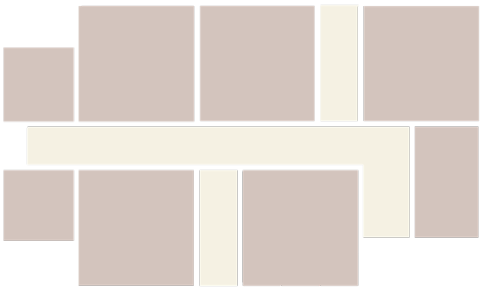
The Balanced City

Rethinking the Apartment to Provide Families with an Alternative to the Single-Family Home in the Suburbs



Emma Norden | Chalmers University of Technology | 2020
Department of Architecture and Civil Engineering | Architecture and Planning Beyond Sustainability
Examiner: Ola Nylander | Supervisor: Jan Larsson

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Emma Norden

nordenemma@gmail.com

Chalmers University of Technology
Department of Architecture and Civil Engineering
Master's Programme of Architecture and Planning Beyond Sustainability
Examiner: Ola Nylander
Supervisor: Jan Larsson

SE - 412 96 Gothenburg
Sweden

CHALMERS
UNIVERSITY OF TECHNOLOGY

ABSTRACT

In westernized countries, a single-family home is the housing goal for many people who wish to have children. However, with rising population and increasing urbanization, promoting such a lifestyle is not feasible. On the other hand, some younger families wish to remain in the city because they value the urban lifestyle. Whatever the case, today's apartments are not designed for familial households and thus, are not often considered to be an appropriate place to raise children.

Studies have shown that families desire safe outdoor environments, adequate indoor space, privacy, and ample storage. Not only are apartments becoming more compact, but they also lack efficiency in design. This can be addressed by the concept of adaptibility. Individual rooms must be able to accommodate multi-purpose functions and provide sufficient storage when needed. The placement of the rooms is just as critical. Layouts with several small rooms and an open floor plan limit usability and the possibility for change over the life course.

Another concept is that of the private yard. Depending on one's perspective, the absence of the yard could be viewed as a benefit to multi-dwellings, but the outdoor spaces provided in them are not appropriate substitutes. By integrating supervisable areas that cater to various ages, apartment complexes can maintain a similar idea. Moreover, these spaces can encourage interaction between the residents, helping to foster the emotional and moral support that parenting requires.

While the physical attributes are important, the nontangible qualities are factors as well. Neighborhood continuity facilitates a strong sense of community, contributing to a family's desire to remain in a certain location. Considering the context of Gothenburg, Sweden, this thesis borrows ideas used in co-housing projects and maintains them on a smaller scale. It views the building as the neighborhood, offering various apartment typologies using the same base grid so that families can move within the building. Thus, the result takes the desired qualities of the single-family home and applies them in the context of the apartment.

Keywords: *single-family home, apartments, residential housing, urban living, families*

STUDENT BACKGROUND

I grew up in Minneapolis, Minnesota USA where the single-family home is the norm for middle-class households. It wasn't until I moved to Europe, traveling to many countries, that I encountered a great number of middle-class families living in multi-dwelling housing. Their reasons for doing so varied, but I realized that there will always be families living in apartments and, more importantly, that some of the perks it offers are quite advantageous. For the first time in my life, I found myself questioning my own desire to buy a home.

Unfortunately, most apartments are not designed with children in mind. I especially noticed this after babysitting a little girl in Gothenburg. There was no proper storage, forcing the mother to keep the bulky stroller in the entrance way. There was no elevator, the single bathroom could barely accommodate one person, and the two bedrooms were split so that the small one was by the entrance and the larger could not be accessed without moving through the living room. Needless to say, this is only their home when they are in the city- their main residence is outside of central Gothenburg. However, the situation demonstrates that apartments cater to a certain group from which families are excluded.

Education:
MSc. in Architecture and Planning Beyond Sustainability
Chalmers University of Technology 2018 - 2020
Gothenburg, Sweden

Bachelor of Design in Architecture
University of Minnesota 2014 - 2016
Minnesota, USA

Work Experience:
Design Intern
The Opus Group 2016 - 2018
Minnesota, USA

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THE BALANCED CITY

The balanced city is one that is valued not only for new forms of productivity... or for the consumption of exciting leisure amenities..., but also for an infrastructure which facilitates reproduction tasks, children's culture and family housing.

(Karsten, 2009, pp. 327).

INTRODUCTION

BACKGROUND

Global Housing Trends

The reasons behind a person's decision to live in a certain housing type is a complex issue. Several factors have to be considered including economic position, personal wants and needs, cultural and social influences, housing experience, and physical context. Further, these factors change over the course of one's life which create a fluctuating circumstance.

Within many Western countries, detached housing is associated with security, privacy, and economic stability. Thus, apartment living is geared towards childless, young adults while the detached dwelling is linked to family formation and suburban life (Chudnovasky, 2018; Booi and Boterman, 2019). This Westernized image arose because middle-class families with the means to enter the housing market did so, leaving overcrowded cities for a quieter life in the suburbs while lower class families remained in the city. This association has shaped the norms that still exist today.

In the U.S. and Europe, urban environments are not considered appropriate for raising children. Lack of affordable housing and green spaces, overcrowding, noise, and pollution have rendered them unideal for families (Boterman, Karsten, & Musterd, 2009). As a result, these households tend to move to the suburbs where the single-family home, private yard, and ample outdoor play areas are possible.

While there has always been a percentage of families residing in urban areas, the number of young people wishing to remain in the city during parenthood is largely increasing. Shorter commute time to work, access to amenities and services, and a preference for the urban life all contribute to this tend (Krishnamurthy, 2019; Boi and Boterman, 2019). Often these "urbanites" are well-educated and can afford the higher costs of the city. Thus, they forgo the suburbs as the perks of the city outweigh the downsides.

In contrast to families who consciously choose urban life over its counterpart, there are those who simply have no alternative. In extremely dense and fast growing cities, compact living remains the only option. This situation will soon become the norm in many countries. Today, more than half of the total population resides in cities (Karsten, 2015) and by 2025, it is expected that more than half of the world's children will be living in cities (Krishnamurthy, 2019). As a consequence, multi-dwelling housing will become the situation of many families irrespective of their preferences (Karsten, 2015).

Suburban and urban sprawl are both linked to urbanization. However, suburban living has a greater impact on the environment due to greater energy use, pressures on the ecosystem and biodiversity, (Urban Europe, 2016) and heavier reliance on cars. This lifestyle is not sustainable especially with the climate concerns facing us today. On the other hand, some families wish to

stay in the city for the lifestyle they provide or they simply have no choice. Whatever the case, modern apartments are becoming smaller and smaller, rendering them unsuitable for long-term use. They are unable to accommodate the changes that occur during the life course, such as the growth of a household. Young children produce noise and the lack of sound proofing can create anxiety for parents who feel they are disturbing their neighbors. This only adds to the idea that families don't belong in communal housing situations. Thus, those who have the option, may eventually feel forced to relocate (Boi and Boterman, 2010).

PURPOSE & AIM

With Sweden's housing shortage, options are few, especially within larger cities like Stockholm and Gothenburg. Multi-dwelling buildings are most common, but they are not always an ideal setting for raising children. Furthermore, it is unfeasible for everyone to live in a detached home. This thesis will try to dissect the factors that influence different housing choices. It looks at the qualities and preferences people have for a permanent residence. In addition, it looks at how the needs of families change as their children get older and how the layout of apartments is critical to accommodating that. Based on research and scientific studies, this thesis provides a design proposal for a multi-dwelling building for family households. The solution will be an alternative to the single-family home, allowing more people to live within the city but still have the same quality of life that a private dwelling would provide.

RESEARCH QUESTIONS

What are the qualities that families desire in a home?

How can architecture maintain the same qualities of a single-family home in a multi-family housing solution?

How can the design of apartments encourage a shift in societal norms and promote apartment living as a viable option for households with children?

METHODS

This thesis is based upon a research by design process combined with research for design.

Literature studies are used to gain in depth knowledge regarding housing trends, factors that influence housing choices, and the characteristics of apartment design today.
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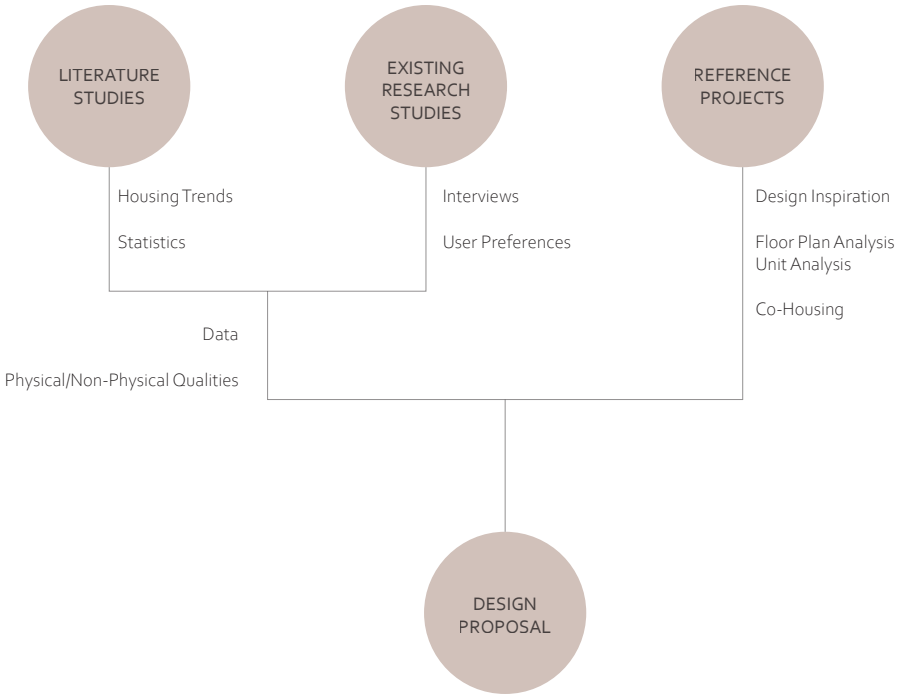
Research studies are evaluated to support the conclusions made from the literature. Studies provide scientific data and pinpoint the various qualities families desire in a housing type.

Reference projects provide inspiration for the design elements in the final proposal. Analysis of the apartment layouts are used to determine what works, what doesn't, and why.



DELIMITATIONS

This thesis only considers familial households, defined as one or more adults caring for one or more minors. It does not take into account other household constellations such as seniors, students, or solo dwellers. However, clearly some aspects used in the design can be applied to those groups as well.

While the chosen site is located in Gothenburg, the essence of the project is intended to be applicable in other situations within other contexts. For example, there are much denser cities than Gothenburg where even large apartments are not feasible. This was kept in mind as well. On the other hand, while urban environments are the main discussion, it is not limited to such. Apartments in suburban areas are equally in need of smarter design.

Lastly, the proposal does not consider affordability as a factor.

THEORY

DEFINING THE HOME

Basic Activities

In order to understand the qualities that exist in the single-family home, it is necessary to return to the basic principal of what a home is. Bernard Leupen states six basic activities that a person should be able to carry out in a long-term residence: sleeping, get together, eating, cooking, bathing, and working (2006).

In their Master's thesis, *Home Free Home*, Brinkenberg and Miettinen compare Leupen's activities to the Swedish Standard Regulations and determine that sleeping, getting together, eating, cooking, bathing, working, and storage are the necessary functions (2018). However, Brinkenberg and Miettinen exclude laundry which was on the original BBR list. For other household constellations, this may not be as important, but children are messy. It is not uncommon for families to constantly need to do laundry. Thus, providing a space to air dry clothing even if the facilities themselves are shared is essential.

Play

One element that all three sources leave out is play. Play is fundamental to a child's development and to exclude it is to ignore an entire group in society. Play can occur in many forms. Whether it is integrated in the architecture or provided with designated outdoor or indoor areas, it is important to have spaces that engage children in various ways.

While having the physical play space is necessary, it is also the matter of having the appropriate environment. For example, a courtyard will do little if it consists of concrete with no greenery. Usable play areas are especially important in multi-dwelling buildings because of the limitation within the individual apartments themselves. In detached houses, children can run freely throughout without disturbing neighbors below them; they can utilize the yard when they are too energetic, and may even play in the street in more suburban communities. Thus, play is an underlying feature of the single-family home and is perhaps, (although not consciously considered), one of the determining factors for parents when it comes to choosing this typology over its counterpart. Therefore, it can be deemed that for family households, play is a necessary function.


BASIC
ACTIVITIES
Sleeping
Get Together
Eating
Cooking
Bathing
Working
Storage
Laundry
Play

As children age, the way in which they interact with the world around them shifts. For this reason, different types of spaces are needed to cater to these unique junctures in life.

Whitzman (2015) discusses the various stages of development and how this affects the types of spaces required. She states that during infancy, it is important to have both indoor and outdoor areas so that the child may crawl around under parental supervision. Not surprisingly, noise proofing due to crying as well as being sensitive to ambient sound is critical.

In preschool years, children require greater access to outdoor areas that are within easy reach of a parents. Typically, this is seen in age appropriate playgrounds or open areas with soft ground cover.

Between the ages 6-9, children can start exploring the environment beyond the borders of their own home. They can use courtyards and play areas semi-independently given that a guardian is nearby.

From 10-12, more adventurous areas are likely to be desired. Whitzman also suggests that it is around this age that sharing a bedroom between siblings becomes more difficult especially when they are of opposite genders.

As kids enter the early teenage years and above, they become increasingly more independent, requiring more privacy to facilitate their autonomy. In this regard, having their own personal space, usually their bedroom, is essential.

These elements are difficult to address in apartment design and are often left out. However, it is not impossible. By giving more consideration to the specific needs of different age groups, there is potential to alter the perception of multi-dwelling housing and make it a long-term solution.

QUALITIES AND PREFERENCES

The Yard

One of the first things that comes to mind when differentiating apartments from the detached dwelling is the private yard. Some value this quality while others see the absence of having to maintain a garden as a benefit to apartment living (Karsten, 2015). However, for households with children, the yard represents more than just a garden. Yards provide a safe and easily accessible space for children to play with adult supervision possible from within the dwelling. Active play is critical to a child's psychological, physical, and social well-being (Krishnamurthy, 2019). Not having such spaces in apartments can therefore be detrimental to their development and is perhaps part of the reason compact living is viewed negatively by some cultures.

Parks and Green Areas

For the same reason that the private yard is valued amongst families, access to parks and greenery is also desired. Child-friendly outdoor play areas where kids can run around are limited in urban areas. Further, high traffic and non-pedestrian friendly streets may make it uncomfortable for parents to casually walk with their youngsters. Because greenery is limited, integrating it into the building and ensuring that public parks can be reached, either through public transportation or within walking distance, should be part of the design process.

Private vs. Public

On the unit scale, multi-dwelling housing doesn't offer the various grades of intimacy that detached dwellings provide. Modern apartments are designed with open layouts where the kitchen and living room often bleed into one another. These "pass through" rooms limit their uses and their privacy (Femenias and Geromel, 2019). For example, if the living area were to be used as a bedroom, one would need to cross it in order to reach the other rooms in the apartment. Further, it is important to provide privacy for older kids as they have more autonomy.

On the building scale, complexes are usually placed in close proximity to each other, removing a sense of privacy from inside the unit. A provided balcony or courtyard space may be underused because one ends up peering into another's dwelling. In some cases, inhabitants may feel uncomfortable lifting their blinds (Andrews, 2018). Close proximity may also create tension between neighbors when it comes to noise that children make.

Location

Location has been found to be one of the most leading determinants to a family's choice in settling down. This includes neighborhood quality, access to good public transportation, proximity to amenities such as daycares, schools, cafes, and surrounding green areas. Walkability in the neighborhood is also an important factor. Parents stroll through the streets with their infants and children need to be able to explore the environment on their own (Lilius, 2015). Thus, traf-

fic control is vital in urban areas.

Adaptability

Family constellations are vast and diverse. Further, they fluctuate over time whether through the birth of more children, older kids moving out, divorce, or a new partnership. The physical spaces must be able to adapt to such changes, growing and shrinking as the household does. Adaptability can prevent families from needing to move, is beneficial to the stability of the neighborhood and the household.

Storage

With all the toys, furniture, and extra belongings that comes with having kids, storage is an important aspect. Apartments aren't often equipped with sufficient spaces for this. Strollers are often left in the open areas of apartments due to not having a convenient space to put them. Single-family houses have the advantage of a basement where bulkier items can be put for long-term storage.

Social Support

Families lean heavily on external interactions for help. Strong relationships offer the support and stability that families rely on. Parents can care for one another's children, provide advice, and establish a rapport on the basis of raising kids (Kartsen, 2010). This continuity is the main reason relocation happens less frequently amongst families. When moving does occur, it is typically within the same neighborhood in order to maintain the social ties already established (Karsten, 2010).

A decreased sense of community is a common theme in apartment living. Some argue that the social interaction that occurs in suburban areas with casual run-ins on the street or when kids are playing in the yard is lost in vertical housing. This is partly due to the lack of child-friendly spaces such is the case in many market-rate apartments designed today. In lower-income residences, amenities are often entirely absent. When they are offered, the facilities become outdated or, if it is a large estate, overcrowded (Karsten, 2015). A feeling of anonymity limits interaction between residents and can contribute to reluctance to turn to one's neighbors. As a result, families may search for their social network outside of the community complex and many may end up not knowing their neighbors at all.

ADAPTABLE HOUSING

Space is a commodity when it comes to inner city living. Many attribute lack of space as one of the main factors that make apartments less suitable for families. Fewer square meters also affects the amount of storage available. However, it isn't the lack of space so much as the lack of adaptability within these spaces that renders multi-dwellings inadequate for families.

Today's apartments are homogeneous in their layout and cannot meet the needs of various households. Braides describes them as being "made up of norm-prescribed, functionally-dimensioned rooms" (Braides, 2019, pp. 6). Replicating the same three or four floor plans may seem like the best strategy for outputting dwellings as quickly as possible and acquiring a greater upfront profit, but they fail to be a long-term solution.

Adaptability is not a new term but the way in which architects have been utilizing such methods is growing. First, we need to define what adaptability is. For purposes of this thesis we will use Femenias' and Geromel's definition, that is, the "capacity to accommodate future changing needs" (2019, pp. 1). This is a broad definition, providing the umbrella under which several specific strategies exist in order to achieve adaptability . These include generality, flexibility, and elasticity.

Generality

The first concept is generality, or universality, which Yunitsyna defines as the capacity of a dwelling to host various uses and activities without changing its physical properties (Yunitsyna, 2014). Generality is dependable on size, shape, and the relationship of the rooms within (Femenias and Geromel, 2019; Yunitsyna, 2014).

Typically, a dwelling is said to be more general if it has square rooms of similar size arranged around a neutral space. In such a layout, various activities can be carried out within them and switched among them (Femenias and Geromel, 2019). Through a study of housing standards in 31 European countries, Yunitsyna (2014) determined that a room is universal if its area is more than 15.4 m^2 - 16.4 m^2, its width is more than 3.1 m, and it has one point of access. Others consider a room to be general if its dimensions are 4 m x 4 m (Femenias and Geromel, 2019).

Flexibility

Flexibility is the ability to reconfigure a space through physical interventions such as movable wall partitions or adding and removing entrances. Experimenthuset, a multi-family residence built in 1953 in Järnbrott, Gothenburg, exhibits flexibility in that users can add or remove rooms of various sizes within the predetermined framework (Braides, 2019, pp. 78).

Extendibility

Elasticity, or extendability (Femenias and Geromel, 2019), refers to a dwelling where one room can be separated from the rest because it has a neutral

access near the entrance, kitchen, and bathroom (Braides, 2019). This method can provide privacy for teenagers as they get older and creates the possibility of renting out the room as a source of income. In more general terms, it is the condition where a dwelling can expand and contract in response to the user's needs during his or her life course (Femenias and Geromel, 2019). This is demonstrated in Landshövdingehuset, a multi-dwelling residence in central Gothenburg from 1931. The rooms within each apartment are centered around a hallway where the entrance to the unit also is, thus the neutral area. Today, this allows residents to grow or shrink their apartments by either purchasing the unit next door or above or below their own (Braides, 2019).

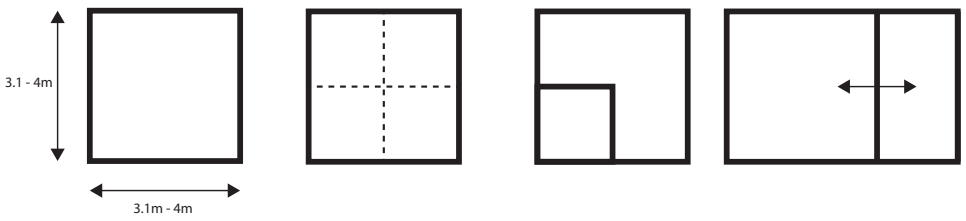
Adaptable Apartments

As one can see, several methods can be applied to make dwellings more adaptable. Of course, there is a correlation between space and adaptability. Larger spaces, to an extent, are inherently more adaptable because they are more general and can accommodate different uses. As a result, they often don't necessitate physical intervention. This is the case with single-family homes. In smaller spaces such as apartments, this luxury does not exist. Thus, apartments may require built-in flexibility in order to create the spatial efficiency and adaptability that is lost in reduced floor area (Till and Schneider, 2005). Unfortunately, the strict layouts of today's apartments limit the opportunity to change them, leading to greater turn over (Kotulla, Denstadli, Oust, and Beusker, 2019).

Generality, flexibility, and elasticity are all ways in which one can make an apartment unit more adaptable. These features are applied to the architecture during the design process. Except for the first, they allow modifications to be made by the inhabitant upon moving in. Although these are good methods for prolonging the relevance of multi-dwellings, it should be noted that there is an extent to which flexibility is useful. When overcrowding occurs, flexibility is not enough to provide a comfortable arrangement for families. Small bedrooms, inadequate storage, and insufficient living space are some of the complaints that households may have (Braide Erikkson, 2016).

Infill

Another way to address adaptability within a space is by providing an in-



Generality **Flexibility** **Extendibility**

fill solution. That is, the shell of the building is constructed with fixed service cores and the rest of the space is left raw. The user then chooses the floor plan according to his or her own desires before moving in. The Tila Housing Block in Helsinki, Finland and Cb19 apartments in Berlin, Germany are two recent examples of this. In the former, apartments had a floor to ceiling height of 5 meters, making it possible to add a mezzanine level. In the latter, some owners combined apartments across levels, demonstrating elasticity as well.

While raw space is an effective way for owners to personalize their apartment and have an active role in the design process, it makes it difficult for the following residents to have the same feature.

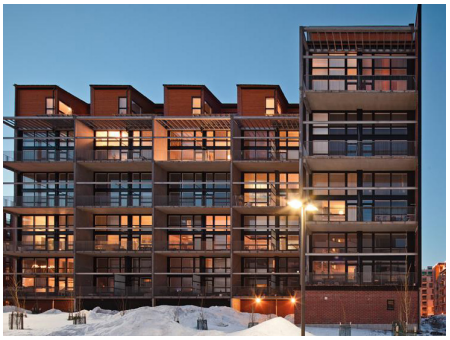


Figure 1. Tila Housing Block (Kuvio Architectural Photography, 2011).

Figure 2. 100 m2 Unit Raw Space (Bremer, 2011).

WITHIN THE CONTEXT OF SWEDEN

Background

In the mid 1800s, only 10% of the Swedish population lived in towns and cities (Hall and Viden, 2006). It wasn't until the post-war era that rapid urbanization took place, leaving Sweden with a housing shortage. At the time, housing standards were extremely low compared to the rest of Europe which only fueled the demand. In response, the Million Homes Programme was initiated and one million homes were constructed during the period between 1965 to 1974. One-third were single-family detached dwellings, one-third three-story apartments buildings, and the rest were large concrete blocks of four stories or more (Moore, 2018). These dwellings acquired a bad reputation for being located in suburban, low income areas with no local service or public transport. Many found them unappealing as those who could afford it reloacted to single-family homes (Terner, 2017).

In the 1970s, the housing shortage was replaced by a housing surplus and many of the dwellings constructed during the Million Homes era were left vacant. However, in the wake of the financial crisis in the 1990s, the demand for housing increased again, this time within cities due to the flux of people migrating there.

Today, a bit more than half of the Swedish population lives in metropolitan areas, a ratio within Europe that is only surpassed by Spain (Moore, 2018). However, the majority of apartments were built during the Million Homes era, current construction is not keeping up with demand, and the residential housing that is being constructed is geared towards young professionals. Living areas are shrinking, but design is not improving. This approach reinforces the norms prevalent today.

There are three types of housing tenures in Sweden: rented apartments from the municipality or property companies (allmännyttig), tenant ownership (bostadsrättsförening), and owner-occupied detached homes. Renting is the most common form in multi-dwelling buildings and ownership is most common in one or two-dwelling buildings (SCB, 2017). Today, 48% of the Swedish population live in multi-dwelling buildings and 44% live in one or two-dwelling buildings. The rest reside in specialized housing such as student or senior residences (SCB, 2018).

Although multi-family housing is more common in Sweden, homeownership remains the end goal for many in one's housing career. This is partly due to the relationship between housing tenure and a woman's stage in her life cycle (Andersson, Naumanen, Hannu, and Turner, 2006; Chudnovskaya, 2019).

Chudnovskaya gathered data from the Swedish registers consisting of a 25% sample of four birth cohorts of women in Sweden, ages 15-18 in 1986. The study followed them for 20 years, covering the time from when one moves out of her parents' home until the typical end of the childbearing period. The majority of childbearing occurred in detached homes at 53% with 29% in rental apartments and 9% in an owned apartment. Most of those living in apartments during her first pregnancy transitioned to detached housing with the birth of a second child. Detached housing continued to become more common with increased number of births (Chudnovskaya, 2019).

Statistics Sweden also reports that 58% of children under the age of 9 live in one or two dwelling buildings and 65% of those 10 to 19 years old live in one- or two- dwelling buildings (SCB, 2018). This could either be due to the birth of a sibling as Chudnovskaya's research indicates or because familial needs change as children reach adolescence. However, those who were raised in an apartment were more likely to be comfortable with the idea of raising their children in a similar environment. This suggests that there is a connection between cultural norms in Sweden and the housing type in which families choose to raise their kids.

During the Million Homes Programme, 34% of the production included detached homes, the majority constructed in smaller municipalities. It was during this time that the standard for living space and quality rose in Sweden. In the 1950s, the single-family home typically consisted of one or two bedrooms with a kitchen. In the 1960s, the standard became three rooms and by 1975, 50% of the homes being built had five rooms or more (Hall and Viden, 2006). Today, the average dwelling size for multi-family housing in Sweden is 68 sq. m and 122 sq. m for one or two-dwelling buildings (SCB, 2017). The average household size in Sweden is 2.2 persons (SCB, 2018). However the average woman has 1.75 children (Sweden, 2020). Rounding up to two, it can be assumed that on average, there are at least three persons in a family household. Depending on the situation, this could be more or less at any given time. Although, in general, Swedes tend to live within a smaller footprint than other developed countries, downsizing from 122 sq.m to half that would be a difficult adjustment.

Today, the typical apartment is designed with presumed uses for the rooms within. Modern layouts often show the kitchen and living area as combined spaces, having an open communication with each other. While this provides visual connection and may encourage interaction within the household, it limits the possibility of various tasks occurring simultaneously. It also restricts the gradient of privacy. The other rooms within an apartment are bedrooms, usually with a larger master bedroom and smaller bedrooms. This assumes that parents will have the larger bedroom while kids have the smaller ones. However, it has been found that when overcrowding occurs, parents will sleep in the smaller bedroom or even the living room so that the children can have their own space (Braide, 2019).

Femenias and Geromel found that the common living spaces make up 30% - 50% of total apartment area compared to 20 - 30% of private spaces. Shared space decreases with an increased size of the apartment (Femenias and Geromel, 2019). This makes sense as larger apartments usually indicate more bedrooms. However, one must consider that more bedrooms equate to more people. Thus, the living area should increase as well or at least be able to accommodate larger groups through flexible methods so that families can gather together comfortably.

REFERENCE PROJECTS

VIA VERDE | SOUTH BRONX, NEW YORK, USA

Architect(s): Dattner Architects, Grimshaw
Year Completed: 2012
Area: 294,000 m²
Units: 222

This co-housing solution consists of a low-rise, mid-rise, and high-rise tower. It includes duplexes, townhouses, and smaller apartments to cater to different generations and housing needs. Through its shared courtyard, multiple roof gardens, ground floor retail, and various communal spaces, it encourages social interaction between residents, from young children to the elderly. It also promotes health and well-being through its consideration for daylighting, natural ventilation, physical activity, and biophilia.

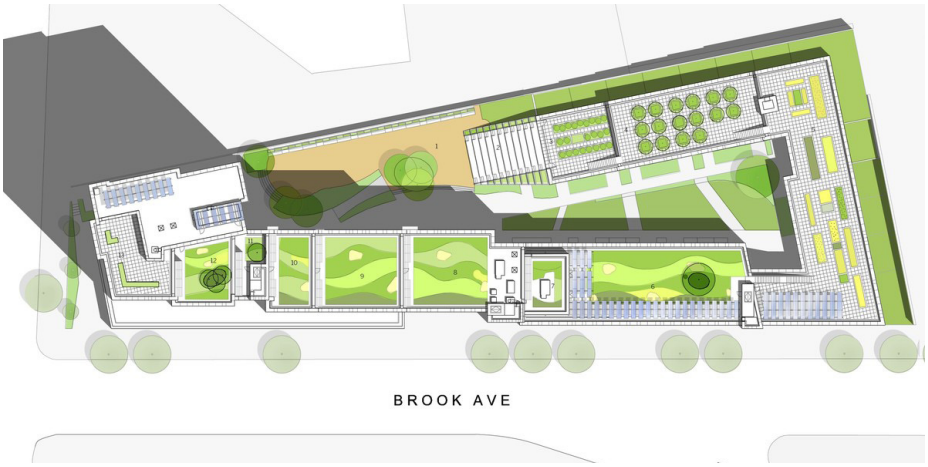


Figure 3. Site Plan (Grimshaw + Dattner Architects, 2012).

Figure 4. Via Verde (Sundberg, 2012).

Figure 5. Courtyard (Sundberg, 2012).

Figure 6. Floor Plan (Grimshaw + Dattner Architects, 2012).

Figure 6 shows a floor plan of the duplex. The `second floor is rotated 90 degrees, providing daylighting to the unit from both facades. This decision places the bedrooms on opposite sides of the staircase, eliminating a potential shared wall. Avoiding shared bedroom walls within the apartment establishes a greater sense of having one's own space, something that can be lost in apartment design.

The different roof terraces create various zones of gardening activities while the courtyard can be utilized for all ages. In *figure 5*, one can see sculptural elements for younger children to interact with while leaving the rest of the courtyard open and undefined.

Co-housing projects such as Via Verde provide a good example of how to integrate and encourage interaction amongst residents. The sharing strategies implemented in co-housing can be applied to non-social housing as a way to mitigate the feelings of loneliness that some may experience when living in cities. Initiatives taken by the residents to host activities like gardening, cooking, and cleaning can bring people together and create a strong sense of community.

URBANA VILLOR | MALMÖ, SWEDEN

Architect(s): Cord Siegel; Pontus Åqvist
Year Completed: 2008
Area: 140 m² per unit
Units: 7

Urbana Villor consists of 7 dwellings stacked vertically. Communal spaces include a garden, bike storage, and roof terraces. Each unit has its own unique floor plan, private entrance, and garden (seen in *Figure 9*). The ability to open up the kitchen to the balcony makes it an extension of the apartment and creates the sense that it is truly a yard. Further, the units have a balconies on two sides which establishes an inward and outward connection and can be seen as a backyard and front yard. At 140 m², units are quite spacious. Thus, while Urbana Villor is a vertical solution, it does not sacrifice the qualities that detached houses have.

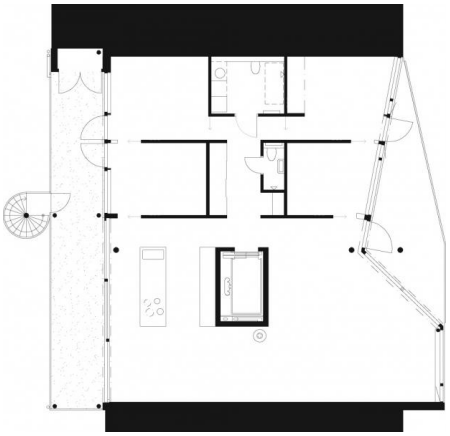


Figure 7. Floor Plan

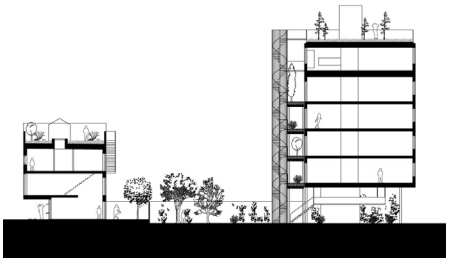


Figure 8. Section

Figure 9. Balcony

Figure 10. Facade

KIN (AT JACKSON PARK) | LONG ISLAND, NEW YORK, USA

Developer: Tishman Speyer and Common
Year Completed: 2012
Units: 1,871

Kin is the United States' first residential brand geared towards providing family-friendly living in the city based on the core belief that community is the foundation for this. Kin includes on-demand childcare, scheduled events and activities, and other available resources. All of this can be accessed through an app. Kin was first implemented at Jackson Park, which has dog parks, gyms, playgrounds, and various family designed spaces. This initiative demonstrates that urban living does not necessarily mean anonymity. Further, by designing ample spaces for children and utilizing resources such as technology, one can foster the social support that families often seek within urban environments.

The idea of encouraging a strong sense of community amongst families in the city should be a universal concept and while a technological solution is not integrated in this thesis, it is an option to consider.

Figure 11. Dog Park (Kin).

Figure 12. Play Ground (Kin).

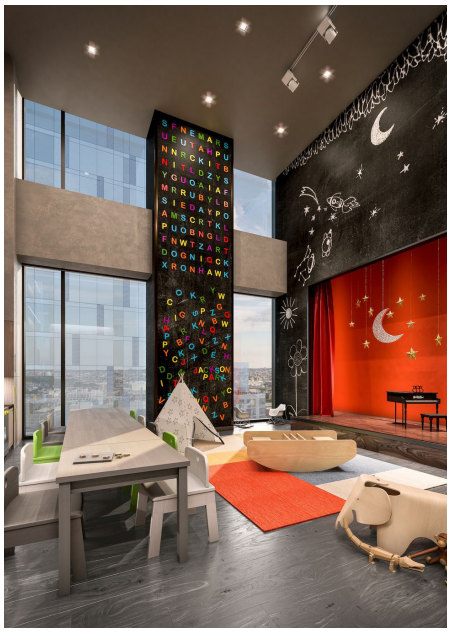


Figure 13. Play Room (Kin).

COMMUNITY AND PRIVACY

Authors(s): Serge Chermayeff and Christoper Alexander
Publishing Date: 1968

Although dated, Chermayeff and Alexander's deconstruction of the suburban house is quite applicable in the present time. They argue that much of what the single-family home stands for, such as privacy, quiet, and an "in-between" between rural and metropolis, is a fallacy. In many respects, with the ever increasing intrusions that come from the outside world and technology, the suburban home actually fails to achieve what it intends to.

Some have the opinion that suburbs are a great way to establish connections with people of similar backgrounds. Chermayeff and Alexander state the opposite, pointing out that neighborhood relationships are quite superficial. They view the yard as a no-man's land that merely wastes space and the four free-standing sides of the house that supposedly provide daylight and views from all angles are in fact only two.

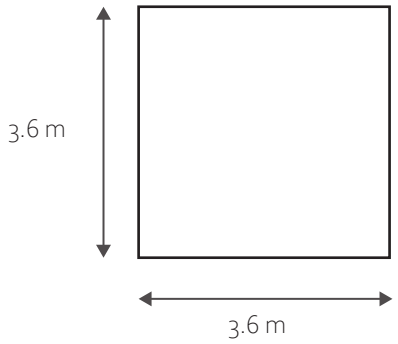
With this perspective, it could be argued that the suburban house is not necessarily better than an apartment. In fact, it's shortcomings are perhaps what is deeming the suburban home irrelevant as more people forgo its assumed perks to move to inner city areas.

APARTMENT CONCEPT

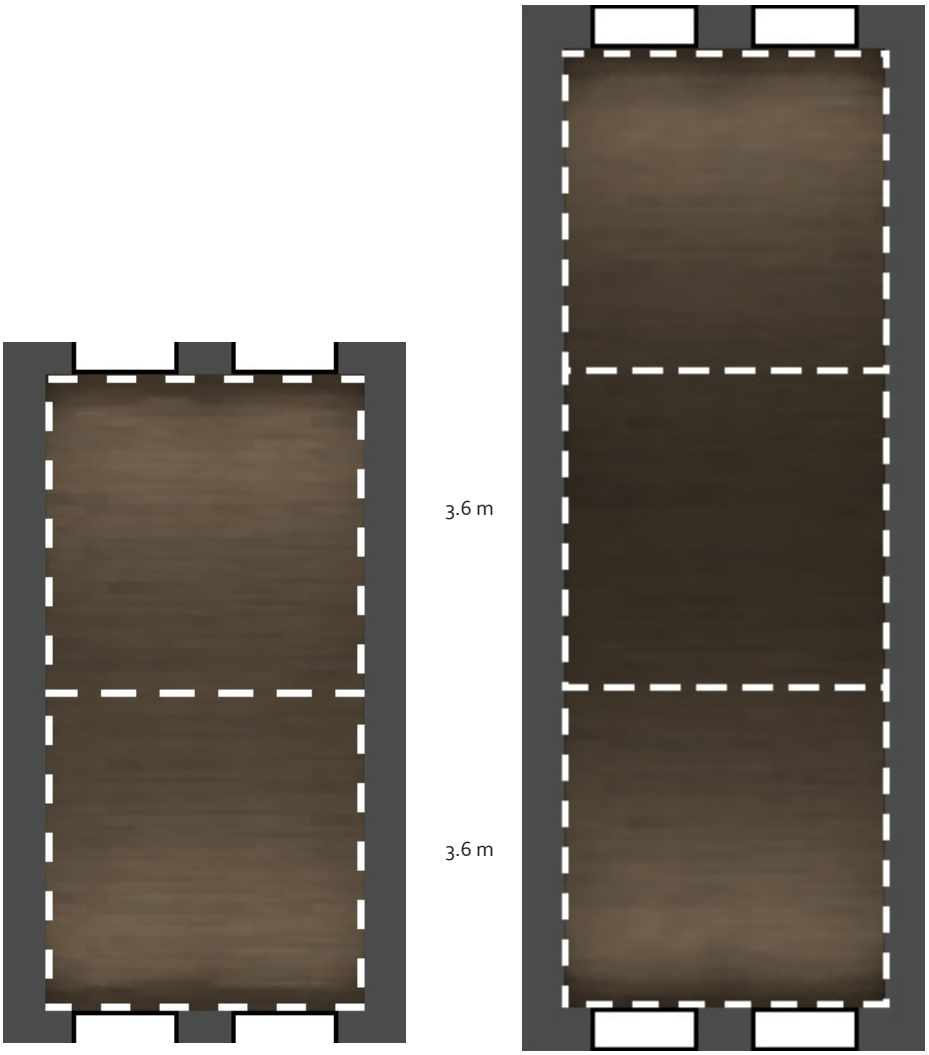
THE APARTMENT

Square Module

Keeping in mind the concept of generality, the apartment started with the basic square. Femenias and Geromel (2019) state that a room is universal if it is greater than 3.1m in width. Leupen (2006) claims that a room should be 4m in width. Starting with 4m x 4m, the footprint of the apartment quickly became too large. With the 3.1 dimensions, space was not adequate to meet Swedish Standards. The average of the two gives a dimension of 3.6 m. 3.6 has been used in other projects like 79th & Park in Stockholm and is referenced by several sources (Braide Erickson, 2019). It provides extra space for more versatility and while it does not meet all accessibility requirements, rooms can be combined in order to achieve this.

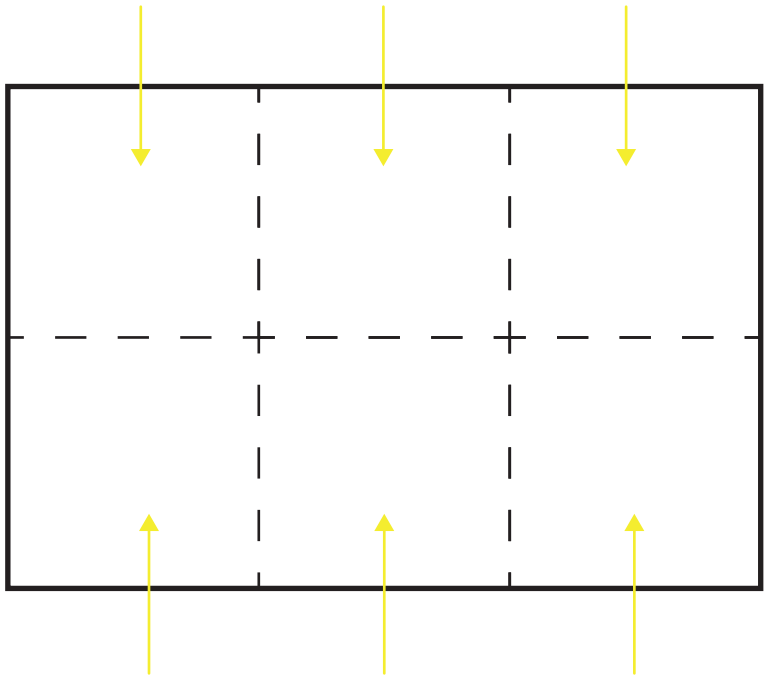


Various arrangements were tested with the 3.6 m x 3.6 m module. First, 3 modules were combined in depth, but this did not achieve adequate daylighting. It also left the middle room without windows, limiting flexibility. Thus, 2 modules in depth was decided on.

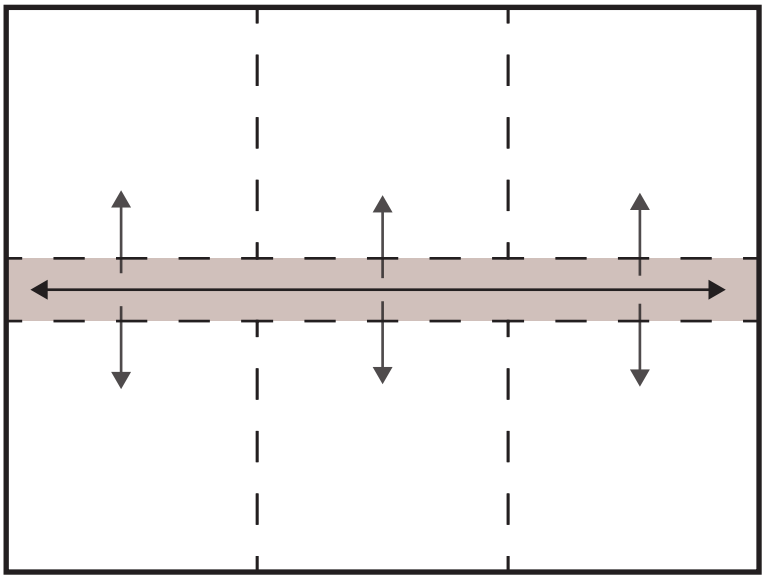


Although the depth of the unit is shallow, this allows daylight into all rooms and removes potentially dark corners.

Windows on the long facades allows even more light and maintains similar views that one would have in a house.



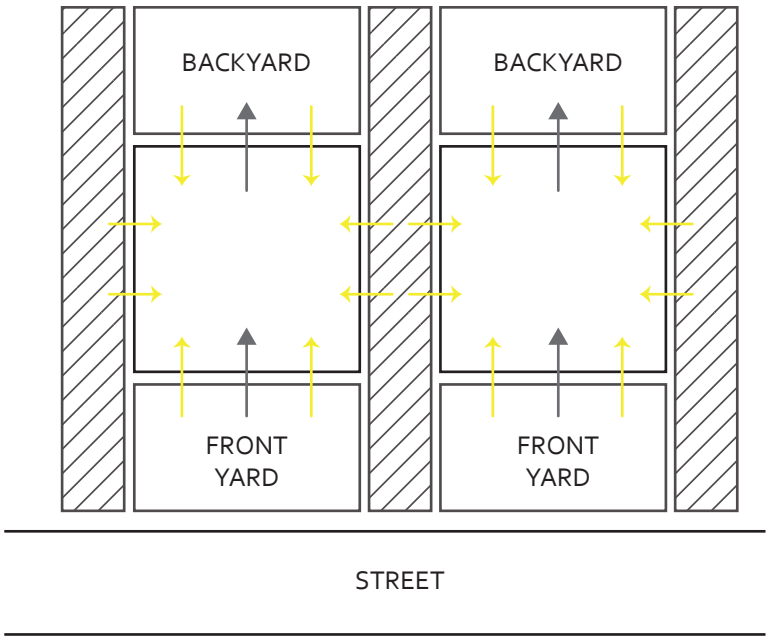
A neutral zone from which all rooms can be accessed was created. This eliminates pass-through rooms if the inhabitants desire it. It can also be used to establish grades of privacy. Where a detached house has split levels to differentiate private from public, apartments often lose this quality with open layouts. Keeping a pathway provides the option of maintaining it. It also acts as a buffer between rooms.



PHYSICAL QUALITIES

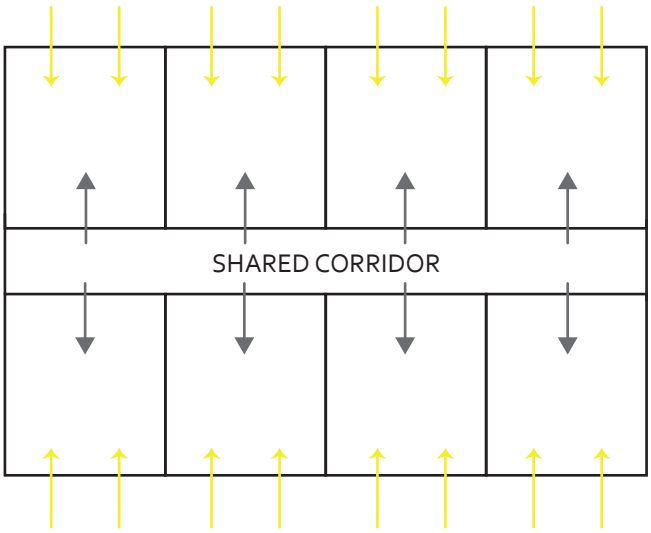
Single-Family Home

- Private yard
- Private entrance and exit
- Direct street and yard access
- Free standing walls
- 1-3 levels
- Windows on four sides

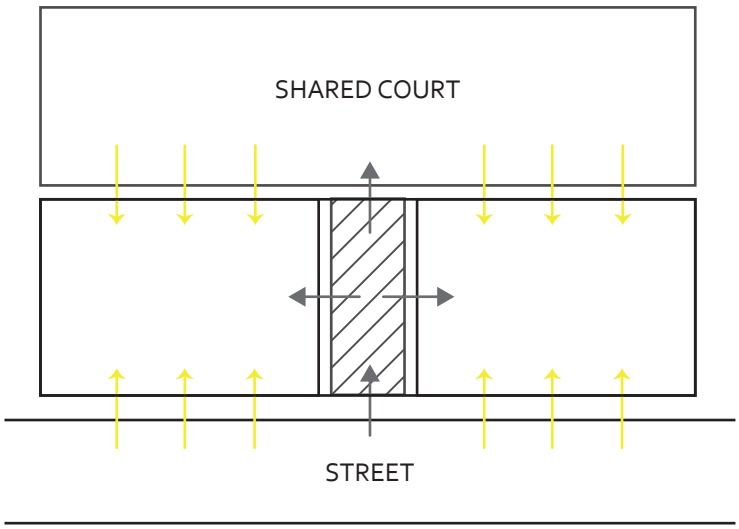


Multi-Dwelling

- Lobby (no street access)
- Common corridor
- Windows on 1 - 2 sides
- 1 level
- 2 shared walls
- Shared amenities



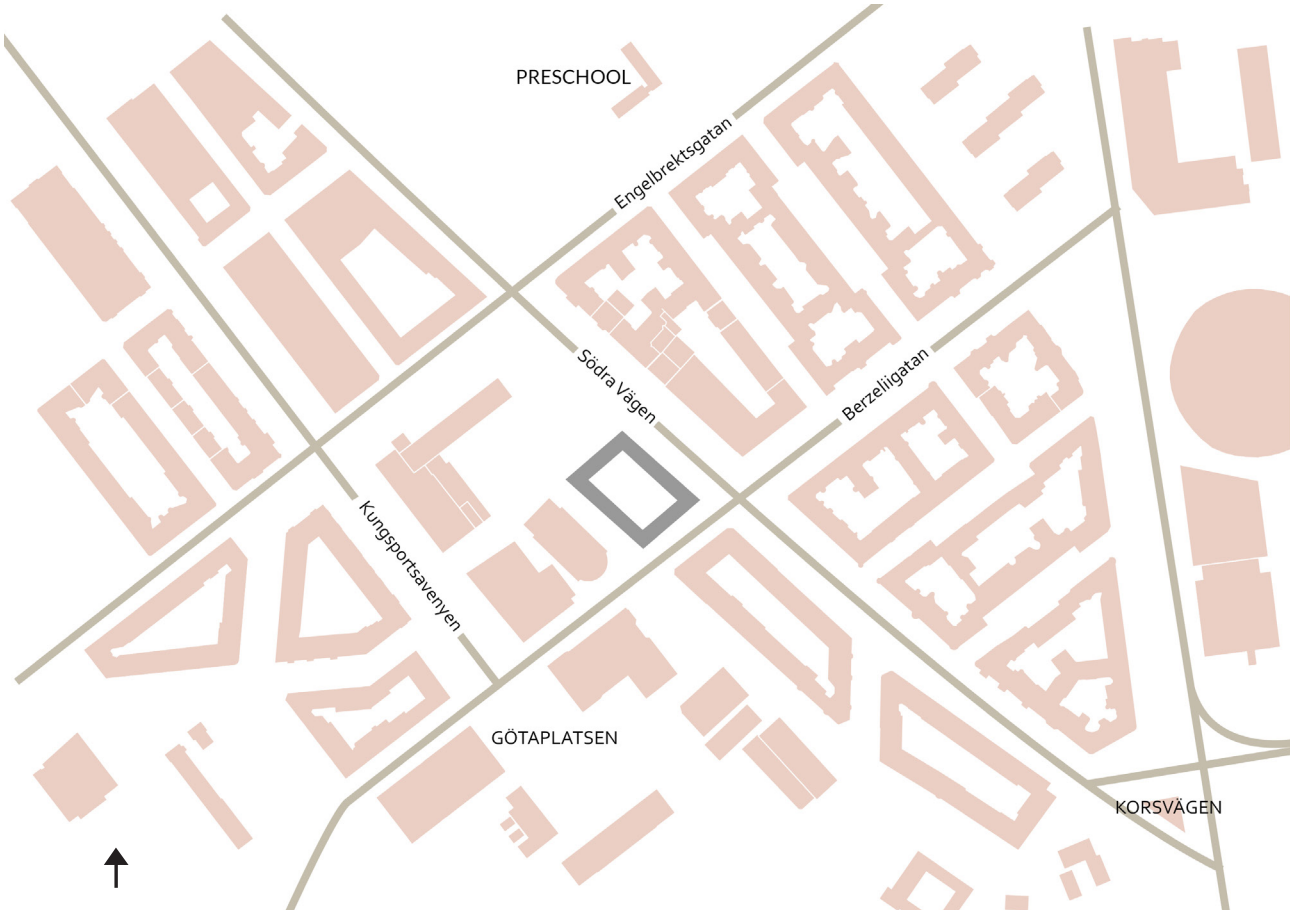
- Semi-direct street and courtyard access
- Semi-private entrance
- 1 shared wall
- Windows on 2 sides
- 1 level
- Shared yard



DESIGN PROPOSAL

SITE

The site is located in central Gothenburg, Sweden where the existing parking lot is intended to be replaced by residential buildings in the future.



One does not always have the option of the perfect plot, especially within an urban framework. Thus, this site provides a good opportunity to demonstrate how some of the negative qualities of urban life may be addressed in architecture.

Surrounding Context

Södra Vägen

Berzeliigatan

Park

Theater and City Library

Existing Parking Lot

Pedestrian Walk

Pros:

- City's theater and main public library
- Concert hall and museum at Götaplatsen
- Preschools within walking distance
- Tram and bus lines
- Korsvägen, a main public transportation hub in close proximity

Cons:

-Heavy traffic
-Noise
-Other disadvantages of urban life

THE BUILDING

Public Ground Floor Uses

Activates streetscape and connects neighborhood to building

Lobby

Intended as a hangout space and not just for passing through

Childcare

Convenience and gives opportunity to interact with children outside of complex

Communal Kitchen

Possibility to hang out and socialize or host community events

Multi-Purpose Room

Can be booked for private events or used for various activities

Play Room

Common indoor area for children to interact and run freely

Shared Storage

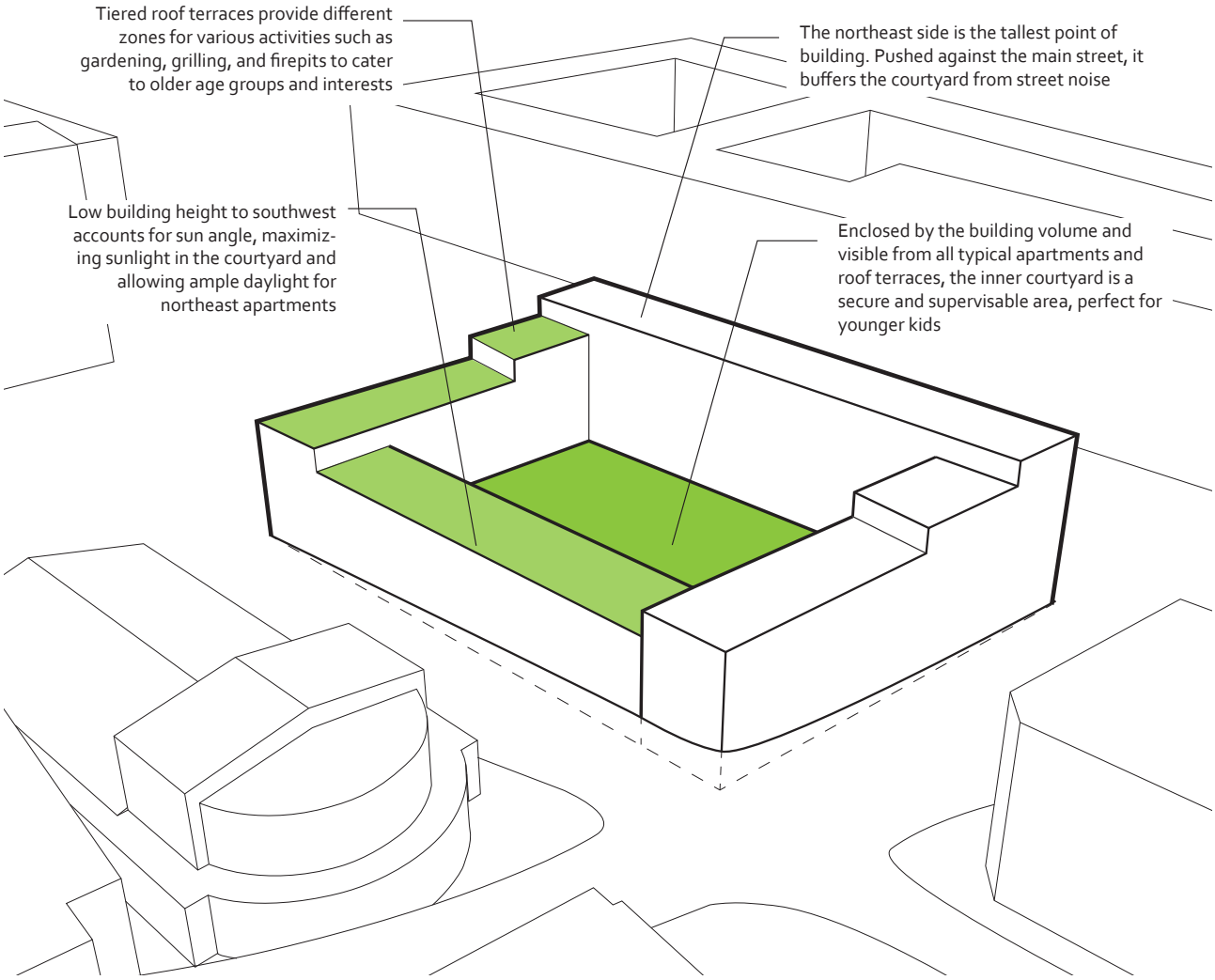
Possibility to store bulkier or seasonal items that don't fit in the apartment

Enclosed Courtyard

Protected outdoor space for various age groups

Rooftop Terraces

Provides various types of spaces for different age groups


Tiered roof terraces provide different zones for various activities such as gardening, grilling, and firepits to cater to older age groups and interests
The northeast side is the tallest point of building. Pushed against the main street, it buffers the courtyard from street noise
Low building height to southwest accounts for sun angle, maximizing sunlight in the courtyard and allowing ample daylight for northeast apartments
Enclosed by the building volume and visible from all typical apartments and roof terraces, the inner courtyard is a secure and supervisable area, perfect for younger kids

Basement Level

Scale: 1 - 400

Level 1

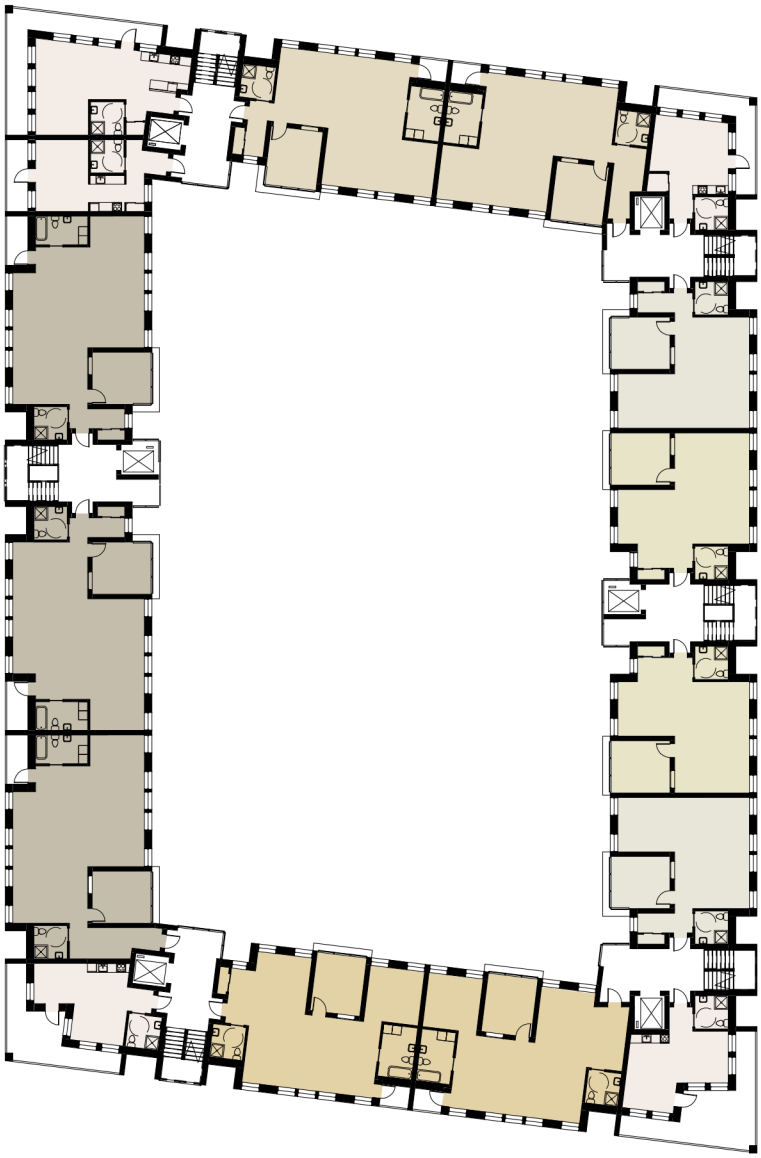
North

Scale: 1 - 400

Level 2

Scale: 1 - 400

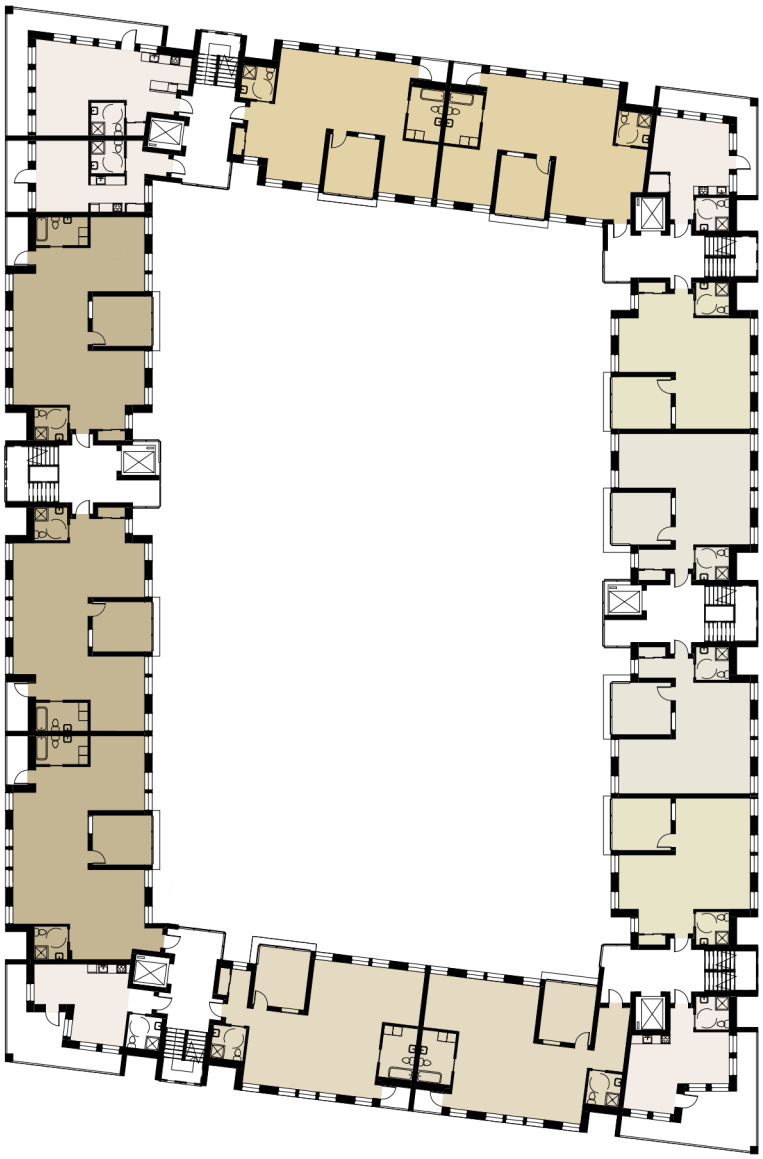
Level 3



Large - Type A
Large - Type B
Medium - Type A
Medium - Type B
Small - Type A
Small - Type B
Unique

Scale: 1 - 400

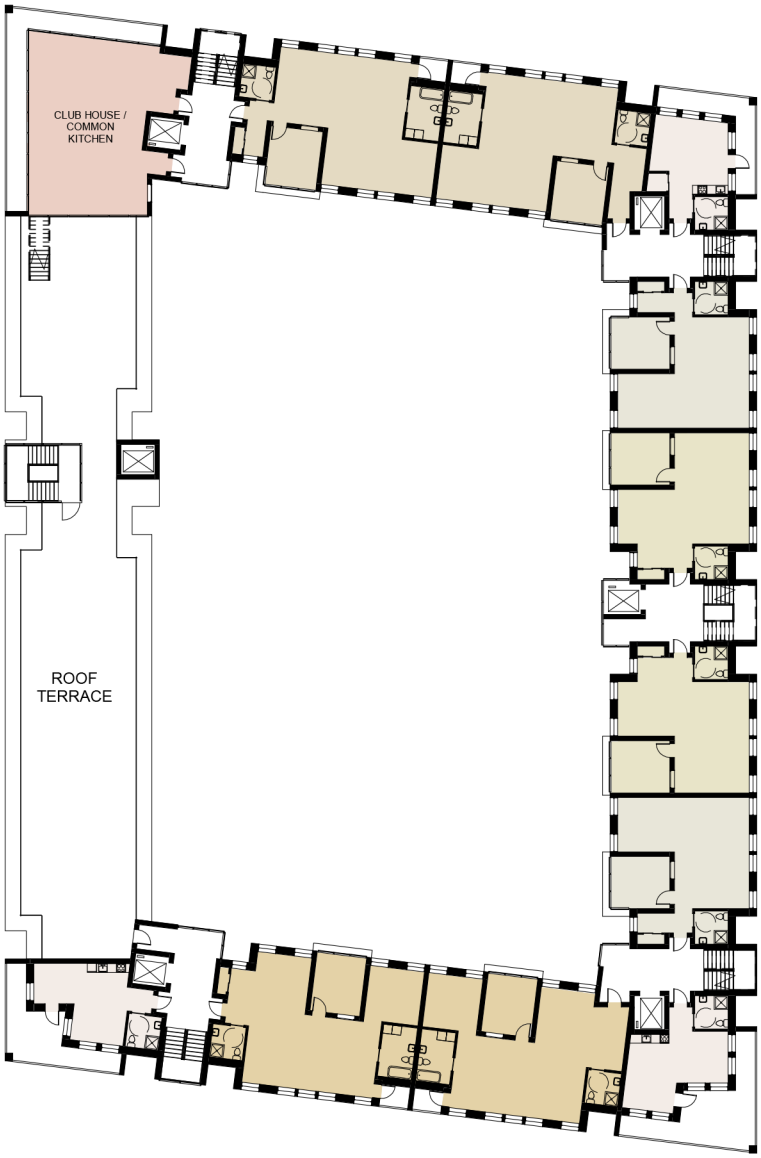
Level 4



Large - Type A
Large - Type B
Medium - Type A
Medium - Type B
Small - Type A
Small - Type B
Unique

Scale: 1 - 400

Level 5



- Large - Type A
- Large - Type B
- Medium - Type A
- Medium - Type B
- Small - Type A
- Small - Type B
- Unique

Scale: 1 - 400

Level 6

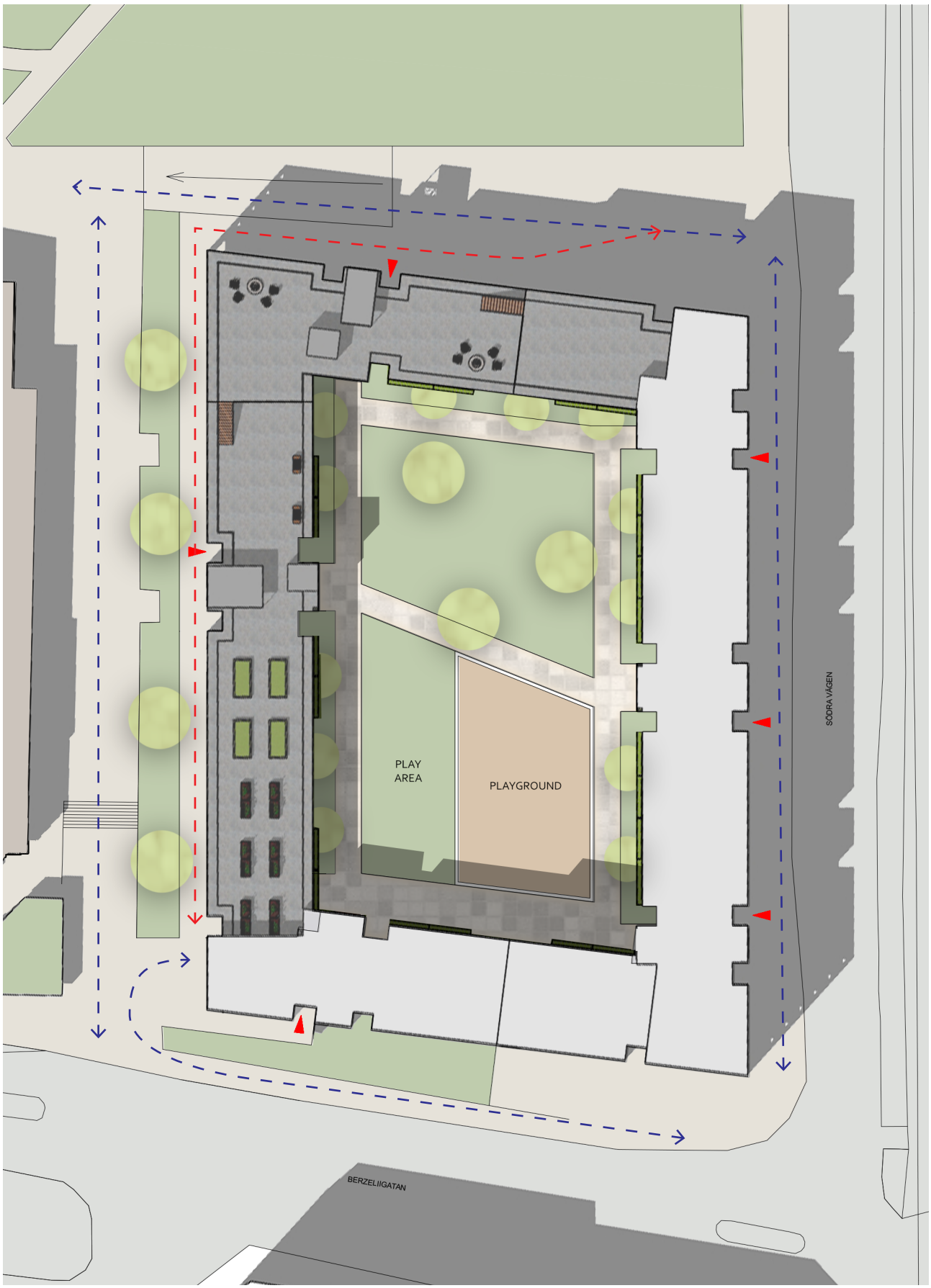
Large - Type A
Large - Type B
Medium - Type A
Medium - Type B
Small - Type A
Small - Type B
Unique

Scale: 1 - 400

Level 7

Large - Type A
Large - Type B
Medium - Type A
Medium - Type B
Small - Type A
Small - Type B
Unique

Scale: 1 - 400



North

Scale: 1 - 400

Northwest Elevation

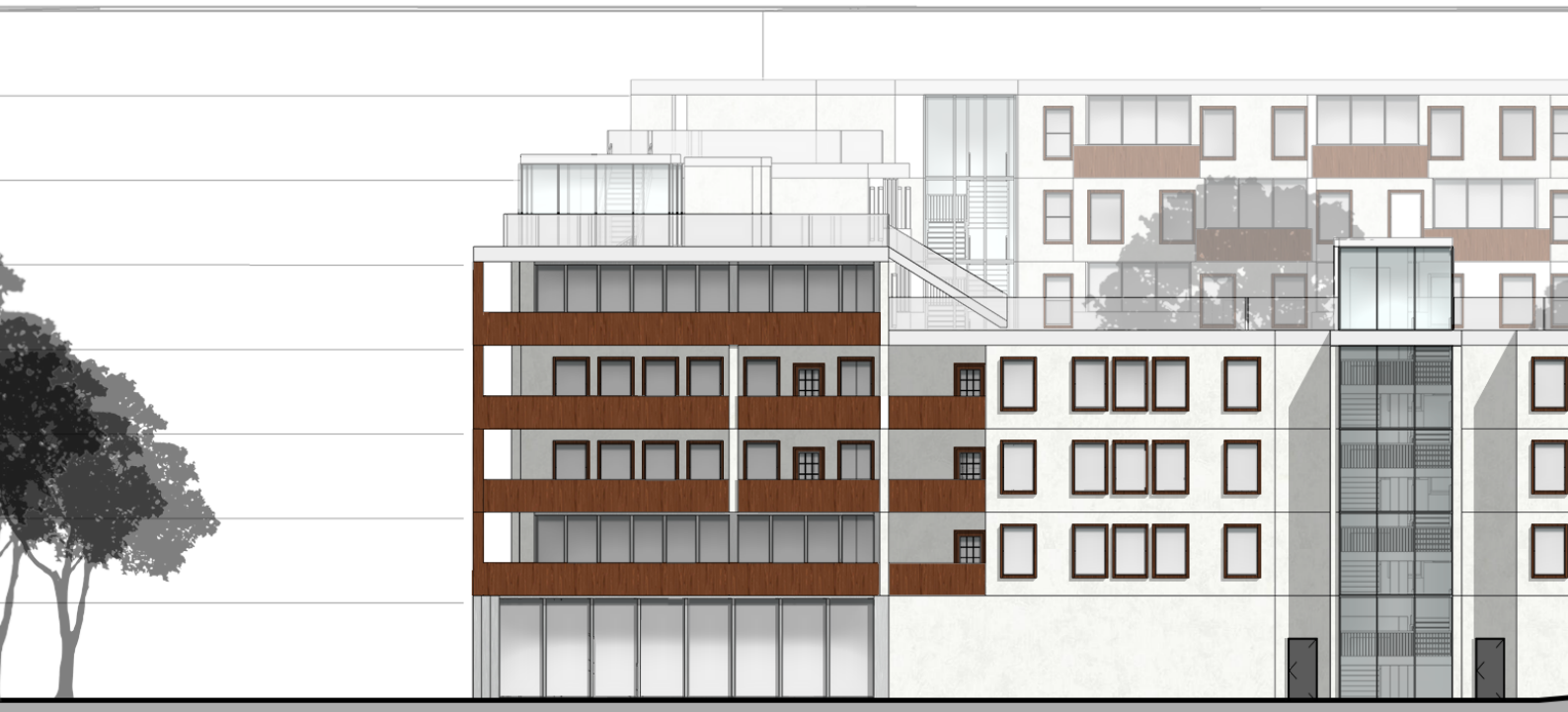
Scale: 1 - 250

Southeast Elevation

Northeast Elevation

Scale: 1 - 250

Southwest Elevation



THE APARTMENT

S, M, L Apartments

Caters to different types of households and makes it possible for families to move within the building

Flexible Interior

Interior walls are flexible to accommodate different needs

Window Placement

Regular rhythm provides possibility to divide bigger rooms into smaller ones

Visual Connection

All family apartments face the courtyard for supervision of children

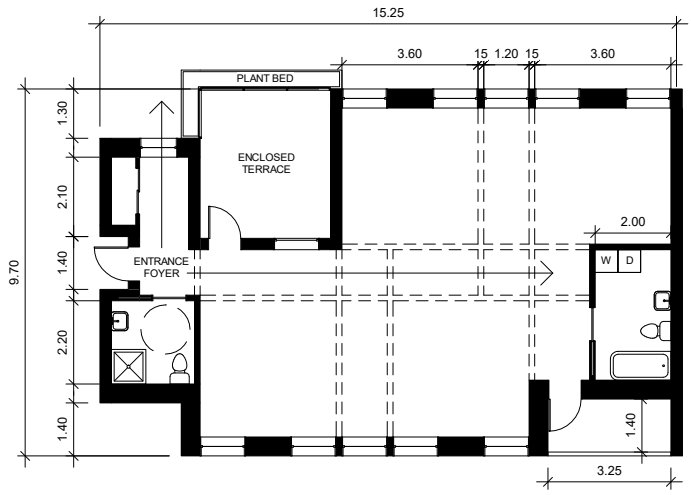
Entrance Niche and Foyer

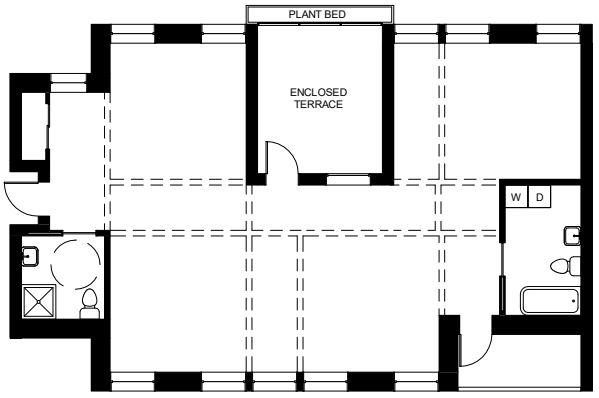
Establishes own space and provides storage for strollers, outdoor items, etc.

Enclosed Terrace

An extension of the apartment, it acts as a mini private garden, usable year round

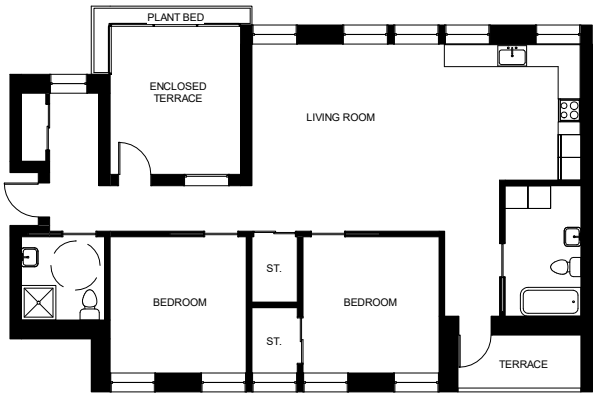
Large Apartment - 117²

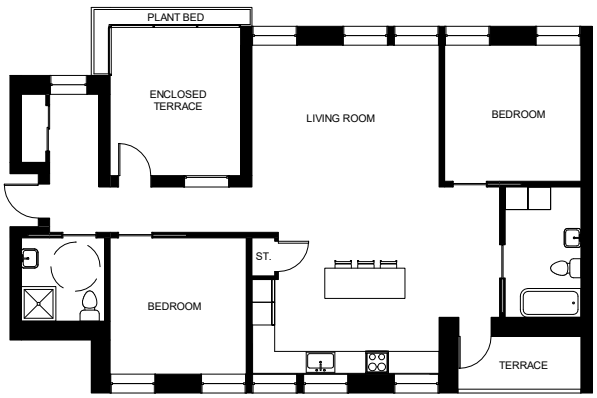




Scale: 1 - 200

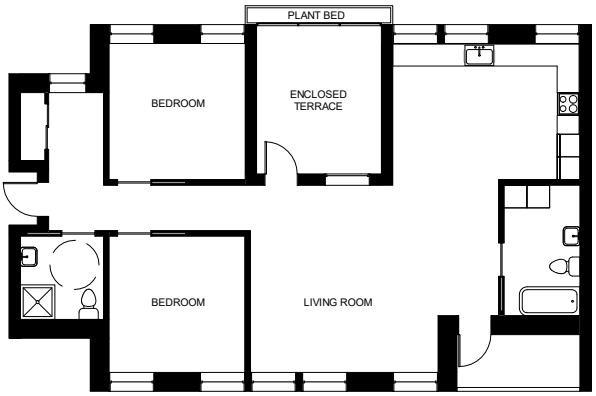
Large Apartment A - Possible Layouts

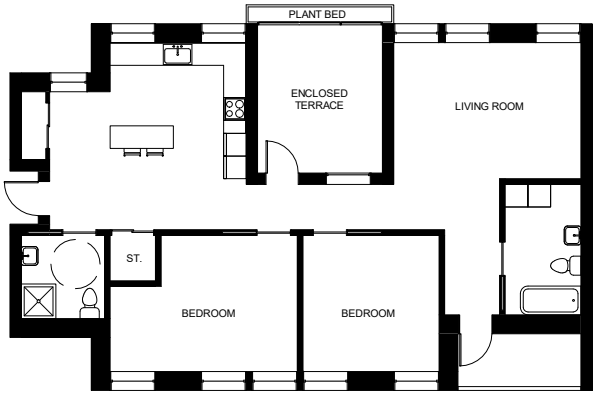




Scale: 1 - 200

Large Apartment B - Possible Layouts





Scale: 1 - 200

While the large apartment was the main focus, all apartments follow the same basic structure.

3.6m x 3.6m modules create general rooms, making the apartment more versatile.

1.2m space provides additional square meters for rooms or storage or can serve as corridors if inhabitant wishes to create further separation between rooms.

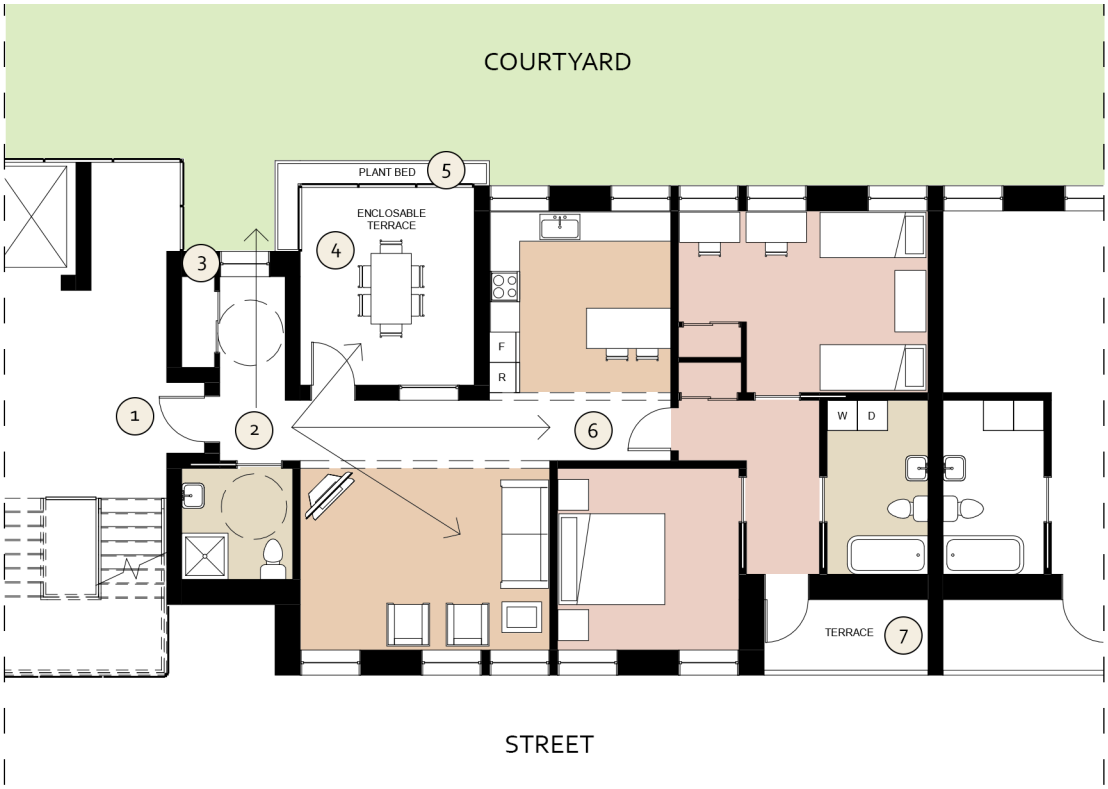
Utility and service areas are placed against the stair core and dividing wall between apartments to create a buffer against noise. One bathroom is at the entrance so guests do not have to walk through the rest of the apartment. This also provides a wet area and accessible bathroom for when kids are running in and out of the house.

Flexible interior walls can be added or removed based on the grid lines, making the apartment adaptable to change over time.

Enclosed terrace faces the courtyard, acting as a private semi-outdoor space and allowing a closer relationship to the activity below as a porch does to the private yard. Because it is not an open-aired balcony, it can also be used as a play room, dining area, or work space. It can also be opened up for fresh air, hanging laundry, or enjoying the natural elements. The thick low exterior wall allows for a small garden without the commitment of maintaining a private yard.

The terraces alternate every other floor, creating movement in the facade and helps to limit looking into someone else's balcony.

Small terrace provides visual connection to the activity happening on the street. While perhaps less used, it gives the option of being more in touch to the world outside of the complex and one can watch people as they come and go.



1. Entrance Niche
2. Foyer
3. Entrance Window
4. Enclosed Balcony
5. Low Wall
6. Corridor
7. Terrace

Public
Private
Utilities

Scale: 1 - 150

The detailed plan shows how the apartment may be arranged to best utilize its qualities for a family with 2 kids.

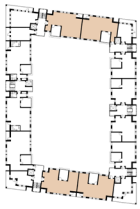
Here, the corridor creates a neutral zone and a transience of public to private spaces within the unit. It is left open, allowing views from the entrance foyer into the living spaces.

The kitchen and living room are left open but are on opposite sides of the corridor. This maintains a visual connection between them without blending them together. It makes it possible to section them off so that one person can do homework at the kitchen island while another is watching TV. The kitchen looks down to the courtyard so that parents can supervise their kids playing while they cook or clean up.

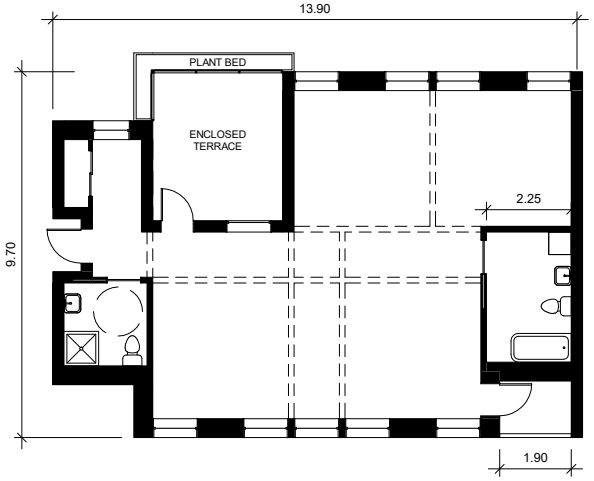
The bedrooms are accessed from a second corridor, which separates the private areas from the living spaces. It also separates the two bedrooms so they are not sharing a wall, increasing the sense that one has their own space.

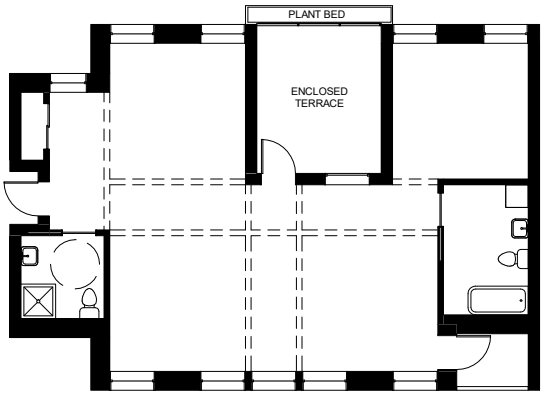
The larger bedroom is given to the children. It is on the courtyard side so they can be connected to what's happening below. If they see their friends from their bedroom window, they can join them. It is also on the quiet side which is ideal for bedtime.

The parents' room is against the street side and shares a wall with the living room. This is ideal because after the kids have gone to bed, the adult(s) can sit in the living room and watch TV, their own bedroom acting as a noise buffer.



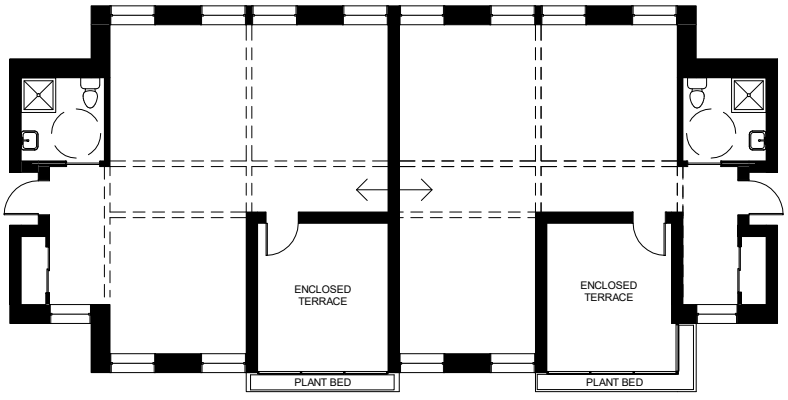
Medium Apartment - 107 m²

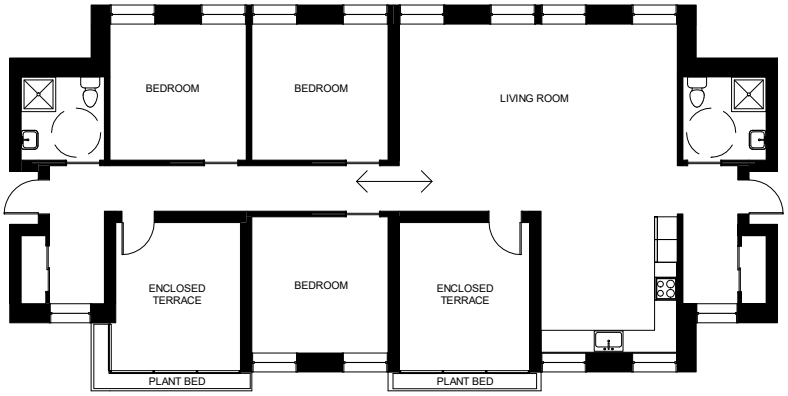




Scale: 1 - 200

Small Apartment- 78 m²





The small apartment only keeps the main corridor, but it incorporates the concept of extendability. Thus, residents can purchase two units and combine them across if needed.

Scale: 1 - 200

View from Large Apartment Balcony

Courtyard

CONCLUSION

Future Challenges

Apartments in cities are becoming smaller and more compact in order to make them more affordable, produce greater revenue, and address the housing shortage. In this way, they are geared towards specific target groups, namely young professionals and empty-nesters looking to downsize. However, failing to cater to a larger audience can have negative long-term impacts on urbanization. Excluding families can lead to gentrification, limit future city growth, and result in high-turn over which can impair neighborhood satisfaction (Kotulla, 2019).

However, as cities continue to grow, it is important to realize that addressing the needs of families does not stop at the design of residential buildings. Creating family-friendly environments requires planning and consideration at the urban planning scale. Policies and guidelines should be implemented and met to ensure that urban living goals are inclusive to the majority. It is argued that building vertically is more sustainable than building outward, but if the vertical solutions provided continue to eventually force people to relocate, it fails to alleviate the problem.

Contextual Importance

Although the methods and solutions in this thesis are applied within the Gothenburg and Swedish context, the concepts themselves are intended to be implemented in diverse scenarios including denser cities and even suburbs.

In denser cities, the solution is to build vertically - the denser the city, the higher one builds. This is met with controversial opinions. Quite a bit of research has been done on high-rise living and several sources link behavior problems, crime, psychological disorders, obesity, suicide rates, and overall unhappiness to such housing situations (Whitzman, 2017). However, these studies are often bias in that they only focus on lower-income families which could result in negative outcomes due to other factors besides housing. In fact, studies on middle-class families living in high-rises have shown quite a high level of satisfaction. The same is apparent in contexts where vertical housing is the cultural norm (Whitzman, 2017). This relates back to the influence housing origin has on one's housing preference. It isn't so much that apartments are objectively inappropriate environments to raise children but they are perceived to be and the way in which they are designed exacerbates those preconceptions.

Including Children

Part of this thesis involved asking why some families choose the single-family house over its counterpart. Space, safety, neighborhood continuity, outdoor areas, and privacy were some of the reasons that influenced their choices. On the other hand, when it came to living in the city, proximity to good indoor and outdoor spaces, pedestrian-friendly environments, neighborhood walkability, and access to childcare, schools, shops, and libraries were important factors (Whitzman, 2017). It

should be noted that these preferences are based on the parents' answers. Few studies have actually asked children for their opinion. The ones that have show a discrepancy between their preferences and their parents' (Whitzman, 2017). Thus, as architects ask for user input during the design process, it is necessary to include kids in that equation. The next step would be to start asking kids what they prefer in a home. This is the best way to ensure that the design is correctly addressing everyone it is intended to serve.

FINAL REFLECTION

Initial Assumptions

Upon starting this thesis, the intent was to design a small, compact apartment.. However, through research and trial and error, it was discovered that many of the qualities that make a single-family home what it is exist because of its extra space. No matter how adaptable a room is, insufficient floor area will create an uncomfortable living situation if there are too many inhabitants. Modern day apartments can appeal to childless adults and young professionals because this group usually does not need a large living area. Thus, the question became less about designing a compact apartment and more about designing an apartment appropriate for families.

Final Outcome

The three typical apartments share the same basic yet flexible grid. This makes it easy to replicate the dwellings while maintaining the ability to personalize them as one can do with a home. It's shallow, 9.7 meter depth allows for ample daylight into the interior so that no rooms are without windows. The neutral corridor provides opportunity to eliminate the open layouts that apartments typically come with in order to create more public or private spaces. Further, the two balconies emulate the private yards of the single-family home, providing a connection to both life within the complex and outside of it.

Not everyone wants to live in a detached house. Not everyone wants to live in an apartment. Regardless of preference, there will always be different groups of people living in the latter and it is important that their diverse needs are met. Most multi-dwellings today follow a one-size fits all prescription. If architects were to design apartments as meticulously as they do the detached home, it is possible for apartments to maintain similar qualities. By doing so, multi-family housing could indeed be viewed as a feasible option for many instead of for the few.

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