

We Meet In The Street
Combating Youth Out-Migration In Halifax By Re-Connecting Multi-Unit
Housing To The City Street

by

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ABSTRACT

Density in smaller cities can be difficult due to slow or stagnant population growth. In the Halifax Regional Centre, future growth of the city relies heavily on the attraction and retention of young adults. Studies show that high costs of living, lack of employment opportunities, and lack of community attachment are the top reasons that young adults leave Halifax. This thesis seeks to address these needs through architectural methods inspired by *Team 10* in the design of a mixed-use residential development. Two general strategies will be used: building with a flexible, modular infill system, and integrating the street and public space vertically throughout the building. Both of these tactics aim to reduce the cost of dwelling, provide opportunities for live/work, and increase a sense of place attachment. The resulting design should create an environment where a diverse population group of all income levels can live, creating a strong community where young adults can become integrated through affordable options, enabling them to live in Halifax long term.

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CHAPTER 1: INTRODUCTION

Denser cities avoid many of the problems created by sprawl [...] Municipalities are able to keep costs (and taxes) down by providing services over a smaller area. More walkable cities avoid many of the costs of gridlock, and reduce air pollution and greenhouse gases. Wild spaces and water can be preserved, providing habitat for wildlife, as well as recreational opportunities for people. [...] Denser cities often provide tighter, more closely knit communities and neighbourhoods.¹

Throughout Canada, natural population growth has been on the decline as the population has been aging and fertility rates have been decreasing.² Overall, natural population growth accounts for less than one-third of Canada's total population growth.³ In order to counter-balance this, the country has relied strongly on immigration. It is predicted that without an increase to current immigration, Canada's population growth could be non-existent within twenty years.⁴

In smaller cities such as Halifax, Nova Scotia, the control of out-migration to larger cities is also an important factor for maintaining and growing the population. Specifically, the attraction and retention of young adults, as this is the time in one's life when the majority of migration occurs.⁵ In recent years, the city of Halifax has been working towards increasing its urban density within the Regional Centre. This has included the development of a new planning strategy called the Centre Plan, as well as the introduction of bonus density regulations, the Halifax Transit's Moving Forward Together Plan, and the Integrated Mobility Plan.⁶ The city has also seen a dramatic increase in multi-unit residential housing developments since 2011.⁷

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- 1 Derek Simon, "Urban Development: Does Halifax need to grow up?" Spacing Atlantic, 2012.
 - 2 Statistics Canada, "Population growth: Migratory increase overtakes natural increase," *Canadian Megatrends*.
 - 3 Ibid.
 - 4 Ibid.
 - 5 Paul A. Jacob, "A Generation of Change- Youth as Nova Scotia's Defining Moment," 4.
 - 6 Ryan Macleod, "The Halifax Index 2016," The Halifax Partnership, 8.
 - 7 "Halifax Housing Needs Assessment 2015," Housing and Homelessness Partnership, 40.

Considering the city's current investment in density, it is important that efforts are catered towards population groups that are critical to long-term population growth. Cost of living, employment, and community attachment are the top reasons that youth migrate out of the Regional Centre.⁸ Addressing these problems will have a positive effect for young adults as well as for the overarching goal of density:

Affordable living is tremendously important to the social and economic health of a community and has perhaps the single largest impact on quality of life. A lack of affordable housing limits our ability to attract students to our universities, cuts into our ability to attract and hold on to young professionals, and impacts the quality of life of all residents. Lack of affordability contributes to expensive urban sprawl, resulting in longer commutes, less time with family and friends, and increased costs to our city, our families, and our environment.⁹

The city's current developments include over fifty-seven multi-unit residential buildings that are either under construction, approved, or planned.¹⁰ This thesis seeks to take advantage of this trend in multi-unit housing, and use it as an architectural tool to help respond to causes of out-migration in the city. The goal of this thesis is to re-imagine current developments as if they were designed specifically for the needs of young adults in Halifax.

Thesis Question

Can a flexible building system that integrates public space into multi-unit dwellings create a strong sense of community and meet the social and economic needs of youth in Halifax to help them live in the city long-term?

8 Jacob, "A Generation of Change," 5.

9 Macleod, "The Halifax Index 2016," 40.

10 Planning Design Center, "PDC Construction Site," <http://pdcentre.ca/construction-site/list>

CHAPTER 2: THE FUTURE OF HALIFAX

Opportunities for Population Growth

Natural population growth has been on the decline in Halifax; however, the population of the Regional Centre has continued to increase. This is mostly due to immigration into the city. Without the migration of students and families, the population of Halifax would slowly decline.¹¹ This makes the city's goal of creating a dense urban core particularly risky because of the reliance on outside sources for growth.

Youth out-migration has been a continuing problem for Halifax. Despite having a mass amount of in-migration to Nova Scotia (roughly 36,000 university and college students come from outside the province each year as well as 2000 immigrants), Halifax loses 1300 more youth each year than it gains.¹² If Halifax were to retain 1300 youth, they would provide \$1.2 billion in after-tax income to spend on the economy over their lifetime, and \$46.4 million in net tax relief to the province.¹³ The attraction and retention of youth is not only important for increasing density, but also for the economic well-being of the city. Three groups that are a part of the discussion of youth out-migration are: single unit households, immigrants, and students (see fig. 5).

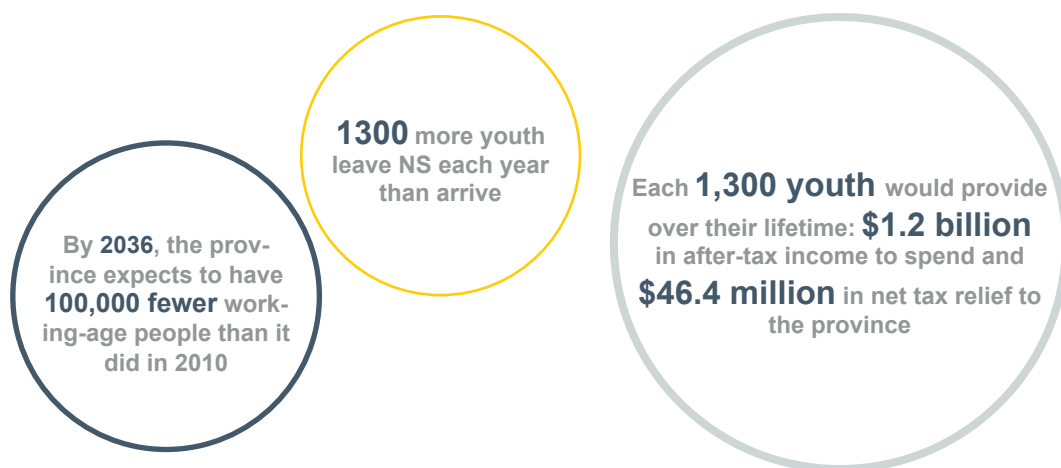


Figure 1. Youth out-migration; from Jacob, "A Generation of Change."

11 Macleod, "The Halifax Index 2016," 13.

12 Jacob, "A Generation of Change," 2.

13 Ibid., 7.

Single-Unit Households

Single-unit households make up 42% of the population of the Regional Centre, which is the largest population group in the area. Out of this group, 60% are considered low income (earning < \$40,692/year) and 43% cannot afford market rent.¹⁴

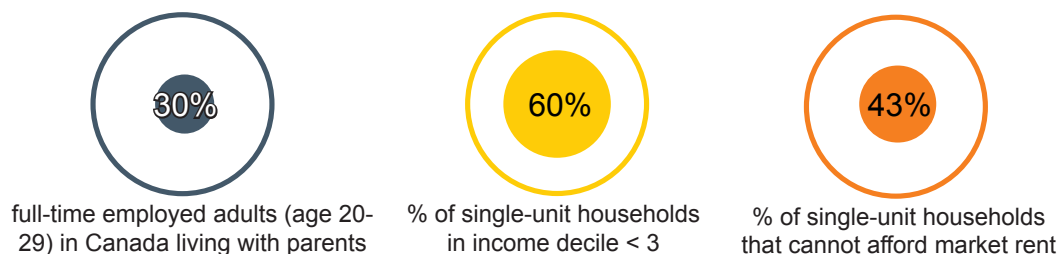


Figure 2. Single-unit households; data from “Halifax Housing Needs Assessment 2015.”

Recent Immigrants

Immigrants accounted for over three-quarters of the population growth in the Regional Centre in 2015.¹⁵ The majority of immigrants who arrive are between the ages of 15-44.¹⁶ This makes them especially valuable for combatting Halifax’s retiring work force. Upon five years after arrival, immigrants statistically blend in with the average population, however the first five years that an immigrant arrives, they are much more fragile. Over 44% of recent immigrants are considered low income and 32% cannot afford market rent.¹⁷ These first five years are crucial in supporting long-term residency by providing more affordable housing and community support until they get their feet on the ground.

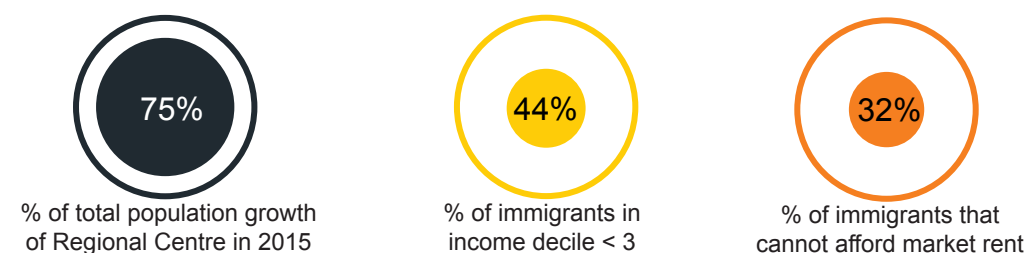


Figure 3. Recent immigrants; data from “Halifax Housing Needs Assessment 2015.”

14 “Halifax Housing Needs Assessment 2015,” 30.

15 Macleod, “The Halifax Index 2016,” 14.

16 Statistics Canada, NHS Profile, Halifax, RGM, Nova Scotia, 2011. CANSIM 99-004-XWE

17 “Halifax Housing Needs Assessment 2015,” 33.

Students

Students fall into both categories of single-unit households and immigrants. Similar to the population trends of the Regional Centre, Halifax Universities have also seen a decline in Nova Scotian born students. Despite this, university enrolments have continued to increase due to steady increases in interprovincial migration and significant increases in international immigration.¹⁸ In 2015, there were almost 31,000 students enrolled in university in Halifax (45% from outside Nova Scotia and 15% from outside Canada).¹⁹ The city had an additional 4700 students enrolled in college. Studies have shown that students have a desire to stay in Halifax after graduation, given that they are able to do so.²⁰

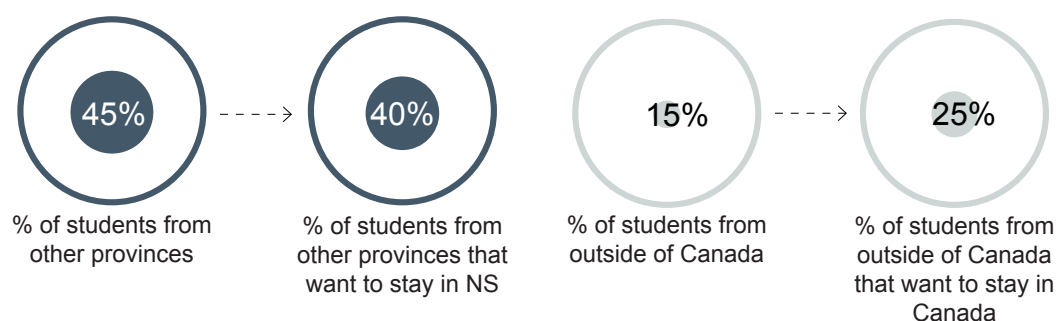


Figure 4. Students; data from “Halifax Housing Needs Assessment 2015.”

Populations Targeted by New Developments

In contrast to population growth targets (students, immigrants, and single-person households), new developments are targeting two-person households and middle-aged professionals (see fig. 6).²¹ This shows that there is a clear difference between the buildings being made to densify the city, and the population groups that need to inhabit them in order to make them successful towards their goals long-term.

¹⁸ Macleod, “The Halifax Index 2016,” 14.

¹⁹ Ibid., 16.

²⁰ “Halifax Housing Needs Assessment 2015,” 11.

²¹ These groups are interpreted from the cost of new developments and the population groups that can afford to live in them. Development cost data is from “PDC Construction Site” and population data is from “Halifax Housing Needs Assessment 2015.”

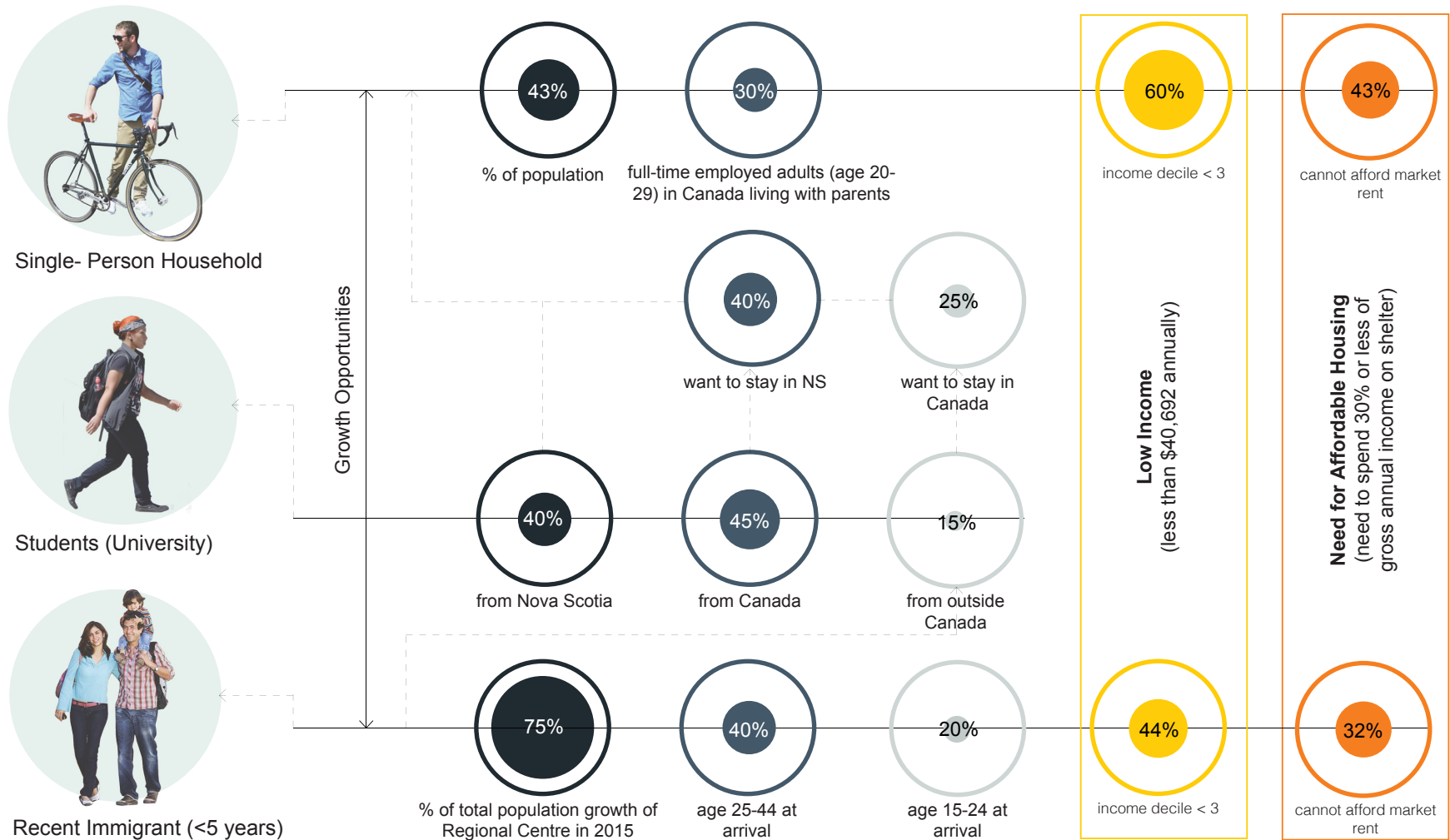


Figure 5. Important population groups in Halifax Regional Centre; data from “Halifax Housing Needs Assessment 2015.”

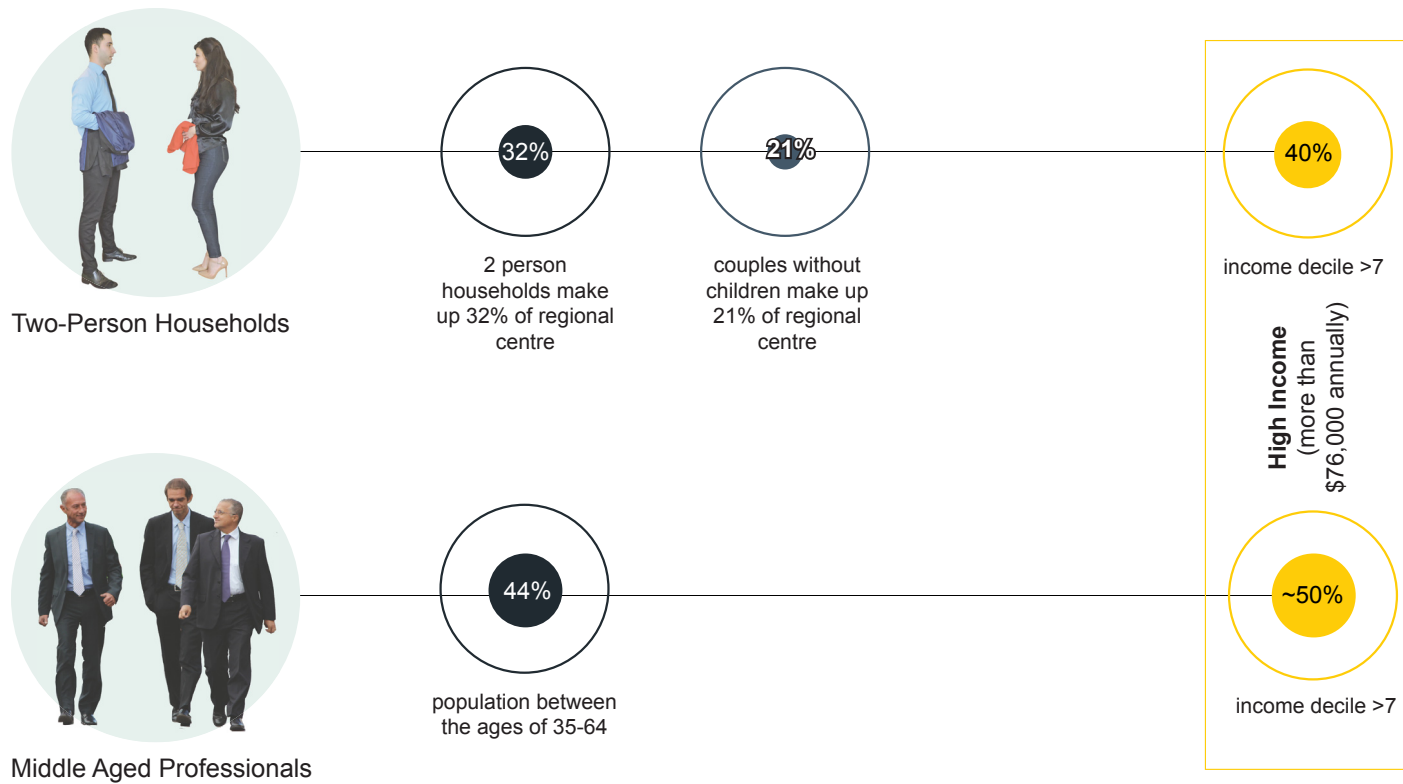
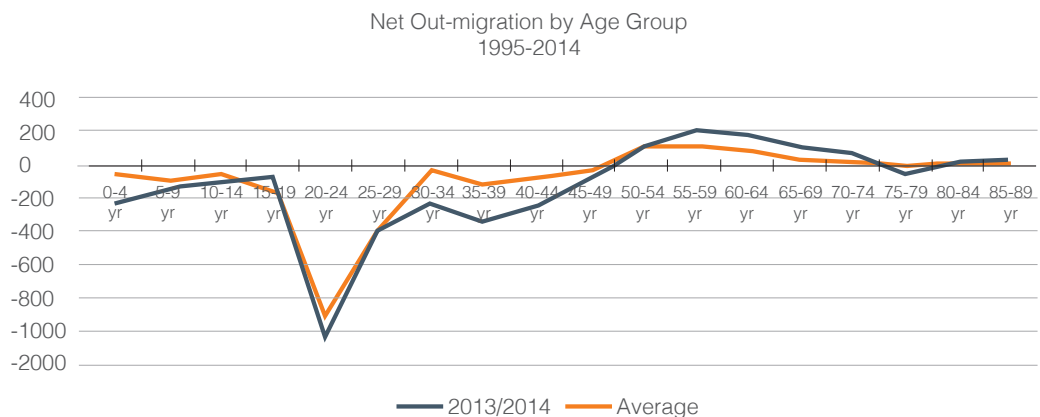


Figure 6. Population groups targeted by new developments; data from “PDC Construction Site.” and “Halifax Housing Needs Assessment 2015.”

Youth Retention

Youth is defined in *A Generation Of Change* as people between the ages of 20-29. This age group is targeted because it is the period in one's life where the majority of migration occurs (see fig. 7).²² Statistically, once someone has moved into their thirties, they are settled in a place long term. The ability to cater to youth as they make decisions regarding employment, marriage, and children, is important in determining where they settle for life. Cost of living, employment, and lack of community attachment are the top reasons that youth decide to migrate out of the Regional Centre.²³



Source: Statistics Canada, Interprovincial Migration, CANSIM 051-0012

Figure 7. Net out-migration by age group; from Jacob, “A Generation of Change.”

Cost Of Living

Current Developments

The city's current fifty-seven developments represent the city's growing interest in multi-unit housing and consequently a dramatic decrease in single-unit housing starts (see fig. 8 + 9). This relates to the desire for urban density and to decreasing family sizes that may need less space and alternate ways of living. The majority of new developments provide one and two-bedroom units, with less providing three bedroom or bachelor units. This also runs in line with the changes in family

²² Paul A. Jacob, “A Generation of Change- Youth as Nova Scotia's Defining Moment,” 4.

²³ Ibid., 5.

sizes and the increase in single-person households. Overall there is a fairly even distribution of condo and rental options.²⁴ The increase in multi-story construction is leading to a noticeable difference in the Halifax streetscape, including the pedestrian/public experience outside of the buildings, and the social/community experience of the condo dwellers inside.

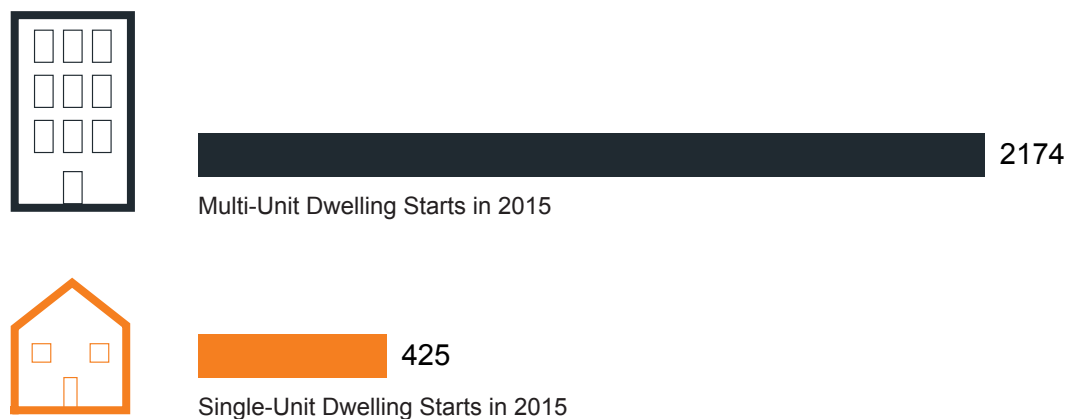


Figure 8. Housing starts in 2015; data from Macleod, “The Halifax Index 2016.”

Affordable Housing Options For Youth

Housing is considered affordable if someone spends less than 30% of their gross annual income on shelter.²⁵ Although people falling in the upper end of the low income bracket can afford the average market rent in Halifax, they can still not afford to buy an existing or new home unless they spend more than 30% of their income on shelter or they have the savings to put more than 10% as a down payment.²⁶ Several current developments in Halifax range in price from \$400,000 - >\$1,500,000 (well above the average cost of a new home in Halifax), and of the fifty-seven developments listed, only four mention the possibility of providing a portion of affordable units within their early proposals (see fig. 10 + 11).²⁷

²⁴ “PDC Construction Site.”

²⁵ “Halifax Housing Needs Assessment 2015,” 73.

²⁶ Ibid., 88.

²⁷ “PDC Construction Site.”

Current Multi-Unit Residential Developments | Halifax Regional Centre 2015



Figure 9. Map of multi-unit residential development in the Halifax Regional Centre 2015; data from “PDC Construction Site.” and Google Maps.

Current Multi-Unit Residential Developments | Halifax Regional Centre 2015



Figure 10. Graph of multi-unit residential development in the Halifax Regional Centre 2015; data from “PDC Construction Site.”

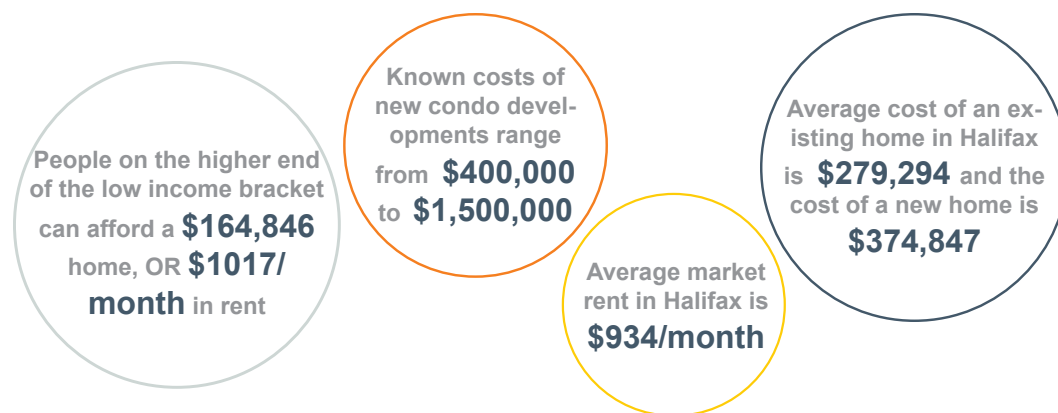


Figure 11. Housing affordability; data from “Halifax Housing Needs Assessment 2015.” and “PDC Construction Site.”

Although the Regional Centre has the highest percentage of low-income households in Halifax, other households with lower incomes typically migrate out of the Regional Centre and into areas such as Halifax Urban and Dartmouth Urban.²⁸ These areas are slightly less expensive, however they are more detached from the city and amenities, and require the purchase of a vehicle, which can be a burden on low-income families.

Youth and Employment

Declining workforce participation rates and modest labour force growth in the past few years highlight the continued importance of young worker and immigrant attraction and retention to grow the Halifax and Nova Scotia economies. Efforts to integrate immigrants and recent graduates into the labour force are as vital now as they have ever been.²⁹

Unemployment rates in Nova Scotia are higher for youth (age 20-29) at 12% than the Halifax population average of 6.3%.³⁰ These rates are some of the highest in Canada. Among those who do have employment, 45% of youth age 15-24 years' work in part-time positions (compared to the population average of 16%).³¹ Finally, although Halifax has a highly educated population, 42% of recent university gradu-

28 “Halifax Housing Needs Assessment 2015,” 29.

29 Macleod, “The Halifax Index 2016,” 7.

30 Statistics Canada, Labour Force Survey: CANSIM: 282-0002.

31 Statistics Canada, Labour Force Survey: CANSIM 282-0138.

ates and 16% of recent college graduates are over-qualified for their current employment.³² For those who have work, many youth are considered low income. Almost 65% of people in Halifax ages 15-24 and 32% of people ages 25-34 make \$40,692 or less annually (the threshold for low income in Halifax). In addition to these numbers, 32% of people ages 15-24 and 10% of people ages 25-34 are in the lowest income bracket making less than \$17,065.

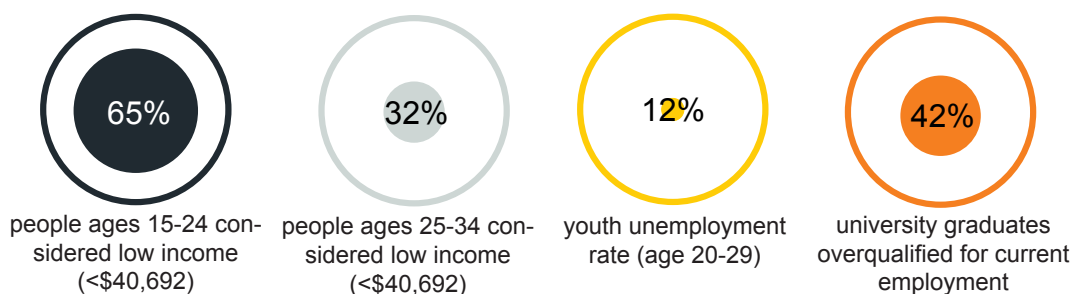


Figure 12. Youth employment; data from Statistics Canada.

These statistics clearly demonstrate problems with youth employment, job satisfaction, and the ability to afford the high costs of living in Halifax. Despite each of these factors, studies indicate that once someone makes it into the labor market they are typically more secure for the rest of their life.³³

Community Attachment

Place attachment affects both people's desire to remain in place and their ability to afford to do so. Studies show that those who exhibit higher levels of place attachment are less likely to move than those who are minimally involved.³⁴ Community attachment also impacts youth's desire and willingness to access resources and opportunities provided to them by their community, potentially impacting their ability to learn, engage in activities, access resources, find employment, and network with other people.³⁵

32 Sharanjit Uppal and Sébastien LaRoche-Côté, "Overqualification among recent university graduates in Canada," Statistics Canada, CANSIM 75-006-X.

33 Statistics Canada, Labour Force Survey: CANSIM: 282-0002.

34 Chelsea Eacott, and Christopher C. Sonn, "Beyond Education and Employment: Exploring Youth Experiences of Their Communities, Place Attachment and Reasons for Migration," *Rural Society* 16, no. 2 (2006): 202.

35 *Ibid.*, 201.

Immigration and Social Integration

The act of immigration causes people to leave their communities, breaking family ties and supports to come to an unfamiliar place. Mediating the loss of community and beginning to replace it with new relationships is important for the health, happiness, and attachment to place that new immigrants feel.³⁶ Active participation with others in the community can be particularly beneficial for immigrants to develop skills and competencies related to a new culture, place, climate, and language.³⁷ Typically, immigrants tend to move and live with people that they know or people from their place of origin.³⁸ This is due to the desire for community ties but also because of affordability and the money that is saved by cohabiting. Unfortunately this often leads to overcrowding in low-income immigrant homes.³⁹ The ability to promote healthy, long term residency from immigrants will depend on the city's ability to provide affordable housing in areas that enable social networking within the direct community, the city, and the labour market.⁴⁰

Public Space in Multi-Unit Dwellings

The majority of Halifax's current fifty-seven developments provide commercial program on the ground floor (see fig. 10), however there is limited public access other than to the main lobby of the buildings. Of the five units that provide public amenities, these are mainly limited to public parking, green space, or art installations.⁴¹

Density bonusing allows developers to increase the maximum allowable height of their buildings in exchange for providing a public amenity or benefit. This option has existed within Downtown Halifax since 2009 and has been a part of the Regional Centre since 2014.⁴² If a developer wants to partake in density bonus-

36 Christopher C. Sonn, "Immigrant Adaptation: Understanding The Process Through Sense of Community," 2-3.

37 Ibid., 18-19.

38 Ren Thomas, "Viewing immigrants' neighbourhood and housing choices through the lens of community resilience," S.A.P.I.EN.S. 6.

39 Ibid.

40 Ibid., 7.

41 Planning Design Center, "Construction Site," <http://pdcentre.ca/construction-site/list>

42 "Density Bonusing Study," Teal Architects, Toderian Urban Works, Cantwell & Company LTD., Coriolis Consulting Corp, 6.

ing, they must apply with the city, and then chose which amenity they would like to provide from a list of ten:

1. The preservation or enhancement of the heritage resource where the development includes a registered heritage property which is to be maintained
2. Publicly accessible amenity or open space where a deficiency in such spaces exists
3. Residential units at a subsidized cost
4. Three and four bedroom units with direct access to outdoor amenity space
5. Rental commercial space made available at a subsidized cost for arts or cultural uses
6. Public art
7. Public parking facilities where a deficiency in such facilities exists
8. Investment in public transit or active transportation infrastructure
9. Exemplary sustainable building practices
10. Underground electrical and communication distribution systems ⁴³

These density bonusing options can be argued for their ability to provide public benefit. Additionally, they are not well described and lack specific expectations or guidance on how to fulfill them. If the city wants to make more community oriented buildings, the current density bonusing options need to be reconsidered and better explained.

Need For Change

Current modes of thinking in Halifax are leading to the development of traditional condominiums and apartments that are catered to a small, wealthy portion of the population. It is estimated that the current fifty-seven buildings discussed will make up 50% of multi-unit dwelling construction in the next ten years.⁴⁴ An intervention needs to happen quickly to investigate how to create better housing that caters to the retention of young adults in order to meet long-term targets of density in the city.

⁴³ "Density Bonusing Study," 49.

⁴⁴ "Density Bonusing Study," 77.

CHAPTER 3: METHODS

The Vertical Street

Urban density requires building upwards to allow more people to live within less land area. While current forms of building are bringing people upwards, it is important to also think about bringing the city upwards to reengage people with the community they live in. This relationship between city and the individual (or city and dwelling) is a key concept explained in the *Team 10 Primer*. In this book, the city is divided into four components or scales: the house (finite), the street (finite), the district (plastic), and the city (tangible).⁴⁵ The house on its own is not a community, however as layers of connection and public space are added, community is created, with the city as the ultimate manifestation. Alternately, the city cannot be a place of community without the layers (including dwellings, streets, circulation, districts, public program) that create it (see fig. 13).⁴⁶ For this thesis, the term “city” does not need to be interpreted literally. The city can exist at many scales, including the scale of the block or the building (see fig. 14).

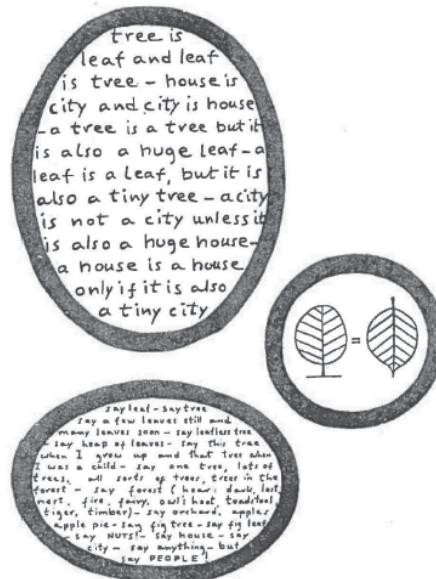


Figure 13. Van Eyck, *Drawing of Leaf and Tree*; from Alison Margaret Smithson, and Team 10, *Team 10 Primer*, Pbk. ed. Cambridge: MIT Press, 1974.

⁴⁵ Alison Margaret Smithson, and Team 10, *Team 10 Primer*, Pbk. ed. Cambridge: MIT Press, 1974, 76.

⁴⁶ *Ibid.*, 99.



Figure 14. Scales of community diagram

Current building practices are producing multi-unit dwellings that have little to no public space, and are organized by a central elevator with narrow, double-loaded corridors. These building types seem to completely neglect the opportunity to design community oriented neighbourhoods. This idea is supported in the *Team 10 Primer*:

In the past...has led to a form of vertical living in which the family is deprived of its essential outdoor life, and contact with other families is difficult if not impossible on the narrow balconies and landings that are their sole means of communion and communication. Furthermore, outside one's immediate neighbours (often limited to three in point blocks) the possibilities of forming the friendships which constitute the 'extended family' are made difficult by complete absence of horizontal communication at the same level and the ineffectiveness of vertical communication.⁴⁷

The importance of both horizontal and vertical connections can be achieved through methods of circulation, integration of the street, and incorporation of public program throughout the height of a building. The *Team 10 Primer* proposes the creation of multi-level cities that have residential streets that exist in the air (see fig. 15, 16 + 17).⁴⁸ These streets should be continuous and connect to various types of program such as work, residential, recreation, and green space.⁴⁹

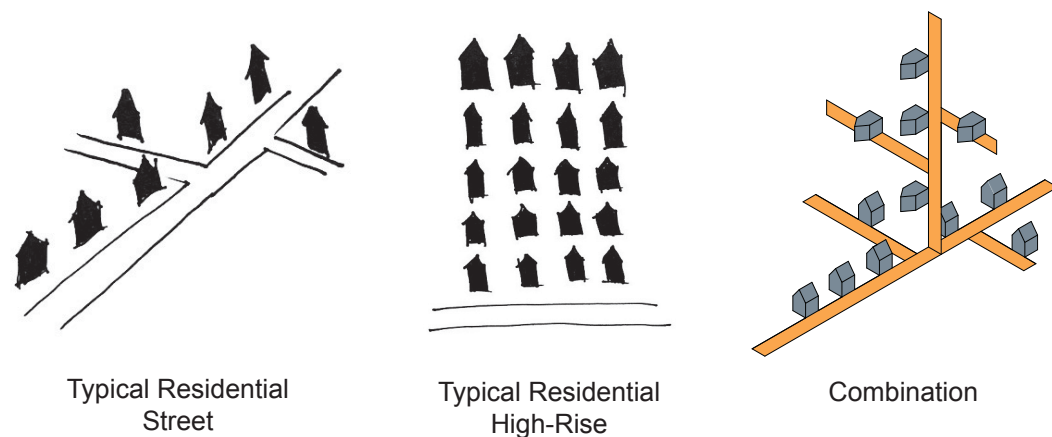


Figure 15. Vertical public street

⁴⁷ Smithson, and Team 10, *Team 10 Primer*, 80.

⁴⁸ *Ibid.*, 78.

⁴⁹ *Ibid.*

Stem and Cluster

In order to determine the placement and design of the street, the term “stem and cluster” is borrowed from the *Team 10 Primer* to describe an organizational scheme for the built environment.⁵¹ The stem is the core element, providing a life-line to clusters that grow from it (see fig. 18 + 19). This scheme is proposed as an alternative to the traditional city center or courtyard layout. It is argued that as a city grows, the clusters expand and become disassociated from the core.⁵² Alternatively, the stem, as a linear element, can grow with the city, always maintaining its connection to the clusters. The stem can be considered as a street, holding public program, transportation, mechanics and services, and social activity. Although the stem is considered the “fixed” piece in this scheme, it is also in flux with changing interests, program, and time. The stem however is always fixed in the sense that it is always the life line to the clusters.

The gathering of clusters around stems implies a “front’ and “back” to the clusters, with the front being oriented towards the stem. This is displayed in Figure 20, where lines can be drawn around clusters, organizing them into districts and creating differences between public and private areas as well as implied primary access.

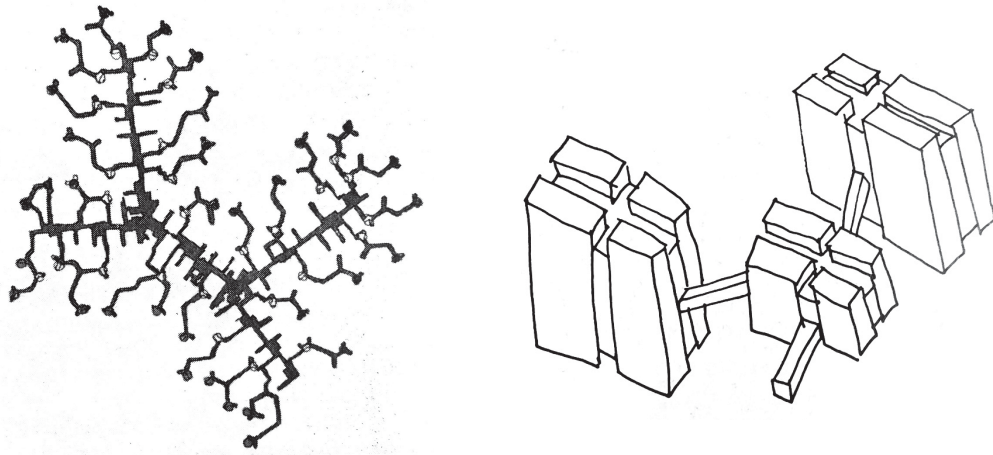


Figure 18 + 19. *Scheme showing the linear organization of activities and the proposed grouping of cells around the linear center and Peter Smithson, Office Cluster; from Smithson and Team 10, Team 10 Primer.*

⁵¹ Smithson, and Team 10, *Team 10 Primer*, 94.

⁵² Ibid.

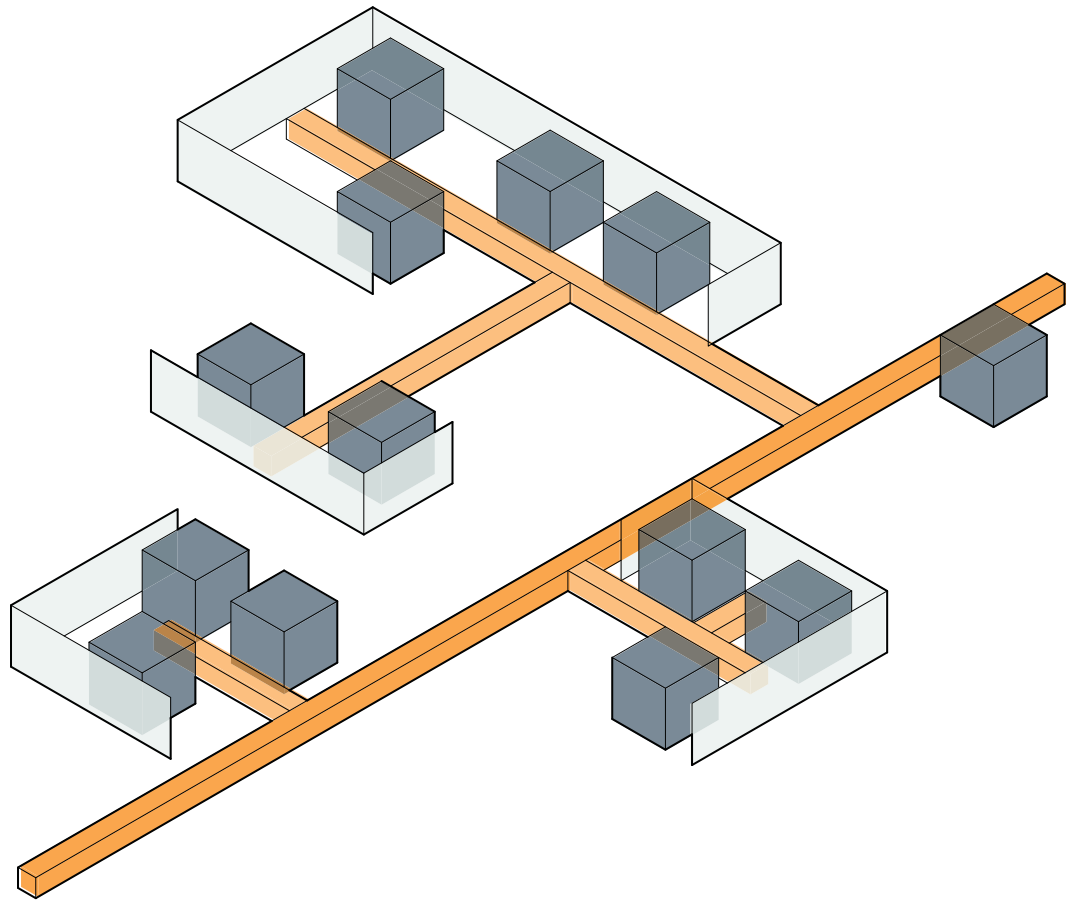


Figure 20. Stem and cluster

The Grid

In an attempt to add order to the city, mobility, communication, and program, should be used as methods to add fixed elements to which the rest of the city develops from.⁵³ In order to determine where and how circulation should be fixed, the patterns of each individual and community should be considered (see fig. 21). The design of circulation cannot be standardized and rather needs to be specifically considered for the program and people related to it.

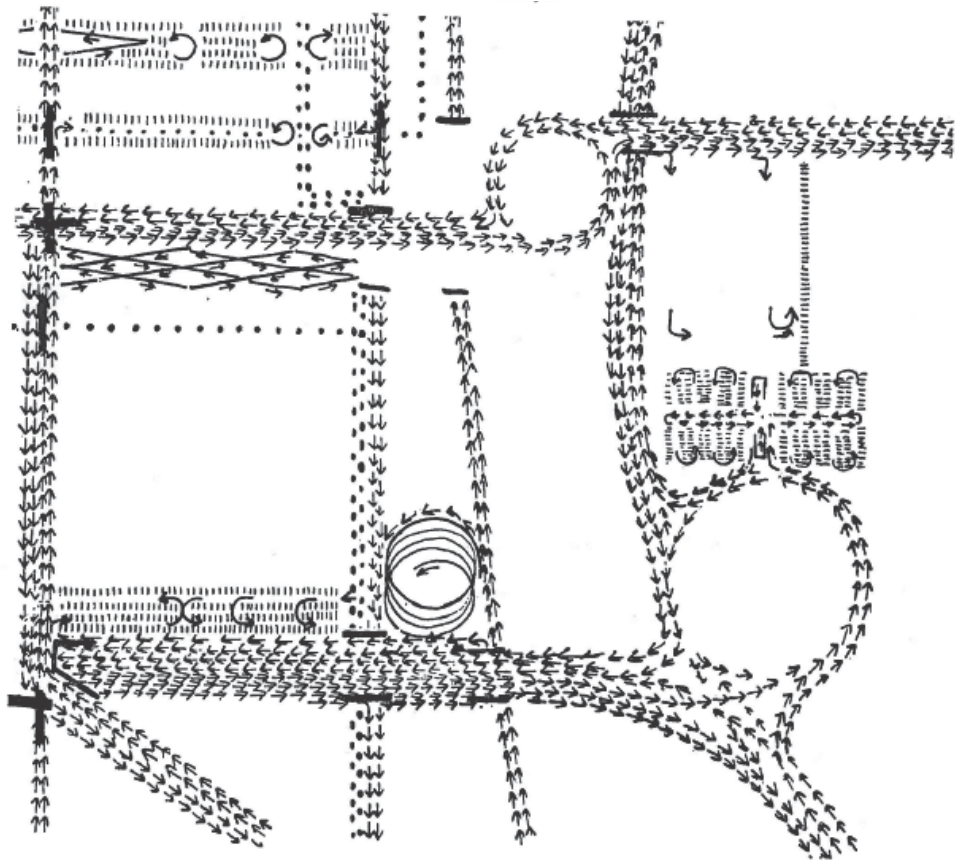


Figure 21. Khan, *The architect can control systems of physical communication and offer new concepts*; from Smithson and Team 10, *Team 10 Primer*.

⁵³ Smithson, and Team 10, *Team 10 Primer*, 52.

The grid method can help format the layout and placement of stems and clusters. Organization can start with a strict grid, which can be interpreted as a city block or structural system (see fig. 22). This initial grid will be interpreted from the circulation patterns of the existing site context. From there, programmatic nodes are strategically placed to create areas of higher energy. By predicting the main circulation paths between the nodes, main circulation corridors can be determined. This might be related to a highway or a vertical circulation shaft. The combination of programmatic nodes and main circulation paths create the fixed organization (stem) from which all other streets and dwellings can be placed around (clusters).

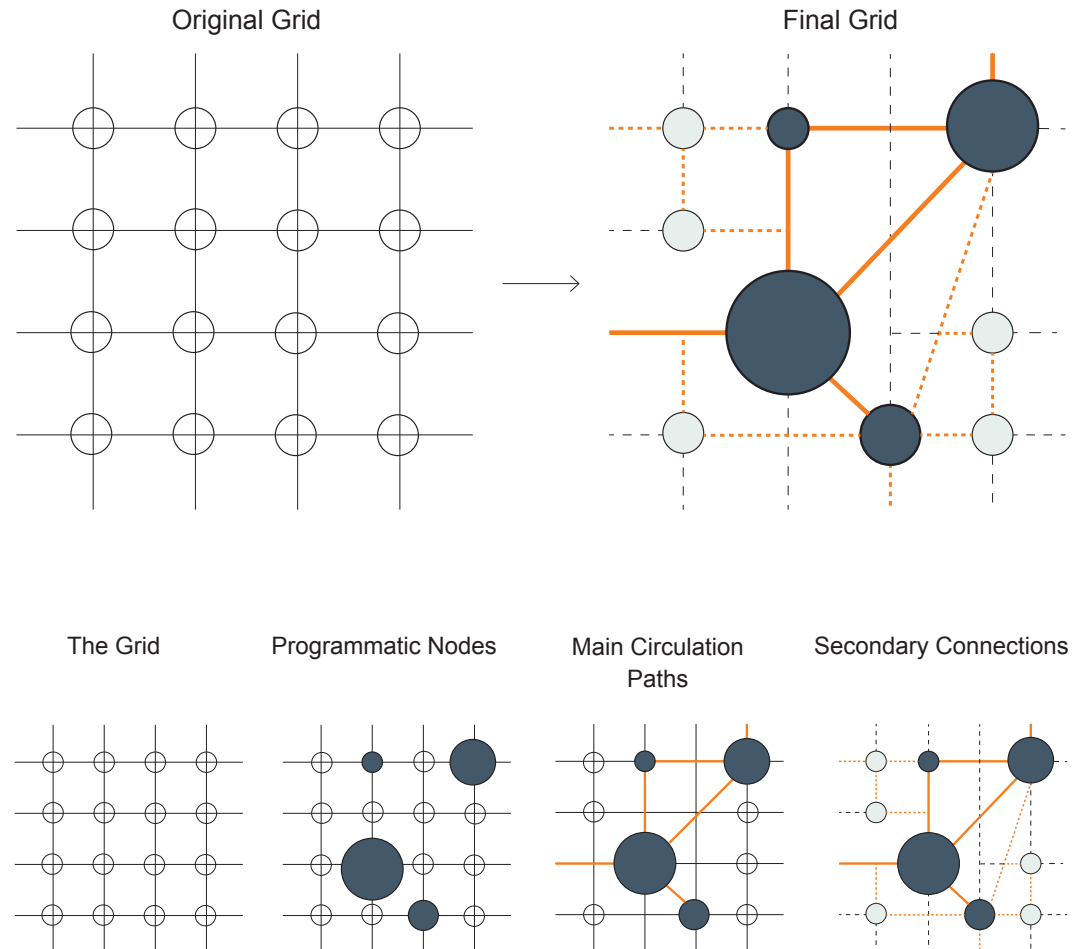


Figure 22. System organization

Flexibility (Kit-of-Parts)

The idea of the incomplete building allows room for the inhabitant to complete a space to tailor to their specific needs. This could include the number of rooms, movement of furniture, or even the change in the size of the dwelling. In order to allow for maximum flexibility, larger spaces with minimal load bearing walls are ideal.⁵⁴ To counteract the disorder of personalization, certain elements need to be clearly defined (such as the staircase, bathroom, walls). Till and Schneider divide building elements into two categories: hard and soft.⁵⁵ Hard elements are those that are fixed and designed for specific intentions while soft elements are those that are more flexible and open for adaptation. Hard technology includes systems of support and infill, and soft technology includes prefabricated elements that can be edited or used in new ways for customization (see fig. 23).⁵⁶ Flexible living spaces can aid to the retention and attraction of young adults through means of affordability, providing live/work opportunities, and community building.

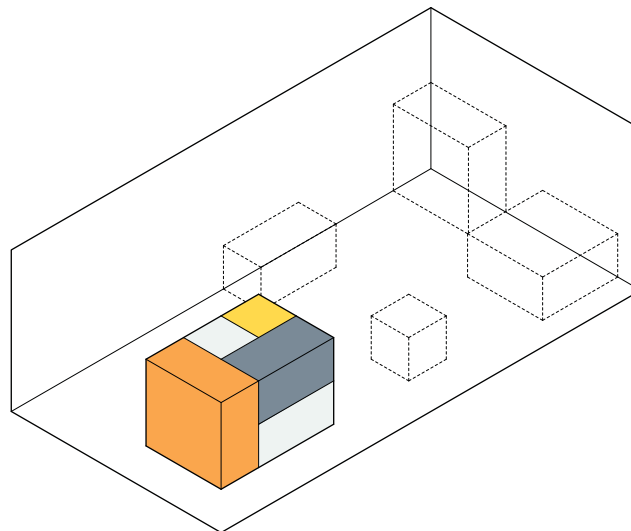


Figure 23. Kit-of-parts- the architect provides the building blocks that can be manipulated by the inhabitants to create various living spaces

54 Jeremy Till and Tatjana Schneider, "Flexible Housing: The Means to the End," *Architectural Research Quarterly* 9, no. 3-4 (2005): 295.

55 *Ibid.*, 289.

56 *Ibid.*

Affordability

Having a simple material palette and kit-of parts allows a building to provide a large range and quality of spaces while using standard, repetitive, and modular materials. This helps cut down on costs of materials and labour. This type of thinking is supported in the *Team 10 Primer*:

In any house the problems are vastly different from those of a car, where only a few things can be eliminated without destroying its performance. In a house there are many variables. And the removal of some [...] would not fundamentally alter the performance. Therefore, a house designed like a car is at some disadvantage, for the appliances would be so closely integrated into the structure, that to change the refrigerator would be like getting a larger glove compartment in a Volkswagen dashboard-it would be simpler to get a new car.⁵⁷

The option for flexibility allows tenants to inhabit a place long-term through its adaptability rather than simply opting for something brand new. This helps enable long term residency and also allows those who cannot afford to move the opportunity to stay in place.

Community Building

At the scale of the building, flexibility allows the community to adapt units to fit their current needs. At the scale of the unit, it allows residents to express their individualism within a modular framework, creating a sense of ownership, pride, and identity within the larger community. Differentiation is also necessary in order for one to compare and comfortably situate themselves around others.

Live/Work

Flexibility allows living spaces to be adapted to difference uses, including live/work programs. Having the ability to earn an income where you live cuts down on transportation costs. In particular the ability to become self-employed helps tackle issues of unemployment and in return, the affordability of dwelling. In the article *Live-Work And Community: A Natural Marriage*, Dolan advocates for the benefits of live/work communities. Dolan emphasizes that because mixed-use developments are busy throughout all times of day, and keep people living/working within the same area- they foster a stronger sense of belonging and ownership of com-

⁵⁷ Quote by Peter Smithson from; Smithson, and Team 10, *Team 10 Primer*, 99.

munity.⁵⁸ This can also offer opportunity to facilitate aging in place because of the walk-ability to resources as well as the flexibility of space.

Community Participation

When considering integrating public space into residential buildings, it is important to acknowledge that you cannot force residents to participate in public activity. For this reason, an understanding of current trends in public life is necessary to design the proper program that successfully creates better communities.

The quality of modern public space has been under criticism since the beginning of capitalism and secularism. This feeling has been shared by many philosophers and professionals of the twentieth century such as Susan Buck-Morss,⁵⁹ Christine Boyer,⁶⁰ and Henri Lefebvre.⁶¹ In Richard Sennett's *The Fall of Public Man*, he concludes that people have become increasingly more narcissistic and in turn, more self-conscious.⁶² This has made public life an opportunity to affirm one's own identity rather than learning to play, socialize, and let loose- leaving your personal identity with your private life. Public space has become a place to quietly watch and be watched, and a place to move through rather than a place to stay.

While there are definite changes within public behavior between the eighteenth and twenty-first centuries, it is important to note that this is not necessarily a negative change. Although active and playful participation within the public may have become less popular, in other ways, people have become more connected than ever through modes of social media and the internet. Muilenburg-Trevino notes that while active participation in community events is one way of achieving a sense of community, it is not dependent on it.⁶³ In the article *Live-Work and Community:*

58 Thomas Dolan, "Live-Work And Community: A Natural Marriage," 94.

59 Susan Buck-Morss, *The Dialectics of Seeing : Walter Benjamin and the Arcades Project*, 1st MIT Press Pbk. ed. Studies in Contemporary German Social Thought. Cambridge, Mass.: MIT, 1991.

60 Christine M. Boyer, *The City of Collective Memory: Its Historical Imagery and Architectural Entertainments*, Cambridge, Mass.: MIT Press, 1994.

61 Henri Lefebvre, and Donald Nicholson-Smith, *The Production of Space*, Oxford; Cambridge, Mass.: Blackwell, 1991.

62 Richard Sennett, *The Fall of Public Man*, New York: W.W. Norton, 1992, 333-336.

63 Evie Muilenburg-Trevino, Megan Pittman, and Mary Holmes, "Sense of Community and

A Natural Marriage, Dolan investigates how to avoid social isolation in mixed-use buildings through informal or passive means. He argues that passive participation is most important in fostering a sense of community by creating familiarity and a feeling of safety.⁶⁴ The time between when someone enters their building to when they enter their front door is critical in creating a sense of community for those who are not directly active.⁶⁵ Passive participation draws many similarities to social media where people can browse others activities without directly becoming involved.

While passive participation is important, community attachment still includes both affective and behavioral components.⁶⁶ This means that both emotional bonding and physical involvement need to be addressed. Both active and passive participation are necessary in fostering a sense of community and social life. Active participation creates activity for others to witness and absorb passively. These methods of participation play a role in both the programming of the building (providing nodes of activity), and the detailing of circulation and site lines, providing awareness of surrounding activities through the senses (see fig. 24).

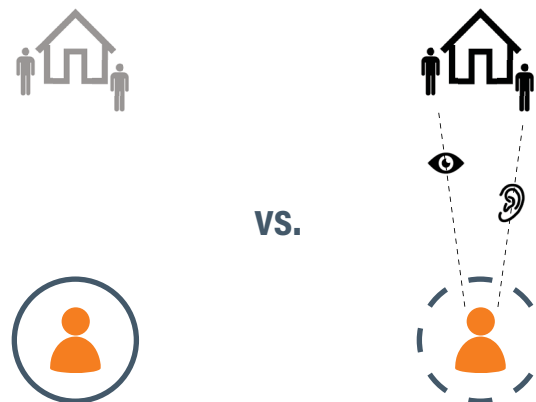


Figure 24. Passive participation through porosity

Income as Indicators of Life Satisfaction,” *Journal of Alternative Medicine Research* 4, no. 3: 314.

64 Thomas Dolan, “Live-Work And Community: A Natural Marriage,” In *Live-Work Planning and Design*. Wiley, 2012. Accessed October 4, 2016. ProQuest Ebook Central, 96.

65 *Ibid.*, 96.

66 Chelsea Eacott, “Beyond Education and Employment,” 202.

Culture of Fear

Since current developments do not include public program, it is important to note that one reason for this is the perception of fear and safety. In her article *Whose Culture? Whose City?*, Zukin discusses the commercialization of public space and how it has led to the decline of meaningful public interaction.⁶⁷ Although culture is believed as the antidote to privatization, it is often used as a tool to create social order and define between “us” and “them”. As immigration has increased, culture has been increasingly capitalized and aestheticized to define who should be seen, when, and where. Sharon highlights the distinction of otherness as the culprit for the fear of public space.⁶⁸ This otherness can be cultural, economic, age, race, etc. This perceived danger of being in public has destroyed the opportunity for open access within buildings and has crippled opportunity for public interaction.

The main way to increase a sense of safety and security in a neighbourhood is to increase the sense of familiarity to the place/people. This reinforces the importance for passive community participation and the creation of familiar sensory cues that make a place more predictable. Being familiar with your neighbours through seeing others private and semi-private routines increases a sense of trust and dependency within communities.⁶⁹

Case Studies

Three buildings are chosen as case studies for this thesis based on shared methods for pieces of their design. The design intentions are important to analyze in order to test if the design methods were successful in the final building. The case studies include: *Robin Hood Gardens*, *Nemausus Housing Project*, and *60 Richmond Street East*.

67 Sharon Zukin, “Whose Culture? Whose City?” from *The Cultures of Cities* (1995),” In *The City Reader*, edited by LeGates, Richard T., and Stout, Frederic. 4th ed. Routledge Urban Reader Series. London: Routledge, 2007, 131.

68 *Ibid.*, 132-133.

69 Margarethe Kusenbach, “A Hierarchy of Urban Communities: Observations on the Nested Character of Place,” *City & Community* 7, no. 3 (2008): 225-49.

Streets In The Sky: Robin Hood Gardens

Robin Hood Gardens is a social housing complex designed by Alison and Peter Smithson in 1972.⁷⁰ The architects intentions were to use this building as a test for the “streets in the sky” ideals that they had laid out with Team 10, and to address goals of building with simple materials at a low cost.⁷¹ The complex is composed of two linear buildings facing a central green space. The Smithsons created “streets” on every third floor where people can access their units, socialize, and play (see fig. 25).⁷² The success of this design has been under debate, mainly due to the buildings poor upkeep over its lifespan.⁷³ Its success in regards to the “streets in the sky” can also be criticized when compared to the values laid out in the *Team 10 Primer*. The streets in this project do not connect with the surrounding context, they do not lead to various types of program, they do not create various types of streets, and they exist as isolated lanes rather than a connected network to the city and units. For the purposes of this thesis, this project is studied as an example of how not to create a successful street.



Figure 25. Alison and Peter Smithson, Robin Hood Gardens. Source: Christian Skovgaard, Robin Hood Gardens. 2008; image from Flickr.

70 Sofia Balters, “AD Classics: Robin Hood Gardens / Alison and Peter Smithson,” ArchDaily. Accessed January 2, 2017, <http://www.archdaily.com/150629/ad-classics-robin-hood-gardens-alison-and-peter-smithson/>

71 Ibid.

72 Ibid.

73 Ibid.

Kit-Of-Parts: Nemausus Housing

Nemausus is an affordable housing block located in Nîmes, France, designed by Jean Nouvel in 1985.⁷⁴ The design of this building is centered around providing large, flexible living units while keeping them as inexpensive as possible⁷⁵. For flexibility, these buildings were left partially incomplete with high ceilings and open spaces, in order to allow tenants to pick the final touches of their space (see fig. 26).⁷⁶ Essential elements were contained to small areas, leaving the rest of the apartment open (see fig. 27). In order to achieve large unit sizes, corridors and stairways were made as small as possible. This is counteracted however by the large balconies that provide the collective space that the corridors do not (see fig. 28).⁷⁷ To achieve the low cost requirement, industrial materials (concrete and aluminum) and prefabricated elements were used in both the interior and exterior of the building.⁷⁸ Many of these tactics will be used for the design of this thesis, specifically the organization of the unit plan, the use of standard materials, and the integration of the unit to the main circulation through operable walls.

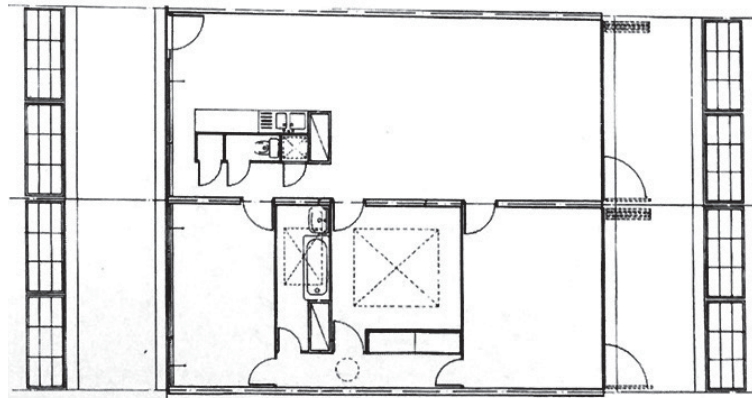


Figure 26. Jean Nouvel, *3 Room Apartment*; from Ramias Steinemann, "Global Housing Projects: 25 Buildings Since 1980."

74 Jeremy Till, Tatjana Schnieder, "Flexible Housing: The Means to the End," 288.

75 Ramias Steinemann, "Global Housing Projects: 25 Buildings Since 1980," *Architectural Papers* (Eidgenössische Technische Hochschule Zürich), Barcelona ; New York: ETH Actar, 2008, 26.

76 Till, "Flexible Housing: The Means to the End," 288.

77 Ramias Steinemann, "Global Housing Projects: 25 Buildings Since 1980," 26.

78 Ibid.

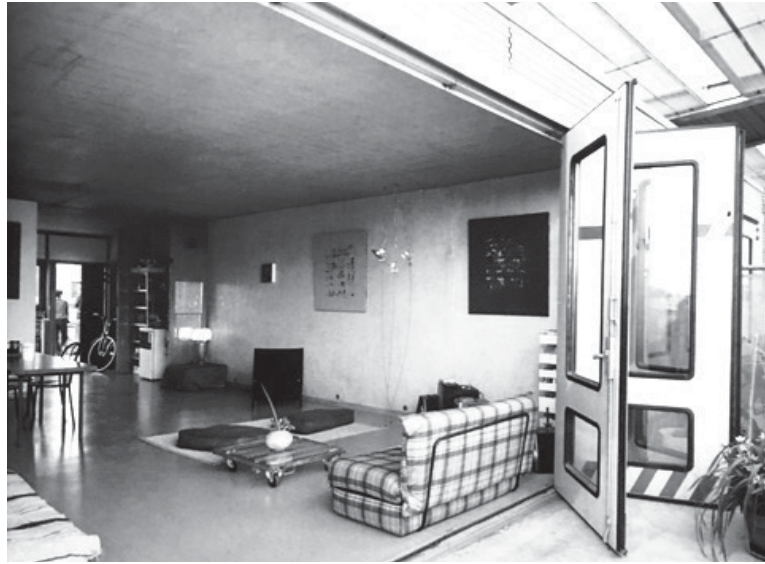


Figure 27 + 28. Georg Fessy, *NEMAUSUS*; from Ramias Steinemann, "Global Housing Projects: 25 Buildings Since 1980."

Creating Employment: 60 Richmond Street East

60 Richmond Street East is a mixed-use rental housing cooperative designed by Teeple Architects Inc. It was designed for individuals who were displaced by the Regent Park social housing project, and integrates economic program that provides employment for its residents.⁷⁹ The building includes a resident-owned and operated kitchen/restaurant on the ground floor, with food supplied from a garden on the upper floors (see fig. 29).⁸⁰ The use of program is the reason that this project is chosen as a case study. Having a building that provides mixed-use program that feeds into a system of employment is something that will be borrowed, along with the possibility for residents have business ownership.

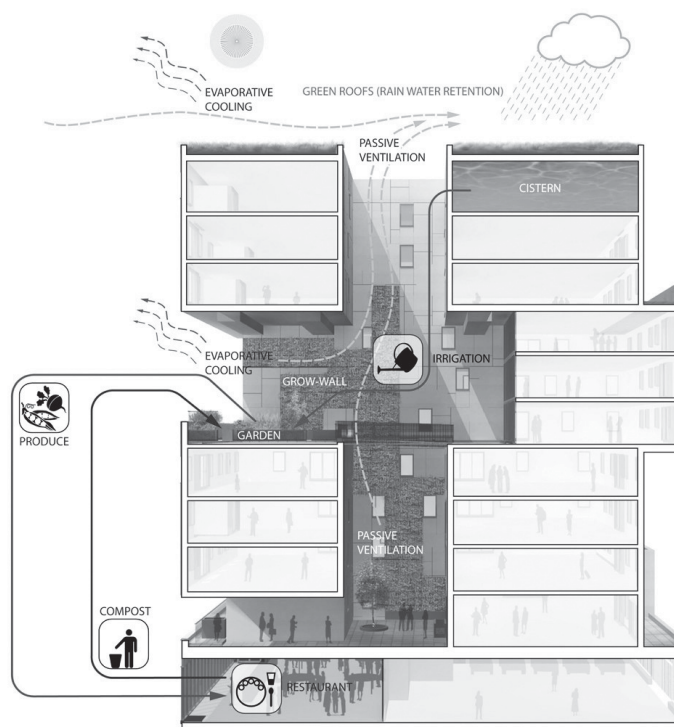


Figure 29. Richmond street east section; from Margaret Goodfellow, and Phil Goodfellow, "A Guidebook to Contemporary Architecture in Toronto."

⁷⁹ Margaret Goodfellow, and Phil Goodfellow, "A Guidebook to Contemporary Architecture in Toronto," Vancouver [B.C.]: Douglas & McIntyre, 2010. eBook Collection (EBSCOhost), EBSCOhost (accessed March 1, 2017).100.

⁸⁰ Ibid.

CHAPTER 4: DESIGN

The Site

The site for this thesis is on 6067 Quinpool Road, a central location within the Halifax peninsula (see fig. 32). This site is chosen for its accessibility, its need for affordable housing, and the strong community that surrounds it. It is within one block of eleven major bus routes and is walkable to the public commons, grocery stores, schools, and other amenities (see fig. 30 + 33).⁸¹ Its placement on a commercial street makes the site ideal for providing employment and live/work opportunities, and the high pedestrian traffic on Quinpool can also feed traffic and life into the site (see fig. 31).

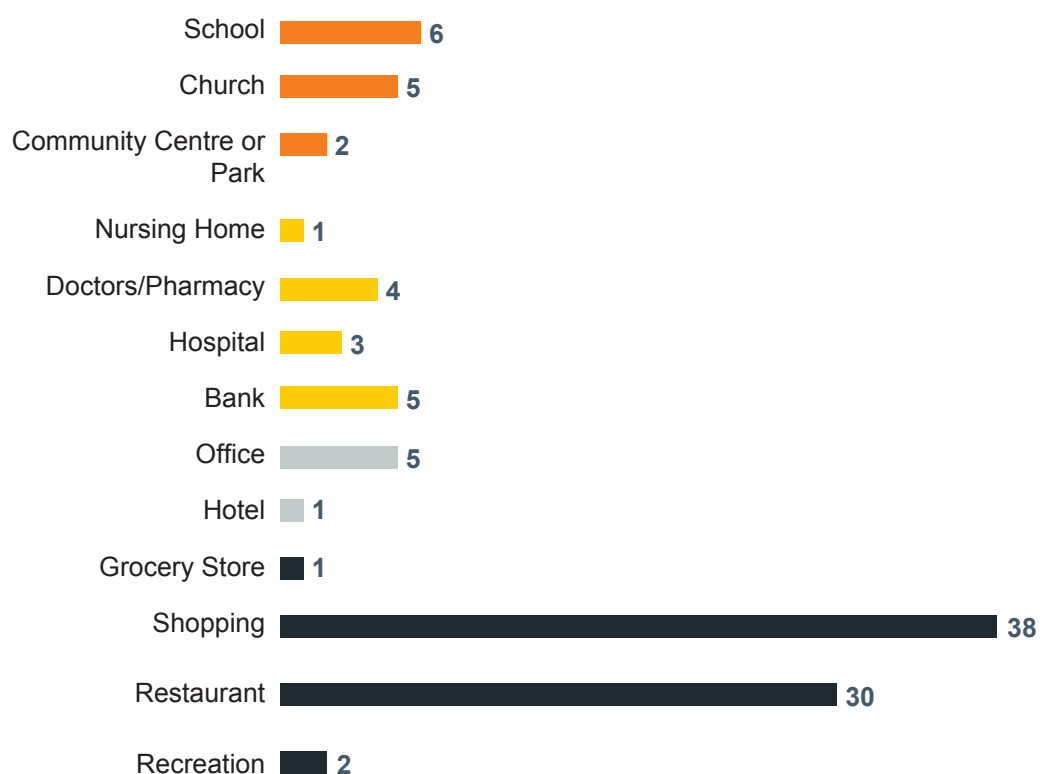


Figure 30. Non-residential programs within 10 minute walking distance

The site is currently empty, and was formerly used as a public high-school and community centre.⁸² Its ownership by the city gives it greater possibilities for public

81 "Schedule and Route Information," Halifax Transit, accessed March 2, 2017, <https://www.halifax.ca/transit/Schedules/>

82 "St. Pats High Site Proposal Leads to HRM Planning Committee," The Chronical Herald, published July 10, 2016, <http://thechronicleherald.ca/metro/1379208-st.-pat's-high-site-proposal-heads-to-hrm-planning-committee>

and affordable programs than if it were owned by a developer. Studies from 2011 show that only 46% of residents living in the immediate area can afford the median dwelling cost and 20% of residents are living in unsuitable housing.^{83 84} These figures display a need for better housing, and more affordable housing options within the area.

Finally, the lot exists within an already strong community that can be built upon for this thesis. This is displayed through the sites previous programs, and by community organizations such as the *Willow Tree Group* who advocate for positive changes in the neighbourhood.⁸⁵ The community even has its own website to notify the city of current events, amenities, and developments.⁸⁶



Figure 31. Quinpool Road

83 CensusMapper, "Households Qualifying to Buy Median Dwelling (Canada Census 2011)," Accessed November 20, 2016. <https://censusmapper.ca/maps/465#15/44.6510/-63.5887>

84 Census Mapper, "Unsuitable Housing (Canada Census 2011)," accessed November 20, 2016, <https://censusmapper.ca/maps/100#10/49.2418/-123.0386>

85 "Willow Tree Group," accessed March 2, 2017, <https://willowtreehalifax.wordpress.com>

86 The website link is "<http://www.quinpoolroad.ca>"



- Main shopping and business zones
- Universities and colleges
- New development- under construction
- New development- approved
- New development- planned
- >50% of population spending >30% of income on shelter
- 40-50% of population spending >30% of income on shelter
- 35-40% of population spending >30% of income on shelter
- 30-35% of population spending >30% of income on shelter
- 10 minute walking distance
- 10 minute bus ride
- 20 minute bus ride



Figure 32. Map of Halifax Regional Centre; data from “PDC Construction Site.” and Google Maps.

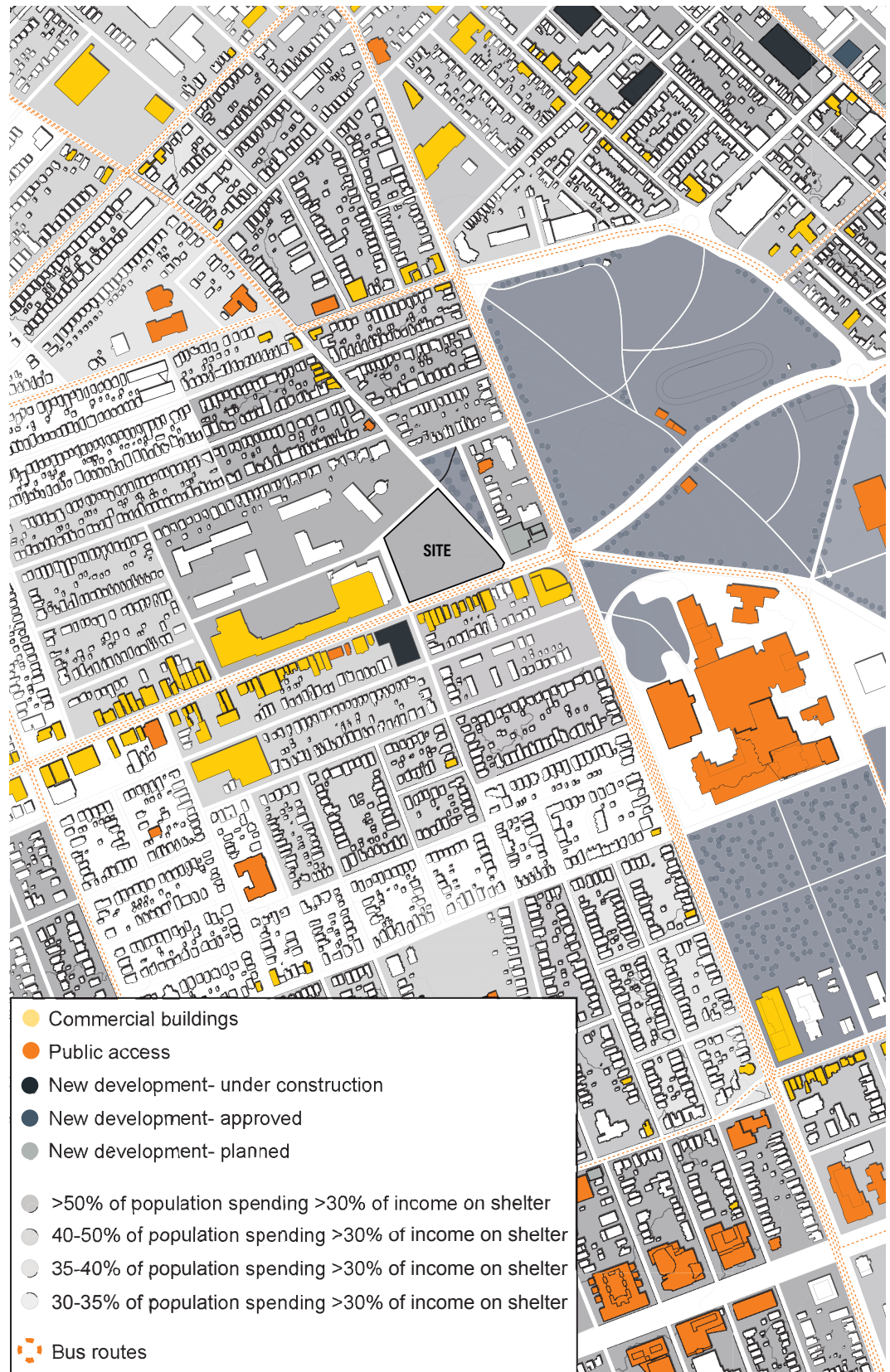


Figure 33. Site map; data from “PDC Construction Site.” Google Maps, and Halifax Open Data.

The Building

The Grid

The design starts with the establishment of a grid of units and fixed programmatic nodes on site (see fig. 34). Unit clusters are arranged based on climatic site conditions, as well as providing a strong shopping front on Quinpool Road. From the units, three programmatic nodes are established: a paved courtyard to feed pedestrian traffic from Quinpool road (one), an interior atrium to allow year-round gathering (two), and a green space adjacent to the public park to provide a side yard to residents and flexible community space (three). All of these elements are used to determine the placement of major streets (stems) on site.

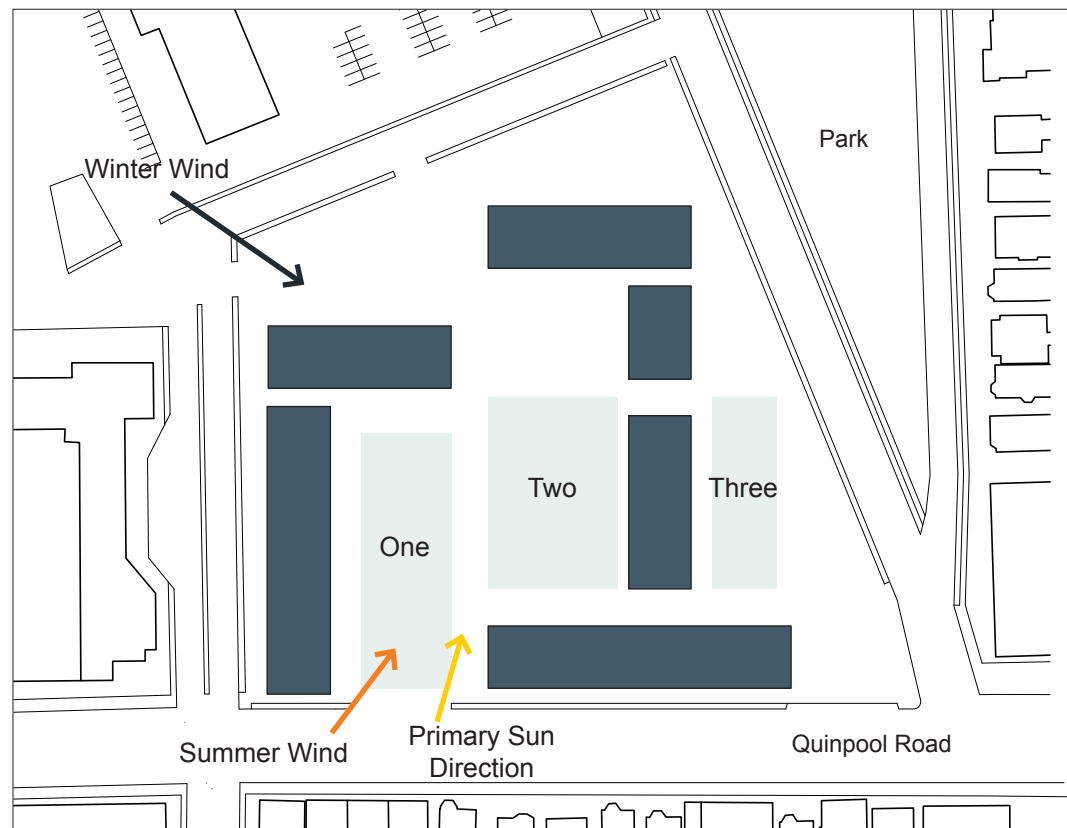


Figure 34. The fixed elements- stage 1

Stem and Cluster

Following the grid, two main stems are placed. On the ground floor, the primary stem runs perpendicular to Quinpool Road, bringing traffic from the street into the site. Inside the building, the stem runs parallel to Quinpool, connecting the main unit clusters and the three programmatic nodes. These primary stems grow into secondary and tertiary stems (including vertical circulation cores) to connect the rest of the units. This can be seen in Figure 35 where the stems are highlighted in orange and the clusters in blue. The final site plan that incorporates the grid as well as the stem and clusters can be seen in Figure 36.

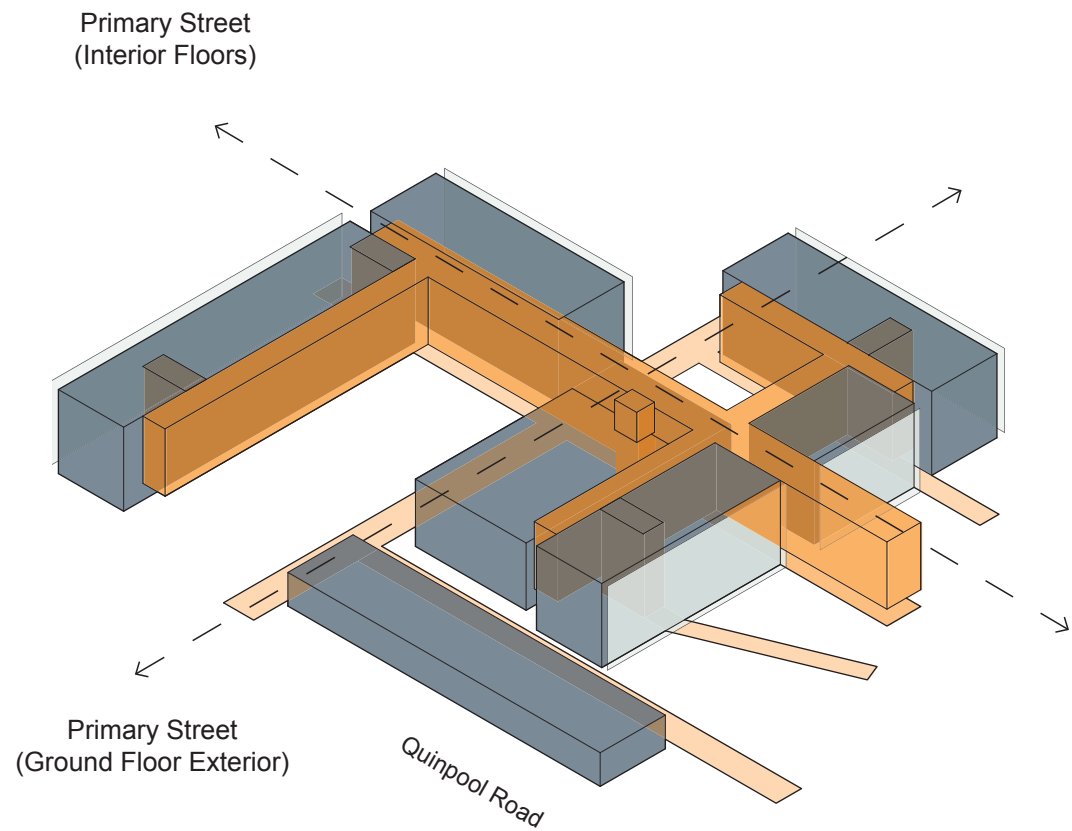


Figure 35. Stem and cluster- stage 2

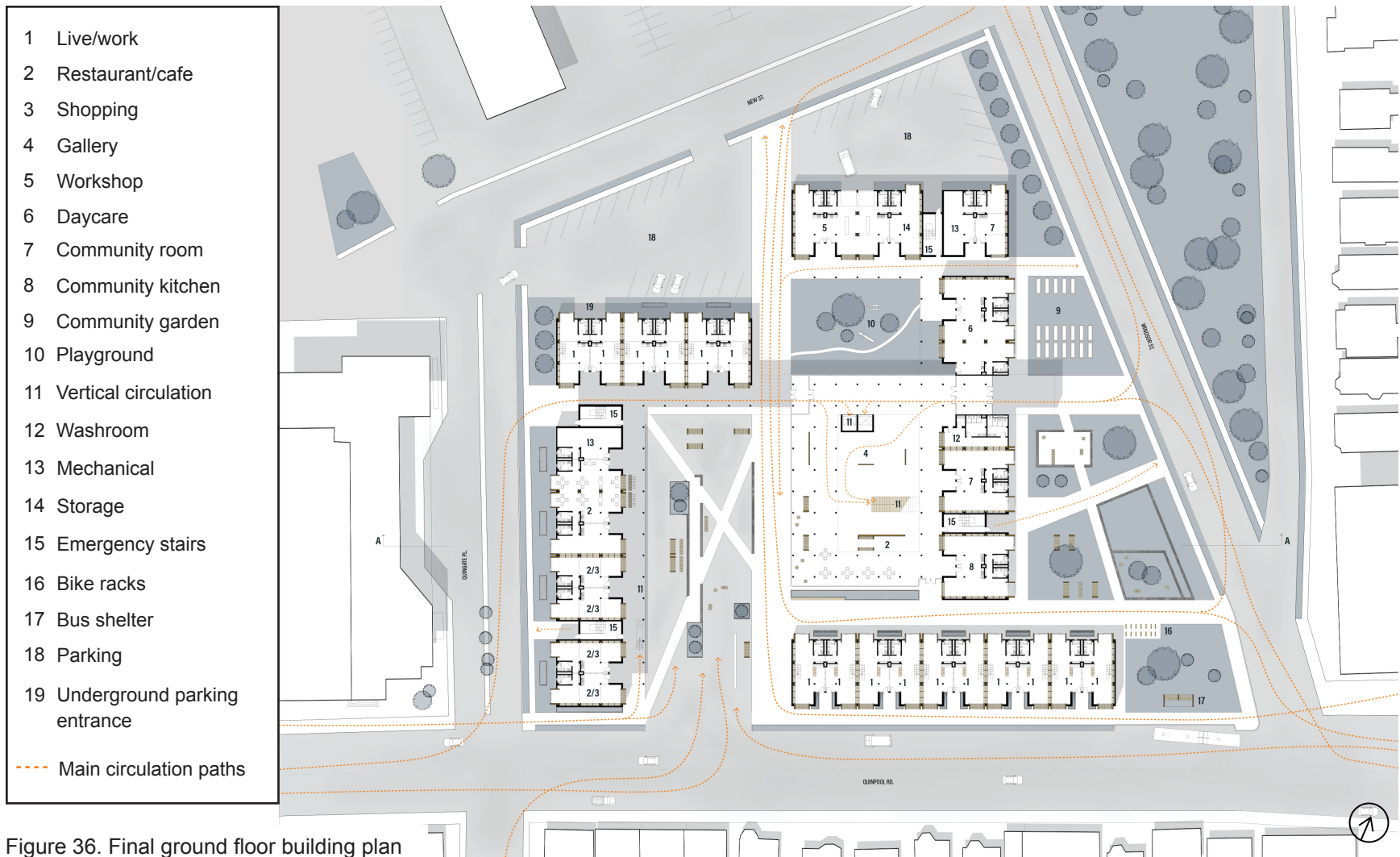


Figure 36. Final ground floor building plan

The Vertical Street

In order to integrate the street and city into the building, it is important to strategically place public program throughout the design. This generates foot traffic and energy throughout the building in order to promote street activity. Figure 38 is a diagram showing scales of public and private program and their connections. This diagram is a proposition of possible programs that create a network of public space through the design (see fig. 39).

In deciding what type of programs to use, the theme of employment is important. Figure 38 is divided into three sections: networking, production, and sales. The idea is that these spaces can help individuals find resources for their fields, such as other people, materials, and/or spaces for creating and meeting. There are also options for rental spaces to start store fronts, and market spaces for those who cannot afford something more formal. The store fronts and main street connecting Quinpool to the site help to integrate the project into the larger community. This establishes an environment where the residents are more aware of available resources and feel a sense of ownership and access to the resources.

The variety of programs should allow for all pieces of a business to take place, creating a system of production, education, sales, and networking. Throughout the building, selected units are picked as options for public activity, while the main street and circulation space has informal gathering areas for work and lounging (see fig. 40).

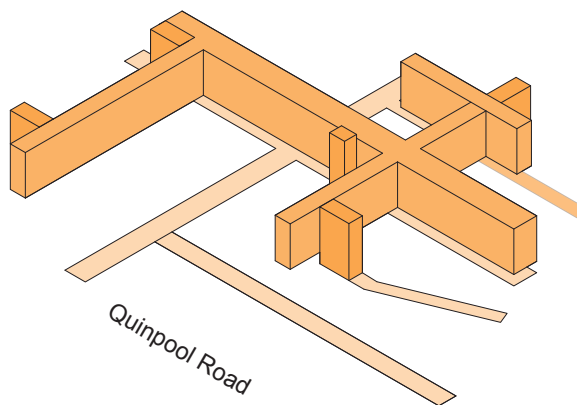


Figure 37. The streets of the building are isolated in orange

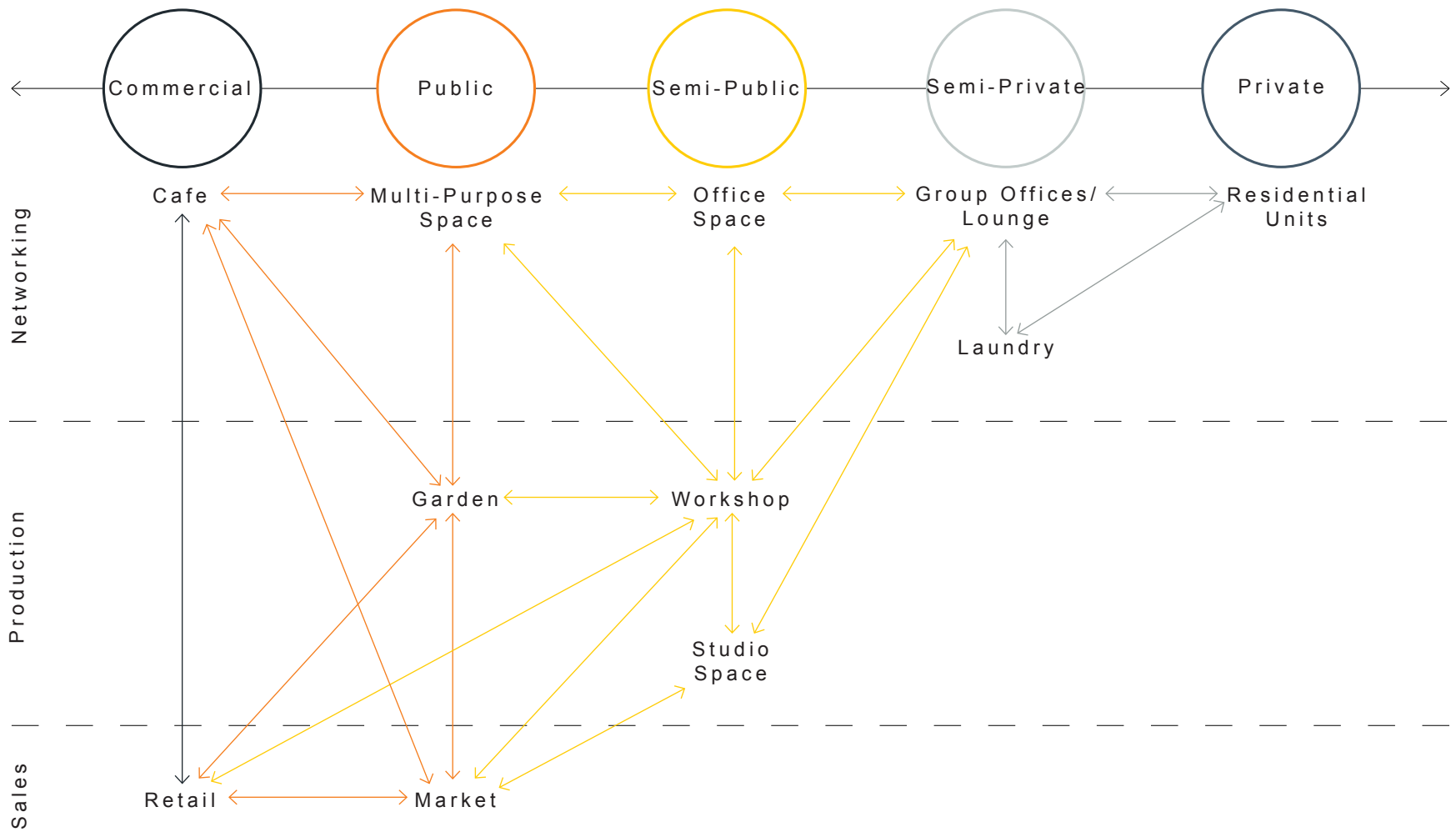


Figure 38. Program network



Figure 39. Sample of public and private program

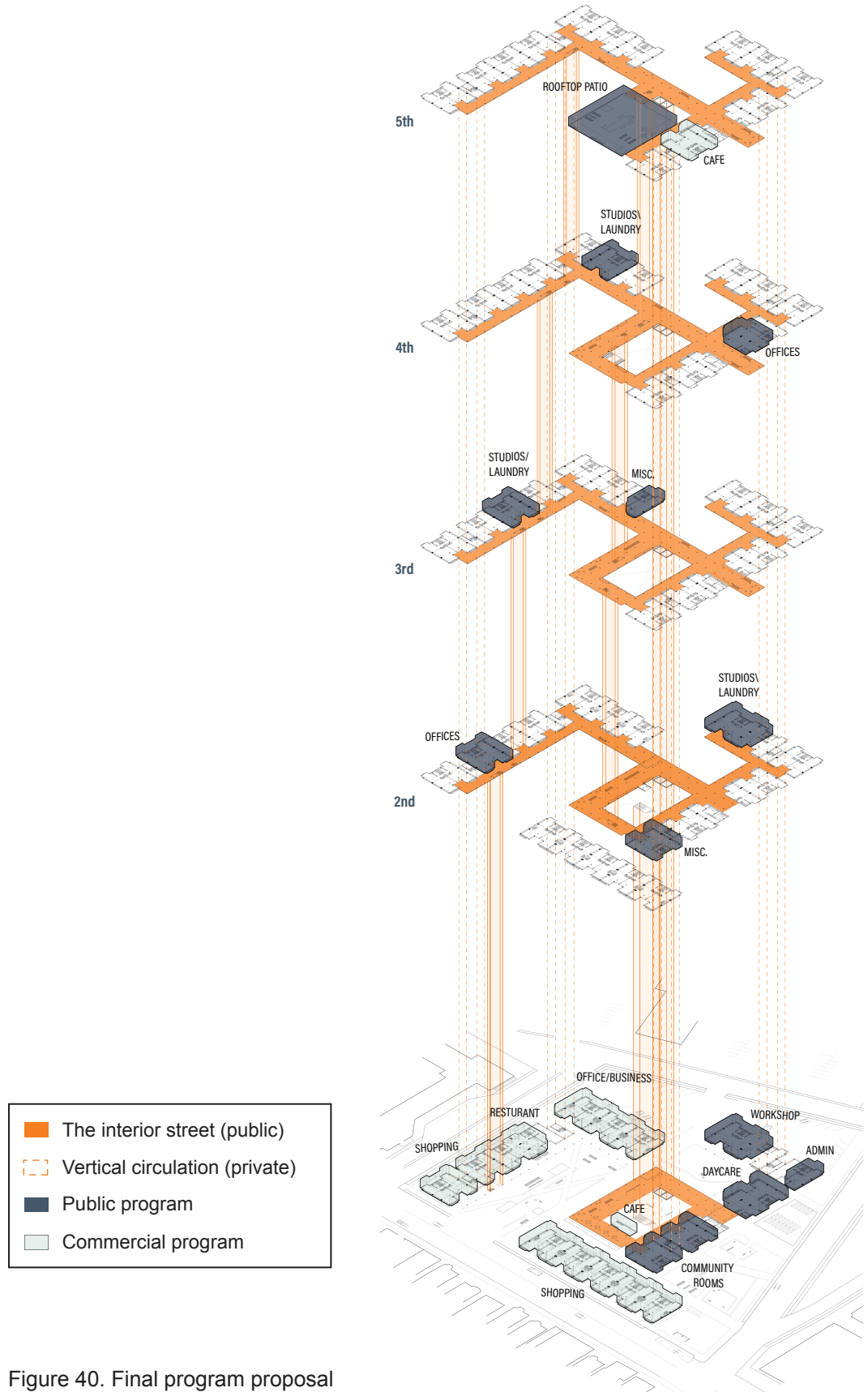


Figure 40. Final program proposal

In order to read public and private areas of the building through the facade, wooden louvres are placed on the exterior of the building envelope (glass). These louvres can be manipulated to create different levels of visual privacy depending on the program behind them (see fig. 41). In cases of vertical circulation and the most public spaces, they can be removed completely to create full transparency to the street (see fig. 42 + 43). This transparency is important for creating familiarity and awareness of community activity. The 6" deep louvres can also be used strategically to address sun shading needs. A complete section of the building can be seen in Figure 44.



Figure 41. Wooden louvres provide different levels of privacy

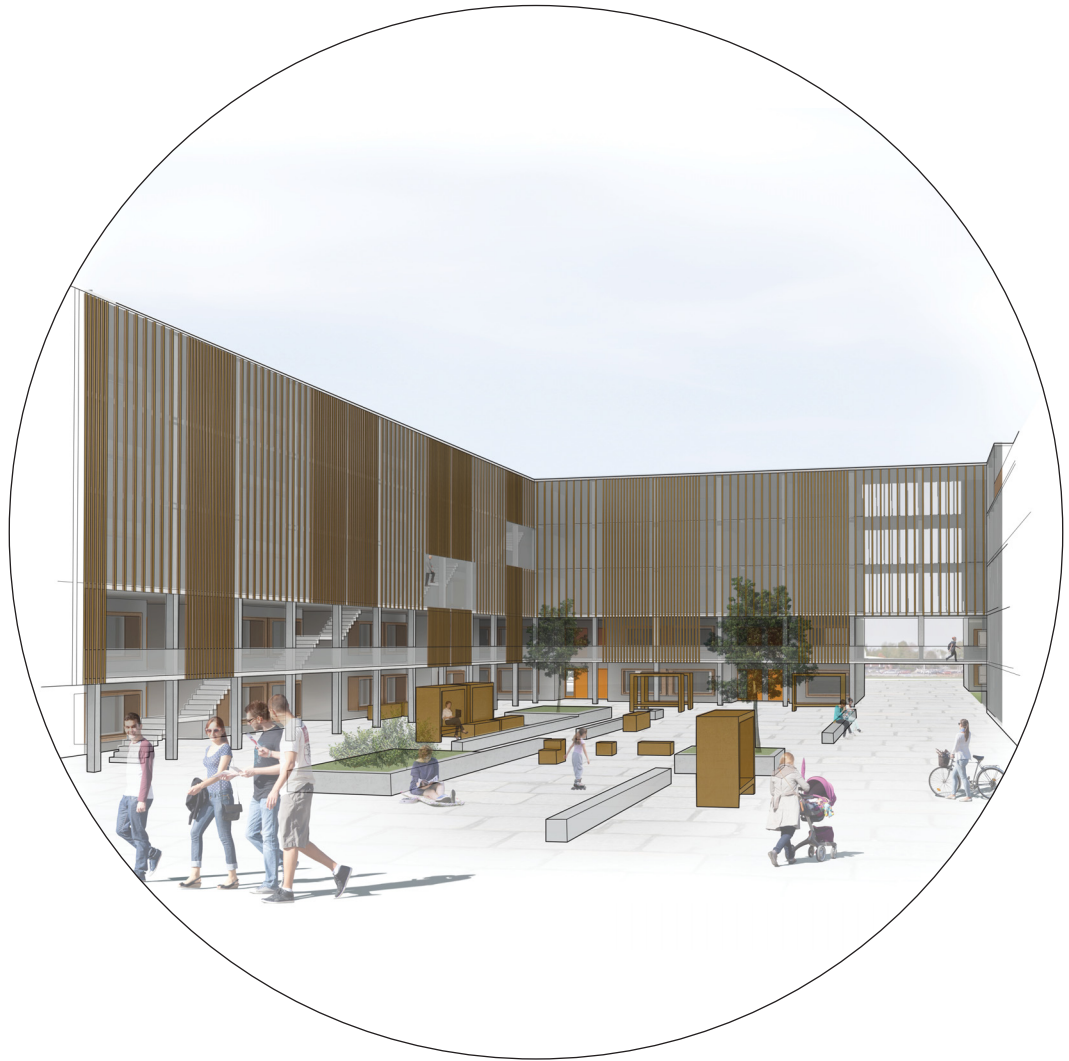


Figure 42. Exterior courtyard from Quinpool Road

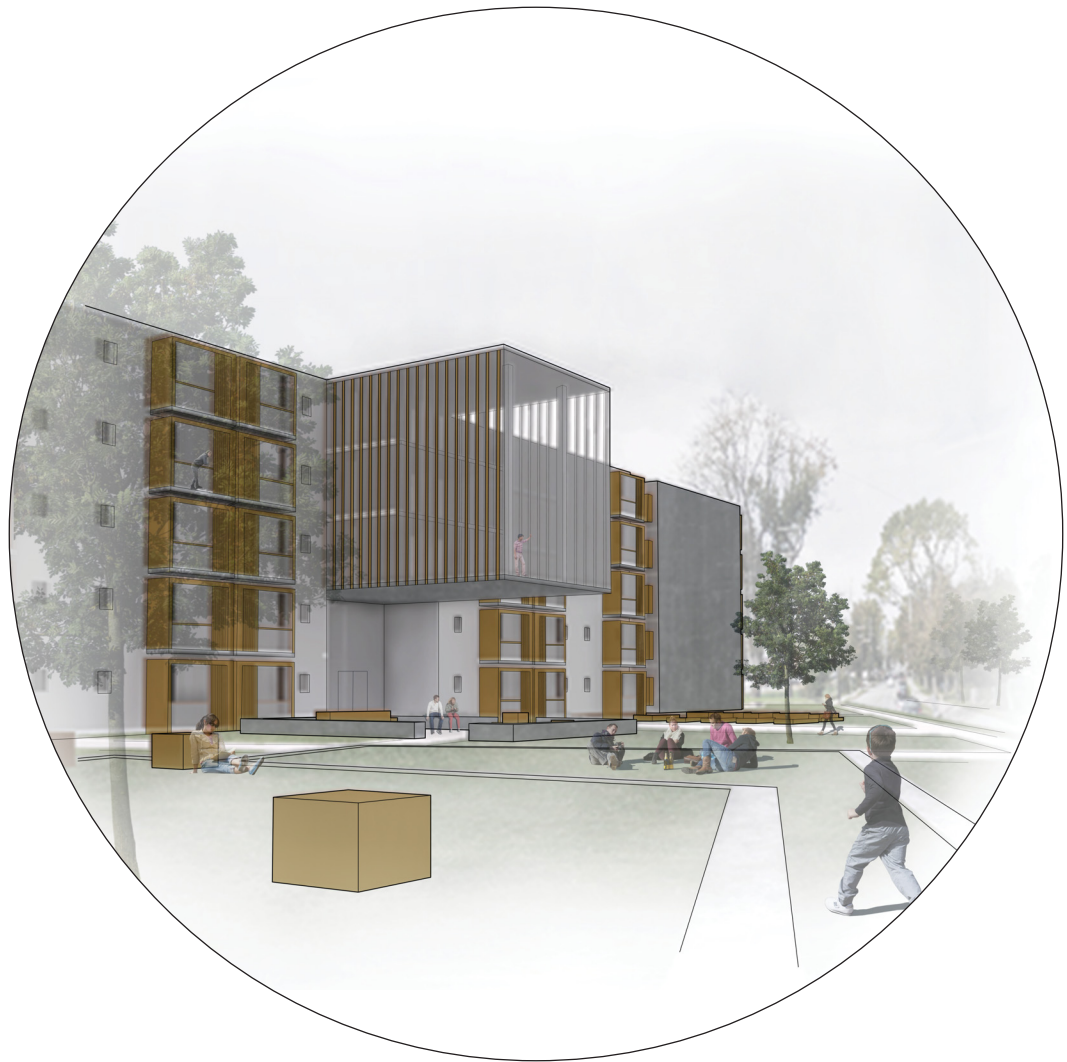


Figure 43. Exterior green space from the corner of Windsor Street and Quinpool Road



Figure 44. Hybrid section/elevation

Kit-of-Parts

The building is comprised of a structure and infill scheme where the concrete structure is fixed and the infill can be changed throughout time (see fig. 45). Dwelling and programmatic spaces can be strategically placed within the larger structural grid in order to create nodes of activity or pockets of open space. The infill is comprised of 160 identical and mirrored units (20' x 42'). These units can be used as residential, commercial, or public program, depending on the needs of the community.

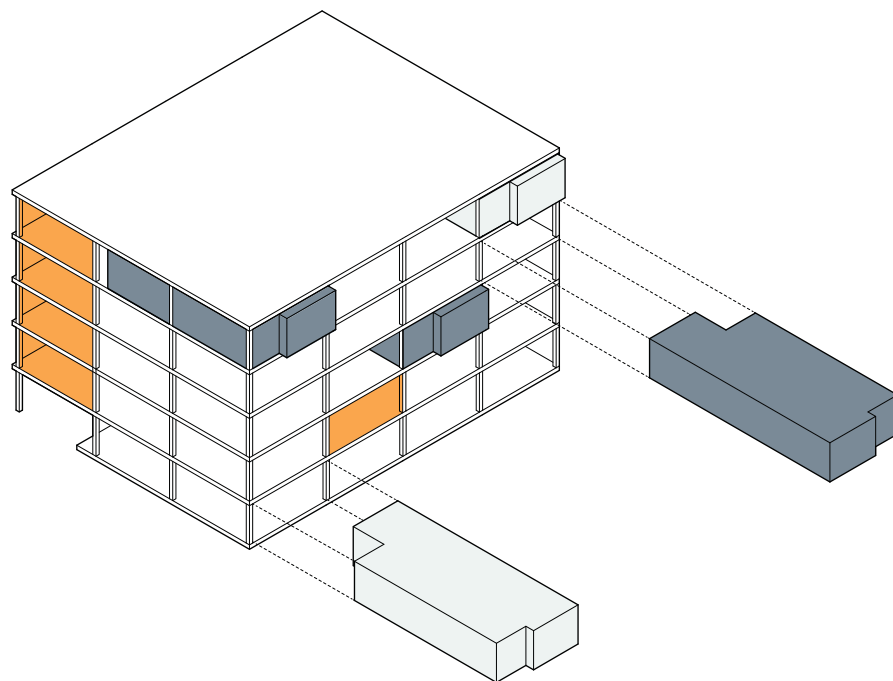


Figure 45. Structure and infill

The Unit

The unit is the basic building block for the design that makes up all programmatic areas of the building. The intention is to provide an open and flexible space that can be repeated, combined, and used in various ways. The final plan for the unit is shown in Figure 46. It is designed through the principals of stem and cluster, the vertical street, and the kit-of-parts.

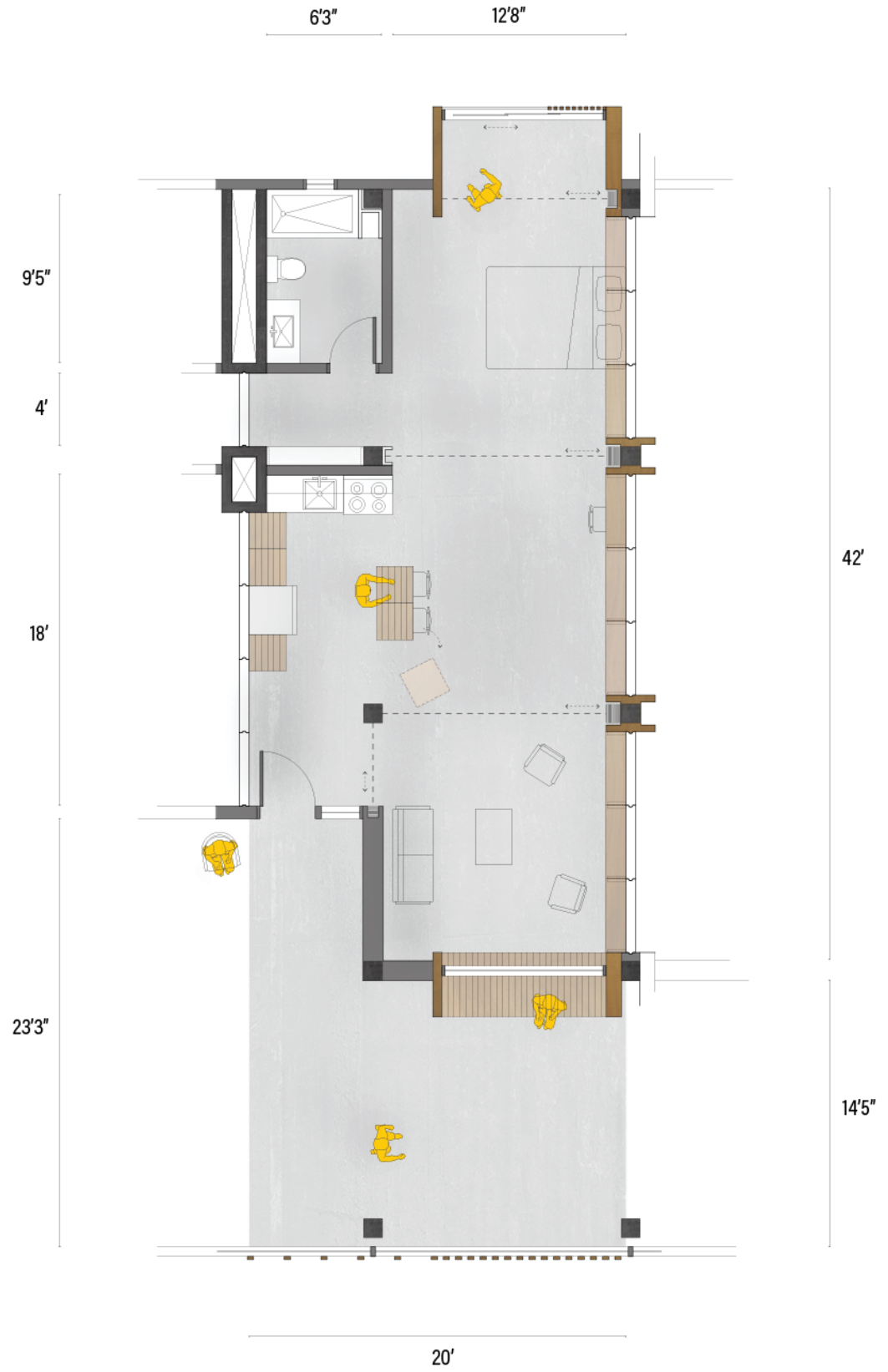


Figure 46. The unit plan

Stem and Cluster

The stem at this scale consists of the fixed elements of the unit, including wet areas and circulation. The clusters are the key living spaces that feed from the stem (see fig. 47). It should be noted that the stem of the unit connects directly from the stem of the building, creating a clear network of circulation.

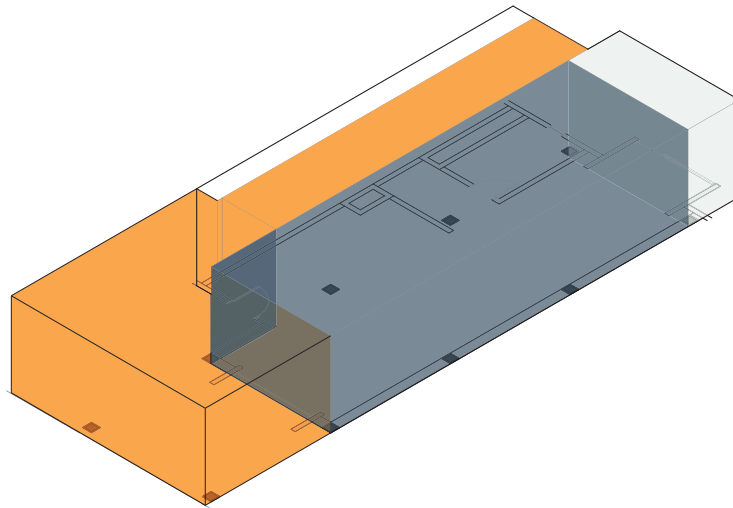


Figure 47. Stem and cluster- the unit

The Vertical Street

More important than the literal interpretation of the street is the idea of the street and its role as an intermediary space. A well designed intermediate space provides awareness of the activities around it.⁸⁷ It also provides distinction between inside and outside, and public and private. The interstitial space can be considered as the glue that connects clusters to the stem. This can be achieved through visibility and familiarity of neighbours and neighbourhood activities. In this design it is achieved by pushing wet areas towards the interior of the unit, and arranging living areas to face onto public pathways, similar to the organization of traditional suburban neighbourhoods (see fig. 48).

⁸⁷ Smithson, and Team 10, *Team 10 Primer*, 104.

By extruding the living spaces outwards, the entry gets pushed backwards into the units, creating a large porch area that can be used for gathering. It also creates a space for self expression through the placement of furniture.

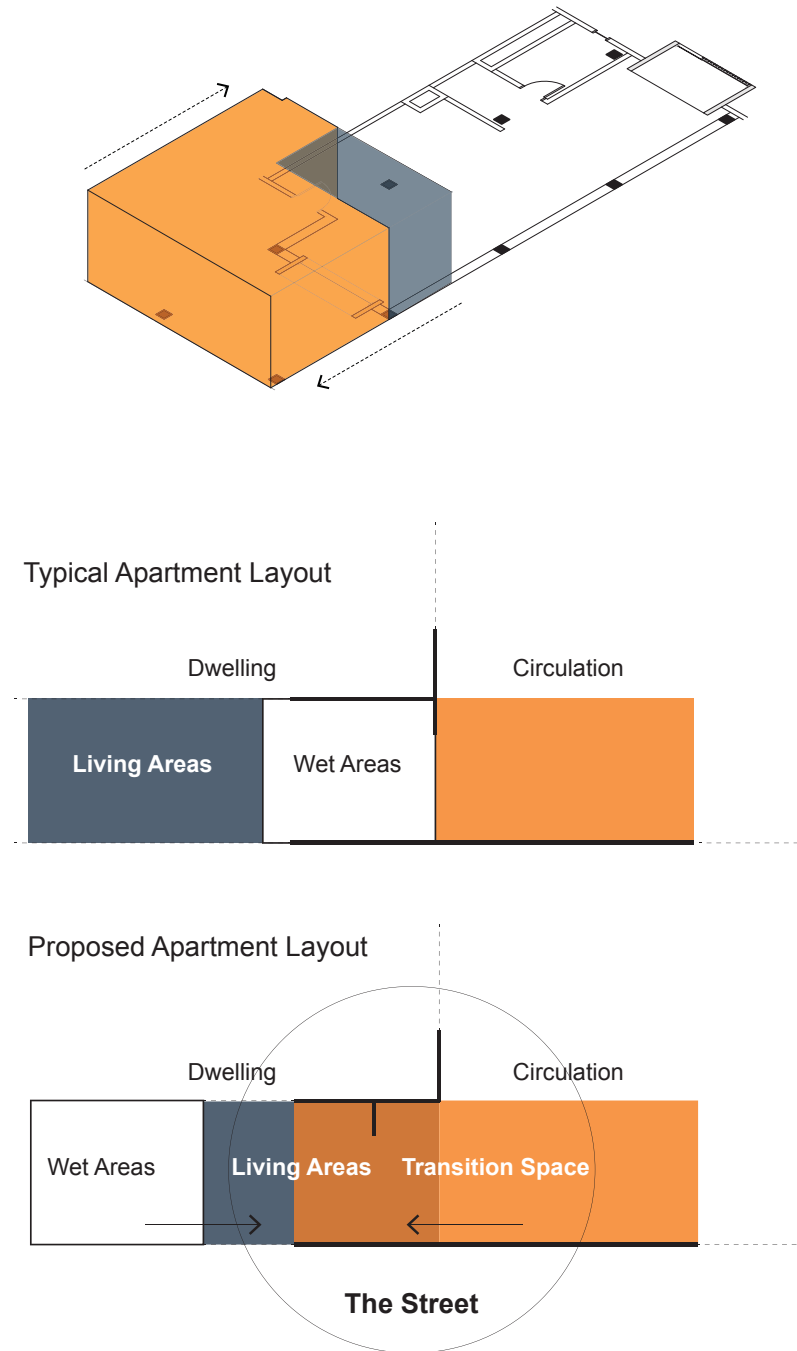


Figure 48. Engaging the unit to the street

Kit-of-Parts

The unit is minimally designed in order to allow the user to inhabit the space as they need. By organizing the fixed elements to the long side of the unit, this allows the main living space to remain open and flexible. The 775ft² unit is divided into three component groups: structure, fixed elements, and the hearth (see fig. 49). The structure consists of concrete columns and slabs on a 14' grid, with structural service cores shared between units. The fixed elements include plumbing fixtures, bathroom walls, and a portion of the kitchen. The hearth elements wrap the open space, allowing it to be divided and use in multiple ways.

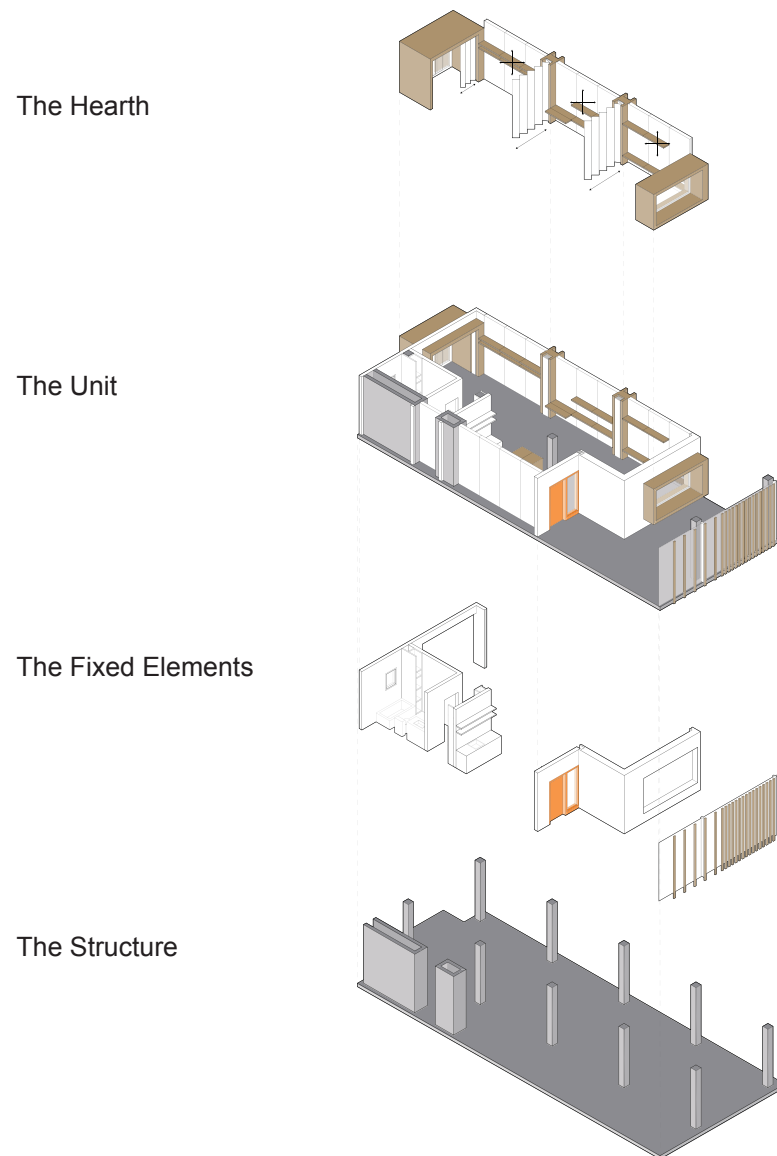


Figure 49. Kit-of-parts exploded axonometric

The hearth elements are key to creating flexibility within the unit. Four accordion wall panels allow the unit to be divided into three primary rooms and a temporary deck (see fig. 50). At either end there are two extruded frames: one at the front of the unit provides a place for sitting or display on the interior street, and one at the back that can be used as a temporary deck by opening the sliding glass doors and closing the accordion wall panel. Moveable wooden blocks allow the kitchen area to be rearranged when units are combined.

Finally, removable wall panels between units allow the flexibility of units to be combined with one another (see fig. 51). The removable panels that intersect the hearth elements also have the ability for shelves to be inserted into four predetermined heights (see fig. 52). These heights allow for a variety of living and working spaces to be created.

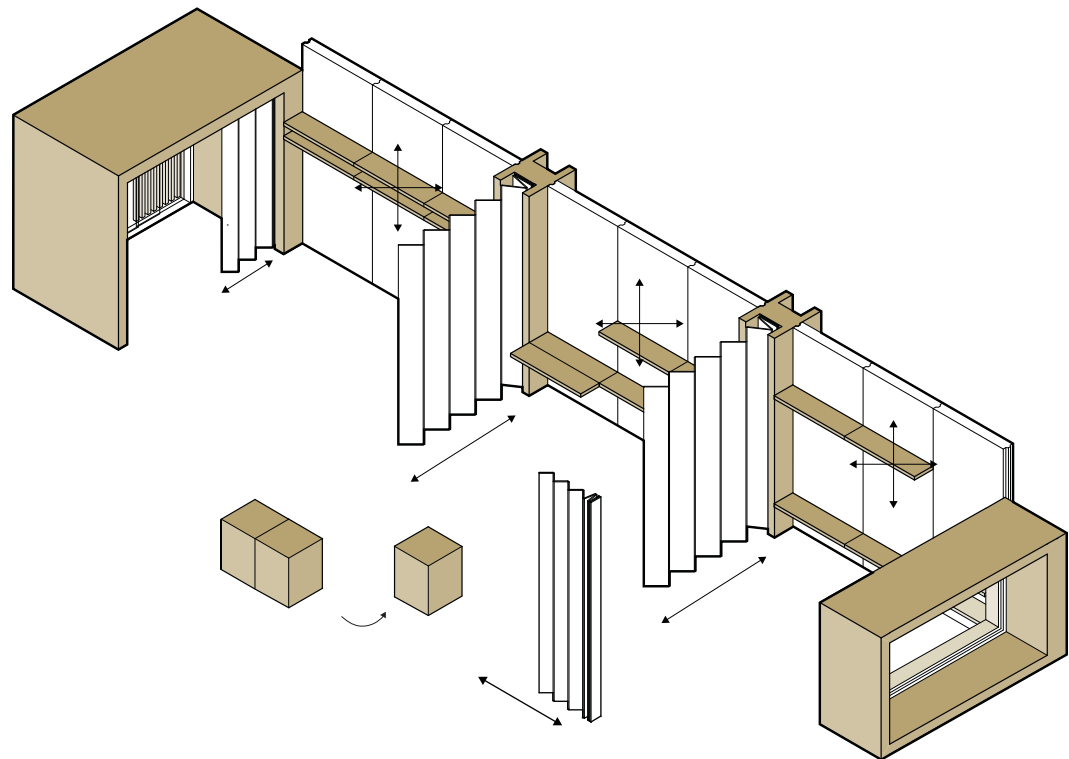


Figure 50. The hearth elements

Ceiling Connection

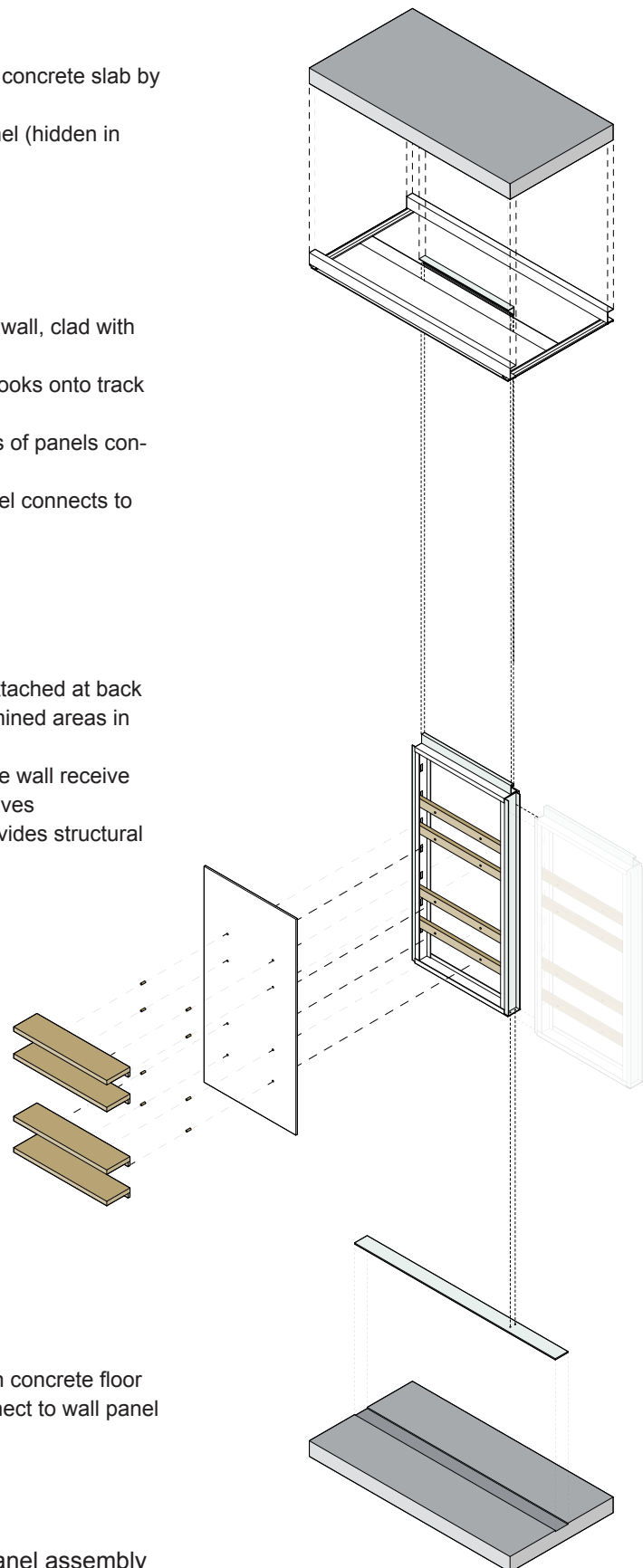
1. drywall ceiling connected to concrete slab by steel studs
2. steel track receives wall panel (hidden in dropped ceiling)

Wall Assembly

1. 4' wide, insulated steel stud wall, clad with MDF
2. steel track on top of panel hooks onto track in the ceiling
3. aluminum channels on sides of panels connect panels to one another
4. steel plate on bottom of panel connects to steel plate in the floor

Shelf Assembly

1. wooden shelves with pins attached at back can slide into four predetermined areas in the wall panel
2. metal tubes embedded in the wall receive the pins on the wooden shelves
3. 2 x 4 wood behind MDF provides structural support to shelves



Floor Connection

1. 3/4" steel plate embedded in concrete floor has pre-drilled holes to connect to wall panel

Figure 51. Removable wall panel assembly

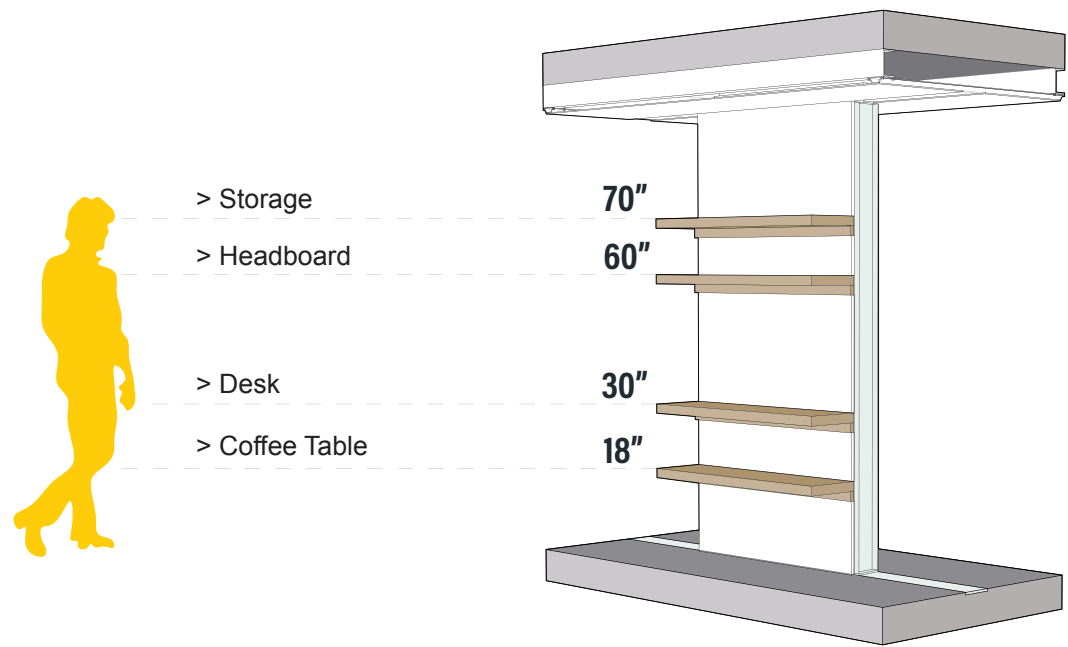


Figure 52. Removable wall panel with shelving

The removal of wall panels allows adjacent dwellings to be combined to accommodate changing needs related to live, live/work, and work environments. The placement of the wet areas allows for two main unit combinations (see fig. 53). The first creates a more cohesive kitchen design, ideal for housing or live/work, and the second creates a larger open space, ideal for work or community activities. A sample of unit combinations can be seen in Figure 54. The flexibility in unit design and arrangement allows the building to become a living organism, constantly changing based on the demands of the population.

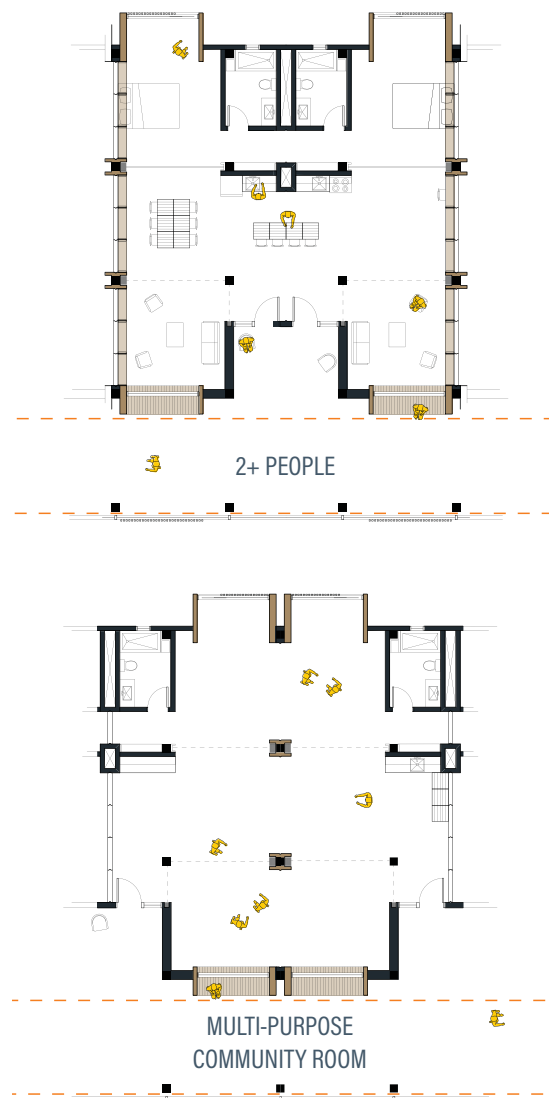


Figure 53. Two primary unit combinations

Single Unit | 775ft²

Double Unit | 1550ft²

Triple Unit | 2325ft²

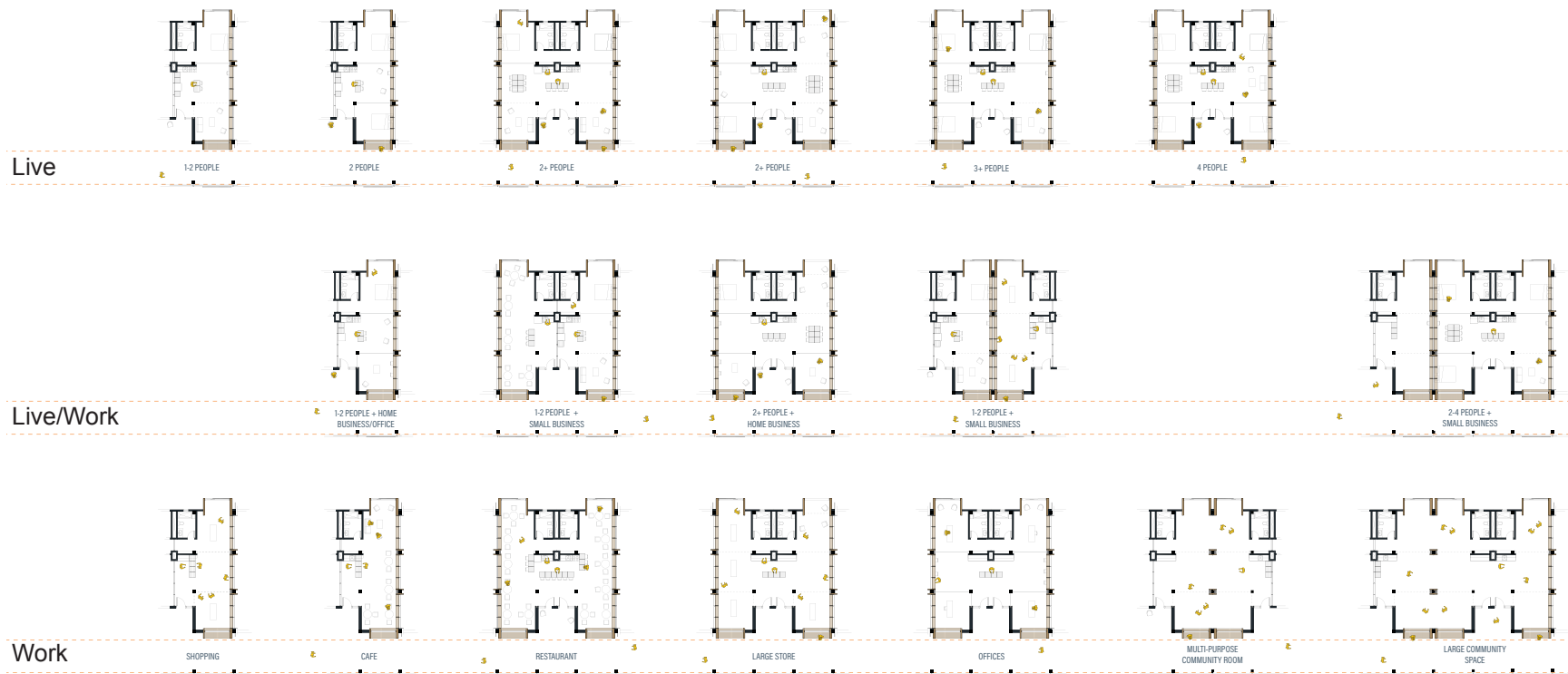


Figure 54. Sample of possible unit combinations and program

CHAPTER 5: CONCLUSION

The aim of this thesis was to address the long-term retention of youth in Halifax by redesigning multi-unit housing to be more flexible and connected to the city street. Through studying *Team 10*, design methods were interpreted and applied to a case study on Quinpool Road. These methods showed to offer affordable housing options, facilitate opportunities for employment, and create better place attachment through building better communities. Each of these factors directly address the primary reasons that young adults leave Halifax. If these strategies were implemented in ~15% of current developments, they could help provide successful communities for over 1300 youth to live (one years worth of out-migration) .

While this thesis centers on youth retention, the principals established can be applied to any multi-unit residential project that has similar goals for quality of space:

1. Introducing Mixed-Program Throughout The Height Of The Building

Strategically placing public and commercial program throughout a building creates activity and density within internal streets by providing destination points. This activity is critical to enhancing community engagement, and also allows the circulation of customers to access live/work units within large buildings.

2. Creating Flexible Living Spaces

Allowing units to be arranged in various ways creates flexibility for units to adapt to growing and changing community needs. This also allows residents to create a variety of live/work environments, facilitating employment and income opportunities.

3. Engaging Residential Units to Their Circulation Cores

Widening hallways and re-orienting living areas and windows within units towards circulation cores transforms hallways into front yards, adds eyes to the street, and creates spaces where people are comfortable to linger and interact. It also makes residents more aware of activities and resources within their community.

Although these principals can be applied to any building, their intention is to respond to specific population needs in order to create site-specific multi-unit housing that is different from typical “out-of-the-box” arrangements. This requires a deep understanding of the site, its population, immediate needs, and future goals. Each of these factors help to make developments more successful towards their long-term roles within a city, and can affect how these principals are manifested.

There are many ways that this thesis can continue to be built upon. One option is to further study the quality of the street throughout time. Whereas this thesis focuses on methods inspired by *Team 10* that were written in 1968, it would be informative to continue to study how the idea of the street has evolved and how methods of using and engaging the street have changed throughout modern day. These findings may provide alternative ways that the principals identified in this thesis can manifest physically, creating a variety street types for any multi-unit residential building.

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