

Integrational Structuring

A Holarchic Strategy for Housing the Aging Population

by
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AUTHOR'S DECLARATION

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

I understand that my thesis may be made electronically available to the public.

ABSTRACT

Canadian society is facing a marked demographic shift as the baby boom generation ages. By 2031 almost 25 percent of Canadians will be over sixty-five; many of those will be north of eighty and the oldest boomers will be turning eighty-five. One person in four will be a senior.

The lack of acceptable intermediate solutions between independence and institutionalization has been pointed out as one of the significant problems facing elderly persons; traditional 'institutional' care which keeps older people apart and medicalizes old age, is no longer desirable. Likewise, the 'golden ghettos' model may be appealing to those who can afford it but does not contribute to producing diverse, inclusive urban places. This thesis is an exploration of an alternative strategy. It investigates how architecture can provide a platform for social connection in a residential environment that allows in equal measure both independence without isolation, and informal community with safety and security. The design proposal establishes five architectural strategies which address the fundamental spatial implications of encouraging aging-in-place. This exploration is supplemented with a cohousing strategy, providing a formal organizational tactic that encourages groups of residents to mutually support each other, strengthening social inclusion and reducing the use of formal care and support only where absolutely necessary.

The methodology employed examines the mutually dependent and interactive scales of City, Neighbourhood, Building, and Dwelling in conceiving of housing for an aging population that becomes a catalyst of urban integration and community regeneration.

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And to Liz for your continuous patience, love and encouragement.

For my family

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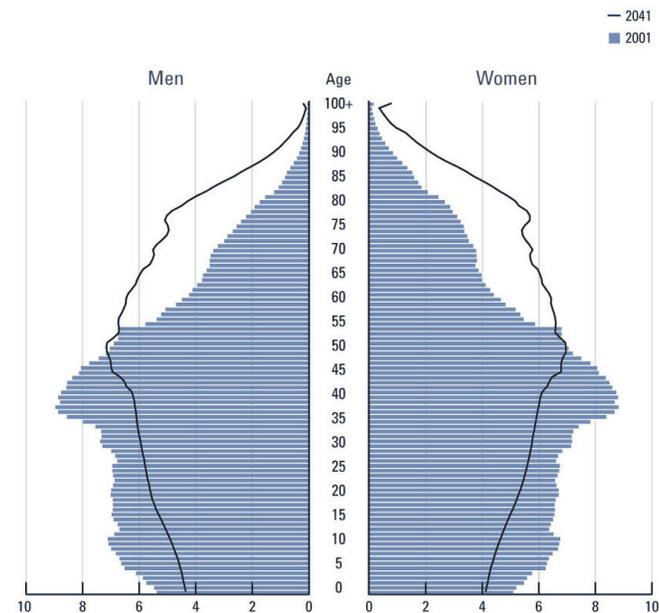


INTRODUCTION

Over the next twenty years, the proportion of people over 65 living in our large cities will almost double as the baby boomer generation – born between 1946 and 1964 – reaches retirement and then old age. Twenty years from now, nearly one in four Canadians will be over the age of 65.¹ The sheer size of this generation, renowned for its demanding consumer habits, promises to redefine what it means to grow old in predominantly urban settings. The impact on Canada’s largest cities – in terms of housing, employment, health care, recreation, retailing, transportation, even municipal government – will be profound.

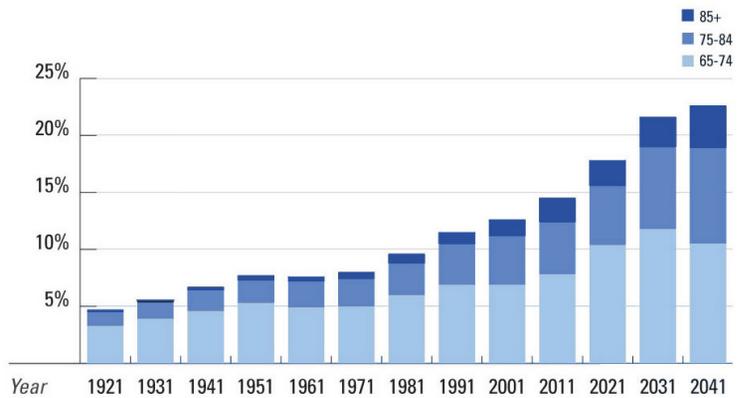
Baby boomers are a historically socially and civically active demographic group. When compared to former generations, this generation of seniors is better educated and are expected to be in better health and live longer. What must be understood is that the next generation of older people is likely to be both very different from today’s elderly and that their lifestyles will equally be diverse. A key conclusion from the OECD Conference ‘Aging, Housing and Urban Development’ held in June 2000, in Oslo, Norway was that older people are not homogeneous in expectations, needs, or behaviour. Projections are risky, and life course data is poor, so there are significant risks in basing policy on what is thought to be known demographically about existing individuals and communities.²

Housing for seniors is unlike other residential development in that it almost always involves some recognition of the health care needs of frail elderly people. The special services they require, which increasingly reflect the aging-in-place concept, introduce a major management component to housing development. In the last sixty years, the major providers of housing and care for the elderly in the



0.1. Population by age and sex, Canada, 2001 and 2041.

0.0. (Opposite) Elderly Man's Hands



0.2. Seniors by age sub-groups as % of total population, Canada, 1921 - 2041.



0.3. Typical Rural Assisted Living - Residential Care Development

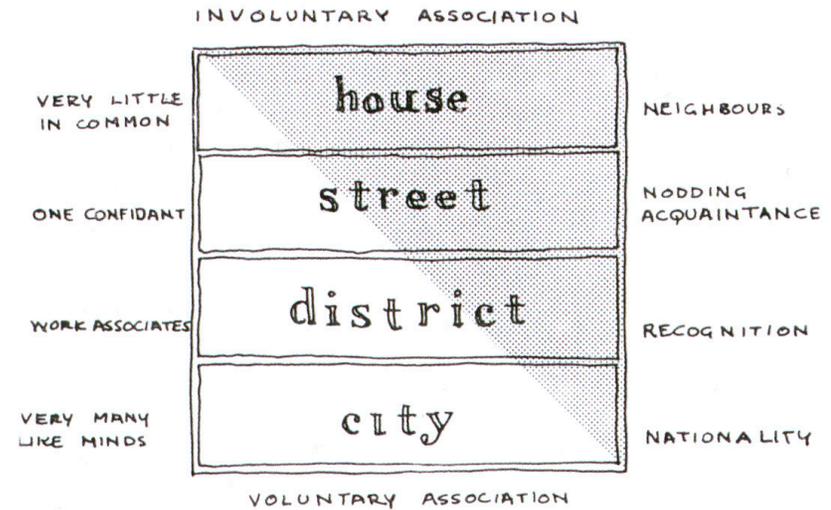
North America have focused their energies on emulating two diverse operating models: the retirement housing segment looked for cues within the collegiate model of campus and dormitory, while the health care component followed the medical model as exemplified by the acute care hospital. Within the rigid boundaries of such diverse environments, we have tried to develop continua of care, which have historically required the consumers to physically move from living space to health care space, depending upon their level of frailty.³ The management concepts developed over this period were based on hierarchical structure, with a paternal attitude towards residents and families adopting a ‘we are taking care of you’ philosophy.⁴

These concepts are based on an outdated retirement system that rests largely on an implied contract between generations that has been in place since the Second World War. This contract is based upon the principle of a division of the life cycle into three phases. Firstly, the phase when youths are educated; another when adults and young adults work; and finally when the elderly have the right to retirement. In this framework, the essence of the phrase ‘compensated inactivity’ has been granted to the elderly in the form of retirement. When considered in contemporary society, however, this division of the life cycle into three phases is no longer operational. We have entered into a “knowledge-based society in the post-industrial era and we are witnessing a real revolution in the social organization of time. Traditional patterns of the social organization of ages and time are challenged in our new society of mobility and longevity.”⁵ It is within this context that the thesis situates itself and attempts to forge an alternative strategy appropriate to the evolving paradigmatic shift.

THESIS STRUCTURE

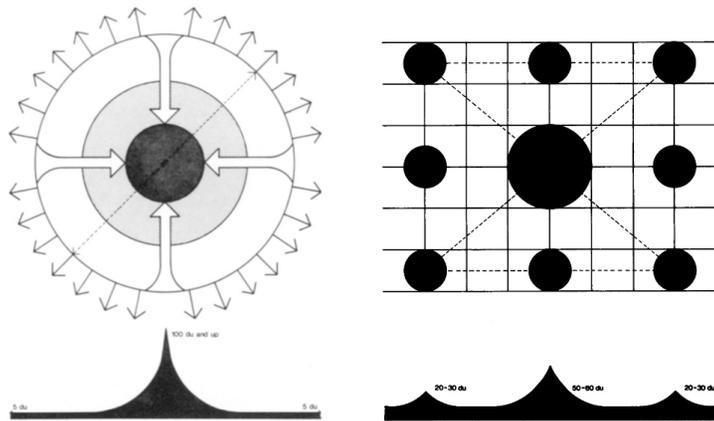
The methodology employed in the thesis is fundamentally rooted in the Ecosystem approach to Complex Systems by James Kay. The strategy underscores the critical importance of a holarchic investigation: it examines and proposes a system of strategies rooted in the interconnectivity of City, Neighbourhood, Building, and Dwelling. The strategy of employing a holistic approach recognizes the interconnectivity of the built realm, and is rooted in the context of nested holons, that is a hierarchically organized system description of the area of study. The behavior of a system (holon) is due to the interactions of its components (also holons) in the context of the wider system (another holon) it is part of. Focus on one level, or by one discipline, cannot adequately describe these interactions between hierarchical levels.⁶

This thesis identifies four scales of intervention, asserting that the exploration of a strategy on a singular level is insufficient in addressing such a complex problem; the strategy must oscillate between scales of intervention. Each chapter highlights opportunities for investigation and proposes strategic initiatives aimed at developing a comprehensive approach for integrating an aging population into our urban areas.

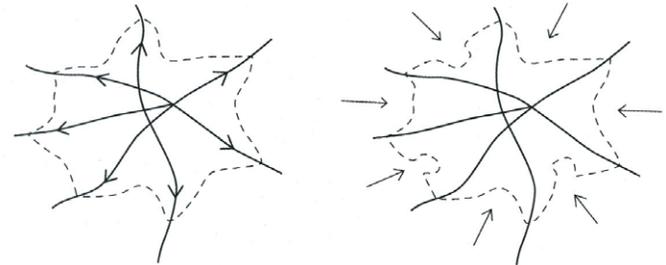


0.4. Scale of Association Diagram, Alison and Peter Smithson

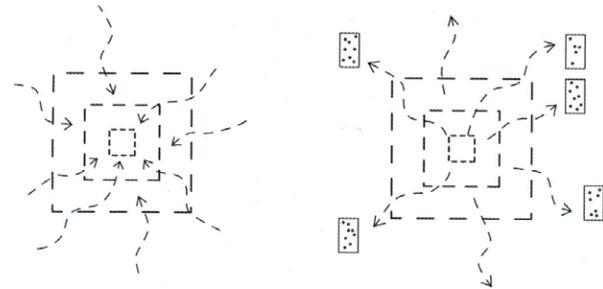
Part 1: Urban Tactics examines the fundamental urban armature and systems of growth operating within the city of Toronto, and posits a case for directing residential intensification along the city's main streets. Part 2: Getting under the Skin investigates the typological and morphological dimensions of the Leslieville neighbourhood focused on the intersection of Queen Street and Carlaw Avenue, establishing a comprehensive understanding for developing an architectural intervention that successfully engages with the community. Part 3 – Integrational Structuring proposes a re-examination of architectural strategy rooted in a fundamentally pragmatic approach. This methodology results in five design strategies for contemporary housing that support the social and spatial dimensions of aging-in-place. Part 4: Permanence and Duration addresses the concept of flexibility within the domestic environment as analogous to supporting independence and peoples changing physical demands as they age.



0.5. Unicentered City and Multicentered City.



0.6. Town - Country : Country - Town. The Process of Conurbation.



0.7. Peripheral landscapes diagram showing centripetal versus centrifugal movement of endangered species toward peripheral landscapes.



THE CASE FOR ALTERNATIVE STRATEGIES

Every phase or epoch of capitalism has its own distinct geography, or what economic geographers call the 'spatial fix' for the era.¹ The physical character of the economy – the way land is used, the location of homes and businesses, the physical infrastructure that ties everything together – shapes consumption, production, and innovation.² And as the economy grows and evolves, so too must the landscape. Fifty years ago, the family needs of the baby boom generation created suburbia. Suburbanization was the spatial fix for the industrial age – the geographic expression of mass production and an early credit economy. Housing became an ever-more-central part of the American dream and for many people, as the recent housing bubble grew, owning a home came to represent not just an end in itself, but a means to financial independence.³

SPATIAL EXIGENCY To a surprising degree, the causes of the recent financial crisis are geographic in nature; they point to a whole system of economic organization and growth that has reached its limit.⁴ The crisis demonstrated what many have known for a long time; North Americans have been living beyond their means, using illusory housing wealth and huge quantities of foreign capital to consume far more than they have produced. Suburbanization, and the sprawling growth it propelled, made sense for a time. If there is one constant in the history of capitalist development, it is the ever-more-intensive use of space.⁵

We can only speculate about boomers' future housing consumption patterns. Housing choices depend in large part on income, health, desired quality of life, values, etc. What differentiates this particular generation, however, is its substantial net worth, boasting higher levels of disposable income than previous generations of seniors.⁶

'Design should be able to clarify complex situations... it (design) contains a substantial amount of 'social engineering', by virtue of its sheer power to organize programmes and activities into mutual relationships, thereby influencing the physical component of social networks. Instead of believing in future utopias, we interpret the state of society in precise visions and accordingly propose concepts for transformation, both on the level of design and of process.'

Kees Christianse
Situation KCAP : Architects and Planners

1.0. (Opposite) Habitat Alienation



1.1. Housing and Services Continuum



1.2. Woman in Wheelchair

Boomers have been driving the Canadian housing market for the past twenty-five years and will continue to do so as they retire and move into old age.⁷ As more and more baby boomers enter their senior years, many are expected to leave the housing market and move into condominiums, rental units, retirement homes, and other modes of tenure.⁸

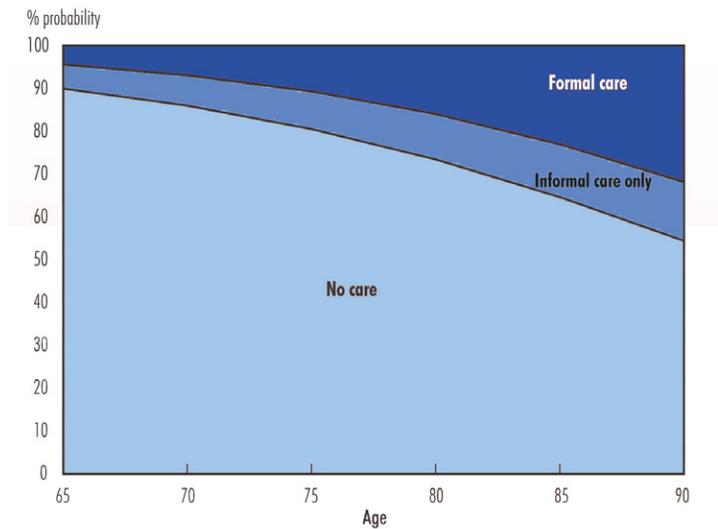
INSTITUTIONAL DISSOLUTION It has generally been concluded that traditional ‘institutional’ care which keeps older people apart and medicalizes old age, is no longer desirable.⁹ Likewise, the ‘golden ghettos’ model may be appealing to those who can afford it but does not contribute to producing diverse, inclusive urban places. Implicit in many of the presentations presented at the O.E.C.D. Aging, Housing and Urban Development Conference held in June 2000 in Oslo, Norway, was the need to find the appropriate balance between spatial segregation and integration, exploring techniques and models by which older people could remain ‘richly engaged’ with their local communities as these communities themselves are transformed by globally based economic, social, and cultural changes.¹⁰

Urban regeneration is a positive step forward, but it must deal with social inclusion of older people as much as with the physical repair of declining neighbourhoods. A focus on residential intensification must provide a full range of appropriate housing options for an increasingly diverse population of older people with various needs, preferences, lifestyles and incomes.¹¹ The key point is the need for choice; we need smaller and sheltered accommodation that is flexible in terms of tenure, design, and financing.¹²

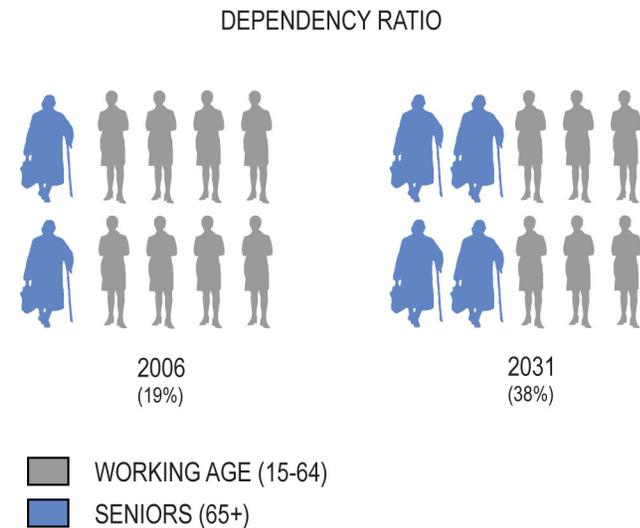
DECLINE OF THE DEPENDENCY RATIO

Although a key determinant of aging is the increase in longevity, it should not be forgotten that the other key factor is the decline in the birth rate.¹³ We are beginning to experience a demographic deficit, as the ‘dependency ratio’ of older people to younger workers financing their retirement becomes more and more unbalanced.¹⁴ As of 2001, close to one in five seniors lived with their children or grandchildren.¹⁵ Tomorrow’s seniors may not have this option. They had fewer children, who are more likely to be working and have a working spouse. This limits their ability to provide in-home care for an aging parent or relative. Marriage breakup, the tendency towards more non-traditional household forms (for example, blended families with children from different marriages) and the increase in single-person households make looking after seniors who are frail more difficult. The seniors’ dependency ratio – the proportion of seniors over 64 to the ‘working age’ population (15 to 64) is expected to double reaching thirty-eight percent by 2031 from only nineteen percent in 2006.¹⁶

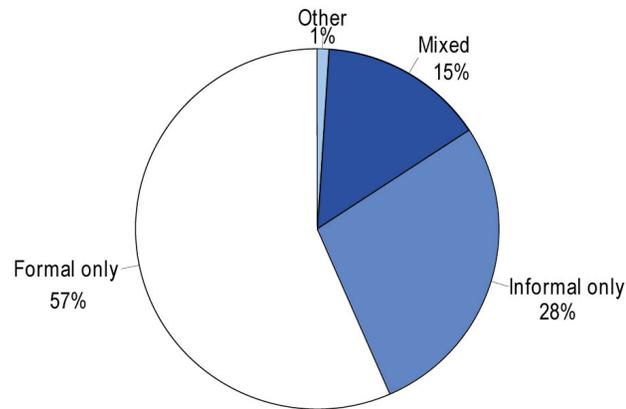
These projections suggest that the cost of services for the elderly will escalate rapidly as the number of elderly people dependent on help and services rises. At the same time the cost of these services will rise disproportionately as increasing demand leads to bottlenecks in supply and higher prices.¹⁷ This increase in demand will result in a new demographic challenge; how will we be able to provide health and social care for an increasing number of elderly when at the same time there is a decreasing number of people in the work force and young people are choosing the care occupations to a lesser degree?¹⁸



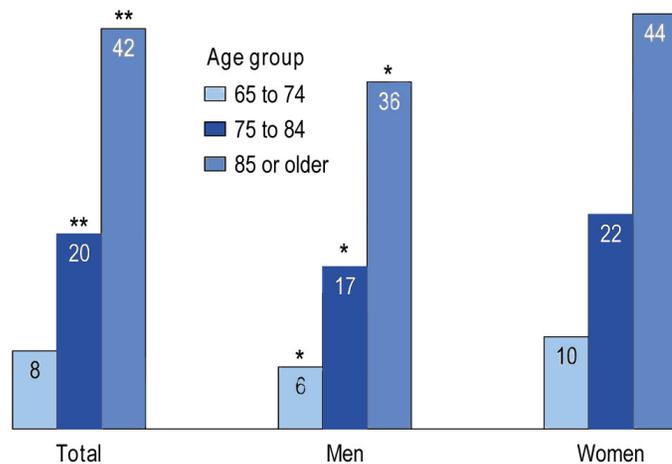
1.3. Probability of Type of Care in Relation to Age



1.4. Dependency Ratio Projection



1.5. Percentage distribution of source of care reported by household population aged 65 or older receiving home care, 2003.



1.6. Percentage who received home care in past year, by age, group, and sex, household population aged 65 or older, 2003.

A partial solution could manifest in supporting informal care as seniors are also active in providing help to other people in the community; of those in the 65 to 74 age category, over a quarter say they provide help with domestic work, home maintenance, or outdoor work.¹⁹ The development of these mutual support networks should be encouraged through denser, walkable communities that foster connectivity and convenience through community design. This attention to the built environment can foster ‘productive aging’ in which seniors maintain and enhance their self-worth by using their skills, experience, and time to benefit the whole community.²⁰

ADVANCING AGING-IN-PLACE + HOME-CARE Most seniors want to stay in their own homes as long as possible. That goal requires a sustainable income security system, safe streets, local mobility options and a domestic environment that can adapt to changing lifestyle needs. But as our cities age, it will also depend on dramatic reforms to home care, which as John Lorinc argues “continues to occupy a lowly position on a national health care agenda dominated by debates on wait times, drug coverage, and private delivery of medical services.”²¹ Lorinc goes on to suggest that “the solution isn’t just a matter of injecting more cash into the system. It also requires a fundamental shift in thinking, one that acknowledges the value of staying out of institutions. For many elderly seniors, especially those living in isolated circumstances in large cities, the difference between independence and institutionalized care can turn on services as basic as assistance with the preparation of nutritious meals.”²²

Victoria-based health policy consultant Marcus Hollander has laid out a compelling economic case for significantly expanded community-based home care for the elderly, with an emphasis on non-medical support services, which are typically excluded from home care programs. Hollander’s research has shown that just ten percent of all seniors’ home care costs are for medical services, while the remaining ninety per-cent are for chronic support: the

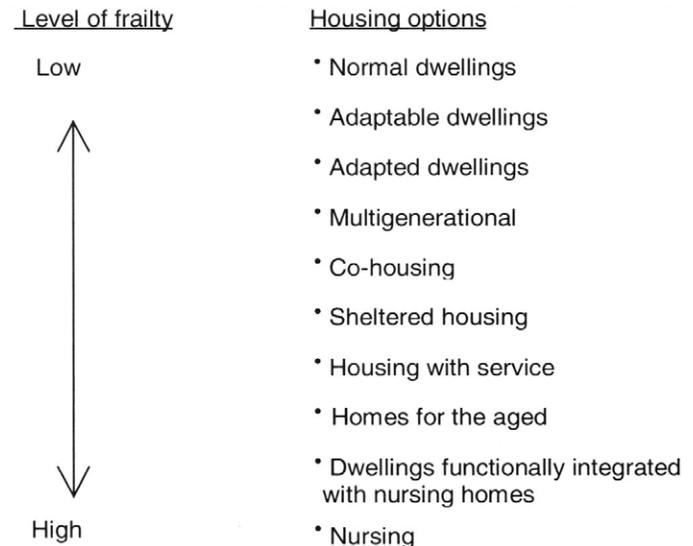
ongoing bathing, cleaning, and meal preparation these seniors need in order to prevent a return trip to the hospital with a case of malnutrition or dehydration.²³ When Hollander compared the costs for Winnipeg seniors receiving chronic home care with the costs for those living in nursing homes, he discovered that the services provided to those living in their own dwellings were ‘significantly less costly’ – the savings ranging from forty-four to seventy-three percent.²⁴ He concludes that ‘the current approach to home care is misguided and may well lead to an increasing cost spiral in health care services.’²⁵

THE CASE FOR INNOVATION

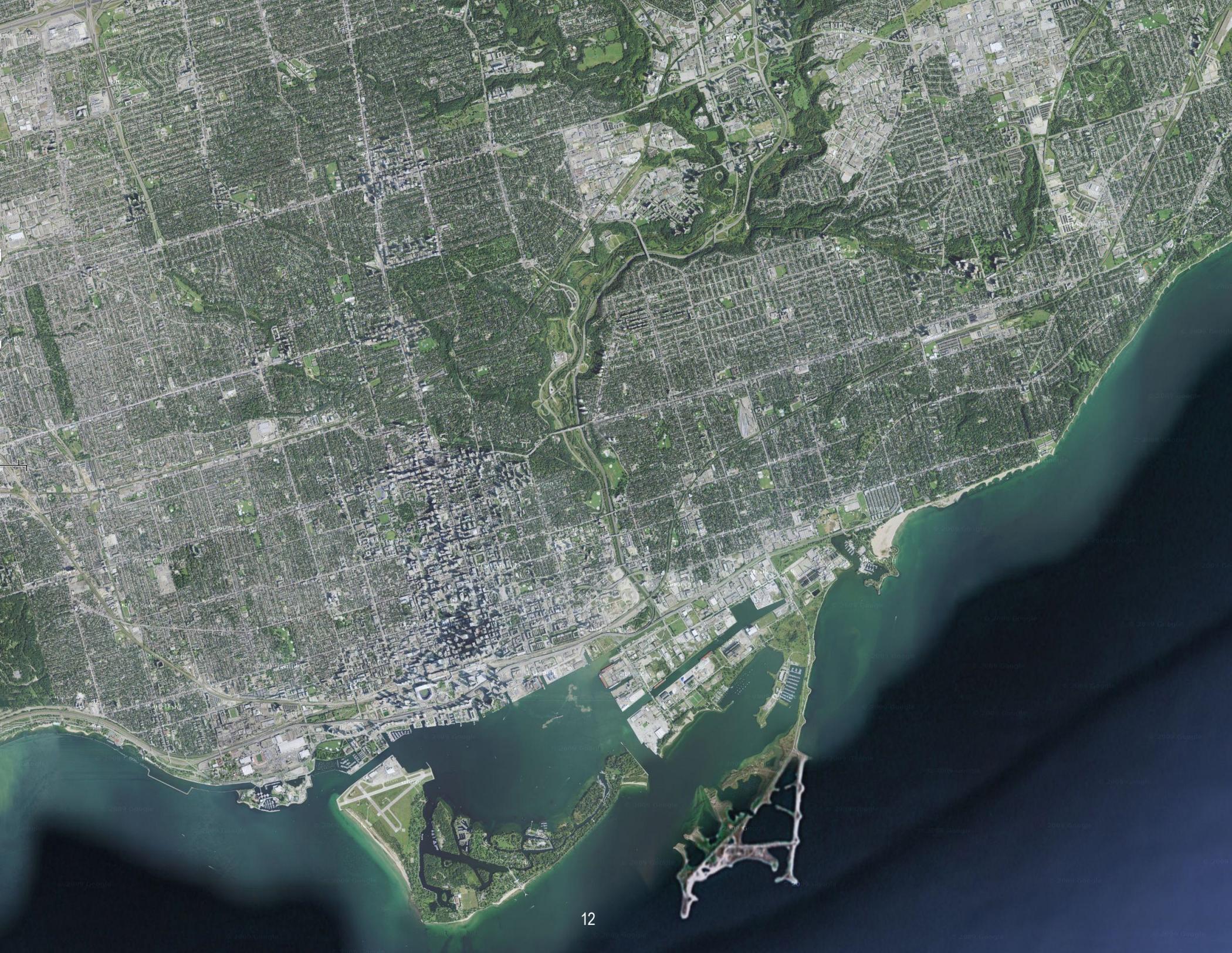
The lack of acceptable intermediate solutions between independence and institutionalization has been pointed out as one of the significant problems facing elderly persons.²⁶ Our strategy must be to enable older people to continue to live independently and participate in the community for as long as possible and to make use of care and support only where absolutely necessary.²⁷ In order to foster self-organized arrangements and integrate forms of mutual assistance, it will be necessary to develop a variety of different offerings so that people with different needs can find suitable options. New and innovative housing models are emerging and are now being expanded to include flexible housing and support options that can be provided in a variety of forms including co-housing, mixed tenure, sheltered, multi-use, communal or hotel-like through new and infill development. It is within this context that the thesis situates itself, proposing an alternative strategy for housing appropriate to the evolving paradigmatic shift. It investigates how architecture can provide a platform for social connection in a residential environment that allows in equal measure both independence without isolation, and informal community with safety and security.



1.7. Assisted Living



1.8. Available housing options relative to level of frailty.



XL - URBAN TACTICS

An appreciation of Toronto rests upon the recognition of a paradigmatic construct in which Main Street, ravine, and lake are the principle elements. Bruce Kuwabara explains:

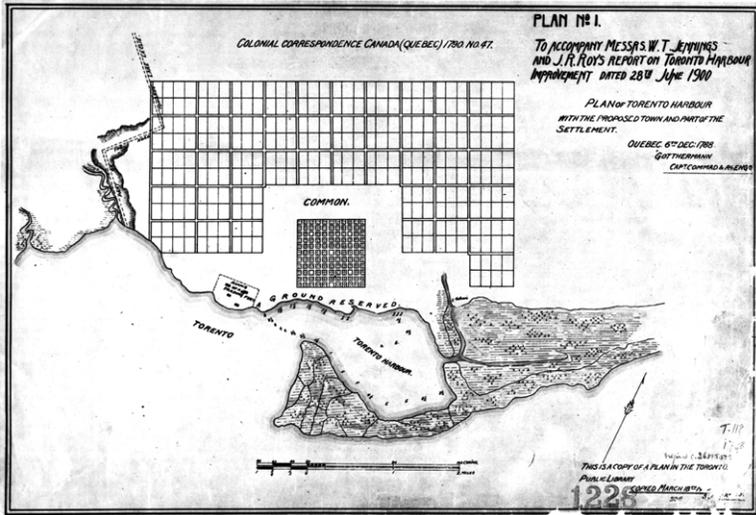
“In 1788 captain Gother Mann, an officer of the Royal Engineers in Upper Canada, applied the British Surveyor Military Ordinance Grid to organize the plan of Toronto. Superimposed on a small area off the shore of Lake Ontario, between the land bounded by the Humber and Don Rivers, this gridiron pattern set the future direction for urban planning in Toronto, imposing an artificial rational order on a natural topography characterized by deep ravines and a rising terrain. Mann’s gridiron eventually evolved into a super arterial grid – a flexible matrix responsive to growth, creativity, and reinvention.”¹

THE MOST BASIC SELF OF THE CITY The growth and evolution of Toronto has been structured by the friction of each constituent element upon one another: ravine, lake, and street. The orthogonal framework of the main streets has been the fundamental form-giver, shaping and defining the extensive patchwork of neighbourhoods which give rise to the collective ‘consciousness and memory’ of the city. As Jane Jacobs describes, “Toronto is not different from other cities in having main streets, but those streets are especially important here, being part of the most basic ‘self’ of the city. The city has many selves, as we acknowledge when we speak of the neighbourhoods, the downtown and the waterfront. But what holds them together is the structure of the city, the grid upon which the city is built. They provide a congenial form for the city.”²

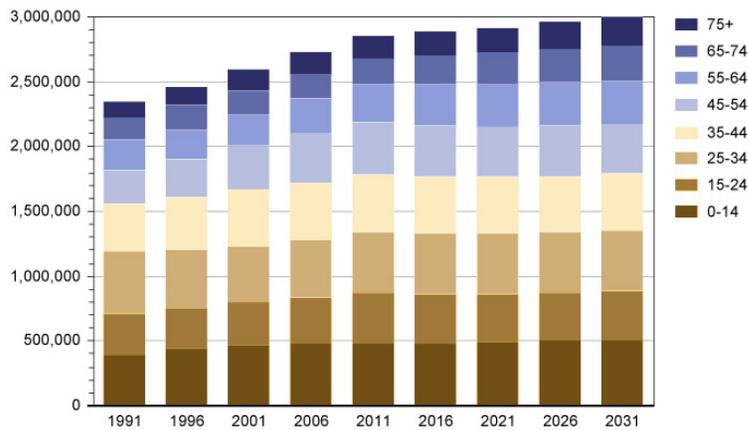
‘With time, the city grows upon itself; it acquires a consciousness and memory. In the course of its construction, its original themes persist, but at the same time it modifies and renders these themes of its own development more specific.’

Aldo Rossi
The Architecture of the City

2.0. (Opposite) Aerial photograph of Toronto.



2.1. Plan of Toronto harbour with the proposed town and part of the settlement, 1788.



2.2. Projected population of Toronto to 2031.

The main streets of Toronto have long been recognized by politicians, planners and architects for their potential for intensification and ‘reurbanization’, yet they remain underutilized given contemporary demand for housing, land, and resources in the city. When viewed in tandem, the profound changes expected in the age structure of the population over the next twenty-five years, the imperative becomes immediate; the city can no longer afford to embrace a laissez-faire attitude towards the logical ‘next step’ in the growth of Toronto.

SITUATIONAL GROWTH The city of Toronto is projected to grow by 537,000 people from 2,463,000 in 1996 to over 3,000,000 by 2031, with the senior population increasing by forty-two percent.³ The city of Toronto Official Plan attempts to direct this growth to “a number of key areas of the City that can accommodate the magnitude of population increase expected, while protecting and preserving the fabric of existing residential neighbourhoods and the valuable green space system. These areas are the Downtown and Central Waterfront, the Centres, the Avenues, and the Employment Districts. The intent of encouraging growth in these locations is to: maximize the use of existing infrastructure; reinforce the City’s urban structure, especially in regard to Centres and Employment Districts; intensify and exploit development opportunities while protecting stable residential areas, and reduce land consumption across the broader region.”⁴

ENVISIONING DISTRIBUTION

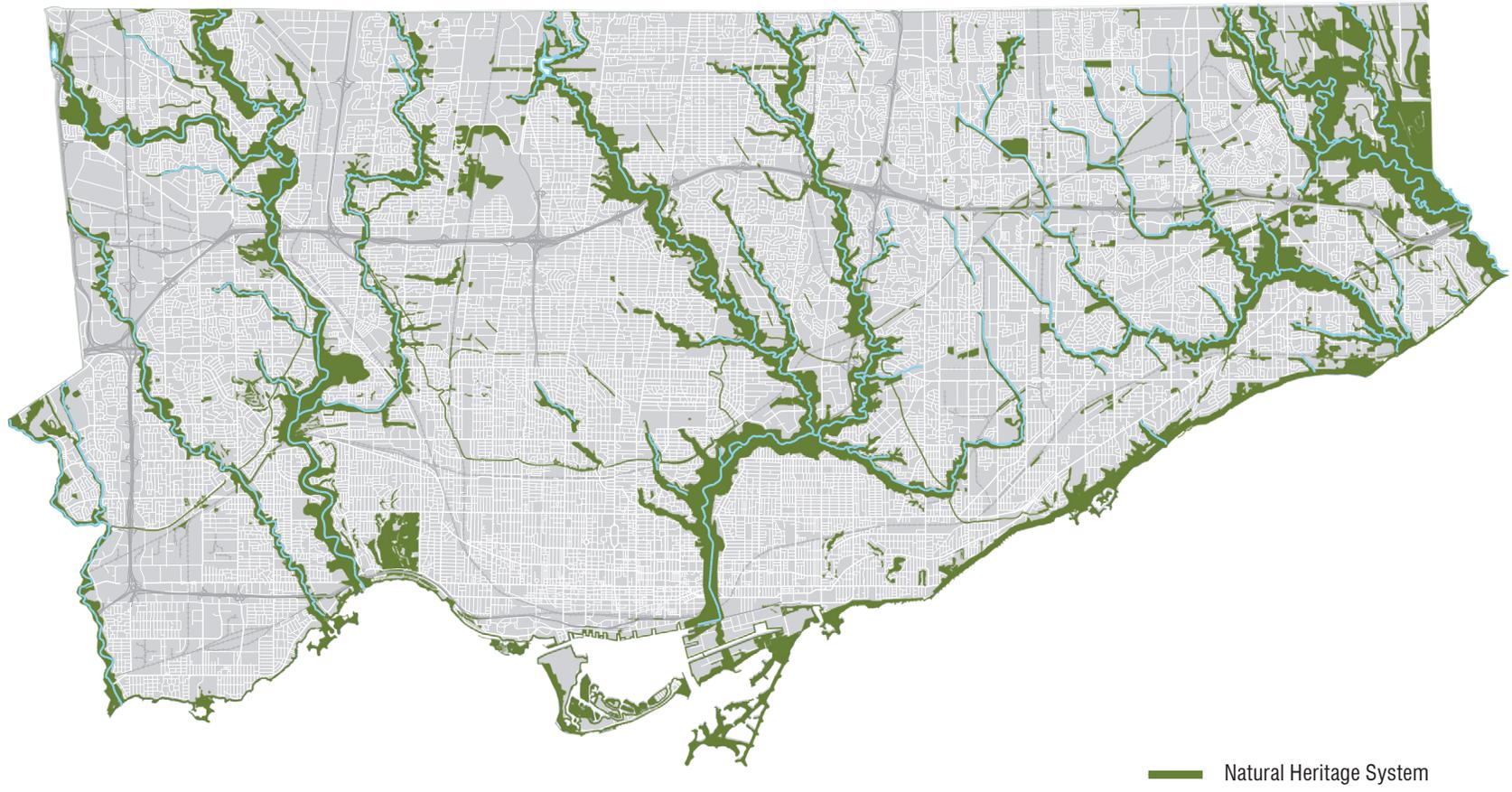
Intensification is essentially a new term for an old process whereby communities incrementally add to or alter the built environment to accommodate new uses that reflect changing social and economic realities.⁵ The flexible matrix of main streets provide the framework for strategically and efficiently directing, managing and addressing the housing and support needs of an aging population with the greatest benefit to the infrastructure and urban character of Toronto’s urban fabric. A modest increase in the intensity of development along these streets would optimize the use of the city’s existing services and infrastructure. The full potential of an increase in density could be realized with minimal effect on the quality of life in any of the adjacent residential neighbourhoods. Focusing intensification along these mixed-use corridors that typically border the residential neighbourhoods, housing appropriate to an aging population can be integrated into existing communities that offer the greatest variety of typology and tenure in the form of medium-density mixed-use buildings.



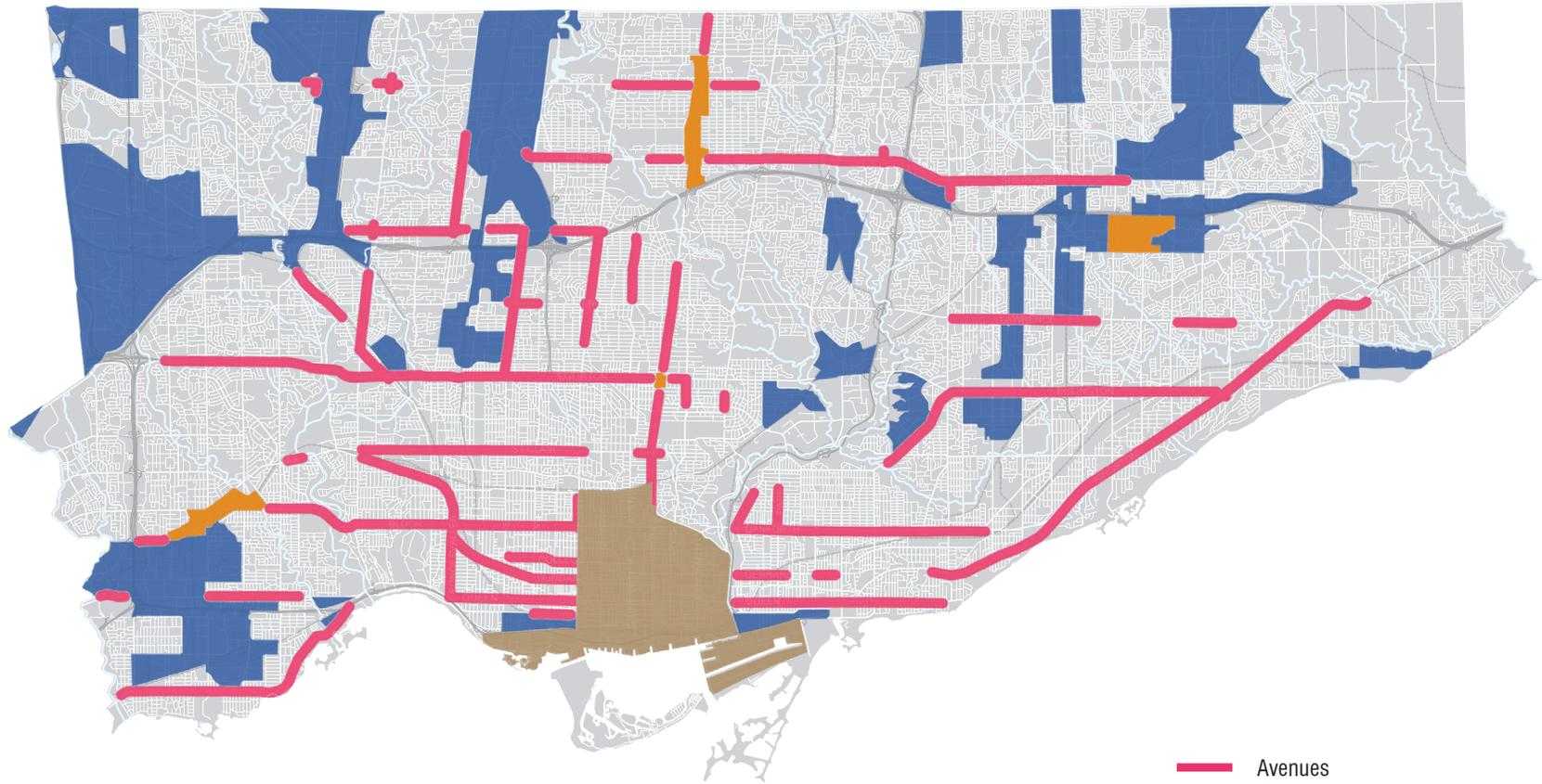
2.3. Rendering of proposed West Don Lands development.



2.4. Toronto’s new streetcar by Bombardier.
2.5. (Next page left) City of Toronto natural heritage.
2.6. (Next page right) City of Toronto urban structure.



NATURAL HERITAGE



- Avenues
- Centres
- Downtown and Waterfront
- Employment Districts

URBAN STRUCTURE



2.7. Streetscape typical to Toronto's main streets.



2.8. Comparison of lot patterns along main streets, Toronto, 1890 and 1988.

THE INCESSANT CONVERSATION

The issues of redevelopment within existing urban fabric have been key aspects of Toronto's history. Past projects, policies, and debates continue to define much of its planning and architectural discourse today. While it is beyond the scope of this thesis to examine in detail the many impediments handicapping housing intensification on main streets, there is value in revisiting the conclusions that have been highlighted by previous publications and reports.

One of the publications that elicited a comprehensive set of conclusions was the 'Housing on Main Streets' initiative of the early 1990's. The report dealt specifically with main street building and other attempts over the last four decades at providing new housing in keeping with the existing urban fabric. The initiative was an effort to encourage the development of more housing along the main streets while enhancing the quality of space and public life on those streets – the principle public realm of the city.⁶

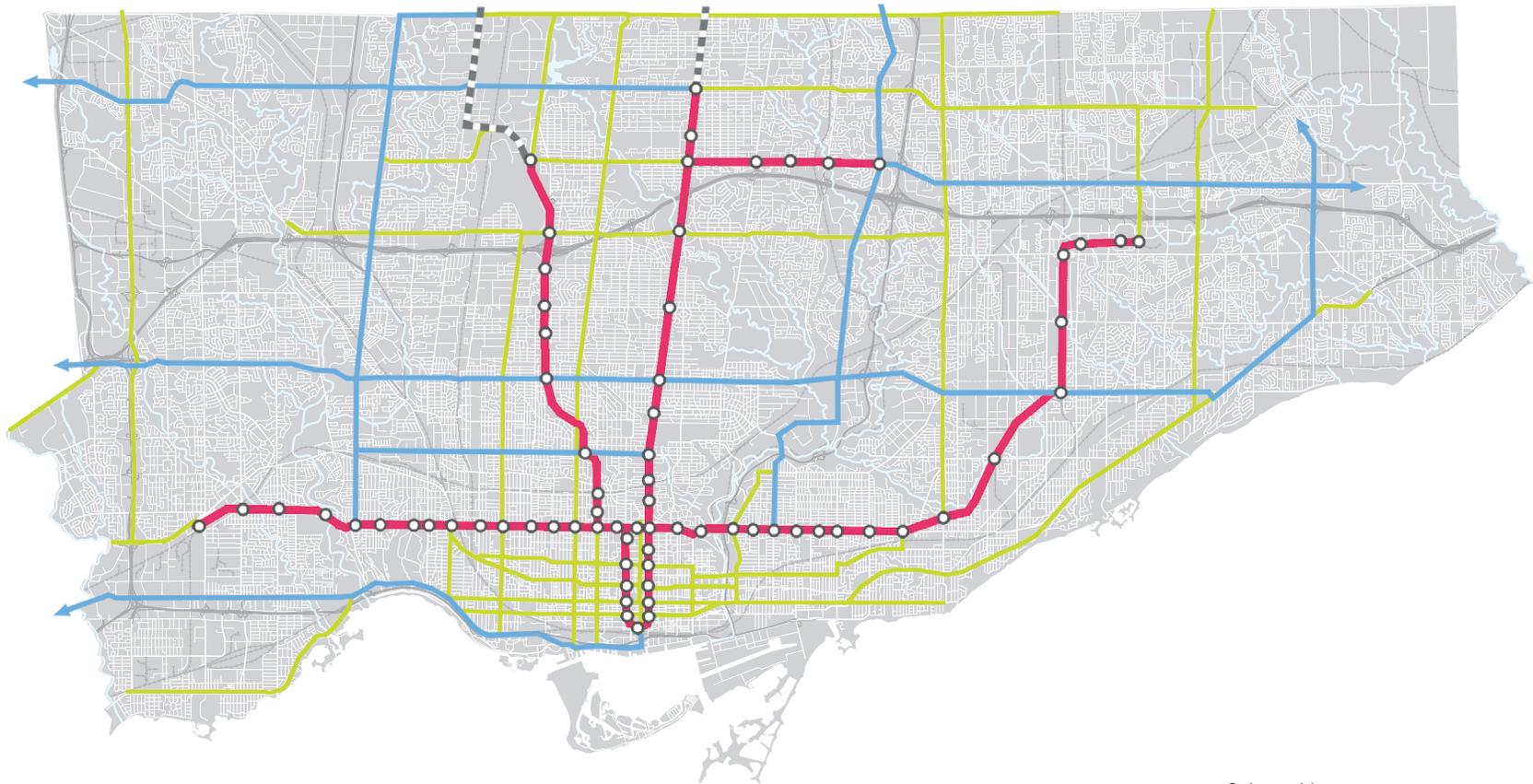
The report identified the following constraints encumbering property owners and developers from building housing on main streets: project density, building height, setbacks and lot coverage, parking, recreation space, garbage and loading.⁷ One of the subsequent factors that has slowed development of housing on main streets and helped to preserve the character of the streets is the difficulty of land assembling sites large enough for development. To deliver real intensification, three other supply side factors must be addressed: the property owners' willingness to participate, supportive planning policy, and the presence of adequate services.⁸

STRATEGIC SPECULATION

The housing on main streets initiative, points to the need for smaller increments of building and a greater mix of housing type, tenure, form and scale than is typically provided in contemporary urban building. In light of the conclusions of the report, the site selection strategy focused on highlighting properties along main streets such as vacant lots, surface parking lots, under-utilized sites such as plaza-type development, former industrial sites, and sites with large frontages that were considered inefficient land-use and out of context for main streets. By focusing design speculations on these sites, one can avoid the difficulties of land assemblage and focus on typological architectural speculation directed towards housing an aging population more efficiently. These sites promote the logical ‘next step’ in the evolution of the city of Toronto. Rather than propose few ultra-density projects to accommodate growth, city-wide development of main streets would allow growth to occur in increments, both on small and large parcels. This approach would result in evenly distributed development over the city’s arterial network without overburdening any particular area.

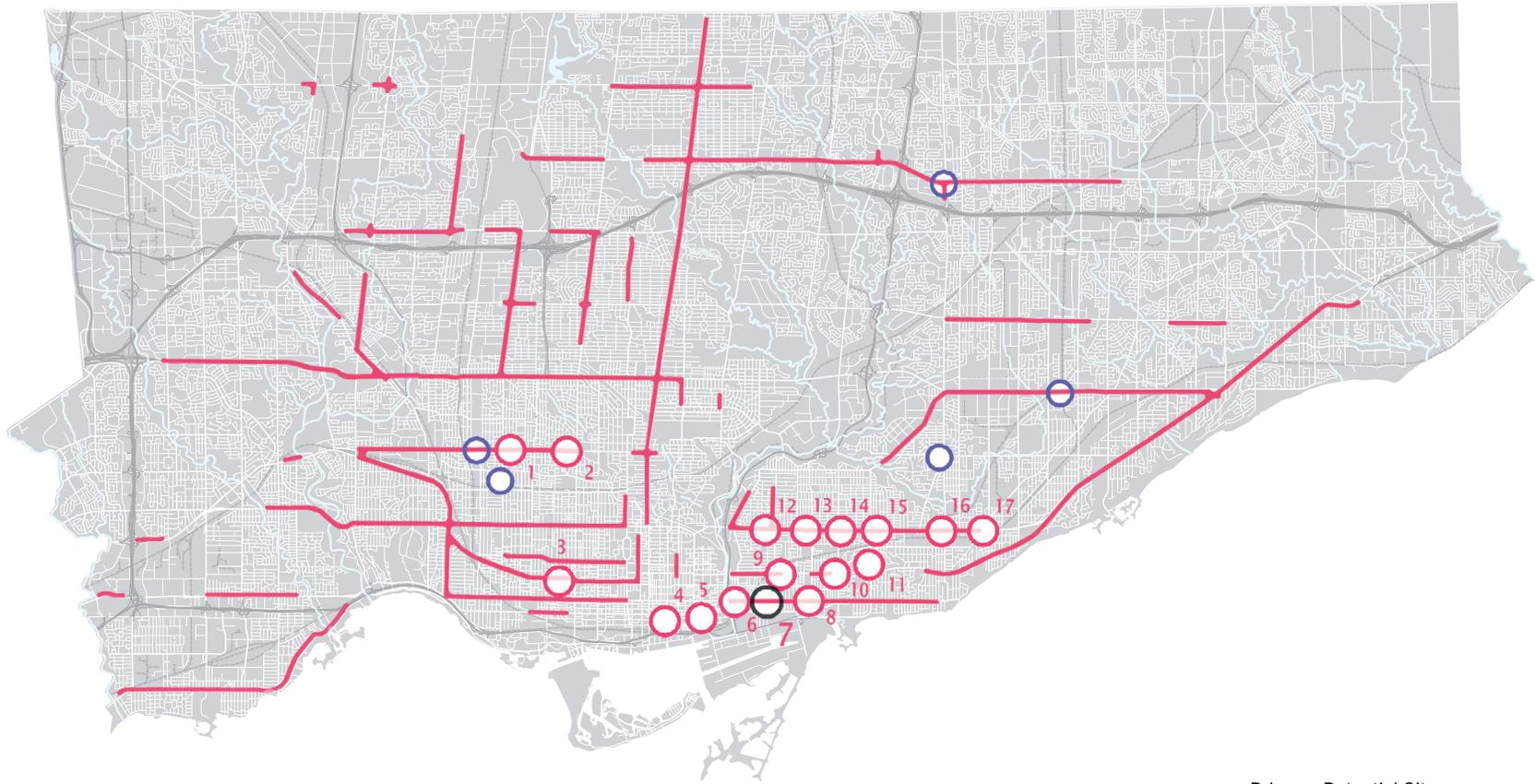
A key issue for local authorities in urban areas will be how to finance the accelerating cost of housing and services for older people given the context of fiscal constraint, vertical fiscal imbalance and competing demands due to decentralization of policy control over urban fiscal management.⁹ The current rigidity of the municipal planning environment has resulted in a lack of alternatives to single detached homes and high-rise apartment condo towers. If we are to increase the demand for housing forms other than the current market polarities, we will need to provide more ‘medium-density’ housing. Developing a greater acceptance of ‘medium density’ housing is clearly the best opportunity to densify new residential neighbourhoods and elaborate better use of existing infrastructure.

2.9. (Next page left) City of Toronto public transit network.
2.10. (Next page right) City of Toronto site selection network.



- Subway Lines
- Transit Priority Segments
- Transit City* Light Rail Network

PUBLIC TRANSIT NETWORK



- Primary Potential Sites
- Secondary Potential Sites

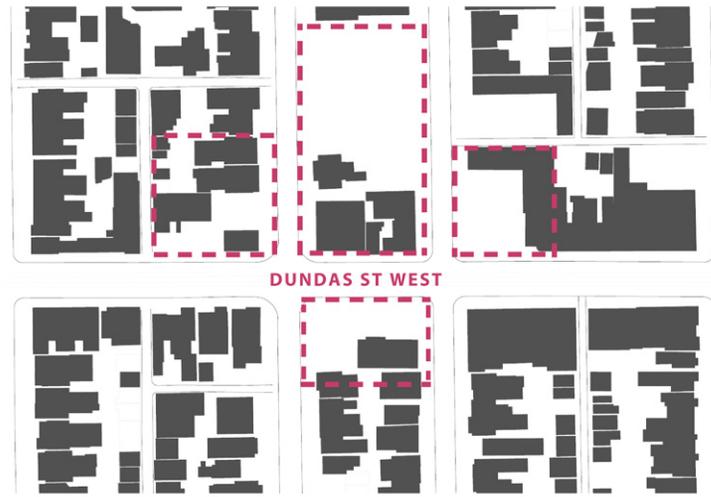
SITE SELECTION NETWORK



2.11. 7-Eleven on Dundas street west and Claremont street.

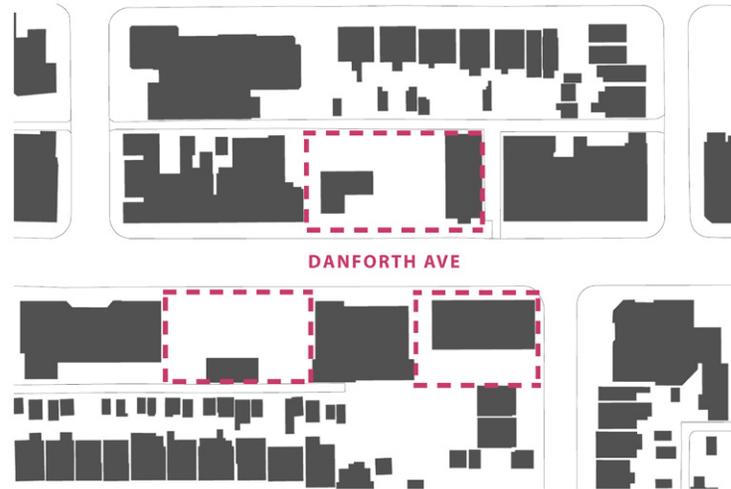


2.13. Auto garage on Danforth avenue west of Greenwood avenue.



DUNDAS ST AT MANNING

2.12. Site development speculation, Dundas street at Manning avenue.



DANFORTH AVE AT GREENWOOD

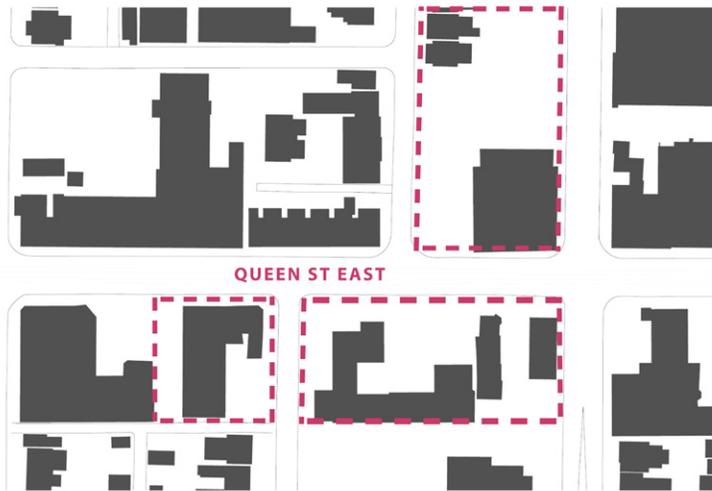
2.14. Site development speculation, Danforth avenue at Greenwood avenue.



ST. CLAIR WEST

ST. CLAIR AVE AT VAUGHAN

2.15. Site development speculation, St. Clair avenue at Vaughan road.



QUEEN ST EAST

QUEEN ST AT CARLAW

2.17. Site development speculation, Queen street east at Carlaw avenue.



2.16. Gas station on St. Clair avenue west of Vaughan road.



2.18. Used car dealership on Queen street east and Morse street.



L - GETTING UNDER THE SKIN

What Manuel de Sola-Morales alludes to when describing ‘the skin of the city’ is not a flat envelope, but rather a ‘qualitative network, a membrane of differences that are subject to interventions and strategies.’¹ He continues, “To operate on the skin of the city is to be constantly attending to the way things are, and to questions about which things need adding, removing, or modifying, or how to better rearrange them.”² What de Sola-Morales emphasizes is the critical importance of reading the urban project as operating within a system of distinct qualitative and quantitative systems. It is only when we see these compositions working in tandem that an accurate understanding of the richness of the urban landscape can be extracted - a tactile experience of the city that gives rise to differences of weight, form, texture, format, morphology, and tectonics.

The consideration of potential project sites gave rise to numerous occasions of surveying the city, employing a simultaneously qualitative and quantitative perspective. These examinations elicited a rich variety of potentials, both in existing richness and potential richness. The choice of the site at Queen St. East and Carlaw Avenue embodied the greatest of both potentials. An attentive reading of Leslieville reveals a dynamic current of morphological and typological friction fundamentally tied to industrial activity from the turn of the century.

‘In the skin of the city, our architectural instruments, our experience as city dwellers and our bodily sensations are the real working material, useful and substantial in themselves, even for cause-and-effect relations of the most abstract kind. So there is a certain analogy between intervening in the skin of the city and the techniques of acupuncture - not because it involves using needles or making small incisions, but because the epidermis is understood to form a system.’

Manuel de Sola-Morales
A Matter of Things

3.0. (Opposite) Urban acupuncture.



3.1. Leslieville environs.



3.2. Connaught avenue looking south from Queen street. August, 1923.

CURIOUS ANTAGONISM

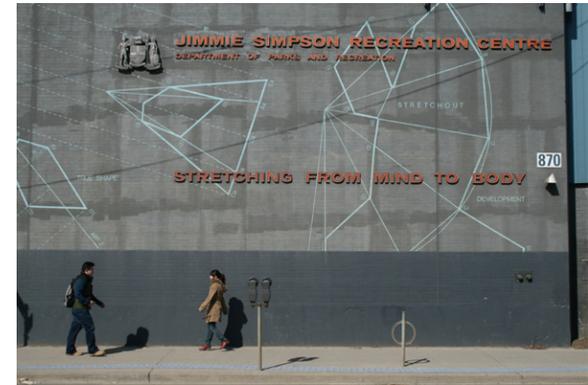
Prior to its incorporation into the city of Toronto in 1884, development in Leslieville had been sparse, and consisted mainly of country estates and roadhouses, market gardens and brickyards. The nomenclature of the area can be directly attributed to the presence of George Leslie and Sons' Nurseries, one of the area's pioneering businesses. Development of the area was accelerated by two factors. The first was the extension of streetcar service across the river in 1887 and 1891 by the Toronto Railway Company, forerunner of the Toronto Transit Commission, thereby giving greater mobility to families on modest incomes whose wage earners worked downtown. And secondly, the development of local industries which served to employ local residents and encouraged the construction of more workers' housing.³

The area provided an optimal operational hub for industry at the turn of the century. The C.N.R. railway lines, built in 1855, connected the area with Toronto Harbour to the west and major points east including Montreal. The area south of Eastern Avenue was well served by rail, as was the area to the north of Queen where the C.N.R. lines crossed Logan and Carlaw Avenues. The heterogeneous industrial profile evolved to include Colgate, Wrigley's, Dylex, Weston's, Woods, Dunlop and dozens of others. In many cases, the size of the industrial sites was limited by the proximity of low-income, residential housing. The lack of planning and absence of restrictive zoning resulted in the patchwork quilt appearance of the different uses which exist in south Riverdale today.⁴ The most graphic example of this situation exists in the industrial section of Carlaw, north of Queen, where the Colgate Palmolive company was located.

The extension of the streetcar lines along the east-west corridor of Queen Street propelled commercial activity, and resulted in a street morphology typical to many of Toronto main streets. This commercial activity served the working class residents and evolved in conjunction with the Industrial activity, creating a condition unique to the neighbourhood. The Queen Street typologies have remained



3.3. Queen street east at Logan avenue looking east. April, 1934.



steadfast in their dominance of the urban condition; their facades have not changed much since the 'twenties'.⁵

With the exodus of Carlaw's industry to the 905 zones, the job market in the area has changed. Instead of assembly line workers, Carlaw buildings now house photographers, designers, artists, artisans and entrepreneurs. This influx of enterprise continues to be the driving force of change in the area as the shift from blue-collar work to knowledge and artisan-based enterprises compete with residential conversion to fill the remaining industrial buildings.

ANALYTICAL MEDITATIONS

Perhaps one of the most significant challenges presented by an aging population is the need for communities and living spaces that are more responsive to people with reduced mobility. This will change the pattern of housing needs and preferences, alter the nature of the demand for services, and change transportation requirements. The following analysis posits a systemic understanding of the morphological and typological dispositions of the Leslieville area, highlighting the urban implications of encouraging denser, walkable communities that foster connectivity and convenience through neighbourhood design. The analysis identifies six vectors of livable communities and common barriers to aging-in-place, which relate to each component of analysis. These vectors are compiled from the CMHC 'Smart Growth, Livable and Sustainable Communities for Seniors' research report, the WHO 'Global Age Friendly Cities' guide, and the AARP 'Opportunities for Creating Livable Communities' research report.

3.4. (Opposite) Photographs of Leslieville environs.



3.5. W.M. Wrigley Company Ltd. Building now the Wrigley Lofts at 245 Carlaw avenue



3.6. Industrial character of Carlaw across vacant lot of former Colgate-Palmolive factory.



QUEEN ST AND CARLAW LOOKING EAST

3.7. Queen street east and Carlaw avenue, north-west corner.



SITE LOCATION

3.8. Site location.



3.9. Carlaw avenue south towards Queen street east.

CARLAW AVENUE LOOKING SOUTH TOWARDS QUEEN ST



QUEEN ST AND VERRAL AVE LOOKING NORTH-EAST

3.10. Queen street east at Verral street, north-east corner.

URBAN MORPHOLOGY + SAFETY

Urban morphology describes urban block sizes, shapes and relationships to street conditions. It therefore occupies a central role in determining the safety and walkability of the project area. The relationship of large industrial sites and their proximity to main commercial thoroughfares provides a significant opportunity for integrating medium-density, mixed use housing.

Many seniors harbor concerns about crime and personal safety that need to be taken into consideration when promoting walking and public transportation. Strategies must aim to mitigate fears of crime and falling by providing better lighting and safer crossings, and also by encouraging high levels of pedestrian activity.

- Adequate and consistent street lighting is provided on streets, pedestrian routes, transit stops, public places, and retail areas
- Visual connectivity and public safety enhanced by appointment of glazed areas facing the street
- Potential entrapment zones avoided in all aspects of urban design
- Cycle paths are separate from pedestrian walkways
- Wayfinding systems/safety features are installed at crosswalks (crossing times that allow seniors to cross the streets safely, clear signage, visible sight lines, crossing noise for the visually impaired)



3.11. (Top) Carlaw avenue between Queen street east and Dundas street east looking south.

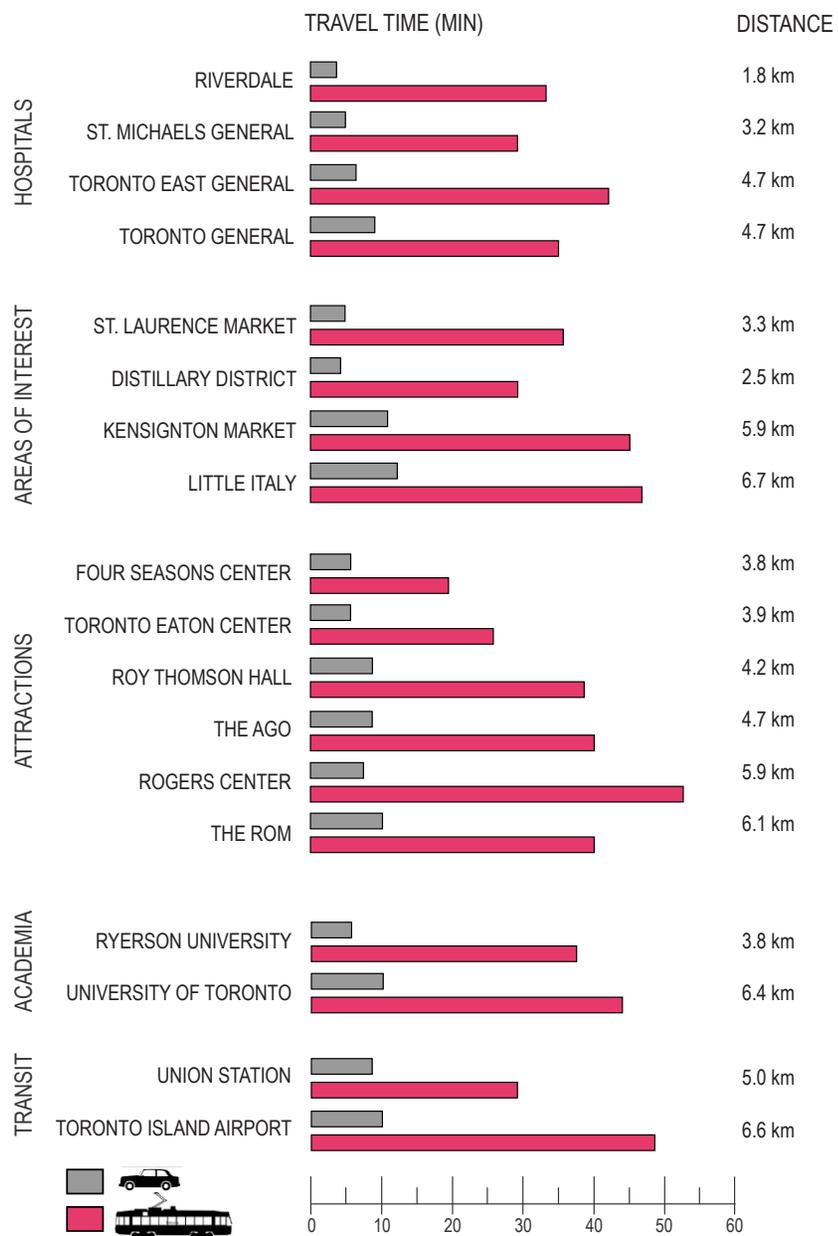
3.12. (Centre) Queen street east between Verral avenue and Morse street looking west.

3.13. (Bottom) Verral avenue between Queen street east and Colgate avenue looking south.



URBAN MORPHOLOGY

3.14. Urban morphology.

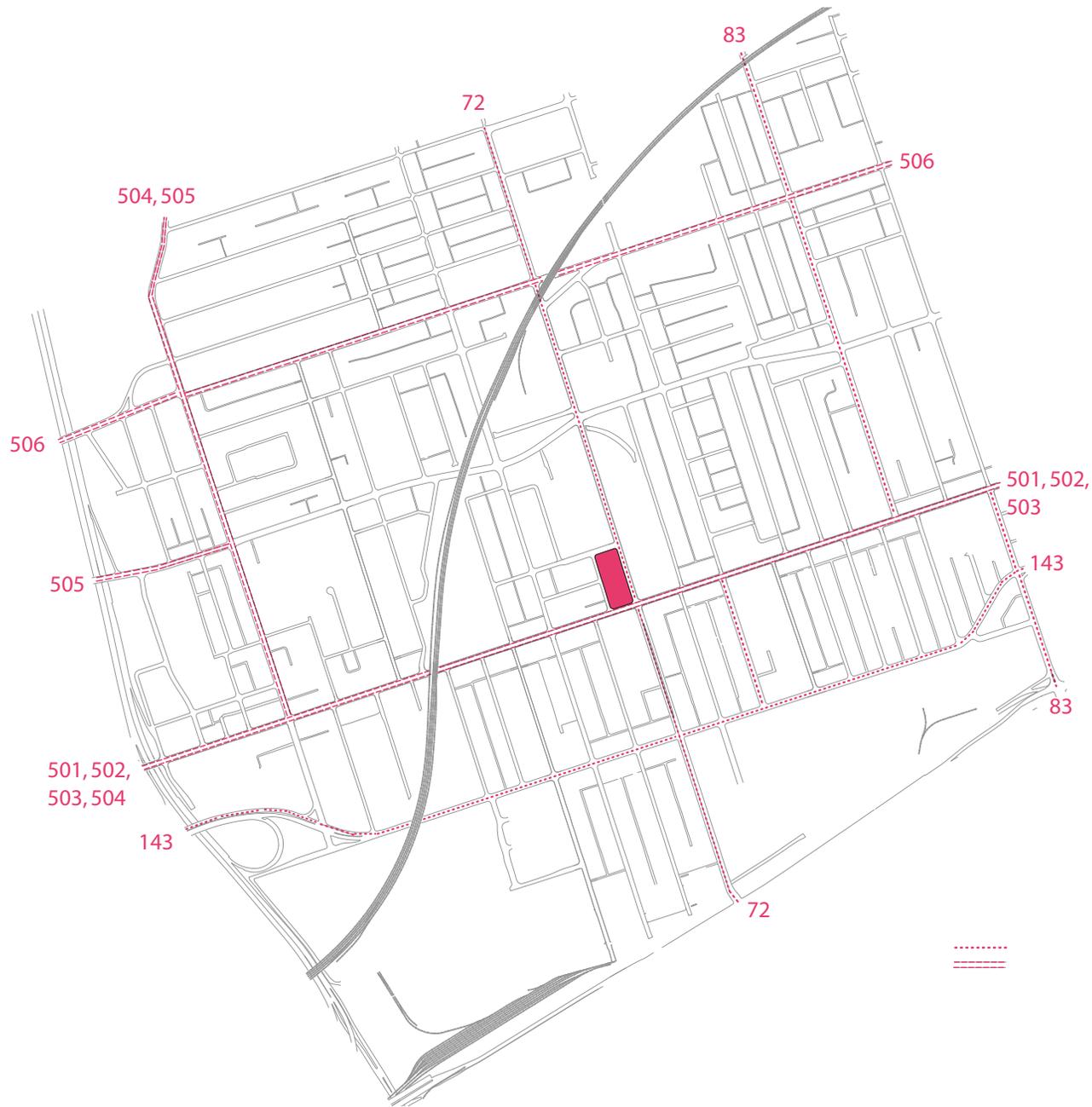


PUBLIC TRANSPORTATION

An emphasis on widespread transit availability facilitates aging in place, although age sensitive transit features are needed to make seniors feel safe and comfortable using transit systems. Without better public transportation service, older seniors will continue to drive to meet their transportation needs, even if driving is stressful. Appropriate site selection must include the understanding and provision of inclusive transportation strategies, mitigating the need for seniors to drive.

- Public transportation is reliable, frequent and accessible
- Transit stops and stations are conveniently located, accessible, safe, clean, well-lit and well-marked, with adequate seating and shelter
- Transit Systems are designed and/or retrofitted to be barrier-free

3.15. Travel times by car and streetcar from Queen street east and Carlaw avenue to various locations within Toronto.



TTC TRANSIT CONNECTIONS

3.16. TTC Transit connections.

URBAN TYPOLOGY

The lack of planning and absence of restrictive zoning resulted in the patchwork quilt appearance of the different uses which exist in south Riverdale today.⁶ The most graphic example of this situation exists in the industrial section of Carlaw north of Queen where the Colgate Palmolive company was located. The Queen Street typologies have remained steadfast in their dominance of the urban condition; their two and three storey facades have not changed much since the 'twenties'. This antagonism between typologies has resulted in a dynamic and flexible matrix which encompasses significant potential for integrating a range of housing choices, most ostensibly medium-density developments. Communities that provide for a range of housing choices are better equipped to deal with aging populations. A well-diversified and affordable housing stock provides seniors with options to remain in their own community in event that they can no longer live in their current residences.

Communities that provide for a range of housing choices are better equipped to deal with aging populations. A well-diversified and affordable housing stock provides seniors with options to remain in their own community in event that they can no longer live in their current residences. This concept is dealt with in detail in the following chapter, however it suffices here to outline key recommendations.

- Diversity of housing type, tenure and affordability
- Rigid separation between residential, commercial, and recreational areas makes it difficult to reach daily necessities and community amenities
- Homes lack design features to serve residents across their life span

3.17. (Top) Queen street east typology with retail at grade.

3.18. (Centre) Carlaw avenue industrial building.

3.19. (Bottom) Verral avenue semi-detached housing.





NEIGHBOURHOOD TYPOLOGY

3.20. Neighbourhood typology.

COMMUNITY SERVICES AND AMENITIES

- 1 - Matty Eckler Recreation Centre
- 2 - Jimmie Simpson Recreation Centre
- 3 - Woodgreen Community Centre
- 4 - Ralph Thornton Community Centre
- 5 - Queen Saulter Library
- 6 - Jones Avenue Public Library
- 7 - Heritage Nursing Home
- 8 - St. Joseph's Place
- 9 - St. Joseph's Catholic School
- 10 - Leslieville Junior Public School
- 11 - St. Joseph Primary School
- 12 - Bruce Junior Public School
- 13 - Woodgreen Community Housing
Woodgreen Employment Services
- 14 - South Riverdale Community Health Centre
- 15 - Queen Street East Presbyterian Church
- 16 - Morse Street Public School
- 17 - Queen Alexandria Middle School
- 18 - Dundas Junior Public School
- 19 - Toronto Chinese Alliance Church
- 20 - Eastdale Collegiate
- 21 - St. Ann's Catholic Church
- 22 - St. Matthew Anglican Church
- 23 - Riverdale Shopping Centre
- 24 - Gerrard Square Shopping Centre
- 25 - Riverdale Collegiate

URBAN ARTIFACTS AND INDUSTRY

- 26 - Canada Metal Co.
- 27 - Toronto Film Studios
- 28 - Cast and Crew Entertainment Services
- 29 - Simcoe House
- 30 - Weston's Bakery Outlet
- 31 - City of Toronto Department of Parks and Recreation
- 32 - Consumers Gas Station 'B' - West Building
- 33 - Consumers Gas Station 'B' - East Building
- 34 - World Journal Building
- 35 - Cinespace Studios
- 36 - Lever Brothers Soap Factory
- 37 - BMW Toronto
- 38 - former Rexall Drug Warehouse
- 39 - former Coca-Cola Bottling Plant
- 40 - Don Jail
- 41 - Toronto Hydroelectric System Building
- 42 - former Harrold's Coal Company
- 43 - former Sturgons Office Building
- 44 - former Wrigley Gum Factory
- 45 - former Dylex Garment Factory
- 46 - former Rolph Clark Stone Printing Factory
- 47 - former Bowes Company Food Distributors
- 48 - former Colgate-Palmolive Factory

ACCESS TO SERVICES

In order to live full and independent lives, seniors need to be able to access basic services such as health care, grocery stores, retail shopping, community facilities, and other recreational opportunities. Basic services must be located within short walks of housing and at transportation nodes. Queen Street contains a number of community facilities including libraries, community centres, banks, and retail. However, grocery stores are located further away, on Gerrard Street to the north and Leslie Street to the east.

In order to live full and independent lives, seniors need to be able to access basic services such as health care, grocery stores, retail shopping, community facilities, and other recreational opportunities. Basic services should be located with short walks of residences and at transportation nodes.

- Proportion of housing located within walking distance (500m) to the following basic services: pharmacy, grocery store, and bank
- Proportion of housing located within walking distance (500m) or 10min public transit trip to following services: pharmacy, grocery store, bank, hospital, senior centre, library, community hall, retail shopping



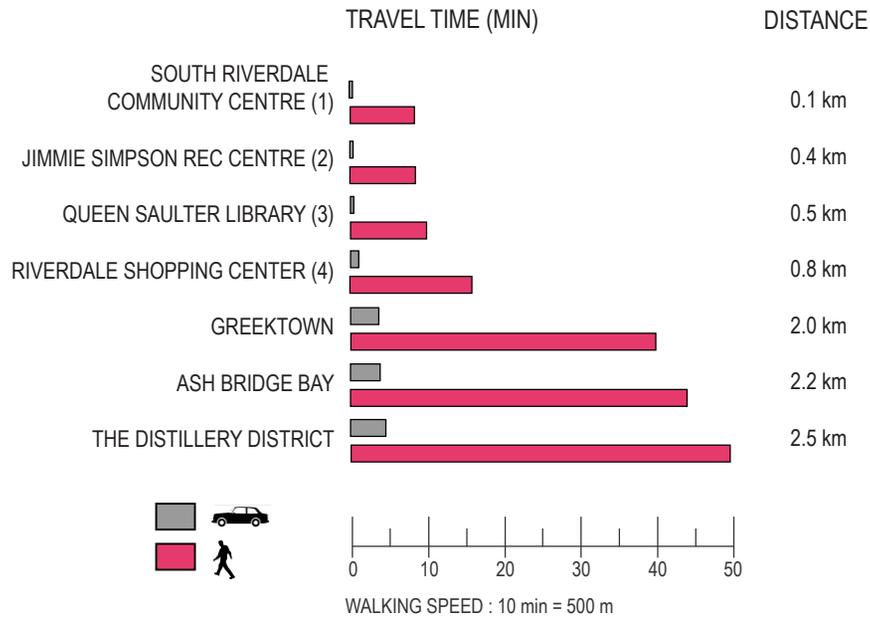
COMMUNITY SERVICES, AMENITIES AND ARTIFACTS

3.21. Community services, amenities and artifacts.

NEIGHBOURHOOD WALKABILITY

Streetscape planning for seniors must include attention to small details that, in combination, have significant impacts on the ability of older residents to take advantage of pedestrian routes. Planning for walkable communities is an important component in allowing seniors to live independently. Design plans that feature walkability create safe environments for seniors, facilitate community engagement, reduce feelings of isolation, and promote active lifestyles – all of which are essential for successful aging in place.

- Housing located within walking distance (500m) of public transportation
- Provision of benches and other resting places including areas of shade and shelter along pedestrian routes
- Sidewalks are wide-enough for wheel-chairs and have dropped curbs to road
- Surface textures are used to communicate the delineation of sidewalks, pathways, bus stops, entranceways, and curbs
- Pedestrian crossing are sufficient in number and safe for people with different levels and types of disability, with non-slip markings, visual and audio cues and adequate crossing times
- Increased signage and larger lettering on street and business signs
- Access to public restrooms



3.22. (Top) Travel times by walking and car from Queen street east and Carlaw avenue to various locations in Leslieville and east Toronto.

3.23. (Bottom) Elderly man crossing street.



WALKING DISTANCE (500m)

3.24 Walking distance (500m) from Queen street east and Carlaw avenue.

COMMUNITY ENGAGEMENT

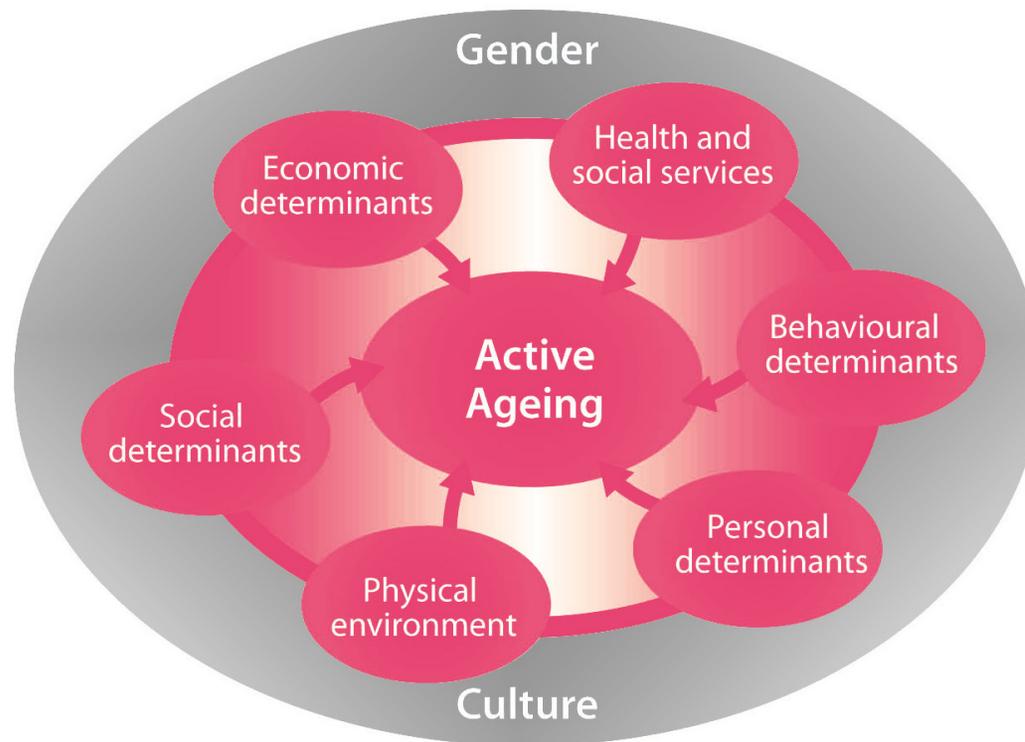
Senior Isolation due to a lack of mobility has negative economic and civic impacts that can be avoided with strategic planning. A community that is designed to support senior mobility can take advantage of the talents and contributions of its seniors.

- Availability to engage in social activities including: meeting with friends/neighbours, engaging in civic, religious, or cultural activities, and participating in volunteer or part-time work
- Planning takes place without sufficient knowledge about the community and its residents
- The public does not fully understand the aging boom on a community level and how it may affect decision-making and service delivery over time
- Inadequate public engagement and participation in community planning affect possible options
- A lack of 'political will' often hinders measures that would make the community more livable



3.25. (Top) Seniors playing cards.

3.26. (Bottom) Small gathering in a common living room.



DETERMINANTS OF ACTIVE AGING

3.27. Determinants of active aging.



M - INTEGRATIONAL STRUCTURING

A POLARIZED HOUSING CLIMATE

Toronto's real-estate boom of the last decade has produced mainly detached homes and high-rise apartments and condominiums. The region relies more heavily on high-rise apartments than Montreal and even Vancouver, and much less on the mid-rise forms, such as townhouses or low-rise apartment buildings, which are attractive in their ability to combine high amenity with higher density.¹ The popularity of high-rise condo dwelling is a result of growing urbanization accompanied by high land values and a continuing demand for home ownership. By permitting a separation of the ownership of the housing unit from ownership of the site, many more Canadians could become homeowners at a potentially lower cost due to savings achieved by collective ownership of the site, common elements, and shared maintenance.²

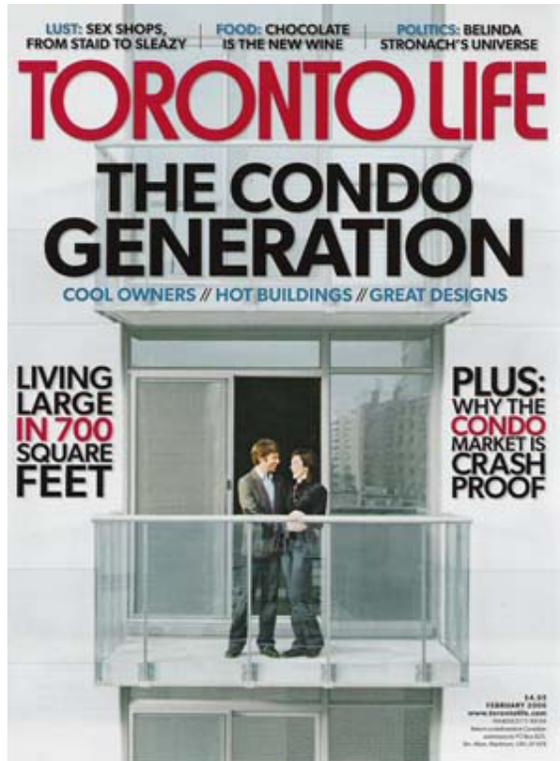
'Housing, in its social role as an image, and on account of its peculiar formal characteristics, is the most potent force at work in the urban fabric. The housing group is the modulus of living; it is at once the instrument of urban research, the means of urban development and an end product of the constructed image.'

John Voelcker
Team 10 Primer

4.0. (Opposite) Design museum. Holon, Israel.

City of Toronto		
	No.	%
Single-detached house	266,880	27.3
Semi-detached house	69,465	7.1
Row house	54,685	5.6
Apartment, detached duplex	44,100	4.5
Apt, building that has 5+ storeys	379,695	38.8
Apt, building that has <5 storeys	162,980	16.6
Other single-attached house	1,345	0.1
Movable dwelling	160	0.0
Total number of dwellings	979,310	100.0

4.1. Occupied private dwellings by type, City of Toronto.



4.2. The Condo Generation.

Most contemporary high-rise condo design caters to younger sectors of the population, which can pose obstacles to those with sensory, mobility, or cognitive limitations. These typologies fulfill people’s desire for secluded private space but do little to foster community or aging-in-place. “Condominium culture is immersive and presents domesticity as a totality that is hermetically sealed and at the service of comfort.”³ These projects contend to offer notions of interior urbanity, extreme convenience, and homogeneous social programming, but they generally fail to provide an architectural framework that facilitates the concept of ‘aging-in-place.’

UNDERSTANDING SUPPORTIVE HOUSING

Supportive housing is a term used to describe a range of housing options designed to accommodate the needs of seniors through design features, housing management, and access to support services. At one end of the range, supportive housing refers to congregate housing with support features and services such as monitoring and emergency response, meals, housekeeping, laundry and recreational activities. At the other end of the range (referred to in most North American jurisdictions as ‘assisted living’) personal care services are also provided for frailer seniors with more significant support needs. Supportive housing may be provided either by the public or the private sector, for profit or not-for-profit. In some cases, one provider will be responsible for delivering the whole supportive housing package (services plus housing). In other cases, services and housing components will be delivered separately, by different sectors. Supportive housing can be rented, purchased as a condominium in fee simple, or obtained through a life lease.⁴

Long-term care facilities mainly provide inpatient nursing and rehabilitative services. The care is generally provided for an extended period to individuals requiring nursing care. These establishments have a permanent core staff of registered or licensed practical nurses who, along with other staff, provide nursing and continuous personal care services.⁵

THE IMPORTANCE OF COMMUNITY

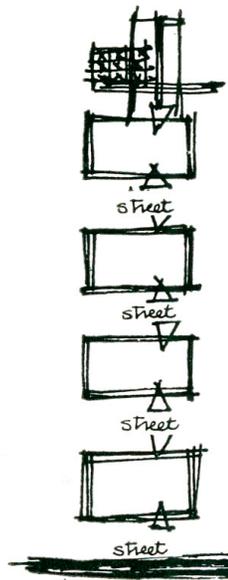
The conclusion drawn from the Case for Alternative Strategies was the fundamental importance of focusing on encouraging mutual support and care through a strengthening of community. In contemporary culture, community is neither easily designed, nor necessarily place-based, but built rather by the actions of people over time. What inspires people to join together seems to be mutual interest rather than geographic location.⁶ The problems of housing cannot be solved through the ‘creation’ of physical communities alone. People create communities, and these communities grow and change continuously. Places, however, can be built and it is the role of designers to make sure that these places are not designed for single communities but encourage neighborliness and support.⁷

The encouragement of neighbourliness and community are realized through a series of socio-spatial qualities which include permeability, legibility, adaptability or flexibility, variety, activity or vitality, and privacy. These qualities are not exhaustive nor are they mutually exclusive, they are interwoven with a complexity that reflects the subtle relationships between social issues and physical form.⁸ What is important is that we start seeing buildings, spaces and people as inseparable elements of a complex matrix, that “we conceive of building literally as well as metaphorically, as a social act with its own intrinsic integrative power. In this we understand architecture to be the background and space of human interaction, which can be encouraged or prevented by what is built, but never has the automatic result of generating a social network per se.”⁹

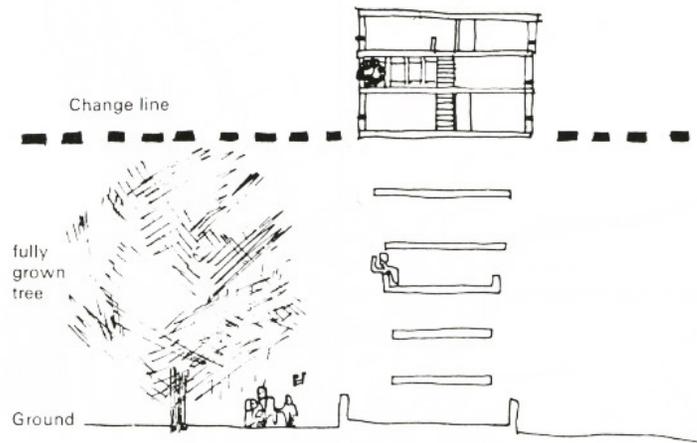
An examination of two projects that have attempted to deal with the notions of ‘community’ and ‘neighbourliness’ can help contextualize the design strategy by extrapolating specific spatial directives. The specific moments of success and failure can help contextualize the current thesis ambitions and establish a trajectory for speculative implementation.



4.3. Informal interaction and community.



4.4. Street mesh in the air.



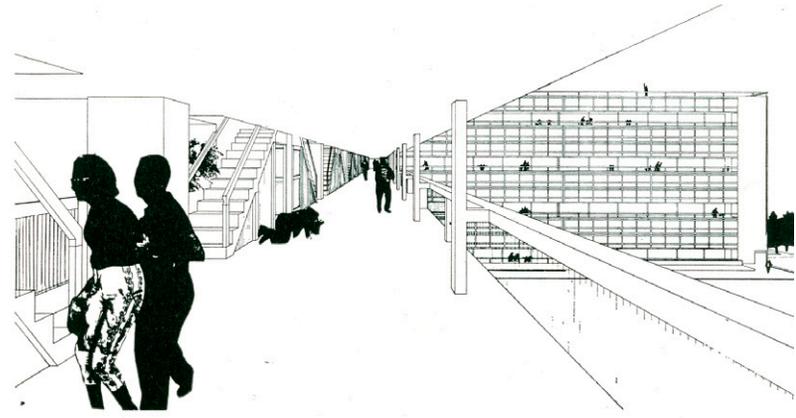
4.5. Considering man's relationship to the tree.

TEAM 10 – GOLDEN LANE HOUSING

The group of architects known as Team 10 came into being as a reaction to the latter-day ideology of a dispersed and disintegrated C.I.A.M. (Congres International d'Architecture Moderne) The group defined itself as a vehicle by which the younger generation could begin to express and even resolve their deep dissatisfaction with the received paradigms of modern architecture. Fueled by an awareness of architecture as a social and intellectual discourse, it was in the Golden Lane Housing project that Alison and Peter Smithson put forward the idea of urban re-identification, the idea that "human associations should determine the formal elements which the architect should then make clear."¹⁰ The project attempted an elaboration of the circulatory realm as a generator of social life; "it is the idea of the street, not the reality of street, that is important – the creation of effective group-spaces fulfilling the vital function of identification and enclosure making the socially vital life-of-the-streets possible," elaborating, "at all densities such streets are possible by the creation of a true street mesh in the air; each street having a large number of people dependent on it for access and in addition some streets should be thoroughfares – that is leading to places – so that they will each acquire special characteristics."¹¹

The Golden Lane Housing project was clearly intended as a critique of Le Corbusier's Ville Radieuse, particularly of its zoning of the generic city into the four functions of *Housing, Work, Recreation* and *Traffic*. The Smithsons opposed these functions with the more phenomenological categories of *House, Street, District* and *City*, although what they meant by these categories grew deliberately and necessarily vaguer as the scale increased.¹² The 'house' in their golden lane project was clearly the family living unit; the 'street' was evidently a system of one-sided gallery access of generous width elevated into the air. The 'district' and the 'city' were consciously regarded as variable domains that lay outside the bounds of precise definition.¹³

The Golden Lane Housing Project in the end, yielded much criticism: "It was clear that the 'house in the air' did not have a yard that was in any way comparable to the traditional private yard of the by-law streets and that the street itself, now one-sided and elevated in the air, could clearly no longer perform as a spontaneous agora. Its implacable single-loaded nature only served to stress its linearity as a route rather than its quality of enclosure as a place."¹⁴



4.6. Street equivalents, deck housing.



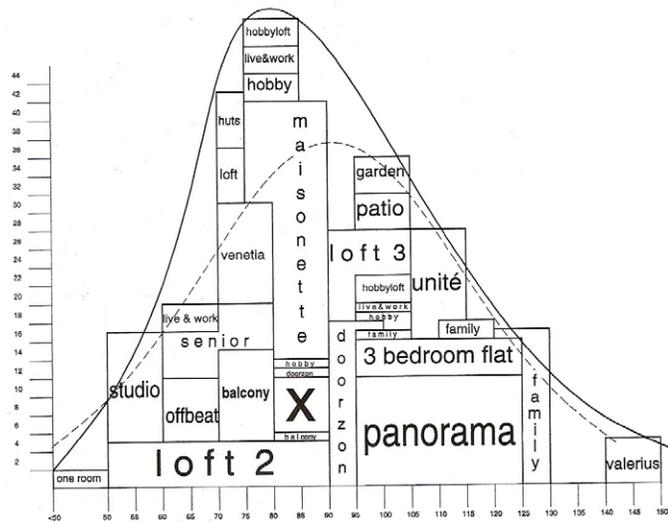
4.7. 'Nehru a load of hay over a balcony' collage.



4.8. Datatown.

AN INTRO TO MVRDV The contemporary practice of MVRDV approaches architecture through the investigation and use of complex amounts of data that accompany contemporary design processes. Architecture is approached not as a conventional expression of aesthetics, materials and form but as an almost scientific investigation into the social and economic forces that influence our constructions.¹⁵

This is methodology based on logic structured by a belief that subjective analysis and ‘artistic’ intuition can no longer resolve the complex design problems posed by the ever-metastasizing global city.¹⁶ ‘The architecture attempts to engage with society by questioning our behaviour and offering alternatives. And they offer those alternatives by demonstrating – visibly, obviously – in their actual design the social problems they are trying to address. “When you see the object, you see the question.”¹⁷ The Mirador project represents one of the firms most recent attempts at combining the large scale of the community as a whole with a desire for extreme individuality.¹⁸



4.9. Optimum division of dwelling sizes.

MIRADOR Mirador is a residential building located in Sanchinarro, a vast and desolate territory in the north-east outskirts of Madrid. The twenty-two storey building tower consists of nine ‘neighbourhoods’ or groups of similar dwellings – duplex, triplex, with or without solarium, etc. – that are put together to shape a larger autonomous unit; their nature as minor sub-units is expressed both on the exterior, and the interior of the volume.¹⁹ The colour and façade materials as well as the modulation and composition of the windows, identify each one of these ‘communities’. The slits in between the blocks act as access zones; they are conceived as small vertical streets along which the housing typologies transform to form small suburbs; these alleyways lead to a vertical sequencing of stairs, halls, platforms, and streets creating a vertical neighbourhood.²⁰ The raised plaza, the main living room of the large ‘Mirador’, is located on the twelfth floor, encompassing a surface of 580m in plan and a height of 14m.

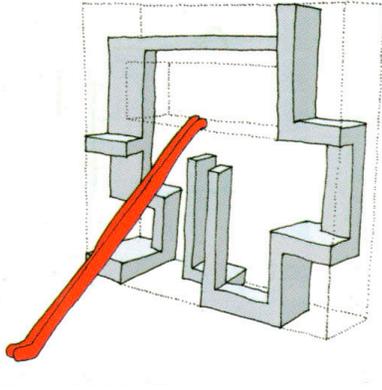
While the project is ambitious in its deployment of architectural strategy, the success of the project deteriorates at grade. The project is located in Sanchinarro, a vast and desolate territory in the north-east outskirts of Madrid, with very little urban integration. The experience of artificial urban living is all but interiorized.



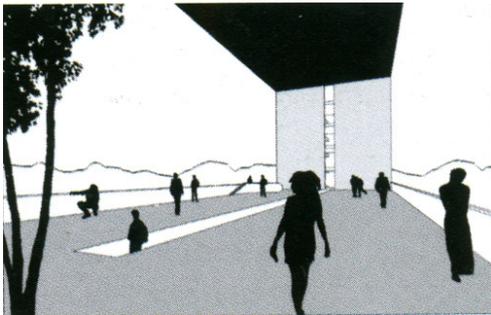
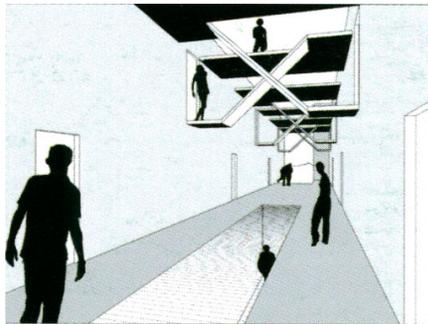
4.10. Mirador in urban context.



4.11. Facade articulation of groups of ‘neighbourhoods’.



When seen in conjunction, these two projects reveal an examination of housing as an opportunity to foster a sense of collectiveness, a reaction to the phenomenon of hyper-individualization.²¹ They embrace the strategy of extrapolating the circulatory realm to facilitate interaction through a sense of place. They attempt to elaborate the condition of the corridor, to free it from its function as a connector to condenser, an informal platform for interaction. In this context, there appears to be merit in exploring an alternative residential typology that might inform specific architectural strategies within a formal socio-spatial environment. Although the student residence has functioned to inform strategies for the retirement home model, the focus on the idea of 'community' and inter-dependence does warrant further careful deliberation.



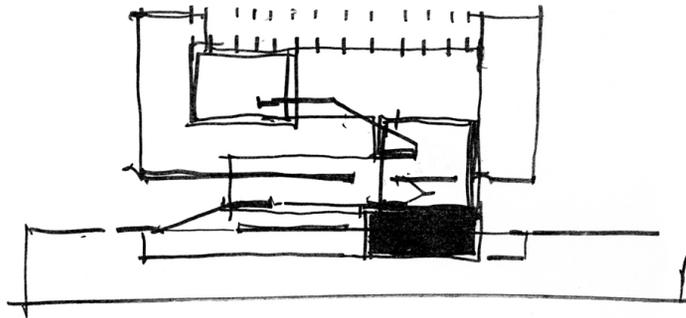
4.12. (Top) Mirador circulation.

4.13. (Centre) Access 'street-in-the-air.'

4.14. (Bottom) Raised plaza design vignette.



4.15. Raised plaza in relation to urban context.



4.16. Concept sketch showing two 'hanging gardens' and stair.



4.17. Residence from Spadina avenue.

SAUCIER + PERROTTE – NEW COLLEGE STUDENT RESIDENCE

The New College residence at the University of Toronto was designed “in the spirit of communal interaction, attempting to transcend a type that has become mechanically utilitarian in recent manifestations.”²² Central to the experience of inhabiting the building are two ‘hanging gardens’, linked by an interior stair that runs through the building core; the second floor garden relates to the laneway of the site, and the fifth floor garden relates to Spadina Avenue. In this case, the architects preoccupation was about the third dimension, ‘not only about movement horizontally across the site, but also movement vertically, from the sky to the ground’.²³ While the building has been criticized for its lack of presence along Spadina Avenue, the conceptual organizational framework is commendable, and can inform strategies for designing for an aging population.

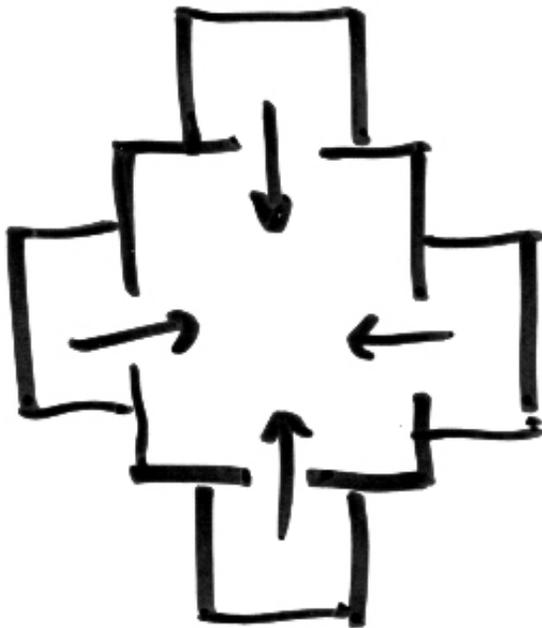


4.18. Second floor communal space.

In contemporary discourse we know that architecture cannot create a 'better' society, but the idea still remains that architecture and urban design have something to do with society and its development. As Kees Christianse describes: "design should be able to clarify complex situations... it (design) contains a substantial amount of 'social engineering', by virtue of its sheer power to organize programmes and activities into mutual relationships, thereby influencing the physical component of social networks. Instead of believing in future utopias, we interpret the state of society in precise visions and accordingly propose concepts for transformation, both on the level of design and of process."²⁴

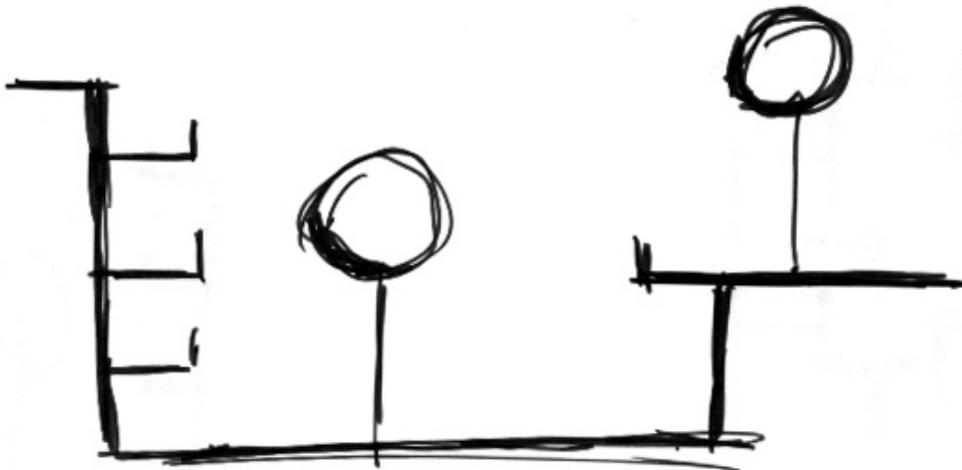
What Christianse begins to allude to is a post-ideological architecture – an architecture that takes its place in a tradition that values pragmatism above all else.²⁵ The following set of architectural design strategies are partially extrapolated from the projects examined earlier, and partially the result of pragmatic synthesis. This design methodology is fundamentally directed at facilitating the 'aging-in-place' concept through strategies approached in mutual exclusivity.

DESIGN STRATEGY 1 - CENTRAL COMMON FACILITIES



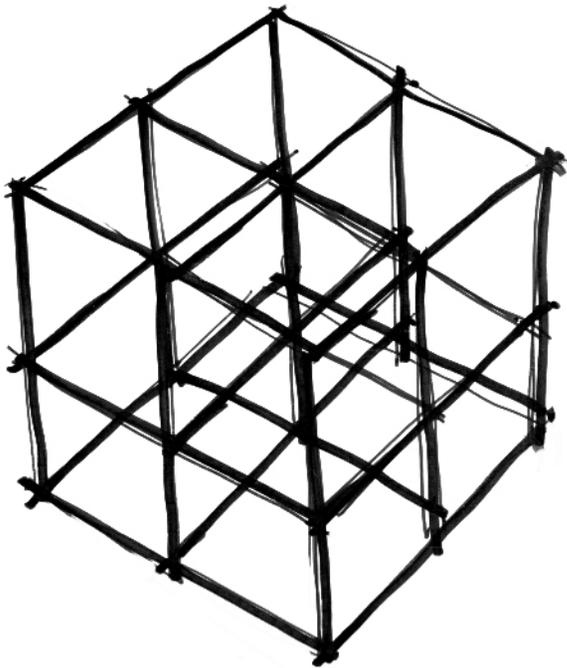
4.19. Central common facilities.

DESIGN STRATEGY 2 - HIERARCHY OF OUTDOOR SPACE



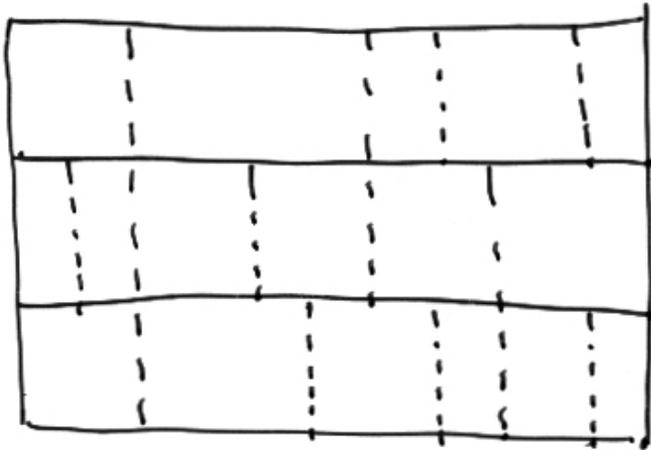
4.20. Hierarchy of public space.

DESIGN STRATEGY 3 - FRAME



4.21. Frame.

DESIGN STRATEGY 4 - ELEVATIONAL MATRIX



4.22. Elevational matrix.



DESIGN STRATEGY 5 - COMPREHENSIVE BARRIER-FREE DESIGN



4.23. Comprehensive barrier-free design.



4.24. Planning a new cohousing project



4.25. Common dinner in a cohousing community.

While these strategies advocate a comprehensive spatial framework through qualities of permeability, porosity, flexibility, variety, connection, and integration, they do not speak to any formal social system. Their success relies heavily on the inhabitants' willingness to engage in social activity, and the creation of self-coordinated neighbourliness. The formal disposition of co-housing establishes a preconceived social responsibility between inhabitants, and should be seen as fundamental to accommodating aging-in-place as the aforementioned design strategies.

CO-HOUSING Co-housing can be described as a way of creating a built environment that supports ongoing community interaction through design. Co-housing neighbourhoods or developments are typically formed by a group of people who are “consciously committed to living as a community.”²⁶ In most cases, the residents participate in finding, acquiring, designing, and developing the community, as well as the ongoing operation and upkeep of their developments. The communities are usually small in scale, consisting of between twenty and forty units and are designed to “provide a balance between personal privacy and living amidst people who know and care about each other.”²⁷ Another feature of cohousing is that each household owns their own unit, but also shares extensive common facilities with the larger group such as workshops, gardens and various other amenities. The legal structure can be condo (strata), equity co-op or fee simple land ownership.²⁸ Currently most co-housing communities in Canada are organized as condominiums; this type of arrangement is well known and thus makes it easier to obtain financing for co-housing developments.²⁹

The principles of cohousing can be described as follows:

PARTICIPATORY DESIGN PROCESS – Future residents participate in the planning and design of their community; they are responsible as a group for most of the final design decisions.

INTEGRATED NEIGHBOURHOOD DESIGN – The physical design encourages a strong sense of community by emphasizing central pedestrian walkways and/or communal outdoor space.

COMMON FACILITIES – Common facilities are designed for daily use, are an integral part of the community, and are always supplemental to the private residences. The common area typically includes a common kitchen, dining area, sitting area, laundry, and may also contain a workshop, library, exercise room, and guest rooms.

RESIDENT MANAGEMENT – Unlike a typical condominium homeowners association, residents in cohousing usually manage their own community, making decisions about common concerns at regular community meetings.

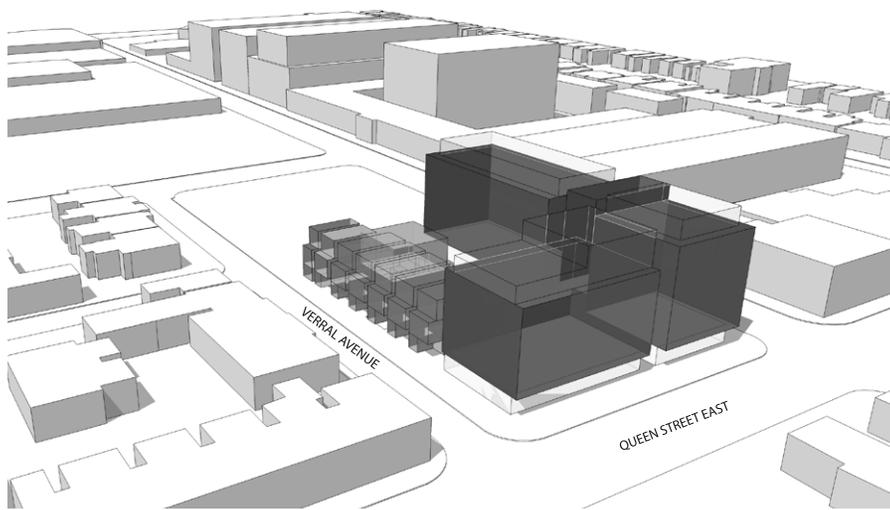
NON-HIERARCHICAL STRUCTURE AND DECISION MAKING – Leadership roles naturally exist in cohousing communities, however decisions are made as a community, usually by consensus.

SEPARATE INCOME SOURCES – Residents have their own primary incomes; the community does not generate income.

4.26. (Opposite) Perspective looking north-west from Queen street and Carlaw Avenue.



LOOKING NORTH-WEST FROM QUEEN STREET AND CARLAW AVE



MASSING STRATEGY FROM SOUTH-WEST

4.27. Massing from south-west.



MASSING STRATEGY FROM SOUTH-EAST

4.28. Massing from south-east.

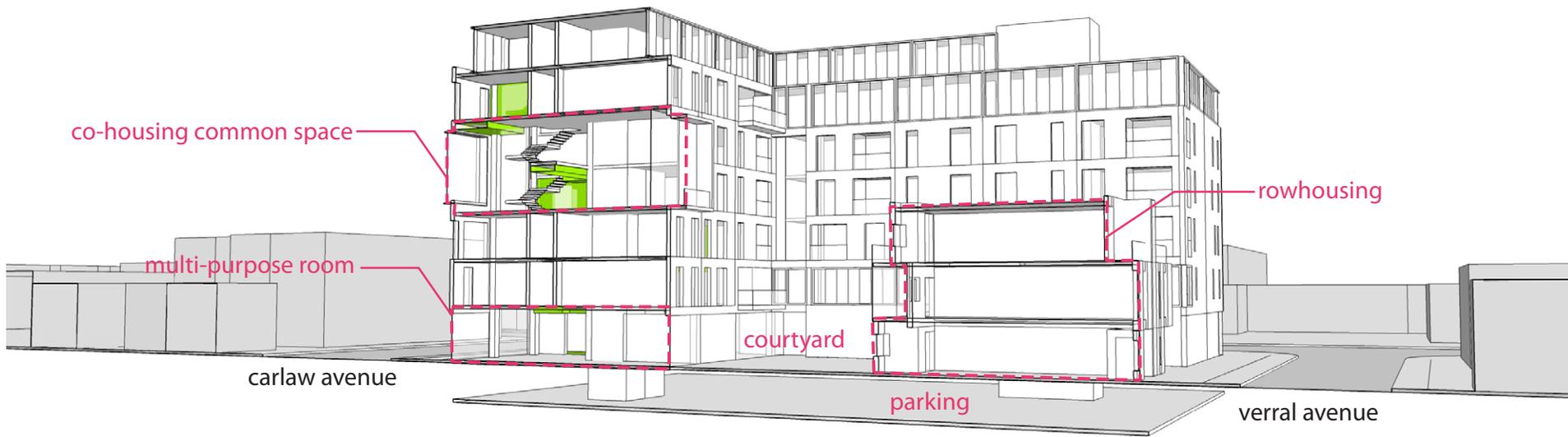
- COMMON BUILDING AMENITIES
- CO-HOUSING COMMON SPACE
- RETAIL SPACE
- ROWHOUSING

GROUND FLOOR PROGRAM STRATEGY

4.29. Ground floor program strategy.



4.30. (Opposite) Sectional perspective.



SECTIONAL PERSPECTIVE

4.31. (Opposite) Perspective looking north through courtyard.



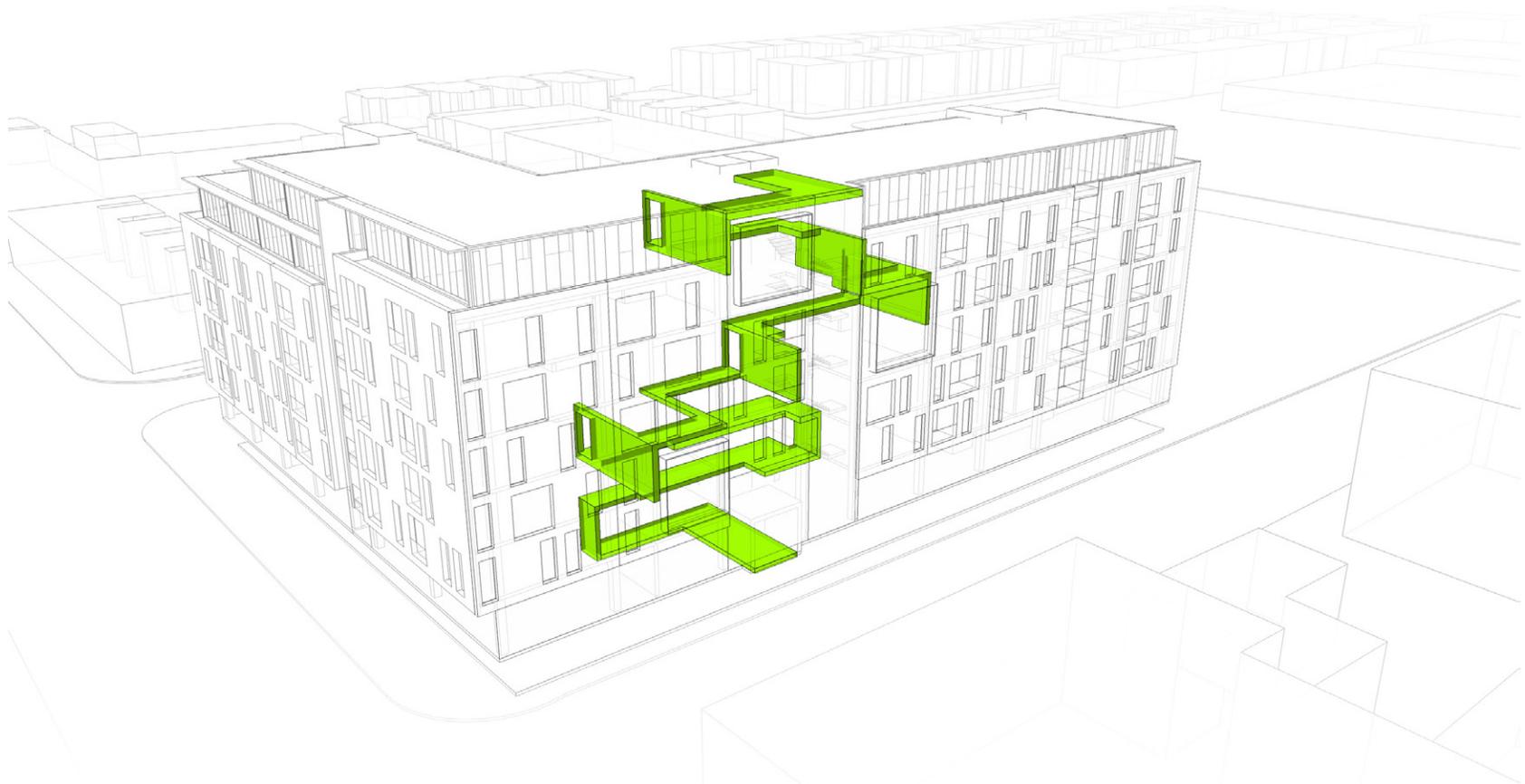
LOOKING NORTH THROUGH COURTYARD

4.32. (Opposite) Perspective looking north along Verral street.



LOOKING NORTH ALONG VERRAL STREET

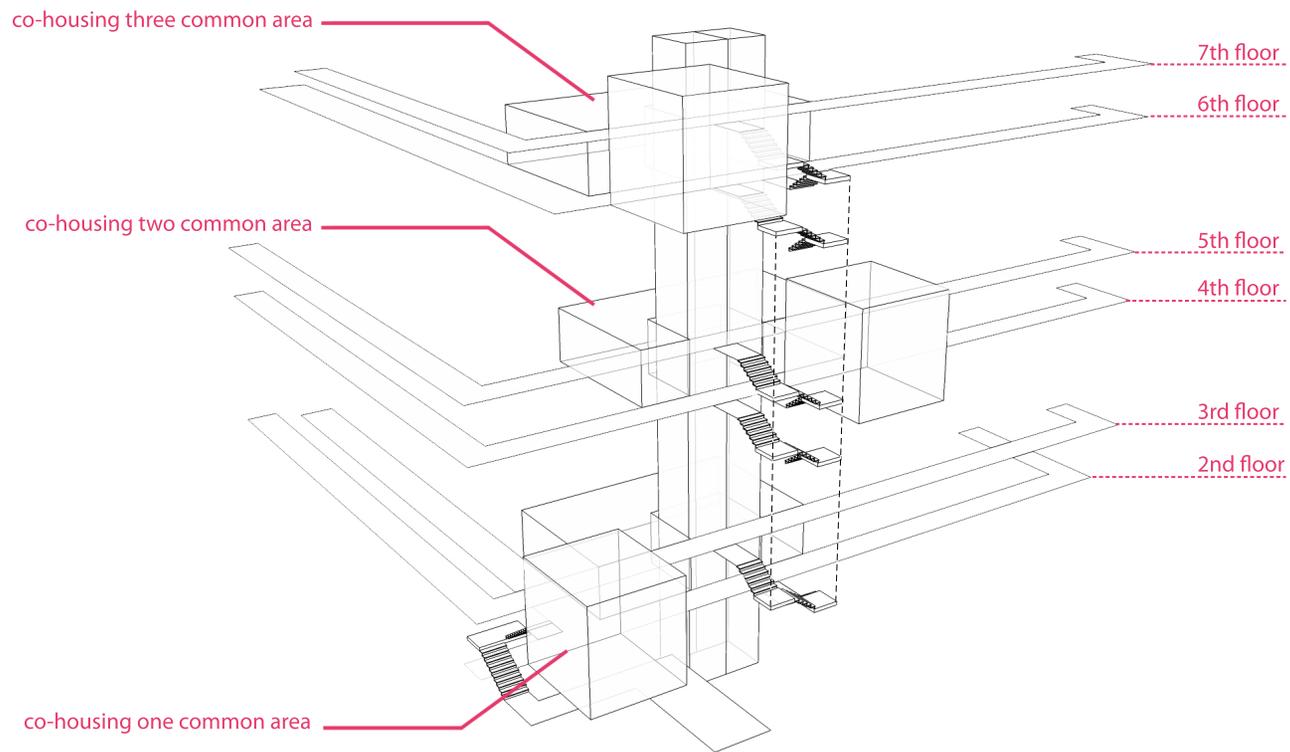
The spatial 'weave' is a continuous interior surface which visually connects the common spaces. It suggests a spatial continuity from the main entrance as a connective planar element; the 'weave' is simultaneously floor, wall and ceiling.



SPATIAL 'WEAVE'

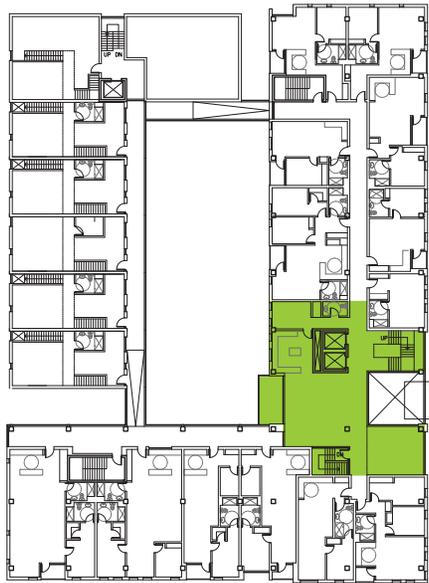
4.33. Spatial 'weave'.

The elaboration of the circulatory realm provides a platform for common facilities which become focal points for each housing community. The common spaces are situated adjacent to vertical circulation, occupying a central position in the floor plan, promoting social intergration. The interaction of residents within these spaces promotes feelings of identity and inclusion, forming the nexus from which informal care networks can evolve.



DESIGN STRATEGY 1 - CENTRAL COMMON FACILITIES

4.34. Central common facilities.



4.35. Second floor plan.

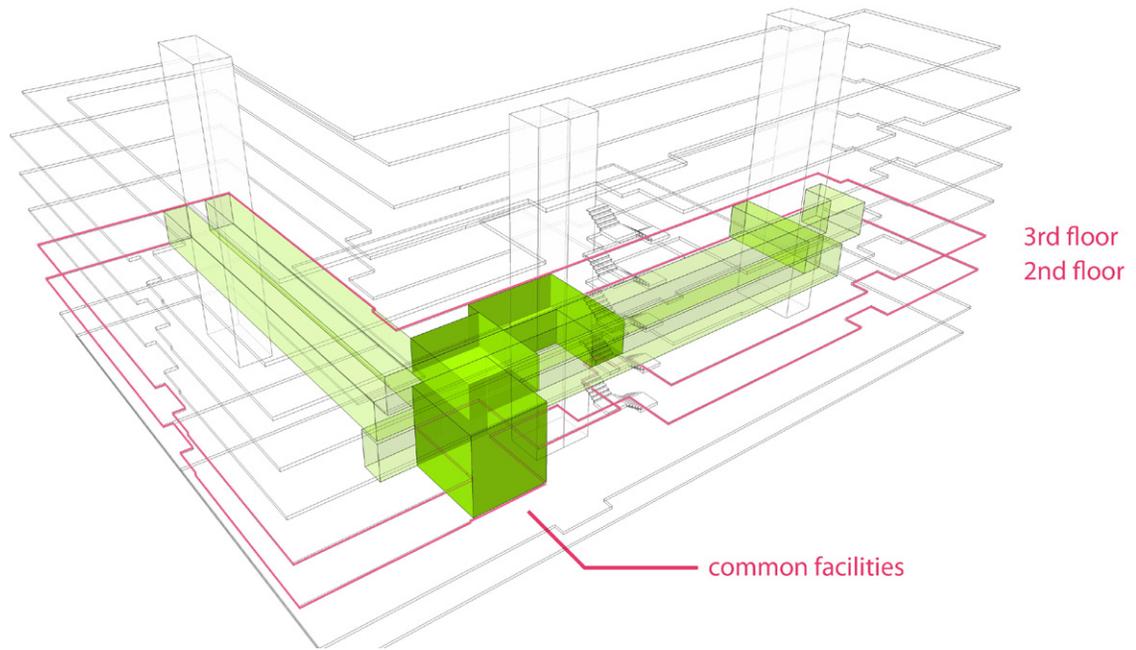


4.36. Third floor plan.

4.37. (Right) Co-housing community 1.

CO HOUSING COMMUNITY 1
 Second Floor = 12 units + 1 guest suite
 Third Floor = 12 units + 1 guest suite
 Total = 24 units + 2 guest suites

COMMON FACILITIES
 Kitchen = 220 sq.ft
 Dining area = 500 sq.ft
 Lounge area = 400 sq.ft
 Outdoor space = 140 sq.ft
 Laundry = 140 sq.ft
 Total = 1,400 sq.ft



CO-HOUSING COMMUNITY 1



4.38 Fourth floor plan.

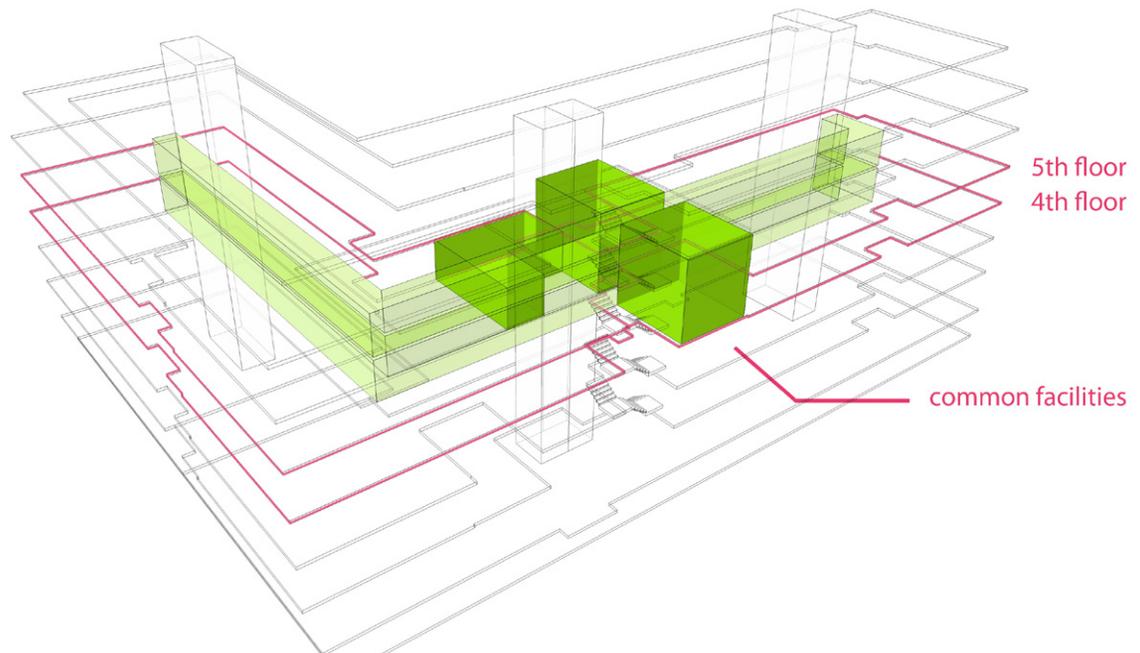


4.39. Fifth floor plan.

4.40. (Right) Co-housing community 2.

CO HOUSING COMMUNITY 2
 fourth floor = 14 units + 1 guest suite
 fifth floor = 13 units + 0 guest suite
 total = 27 units + 1 guest suite

COMMON FACILITIES
 kitchen = 220 sq.ft
 dining area = 500 sq.ft
 lounge area = 400 sq.ft
 outdoor space = 140 sq.ft
 laundry = 140 sq.ft
 total = 1,400 sq.ft



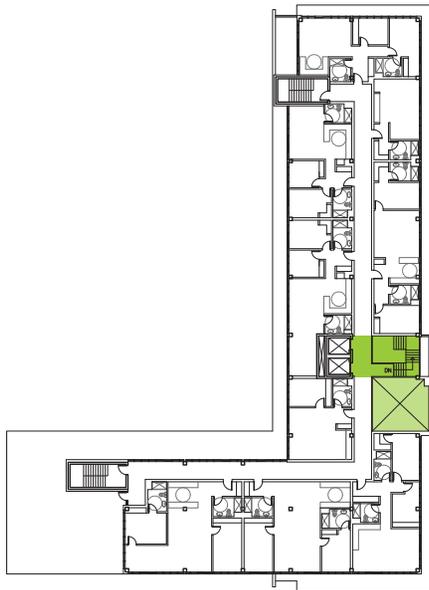
CO-HOUSING COMMUNITY 2

CO HOUSING COMMUNITY 3
 sixth floor = 12 units + 1 guest suite
 seventh floor = 9 units + 0 guest suite
 total = 21 units + 1 guest suite

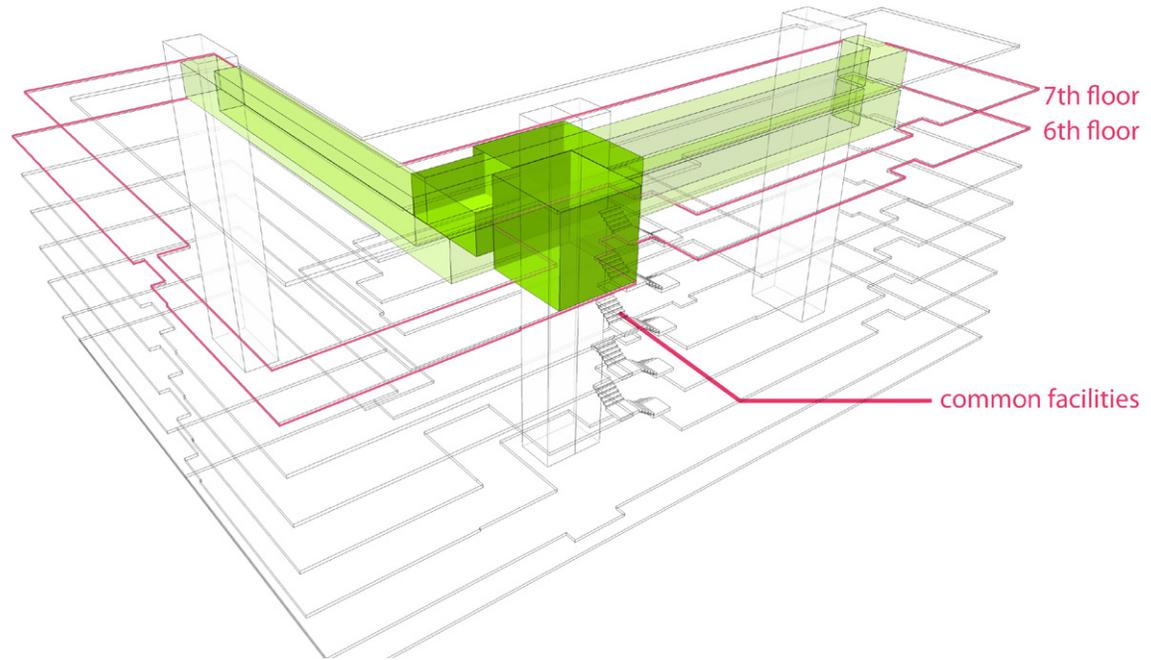
COMMON FACILITIES
 kitchen = 220 sq.ft
 dining area = 500 sq.ft
 lounge area = 400 sq.ft
 outdoor space = 140 sq.ft
 laundry = 140 sq.ft
 total = 1,400 sq.ft



4.41. Sixth floor plan.

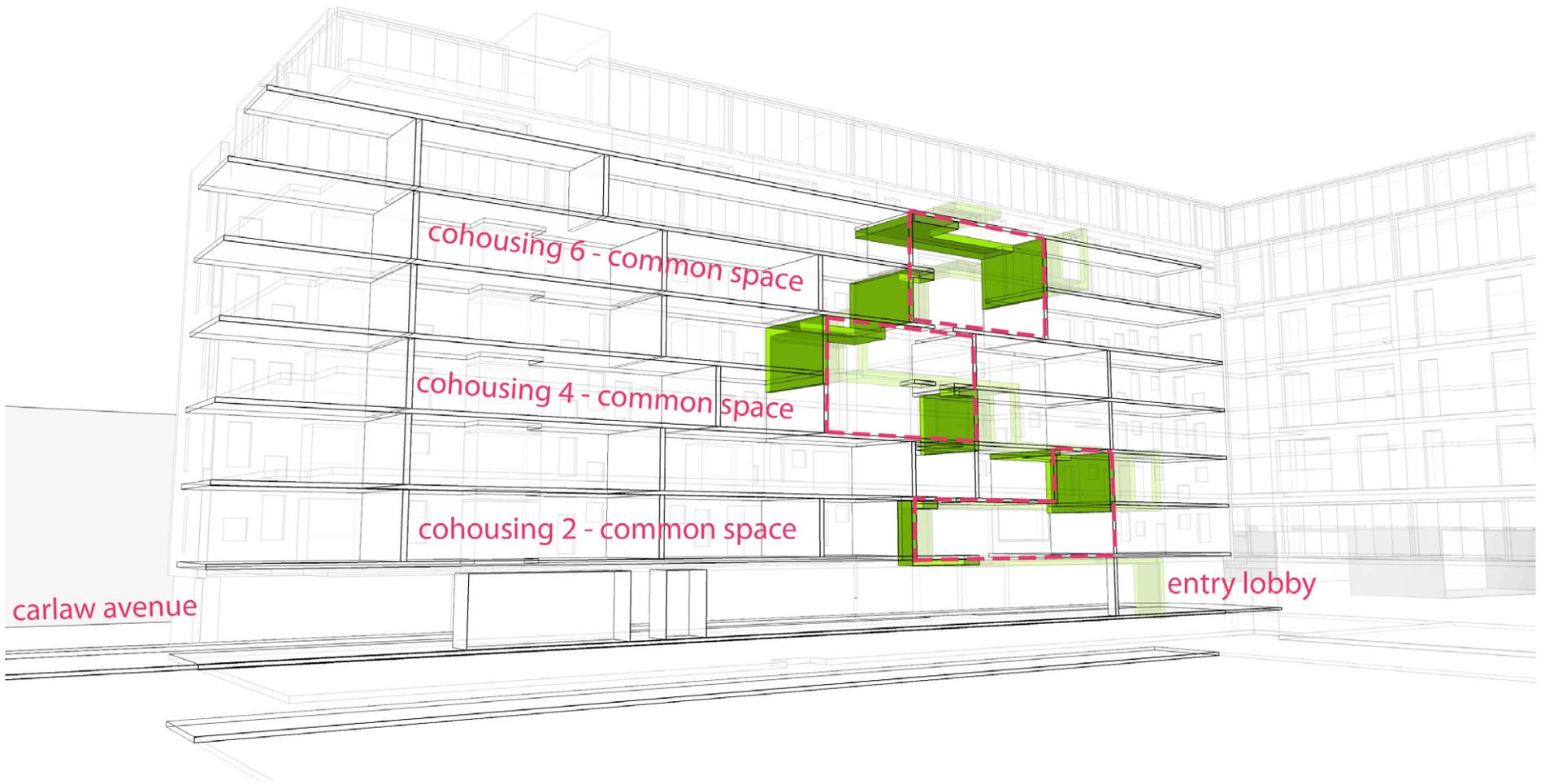


4.42. Seventh floor plan.



- 4.43. (Right) Co-housing community 3.
- 4.44. (Opposite) Sectional perspective.

CO-HOUSING COMMUNITY 3



SECTIONAL PERSPECTIVE

4.45. (Opposite) Perspective fourth floor common space.



FOURTH FLOOR COMMON SPACE - DINING AREA IN BACKGROUND, LIVING AREA IN FOREGROUND

A hierarchy of outdoor spaces encourages connection with the exterior world through a diversity of contact points. The provision of both individual balconies or terraces with common outdoor space supports varying levels of participation with the community. A common hard space must be complimented with a common garden to accommodate varying functional requirements.



DESIGN STRATEGY 2 - HIERARCHY OF OUTDOOR SPACE

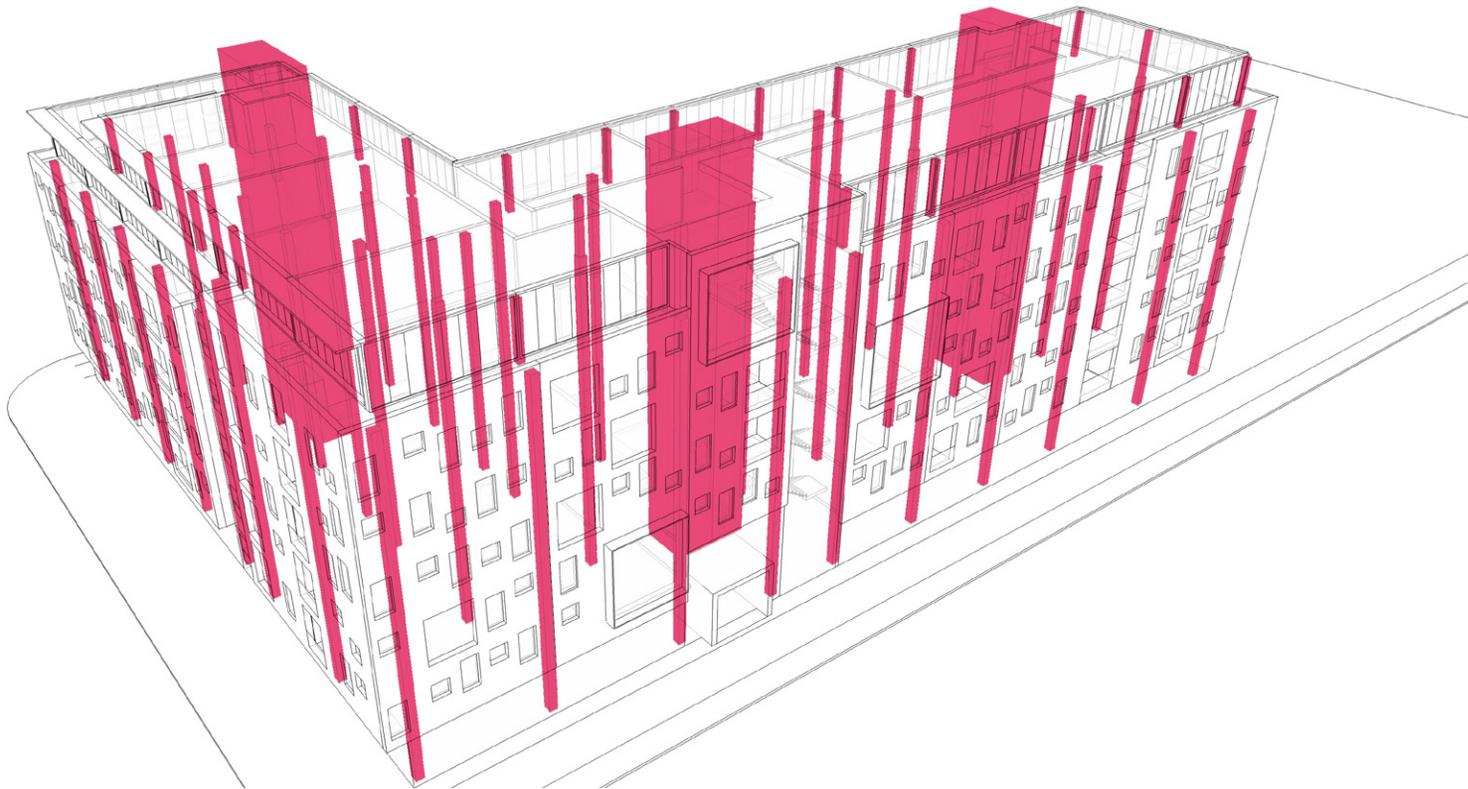
4.46. Hierarchy of outdoor space.

4.47. (Opposite) Perspective across third floor common garden.



LOOKING SOUTH FROM THIRD FLOOR GARDEN

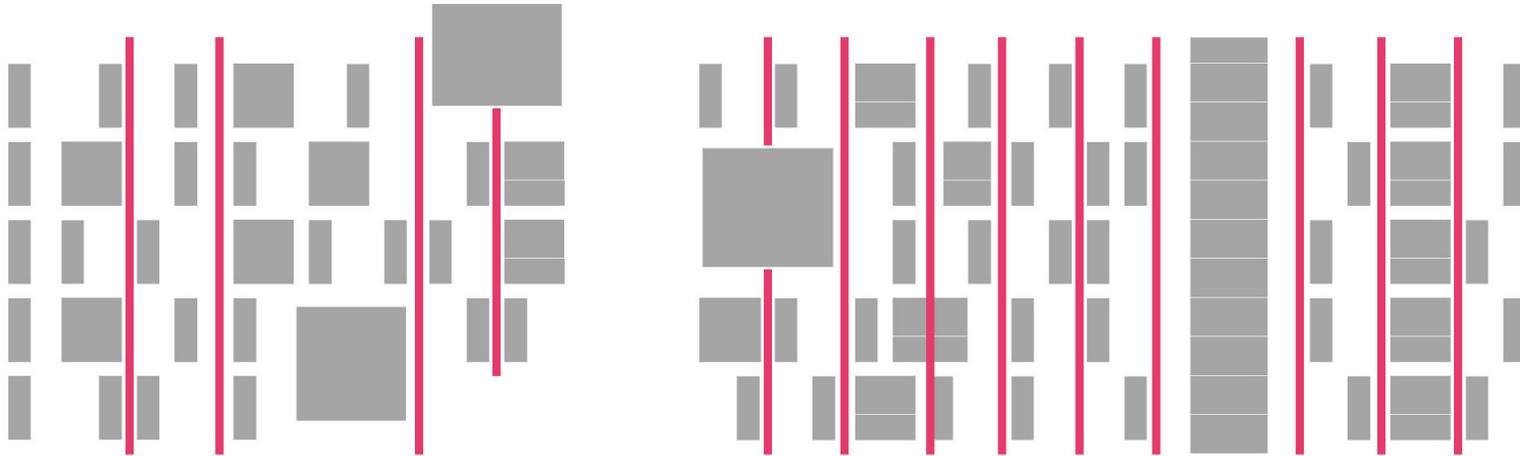
The structure is generally neither celebrated nor is it a direct mapping of a particular plan layout. It is just there – a background armature that enables a variety of plans to evolve within. The frame here is both literal – the structural frame – but also metaphorical – a frame for the action within. A key feature of the frame is that it provides long spans so that space within is indeterminate, allowing non-loadbearing partitions to be put in and removed at will.



DESIGN STRATEGY 3 - FRAME

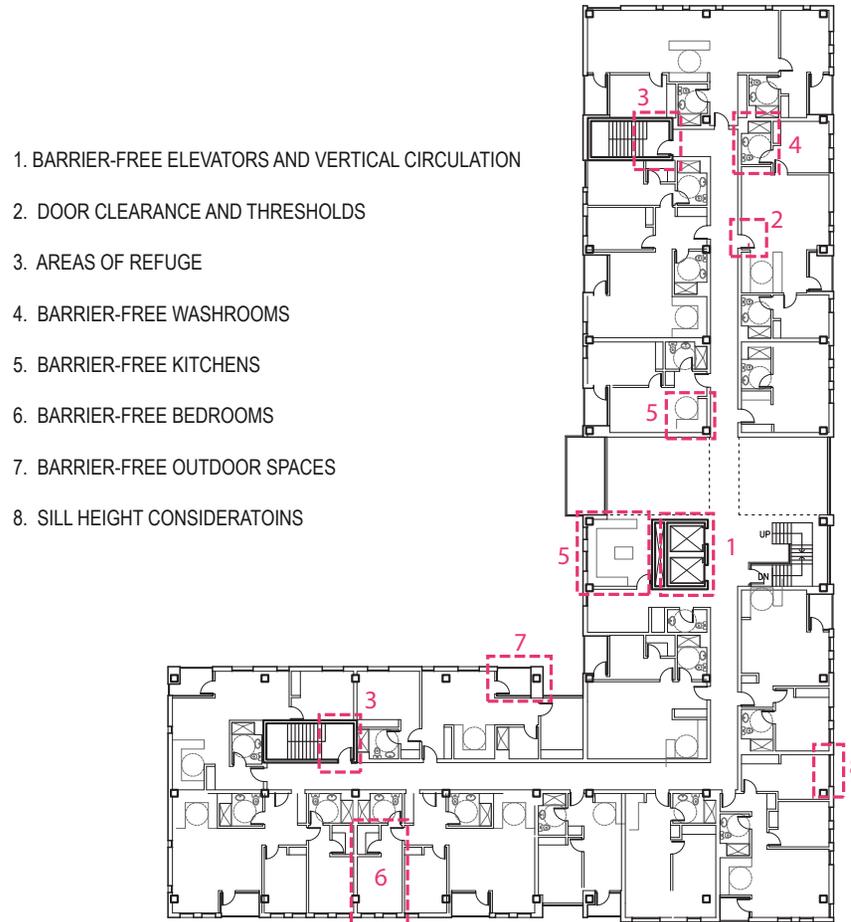
4.48. Structural frame.
4.49. (Opposite) Elevational matrix.

The adaptability of the external walls normally assumes a lower priority than the ability to change or move the internal walls. However, the external wall needs to be designed as a flexible matrix that allows numerous possible configurations within the unit. If we accept a certain number of fixed vertical anchor points, we liberate the horizontal sills and headers, allowing individuality within each facade matrix.



DESIGN STRATEGY 4 - ELEVATIONAL MATRIX

A comprehensive strategy must be embraced that acknowledges the implications of physical, sensory, and cognitive disabilities, from the level of the individual dwelling through all the common spaces and access routes. Particular attention must be made to thresholds, turning radii for wheelchairs, and anthropometric data.



DESIGN STRATEGY 5 - COMPREHENSIVE BARRIER-FREE ACCESSIBILITY

4.50. Comprehensive barrier-free accessibility.



4.51. Barrier-free washroom.

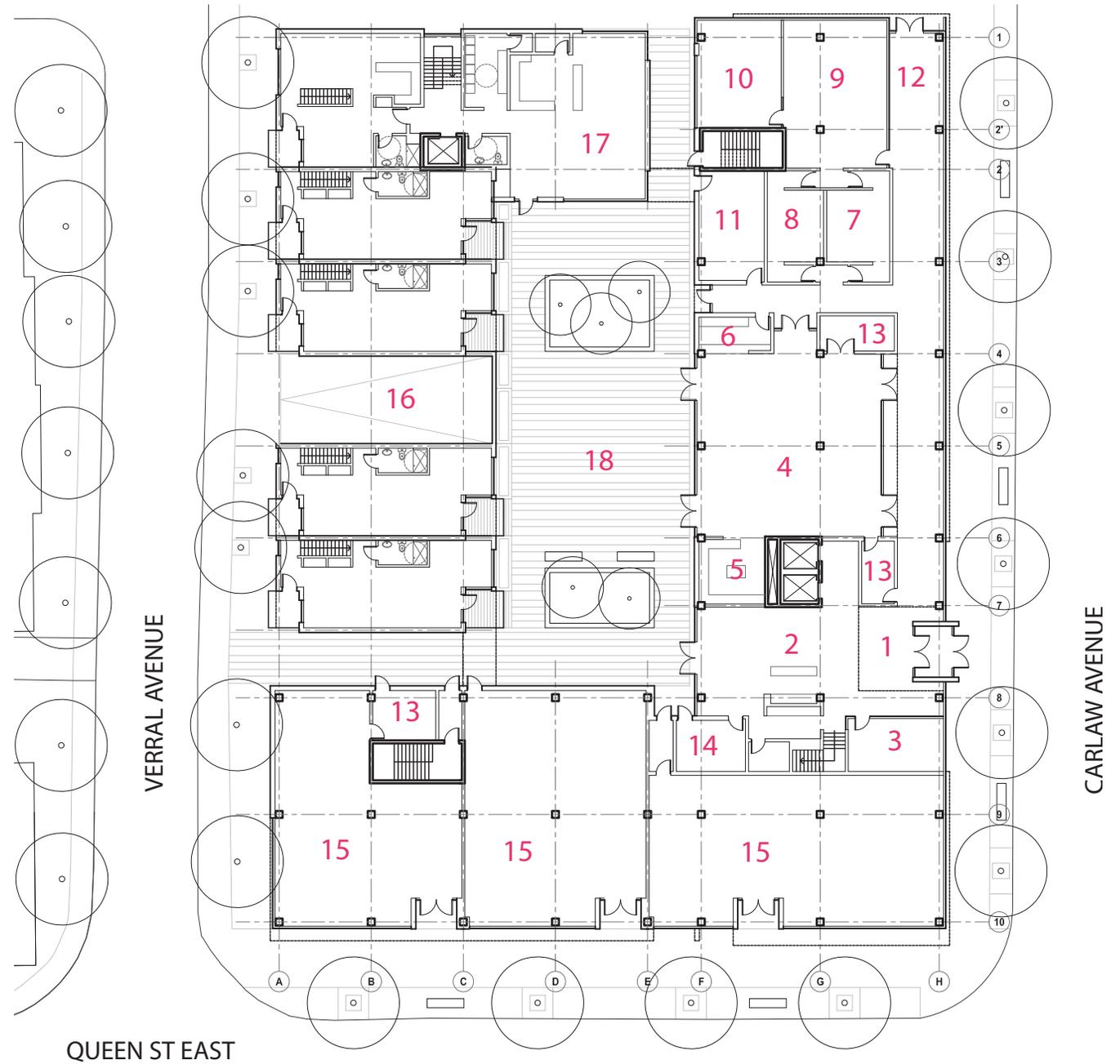


4.52. Barrier-free threshold.

4.53. (Opposite) Ground floor plan.

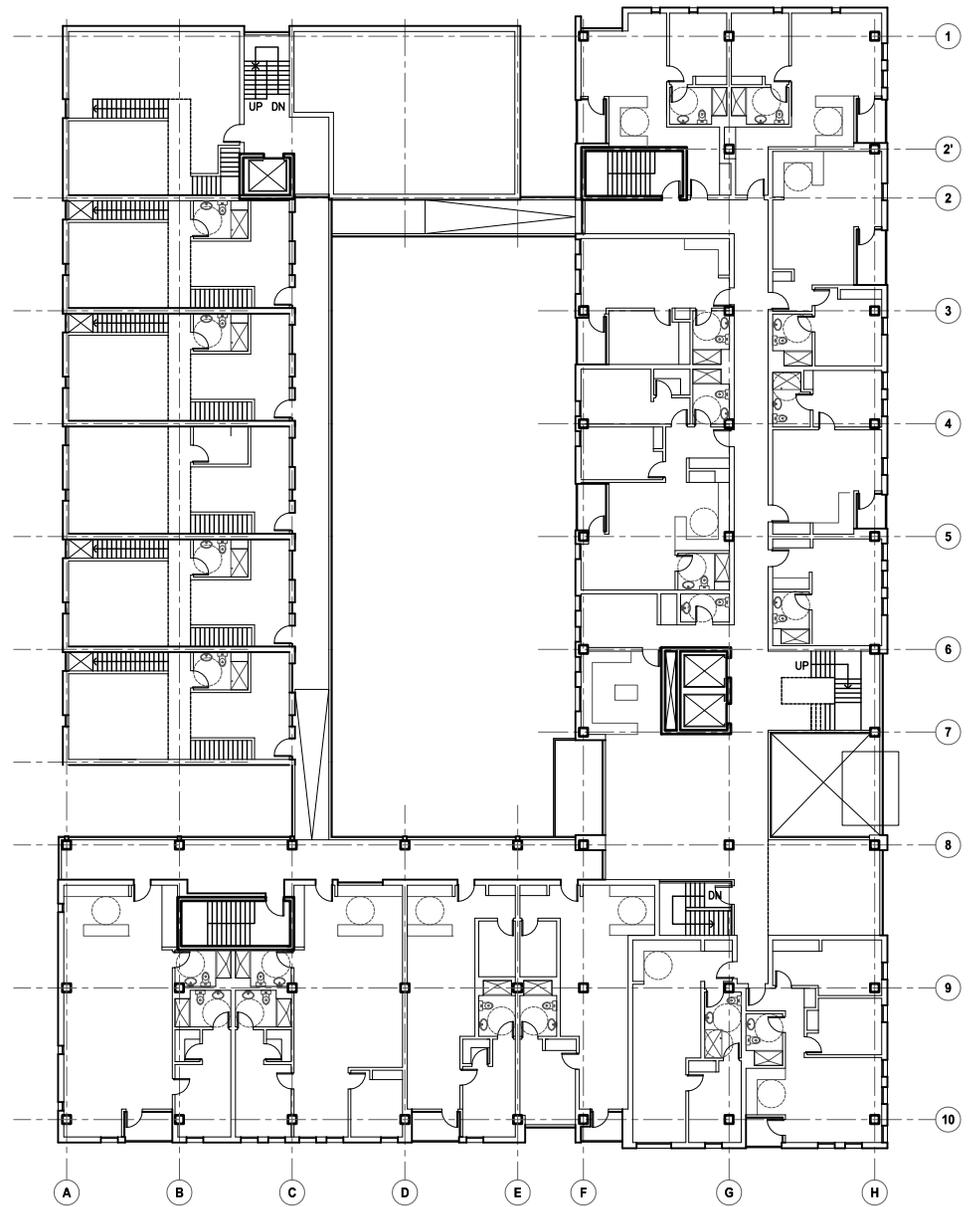
PROGRAMMATIC DISTRIBUTION

- 1 - Main Entry
- 2 - Residential Lobby
- 3 - Office
- 4 - Multi-purpose Room
- 5 - Kitchen
- 6 - Bar
- 7 - Men's Changeroom
- 8 - Women's Changeroom
- 9 - Fitness Area
- 10 - Yoga + Aerobics
- 11 - Bike Storage
- 12 - Connector
- 13 - Storage
- 14 - Garbage
- 15 - Retail
- 16 - Ramp to Parking
- 17 - Cohousing Common Area
- 18 - Courtyard



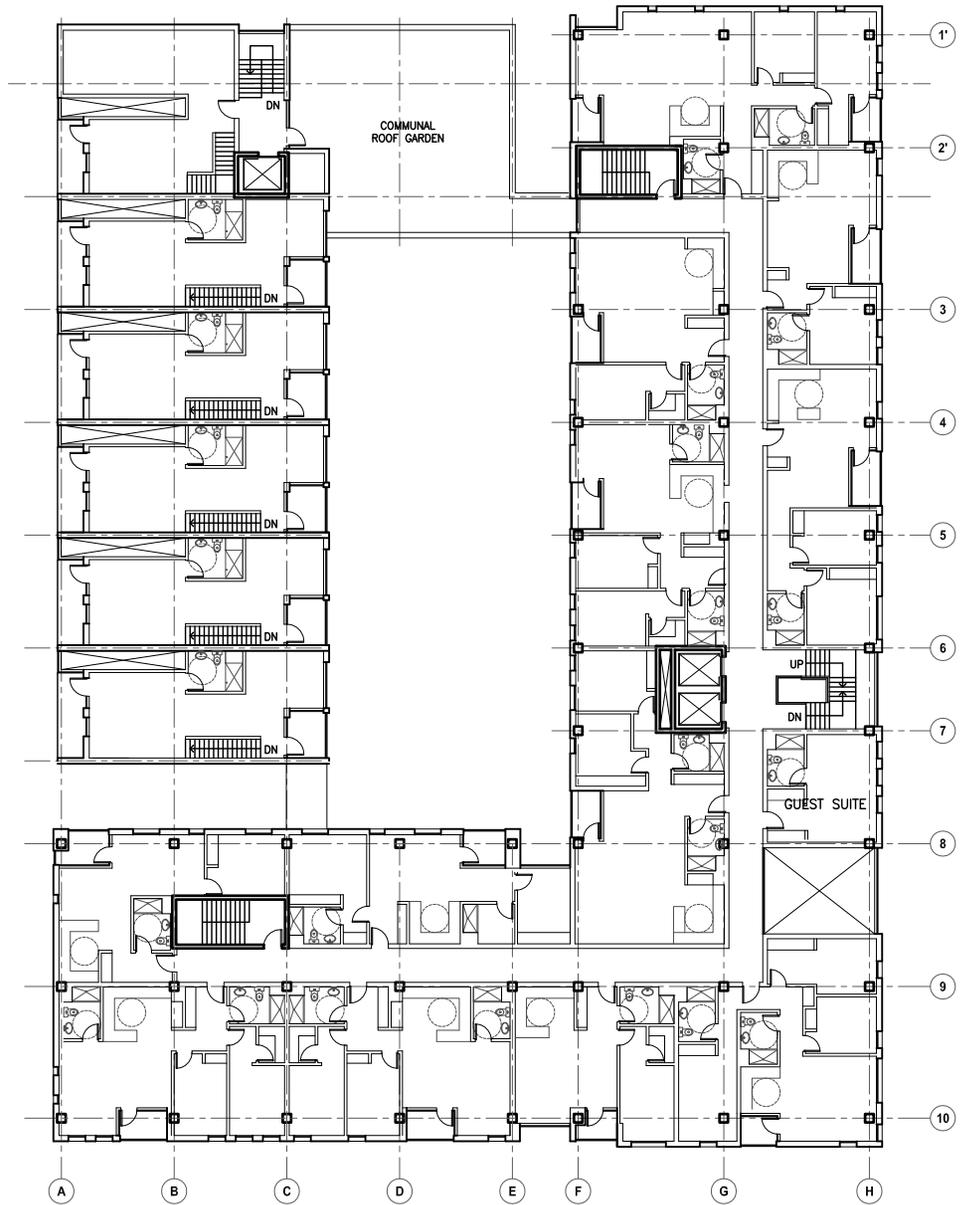
QUEEN ST EAST

GROUND FLOOR PLAN 1:400



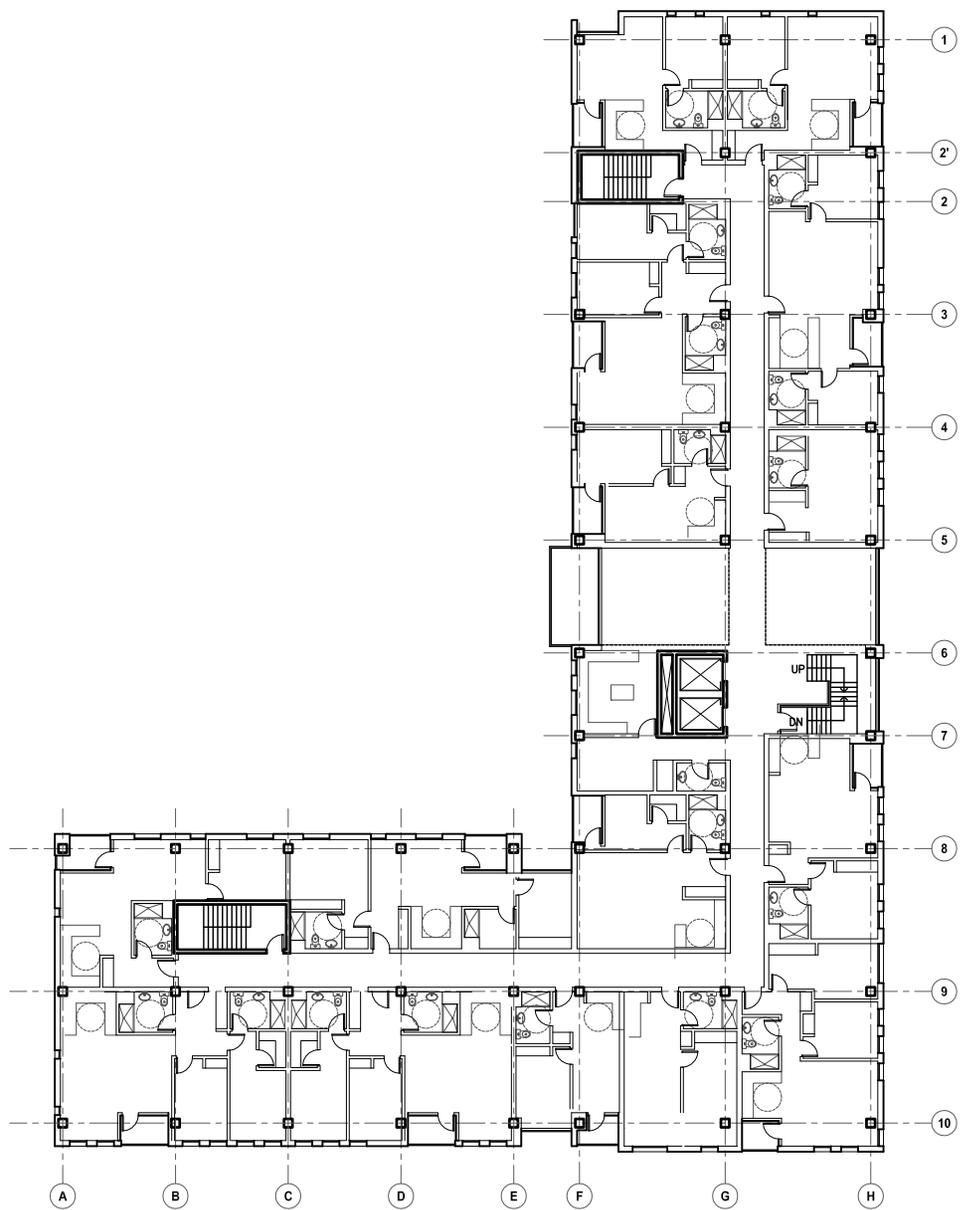
SECOND FLOOR PLAN 1:400

4.54. Second floor plan.



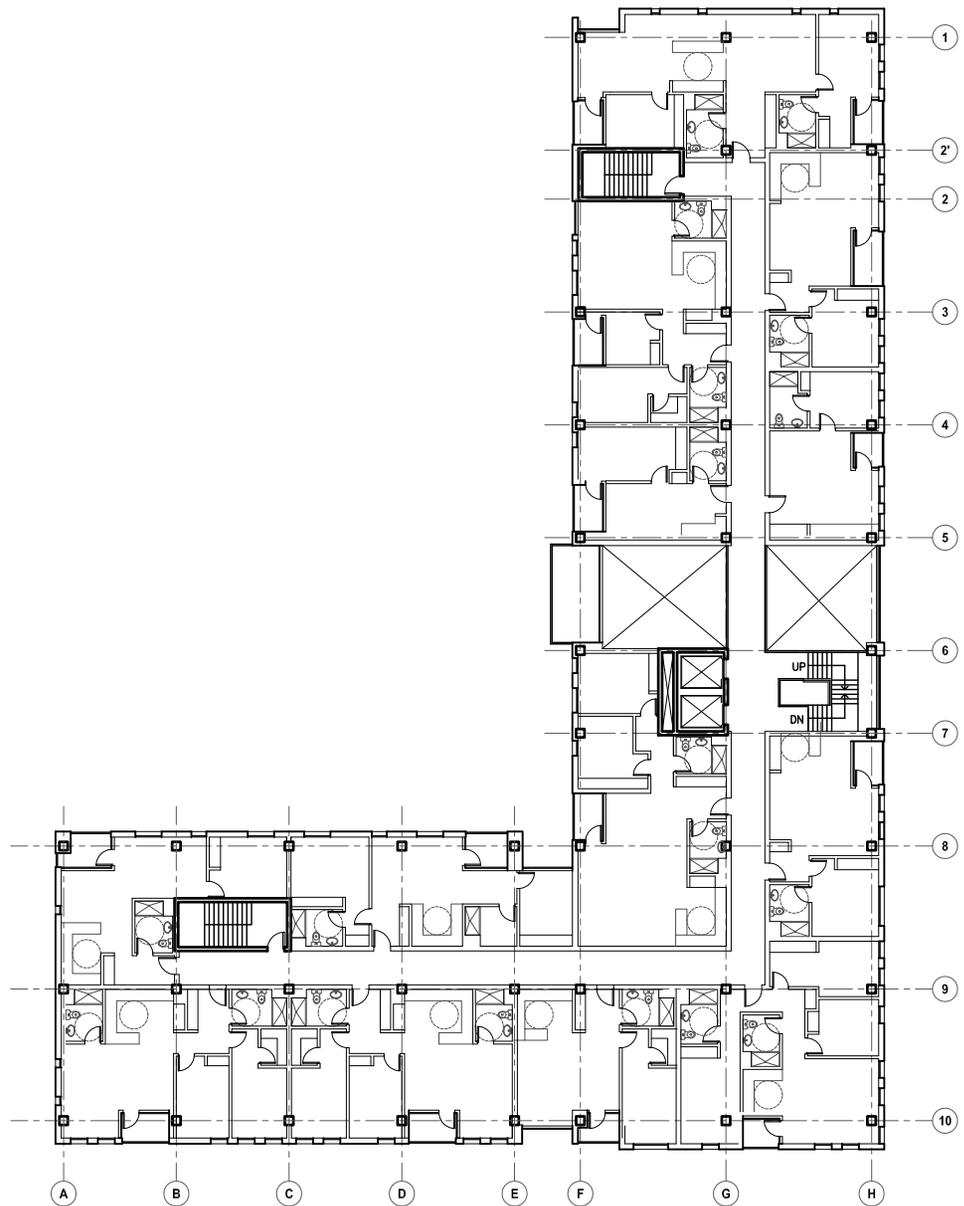
THIRD FLOOR PLAN 1:400

4.55. Third floor plan.



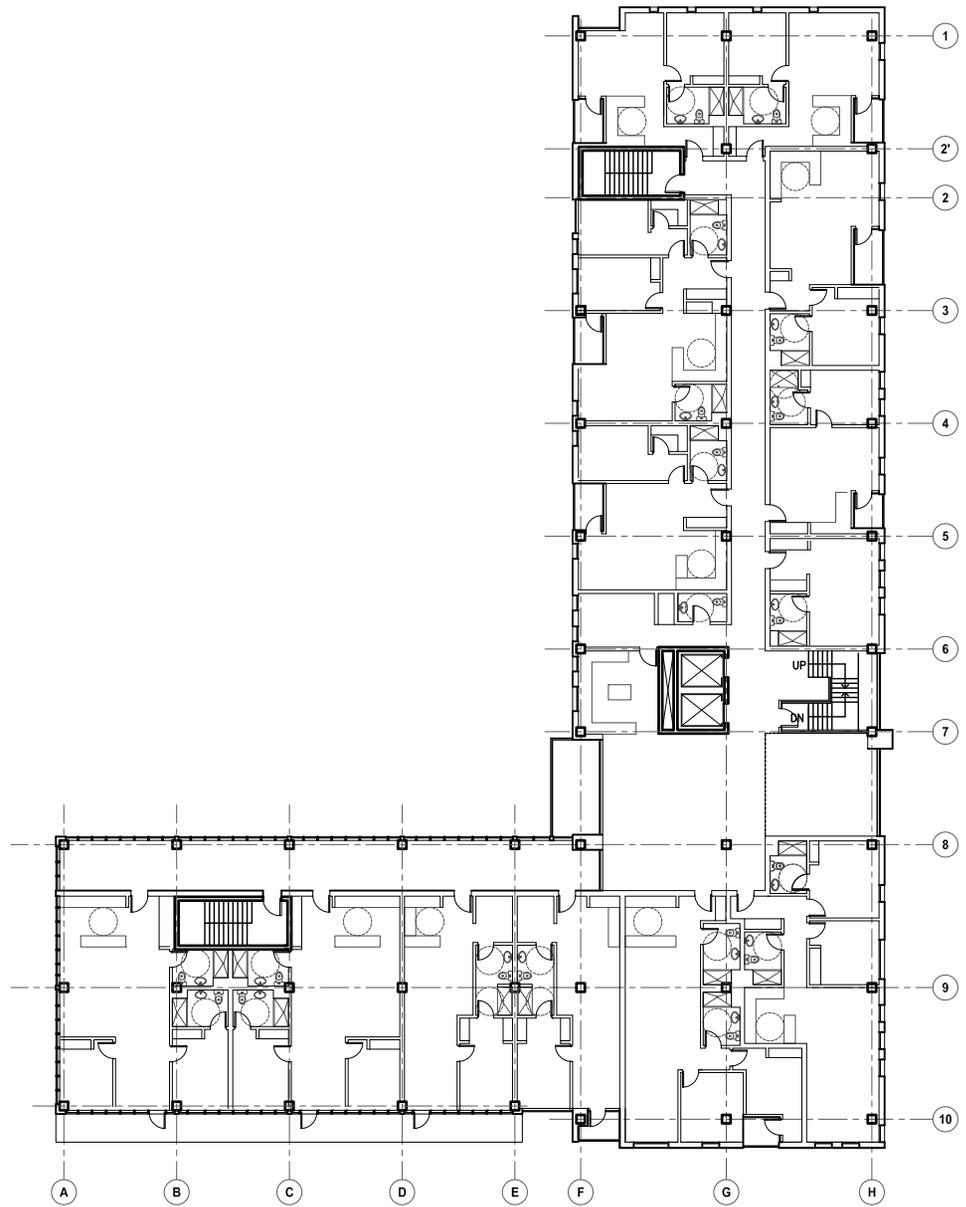
FOURTH FLOOR PLAN 1:400

4.56. Fourth floor plan.



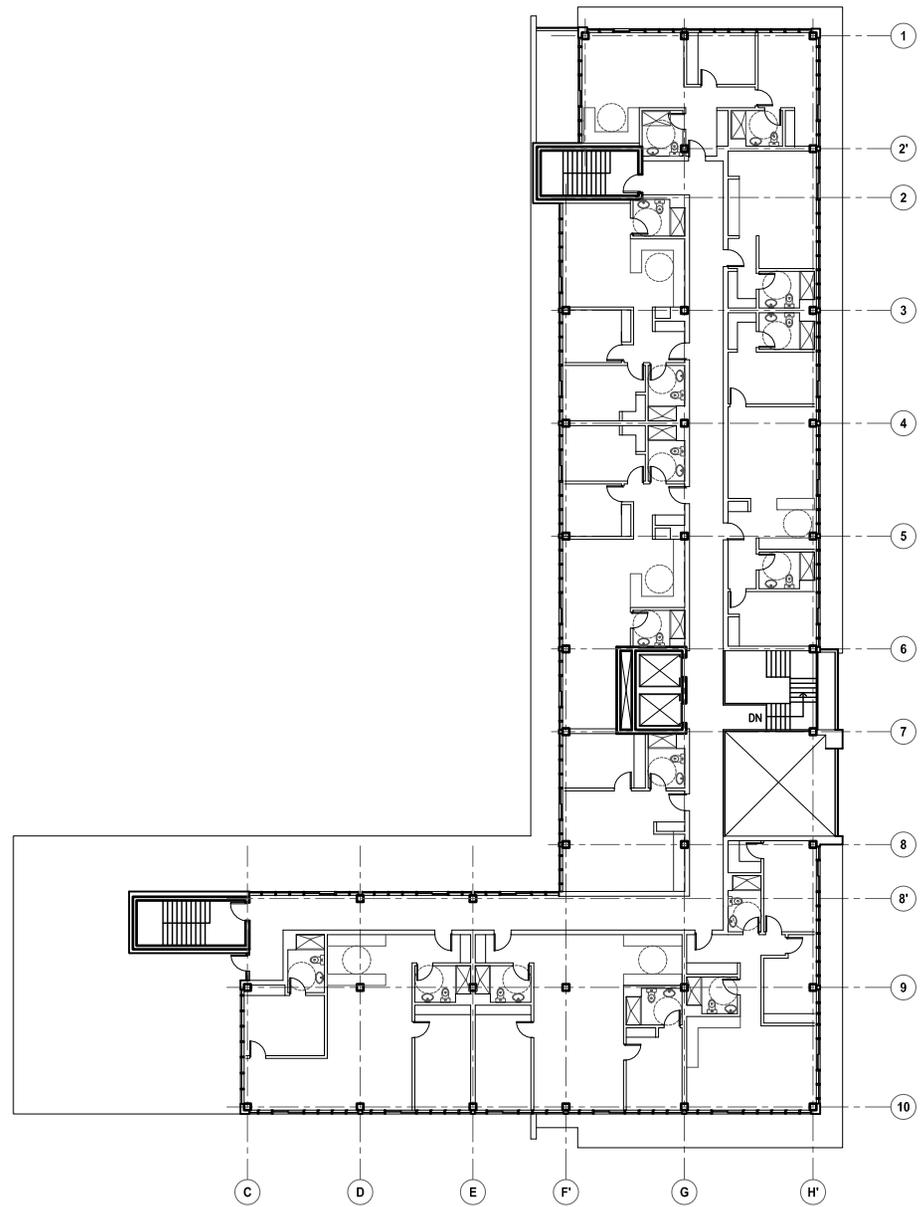
FIFTH FLOOR PLAN 1:400

4.57. Fifth floor plan.



SIXTH FLOOR PLAN 1:400

4.58. Sixth floor plan.



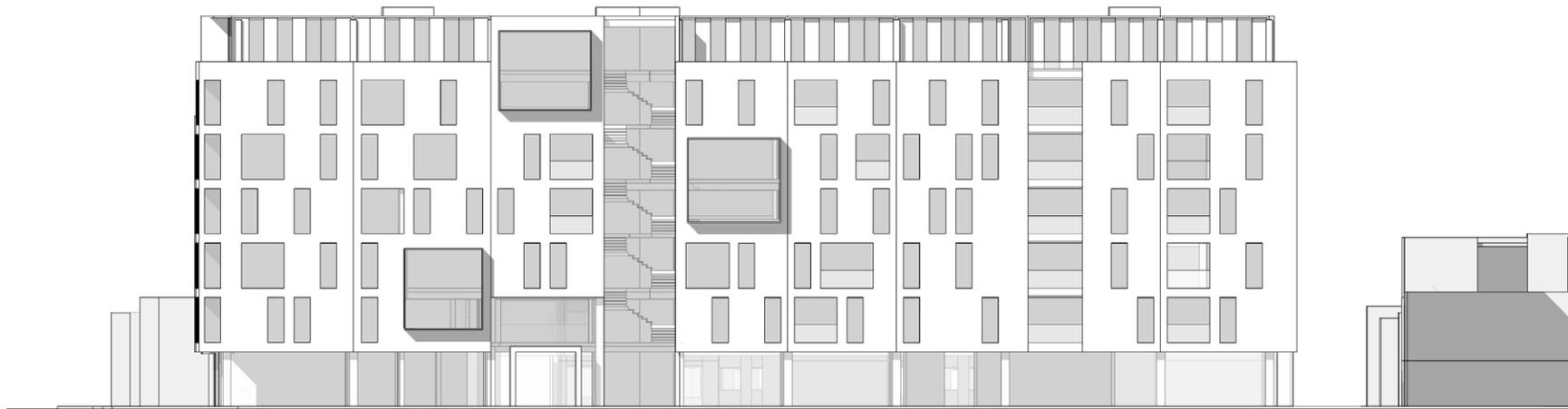
SEVENTH FLOOR PLAN 1:400

4.59. Seventh floor plan.



4.60. South elevation.

SOUTH ELEVATION 1:400



4.61. East elevation.

EAST ELEVATION 1:400



S - PERMANENCE AND DURATION

The aging baby boomers will demand a lifestyle that supports their independence, with units that allow them to age in place, services that respect their dignity, and activities that allow for choice, self-governance, and physical well-being. The design of housing must be flexible, so that a change in physical or mental health does not necessitate a change in living environment.

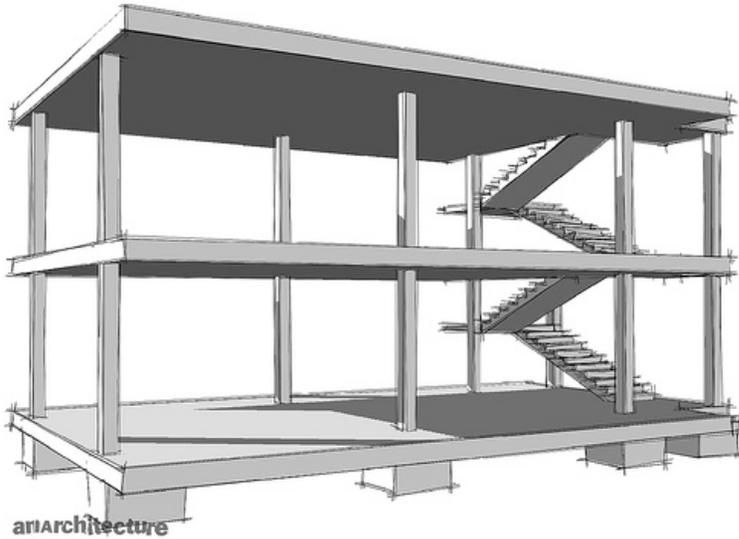
If housing is to remain serviceable over any extended period it will need to be flexible and responsive to people's changing demands. The evidence shows that many of the physical problems that existing housing presents for frail elders would be eliminated if flexibility was considered a fundamental parameter of design.¹

In 1923 Le Corbusier published *Vers un Architecture* that included ideas on mass produced and flexible housing based on the Dom-ino system that he developed in 1914. The Dom-ino system proposed an open plan with ribbon windows that provided endless flexibility in the arrangement of the interiors. In the years to follow, this resulted in many buildings with open, changeable planning around fixed service cores. This greater spatial indeterminacy was thought to allow greater changes in use and occupancy.²

'The constantly growing diversity of our housing needs, on the other hand, demands great flexibility in the use of the accommodation... If the architect limits himself to treating the kitchen and the bathroom as constants, because of their plumbing, while partitioning the remaining living area with movable walls, I believe that by these means it is possible to satisfy every reasonable dwelling need.'

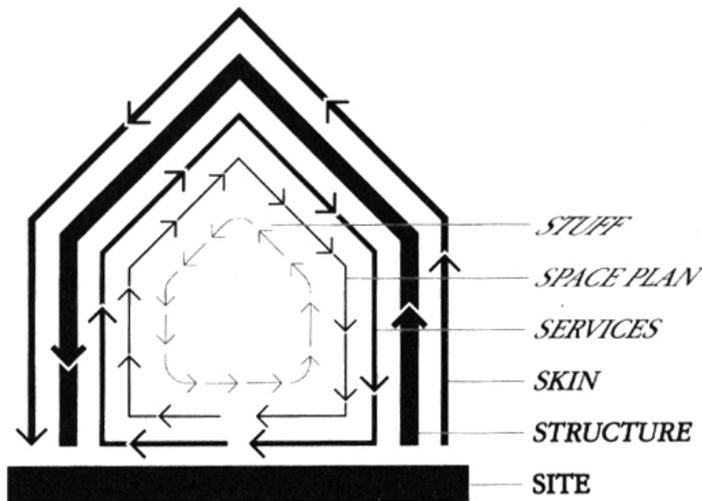
Mies Van der Rohe

5.0. (Opposite) Abandoned factory. Cologne, Germany.



5.1. LeCorbusier's Dom-ino system.

An analysis of the Dom-ino system reveals a series of principles that might inform flexible housing. First, Dom-ino determines distinct life spans for different part of the building; the plan consists of concrete slabs and columns whilst the internal and external partition walls are seen as lasting for a much shorter period. Secondly, the constructional system allows variability in plan. Concrete columns are placed at the very edges of the concrete floors in the longitudinal direction and moved back from the edges in the other direction. This enables openings to be positioned independently from the structural system and makes possible numerous variations for the arrangement of the interior possible. Thirdly, the infill, or in Le Corbusier's terms 'light filling', of walls and partitions are capable of being erected by unskilled labour.³ Acute attention to these principles informs the architectural strategy employed to accommodate flexible living arrangements with an emphasis increasingly placed on the interests of the home buyer. An additional MVRDV project serves as reference for this strategy.



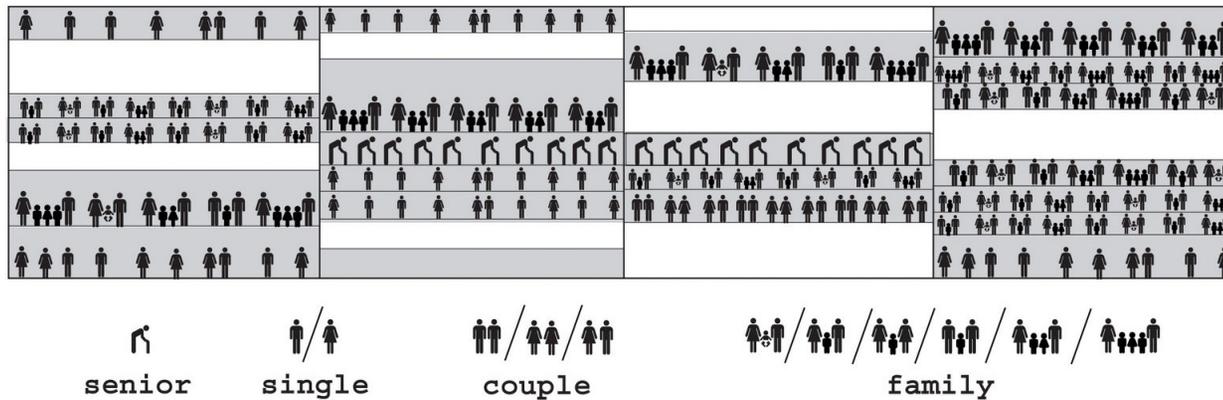
5.2. Stewart Brand's six layer diagram.

SILODAM Silodam marks an interesting transition from the traditionally mass-oriented Dutch approach to housing toward more freedom for the owners. All parties involved – the architects, the municipality, the commissioning housing corporation, and not least the new inhabitants – wanted the building to function as a large envelope, offering the greatest possible diversity in floor plans and therefore lifestyles. ⁴ The project achieved a mix of different housing types that differ in size, cost, and organization, integrated together with various access routes to form a three-dimensional street pattern. The units are connected in a series of neighbourhoods of eight to twelve apartments, based on four tower organization to form a series of clusters, demarcated on the exterior by a differentiation in facade materials.

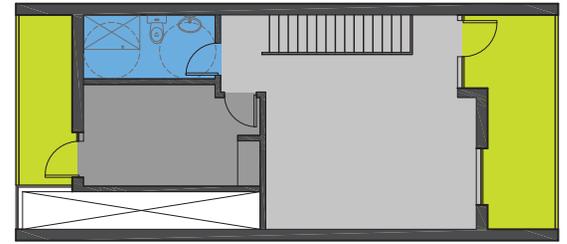
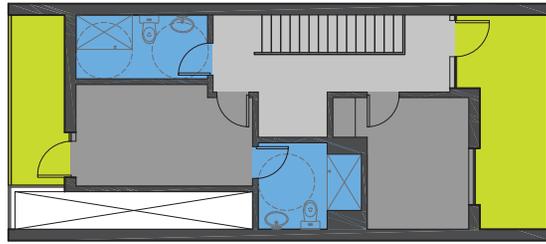
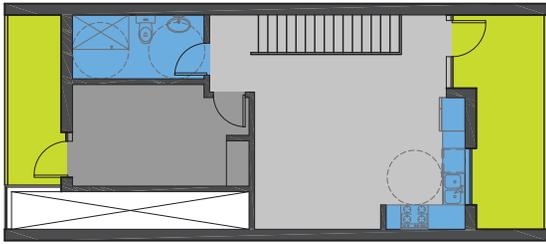
The building represents a transitional moment in Holland’s approach to housing, representing a shift toward the interests of the home buyer; the new owners could change their space in consultation with the contractor, who was more amenable than most to buyers’ wishes.⁵



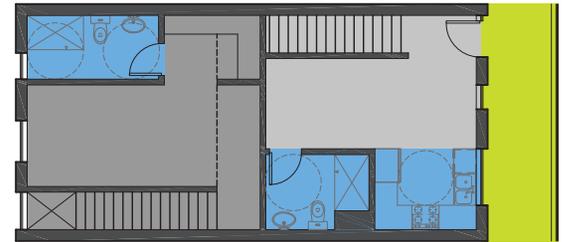
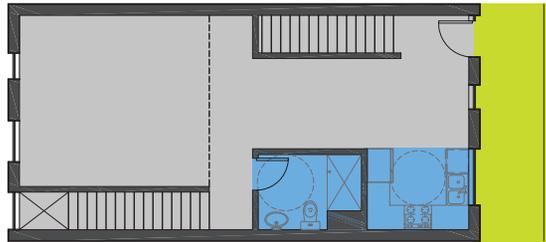
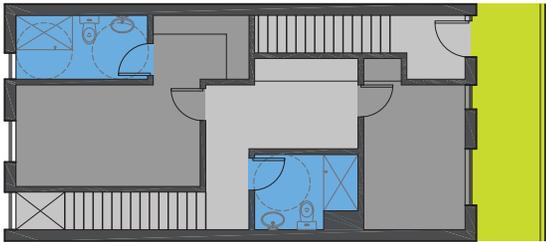
5.3. Silodam housing from main entrance deck.



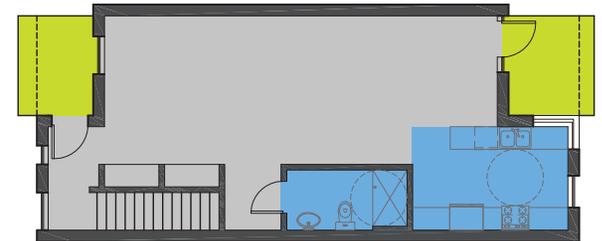
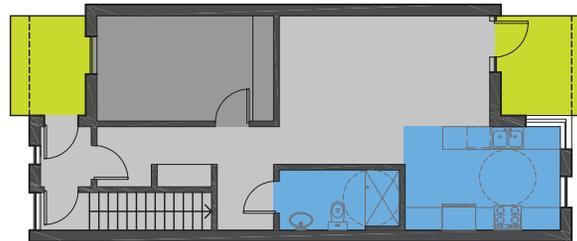
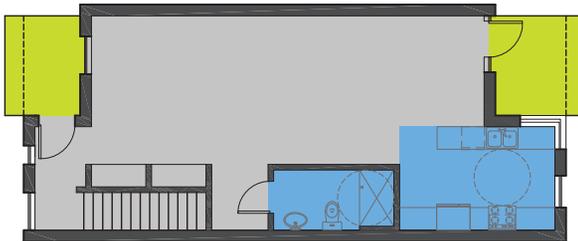
5.4. Silodam housing schematic neighbourhoods.



THIRD FLOOR PLANS



SECOND FLOOR PLANS



GROUND FLOOR PLANS

SCENARIO A-3
UNIT 1 - GROUND FLOOR + SECOND FLOOR
UNIT 2 - THIRD FLOOR

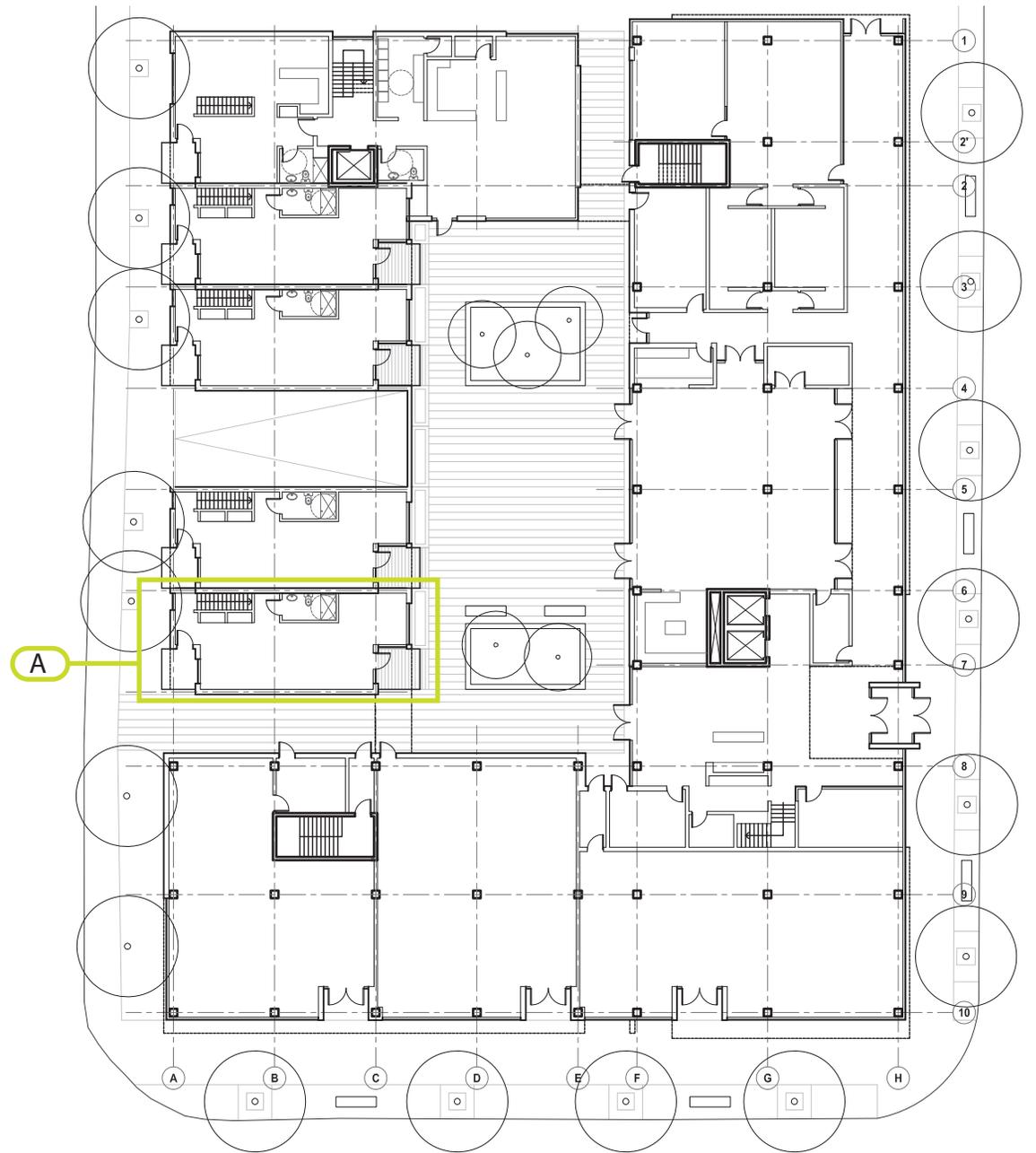
SCENARIO A-2
UNIT 1 - GROUND FLOOR
UNIT 2 - SECOND + THIRD FLOOR

SCENARIO A-1
UNIT 1 - GROUND FLOOR + 1/2 SECOND FLOOR
UNIT 2 - 1/2 SECOND + THIRD FLOOR

UNIT TYPE 'A' FLEXIBILITY SCENARIO PLANS 1:200

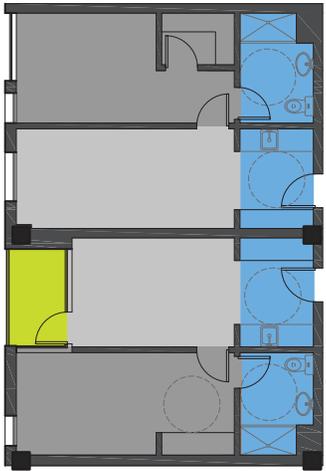
5.5. Unit type 'A' flexibility scenarios.

- LEGEND
- OPEN SPACE
 - WET AREAS
 - LIVING AREA
 - BEDROOMS

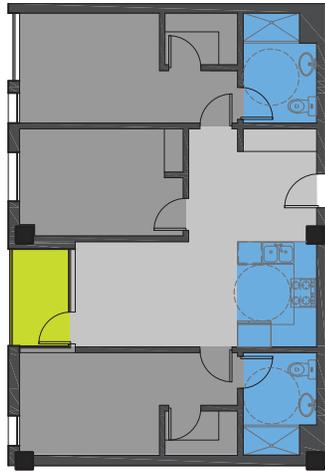


GROUND FLOOR PLAN 1:400

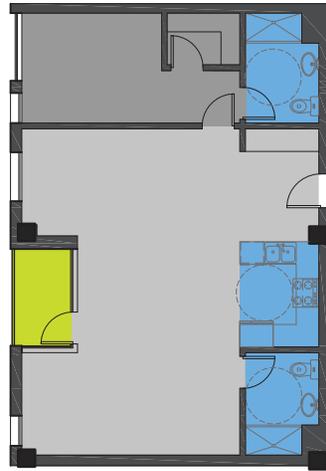
5.6. Ground floor unit 'A' location plan.



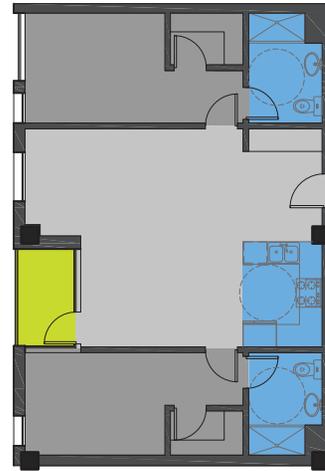
B-5



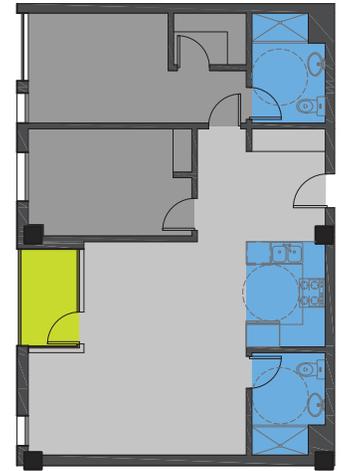
B-4



B-3



B-2

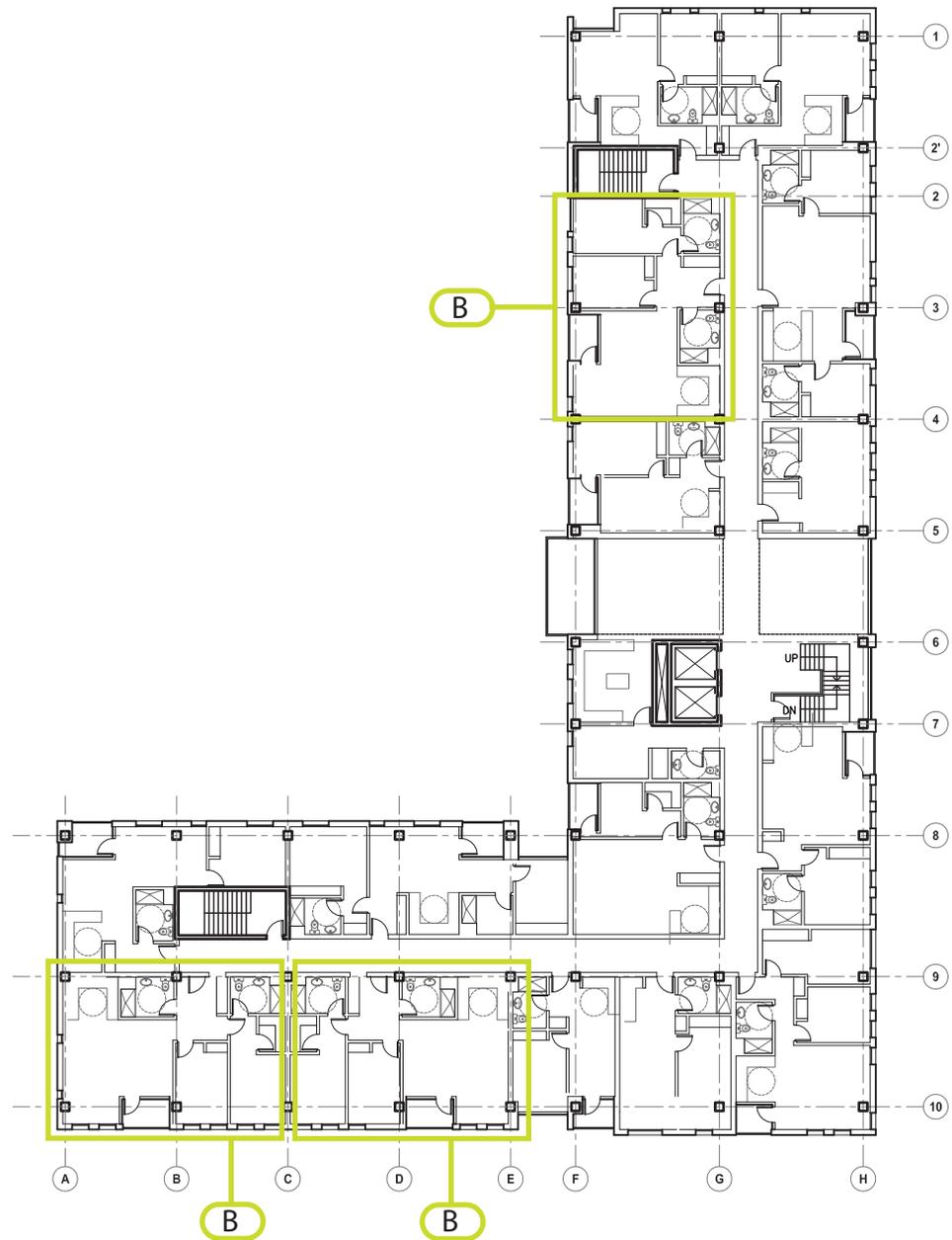


B-1

UNIT TYPE 'B' FLEXIBILITY SCENARIO PLANS 1:200

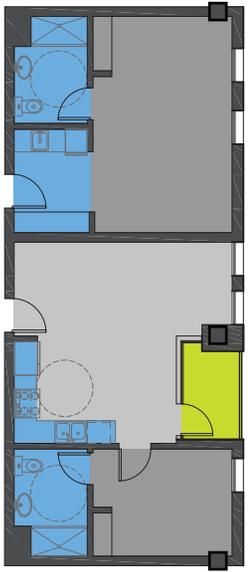
5.7. Unit type 'B' flexibility scenarios.

- LEGEND
-  OPEN SPACE
 -  WET AREAS
 -  LIVING AREA
 -  BEDROOMS

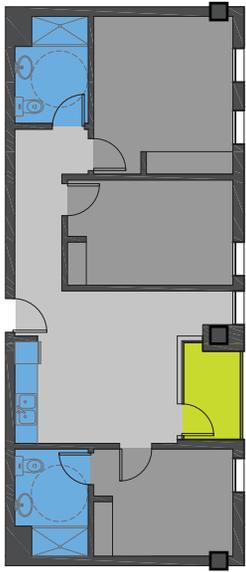


FOURTH FLOOR PLAN 1:400

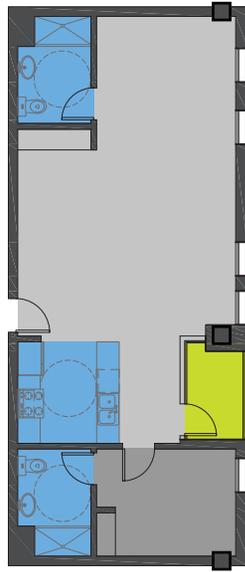
5.8. Fourth floor unit 'B' location plan.



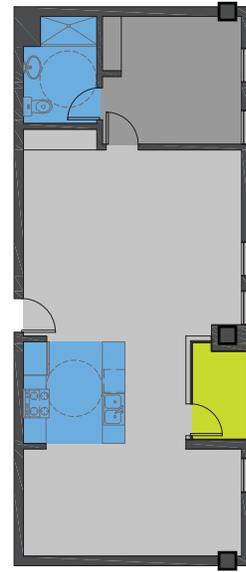
C-6



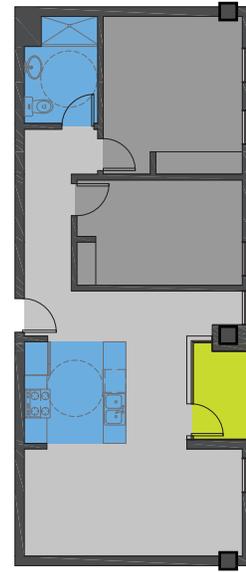
C-5



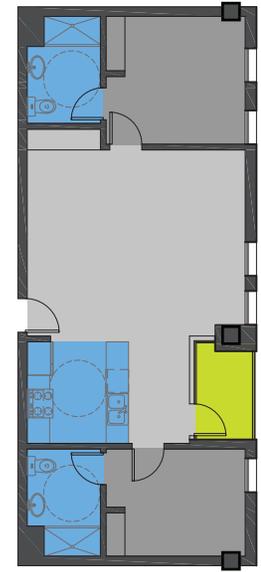
C-4



C-3



C-2

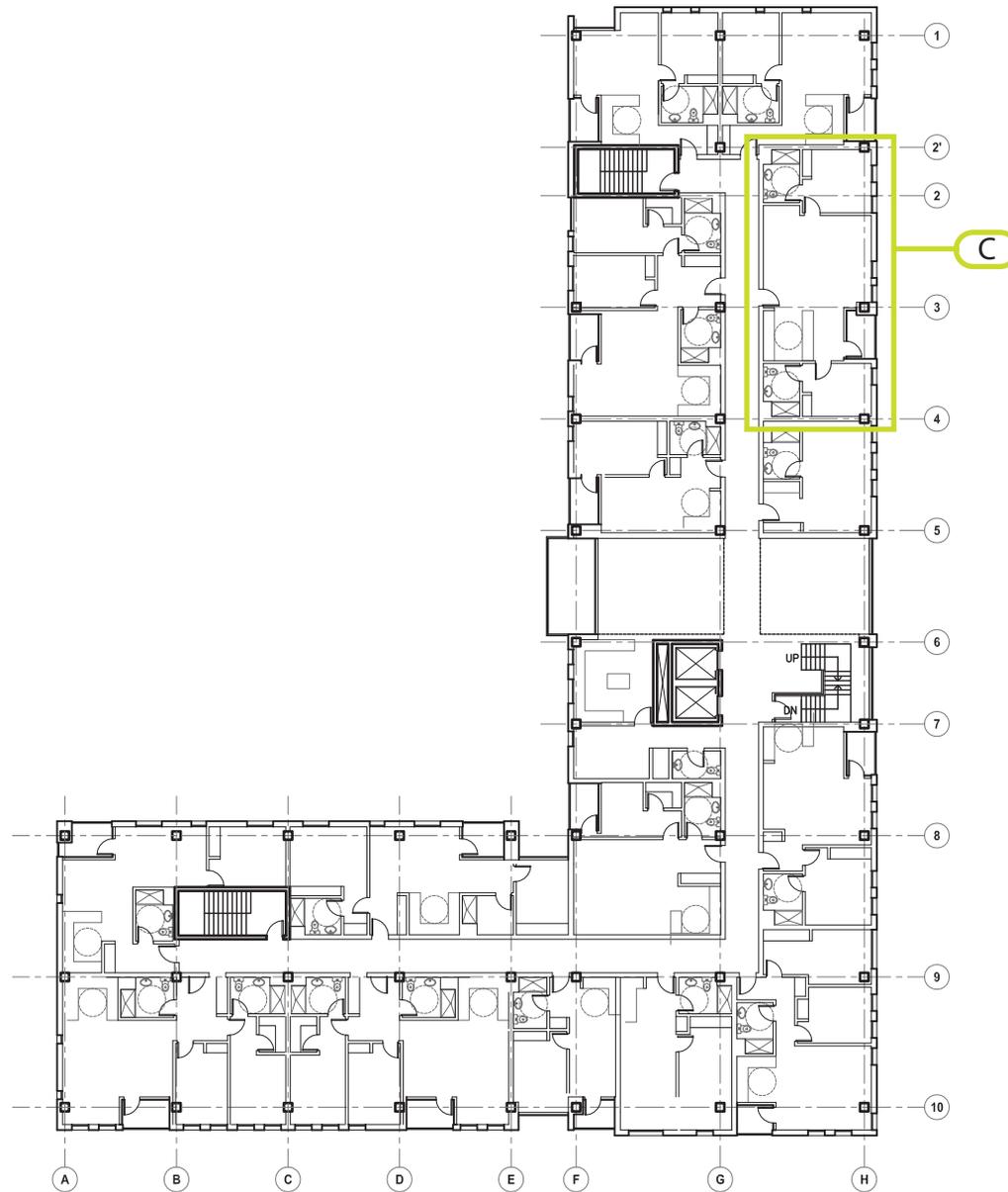


C-1

UNIT TYPE 'C' FLEXIBILITY SCENARIO PLANS 1:200

5.9. Unit type 'C' flexibility scenarios.

- LEGEND
-  OPEN SPACE
 -  WET AREAS
 -  LIVING AREA
 -  BEDROOMS



FOURTH FLOOR PLAN 1:400

5.10. Fourth floor unit 'C' location plan.



D-2



D-1



D-4



D-3

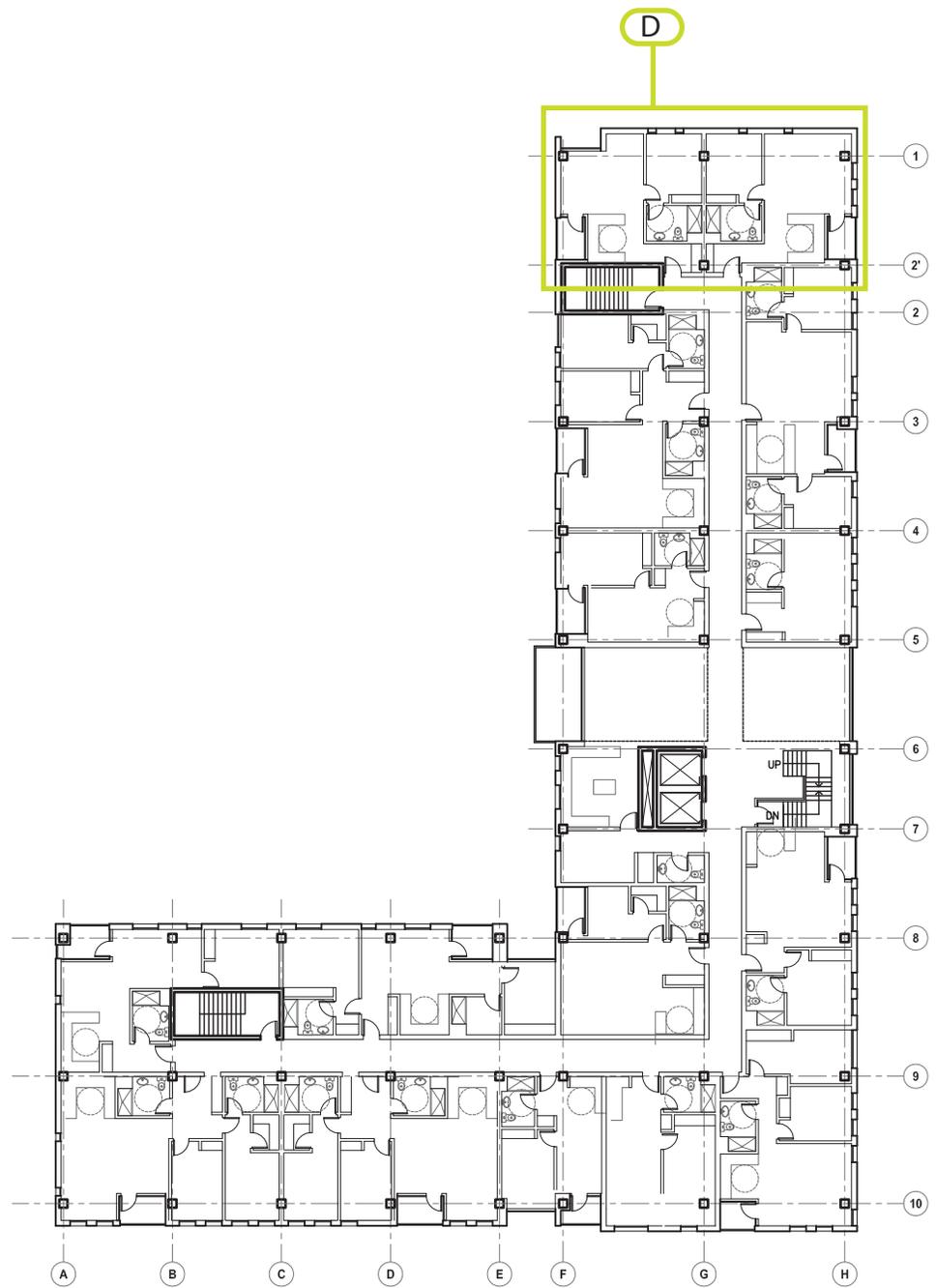


D-5

UNIT TYPE 'D' FLEXIBILITY SCENARIO PLANS 1:200

5.11. Unit type 'D' flexibility scenarios.

- LEGEND
-  OPEN SPACE
 -  WET AREAS
 -  LIVING AREA
 -  BEDROOMS



FOURTH FLOOR PLAN 1:400

5.12. Fourth floor unit 'D' location plan.

CONCLUSION

Architecture, unlike literature, music, painting or sculpture, cannot legitimately aspire to any form of cultural autonomy as it is too intimately involved with the process of everyday life. The maturation of the baby boom generation will ultimately challenge our established perceptions and routines, but also presents a major opportunity to re-examine and question the conventional patterns of dwelling in our cities. Population aging should be viewed as a positive force—a catalyst for neighbourhood renewal and downtown redevelopment. Fifty years ago, the family needs of the boomers created suburbia. Twenty years from now, the geriatric needs of this same generation may well be responsible for equally dramatic changes in our urban regions - changes that could bring about more compact, pedestrian-friendly cityscapes, as well as new forms of supportive housing that foster a stronger sense of community and are flexible enough to adapt to the changing patterns of aging.

The issue of urban residential density returns us to the challenge of land settlement in relation to global urbanization. Low-rise, high-density housing is certainly applicable to the general dilemma we face at a megalopolitan scale, but has traditionally failed to garner significant attention in North America. What we lack is the political and cultural will to establish these patterns as a new and necessary form of development. Only a very small proportion of the built environment is subject to the intervention of an architect. The real-estate and home-building industries, aided by banks, bureaucracies and laissez-faire planning policies, are equally responsible for the polarized aggregation of the environment. This sobering fact returns us to the role of the architect - as educator and mediator - because until society becomes more enlightened, little in this regard will fundamentally change.

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