Living Together:
The Architecture and Mutual Symbiosis of Intergenerational Housing

by

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Contents

Abstract

Today's changing demographic and a rising life expectancy are creating communities where different generations live at the same time for longer periods of time. The constantly growing models for housing and care services for the elderly are based on an age segregated approach. As a result, existing living environments, for the most part, are homogenous, where the elderly are physically and socially isolated from the rest of the community. This thesis seeks to explore intergenerational living as a symbiotic alternative to traditional age specific care models and isolated living in private homes. Mutualism is a symbiotic relationship between individuals of different species where both individuals benefit. This will be the key concept through which a new intergenerational housing typology is developed, one that is heterogeneous in nature, and fosters synergistic, inclusive, and diverse environments for all generations. This theoretical framework will be investigated in Halifax, Nova Scotia, Canada.

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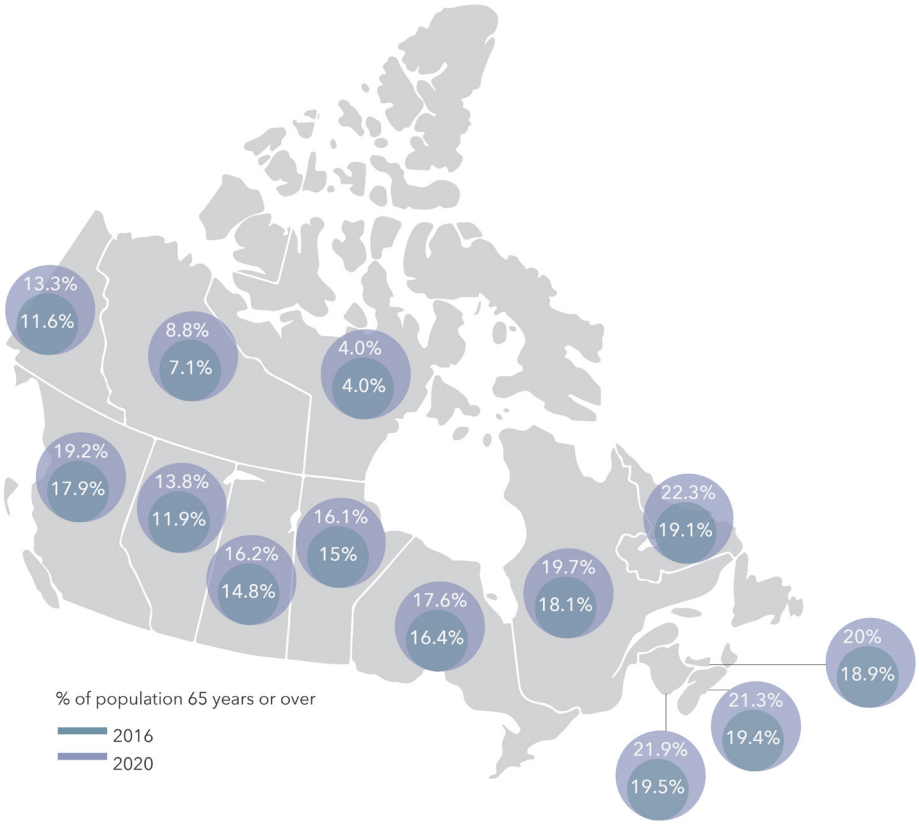
Chapter 1: Introduction

Ageing and Urbanization: A Global Trend

In Canada as well as globally, the senior population is growing. In 2016, for the first time ever in Canadian history, the number of seniors aged 65 and over exceeded the number of children aged 14 and under (Statistics Canada 2019). At the same time, cities are growing with more than half of the global population now living in cities. Older people are also increasingly living in cities, matching the proportion of younger people living in cities (WHO 2007). Both of these trends, ageing and urbanization, are expected to continue rising over the coming decades. As a result, cities are flourishing with different generations living at the same time for longer periods of time.



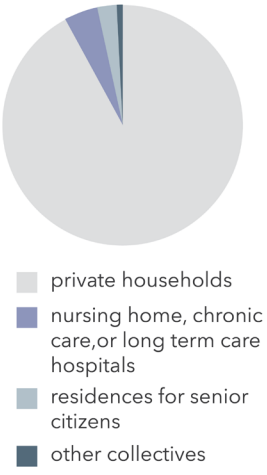
Map of Canada showing percent increase in population 65 years and over (data from Statistics Canada 2019)

The ageing of society is a positive yet challenging phenomenon, as population ageing and urbanization are the culmination of successful human development. This change in our societal makeup affects many aspects of life, and the discussion around the ageing population spans across many fields and disciplines such as healthcare, urban design, and architecture, just to name a few. Since old age can now last for almost 30 years, the role of elders in our community is more prominent than ever and must be explored. From an architect's perspective, these trends create many opportunities to contribute to an ongoing discussion. Therefore this thesis asks the question: how can architecture be designed in an age inclusive and integrative way that fosters synergistic interactions, and diverse intergenerational urban communities? This thesis particularly focuses on the interface between housing and community, and considers an intergenerational dwelling as the smallest community, within and integrated into the larger community. It is the building block of a much more diverse and inclusive society.

A Critique of Current Housing Models

Studies show that 92.1% of elders aged 65 and over, live in their own private households. The more they age, the more likely they are to live in special care facilities, with nearly 30% of elders aged 85 and over living in such facilities (Statistics Canada 2011). As the aging population continues to live longer, care facilities will face greater burdens to grow and expand more than ever before.

Much of the architectural discussion in Canada, has been dominated by typologies of institutional, long-term care models. These are often large scale complexes developed



Living arrangements of seniors in Canada (data from Statistics Canada 2019)

at the peripheries of rural and urban landscapes. Therefore, the resultant geography of aging reinforces the social isolation of seniors. These models find their basis from a medical perspective and during planning and design, there is often “cultural drive for maximum autonomy on the one hand and an economic drive for efficiency and control on the other” resulting in places that promote efficiency but contradict individual autonomy (Schwarz 1997, 15). The resultant architecture therefore resembles that of a hospital with double loaded corridors and generic spaces. These models often emphasize care and the negative aspects of old age instead of emphasizing and encouraging the positive abilities of these individuals. They are also often targeted towards a small proportion of the elderly that require long term care needs and do not address the much larger proportion of elders, those of the healthy and active third age.

The growing availability of health care and home care services influence elders to age-in place. Current housing models, however, are not suitable for those who wish to age-in-place. The single family home in the suburbs, which attracted families for its perceived sense of privacy, did not provide the level of seclusion that families were expecting. “The most conspicuous theme in American model cottages, as in actual homes of the mid-nineteenth century, was privatism. Each pattern-book drawing showed a single, isolated dwelling surrounded by a carefully tended garden” (Wright 1981, 88). These low, dense neighbourhoods with few services and amenities are segregating and create very isolating living environments. They have not shifted along with the changing population, which no longer reflects a nuclear family structure where “every family is expected

to consist of a male breadwinner, female housewife, and their children" (Hayden 1984, 6). This housing pattern does not support an ageing population who wishes to age in place because it does not adapt to changing needs, forcing the inhabitants to find alternative living arrangements. The dependence on cars in suburban settings is another challenge for elders who no longer have the ability to drive. This traps them between the four walls of their homes, making it harder to maintain the same interactions and social life they had.

Images showing the homogeneity of the suburban housing model (Britannica n.d.; Britannica n.d.)

In contrast, the density apparent in cities, allows for a variety of programs to exist within short distances from one another. Although this provides greater opportunities to have housing and other amenities and services easily accessible, the current available housing in cities is also not designed to suit the needs of the ageing population. It does not suit the needs of families and young children either. Housing in the city is often targeted towards professionals, and young couples. The high-rise, dense buildings in the city result in housing units that are usually standardized and small and fail to create a sense of community.

Urban housing model (Cogley 2020; Sidransky 2019)

These current ways of designing and living are homogenous and isolating. Alternative housing arrangements which integrate elders into the community would address the lived isolation and the large financial costs of homes and institutional care while providing greater autonomy to our elders. The increased house prices in urban and suburban areas along with the experienced isolation of current housing models are influencing densification and a return to multi-generational ways of living. This can be seen in individual houses and buildings as well as lane-way additions. There are also many different approaches to senior housing that have taken place in different parts of the world. These will be discussed in chapter 2.

Chapter 2: Case Studies

The following section is a study of different cultural approaches to housing the elder generation. These precedents inform the thesis by offering various strategies and design principles that could be applicable when designing for multiple generations.

Villages

In many cultural contexts, villages represent a larger scale of multi-generational living, where spatial and social structures stimulate beneficial coexistence of all generations. Services and amenities found in towns and villages supported the needs of different age groups and were located within walkable distance to a church and stores with local goods. Cultural events usually took place on a main street or main square. A village was overall a tight-knit community with different levels of interactions such as family, friends, neighbours, and the larger community. Presence of a strong social bond and commitment to collaboration among all residents is evident in such villages.

> A child growing up in such a milieu must learn from his early days how to rub elbows with people and get along with them. He must develop the art of adjustment not only to his age group, but also to his elders and those younger than himself. He soon develops a keen consciousness of belonging to the community. Through such consciousness his personality is expanded. (Tannous 1949, 155)

The village can be seen as a large community where a strong sense of belonging and solidarity is developed. Principles from a village model are directly applicable to intergenerational living in a city setting in terms of scale and experience. Large developments could be broken up into smaller scale buildings, where the space between buildings is just as important as the buildings themselves. This would

create visual, social, physical, and spatial engagement between each building mass, and highly socializing environments just as seen in a village.

Old men gathered at a cafe in a village in Lebanon socializing and watching surrounding activities

Japan

Japan currently has the largest ageing population in the world, with more than 28% of its total population over 65 years old (PRB 2020). The Japanese cultural landscape provides many unique conditions which have affected their housing theories and developments and the way they deal with this rapidly changing demographic. Although Japanese cities are large, their urban fabric demonstrates mixed use neighbourhoods formed around historic roji lanes. The scale

and density of this urban form gives rise to tight-knit districts and communities. Because of spatial constraints, Japan also has a history of flexible housing types which are able to adapt to changing conditions. This is a significant strategy when designing for multiple generations. In the Japanese culture, the connection between the built environment and nature is highly valued and very well incorporated in elder housing (Leung 2018). These characteristics of the Japanese cultural landscape (mixed use, flexibility, and connection to nature), are key principles that could be applied when designing for multiple generations.

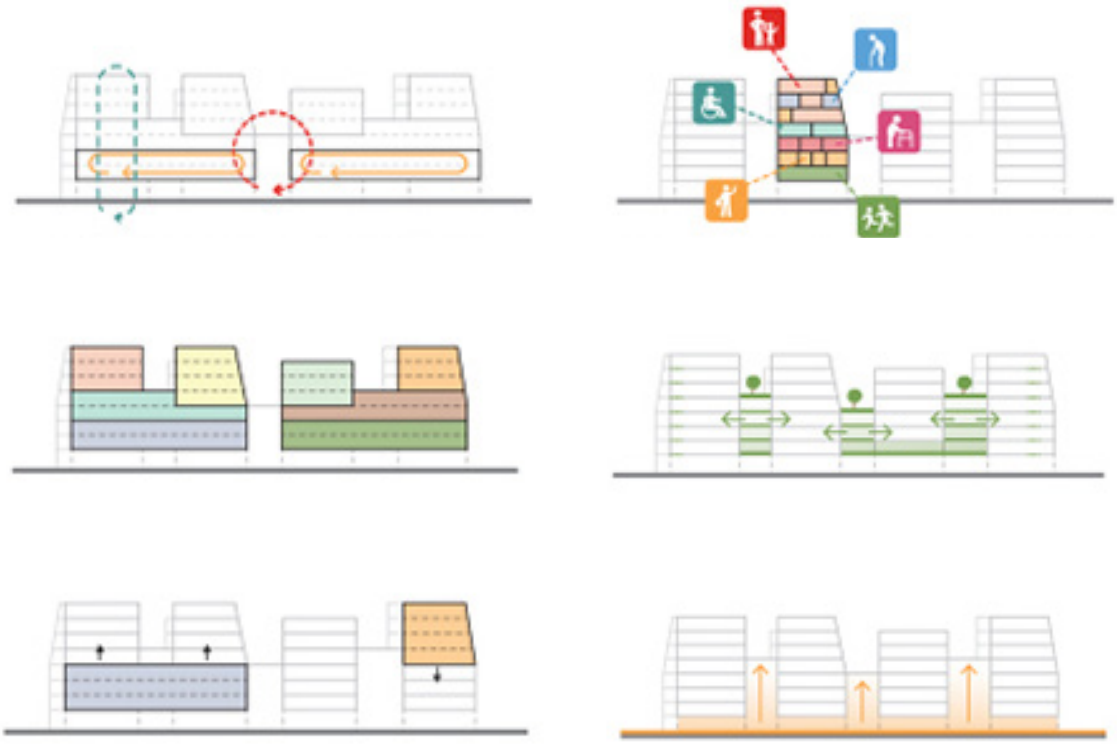
Human scale and mixed-use context of roji lanes. Flexible zoning rules have allowed the city to become an incredibly integrated, mixed-use region (Leung 2018; Smart Density n.d.)

Denmark

Denmark is recognized as a leader in the field of architecture for ageing, and approaches architectural design with a particular focus on reducing the stigma of old age and promoting social inclusion (Peters 2014). Co-housing was an alternative housing typology that developed in the 1960's which was all about social equality and the sharing of household responsibilities. Cultural norms of collaboration, self organization and joint decision making allow this form of collective living. The rise of senior co-housing communities in Denmark, however face a similar issue of segregation.

Since their development was made possible by similarly aged individuals, what resulted was that all the residents were entering old age at the same time which affects these communities as they start needing more support beyond provisions amongst neighbours. Housing options that focus on elders alone, face issues of homogeneity which designing in diversity may help to address.

As an alternative approach, multi-generational planning and design of elder housing has re-emerged. At the larger scale of development, projects look at introducing a variety of housing types and supportive programming to encourage a multi-generational community. Generations House in Aarhus, Denmark, aims to bring together all generations, and is part of a districts vision in “creating a vibrant, diverse, and attractive district, that offers a fusion of business, housing, culture, and recreational oasis to bring together city center and port area” (Yoon 2020, 52). At the Generations House, the housing development consists of care homes, senior apartments, youth housing, and mainstream housing in integrally mixed apartment blocks. Supportive program space for child daycare, public cafe, and auditorium are placed at the ground level. The Generations House development is predicated on the belief in fostering demographic diversity in housing arrangements to address needs across one’s lifespan. The ambitious program provides housing for elders (with and without care), people with disabilities, youth, and families. Meanwhile, public and semi-public spaces distributed throughout the buildings allow for community engagement both within the building and to the neighbourhood beyond. Diversity is a key principle that could be applied when designing for multiple generations.



Concept diagrams showing an arrangement of dwelling configurations which segregate generations and types into a variety of zones (left) and an intentionally mixed dwelling arrangement on each floor (right). (Leung 2018)

Chapter 3: Symbiosis

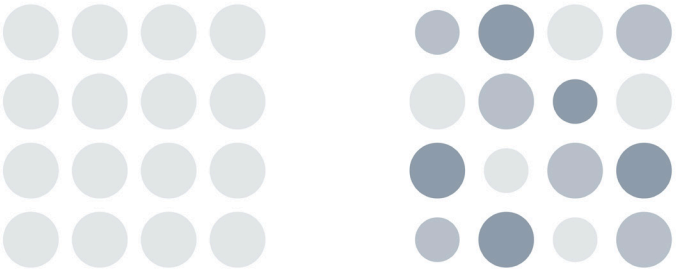
The Concept of Symbiosis

Symbiosis from symbiōsis (Greek) and symbios (German) which mean “living together” (Merriam-Webster 2020) is a biological term used to describe a relationship or interaction between two different organisms. There are three main types of symbiosis: mutualism, commensalism, and parasitism. In a mutualistic relationship, both species benefit. In a commensalistic relationship, one species benefits while the other neither benefits nor is harmed. In a parasitic relationship, one species benefits while the other is harmed. This thesis focuses specifically on mutual symbiosis. An example of this in nature is seen between clown fish and sea anemones. In this case, the sea anemone provides the clown fish with shelter and protection, while the clownfish provides the sea anemone nutrients in the form of waste while also scaring off potential predator fish. Both species benefit from each other in ways that would not be possible on their own. Symbiotic relationships are very important in maintaining an ecosystem’s health, and when lost can be severely harmful or even fatal to some species (National Geographic 2019).

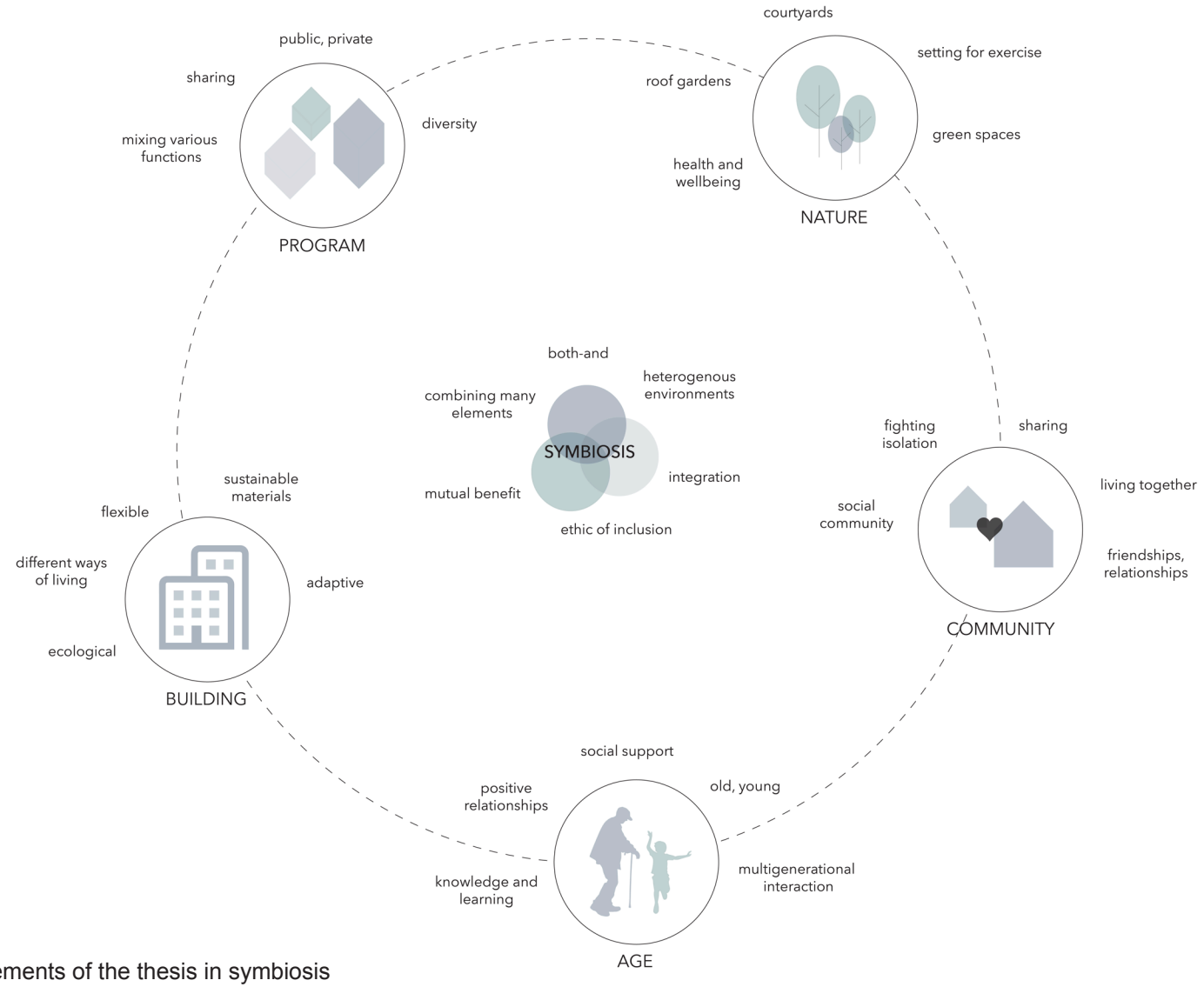
This biological principle can be directly related to architecture. In 1987, Kisho Kurokawa, a leading Japanese architect, and one of the founders of the metabolist movement, published his influential text *The Philosophy of Symbiosis*. Symbiosis which is a key word of ‘life’ is defined by Kurokawa as “the relationship of mutual need, while opposition, competition, and contradiction remain” (Kurokawa 2001, 12). Kurokawa envisioned a transition from “the age of the machine” to “the age of life” which is a “symbiosis of nature and human

beings, of environment and architecture" (Kurokawa 1994, 28). In contrast to the age of the machine, which promotes homogeneity and universality, the age of life promotes individuality and uniqueness of every element of life. It is a philosophy of "both-and" rather than "either-or", a practice of combining many elements, and an ethic of inclusion rather than exclusion. In this sense, symbiosis allows a diversity of culture, value, and religion to be synchronized within the structure and system of life. In the context of this thesis, symbiosis additionally allows a diversity of age.

Outside/inside, public/private, building/nature, old/young, past/present, are examples of opposing elements that the principles of symbiosis would reject. When there is symbiosis, these opposites are no longer divided and recognized as the only option in creating beneficial relationships between elements that would otherwise be impossible to achieve for each element alone. This way of thinking forms the basis of this thesis and is used as a key concept for its development.



Symbiosis allows diversity and heterogeneity



The various elements of the thesis in symbiosis

A Symbiotic Approach to Ageing, Urbanization, and Housing

As a society, we must start shifting our thinking from an institution to a home; from specific programming to synergies. We must break free from thinking that elder housing/family housing and cities are inherently opposed, and instead combine them to create symbiotic living environments. Symbiosis can be applied in many ways, but in the context of this thesis the emphasis is put on the symbiosis of ages, and the symbiosis of building and nature.

Symbiosis of Ages

Mixed-age is essential to a vibrant community as it creates opportunities for mutual support and collaboration between different generations. Elders volunteer, supervise, and play with children. This provides elders activities and interaction with younger generations which keeps them energized and helps them keep a fresh perspective on life. The younger generations have opportunities to gain knowledge and wisdom from the elders. The elders also provide security for children. The mix of different generations can add significantly to the well being of the inhabitants and can be more cost effective in terms of nursing and social support systems.

Bringing together various ages will be explored through the program. Mixing various functions and public and private programs creates diverse spaces and places able to address a variety of needs. By incorporating a range of commercial, housing, office and recreational opportunities, a balanced mix can create dynamic environments which create mutual awareness and interaction between the

ages while extending past the complex and enriching the surrounding community.

Symbiosis of age. Bringing together various ages to form mutually beneficial relationships

Symbiosis of Building and Nature

Nature highly influences wellbeing and can enhance moods and encourage healthier lives. Mixing the built environment and people with nature has emotional and physical benefits. The air is clean from pollutants and toxins and indoor thermal comfort is increased. Nature can also improve sleep quality, reduce stress, and provide settings for exercise and social contact. Additionally, the construction and material choice of a building could benefit the surrounding natural environment by nourishing it and allowing ecosystems to form instead of harming it and destroying existing ecosystems.

Bringing together architecture and nature will be explored through the organization of spaces. Indoor spaces are always connected to outdoor spaces, physically or visually allowing a relationship between inside and outside to always be present.

Symbiosis of building and nature. Bringing together architecture and nature to form a mutually beneficial relationship

Applying a symbiotic approach to ageing, urbanization and housing, means designing arrangements which intentionally mixes programs, nature and generations in the planning and designing of a complex. This thesis focuses on creating synergies between housing and other programs and on improving diversity and integration in the approach to residential design.

Chapter 4: The New “Old”: Architecture for all Generations

Portraits of the Generations

Design for a variety of generations does not mean specific and isolated facilities, or initiatives tacked onto existing designs, but rather integrating quality and inclusive design into daily life and the urban fabric that will last over time. In order to design successful places, the users who the design is intended for must be understood. By understanding the different needs and life rhythms of each generation, programs that benefit each age group can be better selected and spaces can be better planned. Based on Peter Laslett’s *A Fresh Map of Life: The Emergence of the Third Age*, the ages are categorized as first age, second age, third age, and fourth age. The needs of each age group are analyzed in terms of physical spaces and services.

The first age is “an era of dependance, socialization, immaturity, and education” (Laslett 1996, 4). Those living in this age, usually children, require access to pediatric healthcare services, sport facilities, educational institutions, and after school activities. They also need spaces for hobbies, playing, studying, sport activities, and spending leisure time.

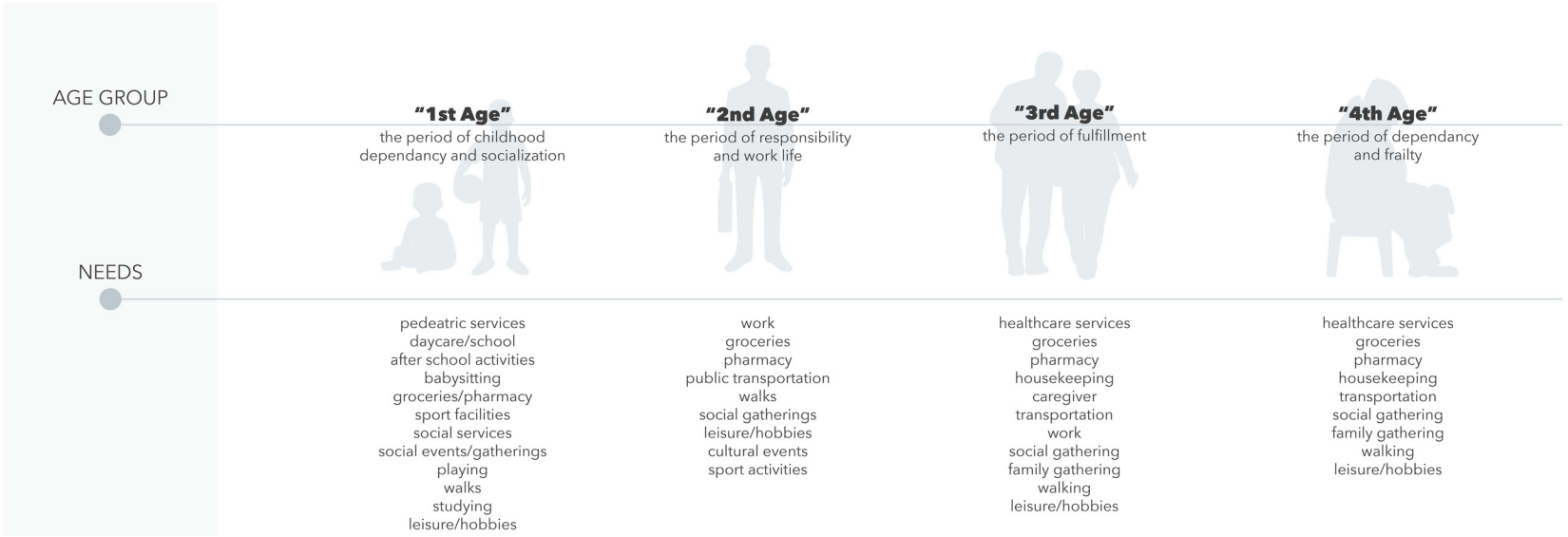
The second age is “an era of independence, maturity, and responsibility, of earning and of saving” (Laslett 1996, 4). Adults in this stage require environments with easy access to daily essentials like grocery stores and pharmacies. They also require access to occasional services such as libraries and theatres. Spaces for working, spending leisure

time, playing sports, social gatherings, and hobbies are also needed for this age group.

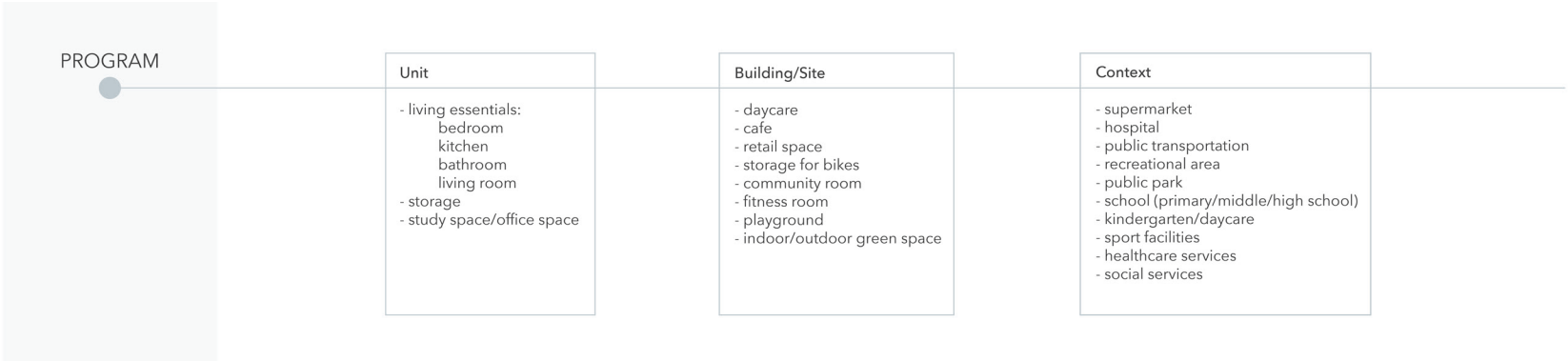
The third age is “an era of personal fulfilment” (Laslett 1996, 4). Retirees are usually found in this age and they require access to health care services, daily essentials such as grocery stores and pharmacies, occasional services such as libraries and theatres, public transportation, caregiving, and housekeeping. Spaces for working, social interaction, walking, physical activity, and family gatherings are also important for those living in this age.

The fourth age is “an era of final dependance, decrepitude, and death” (Laslett 1996, 4). This stage of dependant elderly requires access to health care services, daily essential services, public transportation, caregiving, housekeeping and spaces for walking, social gatherings, physical activities, gatherings, and hobbies.

This analysis gives a quick idea of the essential programs that should be present at the urban scale when selecting a site and the kinds of spaces and programs that are needed at the scale of the complex and the units in order to meet the needs of each generation.



Summary of the four ages and their needs



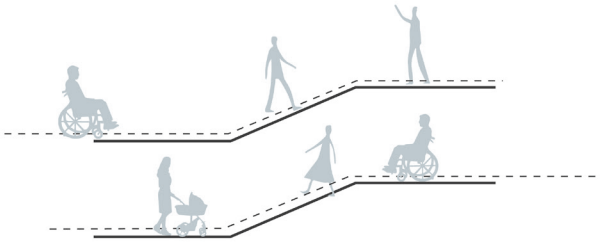
Program options at the urban scale and the scale of the building and units that meet the needs of the four ages

Design Principles

The following section introduces general design principles that act as guidelines when designing for multiple generations.

Accessible

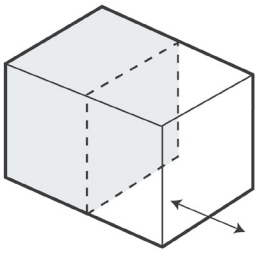
Accessibility is defined as space that is physically accessible without any barriers that could discourage its use. It is also easy access to essential services available at an acceptable distance that could be easily reached by anyone. Stairs are often a physical and physiological barrier. While not much thought is given to moving from one room to another on the same level, there is often resistance in moving to a room that is one level up or down. “In the multistory dwelling, it is often a problem to ensure reasonably equal use of the various levels, and generally the lowest floor is used most frequently. Having come down, one is reluctant to go up again” (Gehl 2011, 143). It is important that vertical and horizontal connections are “felt to be easy and free of complications” (Gehl 2011, 145). Flat ramps are generally preferred to stairs and are much more accessible for wheelchairs and baby strollers which is important to consider when designing for multiple generations. Accessibility can be associated with the architectural element of the floor.



Accessibility though the floor

Adaptable

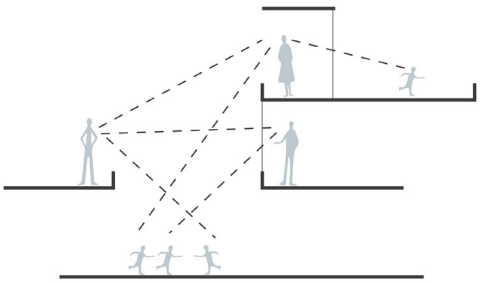
Adaptability can be defined as spaces that are able to change as the needs of the users change. Housing needs vary from resident to resident and change for individuals over time. A young couple, for example, might use a room as a home office at one point in their life and then convert that room into a baby room, which is then again converted to become a guest bedroom. Rooms should be “well proportioned and designed to be neutral with respect to use that offer various possibilities for adaptation” (Huber 2008, 180). In the 1960’s, Habraken noted the importance of inhabitants completing their own living spaces and described a system of support and infill in which “support” is the basic unchangeable part of a building and “infill” is the individual interpretation of a building (Habraken 1972, 83). Herman Hertzberger, under the influence of the structuralist movement, also made the distinction between form and usage. He describes form as “a collective given” and usage as “individual interpretation (Hertzberger 1991, 92). By starting with a fixed structure and distinctive features, the rest of the space is able to be adapted to the specific user. Adaptability can be associated with the architectural element of the wall.



Adaptability through the wall

Safe

Safety refers to living environments in which inhabitants feel secure and safe from harm. Feeling safe affects peoples social integration and emotional well being and overall creates a more pleasant and enjoyable community. Jane Jacobs suggests that “there must be eyes upon the street, eyes belonging to those we might call natural proprietors of the street” (Jacobs 2011, 45). She also suggests that “the sidewalk must have users on it fairly continuously, both to add to the number of effective eyes on the street and to induce people in buildings along the street to watch the sidewalks in sufficient numbers” (Jacobs 2011, 45). This works best “most casually” and “where people are using and most enjoying the city streets voluntarily and are less conscious, normally, that they are policing” (Jacobs 2011, 46). Safety can be achieved by incorporating public spaces throughout the project and along the street. By including public program that different generations can use at different times throughout a day, depending on their daily routines, insures constant activity and engagement. This attracts additional activity and engagement, which in turn creates safe environments. Safety can be associated with the architectural element of the window.



Safety through the window

Site

Developing an understanding of the social and economic fabric of the site is necessary when planning for multiple generations. Selecting a site that is central and well connected is key. In order to do so the site must be studied and selected in terms of its connection to road infrastructures and public transportation, connection to a mixed use context, connection to nature, and walkability. These qualities ensure that the site is in proximity to essential amenities and services required for each age group.

Being connected to major roads and public transportation, allows easy transport to areas a bit further away that one might need to reach. Selecting a site that is well connected to bus routes and bike routes ensures the site is inclusive in providing options for various methods of transportation such as cars, busses, and bikes.

A mixed use context ensures that the site is in immediate proximity to existing essential services and amenities required for each age group. Selecting a site that is well connected to major public amenities such as hospitals, schools, grocery stores, universities, parks, etc., ensures a site that has access to diverse places that are easily accessible.

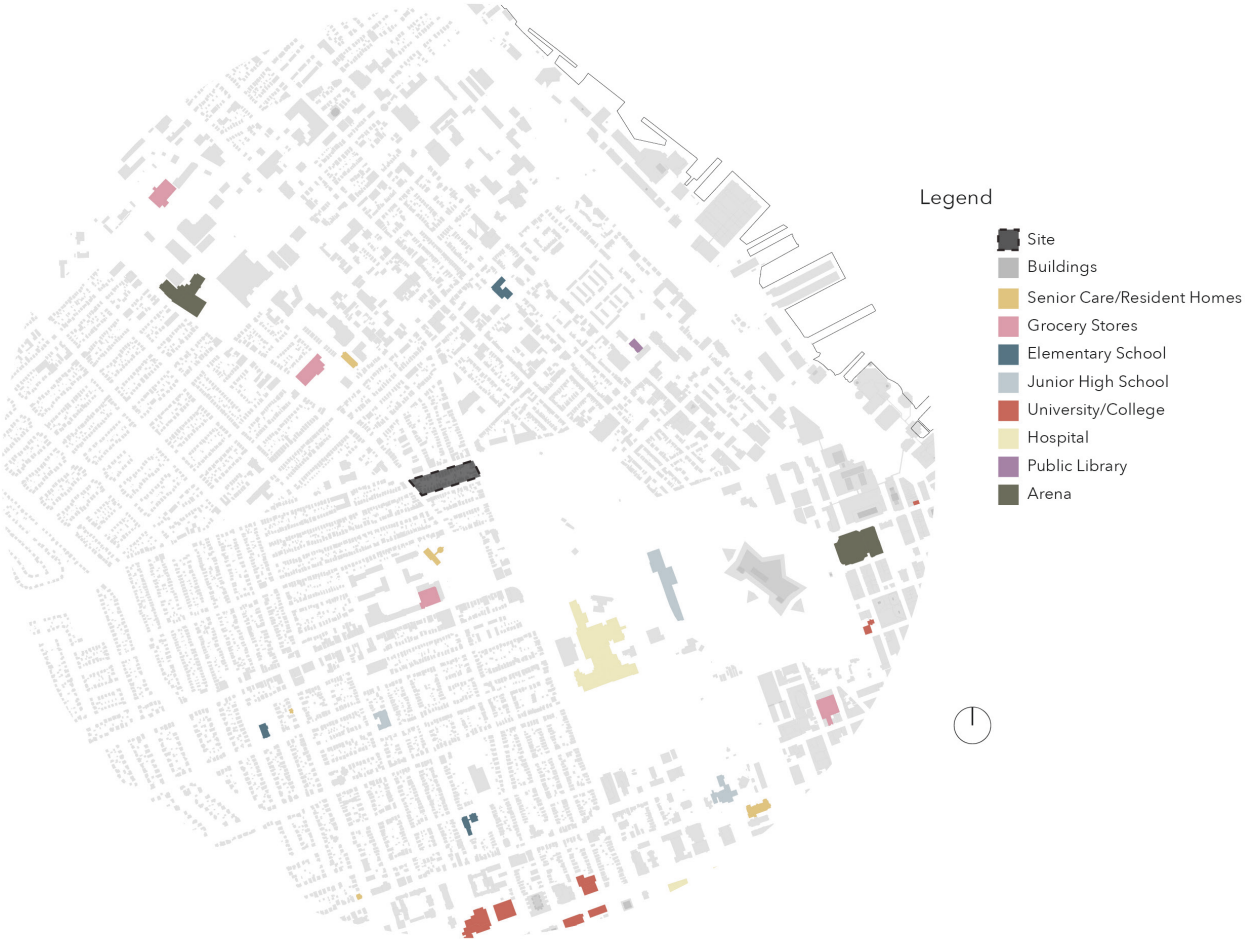
Connection to nature is important for wellbeing and provides settings for play and exercise. Selecting a site that is in close proximity to public open outdoor areas ensures easy access to the outdoors and nature.

Walkability is important in creating a sense of community. Being a part of a neighbourhood with shops and services within walkable distance promotes walking as a method

of transportation which can provide opportunities for contact with others and allows individuals to take time to experience, pause, or become involved as they journey over to their destination.

Based on the above criteria, the selected site is located at the northwest corner of the Halifax Common, bound by Cunard Street to the north, Robie Street to the east, Compton Avenue to the south, and Windsor Street to the west. Because of its centralized location, the site can be identified as a civic node. It fronts two major thoroughfares, Robie Street and Cunard Street, and is very well connected to public transportation with access to multiple bus services located on and around the site. It is in immediate proximity to existing civic amenities including public transit, parks, and community centres, grocery stores, hospitals, schools, universities and senior care homes. It also fronts the Halifax Common, a major urban public park with recreational facilities. The site is within walking distance to Quinpool Road and Agricola Street, where there is a wide range of existing amenities and services.

Map studying road networks, bus stops, and bike infrastructures (data from HRM 2021a)



Map studying various essential services and activities for the various age groups (data from HRM 2021a)

Map studying parks and outdoor recreation areas (data from HRM 2021a)

The selected site with a five, ten and fifteen minute walking radius overlay showing the proximity of the site to essential services and amenities, parks, and various transportation methods (data from HRM 2021a)

This existing block currently includes single family residences, primarily on Compton, and multi-unit residences, primarily on Cunard. Existing properties no longer serve their original single family use, and have been subdivided into walk-up apartment units largely due to the sites centralized location with accessibility to a wide range of civic and commercial amenities. The site is currently undergoing additional changes at the Robie/Cunard corner facing the Common, which has been demolished following the approval for construction of a mixed-use development. Larger-scale developments can also be identified within the immediate surroundings including multi-unit buildings along Cunard Street and Robie Street facing the Common. The urban characteristics of the site in of itself can be identified as integral components for where appropriate density and successful developments should occur in any urban city.

The existing block is currently in two zones. Corridor (COR) and Established Residential 2 (ER-2). According to the Centre Plan, this means that buildings in the corridor zone should be within low- and mid-rise forms, approximately 4 to 6 stories (20 metres). Within this zone buildings are permitted to have a wide variety of uses such as residential, office, retail, personal service, restaurant, and institutional (HRM 2021b). ER zones are the lowest density zones in the Centre Plan. Buildings within the ER zones are primarily intended for low-rise residential uses, home occupations, daycares, bed and breakfast, and urban agriculture, with maximum height of 8 to 11 metres. ER-2 allows single, two-unit, and semi-detached dwellings, backyard suites, and secondary suites (HRM 2021c). The design needs to take into account the town planning guidelines such as the Centre plan for building within a corridor zone and established residential

zone as they reinforce the human-scale character of the site and neighbourhood.

Based on the site analysis a series of site intervention principles are established to act as guidelines for developing the complex on the site. Because of the pre-existing neighbouring uses at grade, Cunard Street and Windsor Street can be identified as commercial corridors. As such, the design should aim to reinforce scale, density and the commercial character of those streets. Similarly, because of the primarily residential fabric facing Compton, it can be identified as a quiet residential corridor. As such, the design should aim to reinforce its small residential neighbourhood character. Because Robie Street is a busy street facing the Common, the design should aim to activate a pedestrian streetscape facing the park.

Although these site studies provide a thorough analysis and understanding of the urban context, from a symbiotic lens, the project should not be dependant on the services and infrastructures around it. Instead it should be able to exist in symbiosis with its urban context by offering elements that are missing. A symbiotic relationship between the project and the city should be formed. The project benefits the city and the city benefits the project. The selected site provides many opportunities for where a new development should be located and offers great potential for the development to exist in symbiosis with the city around it.

Compton Avenue montage, facing the selected site, looking south. This is a quiet residential street.

Cunard Street montage, facing the selected site, looking north. This is a busy commercial street with a community centre, businesses and restaurants.

Windsor Street montage, facing the selected site, looking west. This is a busy commercial street.

Robie Street montage, facing the selected site, looking east. The Halifax Common is a major park with many recreational activities taking place all year round.



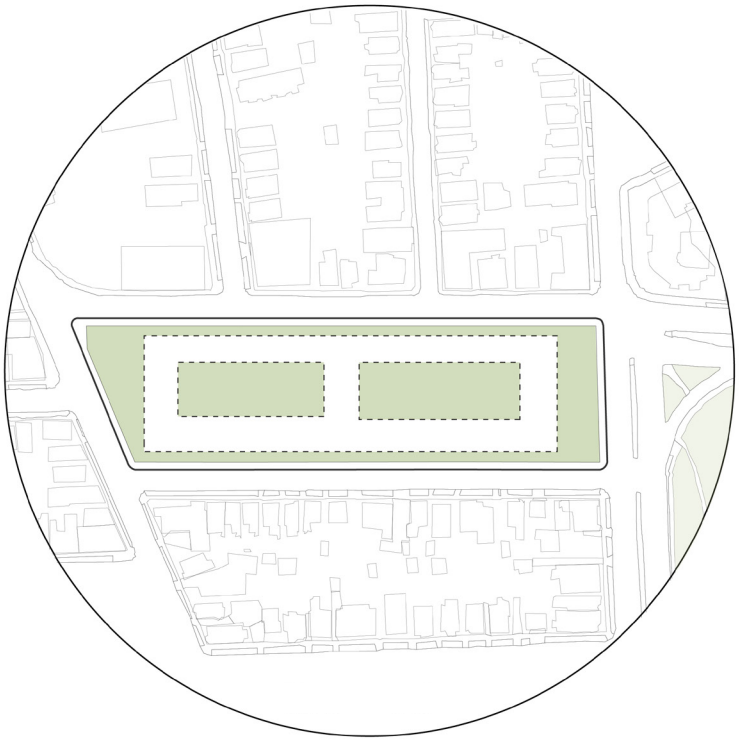



Various summer and winter activities taking place at the Halifax Common (Watson 2018; Garrett 2021; Chaudhary 2021; Headstart Tennis 2020; CBC 2020; HRM 2020)

Design Moves

Courtyard

The building follows a courtyard typology which acts as a base model for the project. The characteristics of this architectural space, enables the human desire for social aggregation in a protected environment as well as facilitates a reconnection to nature. The placement of the building mass respects setback requirements and reinforces the character of all four streets by providing generous landscaped areas creating some distance between the block and the busy surrounding streets.

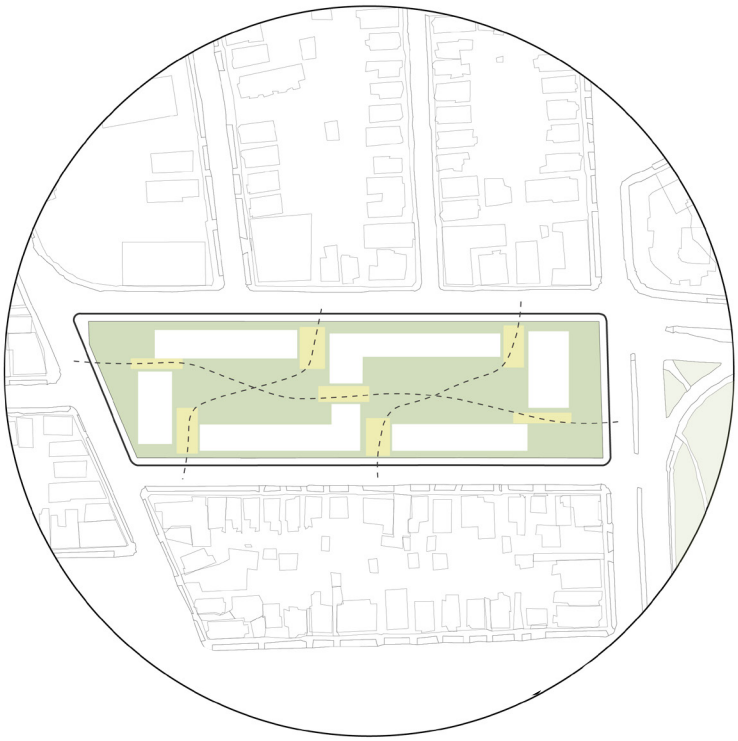


Courtyard typology as a base model

Opening and Connecting

The building mass is broken down into 6 volumes on the ground floor to open up the block and connect it to its

surrounding. Creating multiple access points allows for a differentiated approach to the various users and makes the courtyard spaces and peripheries of the block more public and permeable. This additionally reinforces the pedestrian paths character that can be found in the surrounding neighbourhood.



Opening and connecting the block to its surroundings

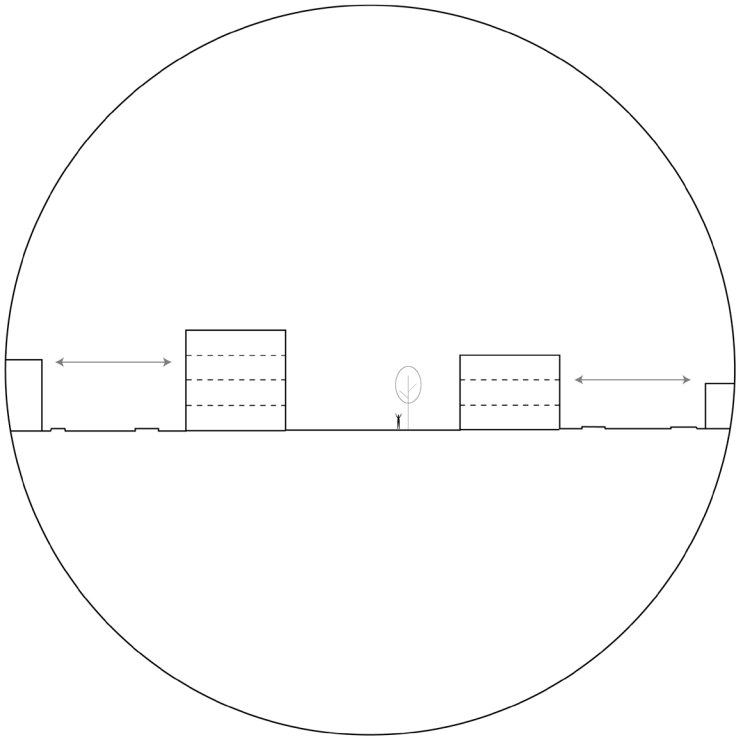
Program Mix

Intentionally mixing program enables a diversity of activities and a diversity of users to be engaged at all times. The placement of the program additionally reinforces the character of the street it faces.

Creating diversity by mixing program

Scale

The mid-rise typology allows density and a neighbourhood environment. The human scale of this building type promotes diversity, integration, resilience and sustainability. The higher building volume towards the North meets the scale of the building fabric along Cunnard St. and of the city. A low building volume towards the South breaks down the scale of the over-all building while meeting the scale of the houses on Compton Ave.



Human Scale

Program

A set of programs was previously established based on studying the needs of each age group. But program should not be selected based on needs alone. When looking at program from the lens of symbiosis, providing a set of programs that benefit more than one generation and fosters intergenerational relationships is key. Programs are selected based on their ability to allow interaction among generations and enrich the surrounding community. By incorporating a range of commercial, housing, office and recreational opportunities, a balanced mix can create dynamic environments and allow for community engagement both within the building and to the neighbourhood beyond.

The design includes, workshops, shops, a cafe, and multipurpose room towards Cunard street. Single office

spaces, co-working office spaces, and a meeting room towards Windsor Street. A market space, towards Robie Street and the Common. A daycare with classrooms and playrooms, and housing units towards Compton Avenue. A mix of units types and semi-public programs such as laundry facilities, gym, library, etc. are located on the other levels.

unit type 1
unit type 2
unit type 3
laundry
gym
multipurpose room

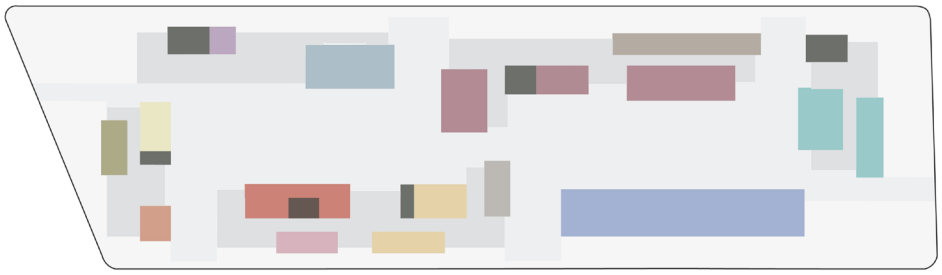
intermediary spaces:
childrens parties, book readings, sharing stories, cooking, eating, gardening, arts and crafts, board games, cards, watching movie, game room, working, studying, putting on skits, concerts, playing/listening to music

typical unit floor

cafe
co-working offices
single offices
meeting room
multipurpose room
playrooms
canteen

classrooms
workshop
bathroom
storage
shops
housing units
market

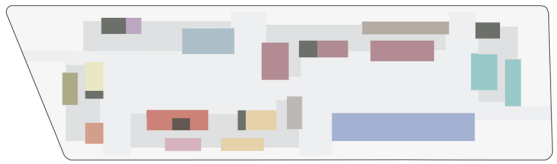
intermediary spaces:
childrens parties, book readings, sharing stories, cooking, eating, gardening, arts and crafts, board games, cards, watching movie, game room, working, studying, putting on skits, concerts, playing/listening to music



ground floor

Program diagrams for ground floor and a typical unit floor showing mix of program, unit types and ideas of activities that could take place in the intermediary spaces

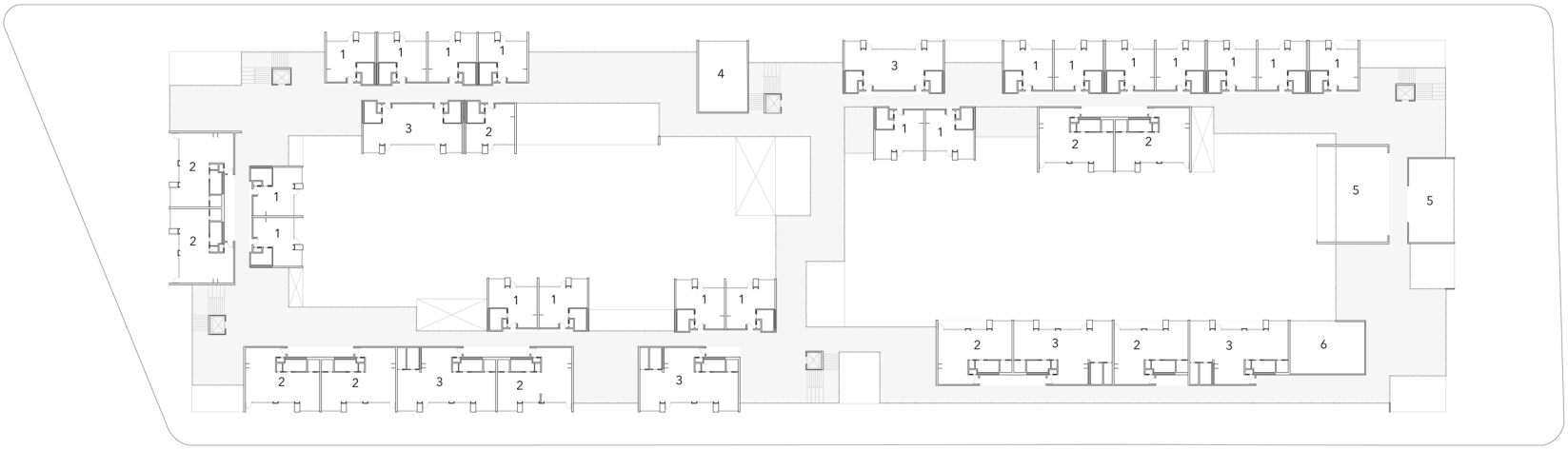
1 cafe
2 co-working offices
3 single offices
4 meeting room
5 multipurpose room
6 playrooms
7 canteen
8 classrooms
9 workshop
10 bathroom
11 storage
12 shops
13 housing units
14 market
intermediary spaces: childrens parties, book readings, sharing stories, cooking, eating, gardening, arts and crafts, board games, cards, watching movie, game room, working, studying, putting on skits, concerts, playing/listening to music



Ground floor plan with associated program diagram

1 unit type 1
2 unit type 2
3 unit type 3
4 laundry
5 gym
6 multipurpose room

intermediary spaces:
childrens parties, book readings, sharing stories, cooking, eating, gardening, arts and crafts, board games, cards, watching movie, game room, working, studying, putting on skits, concerts, playing/listening to music

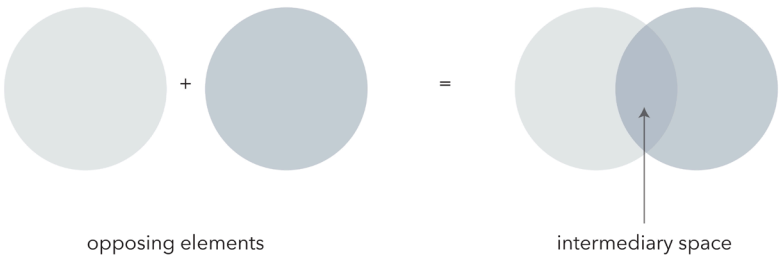


Typical unit floor plan with associated program diagram

Intermediary Space

As previously mentioned symbiosis is a biological principle that when applied in an architectural sense means combining many elements in ways that creates beneficial relationships between them. But how can we mix different programs and generations in a way that creates synergies? This thesis considers intermediary space as a key strategy in achieving symbiosis. In order to create mutually beneficial environments, elements must be brought together and interconnected by the incorporation of intermediary spaces. Here, synergies between the various elements are achieved. These spaces, are where building, people and nature meet. They activate a social dimension and act as a catalyst for interaction. They are moments where informal interaction across generations is possible. They act as common ground between two or more elements that oppose or contradict one another.

Kurokawa explains “eco-corridors serve the important role of connecting isolated ecosystems in order to maintain the biodiversity of species” (Kurokawa 2001, 23). In this sense, circulation becomes an extension of the intermediary spaces which are connected to and maximize the usage of circulation for interaction among residents. Circulation thus becomes for more than just circulating for symbiosis to be present as a possibility.



Concept diagram of intermediary space

The courtyards are the largest intermediary space, at the urban scale. These spaces are then present throughout the building, connecting the various programs and dwelling types and bringing the various generations together. The intermediary spaces are varied and diverse. No two spaces are the same in terms of size and space, and the spatial qualities of each allows for a specific but varied set of activities able to take place within them. Through this, the aim is to create diversity within the intermediary spaces by giving them different proportions and positioning them in a scattered scheme across the site and complex.

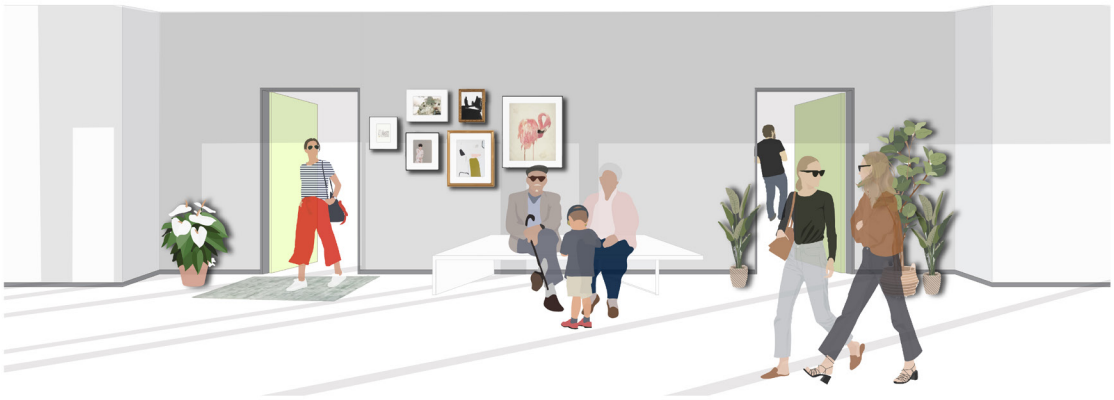
Activities that could take place in the intermediary spaces could include, but are not limited to: getting together to cook and enjoy a meal, book readings, children parties, watching a movie, painting and crafts, working and/or studying, playing board games and/or card games, gardening, putting on skits and/or concerts, exercising, listening to music, playing sports, etc.

Ground floor plan highlighting the intermediary spaces (grey) and longitudinal section cutting through the intermediary spaces (white)

The courtyard in winter and summer providing a sheltered environment where gatherings, occasions, and various activities can take place

Thursday at 4pm. Young professionals are having a meeting in the meeting room while others are hanging out, playing chess, drinking coffee.

Saturday at 10am. The walls to the meeting room open, creating a continuous space where a child’s birthday party is held.

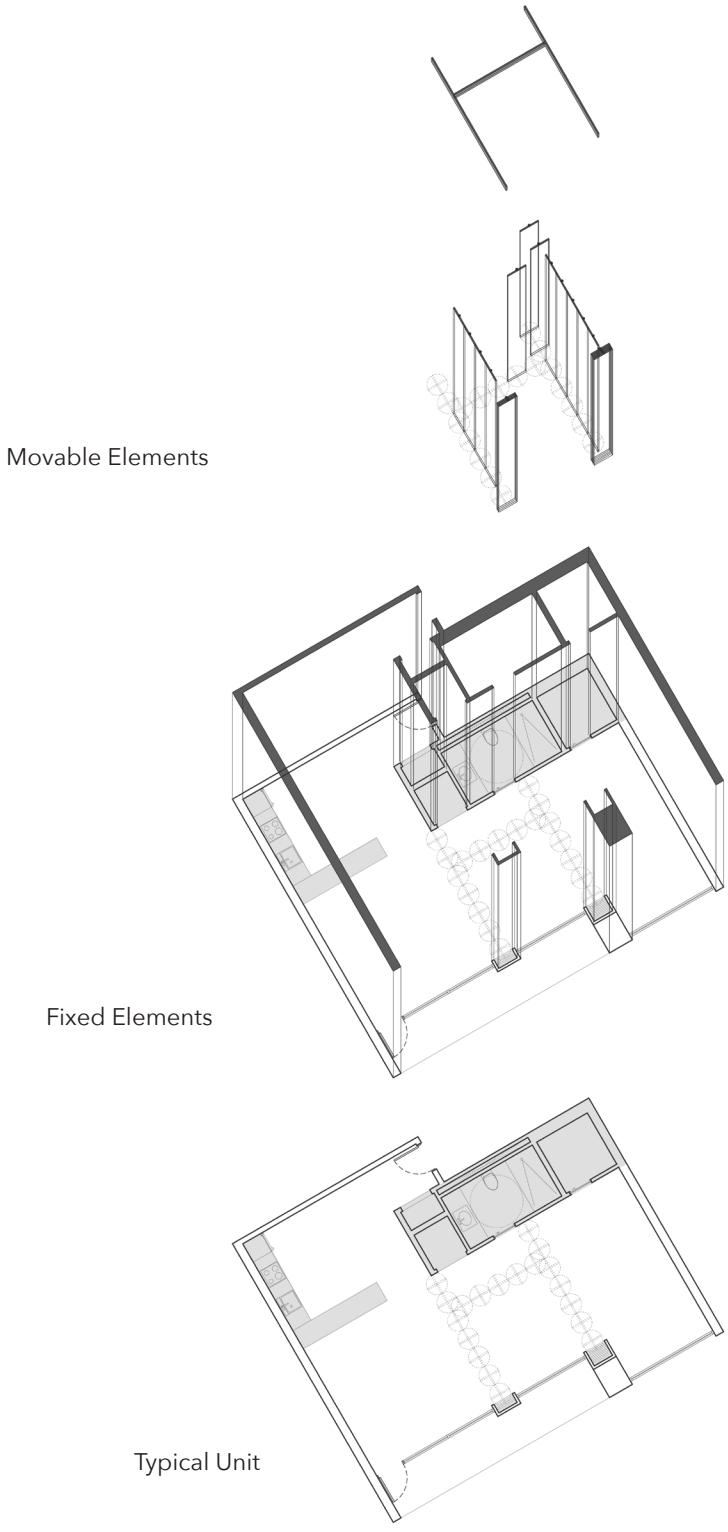


Circulation is never about long narrow corridor after long narrow corridor. They are spaces full of opportunities to experience, pause, stop, or gather.

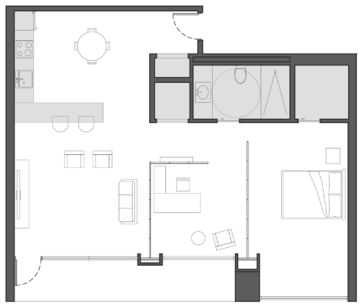
Dwelling

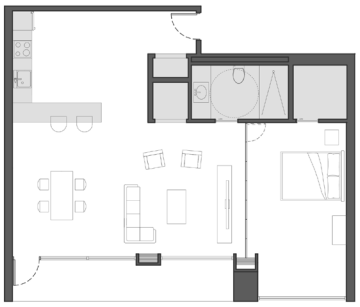
The implications of this thesis can be taken further beyond the site and programming to the design of the dwelling. By exploring ways that structures and infrastructures are located within the dwellings, every given dwelling is able to accommodate different generations and different ways of living and allowing people to live together. The designed dwelling typology acts as a device with multiple possibilities of use and change throughout time, adapting itself constantly to the needs of the inhabitants, as opposed to a physical formal structure. The dwelling units are defined by a set of fixed and movable elements, that according to their position in space allow for diverse layouts. The fixed elements consist of the bathroom and kitchen. The movable elements consist of partition walls which can divide or open up spaces.

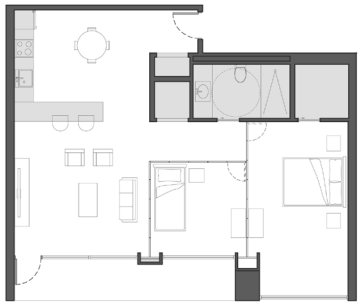
The three designed dwelling types which each act as a device with multiple possibilities, ensure demographic diversity in dwelling types to address needs across ones lifespan. Dwelling groups are clustered around intermediary spaces which are offered at each floor and maximize the usage of circulation for interaction among residents. Whether the residents have a large outreach or mostly stay at home, they will always be close to these common spaces and the rest of the community.

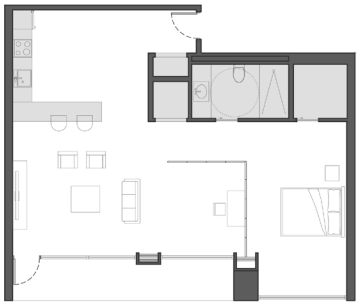


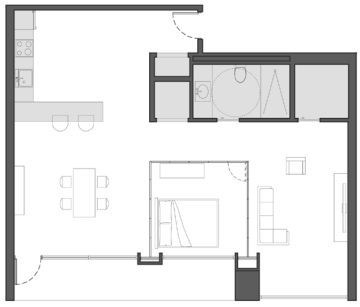
Axo of typical dwelling with the fixed and movable elements



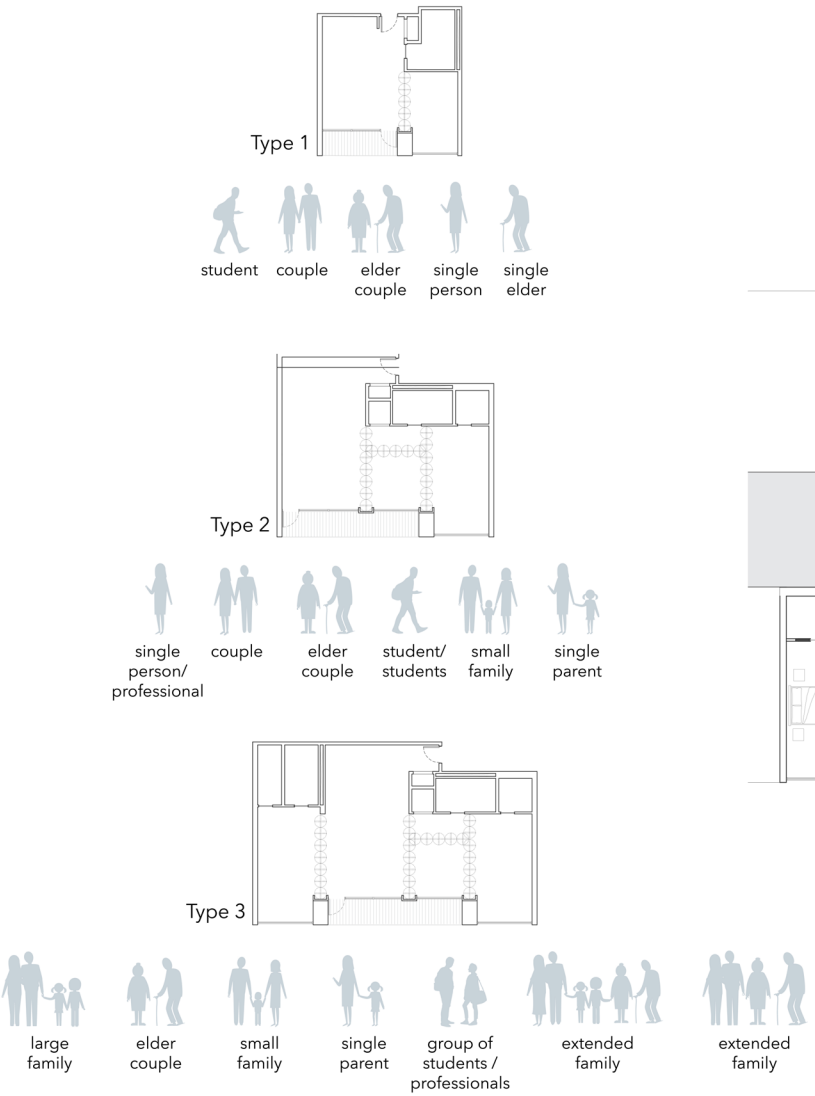








Typical dwelling plan showing the various possible configurations



The three dwelling types and dwelling cluster around the intermediary spaces which are present on all floors

Nature

From the urban context to the scale of the building, outdoor space and nature are integral in the planning and design of the complex. The different landscaped areas facing the city and the courtyards are completely public, allowing for a continuous connection with the Common. The building contains different types of courtyards, balconies, and roof terraces so the connection to the outdoor and nature is always present from the ground floor to the top. South facing terraces allow quality outdoor spaces high up in the complex and the courtyards have optimal daylight conditions due to the lower building volume of the south.

Cross Section

Plan and cross section showing building and nature coming together

Perspective looking down Cunard Street from Windsor Street showing building in relation to context

Cross section through the courtyard showing relationship between the building, nature, the various ages, and the context

Chapter 5: Conclusion

Current housing options are unsuitable for an aging population. As ageing and urbanization continue increasing, alternative housing typologies that foster intergenerational urban communities must be developed and proposed. More intergenerational interactions can lead to a change in the perception of older people from largely a burden, to a renewed appreciation. Thus, intergenerational communities can help to catalyze a cultural shift in the narrative around ageing and begin addressing issues of loneliness and isolation, affordability, and sustainability.

Reflecting back on the thesis question: how can architecture be designed in an age inclusive and integrative way that fosters synergistic interactions, and diverse intergenerational urban communities? The investigation carried out throughout this thesis reinforces the simple answer of SYMBIOSIS. By applying a symbiotic methodology to every aspect of architecture and design, alternative possibilities to the status quo become possible.

Although this thesis applies symbiosis in terms of age, program, building, and nature, this concept can be taken further and applied in many other ways. Applying symbiosis to materiality, for example, could mean the combination of stone, tile, and aluminum to add to the impression of various time periods in symbiosis. Or it could mean using sustainable materials, structures and processes, so that the building allows ecosystems to form around it, and in turn those ecosystems provide benefits to the building creating a positive loop where these things both exist in symbiosis with one another and if one is taken away this positive relationship is lost.

I hope to contribute to the discourse by supporting symbiosis as a mind set worth developing and by supporting intergenerational living as a symbiotic possibility worth exploring.

City, building, dwelling, nature, old, and young, all living and existing in symbiosis

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