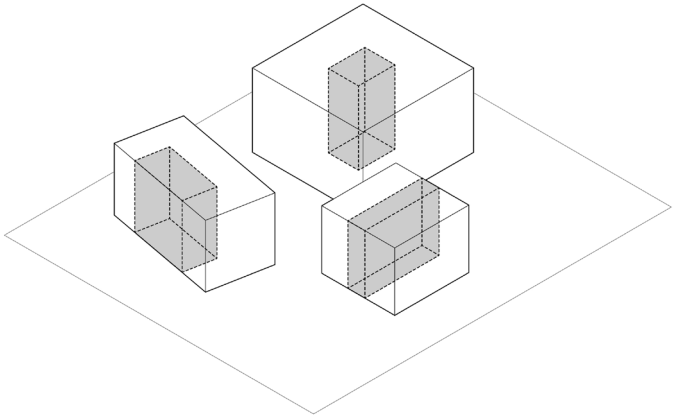

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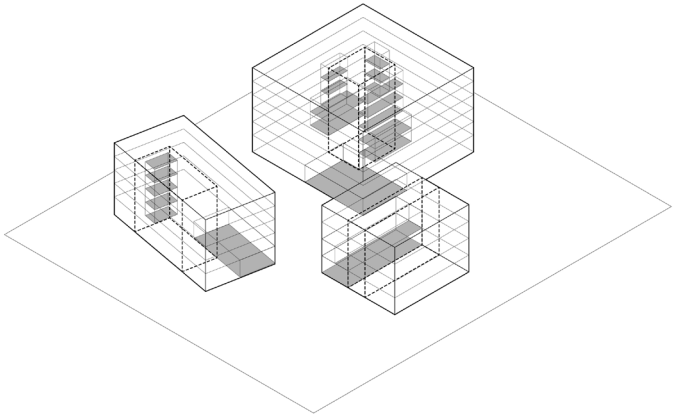
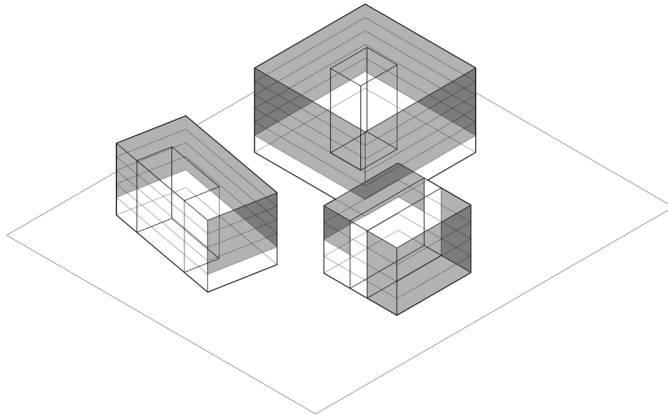


Fig. 40 Volume Strategy
1) Circulation Core 2) Urban & Shared Kitchens
3) Housing Facade 4) Kitchen Facade

3



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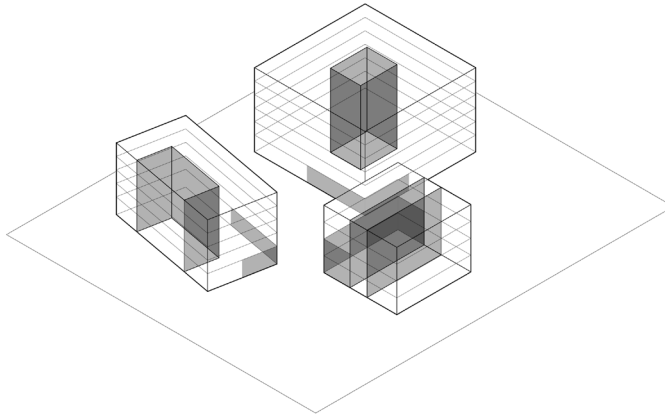


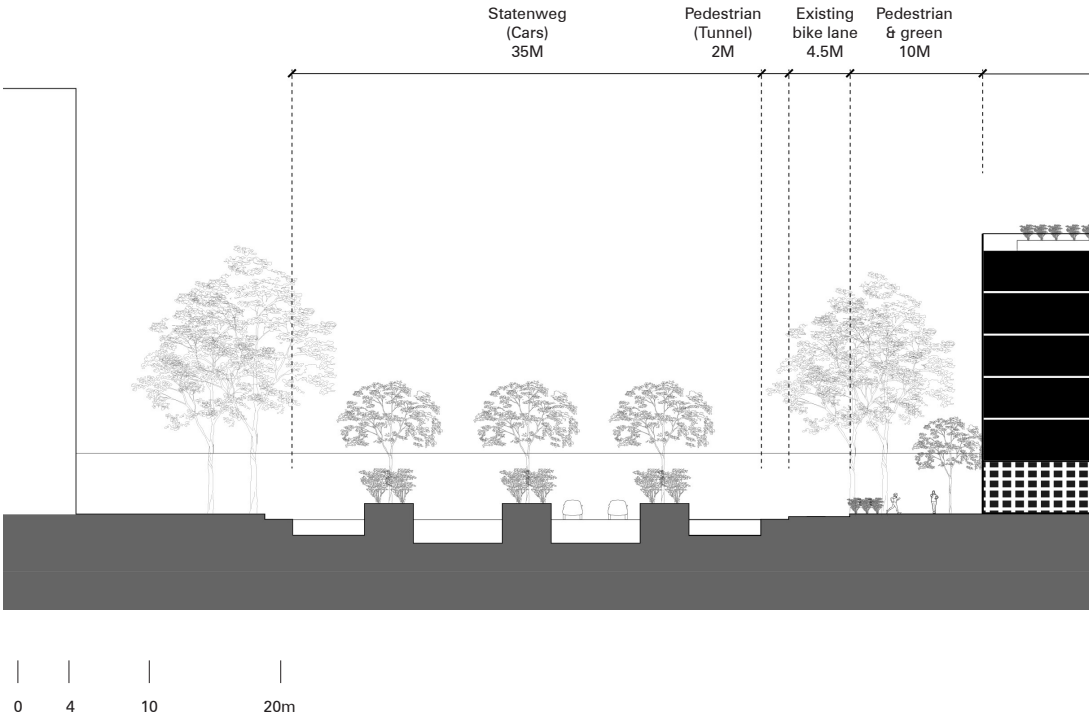
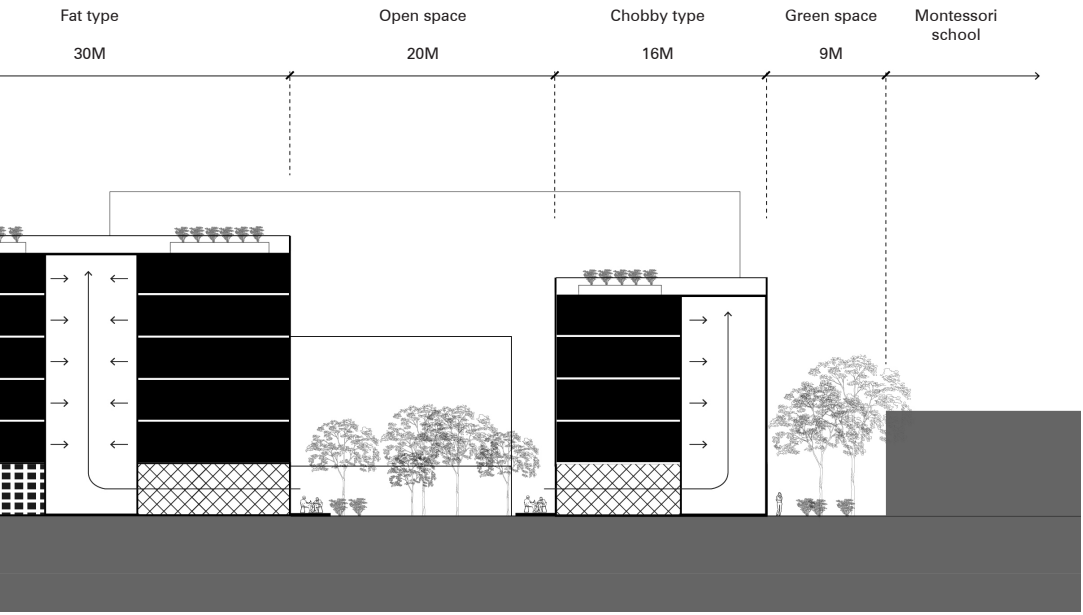


Fig. 41 Urban Section



kitchen & facility shop & business dwelling

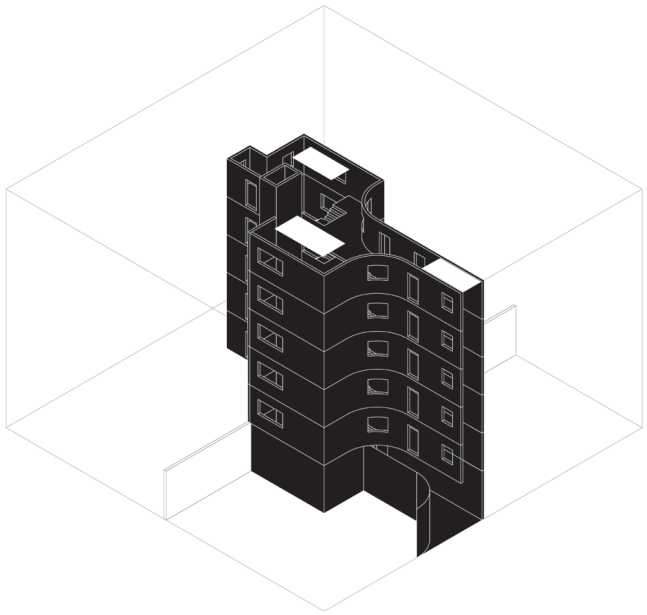


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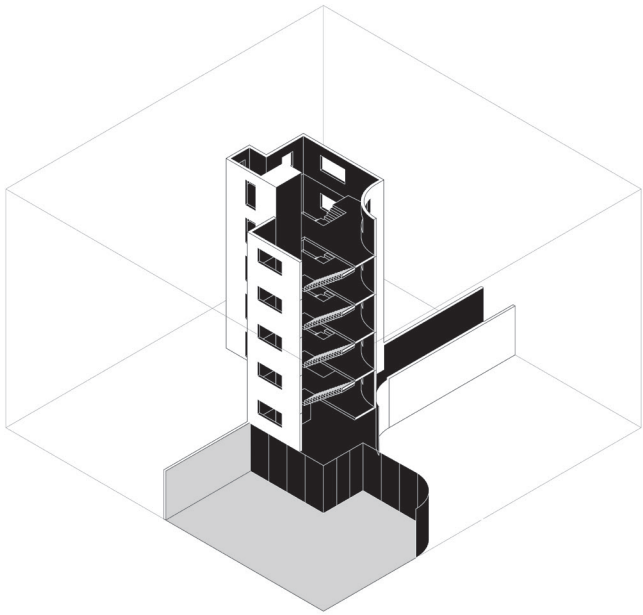
Fig. 42 Preliminary Conceptual Diagram for Circulation Space: 30X30
Isometric & Sectional Isometric



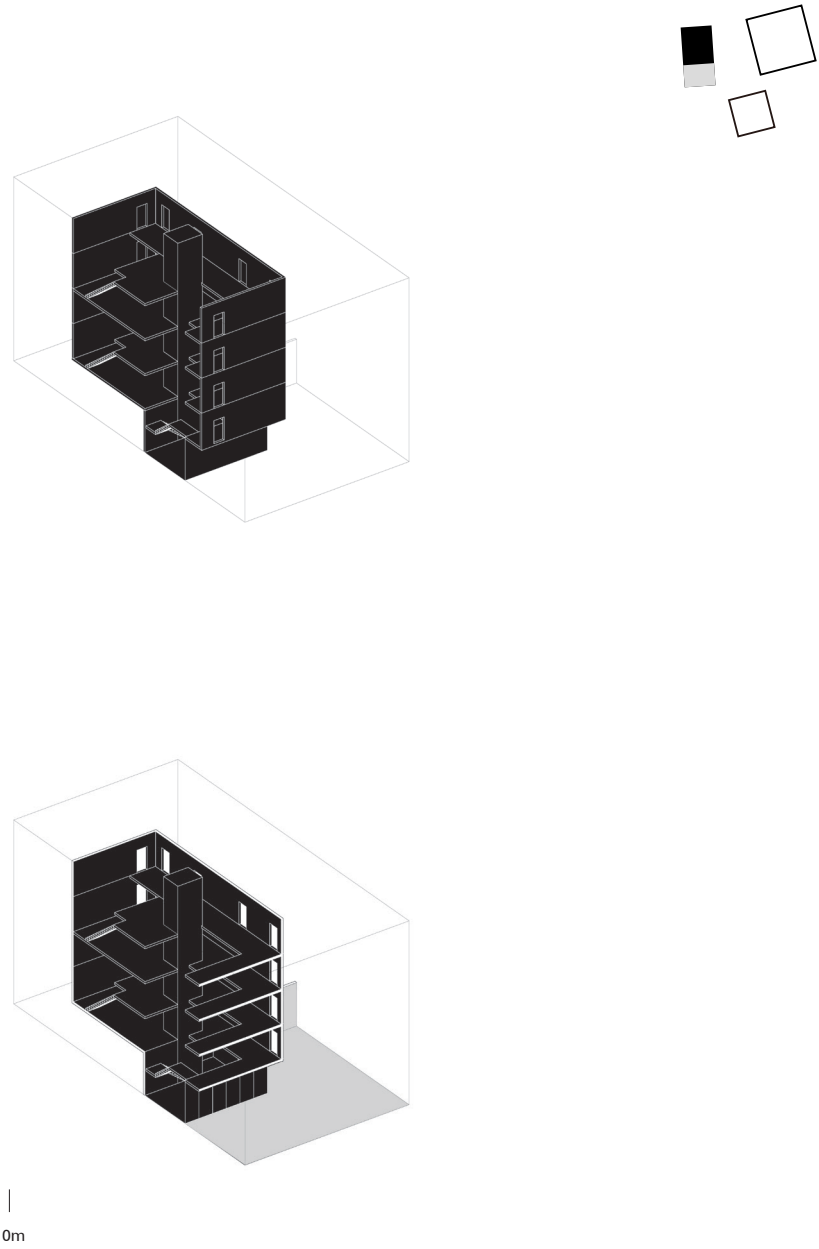
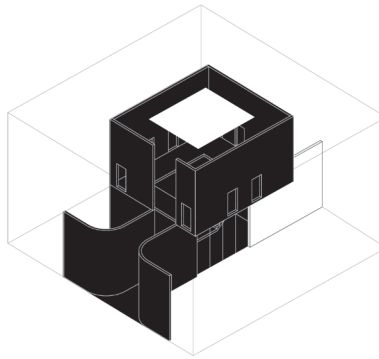


Fig. 43 Preliminary Conceptual Diagram for Circulation Space: 16X30
Isometric & Sectional Isometric



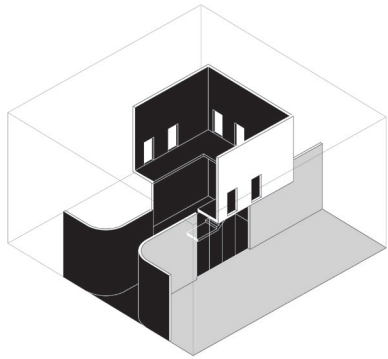


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Fig. 44 Preliminary Conceptual Diagram for Circulation Space: 20X20
Isometric & Sectional Isometric

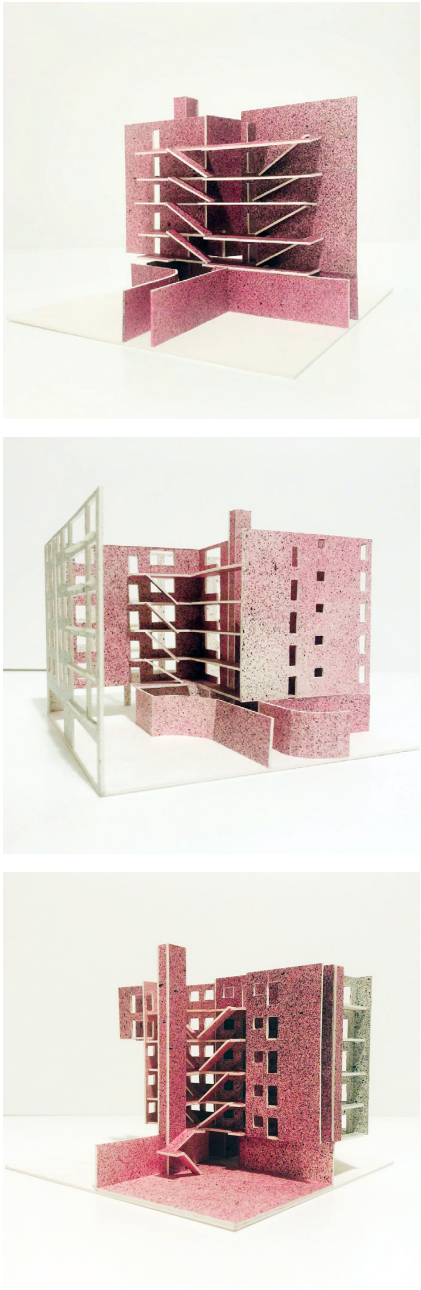


Fig. 45 Photographs of study model

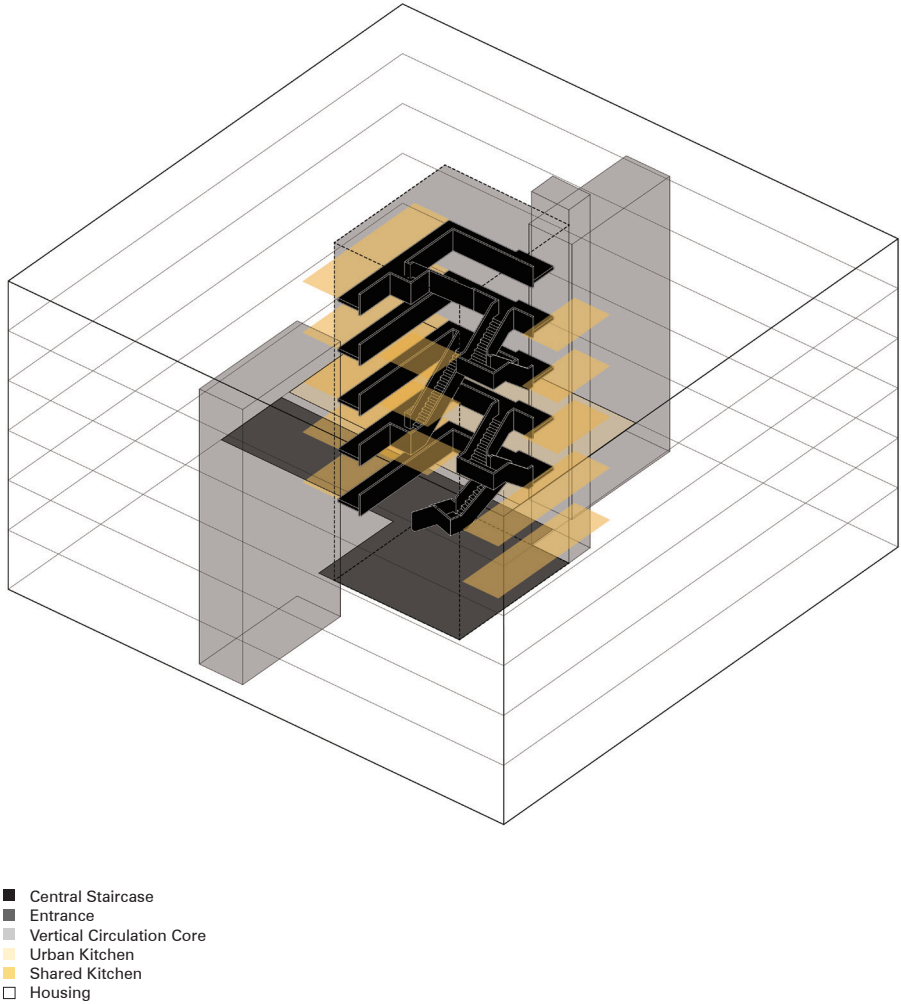
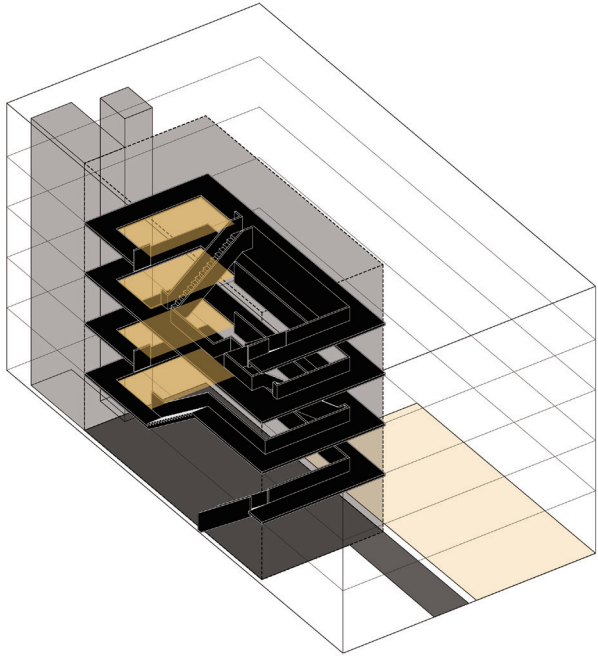
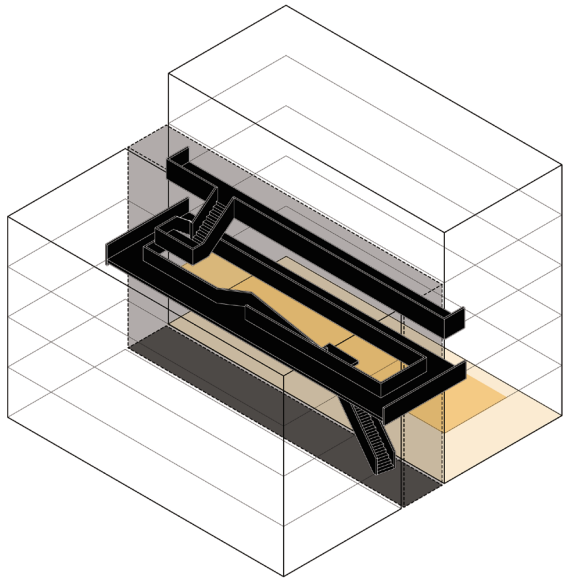


Fig. 46 Conceptual Diagram Kitchen & Core: 30X30



- Central Staircase
- Entrance
- Vertical Circulation Core
- Urban Kitchen
- Shared Kitchen
- Housing

Fig. 47 Conceptual Diagram Kitchen & Core: 16X30



Central Staircase
Entrance
Vertical Circulation Core
Urban Kitchen
Shared Kitchen
Housing

Fig. 48 Conceptual Diagram Kitchen & Core: 20X20

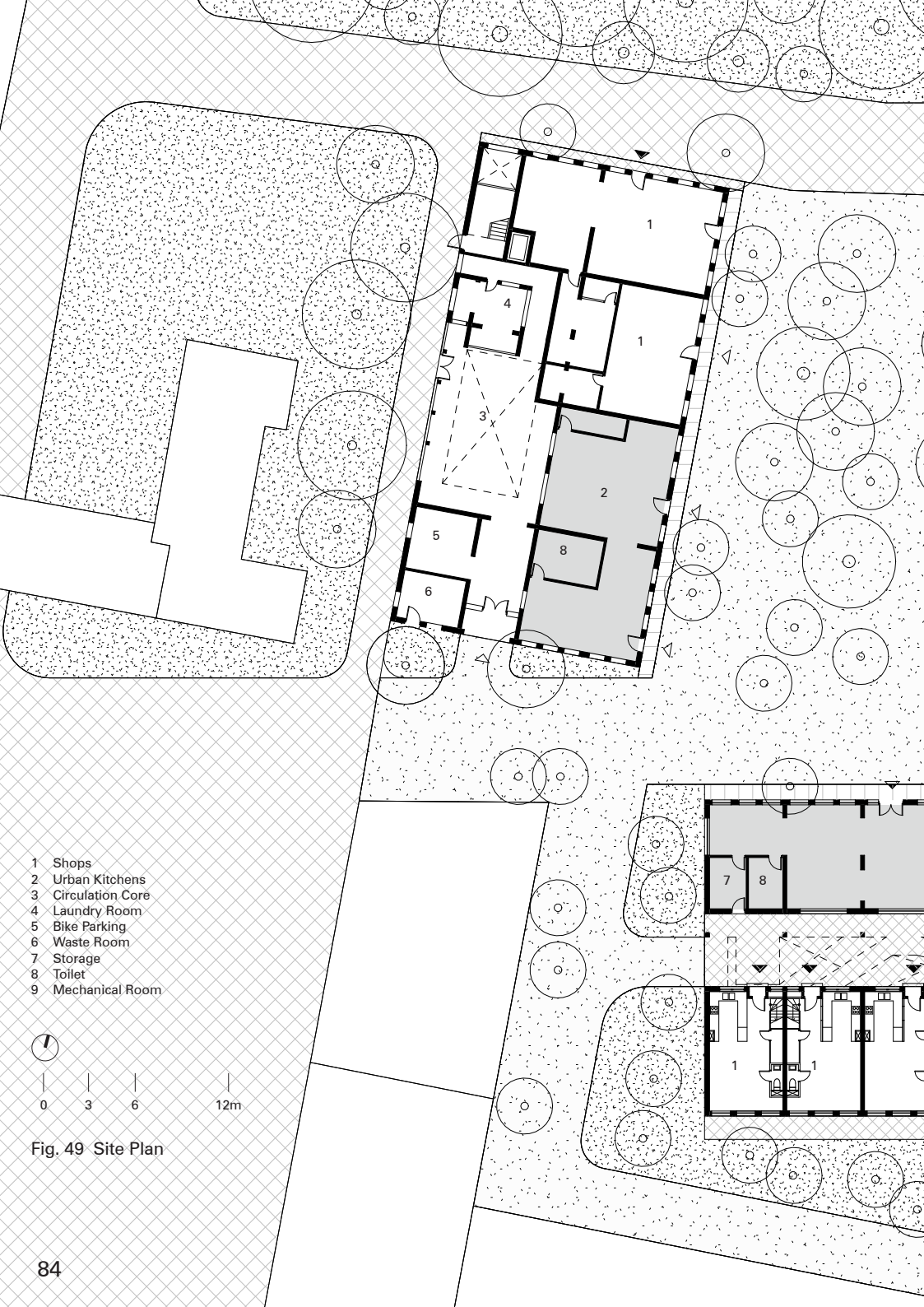


Fig. 49 Site Plan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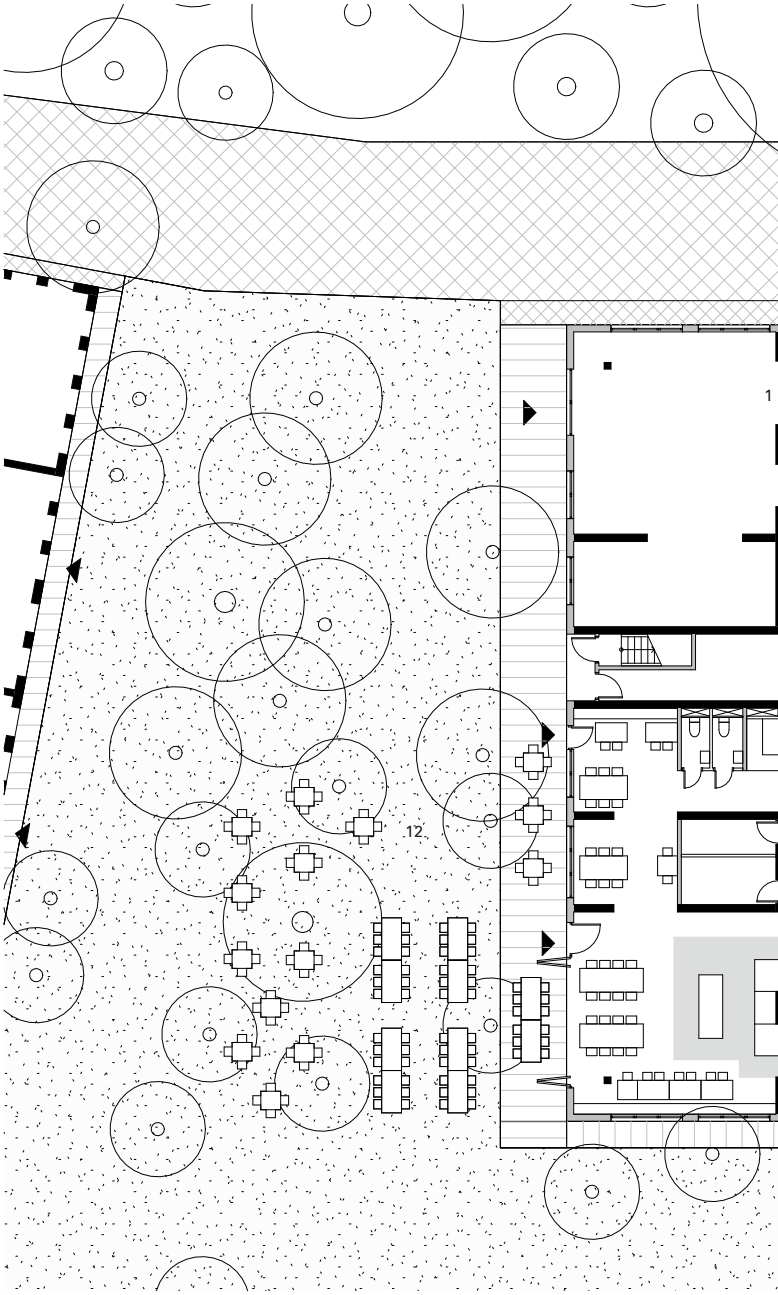
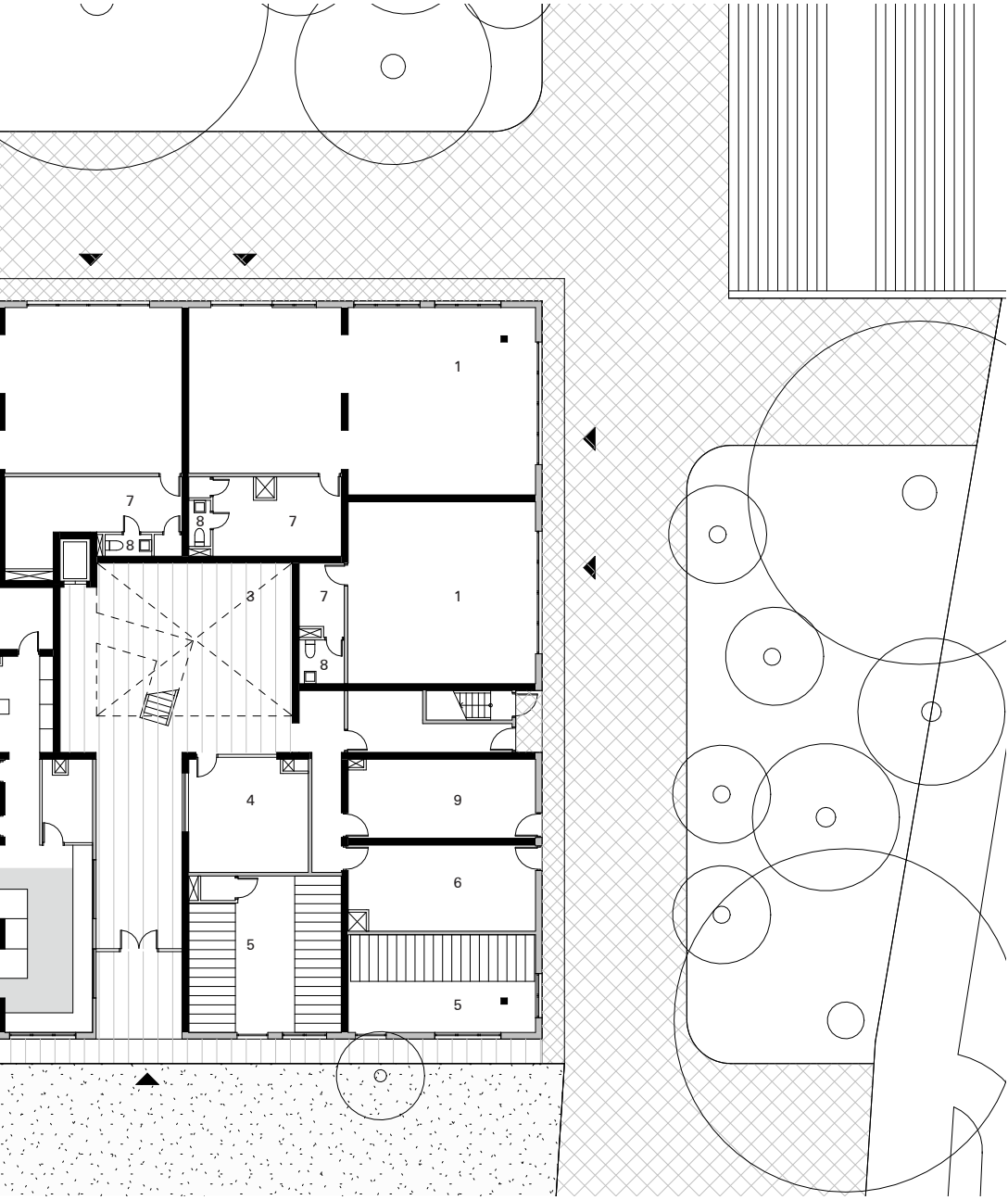


1 Shops
2 Urban Kitchens
3 Circulation Core
4 Laundry Room
5 Bike Parking
6 Waste Room
7 Storage
8 Toilet
9 Mechanical Room
10 Scullery
11 Staff Room
12 Rainwater Storage

0 1 2 5m

Fig. 50 Fat Type 30X30
Floor Plan GF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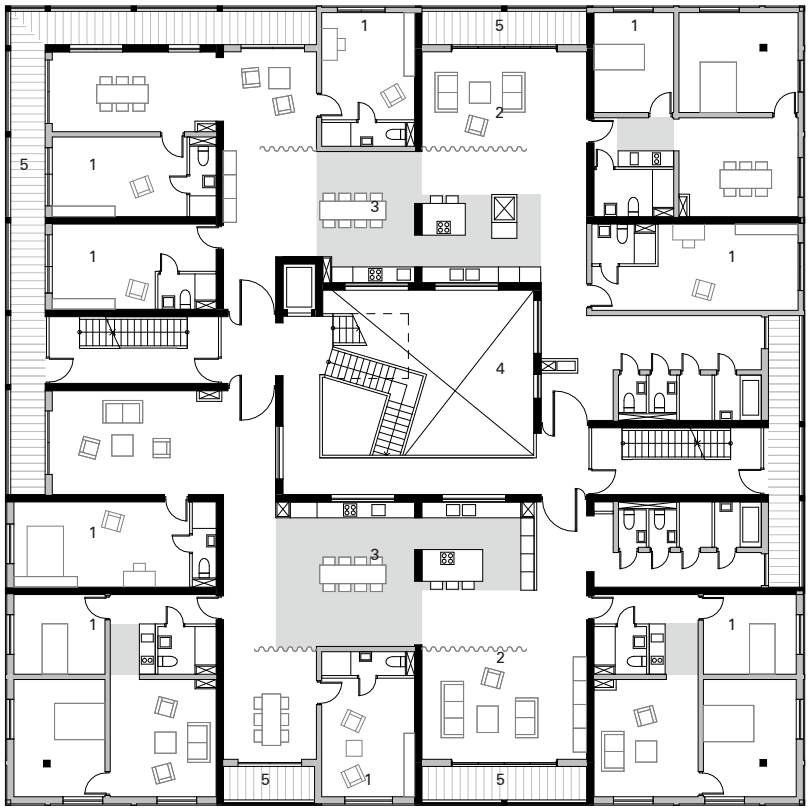
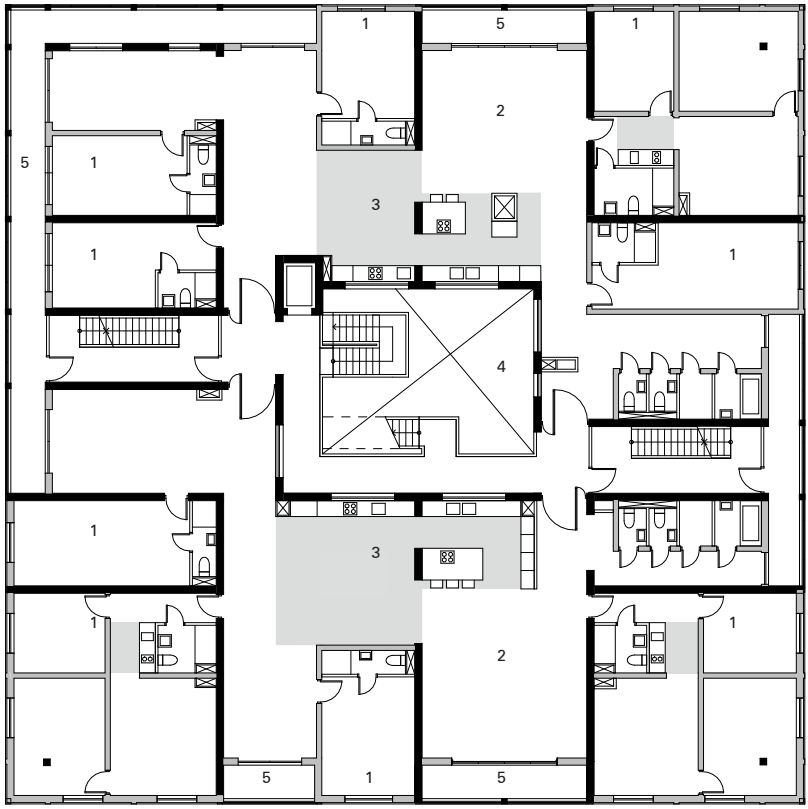


1 Private Unit
2 Shared Living Space
3 Shared Kitchen
4 Circulation Space
5 Balcony

0 1 2 5m

Fig. 51 Fat Type 30X30
Floor Plan 1-2F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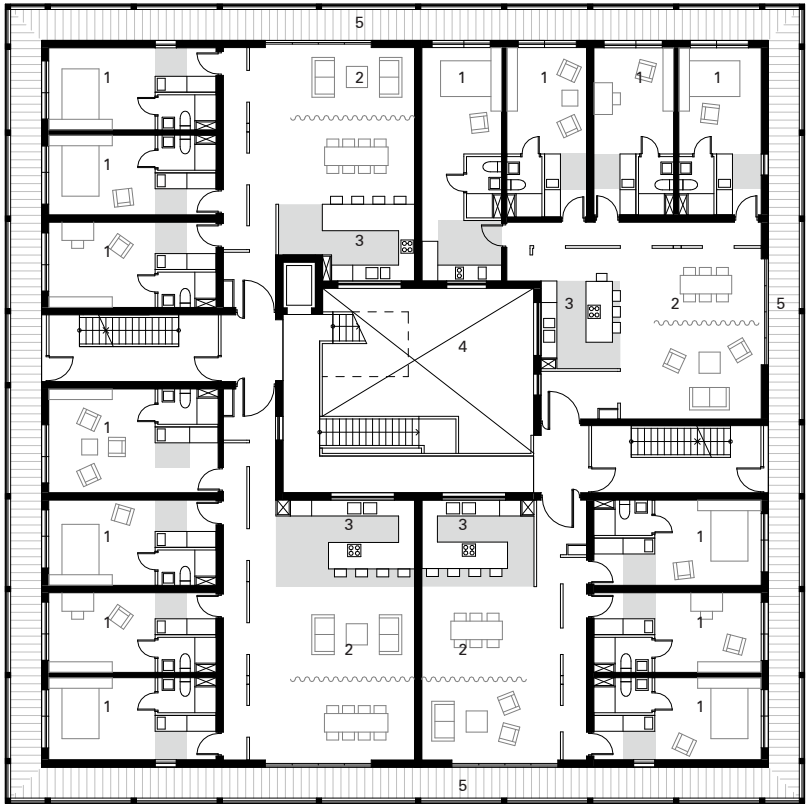
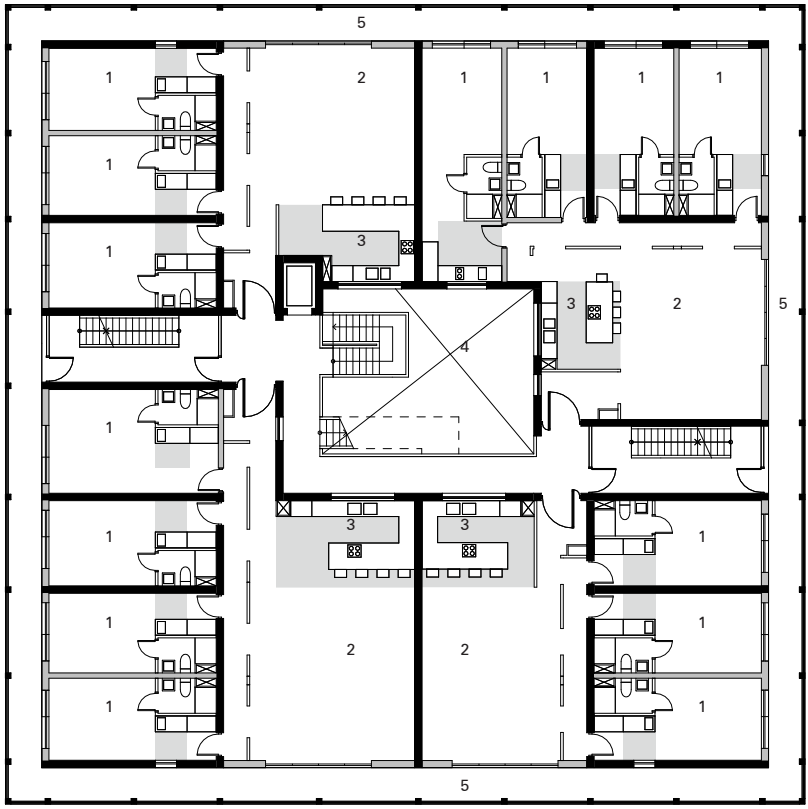


1 Private Unit
2 Shared Living Space
3 Shared Kitchen
4 Circulation Space
5 Balcony

0 1 2 5m

Fig. 52 Fat Type 30X30
Floor Plan 3-4F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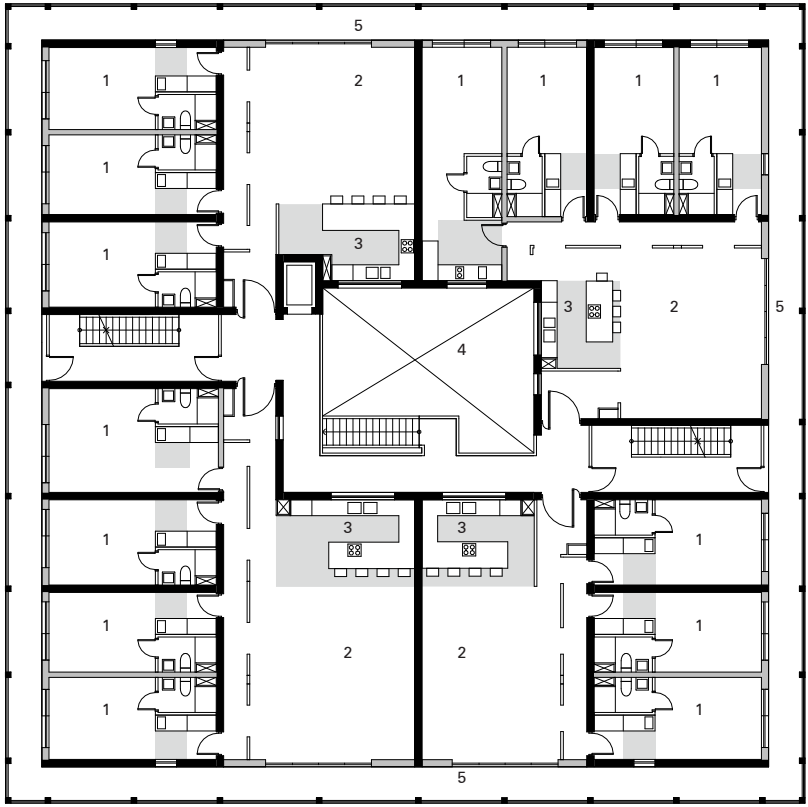
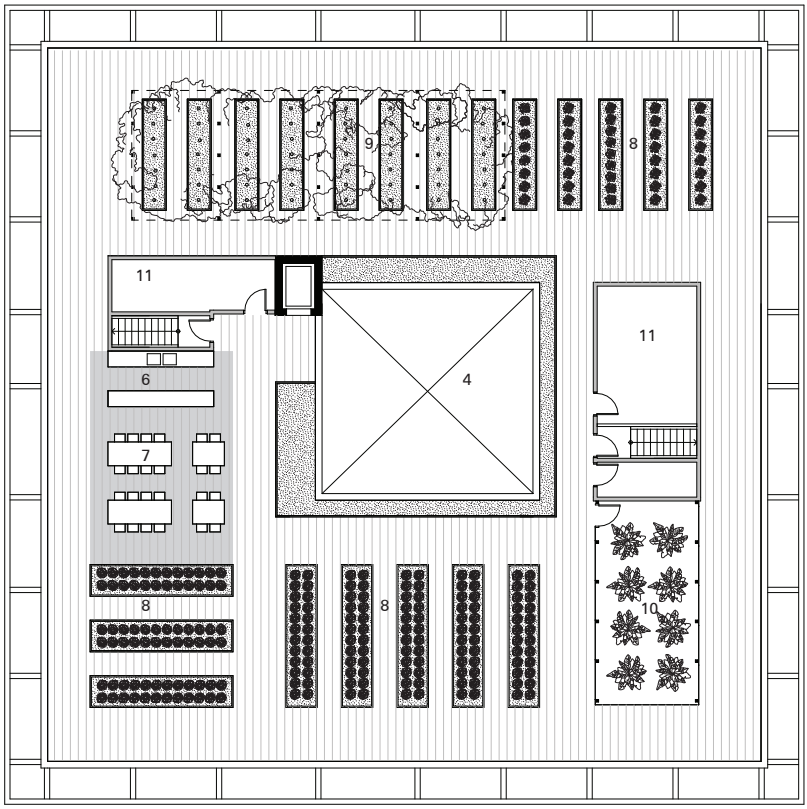
2
2
1
1
5



1 Private Unit
2 Shared Living Space
3 Shared Kitchen
4 Circulation Space
5 Balcony
6 Garden Kitchen
7 Dining Area
8 Urban Farming
9 Climbing Plants
10 Green House
11 Mechanical/Storage

0 1 2 5m

Fig. 53 Fat Type 30X30
Floor Plan 5-RF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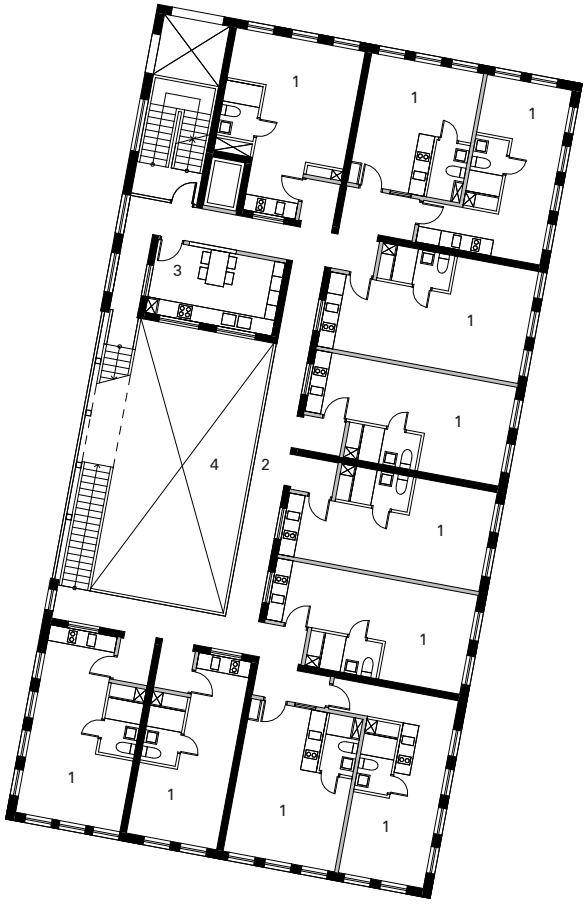
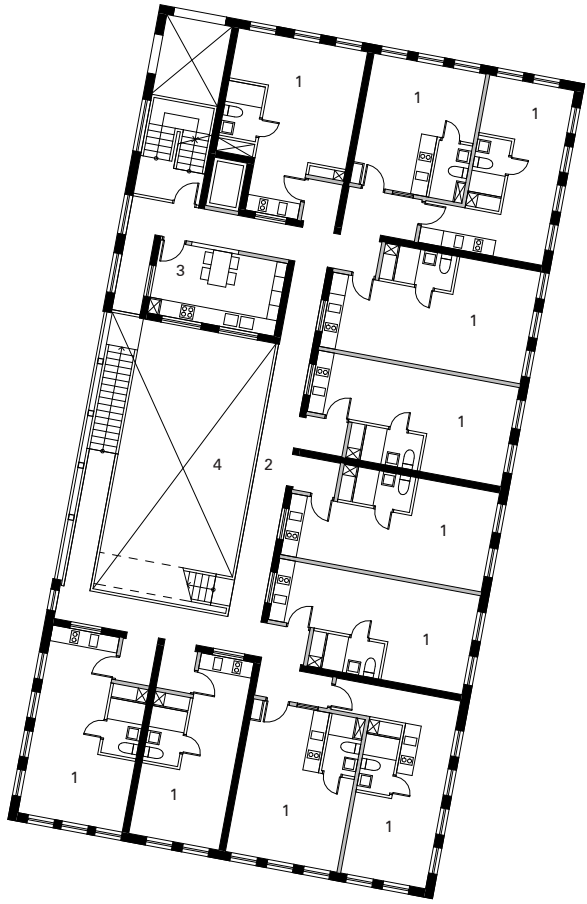


1 Studio Unit
2 Gallery
3 Shared Kitchen
4 Atrium

0 1 2 5m

Fig. 54 Chubby Type 16X31
Floor Plan 1-2F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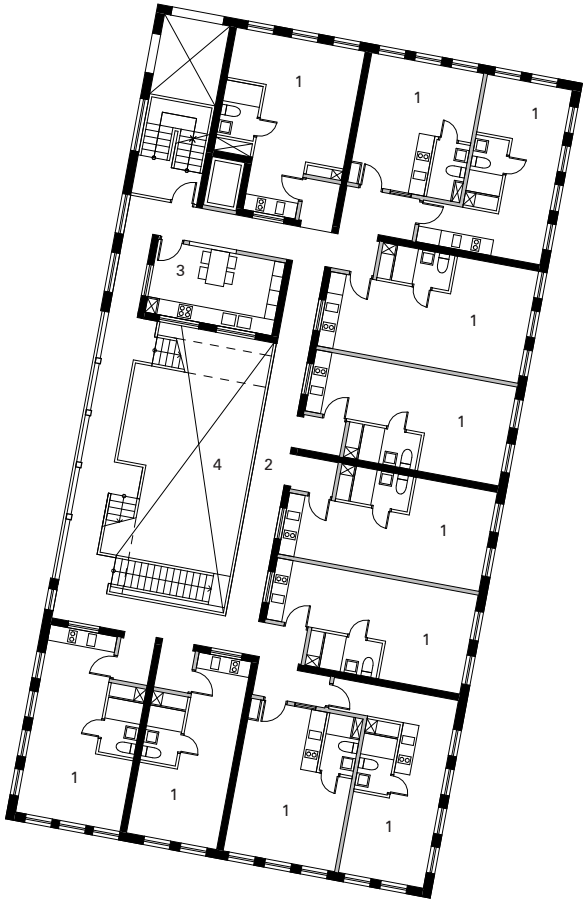
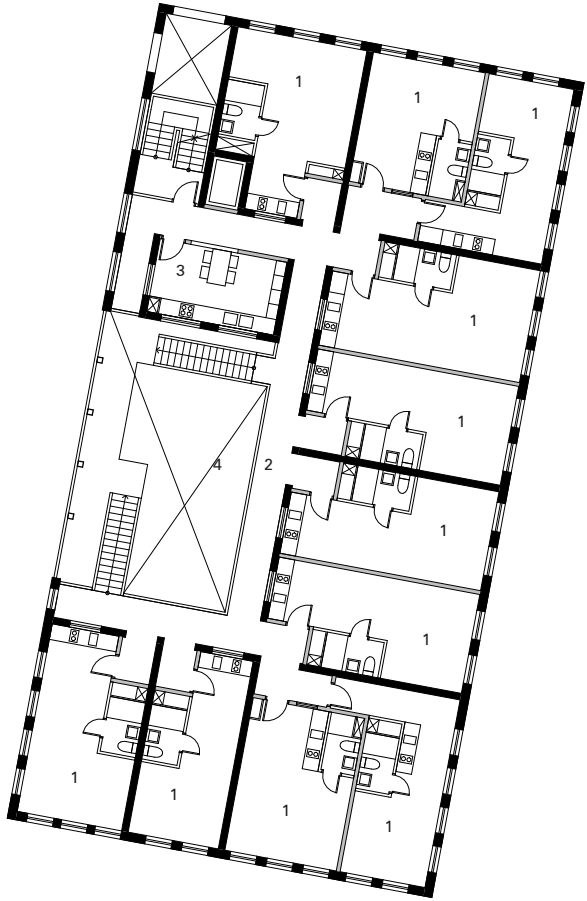
1



1 Studio Unit
2 Gallery
3 Shared Kitchen
4 Atrium

0 1 2 5m

Fig. 55 Chubby Type 16X31
Floor Plan 3-4F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1
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2
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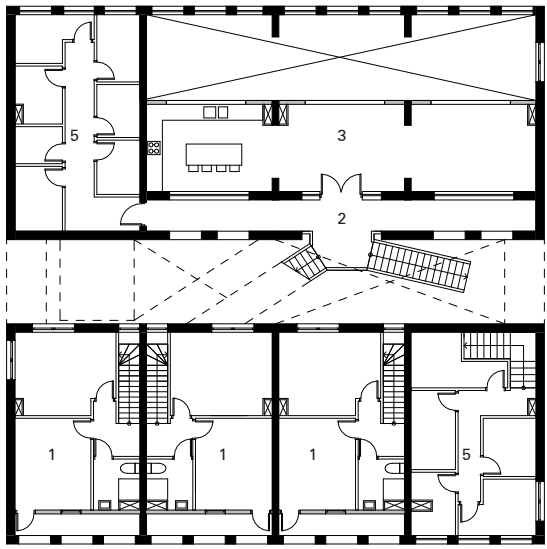
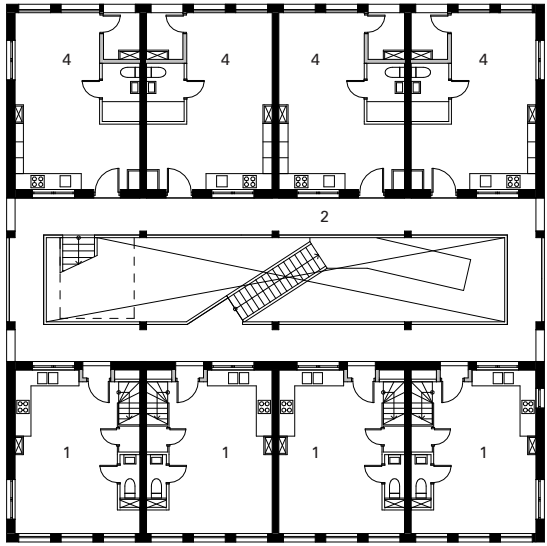
1
1
1
1



1 Maisonette
2 Gallery
3 Shared Kitchen
4 Studio Unit
5 Storage

0 1 2 5m

Fig. 56 Chubby Type 20X20
Floor Plan 1-2F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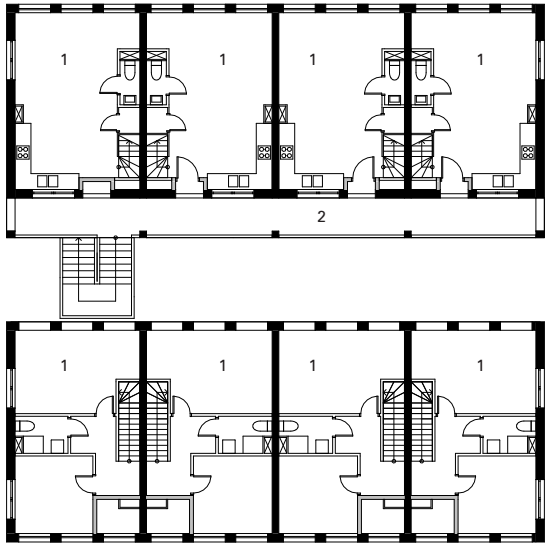
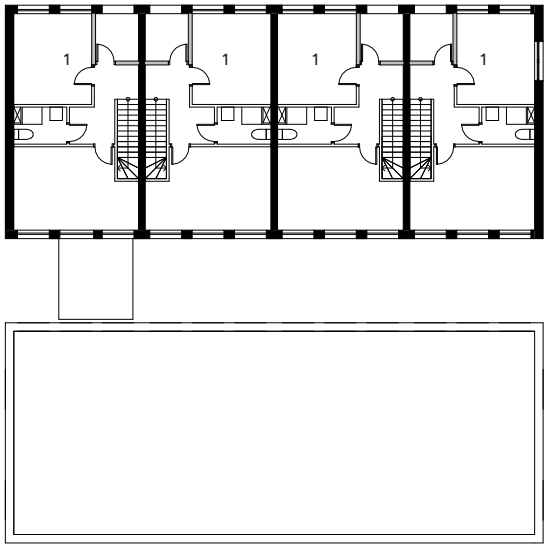


1 Maisonette
2 Gallery

0 1 2 5m

Fig. 57 Chubby Type 20X20
Floor Plan 3-4F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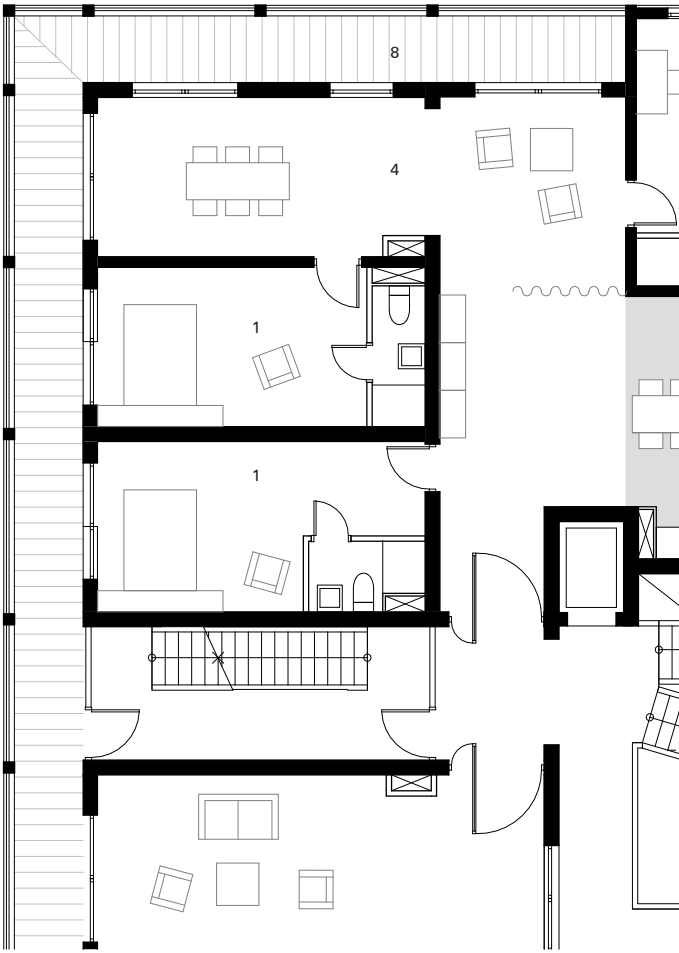
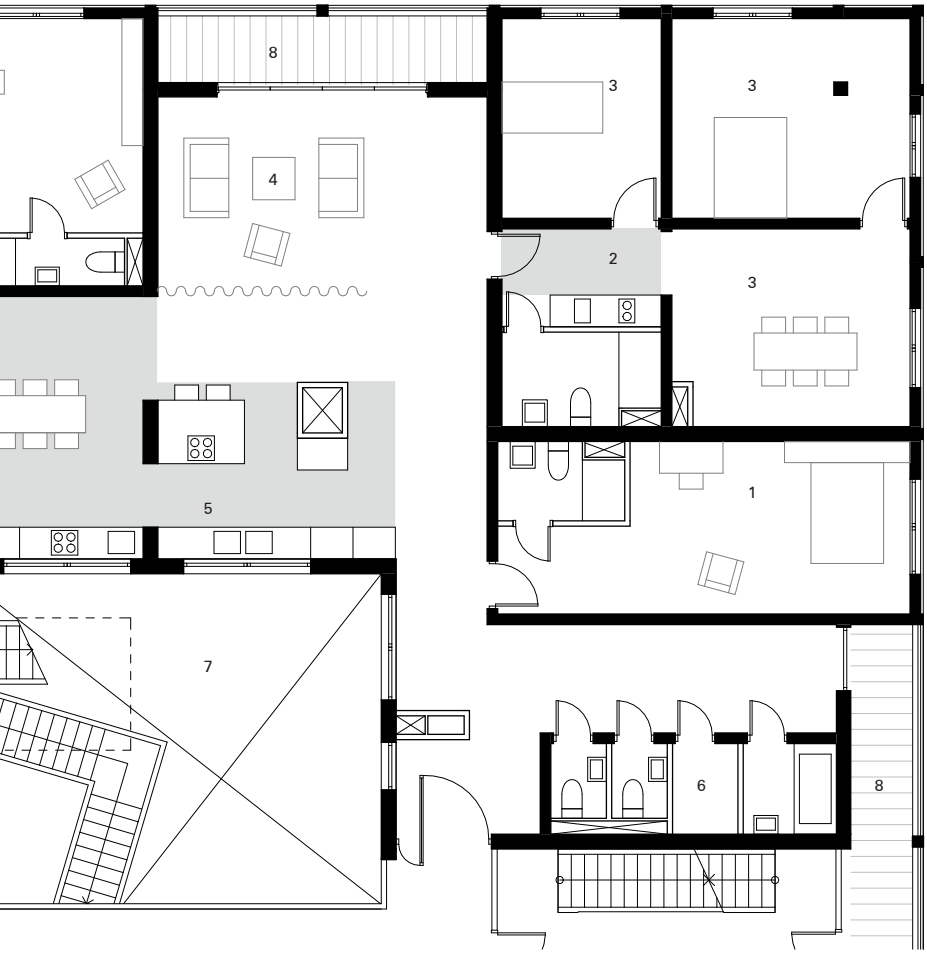


1 Private Living Space
2 Private Kitchen
3 Bedroom
4 Shared Living Space
5 Shared Kitchen
6 Shared Facility
7 Circulation Space
8 Balcony

0 1 2 4m

Fig. 58 Fat Type Housing Type
1-2F 5-Units Cluster Apartment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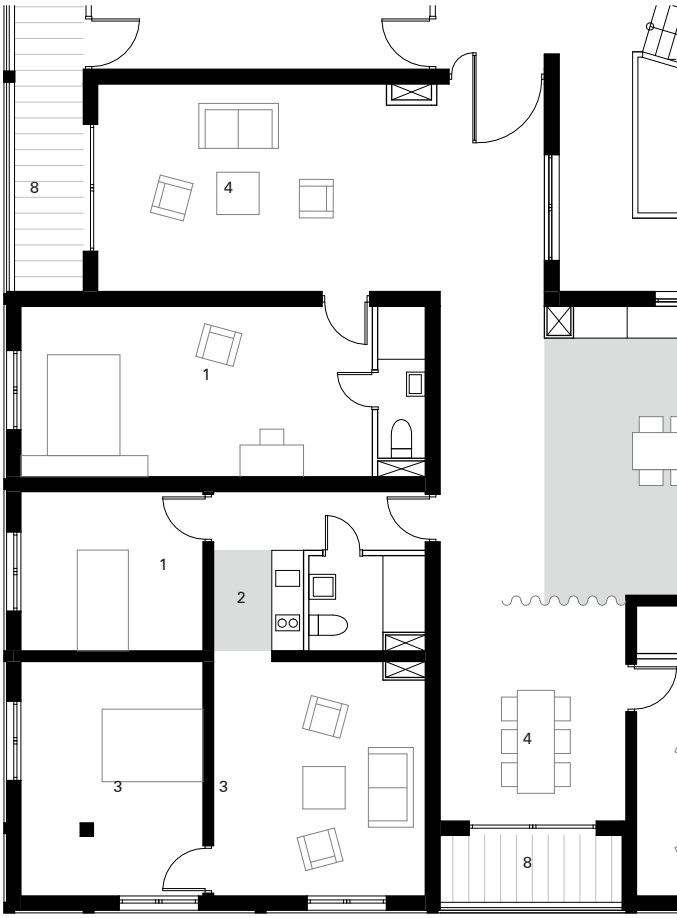
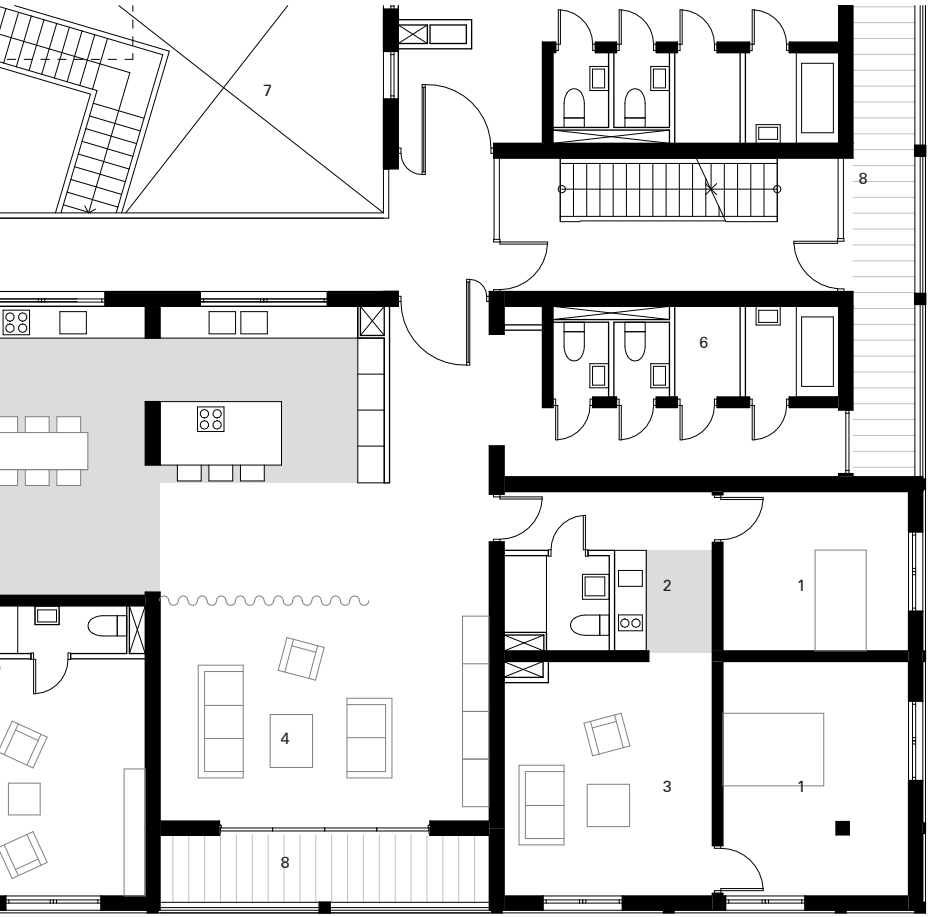


1 Private Living Space
2 Private Kitchen
3 Bedroom
4 Shared Living Space
5 Shared Kitchen
6 Shared Facility
7 Circulation Space
8 Balcony

0 1 2 4m

Fig. 59 Fat Type Housing Type
1-2F 4-Units Cluster Apartment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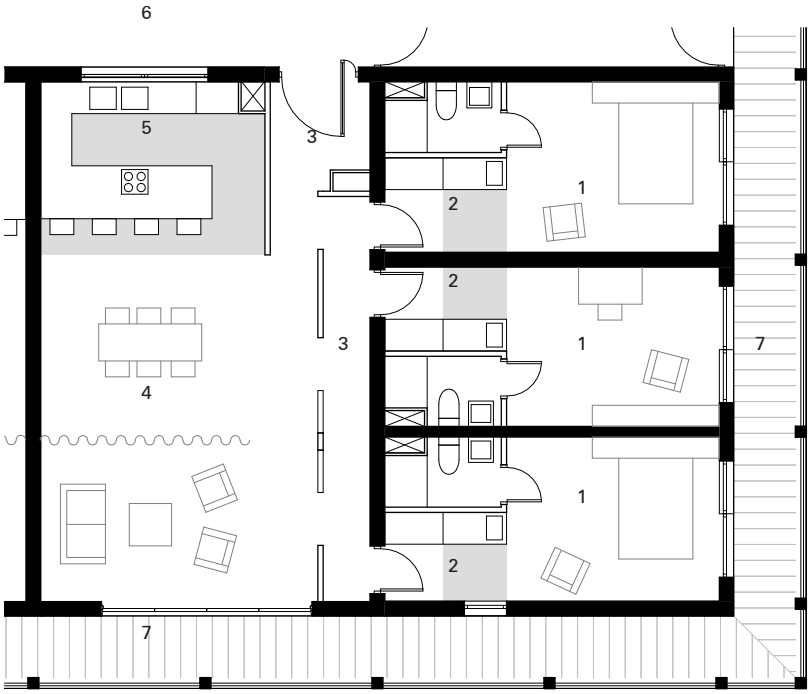
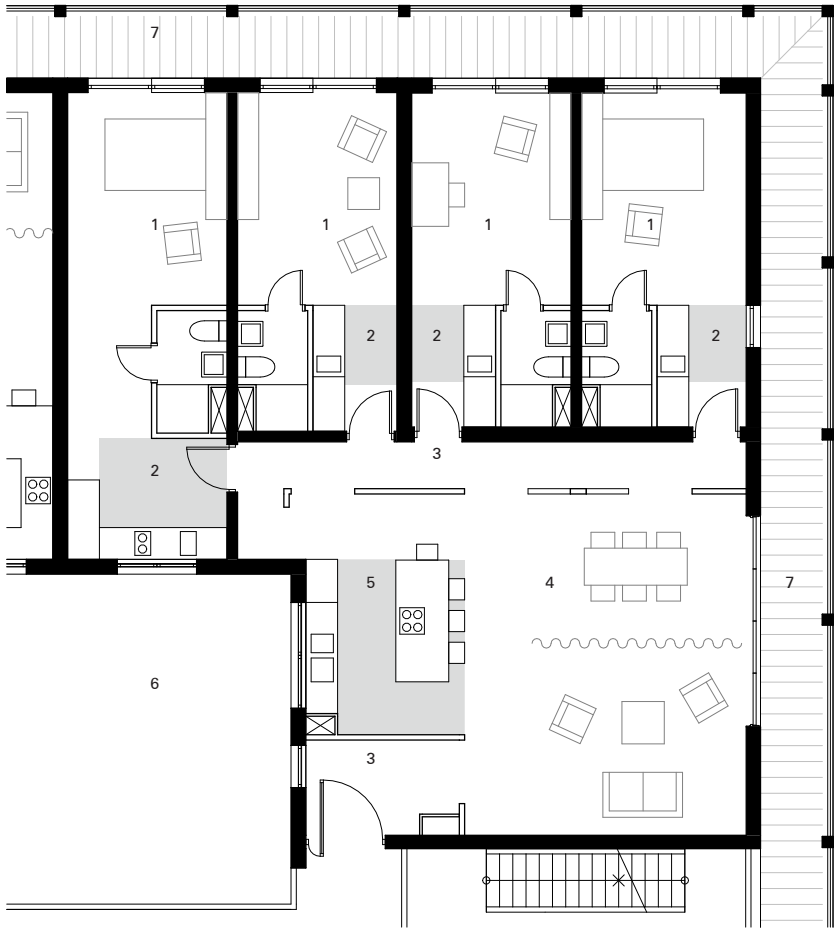


1 Private Living Space
2 Private Kitchen
3 Transitional Space
4 Shared Living Space
5 Shared Kitchen
6 Circulation Space
7 Balcony

Fig. 60 Fat Type Housing Type
3-5F 3-Units Cluster Apartment
3-5F 4-Units Cluster Apartment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7
6
3

1

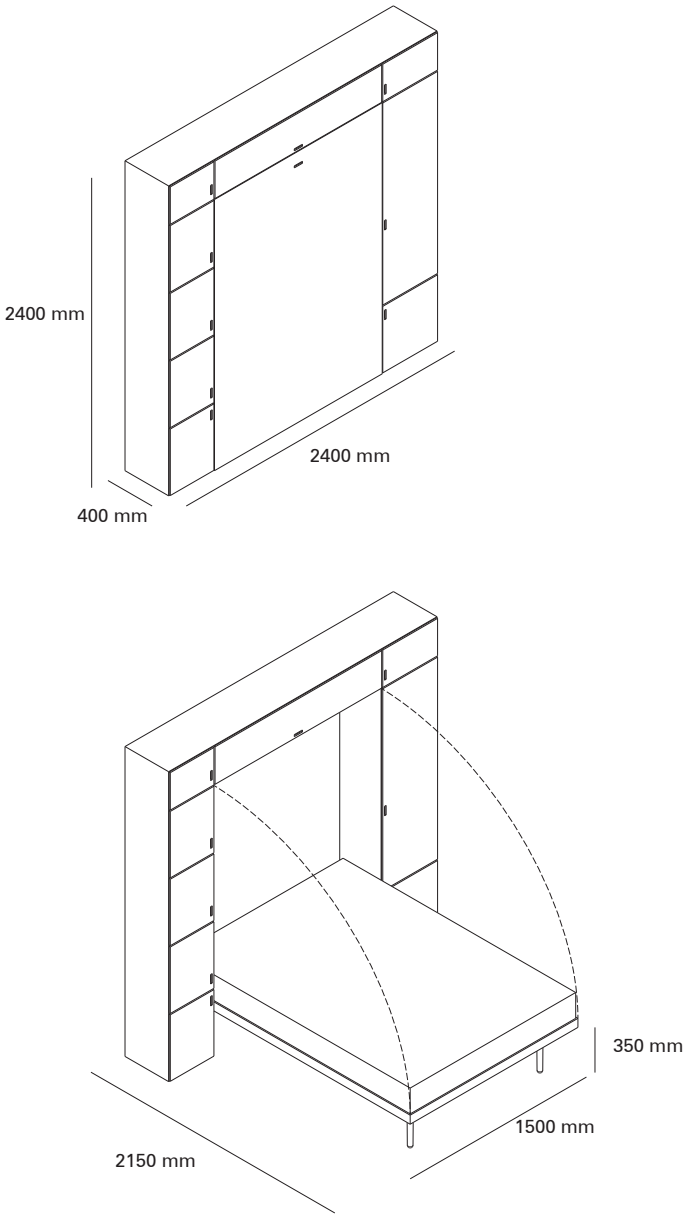
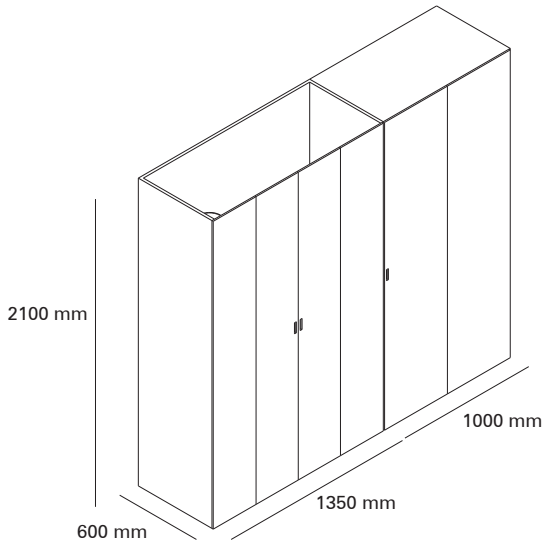
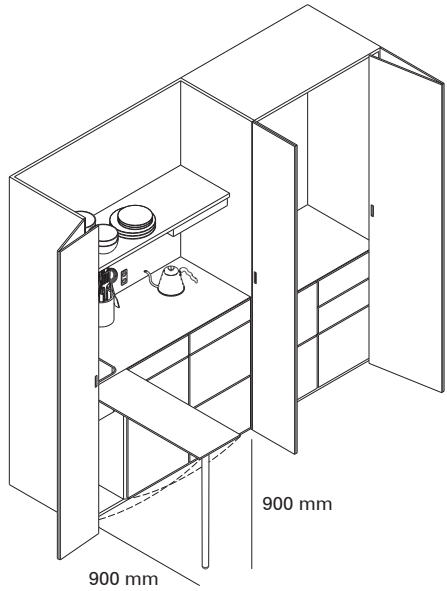
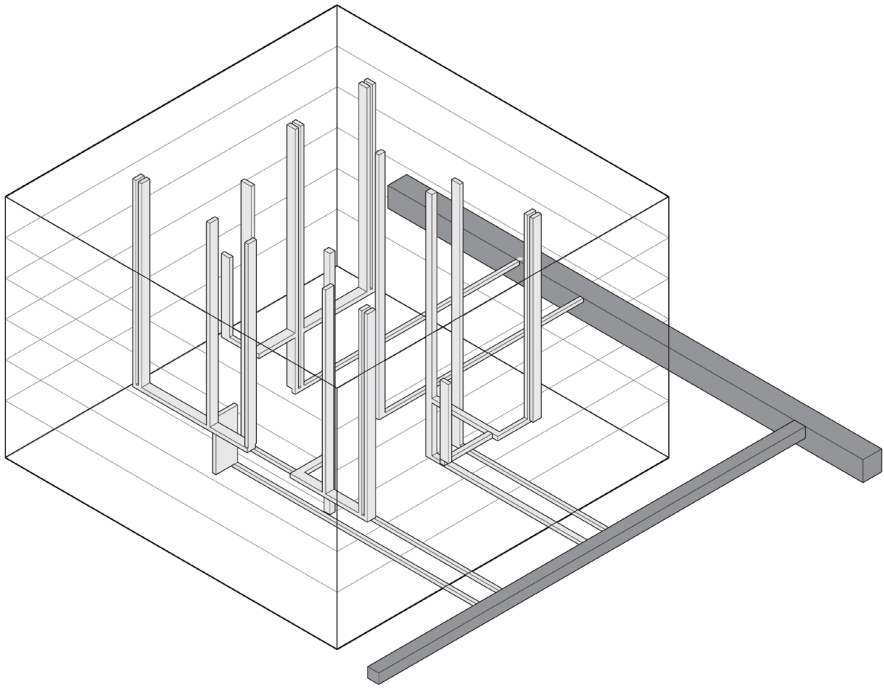


Fig. 61 Private Unite Furniture:
1) Integrated Bed Cabinet
2) Integrated Kitchenette

2







Shafts
Sewage System

Fig. 62 Building System Diagram
Shafts and Waste Water

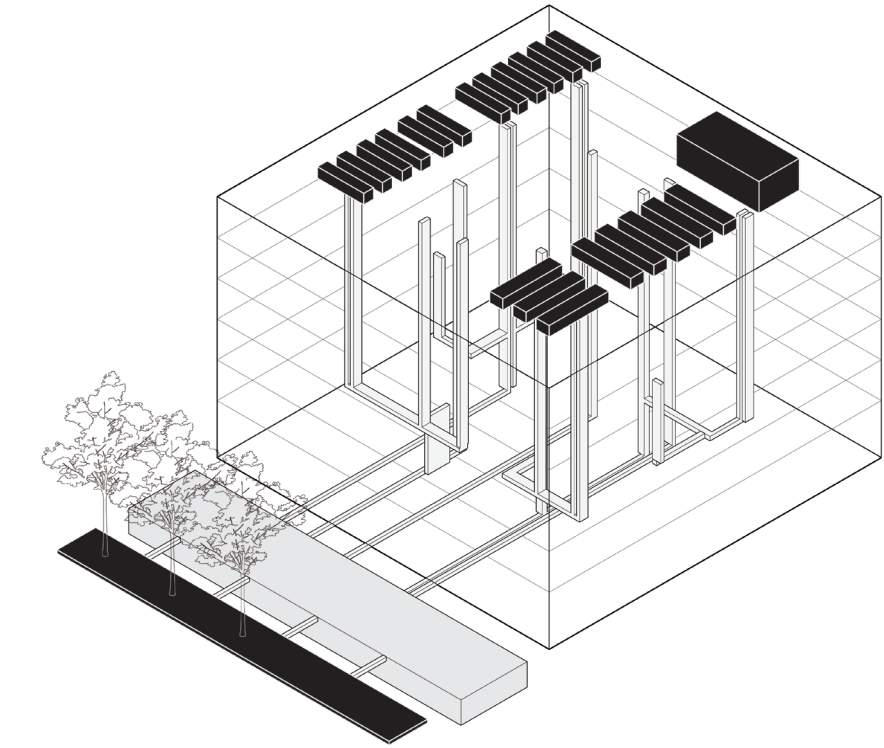
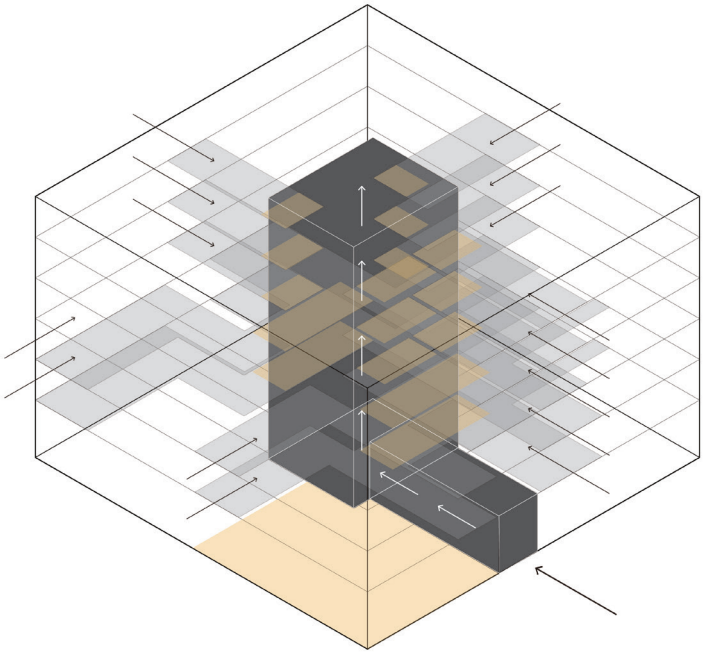
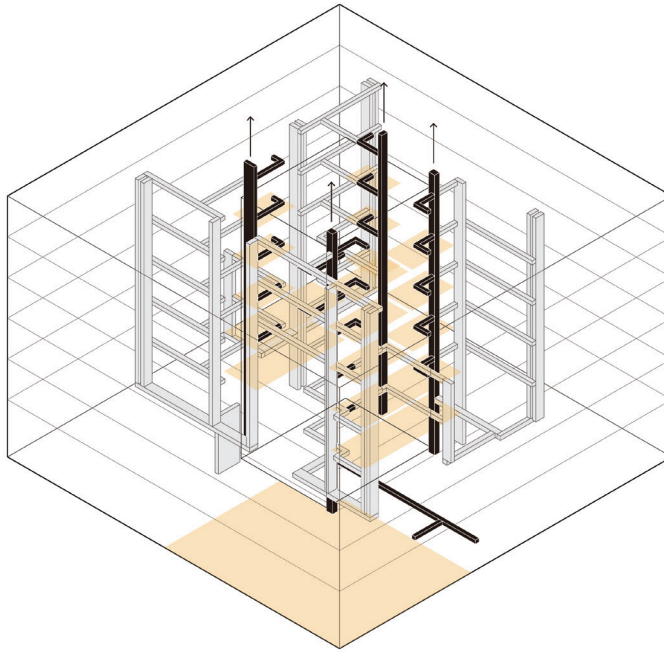


Fig. 63 Building System Diagram
Rainwater Collection & Irrigation



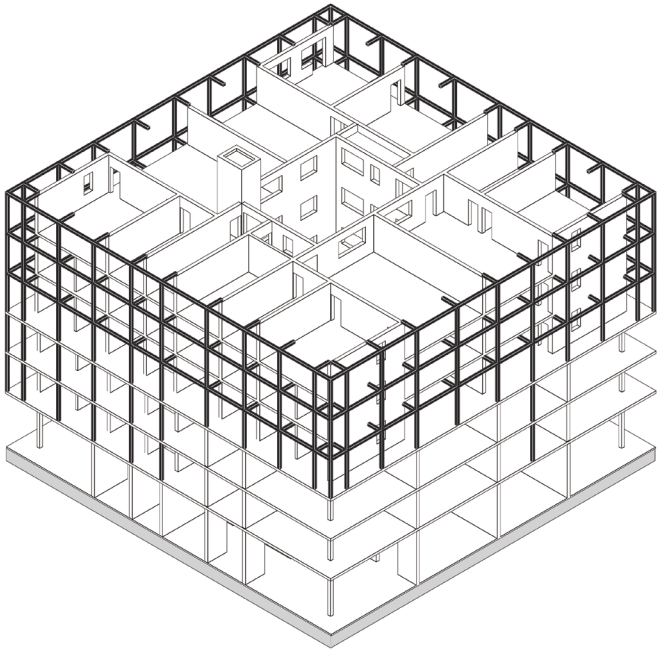
Circulation Core
Kitchen
Shared Living Room

Fig. 64 Building System Diagram
Natural Ventilation



Mechanical Exhaust
Kitchen
Shafts and Ventilations
from Bathrooms

Fig. 65 Building System Diagram
Mechanical Ventilation



Steel Structure
CLT
Strip Foundation

Fig. 66 Building Structure Diagram
Load Bearing Walls & Steel Structure

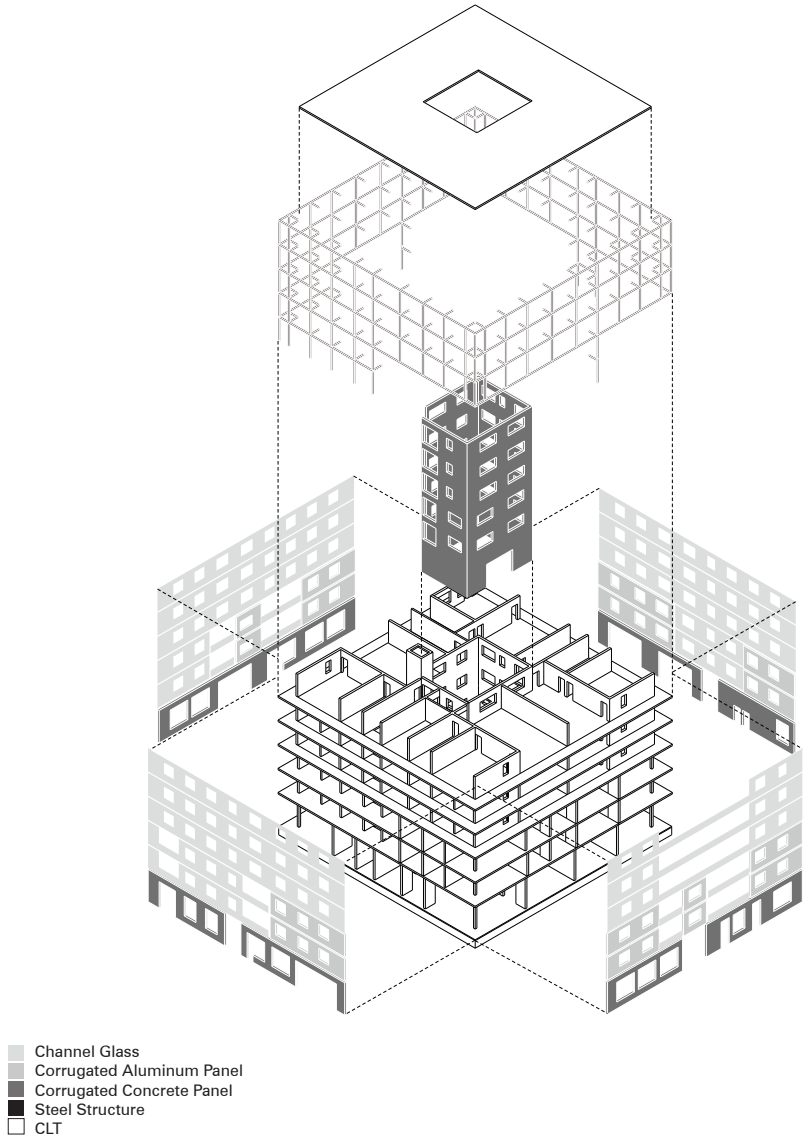


Fig. 67 Structure System & Material

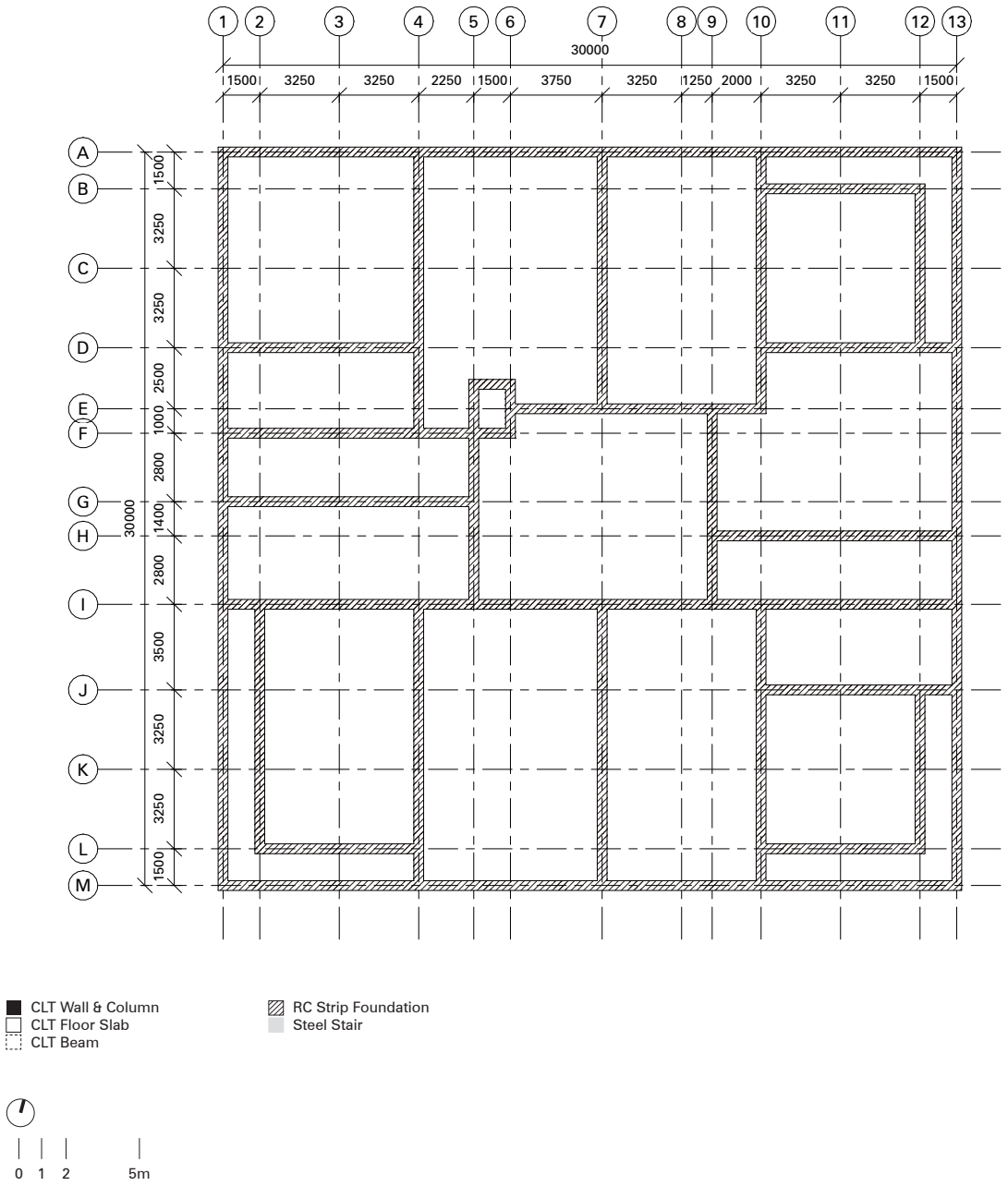
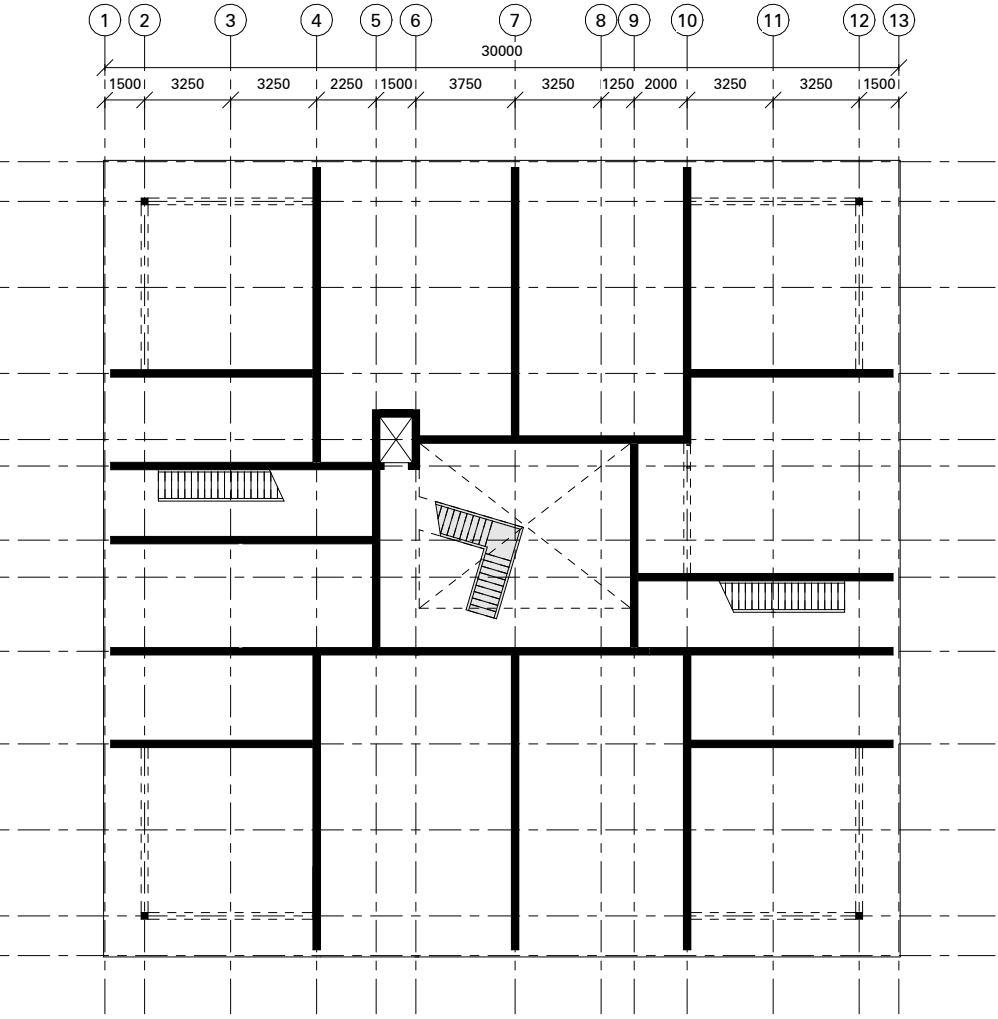


Fig. 68 Structure Plan
Foundation & GF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3750
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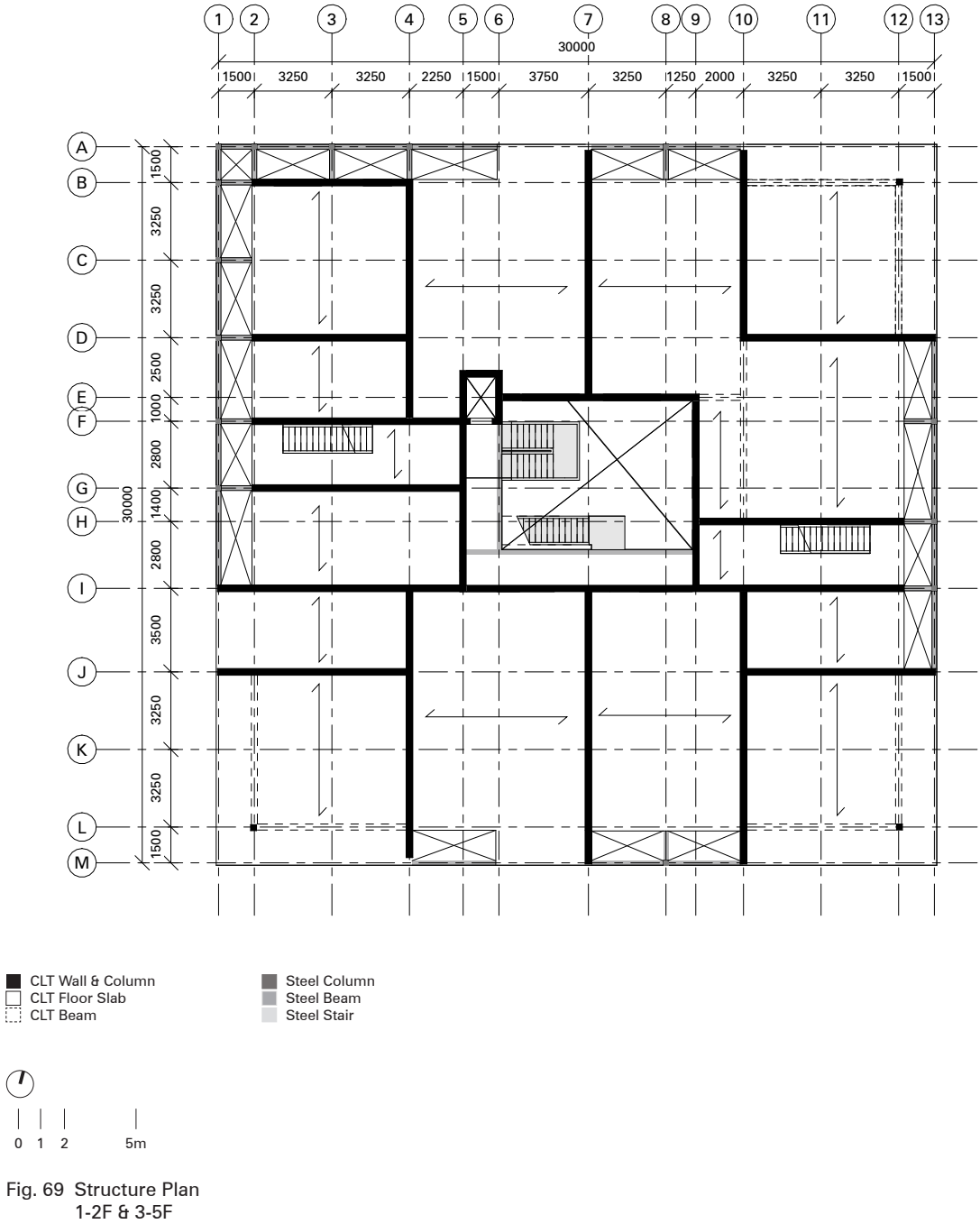
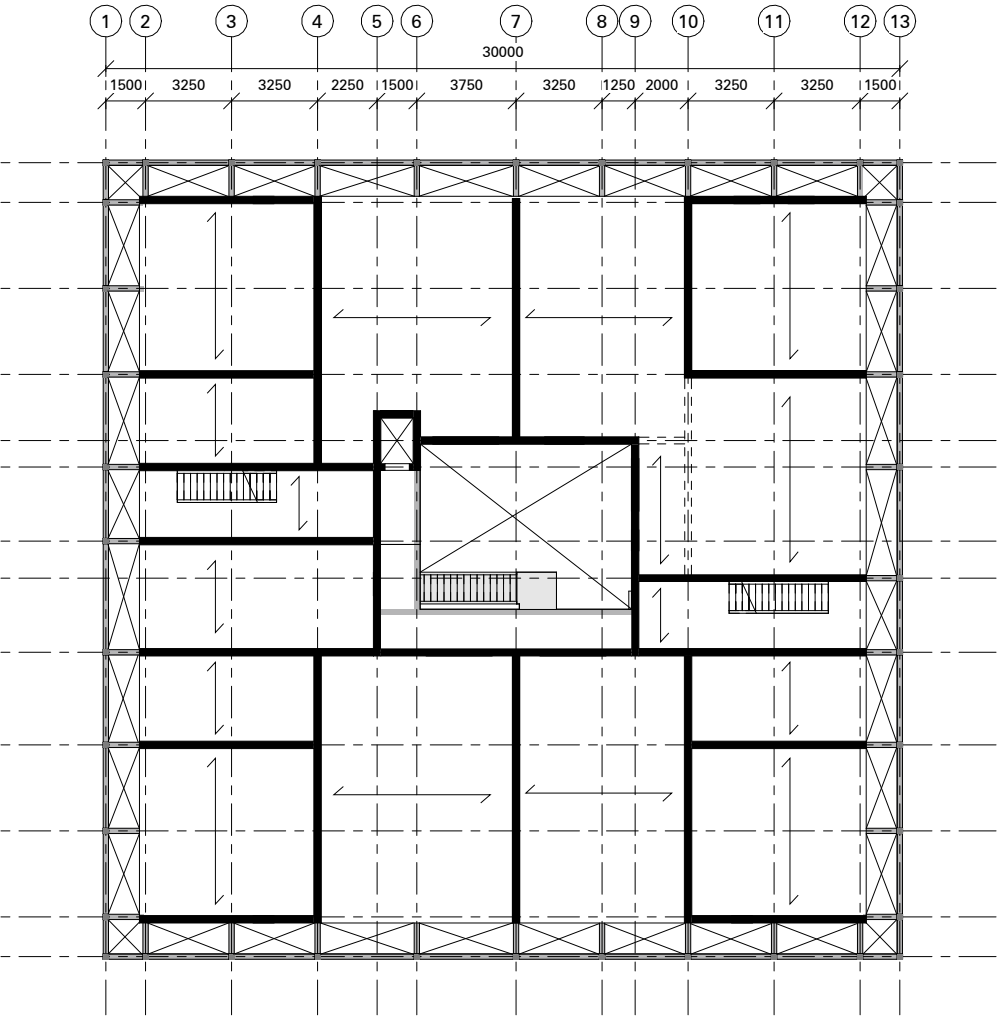


Fig. 69 Structure Plan
1-2F & 3-5F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1500
3250
3250
2250
1500
3750
3250
1250
2000
3250
3250
1500

Fig. 70 Three Buildings North Facade From Green Axis

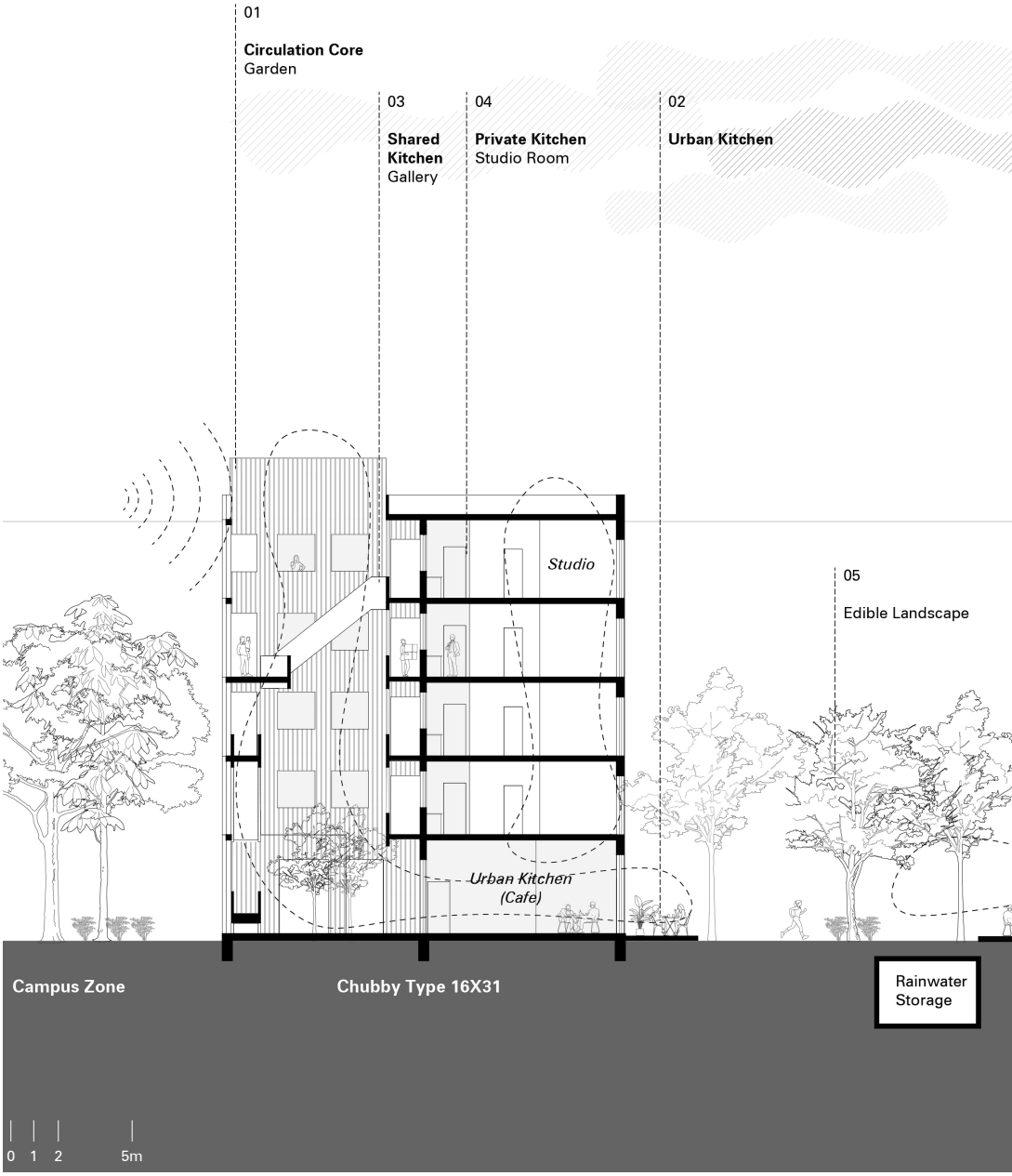
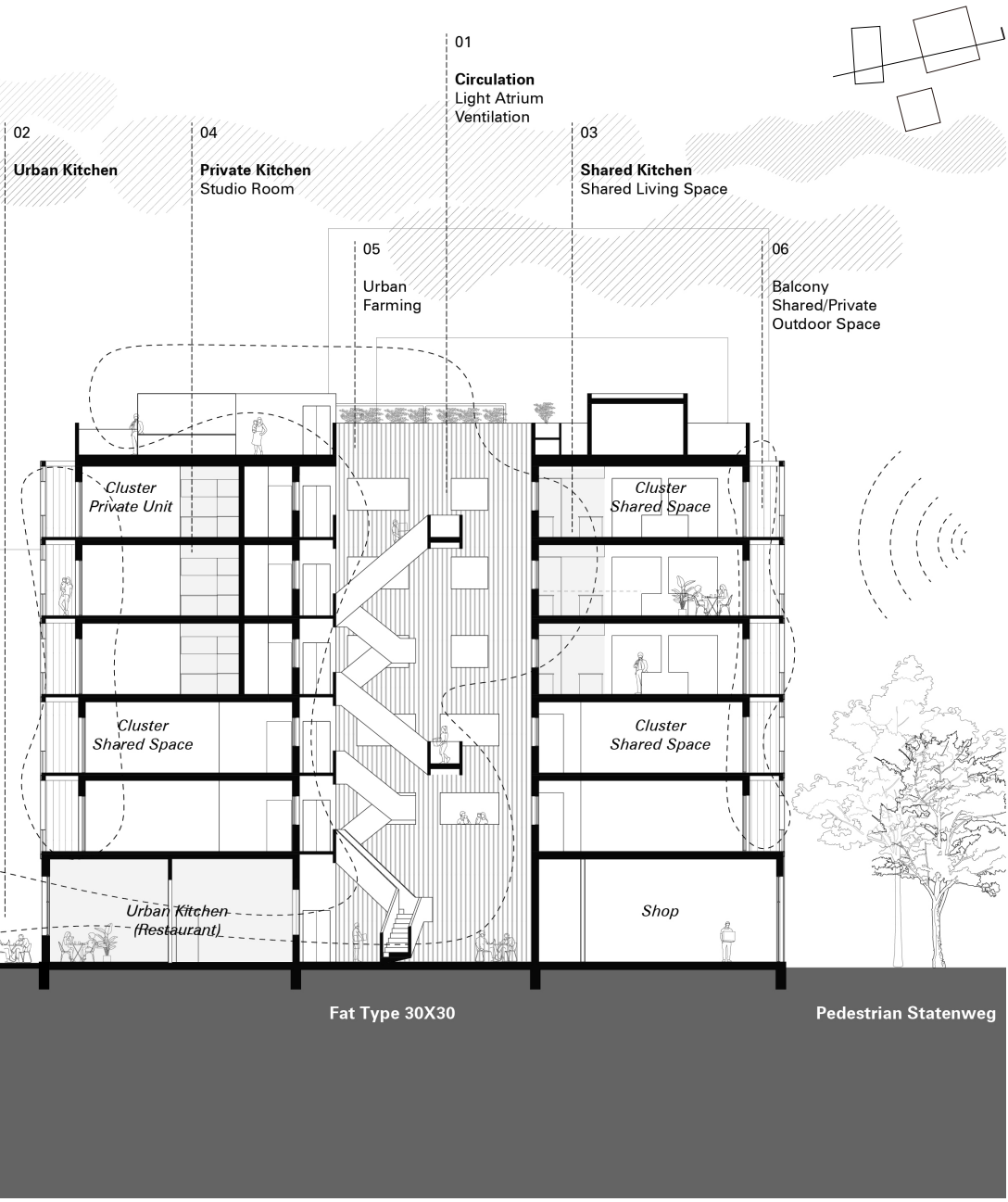


Fig. 71 East-West Section


01
Circulation
Light Atrium
Ventilation
02
Urban Kitchen
04
Private Kitchen
Studio Room
03
Shared Kitchen
Shared Living Space
05
Urban
Farming
06
Balcony
Shared/Private
Outdoor Space
Cluster
Private Unit
Cluster
Shared Space
Cluster
Shared Space
Cluster
Shared Space
Urban Kitchen
(Restaurant)
Shop
Fat Type 30X30
Pedestrian Statenweg

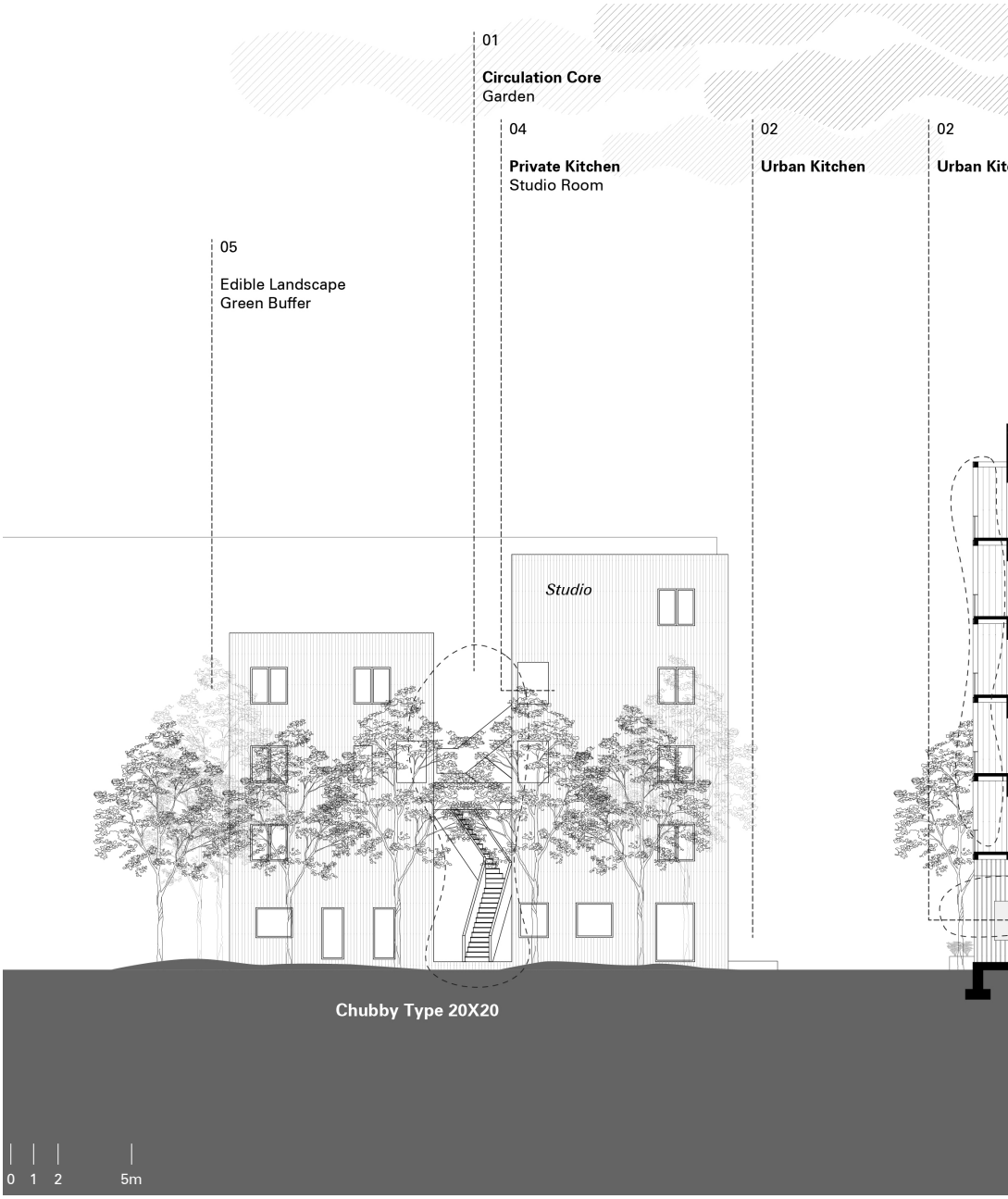
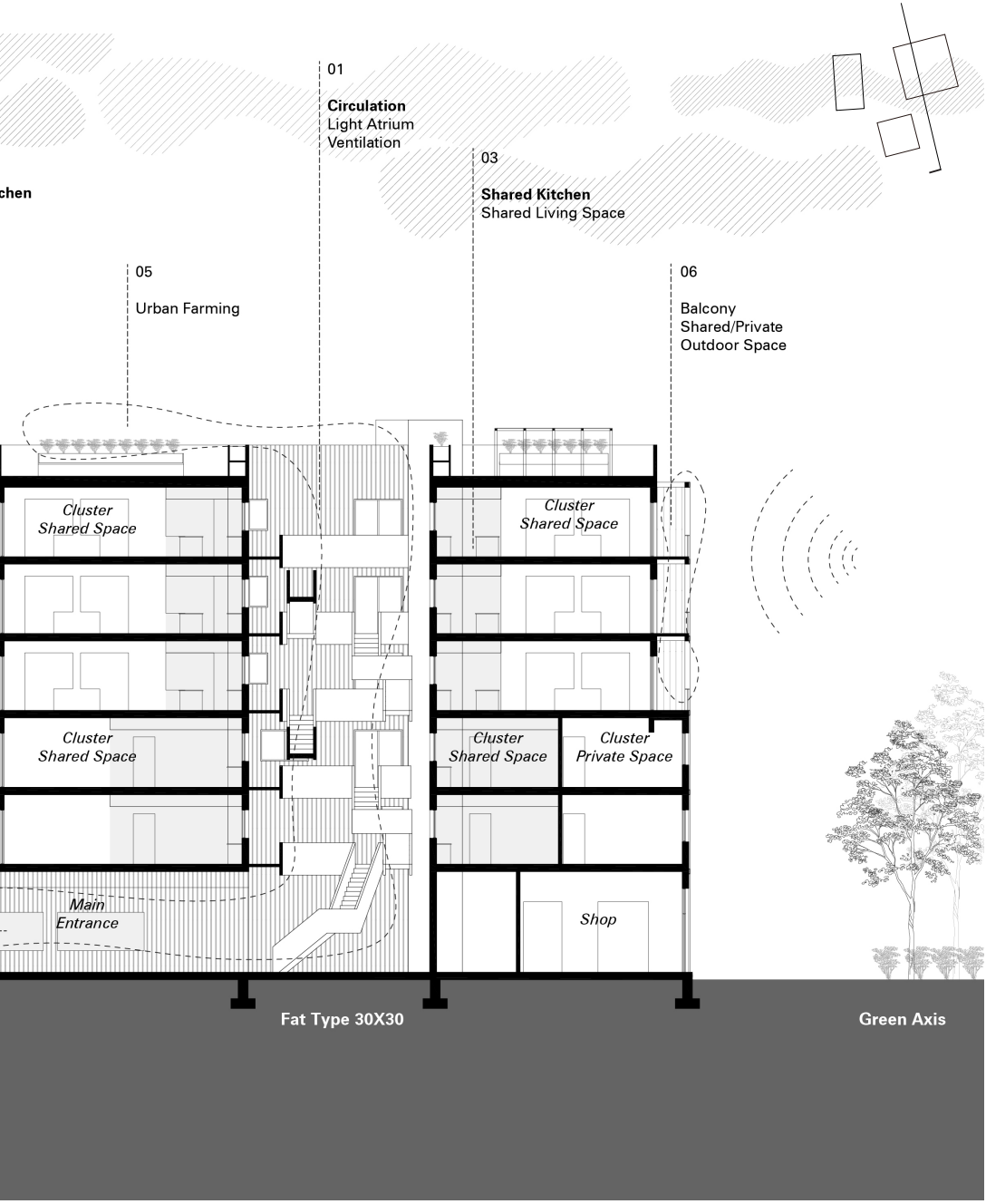


Fig. 72 North-South Section


01
Circulation
Light Atrium
Ventilation
03
Shared Kitchen
Shared Living Space
05
Urban Farming
06
Balcony
Shared/Private
Outdoor Space
Cluster
Shared Space
Cluster
Shared Space
Cluster
Shared Space
Cluster
Shared Space
Cluster
Private Space
Main
Entrance
Shop
Fat Type 30X30
Green Axis

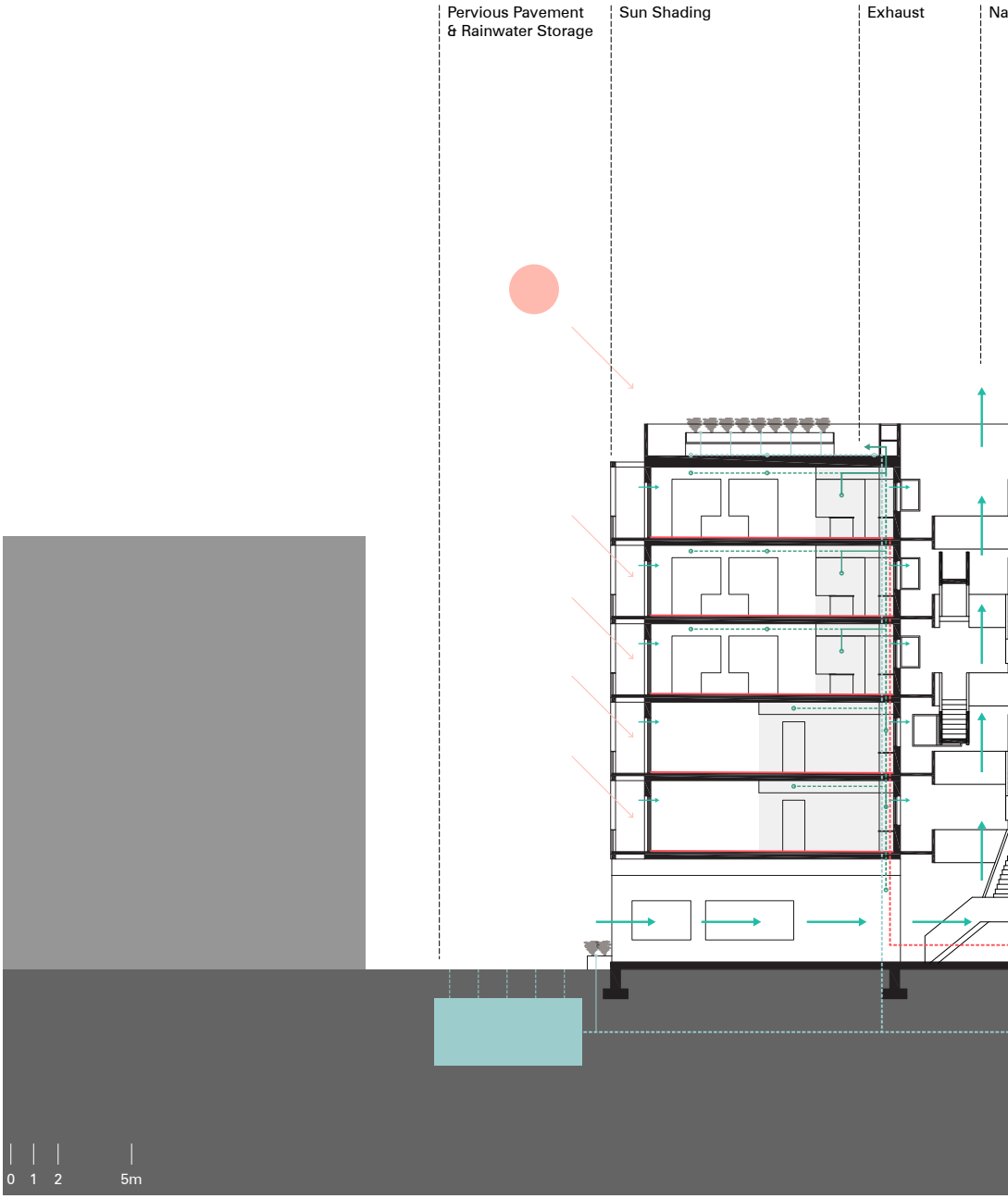


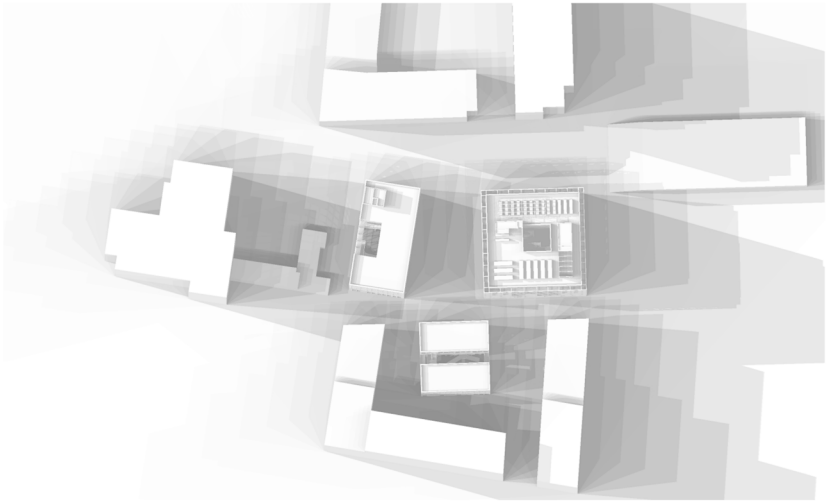
Fig. 73 Sustainable Strategy

tural Ventilation

Collection
& Irrigation

Heating System

1



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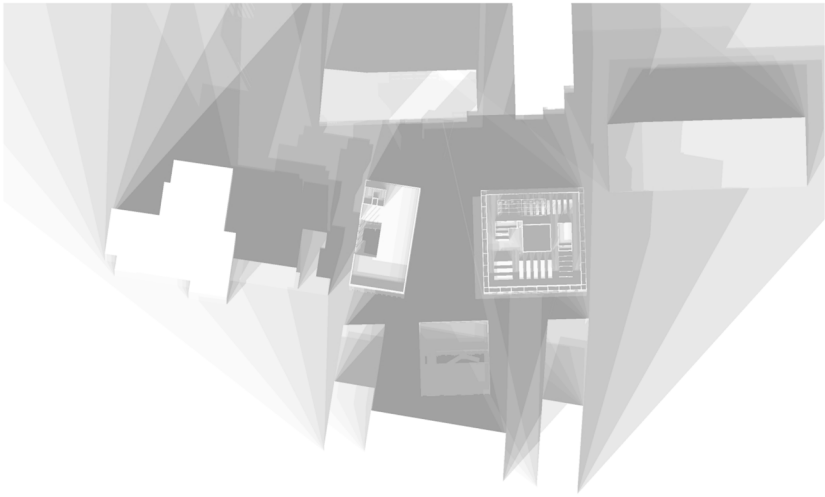
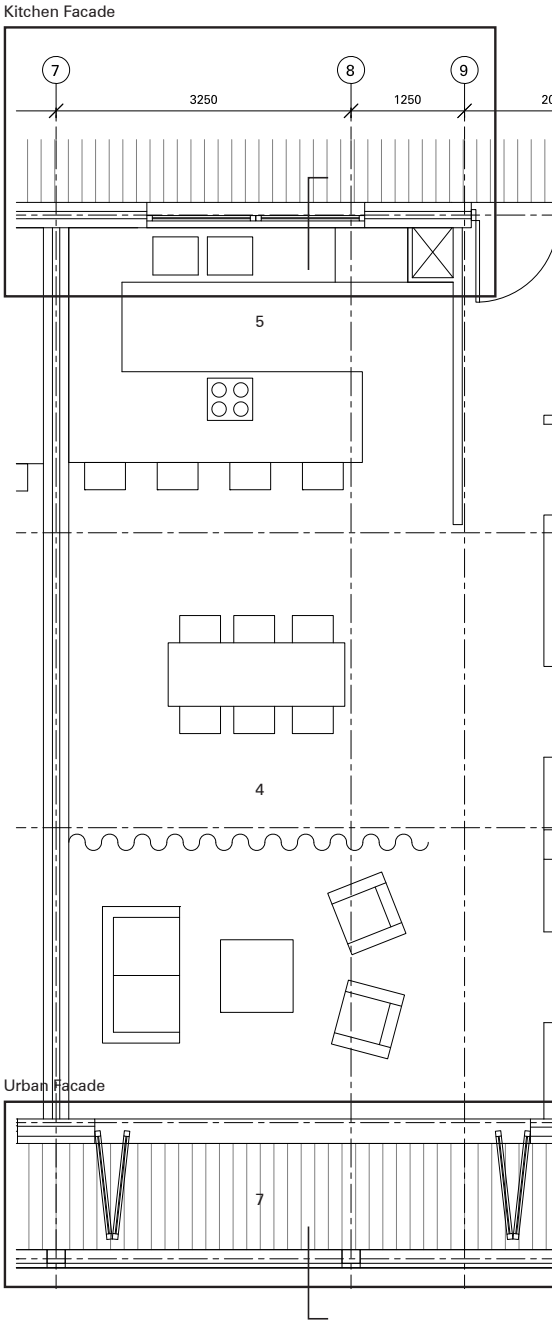
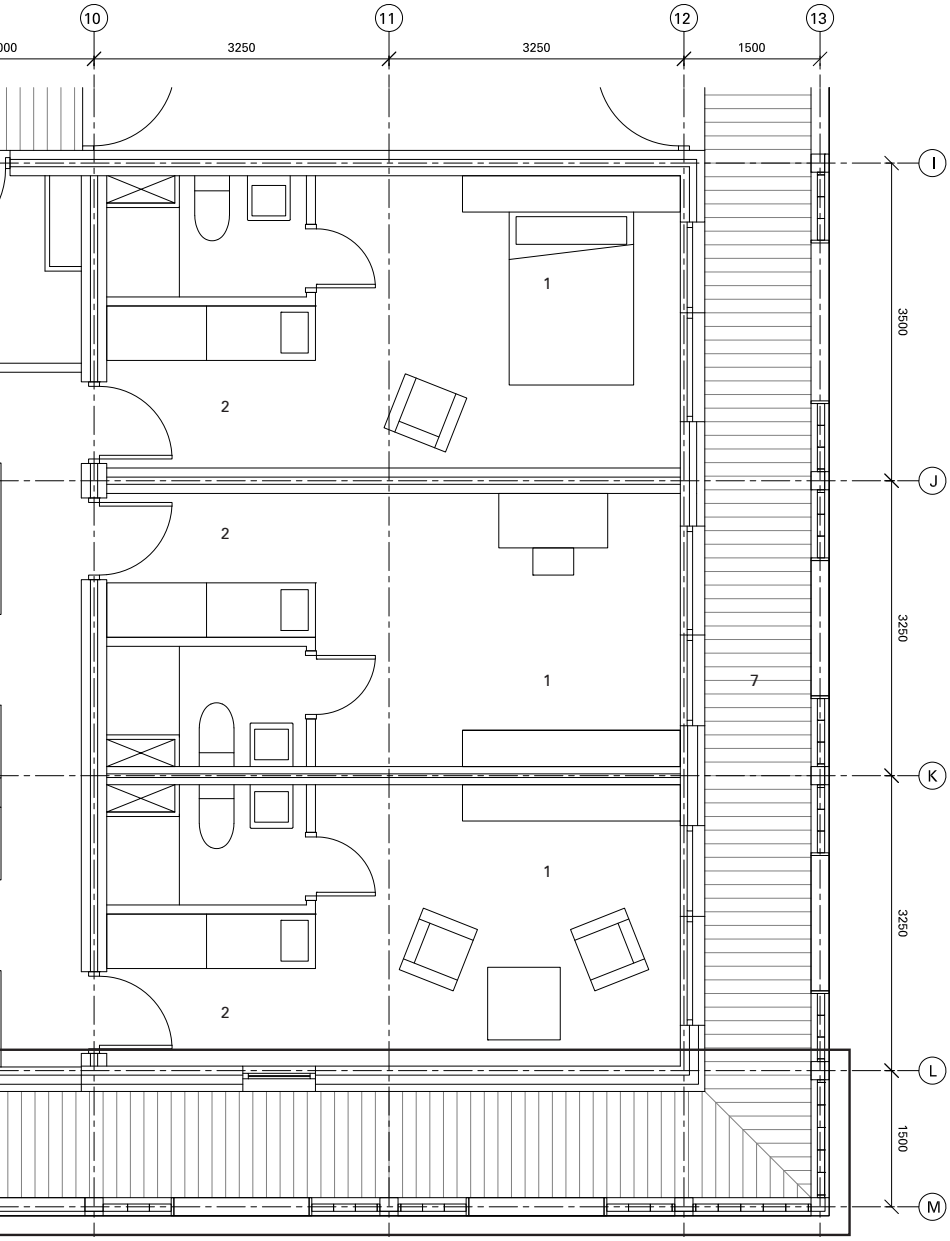


Fig. 74 Sun Shading Study
1) July 2) January



1 Private Living Space
2 Private Kitchen
3 Transitional Space
4 Shared Living Space
5 Shared Kitchen
6 Circulation Space
7 Balcony

Fig. 75 Fat Type Housing Type
3-5F 3-Units Cluster Apartment Detailed Floorplan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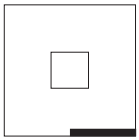
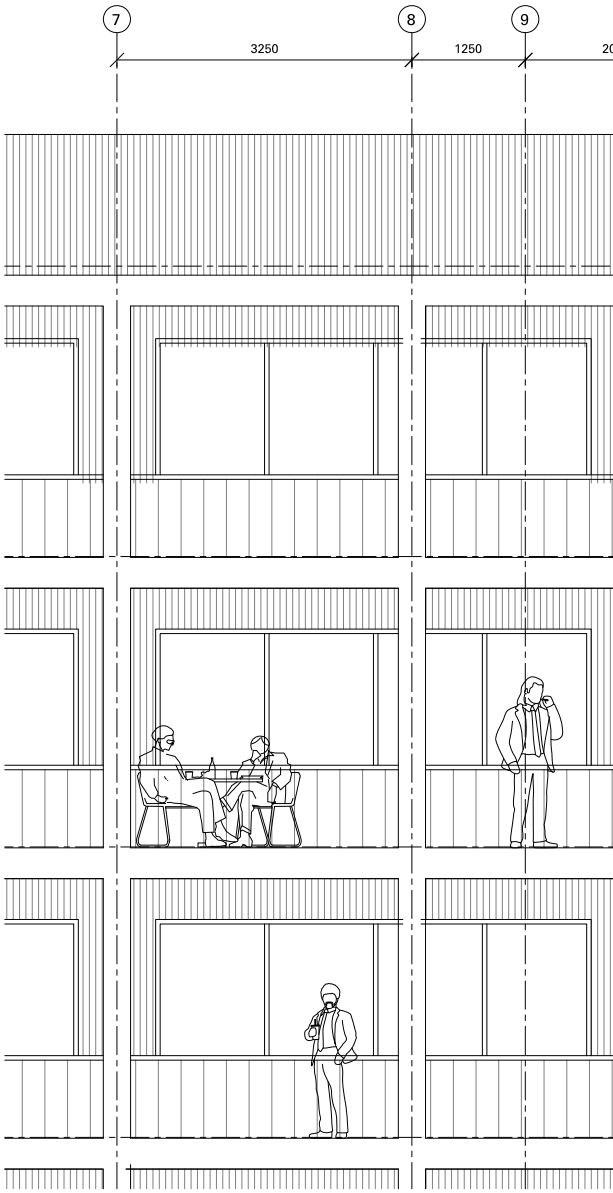
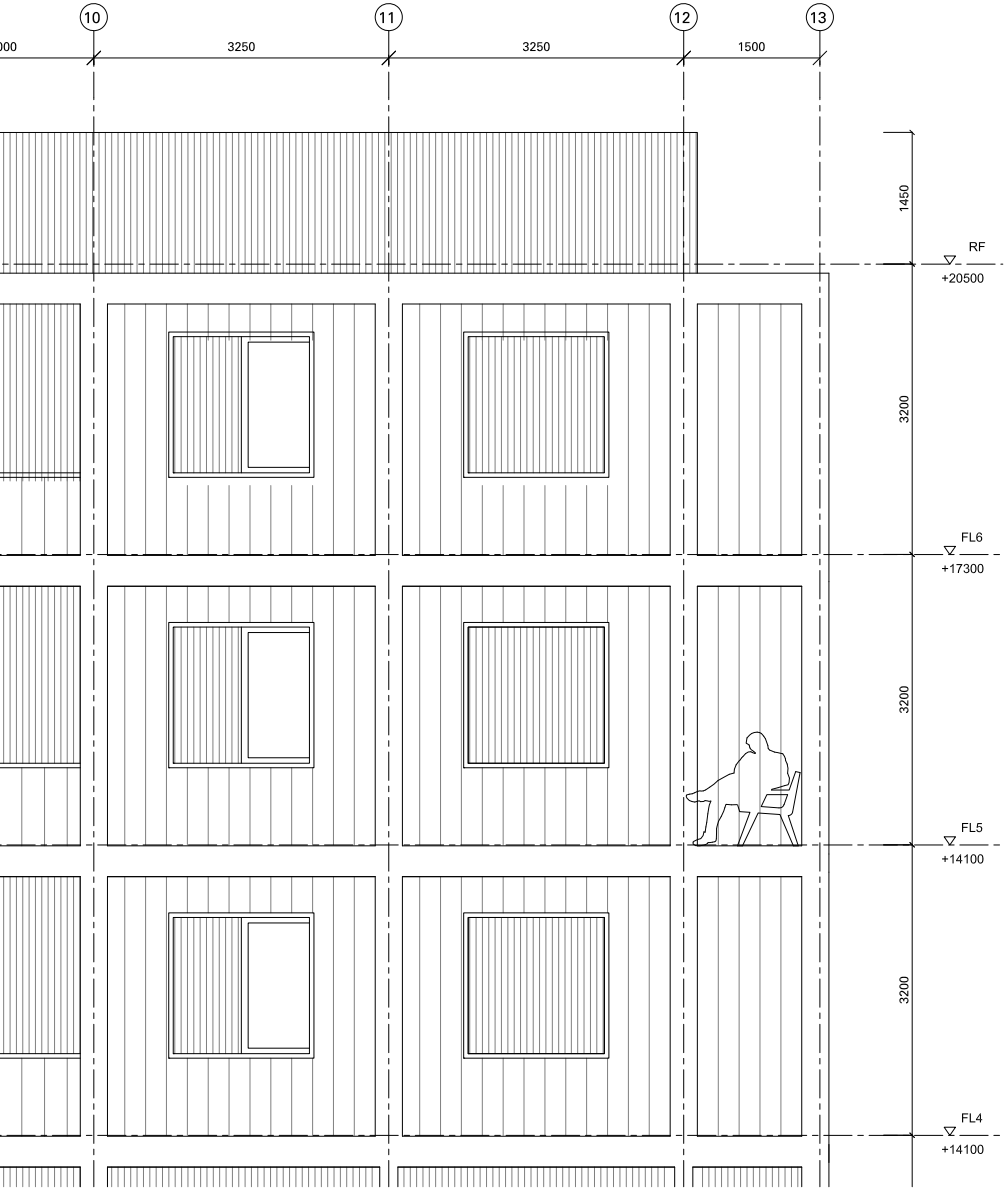




0 0.5 1 2m

Fig. 76 Fat Type Cluster Apartment Facade (3-RF)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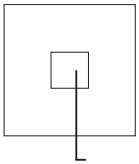
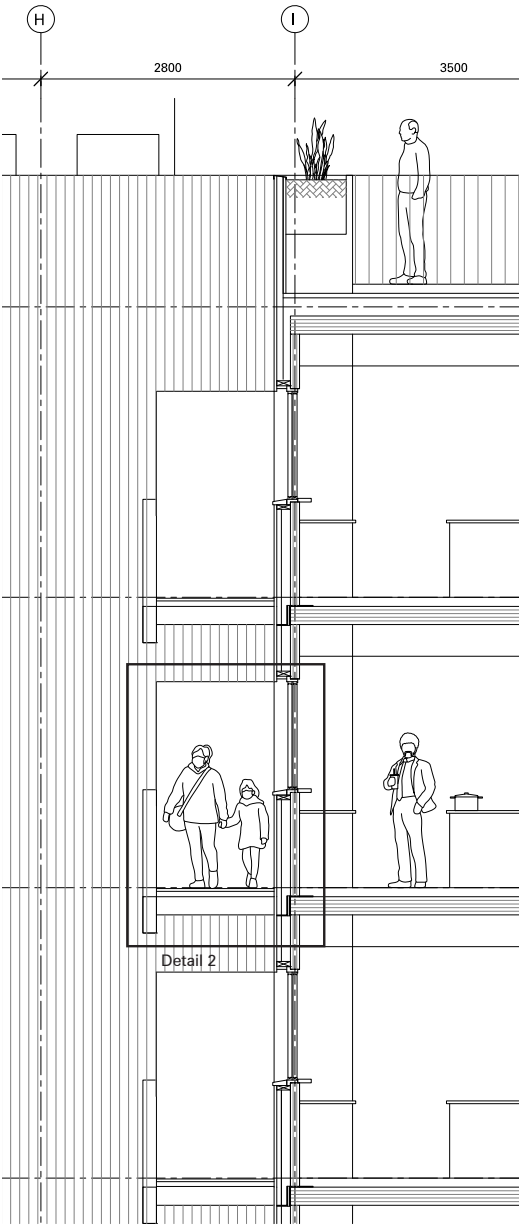
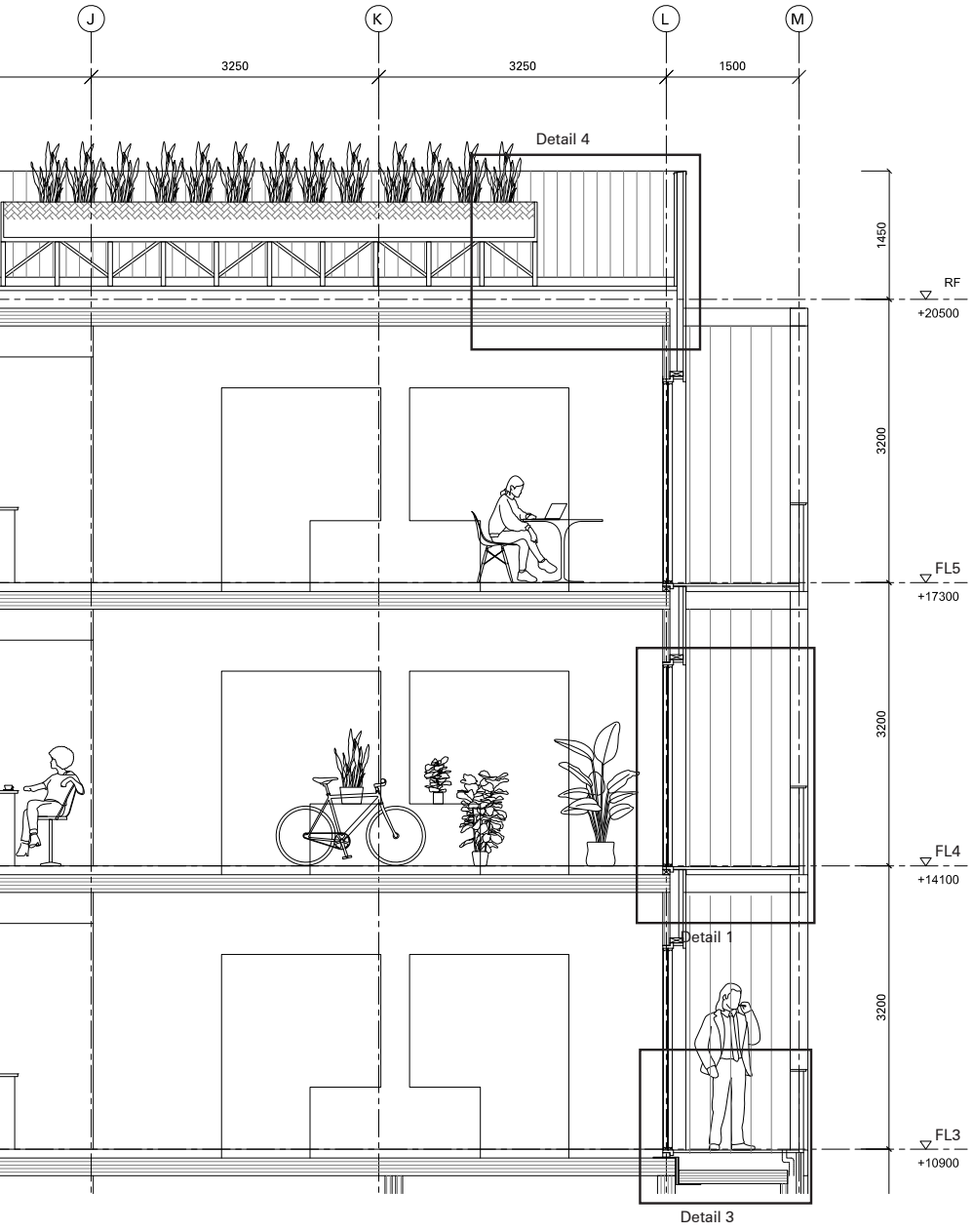




0 0.5 1 2m

Fig. 77 Fat Type Cluster Apartment Section (3-RF)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Detail 1
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FL3
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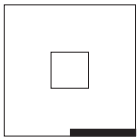
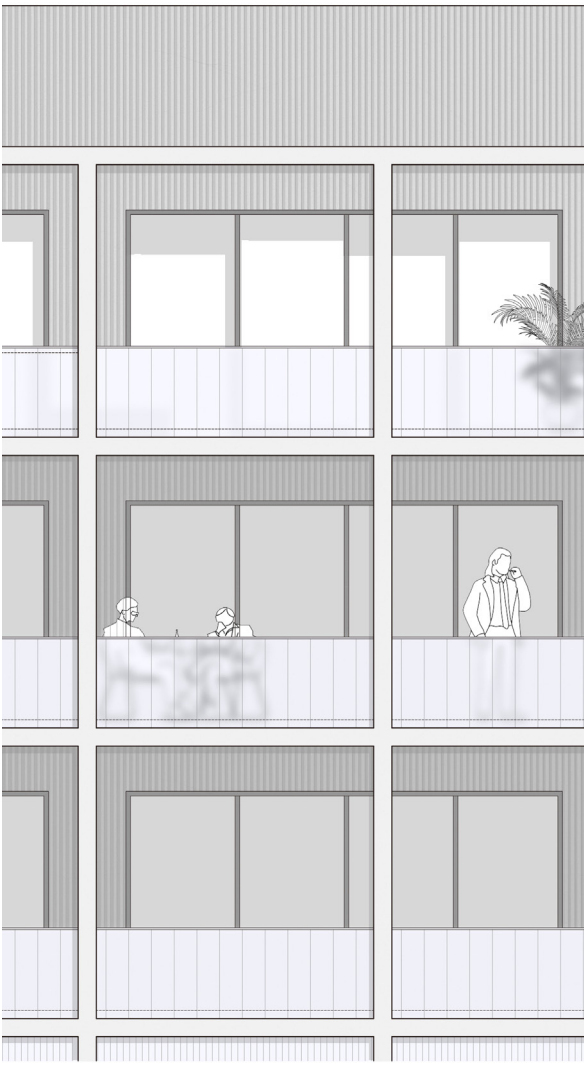
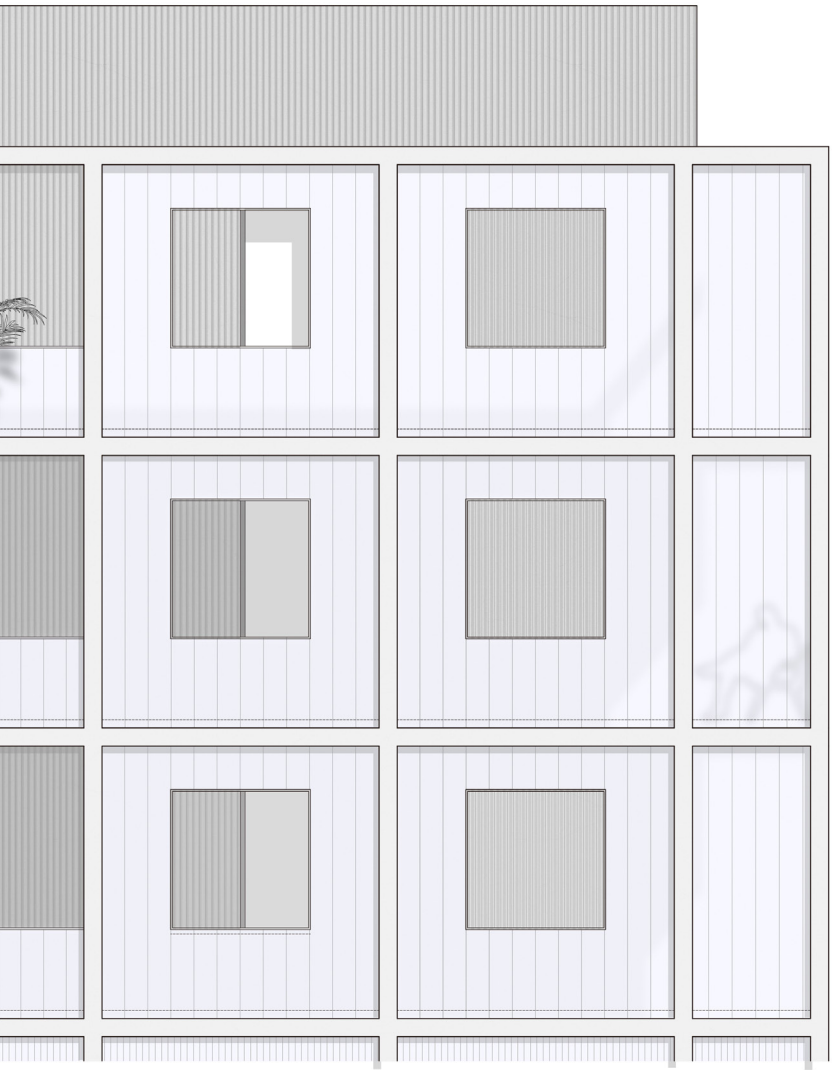
Detail 3





0 0.5 1 2m

Fig. 78 Facade Fragment:
Urban Facade (South)



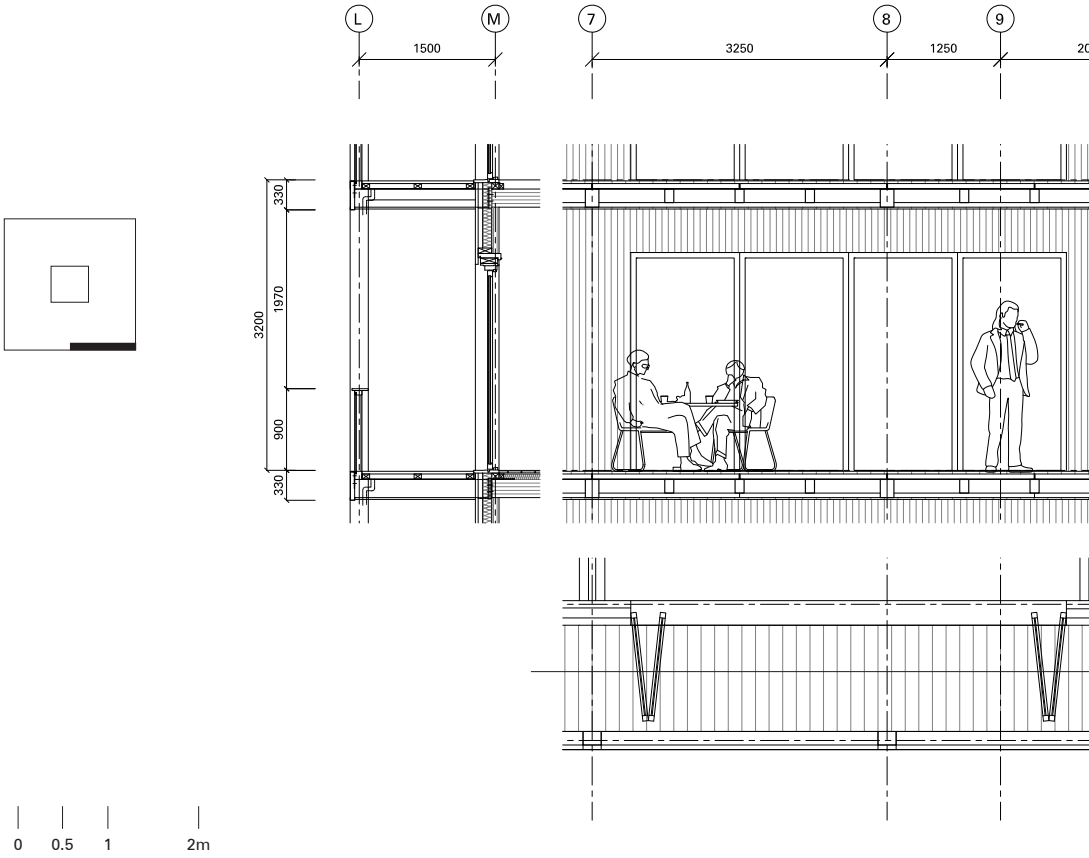
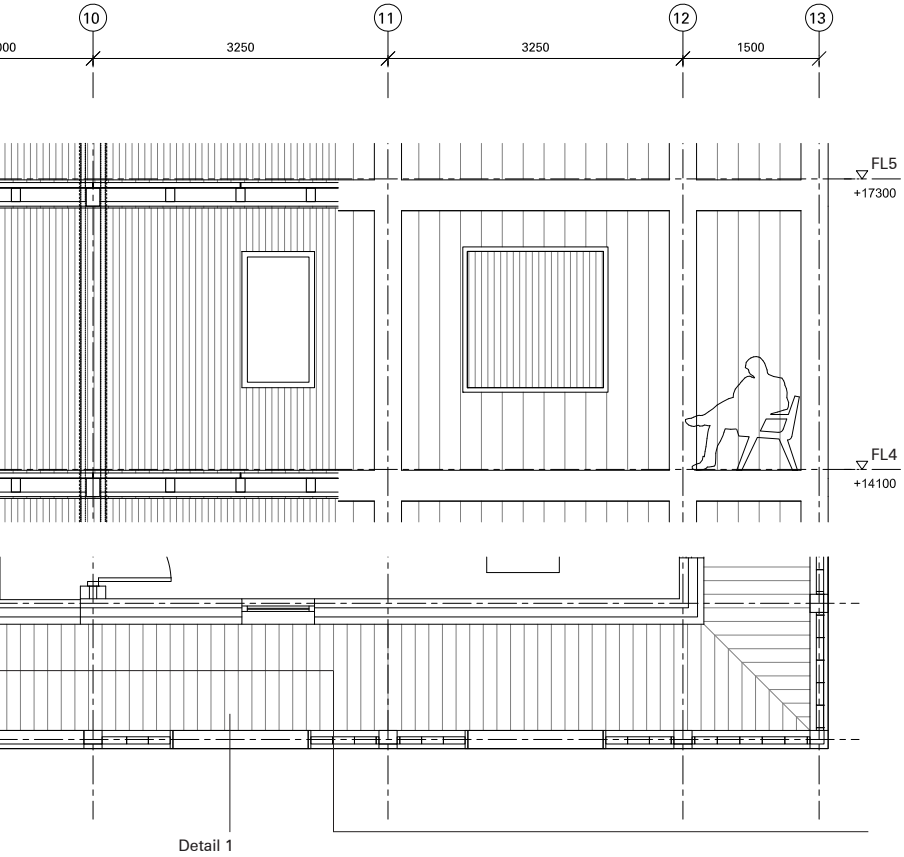


Fig. 79 Facade Fragment:
Urban Facade (South)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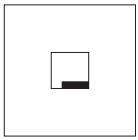
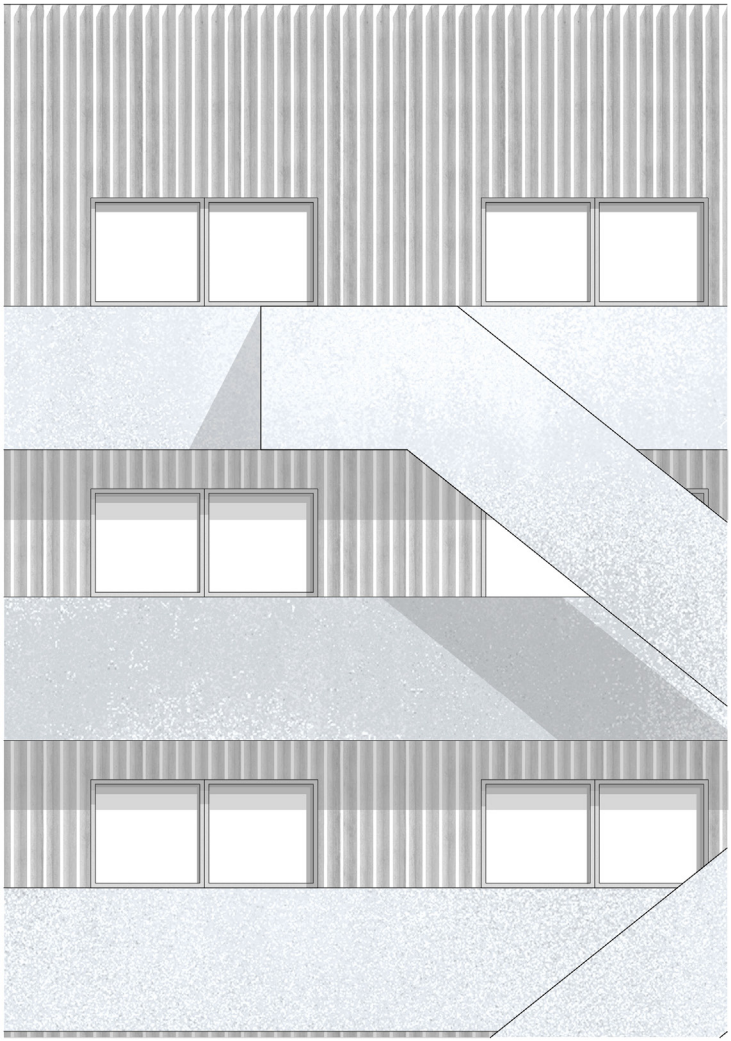
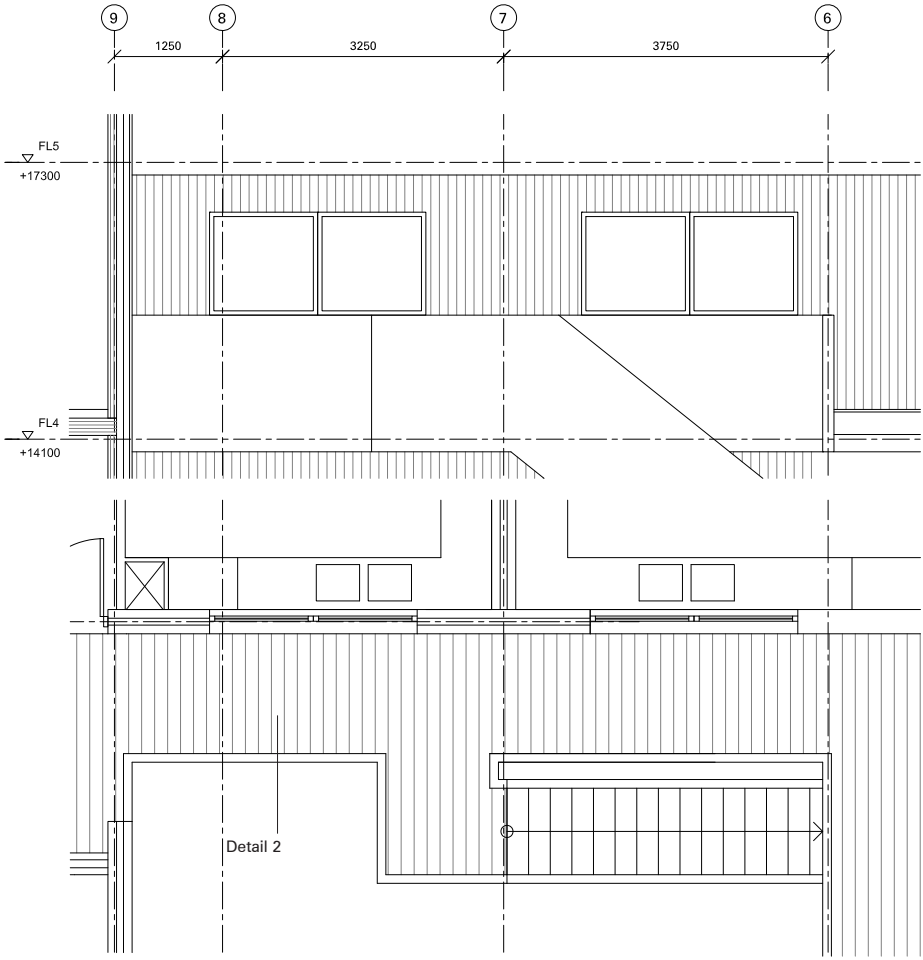
Detail 1





0 0.5 1 2m

Fig. 80 Facade Fragment:
Kitchen Facade (South)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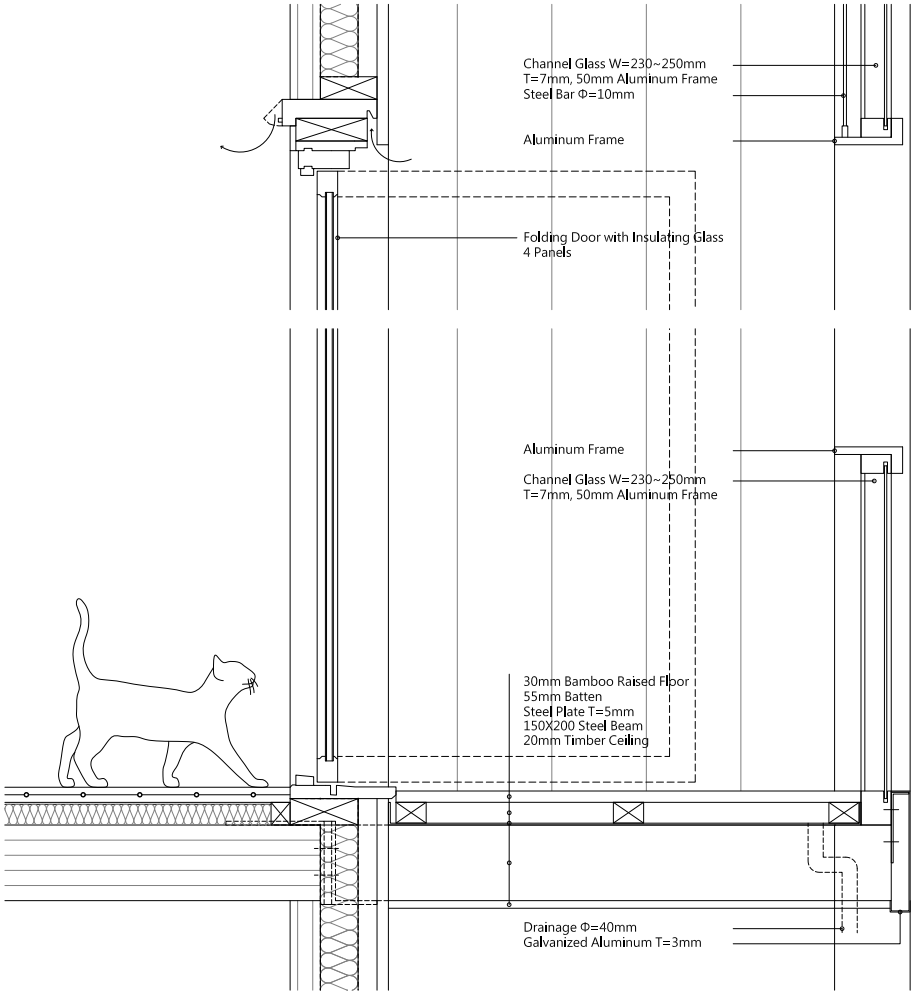
Detail 2



0 0.1 0.2 0.5m

Fig. 81 Wall Detail 1_ Balcony (Gallery)

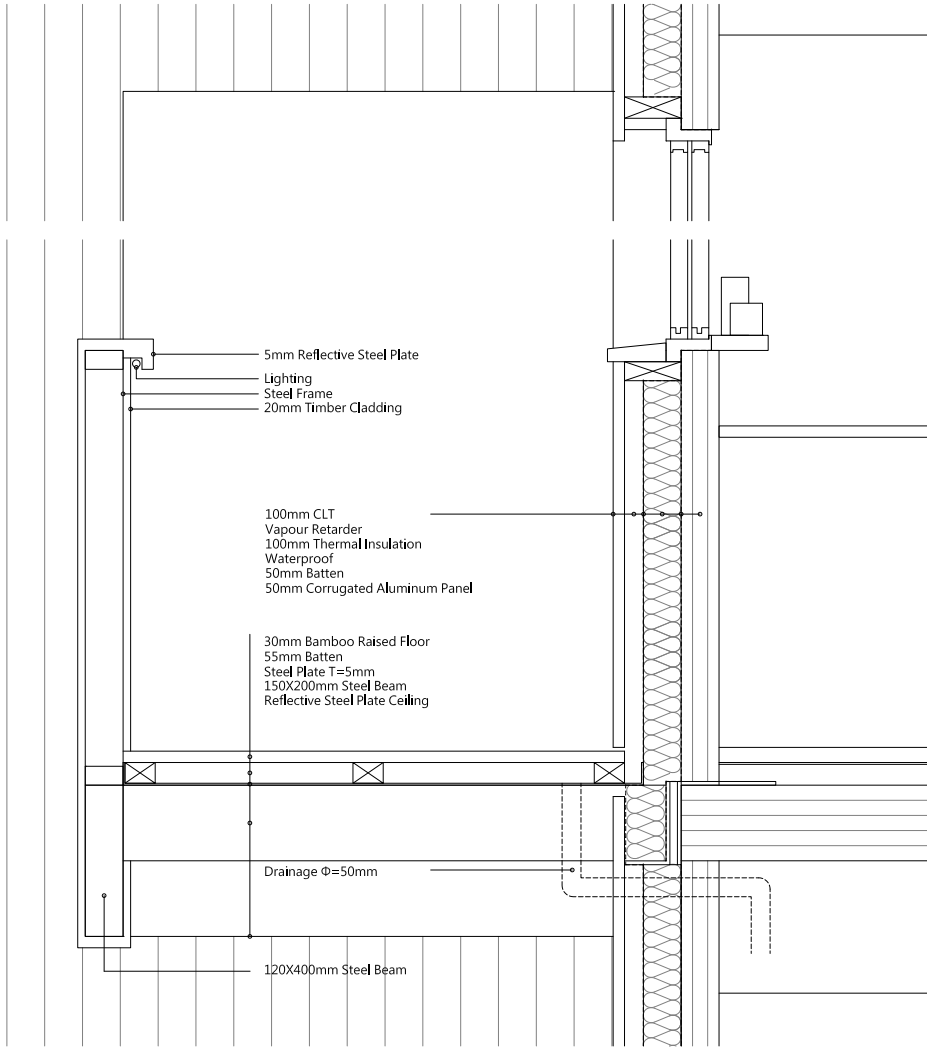
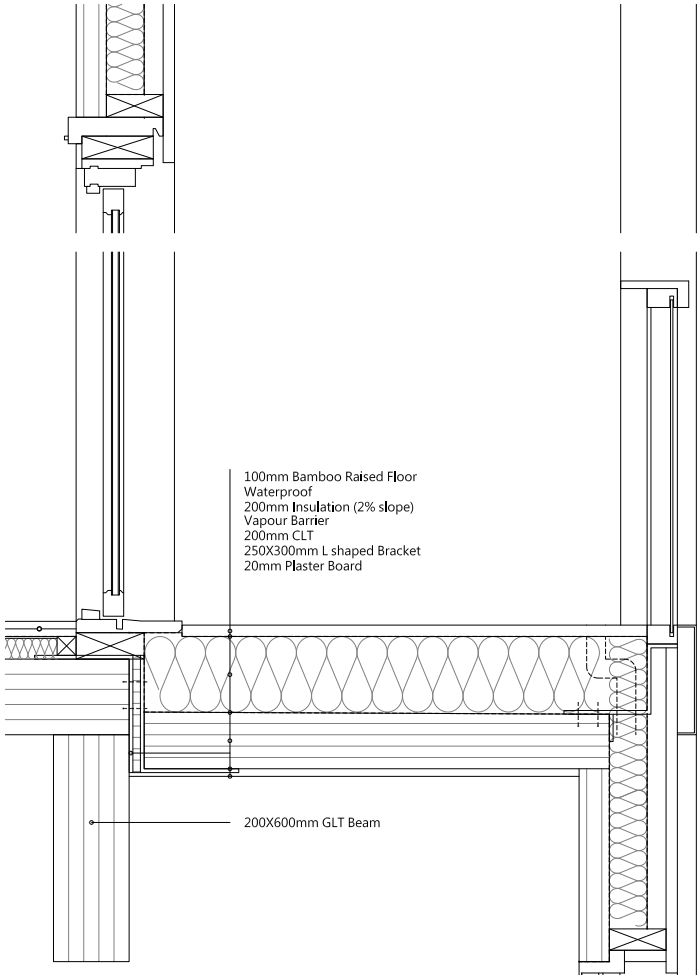


Fig. 82 Wall Detail 2_ Balcony on Kitchen Facade



0 0.1 0.2 0.5m

Fig. 83 Wall Detail 3_ Balcony on top of Interior Space

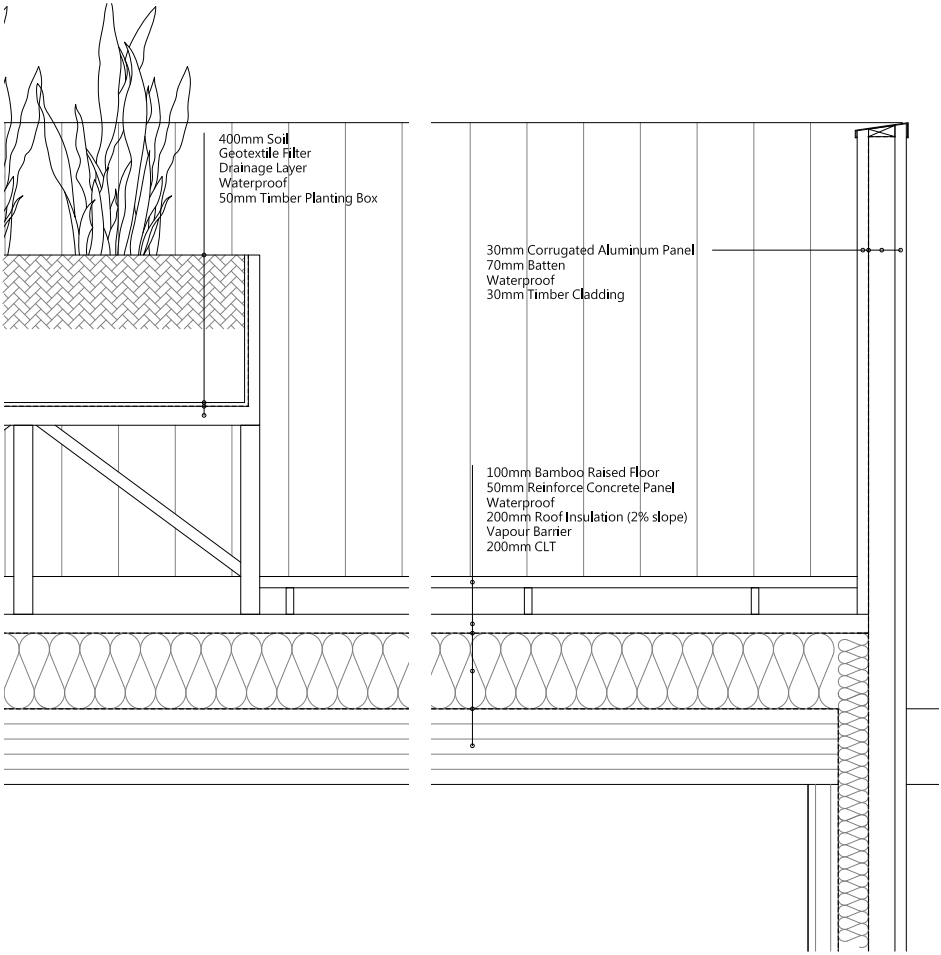
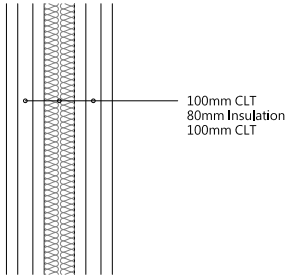
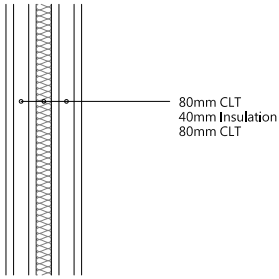


Fig. 84 Wall Detail 4_Roof

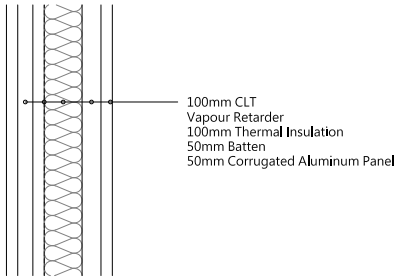
280mm
Load Bearing Demising Wall



200mm
Non-Load Bearing Demising Wall



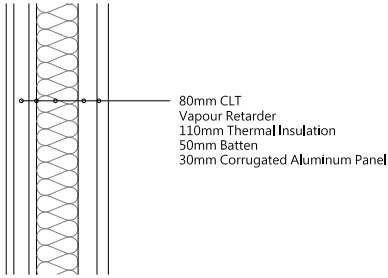
300mm
Load Bearing External Wall



0 0.1 0.2 0.5m

Fig. 85 Typical Detail
CLT Walls and Floor

270mm
Non-Load Bearing External Wall



300mm
Floor with Floor Heating System

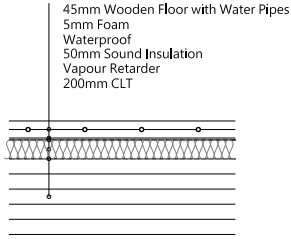
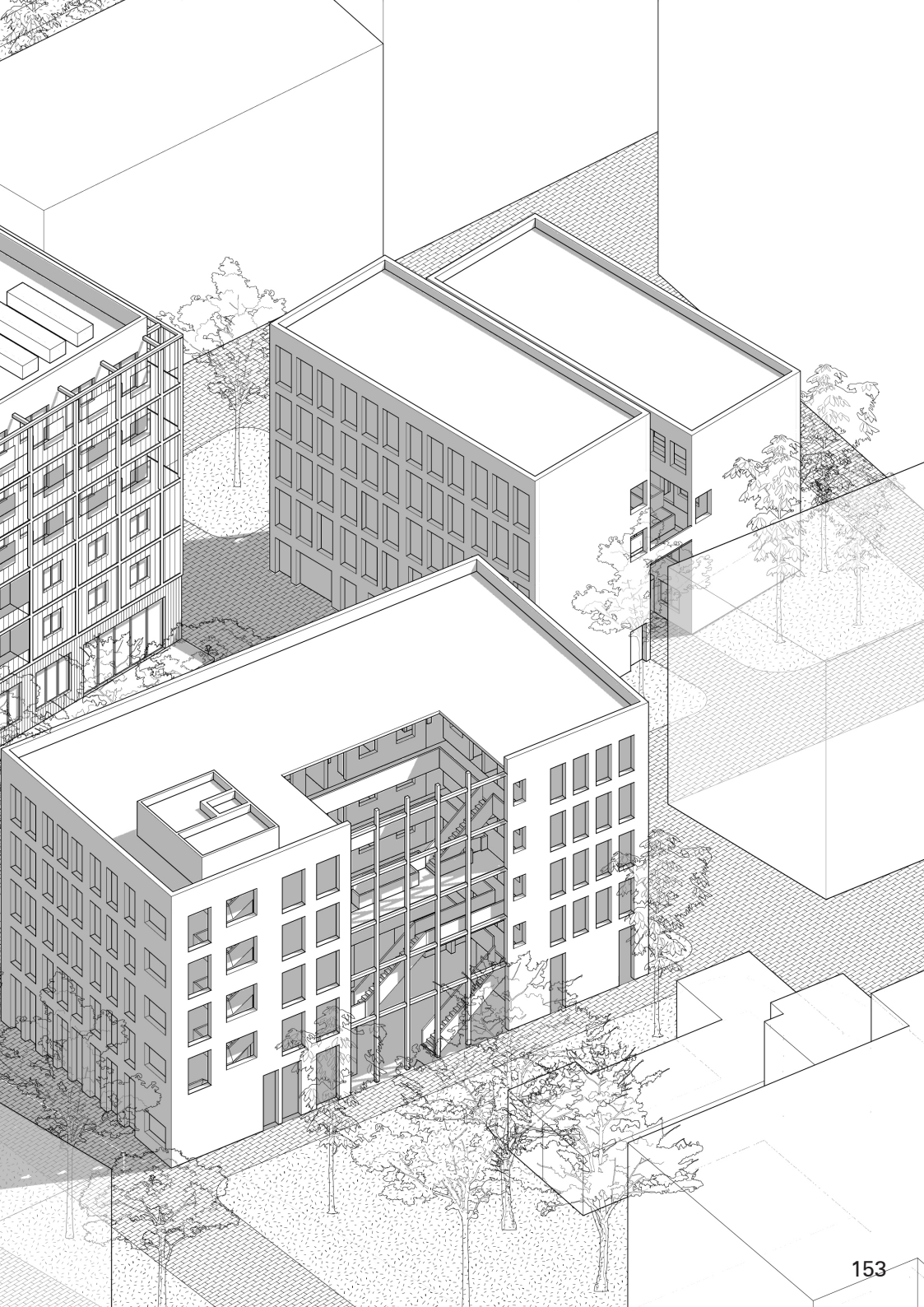


Fig. 86 Urban Facade Balcony Impression

Fig. 87 Kitchen Facade Corridor Impression

Fig. 88 Isometric View



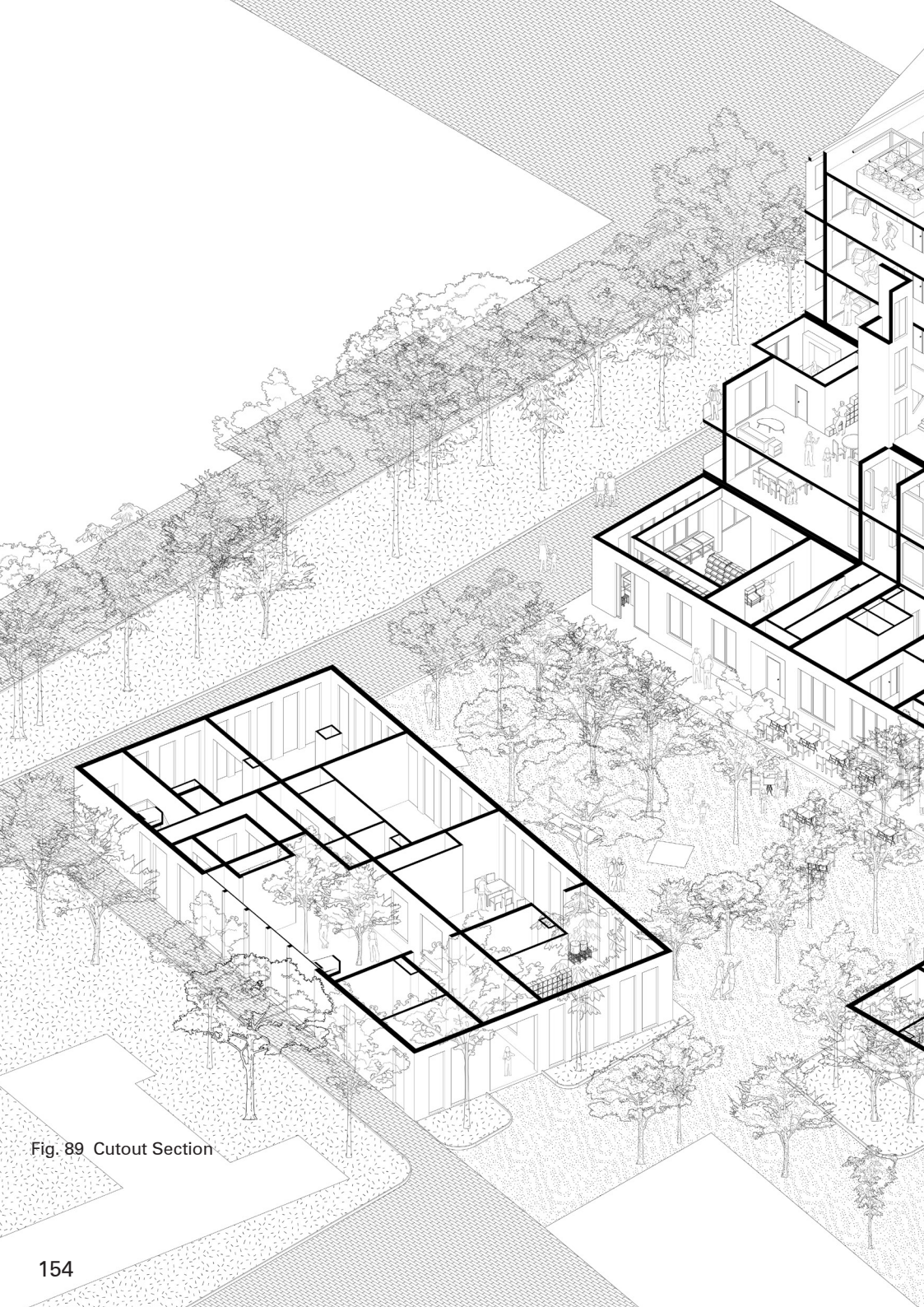
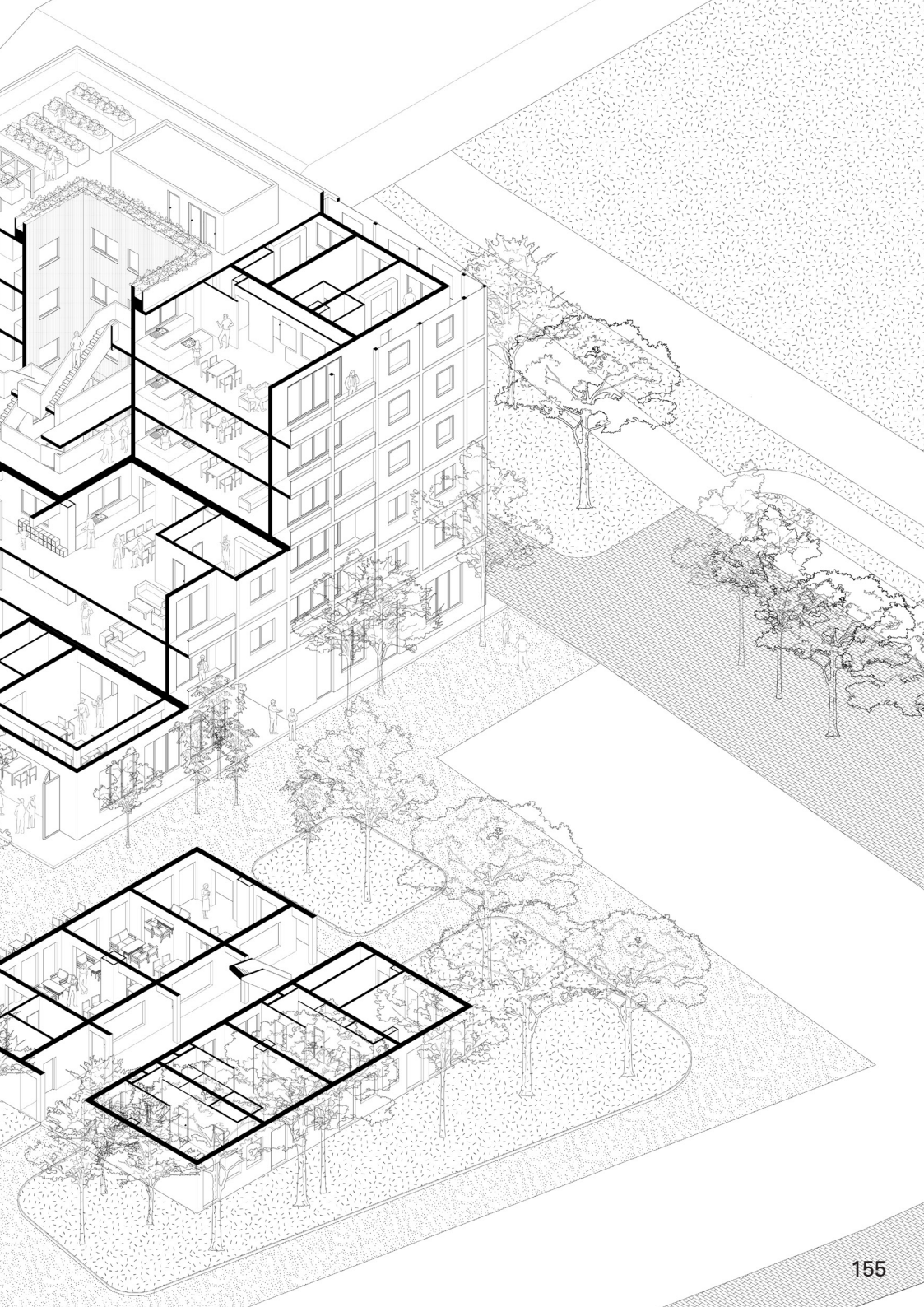


Fig. 89 Cutout Section



06

Graphic Novel

The graphic novel is introduced in the conceptual design stage to visualize the key spaces in the project. Through the protagonists, mainly the dwellers, the graphic novel provides insights on how the spaces are used. Furthermore, the graphic novel intends to depict relationships between power player and other characters.

The main character of the graphic novel is Lucy, a single parent with her daughter Lisa. Together they moved into the cooperative housing after Lucy's divorce, and they share a cluster apartment with a young professional Elke. The story took places on a Sunday, when the urban kitchen is open for people to cook and dine together. The social event "Urban Lunch" serves as a social support for the city of Rotterdam. During the "Urban Lunch", a man named James came to apply for moving into the vacant dwelling unit in Lucy and Elke's household. Everyone talked to James, because he needs to be accepted by all of them to join the cooperative. The selection went smooth, yet the conversations between Lucy and other dwellers suggested the process could be very biased and exclusive. The story showcases the idea the three kitchens, the carefully designed circulation space, and the power structure of cooperative housing.

The second part of the graphic novel depicted the complex 30 years after it was built. Lucy's housemate, Elke, introduced her son Neo to the cooperative and hoping him could move in the future. The story highlighted the achievement of the project, and the dilemma of having a life of sharing where privacy became a challenge.

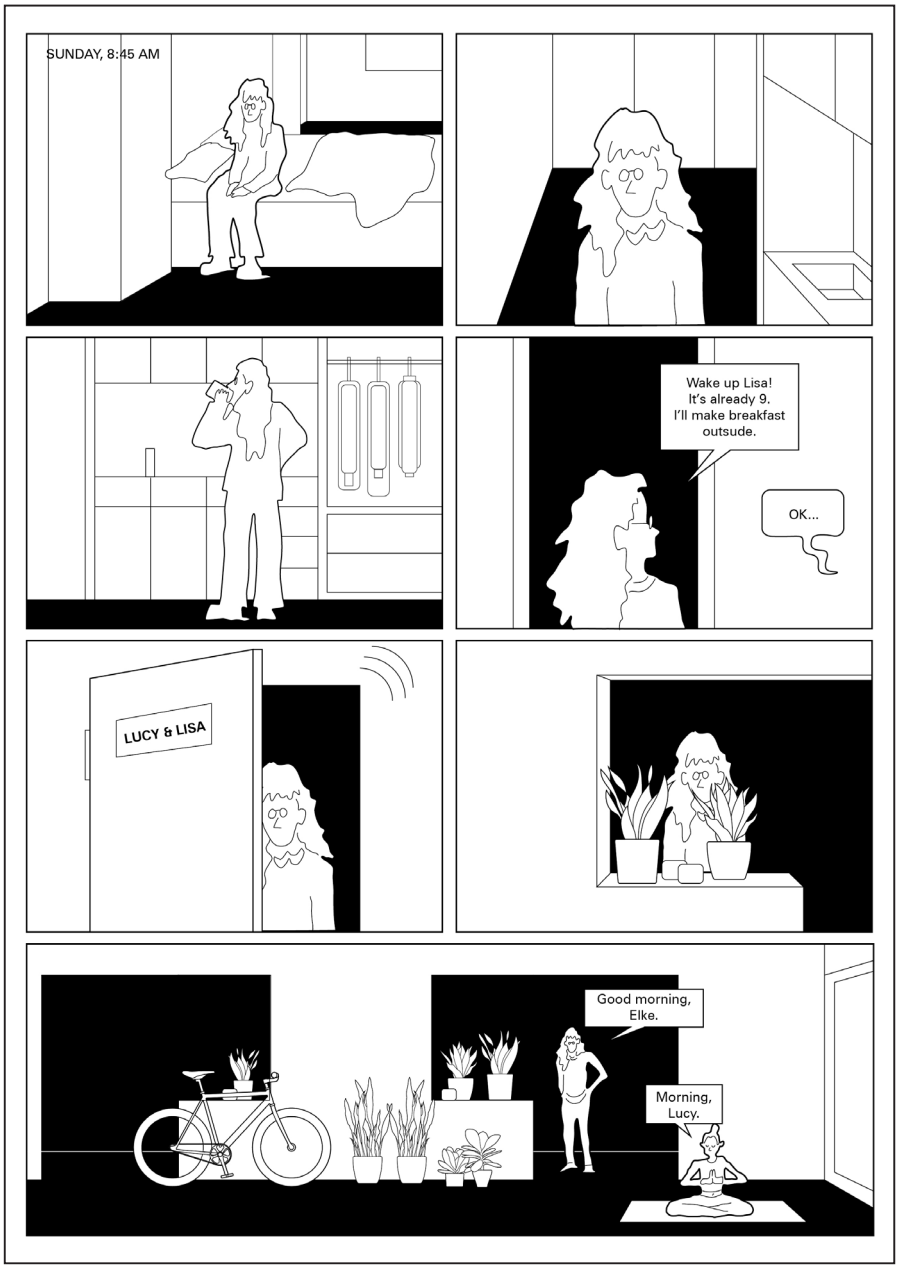


Fig. 90 Page 1, Graphic Novel

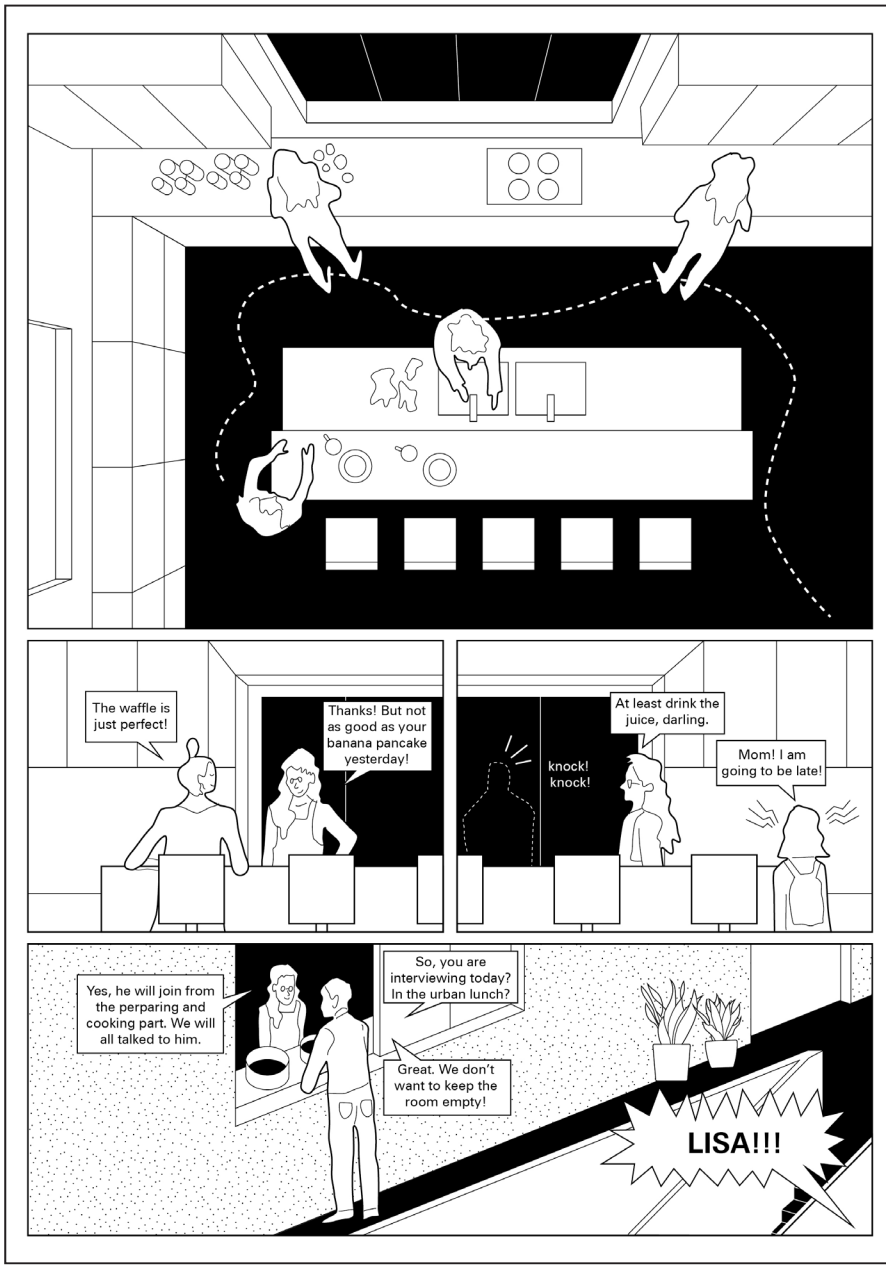


Fig. 91 Page 2, Graphic Novel

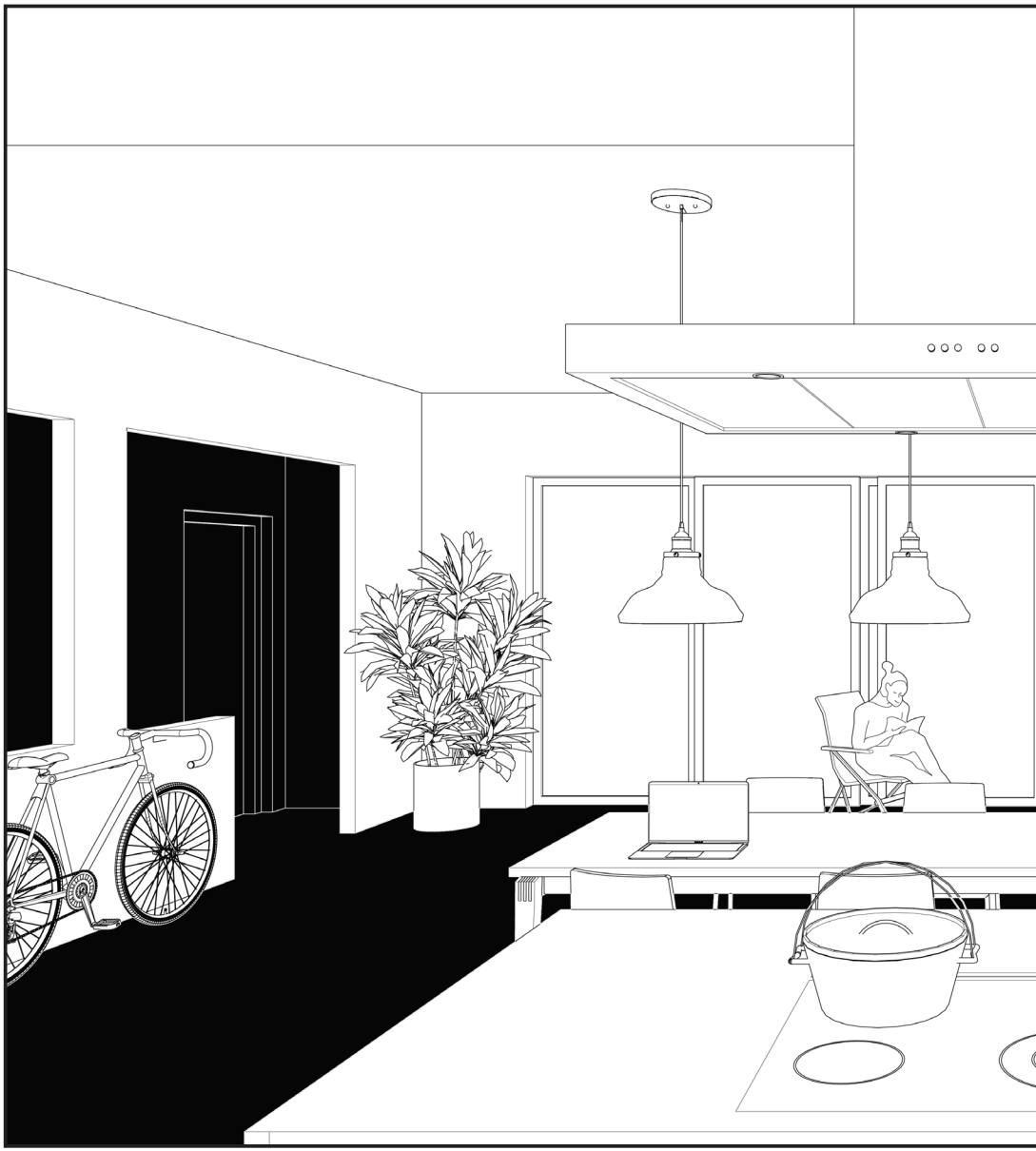


Fig. 92 Impression:
Cluster Apartment Shared Living Room

Fig. 93 Impression:
Cluster Apartment Shared Kitchen Facing Circulation Core

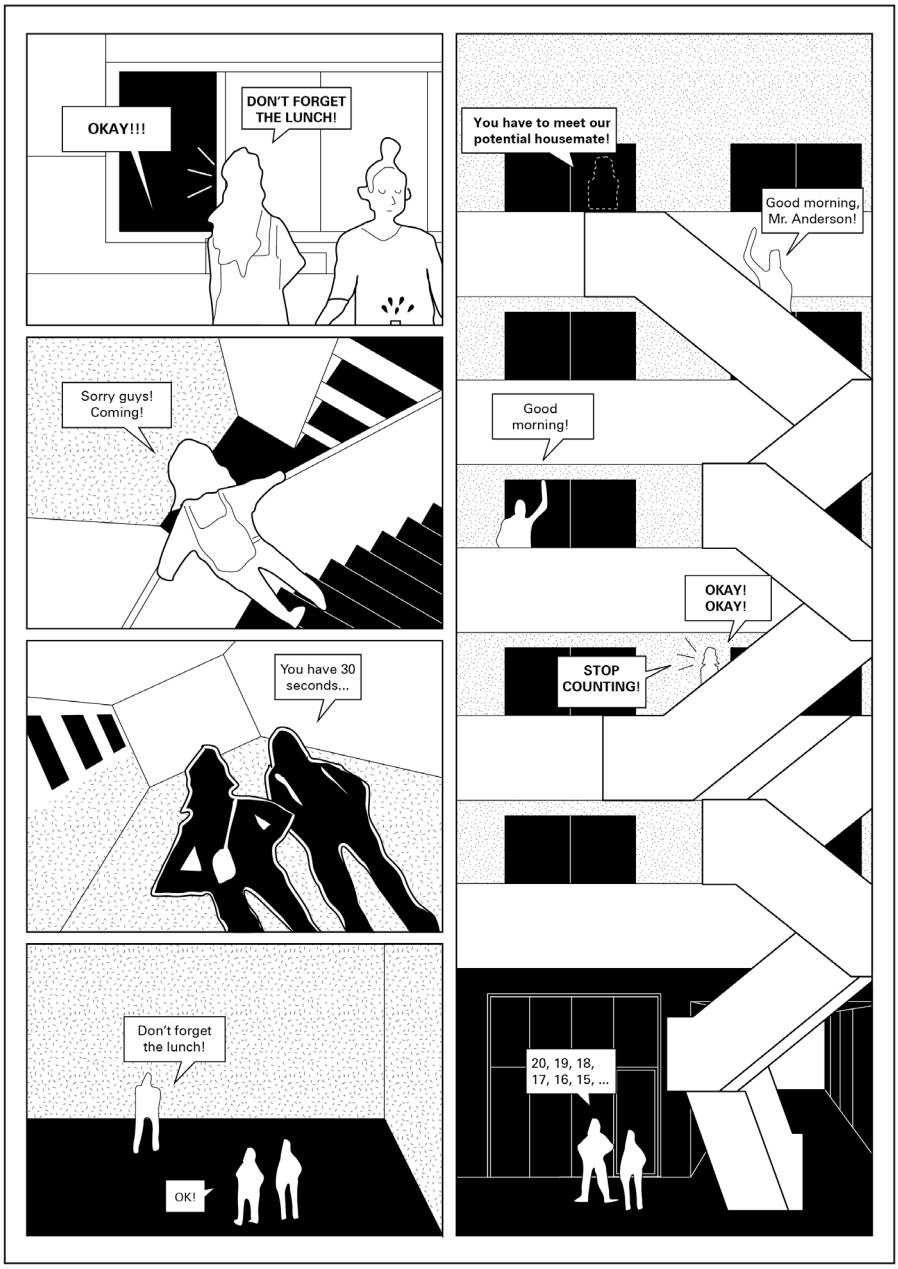


Fig. 94 Page 3, Graphic Novel

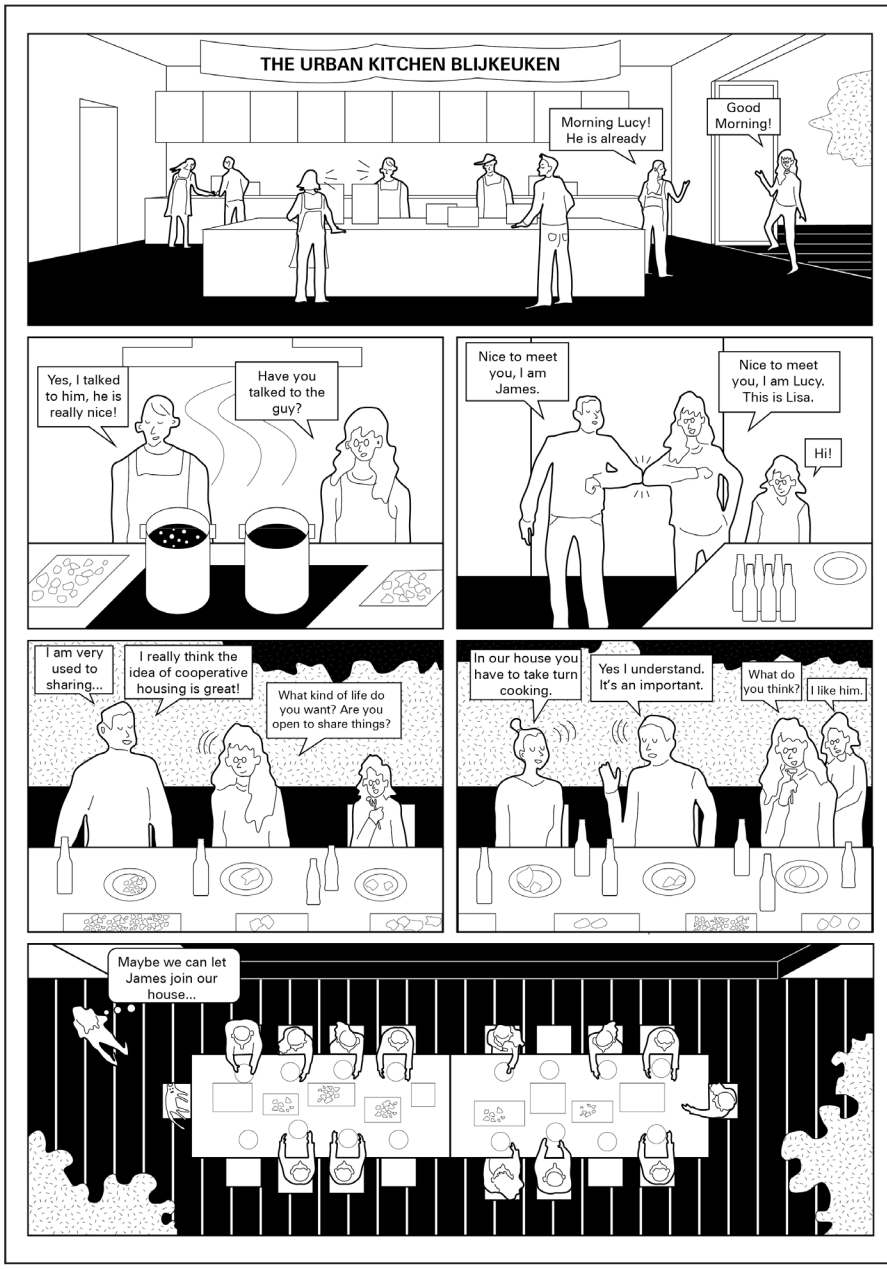


Fig. 95 Page 4, Graphic Novel

Fig. 96 Impression:
Circulation Core

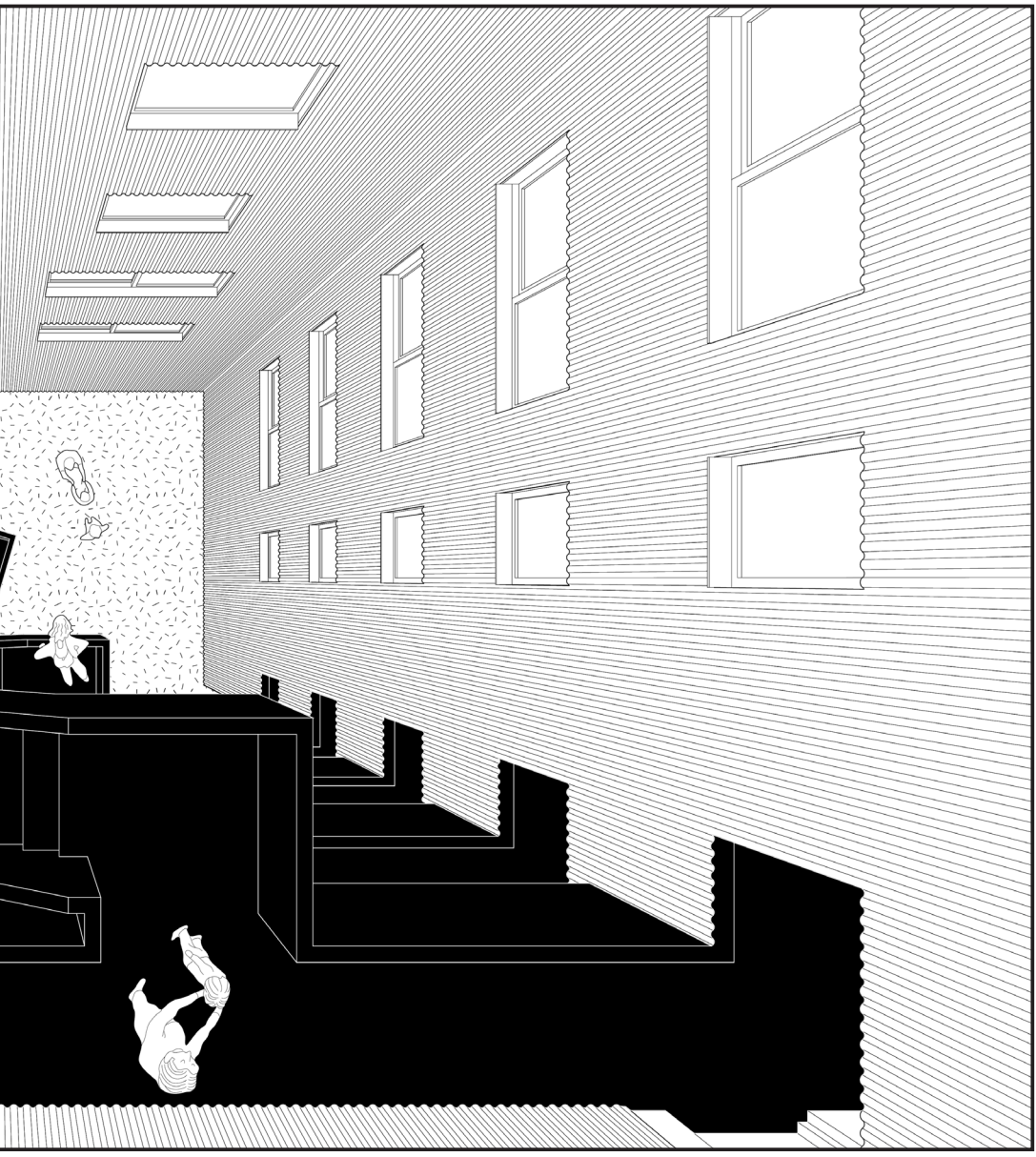
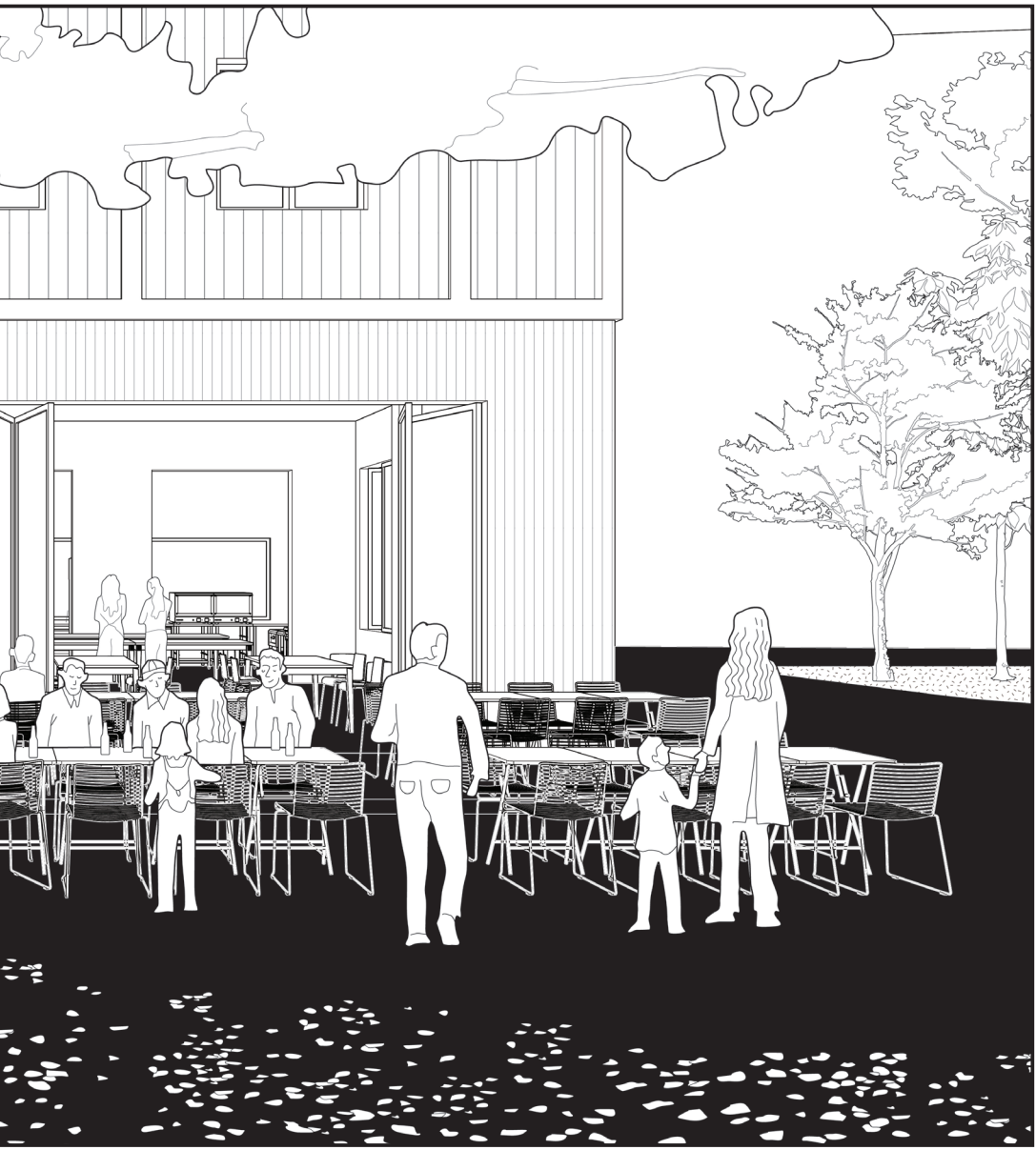


Fig. 97 Impression:
Urban Kitchen From Public Space



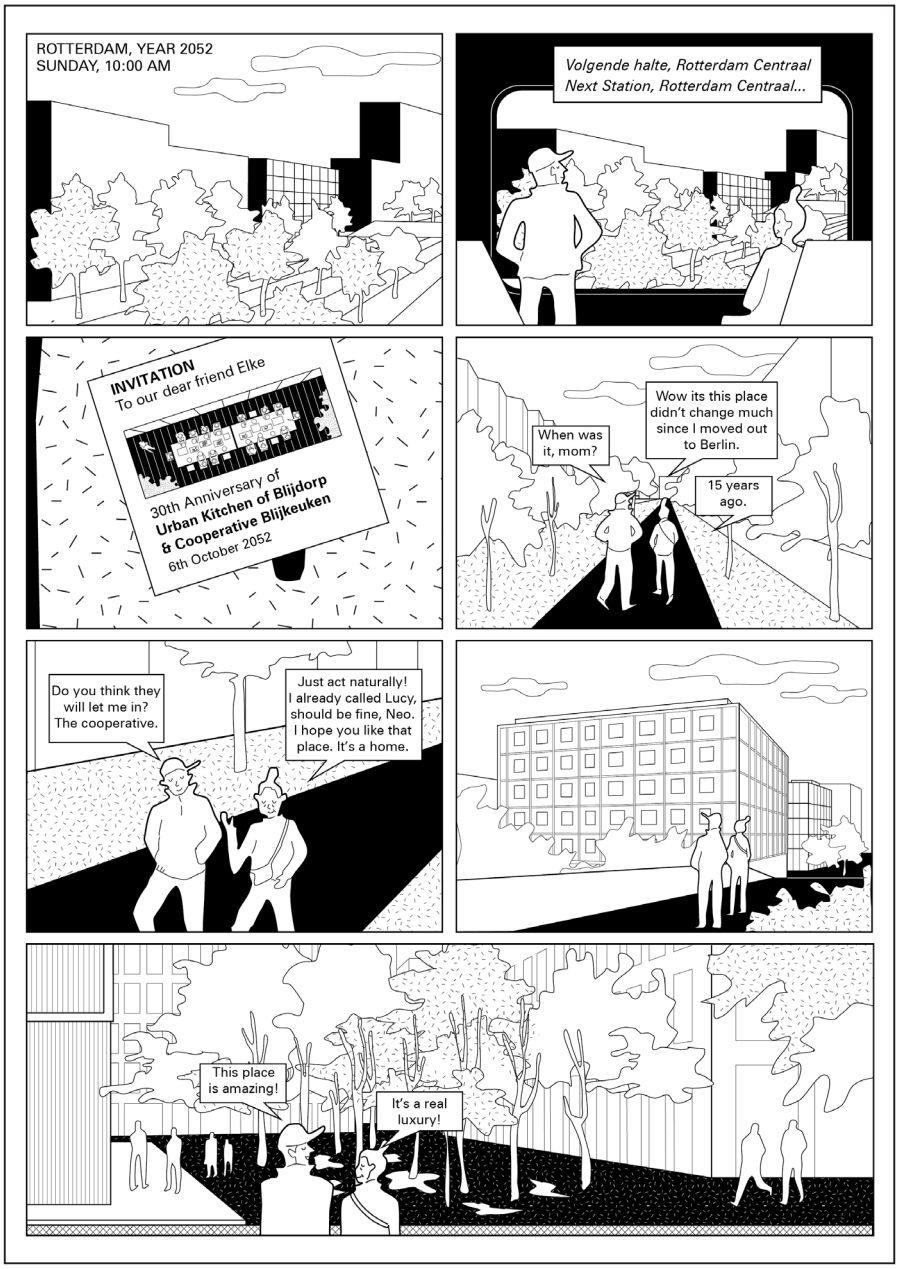


Fig. 98 Page 5, Graphic Novel

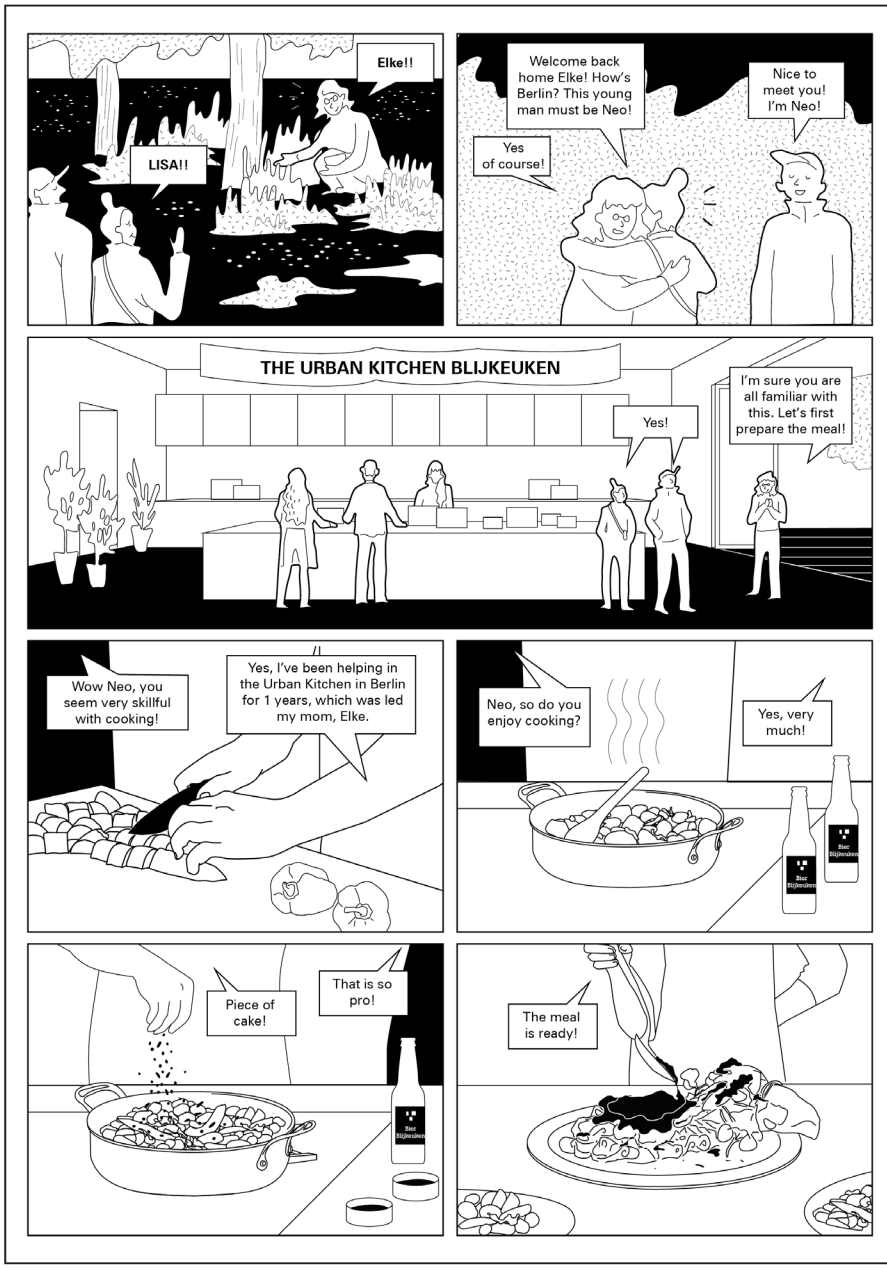


Fig. 99 Page 6, Graphic Novel

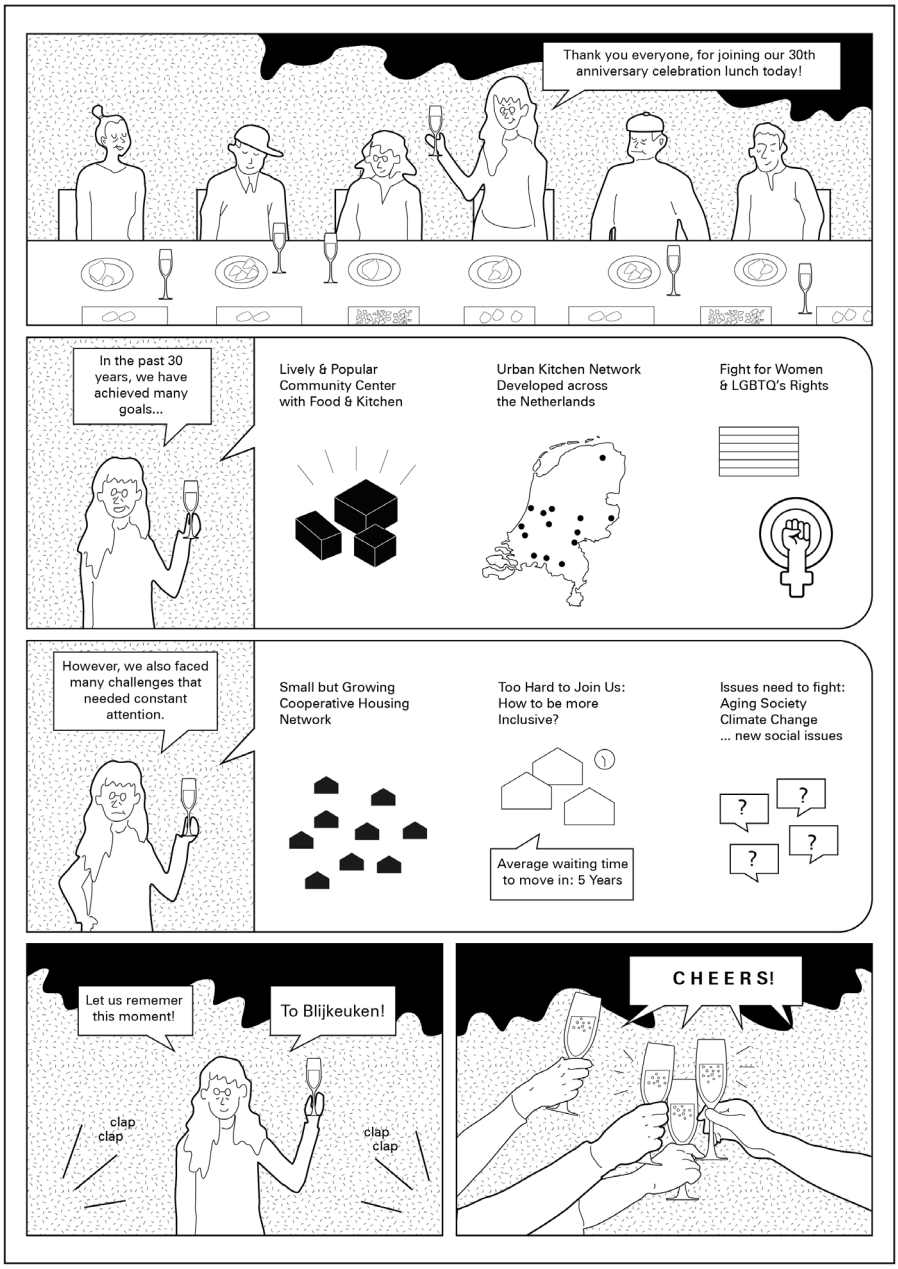


Fig. 100 Page 7, Graphic Novel

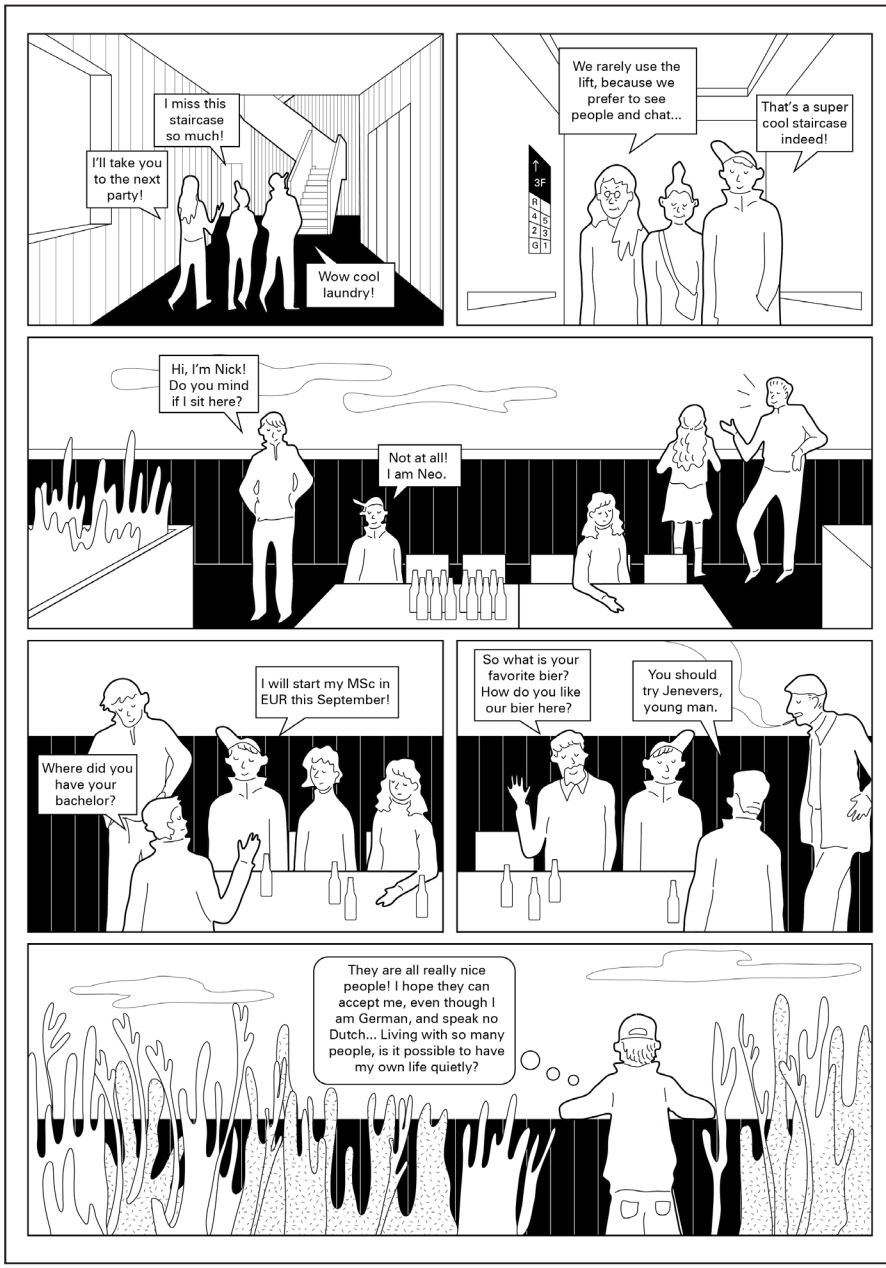


Fig. 101 Page 8, Graphic Novel

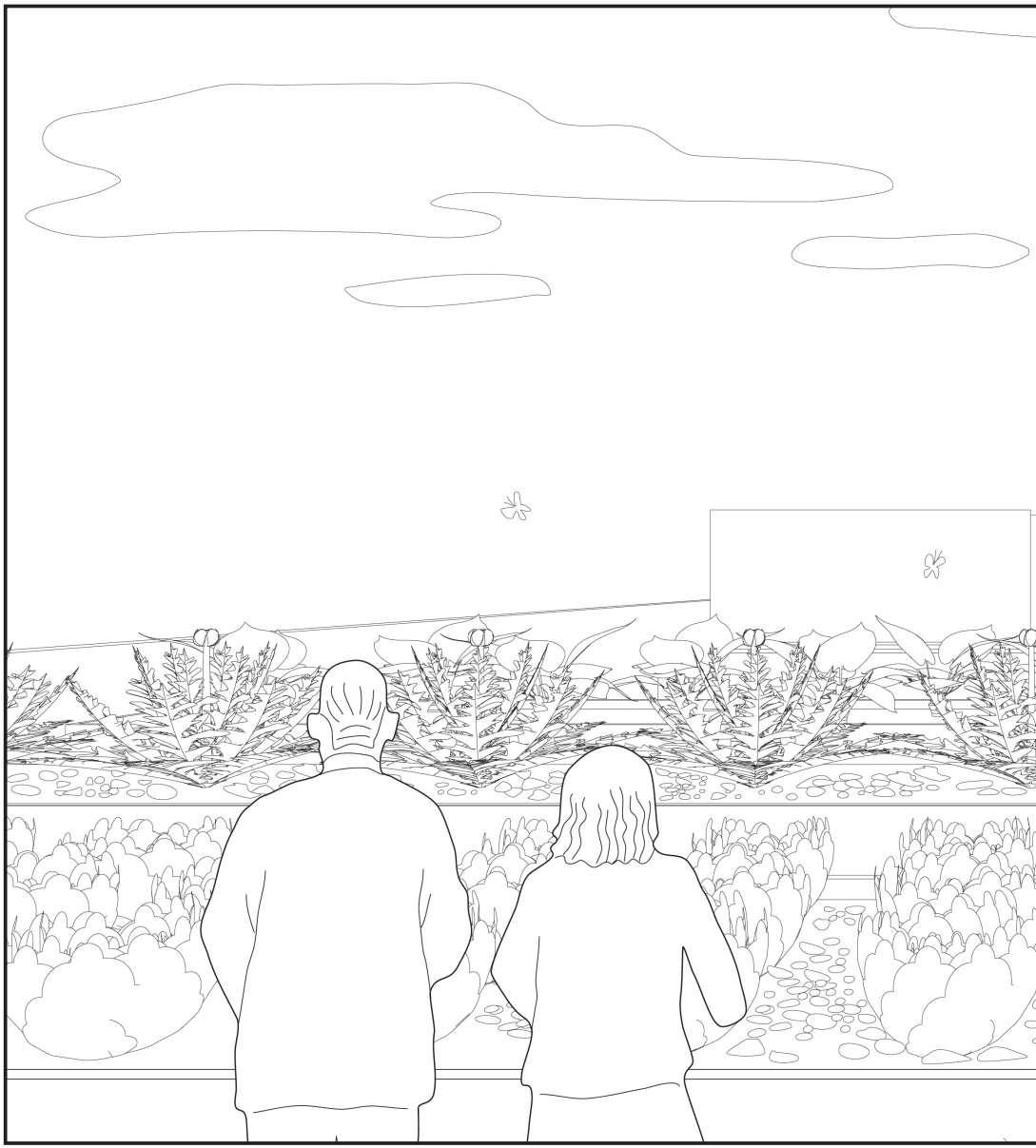


Fig. 102 Impression:
Rooftop Urban Farming

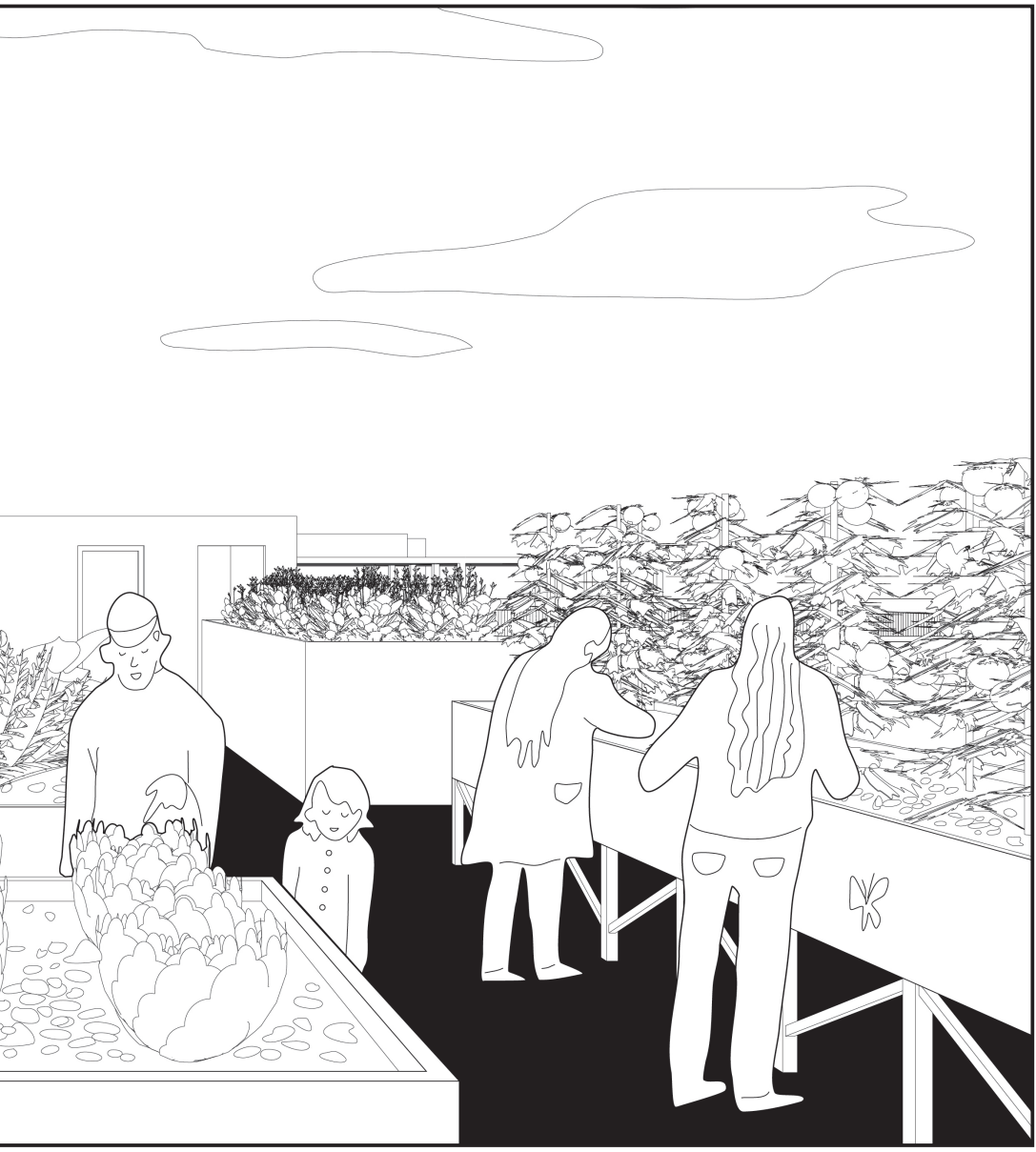


Fig. 103 Impression:
Kitchen Plaza & Edible Landscape

07

Reflection

Aspect 1:
The relationship between graduation (project) topic, the studio topic, your master track (Architecture), and master programme (MSc AUBS).

My topic focused on the social aspect of kitchens and how that could impact housing design. This approach resonated with the topic of my design studio, titled "ecology of inclusion," which aims to promote social inclusion and reduce ecological impact through collective housing. The idea of design for social, environmental, and economic sustainability is one of the most important concepts in Architecture Track and MSc AUBS.

Aspect 2:
The relationship between research and design

My research topic, "Kitchen: From Meal Preparing to Social Making," sought to understand the roles of kitchens concerning the living environment and discuss the possibilities of influencing contemporary housing design. This research carefully examined the historical context and spatial morphology in the formation of the modern kitchen in three scale levels, which are private, shared, and public. Furthermore, to accommodate changes brought up by the first part of the research, a second focus on the building type, Fat Type, was introduced. A successful building type in the "Zurich Model" of cooperative housing, the Fat Type encourages social motivation for sharing in a drastically densifying urban context. The design project "Blijkeuken" is conceived based on the findings and conclusions of the research. It answers two proposed research questions: how to use the kitchen as a critical element to form a new way of living, and how a housing type helps ground it?

The research on the kitchen typology constellations provided programmatic and conceptual grounds for housing design. The kitchen, bearing the duality of technocracy and sociality, has been an indispensable part of the modern house. Whether it is the private kitchen in the 20s, the shared kitchen of the 70s, or the contemporary urban kitchen, the design of a kitchen always reflects the development of technology and ore importantly he socio-political ideology of the time. As the gender inequality issue has been put on the agenda and the pandemic revealed the vulnerability of the social welfare system, the design project redefines the roles of kitchens to depict a new way of living together. Three types of kitchens, inherited from their predecessors, are strategically positioned to loosen the existing social construct and establish a care network.

Morphological research on the Fat Type offered fruitful insights into the design stage. First, the analysis of three buildings (Haus A, Haus G, Haus K) in the Cooperative "Mehr Als Wohnen" set the principal characteristics of the Fat Type.

As the research proceeded, three main elements were revealed: urban facade, circulation, and housing units. These elements critically reflected the challenge of designing a Fat Type: the spatial quality relating to light, ventilation, and the opportunity to generate social-oriented housing types. Secondly, I determined to find means to introduce the Swiss Fat Type into the Dutch urban context. Several examples of Dutch Fat Type buildings were studied and compared with the Swiss ones. Finally, in combination with the study of Dutch housing traditions, the research generated design guidelines for the design of Fat Type in Dutch urban contexts.

In conclusion, the design project directly reflects the research by contextualizing the ideas in contemporary Dutch society. Three types of kitchens as ideological concepts to stir up the existing gender roles and social construct are interconnected with the elements listed in the morphological research, respectively. Furthermore, the role of the kitchen is pushed to a broader domain through the implementation of a relatively rare housing type, the Fat Type, in Dutch society. Finally, the design project provides a systematic realization of the research through a hierarchized understanding of programs and building space.

Aspect 3:
Elaboration on research method and approach chosen by you in relation to the graduation studio methodical line of inquiry, reflecting thereby upon the scientific relevance of the work.

1. The Three Kitchen Constellations: Historical Approach

The historical research aimed to understand the specific historical settings of the critical moments in the evolution of the typologies of kitchens. I picked two case studies as a comparable pair for each kitchen type. The literature study on the proposed examples provided the cultural, economic, political, and technological background of the three types of kitchens. In addition, this part of the research revealed the conditions of the users in these kitchens. What were their struggles? How could the reshaping of kitchens have assisted them? The historical research also raised awareness of socio-political contexts, which would also play a critical role in contemporary design.

On the other hand, I used morphological analysis to understand the spatial outcome of the design thinking. The analysis gave me direct design tools to operate in later stages, including spatial strategies, measurements, and materializations. The knowledge gained from the historical research contained both abstract and conceptual understanding and the physical and formal executions.

2. The Fat Type: Morphological Approach

The method applied in the research of Fat Type was aligned with that proposed by the Studio: the typo-morphological study. Since Fat Type building is a relatively unfamiliar housing type in the Netherlands, this part of the research emphasizes understanding this typology: its spatial quality, challenges, and opportunities. Selected case studies were built and resided in both Switzerland and the Netherlands. The successful examples provided insights on building types and design principles for the design phase. Furthermore, producing analytical drawings contributed to building up tools of representation that proved to be very powerful when delivering architectural information.

Aspect 4:
Elaboration on the relationship between the graduation project and the wider social, professional and scientific framework, touching upon the transferability of the project results.

The mentioned issues regarding post-pandemic living, gender inequality, and the housing crisis in the Netherlands call for urgent solutions. While the architect's role is to introduce ways of living, architecture itself should not be the only factor in facilitating such a perspective. Comprehensive planning should take into account financial strategy. Therefore, this project intended to propose a packaged solution that contains housing design and tenure. In addition, the project wished to provoke further discussions on these topics.

The project was explicitly framed in Rotterdam's urban and social contexts. However, the issues aforementioned in contemporary living are shared among many European cities. By promoting the shifted structure of people's daily routines, and kitchens, the same idea of share and care could be implemented in other contexts.

Aspect 5:
Discuss the ethical issues and dilemmas you may have encountered in (i) doing the research, (ii, if applicable) elaborating the design and (iii) potential applications of the results in practice.

The project aimed to establish a bottom-up, community-based system of care. Such an idea was a counteraction to the current political and social status of the Dutch society, propagated by its government. It is evident from the studied references (such as the urban kitchens) that establishing an unofficial care system is always intertwined with the failure of the governmental care system. However, the impact of architecture and local foundations

is limited to their physical size and territory. It would take a greater entity in policymaking and financing to perpetuate a sustainable care system.

Another dilemma in this project was the issue related to gender inequality among women. The historical examples of the kitchens (particularly the Private Modern Kitchens of the 20s and the Shared Kitchens of the 70s) highlighted the intention to emancipate women from their social gender roles. Nowadays, as gender stereotypes seem to be weakened, the glass ceiling in workplaces and the burden of social reproduction still haunt women. How does the reconfiguration of the kitchen in the living environment help eliminate the inequality, especially when "work from home" is widely promoted? I envisioned my project could trigger more discussions on this matter and shall continue as long as the issues exist.

08

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