



Faculty of Design, Environmental Design, Strategic Foresight and Innovation

2018

Exploring innovation in housing typologies

Bowes, Jeremy, Desai, Maya, Prabhu, Neal, Gao, Lucy, Rahman, Kashfia and McCulloch, Riley

Suggested citation:

Bowes, Jeremy, Desai, Maya, Prabhu, Neal, Gao, Lucy, Rahman, Kashfia and McCulloch, Riley (2018) Exploring innovation in housing typologies. Project Report. OCAD University, Toronto, Canada. Available at <http://openresearch.ocadu.ca/id/eprint/2664/>

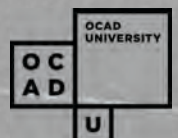
Open Research is a publicly accessible, curated repository for the preservation and dissemination of scholarly and creative output of the OCAD University community. Material in Open Research is open access and made available via the consent of the author and/or rights holder on a non-exclusive basis.

The OCAD University Library is committed to accessibility as outlined in the [Ontario Human Rights Code](#) and the [Accessibility for Ontarians with Disabilities Act \(AODA\)](#) and is working to improve accessibility of the Open Research Repository collection. If you require an accessible version of a repository item contact us at repository@ocadu.ca.



EXPLORING INNOVATION IN HOUSING TYPOLOGIES

NOVEMBER 2018





The report was prepared by the SystemCITY Research Team (Faculty of Design / OCAD University) with the support of the Sidewalk Toronto Small Grants Program (2018) and the engagement of the Housing Innovation Group at Sidewalk Toronto

THE OCADU RESEARCH TEAM

Jeremy Bowes, Principal Investigator
Professor, Environmental Design, Strategic Foresight & Innovation Program,

Maya Desai, Co-Investigator
Assistant Professor, Environmental Design and Graduate Program Director, Design for Health

Neal Prabhu, Co-Investigator
Assistant Professor, Environmental Design

Lucy Gao, Researcher
Master of Design (MDes) Candidate, Strategic Foresight & Innovation Program

Kashfia Rahman, Researcher
Master of Design (MDes) Candidate, Strategic Foresight & Innovation Program

Riley McCullogh, Researcher
Master of Design (MDes) Candidate, Strategic Foresight & Innovation Program

TABLE OF CONTENTS

EXECUTIVE SUMMARY

THE CONTEXT OF HOUSING TODAY

Housing as a Diverse Community-based Ecosystem	6
Understanding Housing Affordability	7
Defining Affordability	8
Key Housing Challenges in Toronto	9
Trends and Drivers in Housing	10

DEFINING THE METRICS OF INNOVATION IN HOUSING

Approach to Research and Information Synthesis	13
Guiding Principles	13

HOUSING INNOVATION AREAS

Toolkit 1: New Models of Living	16
Toolkit 2: Alternative Construction and Design	22
Toolkit 3: Re-Imagined Communities	28
Toolkit 4: New Notions of Affordability	35

DETAILED CASE STUDIES

RECOMMENDED INNOVATION STRATEGIES & NEXT STEPS

Recommended Innovation Strategy	71
Next Steps	73

APPENDICES

- Appendix A: Master List of Case Studies
- Appendix B: List of References & Additional Resources



EXECUTIVE SUMMARY

Early in our research on housing typologies, questions emerged with regards to how we live, both individually and as a collective, and how we build and finance sustainable and healthy communities that support and celebrate a diversity of people.

In today's emerging social, technological, environmental, economic, and political climate, we must look for new and innovative ways to re-use existing housing stock; conceive of new models of ownership; re-design homes to cater to multiple families and family types; and create new forms of community that truly reflect the current population and are able to adapt to future demographic shifts. In the Office of the United Nations High Commissioner for Human Rights' Human Rights Fact Sheet no.21, it is stated that "Adequate housing was recognized as part of the right to an adequate standard of living in the 1948 Universal Declaration of Human Rights and in the 1966 International Covenant on Economic, Social and Cultural Rights (2014, p.6). We must strongly recognize that housing is and must be a fundamental human right and is "essential to one's sense of dignity, safety, inclusion and ability to contribute to the fabric of our neighbourhoods and societies" (Ontario Human Rights Commission, n.d).

In recognition of the complexity of our urban housing ecology, it is necessary to consider a systemic view of housing where community is understood and addressed as an integrated system that is further embedded within a shared infrastructural system – this will provide the context and the constraints for how we want to live and how we build desired communities through policy, design, manufacturing and construction; and how we finance affordable housing through partnerships and collaboration.

Our research pays particular attention to Toronto's context, but in doing so also recognizes and highlights the challenges that are faced by many large urban centres including housing affordability; rental bias/stigma; aging housing infrastructure; the 'missing middle' supply of affordable homes, over-reliance on condominium rentals, and underutilization of viable industrial and commercial lands

Housing is essentially about people, and we must also recognize the changing and ever-evolving values and needs of our city's residents.

Guiding the research is a set of six principles that capture a vision for our current and future cities and include **promoting equity and diversity; challenging traditional notions of home ownership; building community identity; investing in housing research and development; recognizing alternative ownership and financing models; and recognizing housing as a human right.**

Our research uses a comparative case study method to determine housing trends in both global and local sites; highlight lessons and innovations in housing typology; and identified gaps and opportunities in the current Toronto housing market. Case studies were also prioritized to include those from a wide variety of geographic regions that have been built (or in the implementation phase) and those whose innovations have captured academic, media and community attention. Our case studies are clustered and presented in four key thematic areas: New models of living; Alternative Housing Construction and Design; Re-imagined Communities, and New Notions of Affordability. The result of this research is a “Housing Innovation Toolkit” that captures practical tools and methods that are being used to tackle affordable housing both locally and globally.

‘New Models of Living’ explores the advantages and disadvantages of micro-living, co-living /co-working, co-housing and communal living and focuses on innovations that include urban down-scaling, space-sharing, and intergenerational living.

‘Alternative Construction and Design’ explores innovation through sustainable design, prefabrication technologies, open building, and adaptive and flexible design to meet the changing needs of residents and the community.

‘Re-imagined communities’ identifies key issues that our socially, economically and culturally diverse communities are currently facing, and the innovation strategies needed to address them such as alternative intensification strategies, ‘missing middle’ housing, community agency and participation in design, planning and implementation

‘New Notions of Affordability’ highlights the need to re-visit working together and explores options for cooperative ventures such as such as non-profit housing cooperatives, shared equity-based housing cooperatives, and community land trusts.

The **“Housing Innovation Toolkit”** is meant to provide a way forward and should serve as a basis for delving deeper into the complexities of urban housing. In addition to further investigation and exploration, it is imperative that engagement and participation of community stakeholders, including a diversity of residents as well as professional, financial and governmental agencies, are strongly considered to ensure that innovation in housing and community is resilient, inclusive and reflective for the people who reside in them.

THE CONTEXT OF HOUSING TODAY



Housing as a Diverse Community-based Ecosystem

It has become increasingly clear to urban planners and city administrators that well-designed cities need to provide for a variety of flexible housing options for their inhabitants. We now more clearly realize that social segregation, commuter travel, and economic marginalization can create undesirable urban environments.

The provision of the essential amenities and social supports including places for education, culture, community; access to food and health services; and efficient and accessible transportation, are all essential to supporting thriving and sustainable urban communities. Creating options for reducing commuting times by providing for ample and affordable housing near commercial and business districts, supporting and promoting remote working options, and providing social supports such as childcare, are goals for any present-day community and are central to why urban cores are most desired as places to live, work and play.

As the value of homes in the city rise sharply and available rental units are limited in space, it has become increasingly difficult for families to afford urban living. As younger or larger families retreat to the suburbs, city centres are starting to see a shift in demographics, as only singles or double-wage earning couples with few or no children can afford to live in the city due to costly real estate creating communities that are polarized by social and economic status.

As urban demographics change, so does the notion of the single-family home. We must look for new ways of re-using existing housing stock, conceive of new models of ownerships, re-design homes to house multiple families or individuals and create new forms of community that truly reflect the current population. This is especially important and urgent in cities like Toronto, where the rising housing prices and low rental vacancy rates have led to the partitioning of homes into multi-unit dwelling to cater to the growing demand, and often at the sake of fire and life safety. Instead, housing, through policy and design, should anticipate demographic shifts and adapt to current and future population conditions.

In today's urban centres, housing has become a complex problem with multiple, and often uncoordinated interest groups involved in its management, development and profit. In addition to key roles played by urban planners and legislators, real estate developers and financial institutions in housing development and community planning, there is a place for community voice to add much-needed value in balancing community goals with profits and risk. Engaging a diversity of stakeholders, end users and community members in the consultation process and creating a stronger systems approach to planning and development can lead to innovative, community-oriented and potentially more affordable and sustainable housing strategies.

How can a systems view of housing ecology change the process of housing development? A systems view of housing considers housing as an integrated community commodity, embedded within community and shared infrastructures; within the context and constraints of legislation; and in relation to manufacturing and construction. It also recognizes the fundamental human right to housing.

A more broad-based systems view considers the value that housing can bring to a community by providing for a diversity of community members, encouraging community engagement and sense of place, and valuing and supporting social entrepreneurialism. In addition to housing, a systems approach should consider supporting social and physical support systems as part of the larger housing ecology and essential for successful and self-sustaining communities. These, at a minimum, include such as transportation, community amenities, schools, markets, and commercial and cultural facilities.

While simply stated as a theoretical idea, the practical implementation of a well-integrated systems-based housing strategy is much more complex, as it involves the contexts of affordability, inclusion, accessibility, and community building in addition to the expertise of building itself.

Understanding Housing Affordability

As populations in urban centres continue to grow and access to affordable and desirable housing becomes less accessible to an increasing segment of the population, there is an urgent need to re-visit and re-imagine how we design, build and provide for this fundamental human right.

Government subsidized housing initiatives have found it difficult to compete in a developer-driven market. Major cities like Toronto, and Vancouver have become cities ripe for development opportunity, with the last twenty years seeing mostly condominium development and virtually very little public housing building (Tyndorf 2006). The result is a minimum of available affordable rental dwellings, and the domination in the rental market by a program of expensive condominium sublets. This situation is further exacerbated by the influx of rural and suburban families, new Canadians relocating for employment, and 'empty nesters' downsizing to the Greater Toronto Area (GTA) city core. Approximately 100,000 people move into the GTA each year, requiring about 45,000-50,000 dwellings. (Tyndorf, 2006). In 2017, purpose-built apartment rents increased the most in 15 years and vacancy rates reached the lowest in 16 years. In 2017, vacancy rates for purpose-built rentals were 1.0% and those for condominium rentals were below 0.7%. For many

new Canadians and middle-income workers, this translates into an inequitable and unaffordable urban market place.

A report prepared by Evergreen “Getting to 8000” around the current state of rental units in Toronto, identifies the consistently low vacancy rate, generally below 3%, and the above-inflation rate rent increases as creating an unhealthy and squeezed rental market. (Evergreen, 2017) This dictates an over - reliance on private condominiums to provide rentals. “Over the past ten years, the Toronto Area rental market has only grown by 2,400 purpose-built rental units while 76,000 private rental condos have joined the market as rentals.” (Evergreen, 2017, p.4)

Defining Affordability

According to Statistics Canada, “people in households that spend 30% or more of total household income on shelter expenses are defined as having a "housing affordability" problem”. Most definitions of affordability, with respect

to housing, are based on an individual's ability to afford the cost of occupancy, be it rent or a portion of monthly ownership. In both cases the definition of affordability is income-based, market-based, or both.

According to various recent housing studies, there are approximately 25% of owners and as high as 50% of renters whose housing costs exceed the recommended threshold of 30% of their income (Stapleton, 2012). When housing costs become no longer sustainable, people are forced sell their homes, declare bankruptcy, and/or default on mortgages or rent payments. Housing has become intrinsically linked to its financial value, with many Canadians having a long-standing relationship with home ownership as a primary form of long-term investment for retirement and/or potential for equity. Alongside affordability strategies, housing innovation must look for creative ideas that transcend traditional ideas of a home as merely a financial asset. Housing innovation and community planning must create benefits to housing that have value beyond the monetary and can minimize or mitigate the current financial burden of owning or renting.

How is housing affordability defined in Canada?

Canada Mortgage and Housing Corporation

Housing is considered affordable if housing costs account for less than 30% of before-tax household income (CMHC, n.d.).

Province of Ontario

Lesser of housing that does not exceed 30% of gross annual household income for low and moderate income households, or housing for which the purchase price is at least 10% below the average purchase price of a resale unit in the regional market area (or in the case of rental housing, housing that is at or below the average market rent) (Ministry of Municipal Affairs and Housing, 2005).

City of Toronto

The City of Toronto defines affordable rental housing as new housing where the total monthly shelter cost (gross monthly rent, including heat, hydro and hot water, excluding parking and internet/cable charges) is at or below Toronto's average market rent (City of Toronto, 2017).

Key Housing Challenges in Toronto

In addition to issues of housing affordability, Toronto faces several important housing-related challenges related to housing bias/stigma, aging housing infrastructure and underutilized lands.

The 'Missing Middle'

Currently the housing pattern across the Greater Toronto and Hamilton Area can be characterized by one-bedroom tower condos located primarily at key urban nodes or by low-density housing along the urban fringe (Haines & Aird, 2018). Haines & Aird (2018) coined the term "tall and sprawl" for this type of development pattern and highlight a lack of mid-income housing - the "missing middle" - that would be suitable and affordable for a range of household types, sizes and income levels. These "missing middle" housing types include semi-detached, row homes, townhomes, multiplexes and courtyard apartments.

Ownership over Rental Mentality

Most Canadians have a long-standing relationship with home ownership as a primary form of long-term investment for retirement and potential for equity. According to the "Housing Horizons" study (Pacini, 2017) the current political, financial and social systems in Canada favour homeownership as the preferred tenure model. One of the key findings is that there is "disproportionate investment in assisting Canadians to reach the homeownership dream strengthen inequalities between owners and renters and incentivize more households to purchase homes" (Pacini, 2017, p.34). As a result, homeowners have much more access to financial incentives and benefits that renters do not. In this respect, home ownership represents a desired trajectory towards upward social mobility and anything short of ownership is undesirable.

Aging Social Housing Stock

Toronto Community Housing (TCH) is the largest non-profit social housing provider in Canada. It has 2,100 buildings in its portfolio, totaling \$9 billion in public assets (Toronto Community Housing, n.d.). In recent years, TCH has been facing increasing criticism for failing to upkeep its properties, with estimated \$1.6 billion required to fix the aging and dilapidated infrastructure. At present, TCH has 30 social housing properties in serious disrepair, while 222 of 364 developments are ranked in "poor" condition (Pagliaro, 2017).

An Unhealthy Rental Market and Over-Reliance on Condominium Rentals

This situation encourages developers to build condominiums over rentals, and is supported by the financial conditions, as it is easier to raise capital for condos, making rental less attractive to build. "A reinvigorated purpose-built rental sector would help refocus the condo market away from speculation/ investment and back towards owner-occupied units" (Evergreen, 2017, p.23)

Underutilized Industrial and Commercial sites

"The cost of housing is directly linked to the market conditions within a community and the cost inputs to construct housing. If there is a high supply of housing, then market rents and house prices will typically fall. If there is a low supply, market rents and housing prices will typically rise. Therefore, municipalities can contribute to the affordability of housing by maintaining a regulatory environment that is conducive to the development of a diverse range of housing types" (AUMA, n.d.). As the demand for affordable housing increases and if supported by municipal regulations, underutilized industrial and commercial sites provide ample opportunity for production of new models for housing, neighbourhoods and communities. Long-term strategies to evolve municipal regulation and zoning standards are needed to allow for the use of these lands to be developed or redeveloped and increase the City's housing stock.

Trends and Drivers in Housing

At a time when cities around the world are facing unprecedented change, Toronto will be affected by several critical trends and drivers. These challenges set the stage for a new vision of housing innovation, and demand that we reconsider how we live, build, and finance dwellings for people in our city. A scan of these trends was done using a foresight method called STEEPV. This framework ensures that a broad range of "signals of change" are considered when looking towards future.

SOCIAL

Building units will need to be increasingly adaptable in order to meet the needs of older and more diverse households.

The Indigenous population living in metropolitan areas is and will continue to grow; the number of Indigenous people living in a metropolitan area of at least 30,000 people increased by 59.7% from 2006 to 2016 (Statistics Canada, 2017).

Immigration will continue to be the main driver of population growth. Newcomer families are more likely to rent, have larger household sizes, and have different cultural expectations of housing (i.e. multigenerational). By 2036, approximately 77% to 81.4% of Toronto's population will be first or second-generation immigrants (Brannan, 2018).

Increasing life expectancy of Canadians and a low fertility rate will contribute to the growing population of seniors; by 2031, 25% of the population will be over the age of 65 by 2031 (Grenier, 2017).

TECHNOLOGICAL

Technological disruption will shape the way people shop and get around in cities.

Drone delivery will become ubiquitous. In 2018, Drone Delivery Canada received a Compliant UAV Operator Special Flight Operations Certificate (SFOC), which allows the company to take the first step in offering drone delivery services in Canada (Drone Delivery Canada, 2018).

The rideshare industry will continue to thrive; Goldman Sachs predicts it will be worth \$285 billion by 2030. This will decrease reliance on personal vehicles, de-prioritizing parking needs and leaving millions of square feet of parking space empty (NMHC, 2018)

ENVIRONMENTAL

Climate change will have significant impacts on the built environment, health and energy.

Rising global temperatures will impact the frequency and severity of extreme weather events; buildings will be increasingly susceptible to storm damage (Toronto and Region Conservation Authority, n.d.).

A warmer climate will help spread vector-borne disease, as the northern limit of many disease carriers is controlled by temperature. Warmer weather will also increase the risk of water and foodborne diseases (Toronto and Region Conservation Authority, n.d.).

Nuclear and coal generating stations will have reduced capacity as warmer water temperatures reduce the efficiency of the condensers. Energy demand will be greater, and brownouts and blackouts will occur (Toronto and Region Conservation Authority, n.d.).

ECONOMICAL

How people work will change the way people live and how they access housing.

2.18 million Canadians are taking part in the “gig economy” (freelance and contract work) and that number will only increase. This will change how, when and where people expect to work (BMO Wealth Management, 2018).

Toronto will continue to be an attractive market for tech talent. The city added the most technology jobs in North America between 2013-2018 and is the fastest-growing tech market (Wong & Marotta, 2018). This is expected to change salaries and affect housing affordability (Berkes & Gaetani, 2017).

Retail giants Walmart and Amazon will continue to cause upheaval in the traditional retail market (CBC, 2017). Developers will need to consider how innovative retail models can be best integrated into new builds (i.e. experiential) (NMHC, 2018).

POLITICAL

Political uncertainty & division will be the environment in which developers must find support for their projects.

Rising interest rates and falling house prices will lead to a pullback in the pace of consumer spending and overall Canadian economic growth (The Conference Board of Canada, 2018).

Global trade war fears will continue to persist, affecting not only Canada’s economic outlook but globally as well (The Conference Board of Canada, 2018).

The rise of populist leaders such as Donald Trump (US) and Doug Ford (Ontario, Canada) will increase political and social discord (Mounk, 2018).

VALUES

With an increasing emphasis on wellness, residents will expect their homes to facilitate better physical, social and emotional health.

31% of Canadian consumers are willing to pay a premium for health enhancing products. Consumers will continue to look for products and services to help them maintain and improve their health, changing the type of products they purchase for their family, the sports they play, and how they spend their leisure time (Business Development Bank of Canada, 2013)

Real-time and personalized purchasing will shift customer expectations towards lifestyle-focused, flexible and customizable apartments (NMHC, 2018).

The sharing economy will continue to blur the line between public and private space. Residents in apartments will expect to be more integrated into the community as a whole, with spaces that can have multiple uses and be shared for neighborhood needs (NMHC, 2018).

DEFINING THE METRICS OF INNOVATION IN HOUSING



Case study method, as defined by Yin (1984) “as an empirical inquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used.”, has been used to determine a set of affordable housing innovations in both a local and global context.

Case study method allows the exploration and understanding of complex issues through contextual analysis of a limited number of events or conditions, and their relationships (USCLibraries, n.d). This method enables a researcher to closely examine the data within a specific context and understand the behavioural conditions through the actor’s perspective. By including both quantitative and qualitative data, case studies help explain both the process and outcome of a phenomenon through complete observation, reconstruction and analysis of the cases under investigation (Tellis, 1997).

Unlike quantitative analysis, which observes patterns in data at the macro level based on the frequency of occurrence of the phenomena being observed, case studies observe the data at the micro level. The detailed qualitative accounts often produced in case studies not only help to explore or describe the data in a real-life environment, but also help to explain the complexities of real-life situations which may not be adequately captured through experimental or survey research.

As case studies are well suited for exploratory research focused on the study of emergent practices (Zainal, 2007), this method is particularly useful for examining housing innovation typology. This research study utilizes multiple cases to better understand trends in both global and local settings and highlights important lessons that can be drawn from each case study.

Approach to Research and Information Synthesis

The research team conducted a broad literature and media scan of studies and projects that address housing affordability from a multitude of perspectives. Consideration of what is deemed “innovative” was deeply grounded in the Toronto context and informed by gaps and opportunities in the current housing market, such as new housing typologies, financial models and tenure options. As a result, applicability and relevance to Toronto housing market was a key consideration in selecting the most relevant case studies. Other factors for identifying case studies included:

- Projects that span across various geographic regions
- Projects that address gaps in the housing market
- Projects that have been highly referenced in literature or media
- Projects that have been built or ready to be implemented

Using the criteria above, a list of around 60 case studies were compiled, out of which 15 were studied in greater detail. Insights Sorting, also known as Affinity Mapping, was used to further understand the commonalities between the case studies. This exercise facilitated the recognition of patterns within the case studies and helped identify the major trends in housing innovation. Initially, case studies were grouped by housing innovation type. Recognizing that some case studies may represent multiple areas of innovation, case studies were subsequently regrouped

based on similar features and via an iterative process, until a stable clustering pattern was achieved, and insight clusters could be defined. This process resulted in four notable thematic areas that can generally capture the various innovative tools that have been used to achieve housing affordability:

- New models of living
- Alternative Housing Construction and Design
- Re-imagined Communities
- New Notions of Affordability

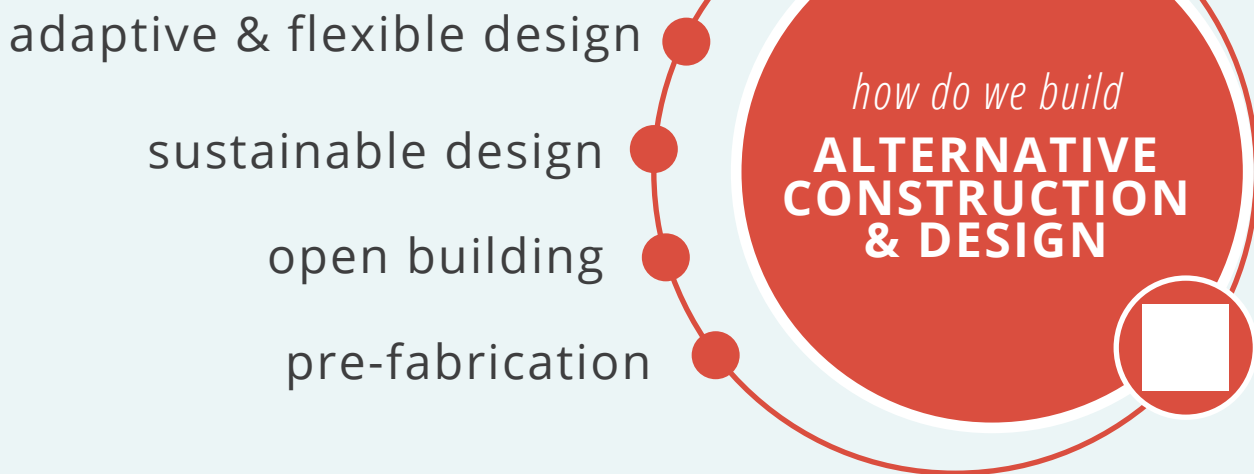
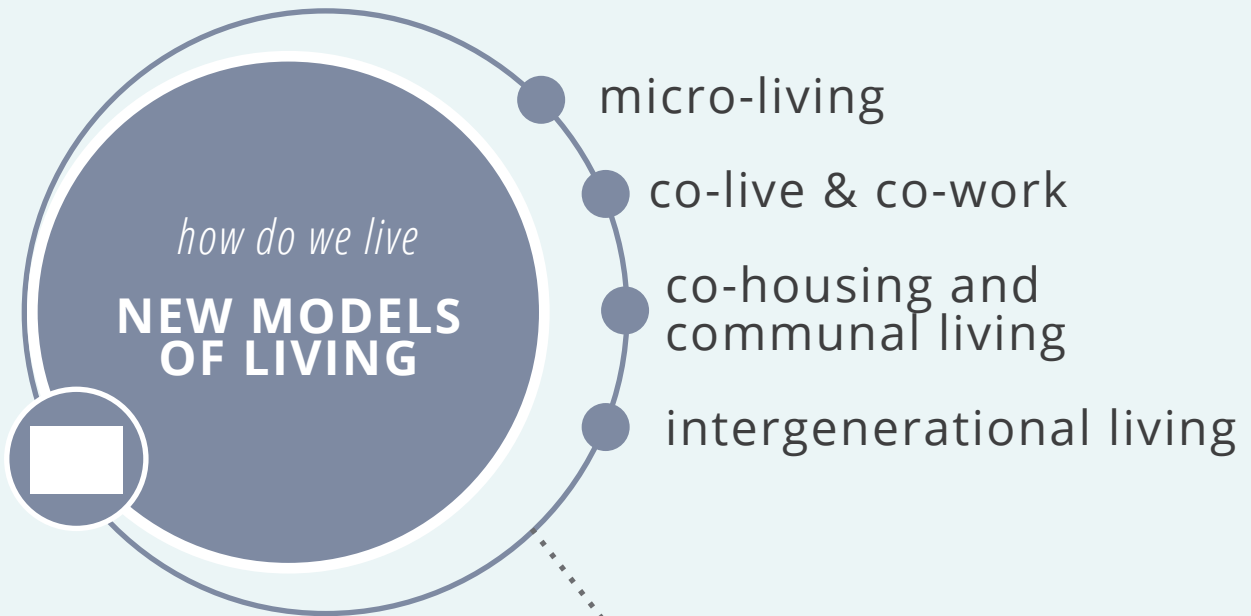
There are many ways in which housing innovations can be categorized and understood. However, the four thematic areas provide a general framework for how we can begin to understand innovations in housing. Notable case studies have integrated multiple innovation approaches from the four categories above. For example, several housing projects in Europe were initiated based on new ideas around how people want to live, which led to innovative housing designs and tenure models, all of which redefine what new communities could look like.

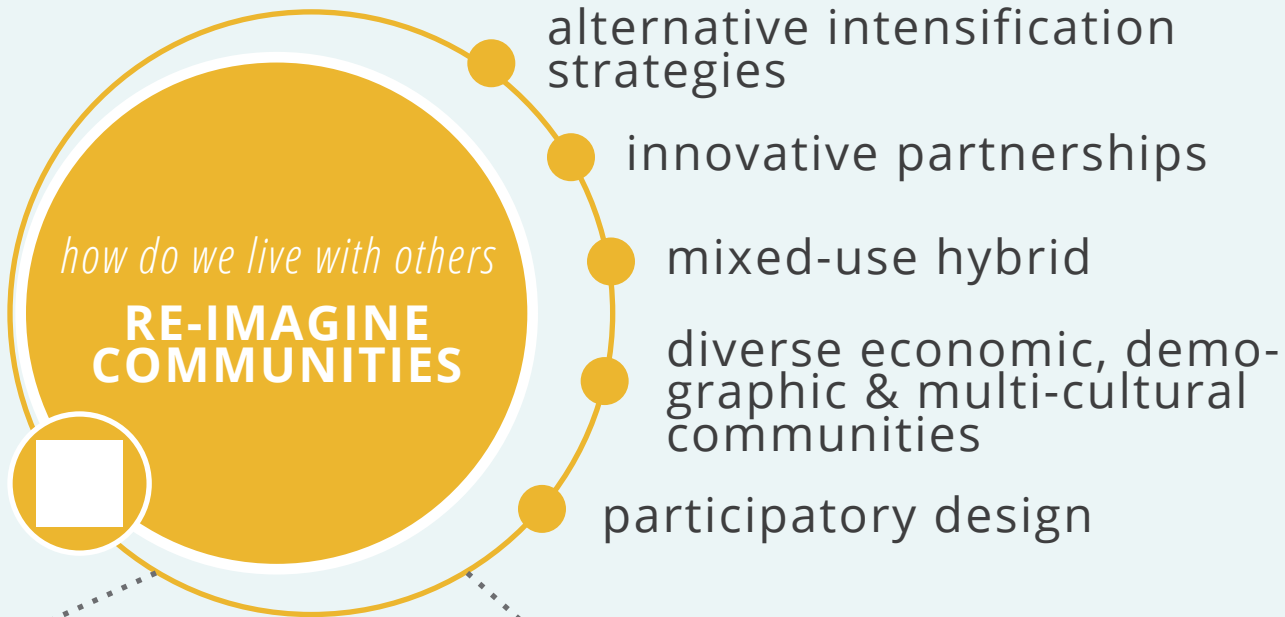
Using the proposed framework and combining a breadth of insights, the research team has prepared a **“Housing Innovation Toolkit”** to capture the tools that have been and are being used both locally and globally to tackle housing affordability. The Housing Innovation Toolkit is discussed in section 3 followed by a series of 15 supporting case studies, in section 4, that illustrate how these tools have been used and implemented in housing projects locally and globally.

Guiding Principles

- **Support and promote equity and diversity (economic, cultural and social) in our communities and discourage social polarization**
- **Challenge traditional notions of home ownership and reduce the stigma of renting**
- **Build a sense of place and community identity, and empower residents in community decision-making**
- **Invest in research and development in emerging materials and technology for housing**
- **Recognize and support alternative ownership and financing models.**
- **Housing is a human right. Implement policies and regulatory guidelines to ensure and enforce inclusive housing development practices.**

**THE HOUSING
INNOVATION
TOOLKIT**





HOUSING INNOVATION AREAS



Toolkit 1: New Models of Living

There is an increasing trend towards a more temporal and mobile lifestyle. “New ways of describing living, [which] shift the product of housing to the experience of a dwelling place as lifestyle and this attitude of the dwelling and its services creates a more consumer - focused dwelling unit” (Shenesy, 2016). In a new age of Netflix, Pandora & Uber, Shenesy (2016) highlights present-day pervasive ideas of renting everything yet owning nothing. A variation is presented by Alderton (2018), who describes new models of living is as a “home subscription that lets [residents] float among numerous temporary residences owned and furnished by the same management company”. Several of these ideas will be explored in further detail the sections that follow.

Micro-living

As real estate prices increase, so does the per square foot cost of housing. Coupled with rising populations in urban centres and increasing demand for space, the result is a rise in compact dwelling units. “In North America, about 82% of the total population – roughly 473.8 million people – lives in urban areas. The number of single-person households is rising, although housing has not kept pace with demographic change. Many of the new units being built are getting smaller and smaller, challenging municipal housing codes and zoning regulations.” (Post, 2014, para.3)

The concept of the micro-apartment is not new one. Kisho Kurakawa’s Nakagin prefabrication Capsule Tower built in the 1970s features some of the first single room dwelling and nArchitects’ Carmel Place project demonstrate how micro-apartments can be ‘chic’.

Another area of intensification is the re-evaluation of functional space itself. The condominium concept has served as a functional reassessment of useable space and a proven alternative to the traditional housing models. Rethinking the functional space has resulted in much smaller units with combination kitchen/

dining and living/guest spaces, as well as single bathrooms that serve as ensuite and common. Very small units (<= 350 sq. ft.) effectively do away with a dedicated dining space and offer a kitchen bar as an eating/prep area and are often designed as open concept bachelor suites. As dwellings become more compact, the implications on lifestyle must be considered. Small units may work for single or young couples who spend large amounts of time socializing outside the home, where the unit can easily and adequately function as a “crashpad”.

Micro-living solutions have produced more efficient small-sized apartments, with scaled down furniture capable of adapting to a variety of dwelling functions. The challenges of downsizing however are affordability, privacy, and comfort. Examples like Carmel Place in New York (nArchitects, 2016) with units ranging from 250 – 370 sq. ft., and some current condominium projects with smallest units ranging from 300 - 350sq.ft., have shifted the value focus to the communal amenities that can be provided. Smart House Development (architectsAlliance with ll x iv Design, 2018), located in Toronto, contains units as small as 276 sq. ft. yet offers social amenities such as community fitness, business centres, games rooms, party spaces, media rooms, gardening centres, and shared outdoor spaces.

Interior furniture, fixtures and equipment (FF&E) have experienced a re-design as well, with many brands producing lines of smaller appliances, such as 20” ovens, 24” refrigerators and micro-toilets; convertible modular furniture pieces such as murphy beds, sofa beds and concealed storage; and furniture with reduced depth and lengths.

Co-housing and Communal Living

Co-housing is a housing model that became popular in Denmark in the late 1960s, as part of the communes and back-to-the-land movement of the era. This rekindling of the pursuit of a more utopian society focused on creating intentional communities, through cohousing. Co-housing is self-built community-led housing. To create a cohousing development, community members or future neighbours design and plan a shared development tailored to their collective needs. To finance the project, they use their own funds or borrow outside funding.

Co-housing typically includes multi-family homes clustered around communal spaces. Under this model, residents may usually own their respective units (or in some cases rent) and share common facilities. Most co-housing will feature common facilities such as a kitchen, kitchen garden, laundry, car sharing, children’s areas, workshops, and guestrooms. Eating is a focus of communal living, with shared responsibility for food production and meals. Co-housing communities typically utilize non-hierarchical structures and consensus-based decision-making processes and approach management of the development from a collective perspective, dividing tasks and activities amongst all residents.

Co-living and co-housing are terms often used interchangeably, however there are significant differences. While both models promote communal living and social connection, co-living projects are often created by private developers with the goal of meeting the needs of a target demographic. Additionally, co-living developments increasingly include co-working spaces (hot desks, meeting rooms, conference rooms, and collaboration spaces) that



are available for rent and a host of other amenities such as theatres and spas as well as cleaning and maintenance covered under a rental fee. In co-living spaces, residents tend often younger, primarily unattached or without families.

Wohnprojekt Wien project, located in Vienna, Austria, creates a way of living in the city based on the values of sustainability, collaboration and open mindedness. 67 adults and 25 children came together to participate in determining their future homes, engaging in workshops to determine community spaces and contribute to the master planning. In addition to community amenities such as the community kitchen, children's playroom, meditation rooms, rooftop gardens, the project also considered residents' social and environmental responsibility and included vehicle sharing (cars and cargo bikes), CSA membership, subsidized apartments for people in need, cultural activities, and a corner store as another point of social interaction for the community.

Naruse Inokuma Architects' "share house" concept, in Nagoya, Japan, is an increasingly popular way of living. This new building type is based on the principles of communal living and the need for housing where individuals who are not related will share space. Situated within a large house, residents share kitchens, living spaces and bathrooms.



Communal spaces within the LT Josai Shared Housing Project / Image Source: Masao Nishikawa Photography

Co-live and Co-work

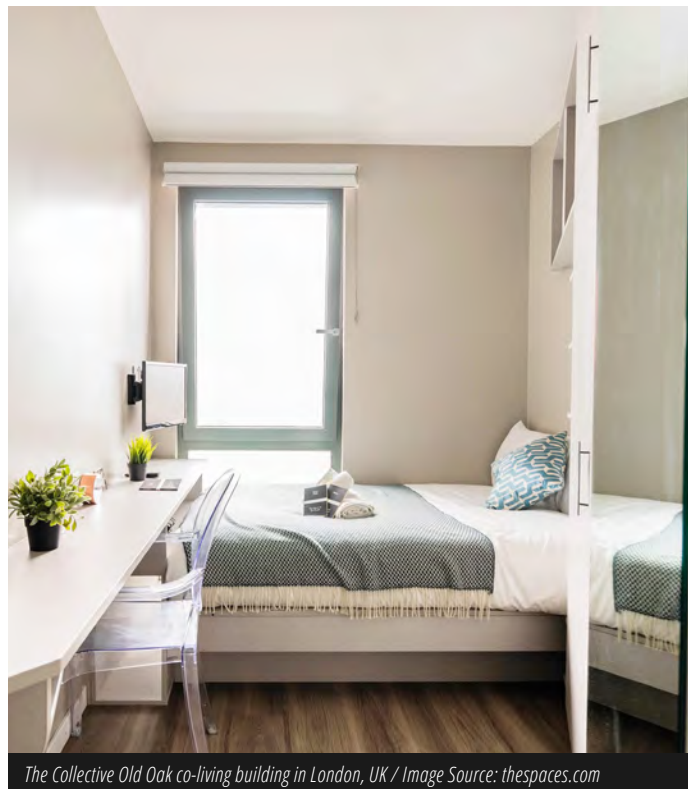
In cities with rapidly increasing housing costs and a growing demographic of young people investing in more experiential lifestyles, co-living is quickly becoming a trendy new way of renting. Property management company OpenDoor defines co-living as “a modern form of housing where residents share living space and a set of interests, values, and/or intentions. It’s a new take on an old idea, imagined by a millennial generation that values things like openness and collaboration, social networking, and the sharing economy.”

Co-living and co-working projects are a partnership of management and real estate interests. With the success of shared work spaces, co-living arose as a conceptual and branded living approach. The lines between work life and social life blurred as work places also became a social hub; hosting private and communal gatherings, events, and lectures. Recently, co-working companies such as WeWork have broken into the market in an unorthodox way by launching WeLive in New York and Washington D.C.

To date, co-living occurs in more urban contexts- generally high-density developments with a demographic of predominantly young professionals rather than families or seniors. Co-live spaces are a merging of student accommodation and a boutique hotel, with private rooms linked by shared kitchens, dining and living spaces, in addition to a wide range of amenities like gyms, work spaces, spas and laundry services. For a monthly fee, residents receive a private furnished room (or a suite for couples), access to well designed and stocked communal facilities, and a built-in social life through the building community.

The Collective, a British co-living property startup, espouses co-living as “a way of living in cities that is focused on community and convenience. Live as part of a community, sharing wonderfully designed spaces and inspiring events, with the comfort of being able to retreat to your own fully furnished private apartment at the end of the day. Everything you need to make the most of city life is included in the bill: rent, concierge, superfast internet, all utilities and taxes, room cleaning, exciting daily events and gym membership - “So you can do the living and leave the rest to us.” The Collective claims to offer the world’s largest co-living development with 550 bedrooms in its Old Oak Commons building and intend to double the size of its portfolio with plans to expand into the US and Germany.

Co-living management and development companies, like Open Door, often operate at an international level, enabling members to live and relocate across the globe whether due



The Collective Old Oak co-living building in London, UK / Image Source: thespaces.com

to work or play. Whereas New York-based company The Common provides locations throughout the United States, members of Roam can move between its luxurious co-living housing complexes in places like Bali, London and Tokyo.

Given the popularity of this housing trend, The Telegraph UK went so far as to state that co-living is the future of renting for the millennial generation. Vivahouse, branded as the "urban house of the future" is a project that combines prefabricated modular housing and vacant commercial properties to turn them into co-living developments by repurposing unused commercial units, including vacant hospitality and office spaces, to help alleviate the need for affordable housing in the megacity. Currently introduced as a pop-up prototype, the company hopes to replicate the project across London. With a target demographic of young freelancers and the self-employed, each Vivahouse location will have a different minimum duration of stay. Rent will differ based on location but will start from £600 per month in central areas for a longer term stay and from £50 per night for a short stay, which the developer states is 50 per cent less expensive than the next best alternative. Like other co-living companies, the price of the units is inclusive of all furnishings, bills, taxes, amenities, and cleaning with communal areas for living, dining, working and gaming. Vivahouse's goal is to "enable true housing as a service in major urban cities [and create] a solution to the UK's low availability of land and shortfall of housing, at a quick turnaround build time with a rapidly scalable model. Vivahouses are for millennials who currently spend two thirds of their income on rent, to give them a space they'll be proud to call home." (Morris, 2018, para.11)

Intergenerational Living

One of the key demographic groups relocating to the cities and downsizing are seniors, as the proximity to services like hospitals, health practitioners, cultural and community venues are desired and often needed. While there are many options for seniors housing, some which offer a co-living experience with added nursing support, there are also new models available to this demographic group. Intergenerational housing projects such as the Residential and Care Centre Humanitas, in Deventer, Netherlands, pairs elderly individuals with students who contribute activity hours in exchange for rent - free living. Activities can include watching sports together, meal preparation, celebrating birthdays, offering companionship during illness, emailing, and social media tutoring. Since the inception of this unique project, several similar care facilities have begun to emerge in the Netherlands due to its success.

Similar examples exist in the United States, such as the Judson Manor, where Cleveland Institute of Music students participate in provide solo recitals every few months, weekend concerts, impromptu concerts and art therapy classes in exchange for rent-free living; and in Lyon, France, where ESDES inter-générations project places student to aid the elderly in their daily activities in their home in exchange for room and board.

More locally, Symbiosis is a housing program that was initiated by McMaster Postdoctoral Fellows (Soumeya Abed and Savitri Jetoo) in 2017 that matches students with seniors near McMaster University in Hamilton, Ontario. It connects students in need of low-cost housing with seniors who have a spare room and could benefit from extra support and companionship. The goal of the project is to enhance the emotional and financial well-being of students by helping them find affordable accommodation and integrate more smoothly into the McMaster community through this partnership with established community members (seniors) while enhancing the feeling of well-being of seniors of through social interactions with students, enabling them to share their life experiences, feel that they are making a difference in someone's life and hence, re-engage with their community.

The Symbiosis Program has been recognized by the City of Hamilton (Age Friendly Hamilton) as one of Hamilton's top 3 housing achievements in 2017 (McMaster, n.d.)

Residential and Care Centre Humanitas, in Deventer, Netherlands, pairs elderly individuals with students who contribute activity hours in exchange for rent - free living.



Image Source: theatlantic.com

Toolkit 2: Alternative Construction and Design

Housing construction must consider innovations that address the development of housing communities that are highly adaptive, resilient and responsive, as well as sustainable. Given that construction is an energy and resource intensive process, where buildings account for 39% of the United States' energy consumption and 39% of its carbon dioxide emissions (Smith, 2010), the design of the home must



consider the life-cycle of the building. However, for truly holistically sustainable systems, the evolving needs of residents over a lifetime must also be considered.

Sustainable Design

Sustainability is defined as “meeting the needs of the present without compromising the ability of future generations to meet their own needs” (Smith, 2010, p.218). This definition makes it clear that sustainability does not only include environmental impacts, but also social and cultural impacts as well (Smith, 2010). Prefabricated construction addresses this multi-faceted understanding

of sustainability - it is economically favourable given the cheaper construction process; produces less material waste; and can result in a higher quality of construction. For these reasons, 'prefab' construction can be a more efficient and sustainable option and is therefore, growing in popularity both locally and globally.

In *How Buildings Learn*, Stewart Brand (1995) argues that architecture needs to be designed in layers that are durable enough to allow for change. Brand relies on "six S's", borrowed from Francis Duff's studies on building performance evaluation, to propose and outline these layers of construction:

- Site - Encompasses all parts of the development.
- Structure - The building's foundation and load-bearing elements. These last as long as the building does, approximately 50 years.
- Skin - The roof and wall enclosures. These will play a significant role with the end of cheap fossil fuels for heating and due to increased technological innovations in enclosure systems. These last for approximately 15-20 years.
- Services - Include the HVAC and circulation systems. These require updated approximately every seven to 15 years.
- Space - Includes the interior partitions, doors, ceilings and finishes. These are all very changeable and can be changed by every new tenant or resident. On average, these are changed at three-year intervals.
- Stuff - Includes wallpaper, paint and furniture. These can be changed at an extremely rapid pace and with nearly every new inhabitant in the space. (Smith, 2010, p.220)

Brand's emphasis on the concept of layers highlights an opportunity for increased adaptive and flexible environments - spaces that are designed for the immediate use but that are designed with temporality in mind. As a building's residents change over time, portions of the buildings could easily and sustainably adapt to the needs of the new resident. Technological infrastructure can also play a role in supporting this change by providing informational and systemic network that can monitor and adjust a building's performance as well as provide building efficiency and performance metrics.

A popular method of measuring sustainability in development is through the Leadership in Energy and Environmental Design (LEED) standards. LEED standards measure the sustainability impacts for projects ranging in size from individual buildings to entire parts of cities and have become one of the benchmarks for sustainable buildings in North America. LEED divides sustainability into nine categories: sustainable sites, water efficiency, energy and atmosphere, materials and resources, indoor environmental quality, locations and linkages, awareness and education, innovation and design, and regional priority (U.S Green Building Council, n.d). Projects can achieve one of four levels of LEED certification, from the lowest level of certification to the highest: LEED Certified, LEED Silver, LEED Gold, and LEED Platinum.

The BedZed Community, built in 2002 in South London, UK, is one of the most notable examples of a net-zero community. The community is comprised of 100 homes and includes office space, a college, and community facilities. Residents of the community consume approximately 50% less water than the London-area average, and the community produces 37% less carbon dioxide emissions from gas and electricity use than developments of similar sizes and locations. The developers also placed an emphasis on sourcing construction materials locally with over half of the materials used in the project originating within 56km of the site. The development embraces passive-sustainability principles, using as little electricity from the grid as is possible to heat, cool and light their buildings. In order to offset power usage, BedZed relies heavily on solar heating, effective insulation, and natural ventilation in the form of wind cowls on the roof. Additionally, from an educational and informational perspective, BedZed makes it easy for residents to track their sustainability metrics using meters installed in each home (Chance, 2009).

60 Richmond Street East, located in Toronto, equally embraces sustainability by creating an embedded ecosystem within the building and a sense of "urban permaculture". The building achieves LEED Gold Certification through its use of green roofs that help insulate the building and reduce the urban heat island effect in its surroundings. Unlike many new developments in downtown core, the building does not rely heavily on exterior glazing and allows for an appropriate amount of light, ventilation and heat to penetrate the building. Integrated mechanical systems transfers warm energy from the sun-lit southern side of the building to the generally colder north side of the building; the hollowed-out core allows for passive ventilation; and a



rooftop cistern collects stormwater for use in the rooftop garden. Produce from the garden is intended for use in the residents' industrial kitchen on the main floor, and compost from the kitchen is used as fertilizer in the rooftop garden (Canadian Architect, 2014).

Pre-fabrication

Housing, while being generally a lower-margin, multiple system design and fabrication exercise, where the integration of various design system needs could benefit the overall economy of construction does this integration relatively poorly as evidenced by the wastage on building construction sites and the process itself. Framing teams build a framed wood structure, and then mechanical and electrical contractors cut and alter to fit their systems into it sometimes making a mess; and compromising the structure itself. The materials are inexpensive, and the finished product relies on "covering - up" all of this "rough" construction. It is here that we need to focus on an approach to integration that provides a more complementary and thought - out integration of the various building systems of a dwelling.

Prefabrication attempts to solve the on-site problems of construction in advance, to lessen construction time, provide a higher quality of workmanship, and to eliminate and control material waste, which increases environmental responsibility. Since prefabrication involves prototyping as a process, there is also the added benefits of exploring innovative new materials, and techniques of construction at a smaller more manageable prototyping and testing scale. There is also the benefit of a shop-controlled environment for portions of fabrication, which in Canada, with a harsh winter climate, improves quality and efficiency.



Murray Grove Apartments / Image Source: Cartwright Pickard Architects



Microflat infill prototype dwelling / Image Source: contemporist.com



Marta Serrats outlines in *Prefab Houses*, “the fact that the panels can be built earlier allows for the use of energy - efficient products, which provide greater insulation from the interior and a higher quality, without them being exposed to inclement weather during construction.” (Serrats, 2006, 9) The recent escalation of housing prices and construction costs have made prefabrication a viable method of reducing construction costs, and prefab building makes housing more accessible for many as it provides a lowered final cost.

As outlined by Smith (2010), some of the principles and efficiencies of prefabrication are outlined as; the ability to make use of technology applications, and building information modeling, improved efficiency through good integration of processes, materials, and workers, better use of off-site fabrication processes for pre-assembly, and modular prototyping, and pretesting of construction approaches, and finally more effective tracking of innovation measures and performance. (Smith, 2010)

What this implies for housing and housing typologies is a more systemized approach to building design is taking place.

Such projects like the Murray Grove Apartments in London (Cartwright Pickard Architects, 2001, London, England), or the Microflat Infill project also in London, by (Piercy Conner Architects, “Microflat”, prototype dwelling, 2002, London, England) which demonstrate the true advantages of off-site prefabrication, shortening on-site timelines, and providing a higher standard of shop manufactured design, that is very expensive to achieve on-site.

Another benefit is support for local industry, as there are many such shops throughout Ontario with the technology and manufacturing capabilities to provide another level of efficient prefabrication for city-buildings. Such businesses as Canada Builds in Lindsay, are versions of some of the European prefabrication expertise that exists throughout Europe like Edward Kaufmann at KFN systems in Austria, or in projects like BIG Architects Dorteavei Residence, or the Gronnevikson Student Apartments by 3RW in Norway.

Another key aspect of sustainable prefabrication is long term reduced operating costs using new materials like digital wood skeletons, carbon fibre, 3D printed clay constructions,



St. Lawrence Neighbourhood, 1979 / Image source: woodsworthcoop.ca

and other sustainable material technologies. Couple with this assistive and monitoring technology for reduced maintenance costs, the notion of net zero building, smart rooms and connected appliances to augment technologically supported sustainable practices.

Open Building

Open Building is an approach to design that places the user at the centre of the design process and considers the need for change and adaptability over the course of life-time; social and technological change and user/participatory input. "Buildings are built and maintained through the concerted efforts of many parties operating at many levels. It therefore makes sense to structure the interfaces of parts and of decision makers in ways that improve the responsiveness to end users, while at the same time increasing efficiency, sustainability, and capacity for change, and dramatically extending the useful lives of residential buildings" (Kendall & Teicher, 1999, p. 4)

Individual dwelling units are only one part of a community, and emphasis must be given to the residents needs for other facilities, and the fact that these needs may change over the life of the building, while some of the retail, and

recreational uses located in the community or building may be market driven, many may be a response to the end - user, in an effort to customize a community.

This is also a move towards increased customization for not only the dweller, but the community social needs itself. Some of the most innovative housing has tackled these social needs as community - based, providing playrooms, daycares and other social gathering facilities, to support the smaller private unit spaces. Community needs can be tailored through flexible common spaces, daycares, public education facilities for children, childcare and play rooms, educational workshop venues for seniors, integrated work hubs within buildings. Recent condominium projects have expanded the roster of amenities, providing more extensive social spaces, like 20-person movie rooms, expanded physical fitness facilities with staff and trainers, in-house bars and party rooms, communal barbeque areas, and in-house business centres and work hubs like the TIFF lightbox apartments.

Another innovation with respect to some of these services is to outsource them as stand-alone services and to provide

them to a larger community beyond the building itself. Daycares, fitness centres, bars, café and restaurants are located on lower levels, or more semi-public areas to service the community service at large. As private car parking needs decrease, lower basement levels can also be repurposed for communal facilities.

Adaptive and Flexible Design

Adaptive and flexible design refers to design that can be easily changed to meet residents' needs. We explore this concept on two scales: the total amount of space required by the residential unit, and the allocation of space within the individual residential unit.

There are several notable examples of architecture that is designed to adapt to a user's needs over an expanded

timeline through the ability to increase or decrease unit size as a family unit grows or shrinks. One of the most well-known of these examples, Walden 7 by Ricardo Bofill, has been a successful model of this type of design since the 1970s. The design of Walden 7 is comprised of 28 square meter cells that can be combined to create units. At the time of the building's construction, the smallest unit in the building was a one cell studio while the largest was four cells with multiple bedrooms. The motivation behind Bofill's design was that the building would be "permanently unfinished", changing in design as the families that inhabited grew or shrunk, exchanging cells and space with each other (Puigjaner & López, 2015). The geometrical design of the building allowed for easy exchange of cells that could either be spread across a singular floor or multiple floors. It is rumored that the largest unit currently in the building



The Moriyama House in Tokyo is home to ten different volumes that are designed to service different purposes as determined by the property owner.

Image source: dezeen.com

is comprised of an expansive eight units on the building's upper floors (King, 2016). Another notable example of flexible and adaptive design is Moriyama House by Ryue Nishizawa located in Tokyo, Japan. The property is home to ten different volumes that are designed to service different purposes as determined by the property's owner - some function as living spaces, while others are used as working studios or are rented out to tenants.

Toolkit 3: Re-Imagined Communities

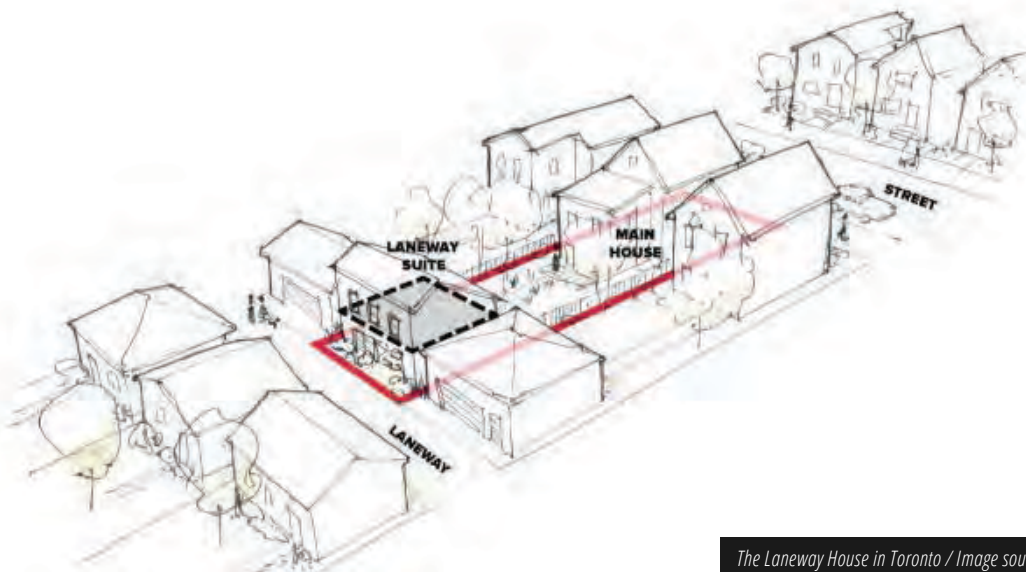
As notions of the single-family dwelling begin to change as a result of changing demographics, new forms of community will need to be actively created. Community challenges such as social isolation in young adults and seniors, financial precarity and access to social support (e.g. child care, transportation, etc) for young families, and health disparities in equity-seeking groups (e.g. children, youth, seniors, newcomers and visible minorities) due to inequitable social and environmental conditions require active consideration to ensure Toronto maintains a vibrant and socio-economically diverse society.

Alternative Intensification Strategies

As Canadian cities continue to grow, city planners in urban centres will continue to battle for increased density. Although dense towers and mega housing projects may seem necessary, they can lead to an increase in isolation and challenge traditional notions of community. Since the 1980's, Toronto's urban plan has been dictated by a nodal strategy - with dense urban areas downtown along major transport corridors, and in North York, and at the Scarborough Town Centre, but with little across the board densification. In recent years, under the guidance of the provincial Growth Plan, 40% of new development is being directed to already urbanized areas, and additional nodal points have been created across the city - such as at Yonge Street and Eglinton Avenue. These areas of intense densification severely juxtapose the traditional neighbourhood form that is often found in Toronto, often directly next to each other in these urban growth centres.

In recent years, there has been a call among urban planners and some urban





The Laneway House in Toronto / Image source: Evergreen Canada

residents to build more housing that addresses the “Missing Middle” (see section 1.5). These types of housing achieve “medium-density yields and provide high-quality, marketable options between the scales of single-single-family homes and mid-rise flats for walkable urban living” (Parolek, n.d., p. 2). Housing in the ‘Missing Middle’ is characterized by walkable neighbourhoods; medium density, but lower perceived density; small footprints; smaller, well-designed units; simple construction; and an urban plan that is not driven by off-street parking.

The City of Toronto’s Mid-Rise Guidelines define building typologies in low, mid and high-rise buildings, with low-rise building being up to four storeys in height, mid-rise building having between five and eleven storeys, and high-rise buildings being over 12 storeys. These guidelines outline a variety of housing types that serve to gently increase density, and that are found in the Missing Middle: townhouses and row-houses, back-to-back townhouses, stacked townhouses, apartment buildings, semi-detached or duplex residences, detached dwellings, secondary suites and laneway suites.

In Toronto, Evergreen (2018) has suggested the missing middle as an opportunity to provide more family-sized units, as currently, most four-bedroom units in the city are found in single family detached homes. Evergreen’s report outlines several reasons why Toronto should focus on increased development in the missing middle typologies of housing: to increase the range of housing options, to increase the range of suitable housing for families, to increase the number of

rental units available, and to remove existing cost-associated barriers to home ownership.

In recent years smaller planning strategies of urban infill, such as those outlined in the city’s Mid-Rise Guidelines, have been considered to provide urban intensification. The associated legislation has aided in increasing density without the expensive new building and infrastructure costs or the loss of community scale. That said, most proposed new development in Toronto still prefers the mid-rise to high-rise tower models, likely due to the inability to gather more than small pieces of property at a time for development. Another factor holding back the increase in gentle density in the city is Toronto’s Zoning By-laws. Most of the city falls within what Toronto urban planner Gil Meslin calls “The Yellowbelt”. These areas are considered “Neighbourhoods” under the city’s Official Plan, and are, in some ways, immune to the gentle density that would support a gentle increase in density. The Official Plan works to protect the physically stable areas of Neighbourhoods by requiring that any new development “respect and reinforce existing physical character of buildings, streetscapes and open space patterns in these areas” (City of Toronto, 2002, 2.23). As this neighbourhood housing type is primarily semi or detached residential, it is difficult to gain planning approval for other housing typologies that could introduce density.

Despite these issues, laneway housing is one housing typology in Toronto that has been approved to provide



TIFF Lightbox building / Image source: bioregional.com

small-scale infill development in stable neighbourhoods. Laneway suites offer a solution to provide gentle density to established neighbourhoods through the construction of separate dwelling units that are accessed by a rear laneway. In Toronto, these new dwelling units would not be able to be severable from the main property and are intended for rental or family use. Along with providing new opportunities for housing in established areas of the city, they can provide opportunities for aging-in place for senior residents.

Diverse Economic, Demographic and Multicultural Communities

Despite recent backlash against immigration in North America and Europe, Canadians generally remain open to immigration and supportive of multiculturalism and diversity (Momani and Stirk, 2017). In an extensive study funded by the Centre for International Governance and Innovation and the Pierre Elliot Trudeau Foundation the Diversity Dividend: Canada's Global Advantage, it was revealed that increased ethnocultural diversity in the workplace correlated with positive productivity growth and increased revenue. "Diversity needs diversity. Diverse people want to live in diverse cities with culture, arts and sports that reflect such dynamic backgrounds, but also serve to unify through shared experiences." (Momani and Stirk, 2017, p.9) However, 'diversity' has become a complex concept where the nature of contemporary diversity is characterized by

"newer, smaller, transient, more socially stratified, less organized, and more legally differentiated immigrant groups comprise global migration flows" (Vertovec, 2010, p.7). As we re-consider the composition of contemporary urban centres using a multi-dimensional definition of diversity that includes income, race/ethnicity, age and family type (Talen, 2007) as well as mobility/accessibility, we must reconsider housing typologies, dwelling standards, community amenities and ownership models, that reflect and support the new communities that have and will develop as a result.

The mixed-used housing developed in the St. Lawrence Neighbourhood during the 1970s showed a remarkable departure from traditional approaches to planning and remains today a successful example of inclusion. Despite the variety of ownership models present in the housing development, a unified aesthetic and equitable access to public infrastructure and shared space (schools, a library, community centre, shops, health services, market, restaurants, proximate transit) render it a successful example of inclusion and accessibility from a housing and urban design perspective, even today. The development of mixed-use housing is the most basic approach to creating social diversity within a neighbourhood. Although a well-established planning strategy with its foundations in 19th century social reform, a mixed-use approach continues to be a successful method of resisting social segregation by providing for social and economic diversity (Talen, 2007). Sociologists studying social diversity have agreed that

providing for a variety of mixed-use housing, both in terms of unit type and ownership model, care intrinsic to creating mixed-income and demographically diverse communities (Talen, 2007). Mixed-use housing alone cannot create or sustain a diverse and desirable neighbourhood. Proximate access to community resources and support services, such as child care, local health care, local schools, and neighbourhood stores, are needed to create “opportunity-housing” (Powell, 2003) and can serve as collective spaces that can connect individuals across socioeconomic lines.

Mixed-use Hybrids

In addition to the primary function of housing, buildings can provide for a vast range of community needs through flexible common spaces, daycares, public education facilities for children, childcare and play rooms, educational workshop venues for seniors, and integrated work hubs specific to the needs of individual communities. Not only do these elements enhance the sense of community and help provide for everyday needs but can contribute to level of affordability of housing stock if planned properly and have policy in place to ensure the ongoing affordability of housing in these developments.

Markus Moos in his study “Planning for Mixed Use: Affordable for Whom?” (2018) describes the positive and negative effects on affordability of mixed-use housing developments driven by their advantageous proximity and access to amenities (Moos, 2018). Affordability can be affected if there are changes to the cost of housing, such as prices or rents, or changes in income. Mixed-use zoning can influence affordability in two ways. Firstly, a greater mix of uses has the potential to reduce the cost of housing if it increases the housing supply and/or the diversity of housing types (Moos, 2018) so in theory, Mixed-use zoning would increase the supply of smaller units at a lower cost if there are higher density housing developments. Conversely, highly accessible units are often more expensive and command higher prices if they are developed in proximity to transit (Aurand, 2010; Song & Knaap, 2004). Thus, increases in housing supply in central locations where land values are high may lead to housing cost increases rather than providing more affordable housing (Koster & Rouwendal, 2012).

Moos suggests that the net effect of the two opposing impacts on affordability depends on specific circumstances such as the target market of new developments, the role of the government in mandating and/or building affordable housing, and whether there are changes in income

The Richmond Hill HUB combines mixed family and seniors' housing with a youth shelter and drop-in centre.



(Moos, 2018). Currently, much of the new housing developed in mixed-use zones is often targeted to those who can afford to purchase housing in amenity-rich downtown areas (Moos, 2018). Regarding affordability, it is imperative that the new developments ensure the resources and amenities combined with housing in mixed-use developments support the needs and values of the residents over the long term.

The Richmond Hill Hub project completed in 2016 exemplifies the goal of achieving and maintaining an affordable mixed-use housing development while being near numerous neighbourhood amenities. Richmond Hill Hub strives to ensure that the commercial offices, services and building amenities remain tailored to the needs of the residents, and that their housing options remain affordable. (York Region, 2018)

Innovative Partnerships

Partnerships and collaborations between private sector and non-profit organizations for housing developments have the potential to provide great benefits for both parties involved in the development and long-term operation of housing projects, while consciously increasing the availability of affordable housing stock. In Evergreen's report "Scaling Up Joint Ventures between Social Housing Provider and Private Sector Builders" (2017), Welch identifies three key benefits to collaborative partnership stakeholders that may not be otherwise available to projects developed by individual organizations: access to otherwise inaccessible land and other resources (ie: deferred development charges and municipal fees); reduced risk; and access to new markets. Collaborations can be successful when the strengths of the partners involved at various stages of the housing life cycle follow through from the design and construction stage and to ongoing management and operation. Although the foundation of these partnerships is based on the potential benefits available to each party, of utmost importance are the attributes of fairness, trustworthiness, and



transparency by all stakeholders including regional and municipal governing bodies. These governing bodies have an active role in fostering innovative partnerships that may be unprecedented in local contexts and providing a variety of facilitation ranging from open-minded approaches to zoning variances and expediting approvals processes to reducing development and application associated fees related to potentially new, unprecedented modes of housing development. It is imperative that these efforts are made with respect to increasing the affordable housing stock in the city.

Although public-private partnerships are not new, recent collaborations are delving deeper into capitalizing on stakeholder engagement and thus both stakeholders and governing bodies are beginning to see these innovative partnerships for communities at-large.

Housing and Transportation Partnership:

Mimico GO Transit Station Development, Toronto - This recently approved project by the Ontario government is being dubbed a "brand new kind of partnership," whereby private developer (Vandyk Group of Companies) will refurbish and add new features to an existing transit station in exchange for receiving the air rights above the property to build a mixed-use development above the station while being open to local community needs. (Reason, 2018) In an article by Cynthia Reason for Toronto.com (2018), Jasmin Dooh of LAMP described the project as "an excellent opportunity for all levels of government, Metrolinx, the private sector and local residents' groups to work together in the spirit of collaboration to improve transit and meet current affordable housing needs." (Reason 2018, p. 1)

Housing and Education Partnership:



RATP bus centre / Image source: ECDM Architects

North Toronto Collegiate Institute, Toronto – “The vision for the North Toronto Collegiate Institute Redevelopment was to create a sustainable, state of the art replacement school and integrated Residential Development. The project, made possible through a unique and innovative partnership between the Toronto District School Board and Tridel, obtained school construction funding leveraged from the residential development. Innovative green loan financing based on utility payback and life cycle costing was used to enable premiums associated with LEED and energy reduction targets. The NTCI Redevelopment is a role model for similar integrated public/private developments, in the leveraging of institutional funding through development. The extensive community participation in the design of both the school and residential buildings has set a precedent for similar integrated developments in the City.” (OAA, n.d.)



Village Vertical co-op / Image source: village-vertical.com

Design/Build, Finance and Operation/Maintenance Partnership:

Bayside Non-Profit Housing, Toronto - Bayside Non-Profit Housing is a corporation that was created by the City of Toronto to own 80 units of affordable housing in private developer Hines/Tridel's Aquavista development. Hines and Tridel designed the units and will be constructing the building (which are part of a larger market rate residential development). The 80 units will be leased and operated by Toronto Artscape Inc. for a 50 year period. Artscape was chosen by the City through a competitive RFP process in 2014. Funding was provided through a variety of means including 'Investment in Affordable Housing' via Canadian Mortgage and Housing Corporation and other capital funds from the City of Toronto. (Welch, 2017)

Participatory Design

The concept of 'Design Participation', whereby users become active participants in the design process, began to gain traction at an international conference entitled 'Design Participation' in 1971 (Lee, 2008). Ideas emerging from the conference were focused on approaching design from a community perspective where design solutions were developed by a larger group of collaborators including stakeholders, designers, and end users. This new way to design proved to be an ideal model for housing development where communities could have the opportunity to directly identify, influence and implement design strategies that meet their specific housing and community needs. Today, the active participation of end user or potential resident in the design process, directly or via advocacy groups, is common place and integral to addressing the wants and needs of residents. However, Lee (2008) posits that over the course of several decades of participatory design in practice, the concept of 'tokenism' has risen sharply whereby stakeholders and end users are often not part of the process in an equitable manner. Most of the decision-making power has shifted away from end users back to professionals, treating end user input and contributions as a 'form of tokenistic community involvement' (Lee, 2008, p.32). One way of addressing this decline of end user input is to add strength, focus and relevancy to end user needs by developing a common language amongst stakeholders. This proves to be very difficult at the end user level, however. Thus, in Darinka Czizchke's article "Collaborative housing and housing providers: towards an analytical framework of multi-stakeholder collaboration in housing co-production, International Journal of Housing Policy" (2018) she suggests that the relationships between end users (ie: residents), institutional actors, and established housing providers (public, non-profit, co-operatives) as a collaborative nit with congruent beliefs can result in a higher degree of end user

involvement whether it be in research, design, implementation and management of housing projects. Based on the study, it was determined that when partnered with established housing providers, the community end users gained valuable access to key resources, historical data, knowledge and professional expertise, that was unavailable to them at the community level (Czischke, 2018). While empowering and equipping the end user, we must also highlight the need to ensure that stakeholders from relevant professional backgrounds are involved in the design and development process and are trained to “engage effectively and constructively with the different types of knowledge and competencies of residents” (Beau and Bacque, 2010, P71). Czischke has identified that in many European countries the strength of this more effective model of user driven collaboration has resulted in a (re)emergence of collaborative housing, housing co-operatives, and other forms of collective self-organized housing.

Toolkit 4: New Notions of Affordability

A most necessary lens by which to understand housing affordability is through that of alternative structures of and pathways to home ownership. The traditional and dominant model of home ownership revolves around the idea of the home as a personal asset. As a result, the path to home ownerships is one that is determined on the basis of an individual's financial ability to put together a sizable down-payment and maintain consistent and often expensive mortgage payments. The most recent Housing Trends and Affordability report released by the Royal Bank of Canada (2018) revealed that on average, a household in Toronto would need to spend 75% of its household income to cover ownership costs. This level of housing unaffordability is echoed in major cities across the world. It within this global context of unaffordability that we see a re-emergence of alternative models of home ownership, albeit at a relatively small scale. These alternative models are largely based on principles of “housing as commons” and include co-operatives, community land trusts and shared ownership approaches to housing. While many of these models are not necessarily new, the means by which they can be updated and rendered relevant and useful in today's financial and social climate can be.

Non-profit Housing Co-operative

According to the Co-operative Housing Federation of Toronto (n.d.), there are 17,000 co-op units across the City of Toronto and York Region. Most of these co-ops were built between the 1960s and 1990s as a result of provincial and federal funding. Therefore, most are run as non-profit housing co-ops. In Toronto, there are two types of co-op units - market rent and rent geared-to-income (RGI), which is subsidized by the government with long waitlists (Park, 2014). With many of the operating agreements for federally-funded co-ops ending in the next few years, many co-op residents are at risk of losing the subsidies that drive housing affordability.

In recent years, the development of new co-ops in Toronto has been far and few between. Notable examples include Local 75 (Hospitality Workers) Co-op at 60 Richmond Street East and Naismith Non-profit Housing Co-op at 10 York



Street. Both examples demonstrate completely different approaches to developing co-op housing in the city. 60 Richmond Street East is the result of a partnership between Toronto Community Housing, the Co-operative Housing Federation of Toronto and Local 75, a hospitality workers' union. Built on surplus city land, the financing for this project came mainly from Toronto Community Housing and government grants (Toronto Community Housing, 2010). This project has been praised for its architectural design, sustainable innovations and amenities. On the other hand, the Naismith Non-profit Housing Co-op in the Ten York Street market condo development resulted from negotiations between the City and the developer Tridel under Section 37 of the Provincial Planning Act (Vincent, 2012). In short, Section 37 is a community benefit agreement negotiated in exchange for the approval of developments that do not meet current zoning standards. It should be noted however, out of the 725 units in the condo, only 12 are offered as units to be managed by the Naismith Non-

profit Housing co-op (Vincent, 2012).

Shared-equity Housing Co-operative

In the United Kingdom, a new type of housing co-op exists called the Mutual Home Ownership Society (MHOS). This type of equity-based leaseholder scheme guarantees affordability in perpetuity for its members. This type of structure sits between ownership and rental, where members are assigned equity and acquire it through a monthly charge. The payments that leaseholder pay is set around 35% of net income. As members leave, existing members can buy more equity shares (Lawrence, 2015). According to the UK MHOS Network (n.d.), "the Society takes out a collective mortgage; each home is responsible for paying a share of it." Additionally, the payments are based on household's ability to pay. This means more affluent households can buy more equity shares than the value

of their home, making other homes in the scheme more affordable for households on lesser incomes (UK MHOS, n.d.).

An example of this model is LILAC - Low Impact Living Affordable Community located in Leeds, UK. LILAC was developed by a group of five Leeds residents that desired an alternative living arrangement. It took about seven years since the inception of the idea for this development to be fully realized. The result is a co-housing model centered around private homes and shared facilities. According to its website (LILAC, n.d.): “the site is based around the Danish co-housing model: mixing people’s needs for their own space in private homes with shared facilities and encouraging social interaction. Our green spaces – allotments, pond, a shared garden and a children’s play area – are also important to community interaction. The common house is at the heart of the community, and includes communal cooking and eating facilities, laundry facilities, meeting space, play area, office and guest rooms.”

Community Land Trusts

The Canadian Mortgage and Housing Corporation (2017) defines community land trusts (CLTs) as locally-based, private non-profit organizations that acquire and hold land for the benefit of a community. They do so with the

specific purpose of making this land available perpetually for affordable housing, usually catering to low- and moderate-income residents. CLTs achieves housing affordability through the dual ownership approach, meaning CLTs retain ownership of the land and, through long-term leasehold interests, grant the right to third parties (e.g., low- to moderate- income households) to use that land (CMHC, 2005). In Toronto, CLTs have not been a widely used approach to affordable housing. One of the prominent examples in Toronto is the Parkdale Neighbourhood Land Trust (PNLT), which was established in 2010 with the goal of “protecting the social, cultural and economic diversity of Parkdale by redefining how land is used and developed.” In 2017, PNLT conducted an audit of rooming houses in the City and discovered 198 rooming houses with an estimated 2,715 dwelling rooms; only 112 of these houses were known to and licensed by the City (Paradis, 2018). However, the Parkdale neighbourhood is experiencing a rapid loss of these rooming houses as a result of “upscaling,” which is the conversion or renovation of these properties for sale or for luxury rental due to market pressure (Paradis, 2018). To date, the PNLT has only acquired one piece of land being used as a community garden. However, it is looking to preserve rooming houses within the neighbourhood to protect the dwindling stock. So far, the CLT model has yet to gain traction in Toronto to make a dent in tackling housing affordability.



In the west, the city of Vancouver has a Community Land Trust at a much larger scale. It is a non-profit that acts as a

Milky Way Garden owned by the Parkdale Neighbourhood Land Trust / Image Source: toronto.com

DETAILED CASE STUDIES

The following section contains 15 local and international case studies that are explored in more detail. These case studies represent projects that leveraged the various tools in the "toolkit." These projects include:

- 60 Richmond Street West, Toronto, Canada
- St. Lawrence Neighbourhood, Toronto, Canada
- Dortheavej Residence, Copenhagen, Denmark
- Beekmos Houten, Netherlands
- Wohnprojekt Wien, Vienna, Austria
- Almere Poort Housing Project, Almere, Netherlands
- Walden 7, Sant Just Desvern, Spain
- Solid 11, Amsterdam, Netherlands
- Silodam, Amsterdam, Netherlands
- Villa Verde, Constitucion, Chile
- Home:Front, Hamilton, Canada
- Hydro Block, Toronto, Canada
- Artscape Triangle Lofts, Toronto, Canada
- Smart House, Toronto, Canada
- Fraserview Housing Co-op, Vancouver, Canada

The complete list of case studies can be found in **Appendix A** of this report.





JAspern co-housing by POS Architecture / Image Source: Marcus Kaiser Photography

local case study

60 RICHMOND STREET EAST



NEW MODELS OF LIVING



ALTERNATIVE CONSTRUCTION & DESIGN



RE-IMAGINE COMMUNITIES



NEW NOTIONS OF AFFORDABILITY

location: Toronto, Ontario | **architect:** Teeple Architects

Project Description: 60 Richmond Street East is an 11-storey 85-unit building that provides co-operative housing for workers in Toronto's hospitality industry and their families. The building combines both market-value and subsidized units and is the product of partnerships across several organizations, including Toronto Community Housing, the Co-Operative Housing Federation of Toronto, and labour unions representing hospitality workers. The design of the building embraces the idea of "urban permaculture" and attempts to support a sustainable ecosystem within the building through the use of the community kitchen and garden.

PROJECT OVERVIEW

Date of Completion

2011

Building Typology

Mid-rise building

Tenure Type(s)

Housing co-op
Subsidized rental

Space Allocation

One-bedroom units: 33
Two-bedroom units: 24
Three-bedroom units: 24
Four-bedroom units: 4

Notable Amenities

Resident-run kitchen & restaurant
Roof-top community garden

Areas of Innovation

Innovative partnership
Non-profit housing co-op
Sustainable design

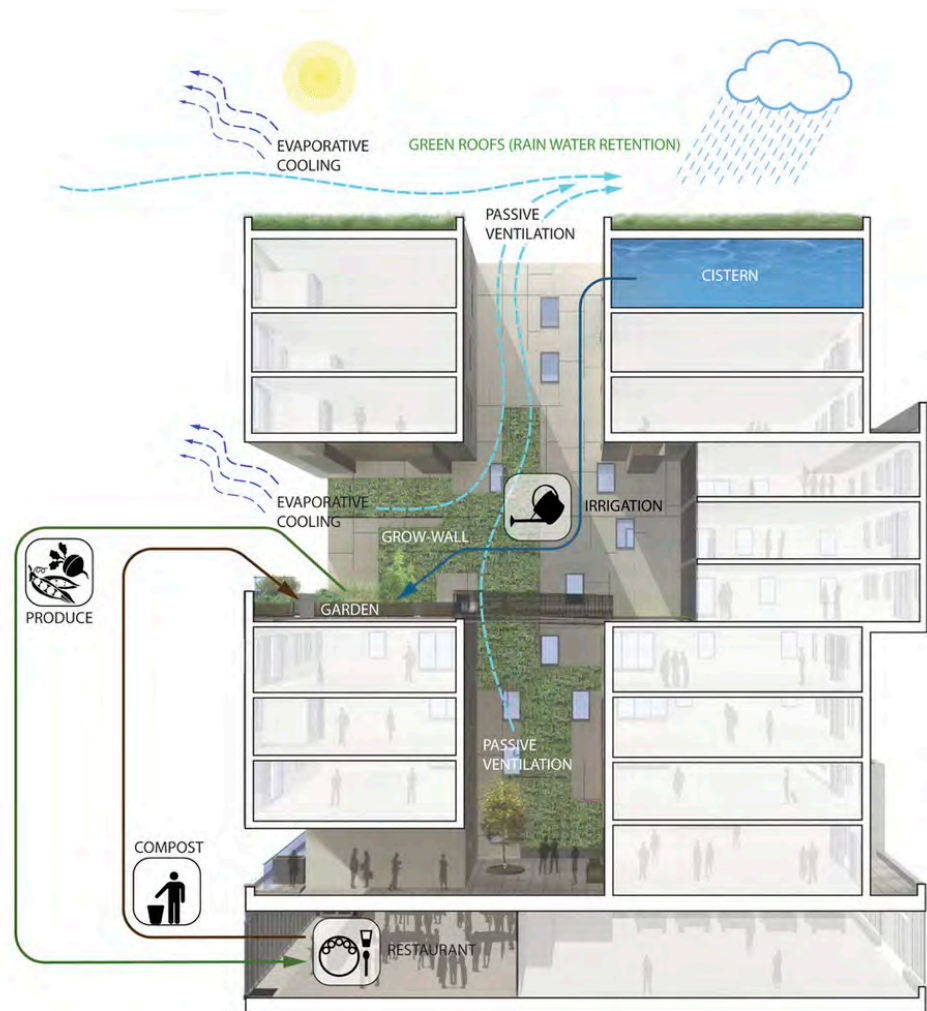


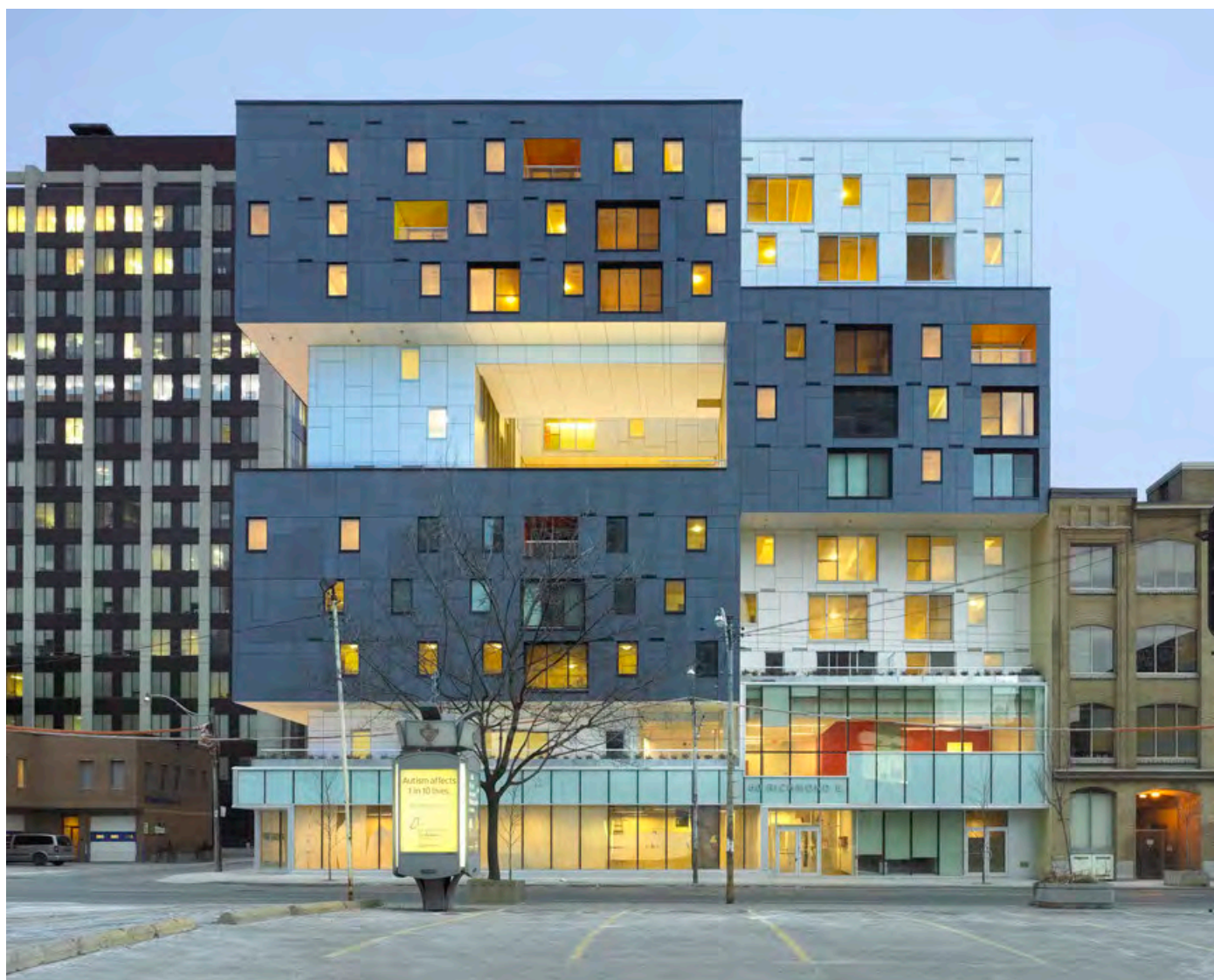
Diagram of the project's sustainable features / Image Source: Teeple Architects

This project represents Toronto's first housing co-op in 20 years

In 60 Richmond Street East's co-op management model, all residents make decisions about how the building is run and managed, and there is no traditional landlord. Rent increases are agreed upon by all members of the building based on the actual cost of continuing building maintenance. This allows residents to establish themselves in one place without the fear of being displaced due to rent increases. The building was also built with energy and cost saving measures such as insulated cladding and a heat recovery system.

This project embodies sustainable design principles based on the idea of "urban permaculture"

The most notable amenities in 60 Richmond are the ground-floor shared industrial kitchen and restaurant, and the roof-top community garden that supplies fresh food for the kitchen. The garden is irrigated through stormwater, and waste from the kitchen is used as compost in the garden. On top of providing a functional service that meets residents' needs, these spaces also serve a social function for the residents by catering to the lifestyle and passions of the residents. The ground floor kitchen and upstairs amenity room also service social purposes outside of the building's community - they are used to host training sessions for other members of the hospitality community.



Front view of 60 Richmond Street West / Image Source: Teeple Architects

local case study

ST. LAWRENCE NEIGHBOURHOOD



NEW MODELS OF LIVING



ALTERNATIVE CONSTRUCTION & DESIGN



RE-IMAGINE COMMUNITIES



NEW NOTIONS OF AFFORDABILITY

location: Toronto, Ontario | **architect:** Irving Grossman, Klein & Sears, Jerome Markson, Matsui Baer Vanstone Freeman, JE Sievenpiper, Silaste & Nakashima, Thom Partnership

Project Description: The St. Lawrence Neighborhood is a mixed-income, master-planned community on 56 acres in downtown Toronto. Its 4,310 units house approximately 10,000 residents. The neighbourhood was a response to a housing affordability crisis in Toronto and was a new model of public housing at the time. The neighbourhood is centered around a six block long linear park.

PROJECT OVERVIEW

Date of Completion

1982

Building Typology

Low-rise townhomes
Low-rise apartments
Mid-rise apartments

Tenure Type(s)

Market Ownership
Subsidized Rental
Co-operatives

Space Allocation

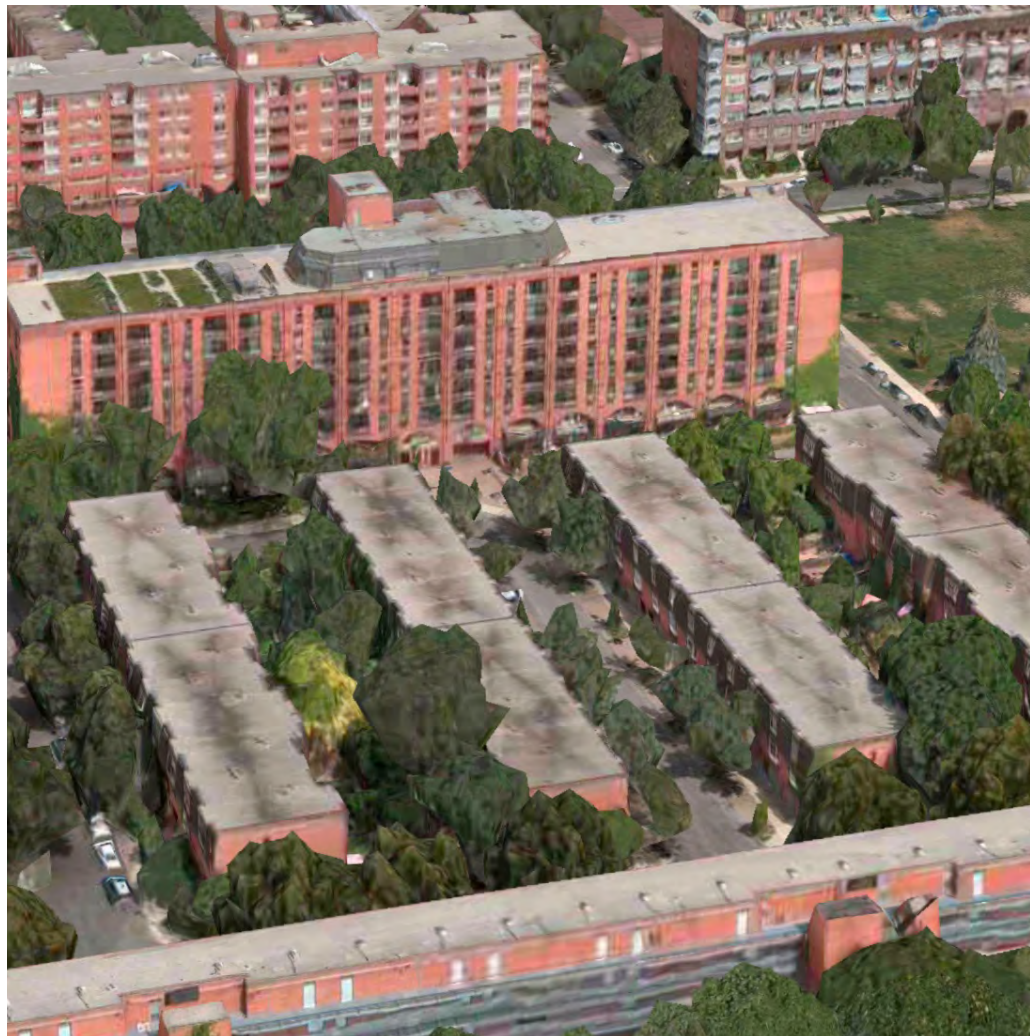
9% condominium apartments
30% non-profit co-ops and private non-profit rentals
27% public non-profit rentals
4% townhouse ownership

Notable Amenities

David Crombie Park

Areas of Innovation

Mixed-use hybrid
Diverse economic, demographic and multicultural community
Participatory design
Housing co-ops



View of Woodsworth Housing Co-op / Image Source: woodsworthcoop.ca

A highly participatory process led to the success of the project

The process for the design and development of the St. Lawrence Neighborhood project embraced the involvement of community members alongside trained urban planners and architects and the decision-makers. This, alongside its emphasis on not being a socially homogenous development, has allowed for the neighborhood to thrive and remain relevant over time.

This project represents a truly mixed-income and diverse neighbourhood

The success of the St. Lawrence Neighbourhood rests on its use of mixed-income housing and a variety of housing types. The neighbourhood brings together townhome ownership and traditional condo apartments with subsidized housing models such as public and private non-profit rentals, as well as co-op housing. The range of housing typologies available, at different price points, allows for a seamlessly integrated community of low and middle-income residents.



View of basketball court in David Crombie Park/ Image Source: miturf.com

international case study

DORTHEAVEJ RESIDENCE



NEW MODELS OF LIVING



ALTERNATIVE CONSTRUCTION & DESIGN



RE-IMAGINE COMMUNITIES



NEW NOTIONS OF AFFORDABILITY

location: Copenhagen, Denmark | **architect:** Bjarke Ingels Group

Project Description: The Bjarke Ingels Group was commissioned by the non-profit organization Lejerbo to create affordable housing for low-income residents. The result was a five-storey development built using pre-fabricated modules to create 66 new homes at a low cost. The design of the building was based on a strict affordable housing budget, without sacrificing space and quality of design for the residents.

PROJECT OVERVIEW

Date of Completion

2018

Building Typology

Mid-rise apartment

Tenure Type(s)

Affordable rental

Space Allocation

Residential GFA: 6,800 sqm
66 units ranging: 60 - 115 sqm

Notable Amenities

Large entrance plaza
Interior secluded garden

Areas of Innovation

Pre-fabrication



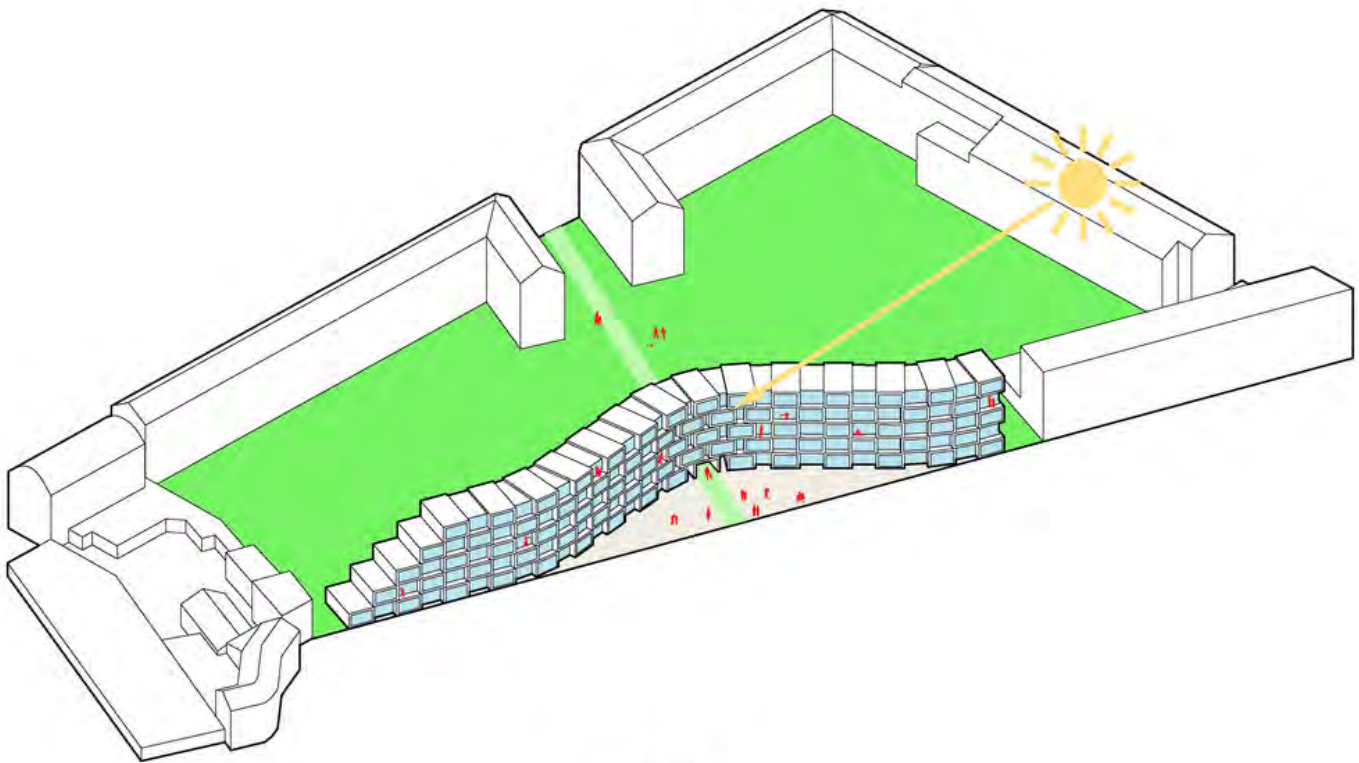
View of the pre-fabricated modular units / Image Source: Bjarke Ingels Group

Innovative design and construction methods kept the project cost low

By leveraging cost-effective construction methods, such as the pre-fabrication of modules, the Dortheavej Residence was able to keep costs low without sacrificing the quality of life or design of the new building. The prefabricated modules are stacked in a way that allow every other module to have increased height, allowing for high ceilings in the living and dining spaces of the units. This model allows for architect-designed, high quality homes at a lower budget.

Building design ensured maximum access to the public open spaces

The project site borders a public open space, and any building on the site would serve as a fourth wall to the existing plaza and garden. One of the project requirements was that access to the public space be maintained, so the structure was developed in a way that a certain portion was lifted to create a walkway and maintain the existing public access point to the central garden. The gentle curve of the building also contributes to a sense of urban space around the building by creating a public plaza in the front of the building and providing visual depth to the interior garden.



SOCIAL REALM

THE SYSTEM COMBINES A VALUABLE PUBLIC SPACE WITH SOCIAL HOUSING UNITS OPTIMALLY ORIENTED.

international case study

BEEKMOS HOUTEN



NEW MODELS OF LIVING



ALTERNATIVE CONSTRUCTION & DESIGN



RE-IMAGINE COMMUNITIES



NEW NOTIONS OF AFFORDABILITY

location: Beekmos 1-17, Houten, Netherlands | **architect:** Hans Been Architects

Project Description: Beekmos Houten brings together young mothers and adolescents with senior residents in an “assisted living environment”. The elderly residents provide advice and guidance to the young girls, while the relationships help combat issues of isolation and loneliness among the senior population. The project not only addresses the need for providing housing for young at-risk population but seeks to create a sense of community beyond the space of the physical home. The project was entirely designed and coordinated between non-profit actors, including Stichting Timon, a non-profit organization that provide guidance to young people, and Habion, a housing foundation focused on providing housing for seniors.

PROJECT OVERVIEW

Date of Completion

2012

Building Typology

Low-rise Apartment

Tenure Type(s)

Rental

Space Allocation

Total Area: 2,155 sqm

Total Units: 17

4 units for senior residents

13 units young mothers

Notable Amenities

Personal garden spaces

Conference rooms

Rooftop garden

Areas of Innovation

Intergenerational living

Non-profit housing



Aerial view of Beekmos 1-17 Houten / Image Source: Google Maps

This project highlights how needs can be met through intergenerational living arrangements

Beekmoos, Houten brings together two different population groups that can fill each other's unmet needs. While young mothers need access to advice on parenting or informal babysitting, the elderly individuals are seeking meaningful involvement to help develop a sense of purpose in life and combat the loneliness that is often found in old age. In this development, the selection of populations that can solve each other's unmet needs naturally created a neighbourly environment. The project also encourages communal activities, such as eating together once a week, to help build a notion of community.

The communal spaces facilitate interactions between intergenerational residents

The common spaces in the building are designed to provide a space where the senior residents and the young women can share experiences together. The building includes a rooftop terrace, large communal spaces, and smaller meetings rooms that provide a variety of opportunities for social interaction as well as private areas for individual support. These spaces allow for the women to gain the skills they need while providing comfortable and meaningful ways of living for the elderly residents.



View of Beekmos 1-17 Houten / Image Source: Google Street View

international case study

WOHNPROJEKT WIEN



NEW MODELS OF LIVING



ALTERNATIVE CONSTRUCTION & DESIGN



RE-IMAGINE COMMUNITIES



NEW NOTIONS OF AFFORDABILITY

location: Vienna, Austria | **architect:** Einszueins Architektur

Project Description: The building was built by a private property developer and was purchased by the community on completion. All residents are part of the association which manages it, making this community one of the first groups in Austria to have a Sociocratic organizational structure. This form of governance differs from a democratic organisational structure in that there is no 'rule of the majority'; all residents have to reason with one another until a unanimous decision is reached.

PROJECT OVERVIEW

Date of Completion

2014

Building Typology

Mid-rise apartment

Tenure Type(s)

Shared ownership

Space Allocation

40 apartments: 36 - 150 sqm
Commercial: 400 sqm
Communal spaces: 700sqm

Notable Amenities

Community kitchen
Children's playspaces
Rooftop garden and terrace
Multi-use event room
Common storage allotments
Library
Guest rooms
Workshop
Meditation room

Areas of Innovation

Citizen-led development
Shared ownership
Shared amenities
Participatory design



View of Wohnprojekt Wien and community garden / Image Source: wohnprojekt.wien

The communal governance approach to housing promotes a strong sense of community

The project emphasizes diversity in community and residents aim to understand conflict through their governance model. All residents play a role in maintaining the common spaces and adapting them to fit the community's needs at that time. As consensus must be unanimous for any changes in the building, there is a strong sense of community. The community believes that this is supported through the variety of ages and backgrounds of its members. The building relies on a separation of public and private space that allow residents to find both peace and quiet and to embrace their creativity. The public spaces are constantly being redesigned by the residents in order to bring new life into the building. These aspects of the building allow for residents to have meaningful connections with their neighbours while also providing them with solitude within their personal dwelling space.

Participatory design helped the residents design communal spaces and amenities that meet the needs of the community

The amenity space in this project provides the foundation for building a strong community. Each of the 39 residential units in the building have their own floorplan, range in size from 1-bedroom units to six-bedroom units, and are designed by the residents to meet their specific needs. The reliance on different community spaces also allows the residents to meet some of their needs in the communal parts of the building rather than in their individual units. The communal spaces were designed by the residents of the building through a series of workshops, aim to bring together all residents to form a community. These community spaces extend beyond your traditional amenities to include services such as children's play spaces, a workshop and a community library. The amenities were designed to meet the needs of the community and include different areas for community gathering.

COMMUNAL SPACES

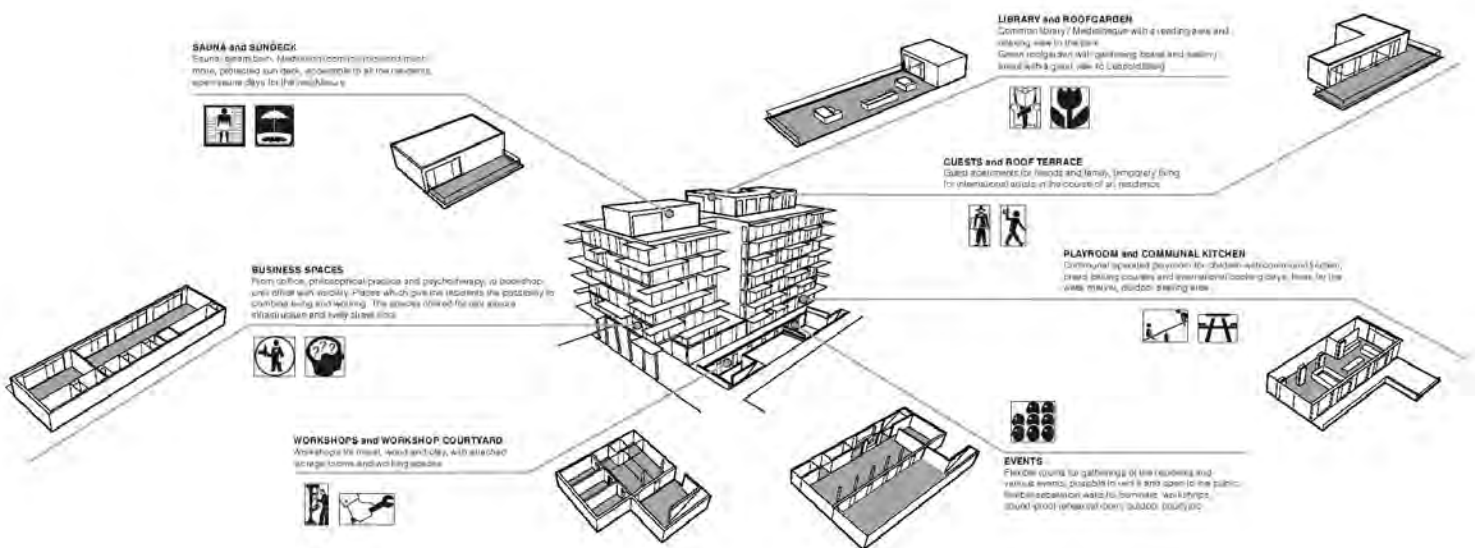


Diagram showing communal spaces in Wohnprojekt Wien / Image Source: archello.com

international case study

ALMERE POORT



NEW MODELS OF
LIVING



ALTERNATIVE
CONSTRUCTION & DESIGN



RE-IMAGINE
COMMUNITIES



NEW NOTIONS OF
AFFORDABILITY

location: Almere, Netherlands | **architect:** varies

Project Description: This is a master-planned community on 100 hectares of council land with nearly 3,000 self-built homes. The community is driven by principles like large-scale citizen involvement and bottom-up community development. The highlight being establishing a direct relationship between the local authority and the homebuyer. Once the buyer secures a plot from the local authority and have a mortgage in place, the buyer is free to customize their home or select from different “ready-made” homes designed by in-house architects. This project targets affordable housing for low-income households of €20,000 (£14,500) a year.

PROJECT OVERVIEW

Date of Completion

2009

Building Typology

Low-rise houses

Tenure Type(s)

Affordable ownership

Space Allocation

Lots range in size from 86 to 1200 sqm

Notable Amenities

N/A

Areas of Innovation

Self-build housing
Innovative partnerships



Birds eye view of self-build housing in Almere Poort / Image Source: decentarchitecture.com

Residents can live close to each other based on social interests or shared architectural vision

Prior to starting construction, the land in Almere Poort was divided into different neighborhoods based on how residents wanted to build their homes. This allowed residents with shared architectural and social interests to live in close proximity to each other. For example, if a resident wanted to build a sustainable home or a live-work home, they could build your home in a neighbourhood with neighbours that shared that interest or lifestyle. In this way, the design and development of the project supported shared interests among neighbours while also allowing them creative architectural expression.

Self-determination in home construction keeps housing affordable while meeting needs

Since the residents in Almere Poort oversaw the design and construction of their own homes, they were able to construct a home that meets their needs within their budgets. As a result, the town saw the construction of many small homes that were designed to keep costs low. Residents who wanted to live in an even more affordable home banded together to create a housing development on a singular plot of land, therefore decreasing the cost by increasing the number of units constructed on that plot.



View of the architectural diversity of self-build housing / Image Source: Thomas Feary via theguardian.com

international case study

WALDEN 7



NEW MODELS OF LIVING



ALTERNATIVE CONSTRUCTION & DESIGN



RE-IMAGINE COMMUNITIES



NEW NOTIONS OF AFFORDABILITY

location: Sant Just Desvern, Spain | **architect:** Ricardo Bofill

Project Description: Walden 7 is comprised of approximately 446 dwelling units made from one or more 28 sqm cells in 16-storey . The building was designed so that each individual unit could transform as its inhabitants moved through different life stages, occupying more or less cells as their needs changed. The arrangement of units can spread across different floors, and the individual cells are constructed as blank slates - meant to be designed by the inhabitants that occupy them. The building itself is structured along two axes, creating central courtyards within the building.

PROJECT OVERVIEW

Date of Completion

1975

Building Typology

High-rise apartment

Tenure Type(s)

Private ownership

Space Allocation

Unit sizes: 30 - 120 sqm

Notable Amenities

Two rooftop pools
Rooftop communal garden
Four interior courtyards
Book exchange in the lobby
Children's art classes

Areas of Innovation

Flexible design



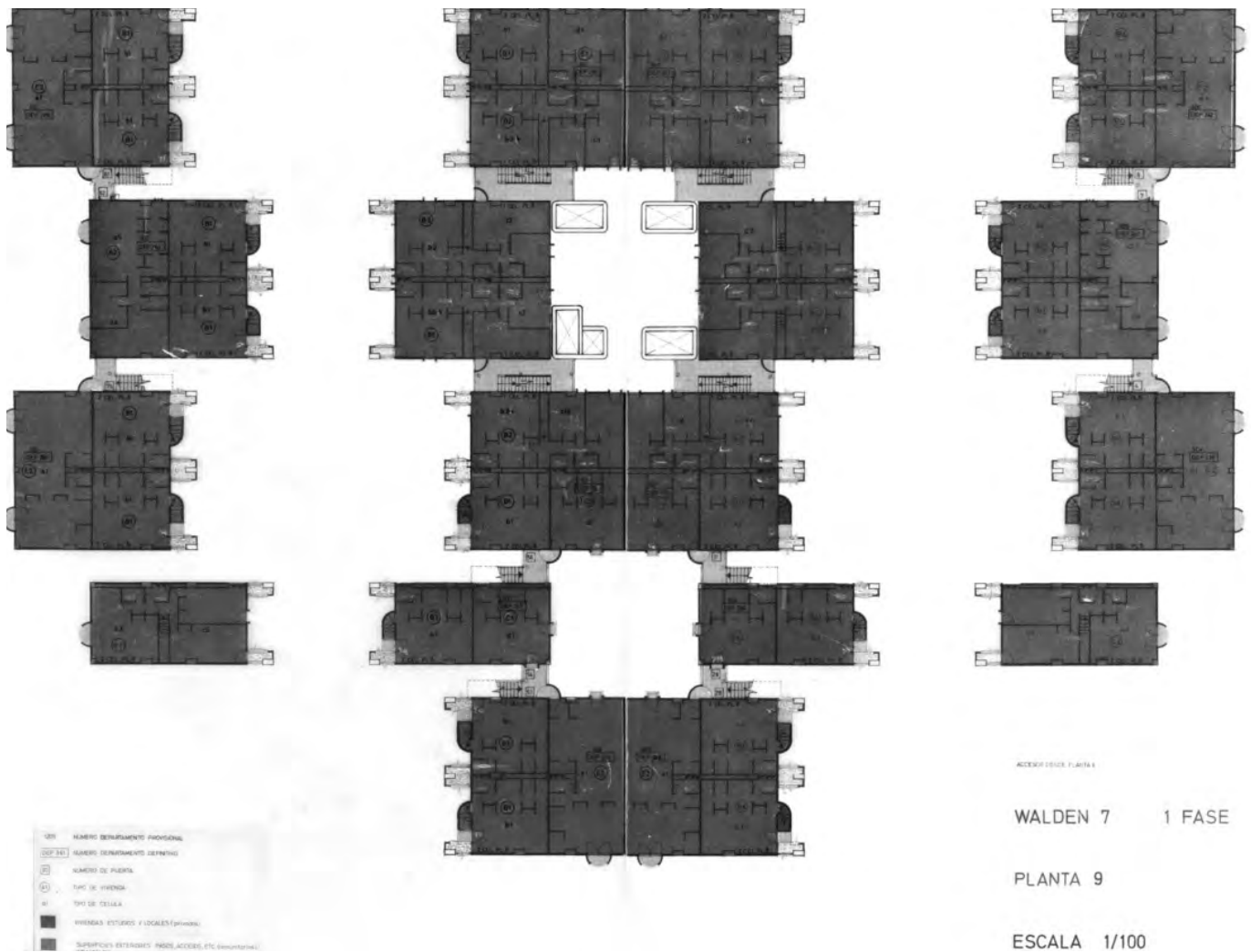
View of Walden 7 / Image Source: Ricardo Bofill, Taller de Arquitectura

A "cellular" approach to design allow the units to adapt to household needs over time

Walden 7 was built to be "permanently unfinished", meaning that the building could grow and adapt with its residents over time. The use of modular cells and a complex geometrical form of the building allows for the easy separation or combination of units over time. As a family grows or shrinks, walls separating the cells can be added or torn down to change the unit size and adapt to the family's needs. This allows the building to be adapted over time to fit the needs of its residents in the current moment.

Unconventional communal spaces such as walkways can facilitate social interaction

The different towers within the building are connected by a series of public walkways to encourage movement throughout the structure. Approximately 50% of the floor area in Walden 7 is public space, designed to encourage resident interaction. The public walkways act as outdoor patios, with many residents using them for their potted gardens and patio furniture. The larger communal spaces, such as the rooftop gardens and pools, also act as an incubator for social interaction within the building.



Floor plan of Walden 7 showing units as "cells" / Image Source: Archdaily.com

international case study

SOLID 11



NEW MODELS OF
LIVING



ALTERNATIVE
CONSTRUCTION & DESIGN



RE-IMAGINE
COMMUNITIES



NEW NOTIONS OF
AFFORDABILITY

location: Amsterdam, Netherlands | **architect:** Tony Fretton Architects

Project Description: Solid 11 is a part of three new-build projects that were designed for inner city sites previously occupied by hospitals and industrial complexes. The buildings appear in sequence, separated by public spaces, in accordance to architect Jo Crepain's master plan. The client, Dutch housing association Stadgenoot, asked that the project be built to have a 200 year life span. The "Solid", a highly durable and sustainable typology, was the response; presented to the market as an energy efficient constructed shell with adaptable interior space. Designed as a mixed-use building, Solid 11's flexible space could accommodate a range of activities including apartments, workspaces, a hotel, shops, cafes, and restaurants and public facilities such as a kindergarten.

PROJECT OVERVIEW

Date of Completion

2011

Building Typology

Mid-rise Building

Tenure Type(s)

Market Ownership
Subsidized Rental
Commercial

Space Allocation

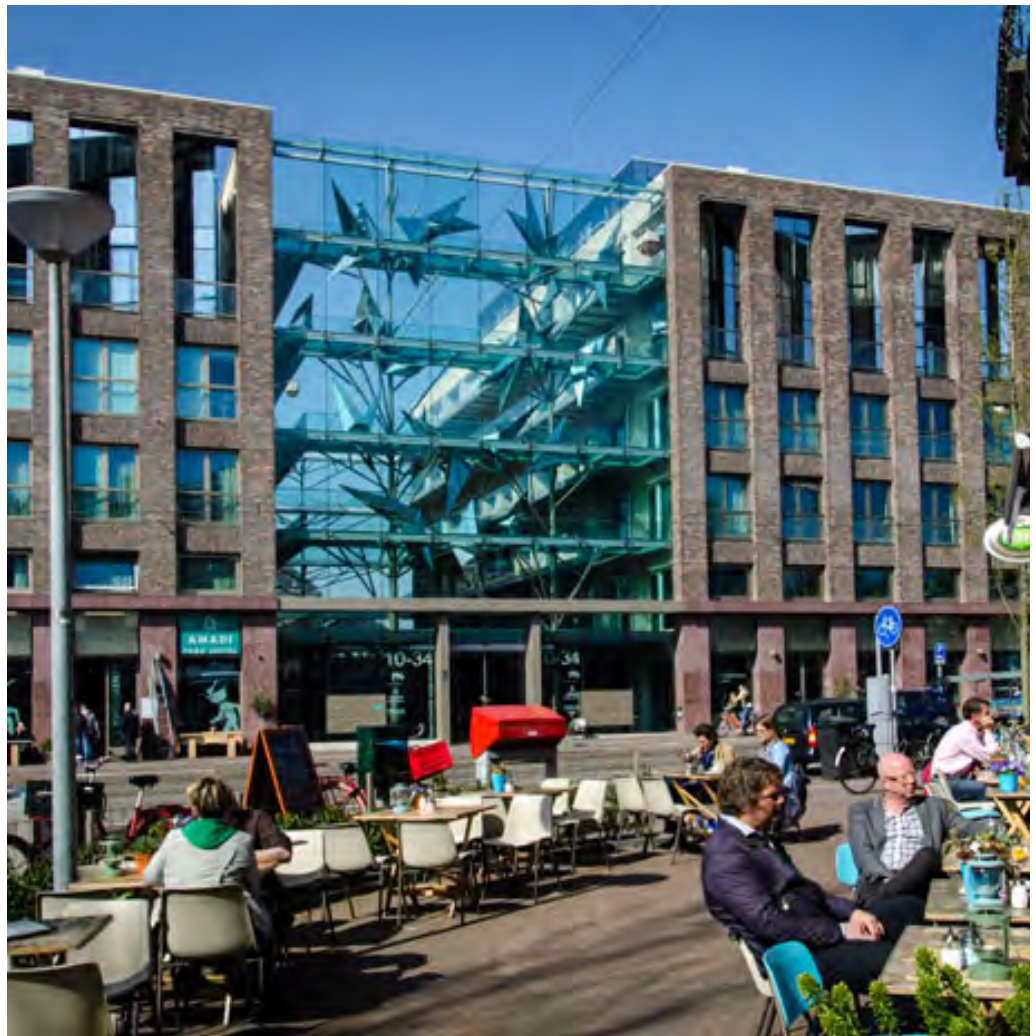
125 lots which can be combined
to form different sized lots

Notable Amenities

Central courtyard

Areas of Innovation

Open building
Flexible design
Sustainable design
Mixed-use hybrid



View of Solid 11 from plaza across the street / Image Source: Alex Schroeder Photography

Design of space matches the variety of changing user-determined needs over time

As a housing typology, a Solid is sustainable construction that is also resilient in its capacity to last up to 200 years, and designed to be adaptable to any purpose. The Solid adheres to a fundamental design principle: the space must be able to accommodate a variety of changing user-determined needs over time. A Solid's basic infrastructure is designed and delivered as a shell, to enable the rented space to be designed and utilized for a range of purposes: living, working, cultural activities, or a combination of multiple functions. As occupants are free to choose the layout and function of the space, they are able to continuously take advantage of this flexibility to best suit the stage of life they are in.

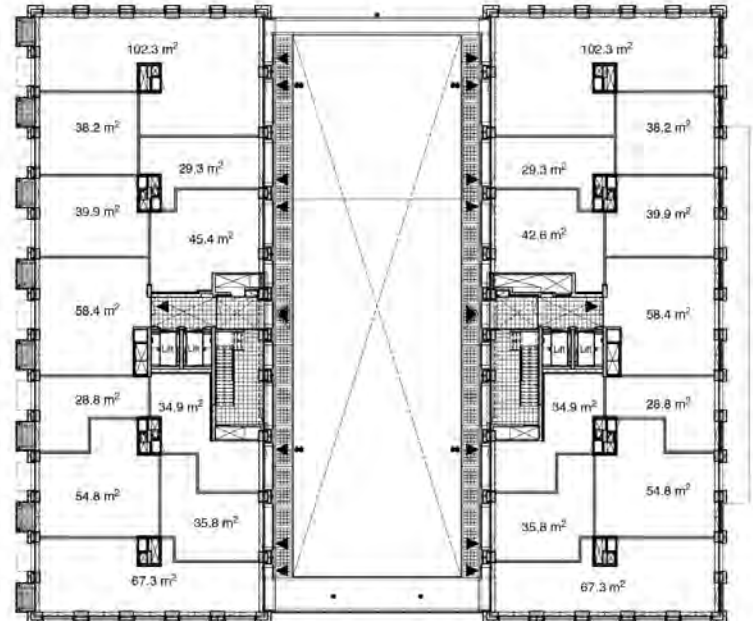
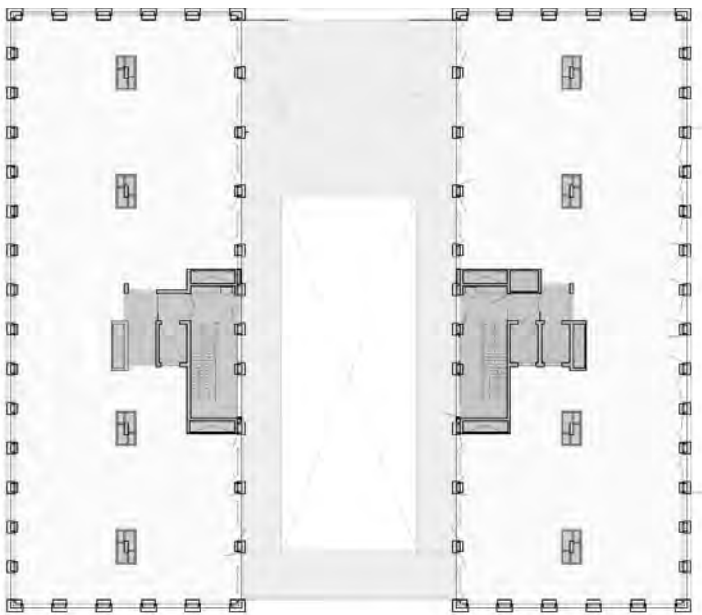
The central courtyard becomes part of the neighbourhood

A main feature of Solid 11 is the central courtyard, which extends the street into the ground floor of the building.

This area will feature shops, cafes and public facilities with balconies and walkways overlooking from the upper floors. Given Solid 11's location next to the canal, it is expected that the courtyard will be utilized as public space and may become a neighbourhood in its own right, functioning as an informal and natural way for residents and neighbours to connect.

Residential and commercial tenants are completely mixed

As a housing association, Stadgenoot's main objective was not in gaining profit, but to create a balanced mix of different tenants (market residential, social housing, and commercial). In order to do this, Stadgenoot developed an auction system that allowed bidders to choose the amount of space they required of Solid 11's lots. Residents could use and combine lots as building blocks for the space they required.



Left: Solid First Floor Plan, Right: Solid Second Floor Proposed Allotment Plan / Image Source: Tony Fretton Architects

international case study

SILODAM



NEW MODELS OF LIVING



ALTERNATIVE CONSTRUCTION & DESIGN



RE-IMAGINE COMMUNITIES



NEW NOTIONS OF AFFORDABILITY

location: Amsterdam, Netherlands | **architect:** MVRDV

Project Description: Situated on the IJ River, Silodam is the result of an urban transformation of a former dam and silo building. Designed for mixed-use, the ten story high building encompasses residences, offices, workspaces, commercial spaces and public spaces. The building is raised up over the water and externally, it resembles a stack of shipping containers. Each cluster of units was given its own unique character with a variety of different colours and material finishes creating stripes across the facade. The apartments differ in size, price and layout, which appeal to a wider range of people and speaks to the desire for individuality.

PROJECT OVERVIEW

Date of Completion

2011

Building Typology

Mid-rise apartment

Tenure Type(s)

Market Ownership
Affordable Rental
Commercial

Space Allocation

Total units: 157
Affordable units: 15
Owner-occupied units: 142
Commercial: 600 sqm

Notable Amenities

Internal boardwalk
Mechanical parking garage

Areas of Innovation

Flexible design
Mixed-use hybrid
Diverse community



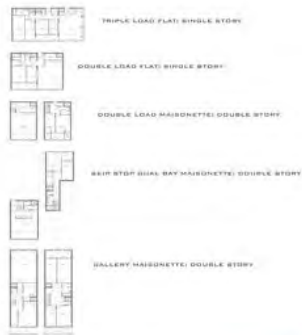
View of Silodam's stacked communities / Image Source: gellersworldtravel.blogspot.com

The different unit types draws a variety of people, resulting in a diverse community

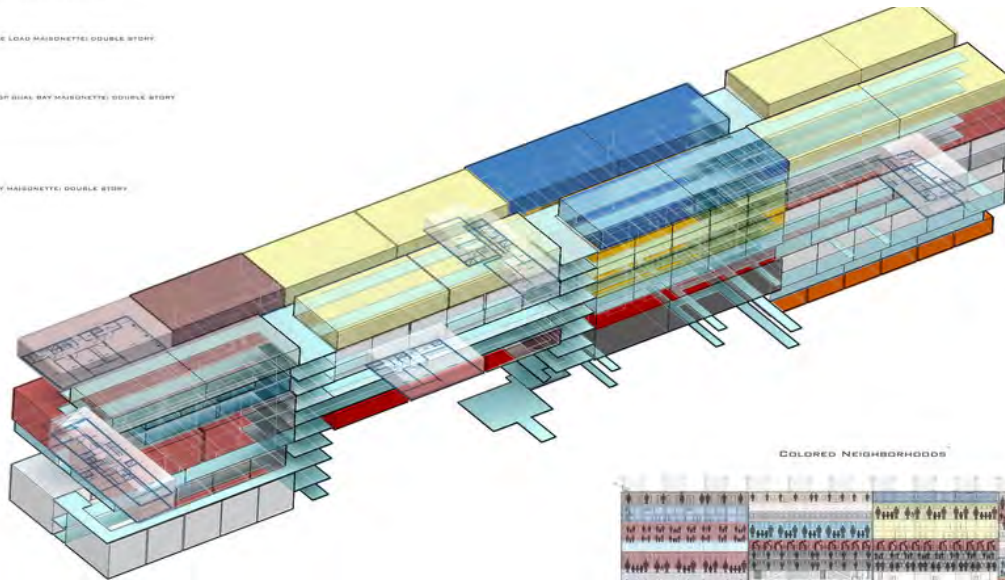
Silodam was created with the goal of allowing for a wide variety of homes, in order to accommodate a diverse group of people- low-income families, elderly residents, office workers and artists. The residences are grouped by type into 4 to 8 "houses": patio houses, studios, lofts, studios, maisonnettes, penthouses, and others. Houses not only differ in size but also in orientation, in the quantity and size of rooms, levels, building materials, outdoor spaces and even types of windows. A "house" can be half a block, a whole block, or diagonal over two floors, some with terraces or balconies, others with patios. Interior walls can also be moved and replaced by future residents, to allow for even more flexibility.

The design centres around the principle of a "stacked neighbourhood" to create a truly successful vertical community

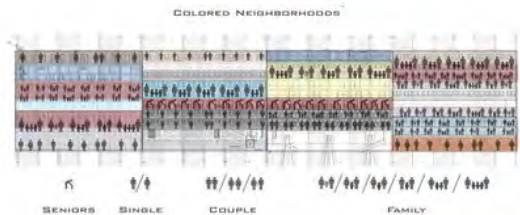
The apartments of Silodam were designed to form internally connected neighborhoods. The corridors function as internal streets, leading residents along pathways through the building. Various meeting places throughout the structure, including a small dock, allow for even greater interaction between residents.



AXONOMETRIC OF BAY UNITS, CIRCULATION AND UNIT PLAN OVERLAYS



COMPLETED WITH PRE-EXISTING NEIGHBORHOOD DIAGRAM



NEIGHBORHOOD



STANDART AMSTERDAM NEIGHBORHOOD



SILODAM "STACKED" NEIGHBORHOOD

local case study

HOME:FRONT



NEW MODELS OF LIVING



ALTERNATIVE CONSTRUCTION & DESIGN



RE-IMAGINE COMMUNITIES



NEW NOTIONS OF AFFORDABILITY

location: Hamilton, Ontario | **developer:** JvN/d

Project Description: The historically working-class North End in Hamilton is the site of a new condo development. Housing development company JvN/d bought two low-rise buildings in the area for \$1.6 million, which they are planning to transform into an eight-storey condominium building. The project hopes to offer flexible and affordable solutions for home ownership, including customized unit configuration and financing. A highlight of this project is the extensive community engagement JvN/d has conducted to inform the building design and financing options.

PROJECT OVERVIEW

Date of Completion

Under development

Building Typology

Mid-rise apartment

Tenure Type(s)

Affordable ownership

Space Allocation

Each floor of the building is divided into lots of 250 square feet

Notable Amenities

N/A

Areas of Innovation

Open building
Participatory design



468 James Street North development renderings / Image Source: OfficeARCHITECTURE

Mechanical Penthouse

Top

Appropriate height location, stepback impacts

Middle

Match "mid-block" heights and provide street definition and surveillance

Ground Plane

Intricate active frontages to activate street edge and provide visual interest to pedestrian

468 James Street North development renderings / Image Source: OfficeARCHITECTURE

Fixed "lots" within the building can be purchased individually or combined to suit buyers' needs

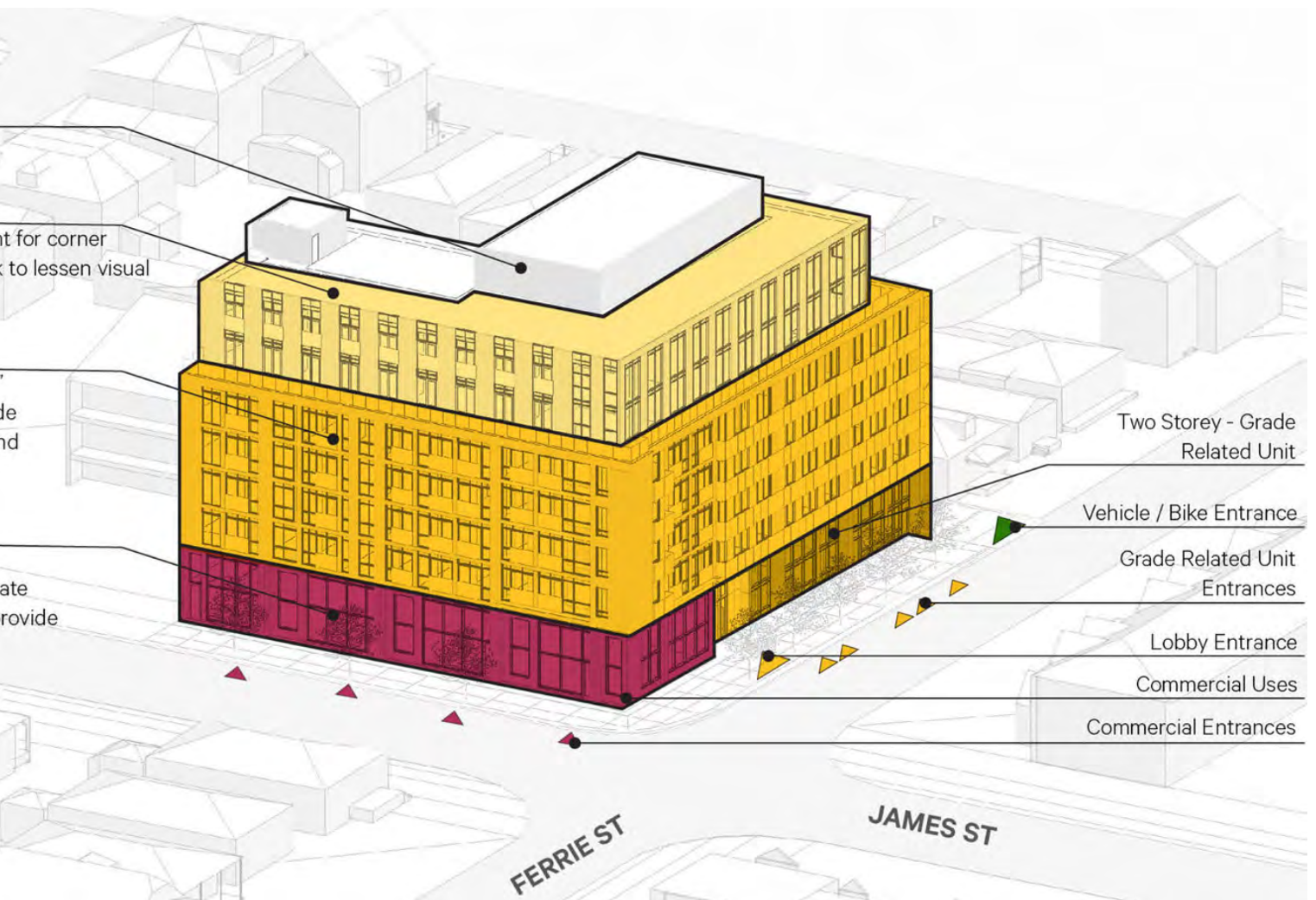
The Home: Front project is designed to allow maximum flexibility for homeowners. Each floor is divided into lots of 250 square feet that can be purchased. By combining lots, homebuyers can design their own studio, 1-bedroom, 2-bedroom, 3-bedroom (or more) condominium. The building frame provides each lot with access to mechanical and electrical services such as water, sanitation, hydro, heating, air conditioning, and telecommunications.

Lots are individually titled under a mortgage, so owners can buy or sell individual lots over time. Over the course of their lives, as they get married, have children, or decide to age in place, owners can purchase more space (as adjacent units come on the market) or sell part of their space. Lastly, some units are zoned as live-work units and have

access to the street, allowing the owner to operate a business from their home and generate income.

Developer provides a variety of financing options to make home ownership accessible to more people

In order to increase affordability for more people, the Home: Front project offers a variety of forms of ownership: conventional, shared, or split. This allows buyers the option to purchase a unit on their own, with friends, family, or even as a co-housing group. There is also the option to sublet a part of the purchased units. Buyers may choose to live in one part, and rent out the other part to supplement their income. This secondary suite can be designed as a separate apartment, with its own entrance. Lastly, the project seeks to increase affordability through offering partially finished unit for a lower price. Over time, buyers can finish their unit as they are able to afford it.



elements / Image Source: OfficeARCHITECTURE

international case study

VILLA VERDE



NEW MODELS OF
LIVING



ALTERNATIVE
CONSTRUCTION & DESIGN



RE-IMAGINE
COMMUNITIES



NEW NOTIONS OF
AFFORDABILITY

location: Constitución, Chile | **architect:** Elemental

Project Description: After an earthquake and tsunami hit the small city of Constitución, residents were left without homes, electricity and clean water. Arauco, a forestry company with thousands of employees in the city, had agreed to provide funding for the reconstruction. Elemental was hired and formed a consortium with Arauco, the government, and the public. Through partnership and consultation, Villa Verde, a housing project for the displaced residents of Constitución took shape. Through the use of incremental housing, the collaborative undertaking generated value for all stakeholders involved.

PROJECT OVERVIEW

Date of Completion

2014

Building Typology

Low-rise housing

Tenure Type(s)

Affordable ownership

Space Allocation

484 homes

Notable Amenities

Three social centres
Multi-purpose court

Areas of Innovation

Flexible design
Open building
Innovative partnerships



View of the incremental housing typology / Image Source: Suyin Chia

The incremental housing typology provides enough visual continuity for the neighbourhood while encouraging individuality

Incremental housing is utilized as a response to scarcity. Pooling together the resources of the government, private companies, and the savings of residents themselves, Elemental was able to provide "half a good house." Residents were able to access a dwelling they couldn't easily build or buy by themselves: a two-story, two-bedroom home, with roof, kitchen and bathroom, with the space to create more functional areas.

Elemental's incremental housing plan for Villa Verde, with its common architectural forms, street walls and public spaces, created the outlines for neighborhoods. The connected half-houses and empty spaces acted like

a framework to bind the community together. In insuring visual continuity and yet encouraging individuality and agency, the collaborative undertaking of neighbours brought communities together.

"Half a house" helps residents meet their immediate shelter needs but also allow flexibility to meet long-term housing needs

By providing only the fundamental spaces that a family might require in one half of the house, Elemental allowed for residents to adapt the second half of the home to suit their unique needs. Over time and as circumstances changed, residents could complete the empty space to serve different functions.

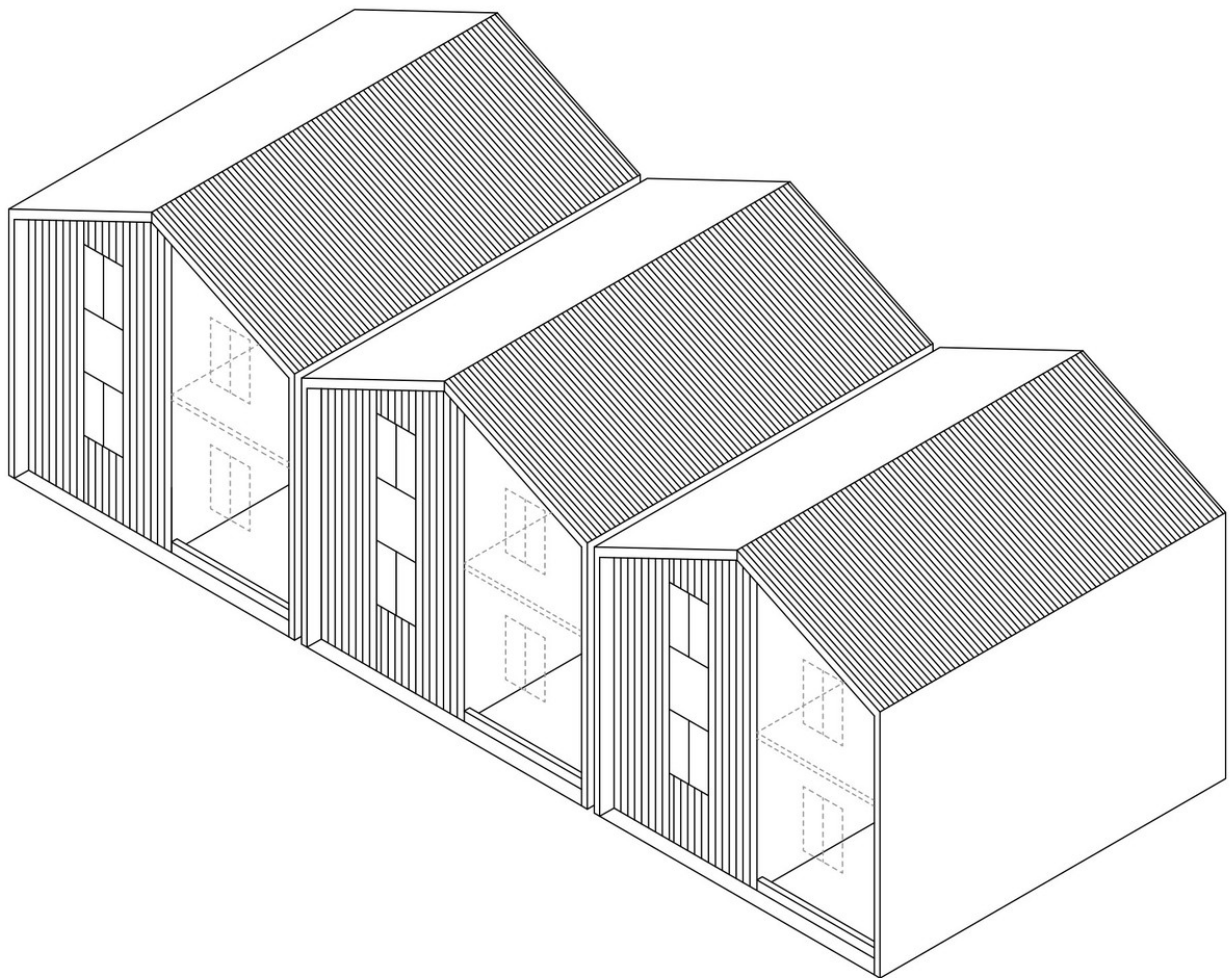


Diagram of how the unfinished half of the house could be completed / Image Source: Elemental

local case study

HYDRO BLOCK



NEW MODELS OF LIVING



ALTERNATIVE CONSTRUCTION & DESIGN



RE-IMAGINE COMMUNITIES



NEW NOTIONS OF AFFORDABILITY

location: Toronto, Ontario | **developer:** Diamond & Myers

Project Description: When Ontario Hydro proposed creating a transformer station in a downtown Toronto neighbourhood, protests and growing political pressure convinced them to reconsider. Instead, the site became a commission for architects Diamond and Myers to create high-density community housing. Hydro Block (or Beverley Place), is one of Canada's most well known works of dense, in-fill housing. Utilizing the concept of block housing, it is able to create ground related housing that fits well into the surrounding context with densities similar to a high-rise.

Date of Completion

1978

Building Typology

Low-rise housing

Tenure Type(s)

Affordable rental

Space Allocation

Total unit count: 152

Notable Amenities

Storage units
Communal kitchen
Central courtyard
Playground

Areas of Innovation

Alternative intensification

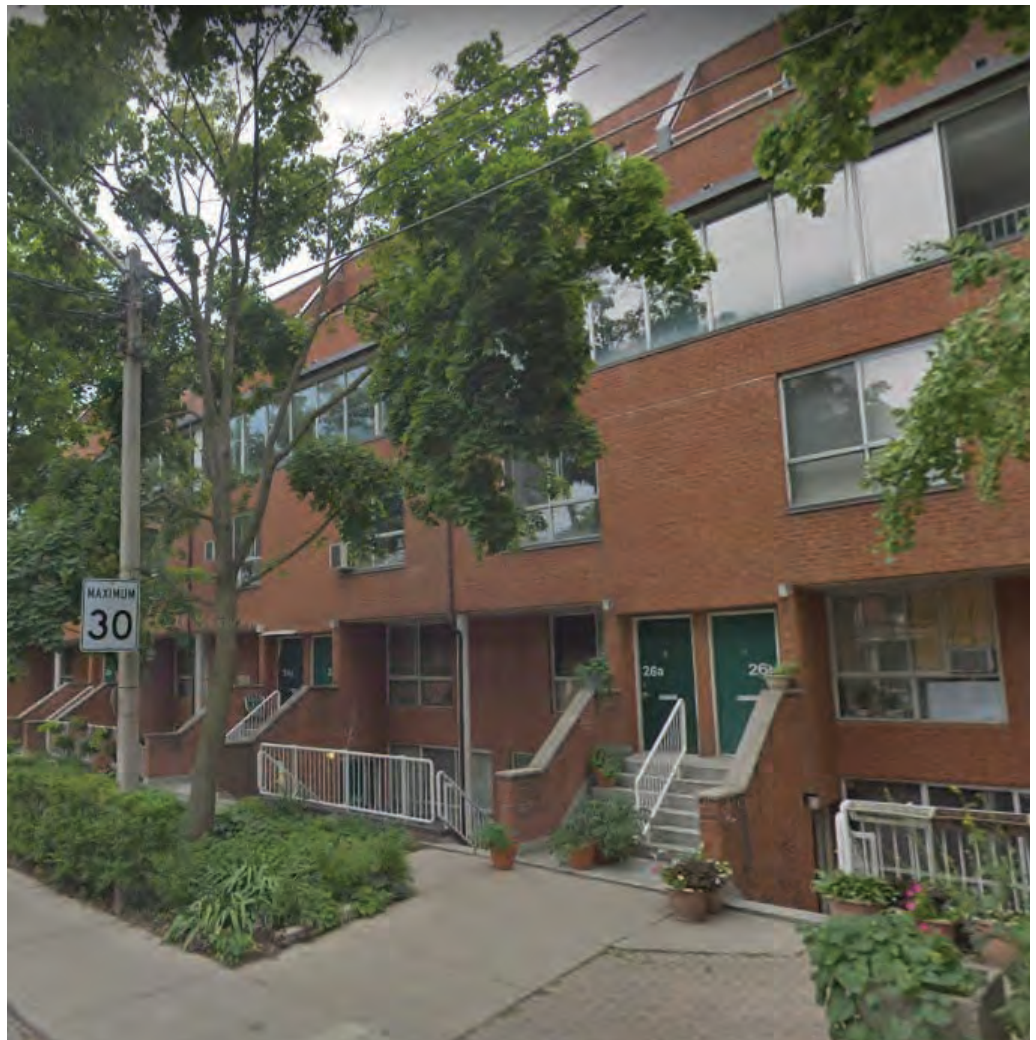


Image Source: Google Street View

This project achieves the high density and diverse unit mix using ground-related housing

Instead of creating an apartment tower, the Hydro Block project achieved similar density to a high-rise while creating ground related housing. By vertically stacking different housing unit types, the development was able to accommodate a wider range of residents. Two-storey units designed for families and larger households occupy the first two floors while smaller apartments, geared towards singles or couples, are on the upper levels. In its construction, Hydro Block challenged zoning bylaws but in the decades since its completion, it continues to successfully adapt and support the needs of the community.

Out of the 152 rental units, 113 of which are residential and include bachelors, one bedrooms, and two storey 2 or 3 bedroom family units at grade with rear yards backing onto a courtyard. Five and six bedroom units were designed for people looking for a single room. The complex is spread out over one 4 story apartment building, 2 storey townhomes, and low-rise semi-detached houses.

The built form respects the existing residential context and achieves visual harmony

The architects of the Hydro Block project wanted the complex to fit with the context in which it was being built. The neighbourhood where the development is located features an urban block structure. In adopting a similar massing and relationship to the street as the housing on neighbouring blocks, keeping to a low-rise form, and utilizing a traditional brick façade, Hydro Block fit its surroundings. This visual harmony was one way to engender a sense of cohesion and belonging, basic necessities for neighbours (whether a part of Hydro Block or other houses in the neighbourhood) to feel comfortable connecting to each other.

Hydro Block also creates opportunities for residents to connect through leveraging pathways. Whether walking through the common courtyard or the multiple entrances to access their units, residents are able to interact during the natural flow of their lives.

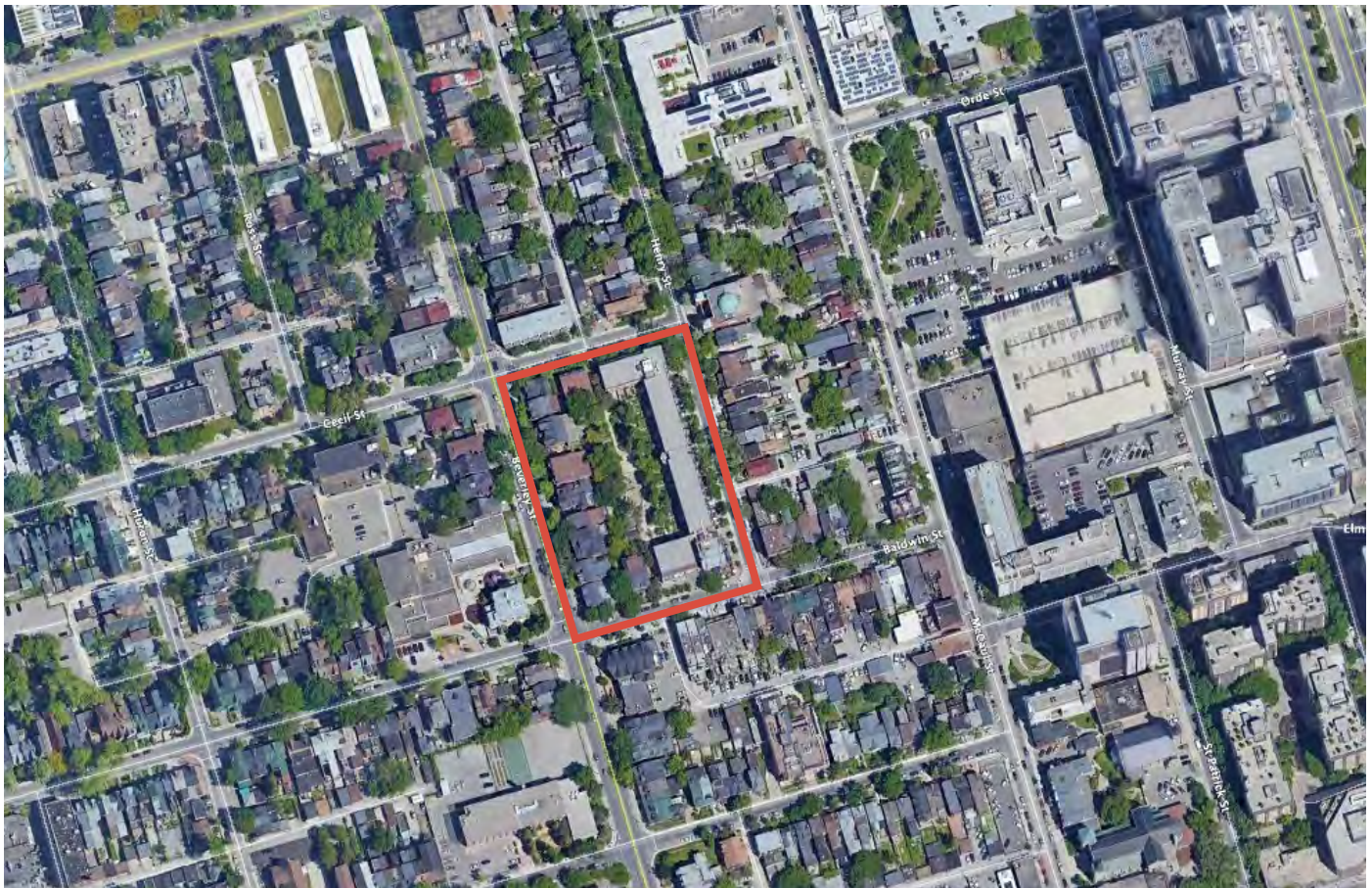


Image Source: Google Street View

local case study

ARTSCAPE TRIANGLE LOFTS



NEW MODELS OF LIVING



ALTERNATIVE CONSTRUCTION & DESIGN



RE-IMAGINE COMMUNITIES



NEW NOTIONS OF AFFORDABILITY

location: Toronto, Ontario | **architect:** Will Alsop | **developer:** Urban Corp

Project Description: The site of Artscape Triangle Lofts was once a former factory, housing artists whose live/work spaces were not legally zoned. Local activist group Active 18 advocated for a development plan that reflected the needs of the community including its artist residents. Following their negotiations with the City and developers, Artscape (a not-for-profit urban development organization) was able to create the Artscape Triangle Lofts to provide work and living space for artists and their families. Artscape Triangle Lofts is located in the podium of the Westside Lofts Development and is Artscape's first condominium and affordable ownership project.

Date of Completion

2011

Building Typology

High-rise building

Tenure Type(s)

Affordable ownership
Affordable rental

Space Allocation

Total unit count: 68 (live/work)
Affordable ownership: 48 units
Affordable rental: 20 units

Notable Amenities

Ten feet ceiling
Ground-floor gallery
Design elements for artists

Areas of Innovation

Innovative partnerships
Non-profit housing



Inside one of the live-work artists' unit / Image Source: BlogTO

Artscape leveraged its partnership with the City and developers to secure affordable units in a market condo development

By leveraging the power of partnerships and the power of shared interests between multiple parties, Artscape was able to create a way to provide affordable ownership units. Artscape purchased 70 units on the lower floors of the Westside Gallery Loft building at the cost of construction from Urbancorp. The City granted the developer the equivalent space as additional height and density to the building, covering the land value and profit that Urbancorp would have relinquished. Adapting an affordable home ownership program model by not-for-profit developer Options for Homes, 48 of these units were then sold to full-time artists or employees at an arts-based not-for-profit organization. To further mitigate costs for tenants and buyers, the units were left as unfinished spaces. Units

have the foundations- bathrooms, a strip kitchen, and four appliances. The tradeoff was to this approach was that it allowed residents to finish the unit to suit their needs.

Artscape used an innovative financing model to ensure that the units remain affordable in the future

Artscape understood that to create a mixed-income community, they needed to consider the future protection of any affordable units they created. Participants of the affordable ownership program had to adhere to two stipulations. First, owners could only resell their units through Artscape to qualified purchasers. Secondly, owners share market appreciation of the unit on a fifty-fifty basis on any amount higher than 5% of the value per year with Artscape. This allowed Artscape to create affordable ownership housing that can be sold and re-sold at below-market rates.



Artscape Triangle Lofts / Image Source: artscape.ca

local case study

SMART HOUSE



NEW MODELS OF LIVING



ALTERNATIVE CONSTRUCTION & DESIGN



RE-IMAGINE COMMUNITIES



NEW NOTIONS OF AFFORDABILITY

location: Toronto, Ontario | **architect:** architectsAlliance

Project Description: Smart House is Toronto's first micro-condo development totalling 25 storeys, situated at one of the most expensive intersections downtown. By building smaller units (beginning at 276 square feet) but increasing functionality through efficient layout and furniture, Smart House is able to deliver a more affordable housing option through micro-living. Smart House attracts buyers that are seeking a balance of convenience, efficiency and location.

PROJECT OVERVIEW

Date of Completion

2018

Building Typology

High-rise apartment

Tenure Type(s)

Market ownership

Space Allocation

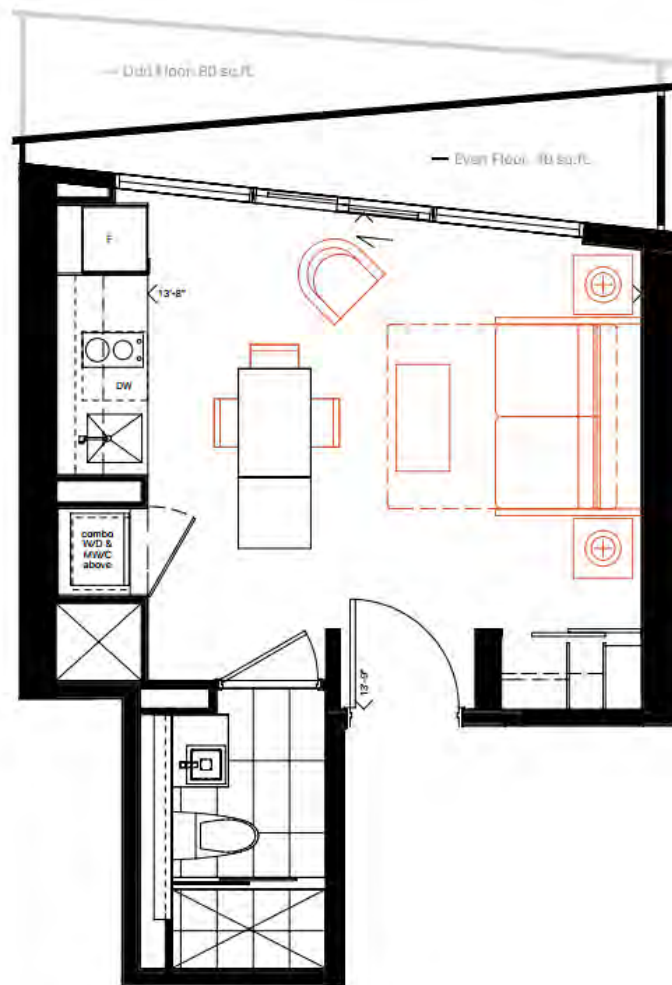
256 units ranging: 289-778 sqft
Retail space on Floors 1 and 2
Office space on Floors 3 and 4

Notable Amenities

N/A

Areas of Innovation

Micro-living
Sustainable features



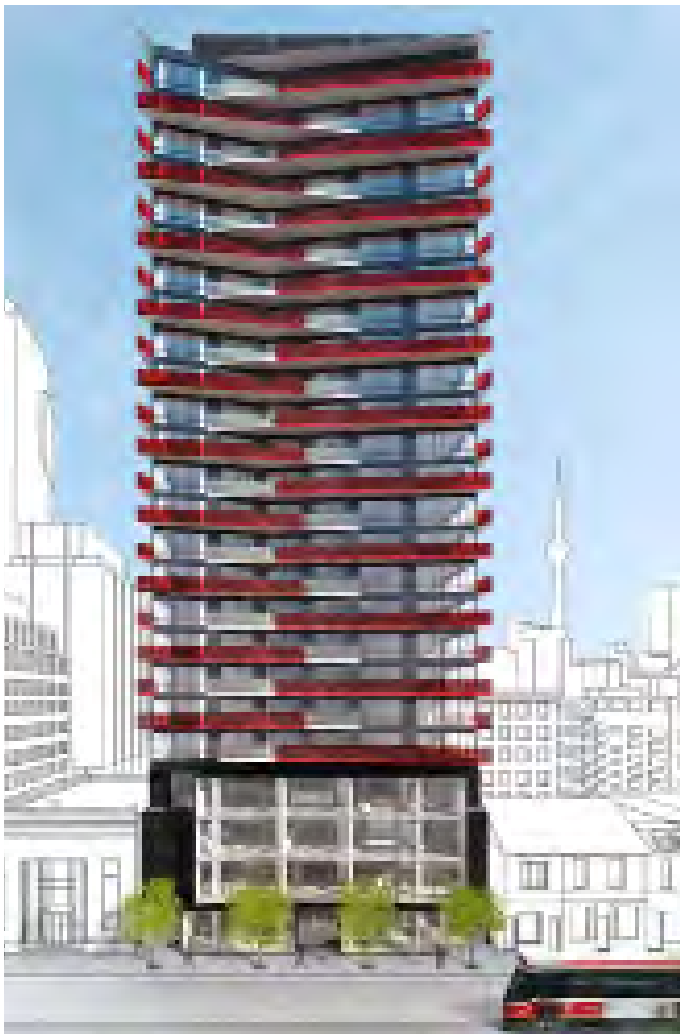
Smart House Micro Unit Floorplan / Image Source: smarthousetoronto.com

Design of micro-units addresses buyers' main priorities

The developers of Smart House examined how people live downtown or would aspire to live if they were able to. Buyers' main priorities were storage, kitchens and bathrooms so the developers made sure that they were designed for maximum efficiency. In regards to lifestyle, however, amenities such as a show kitchen and yoga room allows Smart House residents to extend their home beyond the limits of their unit.

This project capitalizes on the fact that it is in a central downtown location

Toronto, as many major cities, have seen the demand for housing increase while supply can barely keep up, especially for more affordable options. Microapartments allow residents to enter the housing market while enabling them to access the opportunities living in the city can provide. Especially in the highly desirable downtown area, microapartments add density near transit connections so people don't need to rely on cars. In prioritizing utility and a smaller footprint, Smart House makes living, working and playing in Toronto's downtown core more attainable.



Smart House Rendering / Image Source: smarthousetoronto.com



Smart House Kitchen Storage / Image Source: smarthousetoronto.com

local case study

FRASERVIEW CO-OP



NEW MODELS OF LIVING



ALTERNATIVE CONSTRUCTION & DESIGN



RE-IMAGINE COMMUNITIES



NEW NOTIONS OF AFFORDABILITY

location: Vancouver, Canada | **architect:** Tony Fretton Architects

Project Description: The Co-operative Housing Federation of BC (CHF BC) and the Community Land Trust (CLT). Fraserview Housing Co-op is the most recent Community Land Trust housing development to open its doors. It offers a community of 278 homes for families and singles located at two sites adjacent to Vancouver's thriving River District in southeast Vancouver. Fraserview Riverside offers a mix of 90 modern two-bedroom and three-bedroom townhouses and apartments along the Fraser River. Fraserview's members have a voice in how their homes are managed and maintained and have the benefit of security of tenure. This means that as long as you abide by the rules the co-op sets for itself and pay your monthly housing charges (rents), you will be able to live in your home as long as you like.

PROJECT OVERVIEW

Date of Completion

Under construction

Building Typology

Low-rise townhouse
Low-rise apartment
High-rise apartments

Tenure Type(s)

Market rental
Affordable rental

Space Allocation

Total unit count: 278
Townhouses: 36
Apartment units: 242

Notable Amenities

N/A

Areas of Innovation

Non-profit housing co-op
Community land trust
Innovative partnerships



Phase one low-rise apartments completed / Image Source: Bjarke Ingels Group

The financing model targets middle-income earners and does not rely on government subsidies

Fraserview co-op units are offered at 10-20% below market rates in order for middle-income earners to receive housing support. The co-op does not receive any government subsidies to help itself operate. The rents from this phase of the development will go towards subsidizing more affordable rents in phase two of the project, which include two apartment towers. These apartment buildings will house people paying the provincial shelter rate of \$375 per month.

The non-profit co-op model ensures members have an active voice in the management of the buildings

All of Fraserview's members have a voice in how their homes are managed and maintained and have secure tenure. Members vote and elect a board of directors, which hires a management company to care for the development. Members even vote on the amount of rent that is allocated in the co-op's budget. Residents of Fraserview are meant to be active participants in the affairs of their home and must rely on each other to help steer the future of the development.



Model of the Fraserview Housing Co-op Development / Image Source: Dan Toulgoet via vancouvercourier.com

RECOMMENDED INNOVATION STRATEGIES & NEXT STEPS



Design Charrette for Supportive Housing at 11 Brock Toronto / Image source: Eventbrite / PNLT

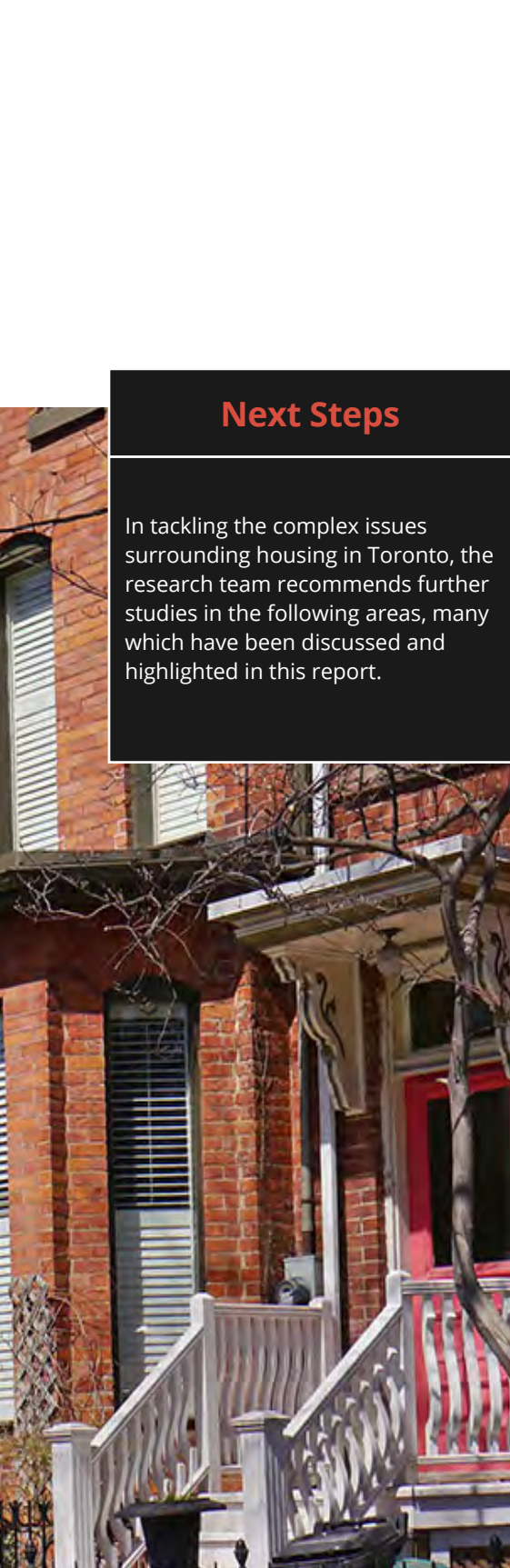
Recommended Innovation Strategy

The 'Exploring Innovation in Housing Typology' study provides an in-depth look at relevant and applicable case studies in the form of a 'Housing Innovation Toolkit' and also offers the following set of recommendations for affordable, equitable solutions to housing.

- 1. Support and promote equity and diversity (economic, cultural and social) in our communities and discourage social polarization** by creating housing projects and communities that are inclusive of a diverse mix of residents (culturally, economically, and socially). Develop flexible mixed-use housing that offers a range of unit types (size, capacity, and ownership model) and build communities that can be adaptive to the changing needs of its residents.
- 2. Incentivize development and construction of rental units** by creating and providing government construction financing programs (e.g CMHC Rental Construction Initiative Program)
- 3. Challenge traditional notions of home ownership and reduce the stigma of renting** by recognizing new models of urban living that shifts the value proposition of housing from commodity investment to the experience of living where dwellings become responsive, customizable, flexible and desirable to live in.
- 4. Build a sense of place and community identity and empower residents in community decision-making** by encouraging a participatory community environment, where residents feel a sense of belonging and empowerment. Provide ample opportunity for community voice and civic engagement.
- 5. Create a sense of collective neighbourhood pride** by investing in maintenance and rehabilitation of existing building inventory, public space and community parkland.
- 6. Invest in research and development in emerging materials and technology for housing** in order to design and implement smart resilient neighbourhood building prototypes that can provide insights into future standards for sustainable and efficient developments.
- 7. Provide educational programs around smart systems and technology-enabled homes to on-board residents.**
- 8. Recognize and support alternative ownership and financing models that can be scaled** (such as co-housing) through updated legal and financial frameworks that recognize and simplify these new models and partnerships.
- 9. Leverage existing financial tools and public assets to expand the range of home affordability programs** such as "options for homes", rent-to-own, cooperative tenancy, and other options for affordability, and create public education programs about the advantages and disadvantages of various housing programs and ownership models.
- 10. Encourage development of vacant lots**, through vacant land taxation legislation, and introduce restrictive regulation on short - term rentals (e.g. AirBnB) to increase rental inventory.
- 11. Implement policies and regulatory guidelines to ensure and enforce inclusive housing development practices** and provide opportunities for new funding partnership models to emerge that extend beyond project development and financial institutions.
- 12. Create policy and regulatory guidelines and reinforce housing as a human right.**



Victorian houses in Toronto / Image source: Evergreen



Next Steps

In tackling the complex issues surrounding housing in Toronto, the research team recommends further studies in the following areas, many which have been discussed and highlighted in this report.

Housing Psychology

What qualitative studies can be conducted to determine the psychological perceptions around housing with regards to ownership vs rental in Toronto? How might we better understand the ways to equalize the playing field for owners and renters and eliminate ideas of “secondary” citizenship?

Vertical Living

How do we create housing that adapts to the different life stages of an individual? How do we best accommodate family life in dense, urban environments? In Toronto, what makes a desirable and adaptable vertical community? How do we build ‘vertical neighbourhoods’ that address the public realm and community amenities in a vertical living environment?

Urban Density

What are strategies (both urban design and financial) that can provide balanced and comprehensive density intensification models as an alternative to high-rise development? What are the best approaches to re-introducing a breadth of typologies, such as mid-rise apartments, duplexes, triplexes, townhouses, laneway suites and row houses, within a dense urban environment with a rising population?

Adaptable Interiors

Can qualitative research, design investigation and co-design reveal new ways to envision flexible, re-configurable, and adaptable interiors to suit a diversity of individuals, families and stages of life?

New Technologies

In what ways can emerging prototyping and additive prefabrication manufacturing technology impact construction processes and design outcomes? What can be the role of new technologies in facilitating customizable, flexible and adaptable living environments?

APPENDIX A

MASTER LIST OF CASE STUDIES

Comparative Typology Case Study List

Housing Innovation Type	Primary Area of Innovation	Case Study	Architect/ Developer or	Geography	Date	Secondary Areas of Innovation	Description of Case Study	Scale	Financial Model	Partnership Model	Community Involvement	References	
New Models of Living	Micro-Living	Carmel Place	nARCHITECTS	New York City, United States	2016	pre-fabrication, innovative partnerships	55 rental apartments ranging in size from 260-360 sq ft. 40% of the units are dedicated for affordable housing. Generous amenities encourage residents to "live outside the four walls" of their unit. The furniture was designed in a way that a singular space could have multiple uses. The project was able to be built with an override of some of NYC's planning and zoning laws, such as minimum unit size and maximum density.	Site	Private/Public	Government and private		http://narchitects.com/work/carmel-place/	
		Nakagin Capsule Tower	Kisho Kurokawa	Tokyo, Japan	1972	pre-fabrication, adaptive and flexible design, mixed use hybrids	The Nakagin Capsule Tower was the first example of capsule architecture design. It is a mixed-use residential and office tower designed by architect Kisho Kurokawa and was completed in 30 days.	Site	Private			https://www.archdaily.com/110745/ad-classics-nakagin-capsule-tower-kisho-kurokawa	
		Smart House	Architects Alliance, IIXIV design	Toronto, Ontario	2018	sustainable design, adaptive and flexible design	The condos are designed on a small scale, but emphasis creative design to make them feel larger. Spaces such as the main living space are designed to also serve as the function through the use of integrated and smart furniture. The kitchens and bathrooms are also highly efficient, so that they can be right-sized to smaller urban residences.	Site	Private			http://smarthousetoronto.com/	
	Co-live, Co-Work	Arena Apartments	Ellivo Architects	Brisbane, Australia	2014		The individual units are designed for live-work arrangements. The central courtyard and coffee shop on the ground floor also provide alternative work-from-home options.	Site	Private				https://www.archdaily.com/617835/arena-apartments-ellivo-architects
		The Collective Old Oak	PLP Architecture	London, United Kingdom	2010	micro-living	The Collective Old Oak is a co-living development in London. It features 546 studios spread over 10 floors. Shared facilities include 3 dining rooms, a library, games room, theatre, garden, sauna and spa, roof terrace, and laundry room. Every floor has a shared kitchen. Members also have access to a restaurant, a bar, and a gym. The monthly fat rate is inclusive of tax, utilities, wi-fi, gym membership, room cleaning, linen changes, use of communal spaces, and community events.	Site	Private				http://www.plparchitecture.com/the-collective-old-oak.html https://www.thecollective.com/
		Open Door	Open Door Group	California	2013	sustainable living	Based in California, OpenDoor offers co-living spaces across five homes in central cities, by offering 10-15 bedrooms in one house. Residents are able to outfit their bedrooms while common areas are furnished by OpenDoor. They commit to living sustainably-recycling, conserving water- and share chores and a house food plan.	Site and Community	Private	Private and Public Benefit			http://opendoor.io
		WeLive	Wework	New York City, Washington D.C.	2016	micro-living	WeLive is WeWork's expansion into the co-living market, offering furnished apartments, flexible rentals, and luxurios shared amenities for a monthly fee.	Site and Community	Private				https://www.welive.com
		VivaHouse	Vivahouse	London, United Kingdom	TBA	micro-living	Vivahouse, branded as the "urban house of the future" is a project that combines prefabricated modular housing and vacant commercial properties to turn them into co-living developments by repurposing unused commercial units, including vacant hospitality and office spaces, to help alleviate the need for affordable housing in the megacity. Currently introduced as a pop-up prototype, the company hopes to replicate the project across London.	Site	Private				https://www.vivahouse.com/
		Roam	Roam	Miami, Bali, Tokyo, San Francisco and London	2015		Roam is a coliving and coworking community testing the boundaries between work, travel and life adventure.	Site and Community	Private				https://www.roam.co
	Co-housing and communal living	Starcity Developments	Starcity	Los Angeles and San Francisco, United States	2017	New notions of affordability,	Starcity provides bedrooms of 130 square feet to 220 square feet. Many of the buildings will feature some units with a private bath for a higher rent, but bathrooms will likely be spread at a 1:3 bathroom to bedroom ratio to maximize affordability. The average one-bedroom apartment in San Francisco rents for \$3,300 a month, but Starcity rooms will go for \$1,400 to \$2,400 a month fully furnished, with utilities and Wi-Fi included. This is an example of "dorm room living for adults" - which essentially reduces the functional living space to a bedroom, while the rest (kitchen, bathroom) is shared.	Site	Private				https://www.nytimes.com/2017/10/12/style/wework-fitness-gyms.html
		Tomo	Tomo Spaces inc., Marianne Amodio and	Vancouver, Canada	TBA	sustainable design, new notions of affordability	Tomo is a proposed affordable cohousing project for middle-income families in Vancouver. Tomo, meaning "together more", encapsulates the residents' belief in the power of a collective. Our Urban Village will be the future owners of the development.	Community	Private				http://kri.com/projects/tomohouse
		Share House LT Josai	Naruse Inokuma Architects	Nagoya, Japan	2013		Naruse Inokuma Architects' "share house" concept, in Nagoya, Japan, is an increasingly popular way of living. This new building type is based on the principles of communal living and the need for housing where individuals who are not related will share space. Situated within a large house, residents share kitchens, living spaces and bathrooms.	Site					https://www.archdaily.com/497357/lt-josai-naruse-inokuma-architects
	Intergenerational Living	Humanitas Deventer	Humanitas	Deventer, The Netherlands	2013	innovative partnerships	Partnership between seniors homes and universities tackles two issues: shortage of affordable student housing and decline in funding for long-term care. Students can live at the senior home for free, and spend 30 hours a month being a good neighbour. Currently there are six students that live in Humanitas Deventer.	Site	Private	University and Long-term Care Providers			https://www.humanitasdeventer.nl/english
		Beekmos Houten	Stichting Timon and Habion	Houten, The Netherlands	2012		Brings together young mothers and adolescents with senior residents in an "assisted living environment". The elderly residents provide advice and guidance to the young girls, while the relationships help combat issues of isolation and loneliness among the senior population. The project not only addresses the need for providing housing for young at-risk population but seeks to create a sense of community beyond the space of the physical home. The project was entirely designed and coordinated between non-profit actors.	Site	Private and public	Non-profit partnership			https://www.nuigalway.ie/media/housinglawrightsandpolicy/Social-Housing-in-EU-European-parliament-(1).pdf https://internationalsocialhousing.org/2015/01/06/innovative-program-in-the-netherlands-combining-elderly-and-young-women/ https://intergenerationalhousingblog.files.wordpress.com/2018/03/examples-of-other-usa-and-european-schemes.pdf https://issuu.com/cecodhas/docs/est83716/30
		Judson Manor	Judson Services inc, Juson Smart Living	Cleveland, United States	1906		In 2010, Judson partnered with the Cleveland Institute of Music (CIM) to create an innovative residential program. In exchange for complimentary housing, students share their performing abilities and participate in cultural programming. Recently, the program has been expanded to include students at other post-secondary institutions such as Cleveland Institute of Art and Case Western Reserve University.	Site		Educational institute and non-profit			https://www.judsonsmarthousing.org/judson-manor/independent-living/lifestyle/
		ESDES Inter-génération		Lyon, France	2004		ESDES Inter-Génération connects elderly people, who can offer a furnished room, and young people in search of housing (students, apprentices, trainees, professionals or job seekers) to develop mutual aid between generations.	Site					http://esdes-intergenerations.net/

Comparative Typology Case Study List

		Symbiosis: Grad Students and Seniors Co-Housing Program	McMaster University	Hamilton, Ontario	2016	new notions of affordability, innovative partnerships	Symbiosis is a housing project that connects students in need of low-cost housing with seniors who have a spare room and who could benefit from a bit of extra support and company. By connecting students and seniors, the program aims to fill two needs at the same time: affordable housing for students and company and/or extra income for seniors. Graduate students are able to find affordable accommodation and a smoother integration into the community through established community members, seniors. Seniors are able to have a greater feeling of well being through social interactions with students.	Community		University and Long-term Care Providers		https://os.mcmaster.ca/graduate-student-life/spices/2017/symbiosis-grad-students-and-seniors-co-housing-program
Innovative Amenities and Features		TIFF Bell Lightbox and Festival Tower Condominium	KPMB Architects, & Kirkor Architects and Planners	Toronto, Ontario	2011	mixed-use hybrids	A 42-story tower with 378 units. Festival Tower also boasts a roof-top terrace, and indoor pool and fitness centre offering spa treatments, kick-boxing, tai-bo, Pilates, yoga, personal training and comprehensive aerobic and weight training equipment at the Tower Club on the 10th and 11th floors. The Festival Tower's services and amenities include: 24-hour concierge, Direct access to a 2-storey bar-café-restaurant, cinema with lounge, pool house with whirlpool, Spa treatment rooms, meditation garden, fitness centre, Guest suites, Car sharing program, sports lounge, media and TV lounges, tower lounge, meeting rooms and business centre, and a rooftop terrace. This project is innovative in its combination of mixed uses and offering to service a particular demographic. While not an affordable housing project, with the smallest unit being a 1 bedroom at 575 sqft., many of the units are larger 2 bedrooms, however the range of amenities and services are provided like those of a luxury hotel.	Site	Private			http://www.myfestivaltowercondo.com/
		Artworks Towers	Quadrangle Architects	Toronto, Ontario	2019		"33-storey, Artworks Tower at Dundas and River Streets. A key tenet of the revitalization is including both rent-geared-to-income and market units - together in the same community. The project's amenity spaces are extensive and offer lifestyle-focused amenities for active residents, and recreation areas fit for kids and adults. One of these is an arcade offering ping-pong tables, billiard tables, and even retro arcade games. There is also a co-working space, with meeting/conference spaces and printing services. party room offers a space for residents to host gatherings and events. This amenity includes plenty of plush seating, a bar, and access to the building's outdoor terrace space. The terrace will be landscaped and include barbecues, dining and lounging areas, along with the community gardening plots that have become a popular staple in other Daniels' developments. A fitness centre will offer cardio machines, weights, Crossfit, and yoga." Artworks towers provides an extensive list of active and cultural amenities (some of which are part of larger regent Park developments) it suggests a new focus	Site	Private			http://urbantoronto.ca/news/2018/09/first-look-daniels-artworks-lower-amenities-regent-park
		River City	Saucier + Perrotte Architectes / ZAS Architects	Toronto, Ontario	2013-2019	New notions of affordability, sustainable design	The design for River City creates a unified urban form in Toronto's West Don Lands, historically industrial part of Toronto. This LEED Gold project comprises 1000 residential units, culminating in the "iconic" tower at the south end of that block. This project is a state of art approach to providing occupant conveniences with a broad range of amenities; Fitness Facility, Office Space, Playroom with pet cleaning statio, product library like our tool loans, Party Room and Theatre, Reading room, Lobby and craft room, Outdoor rec space and pool on 7th floor.	Community	Private			http://saucierperrotte.com/en/projects/river-city-toronto/ http://rivercitytoronto.com/pdf/RC3MarketingBrochure.pdf
Adaptive and Flexible Design		Walden 7	Ricardo Bofill	Barcelona, Spain	1975	participatory design	Walden 7 is comprised of approximately 446 dwelling units made from one or more 28 m2 cells in 16-storées. The building was designed so that each individual unit could transform as its inhabitants moved through different life stages, occupying more or less cells as their needs changed. The arrangement of units can spread across different floors, and the individual cells are constructed as blank slates - meant to be designed by the inhabitants that occupy them. The building itself is structured along two axes, creating central courtyards within the building.	Site	Private			https://frieze.com/article/fortress-solitude http://www.mascontext.com/issues/4-living-winter-09/case-study-2-walden-7/
		Home:Front	JvN/d	Hamilton, Ontario	2019		The development comprises a proposed maximum of 91 residential units over eight storeys. It provides owners with the ability to purchase multiple "lots" (i.e. bays) to create varying floor areas ranging from 250 to 1,000 square feet in order to create a Studio or 1-, 2- or 3-bedroom unit of their choice. Owners can also customize the internal configuration of their unit - and then alter it in the future as their family size or composition fluctuates over time.	Site	Private			https://www.synportal.com/468/amesnorth/
		Moriyama House	Ryue Nishizawa	Tokyo, Japan	2005	alternative intensification strategies, mixed-use hybrids, open building	10 different volumes that serve different purposes that are placed about the property, creating smaller gardens and open spaces. Each building is its own entity, and some are rented out, but they may all one day be used by the owner. There are a mix of studio spaces and living spaces. The owner is free to decide how the spaces are used, if any are rented out and which ones are rented out. The use of the spaces is flexible enough that it can change over time.	Site	Private			assingdesign.blogspot.com/2010/03/moriyama-house-sanaa-kazuyo-sejima-ryue.html
		De Rokade	Arons en Gelauff Architecten	Groningen, The Netherlands	2007	open building	A seniors residence with mixed-demographics, it provides access to a daycare and nursing home. The building focuses on housing younger seniors. The facade, and load bearing construction was designed to accommodate three different layout possibilities so that future inhabitants of the space would be able to determine their own architectural plan.	Site	Private			https://www.archdaily.com/1785/de-rokade-aron-en-gelauff-architecten
		Flex Housing Prototype	Tatiana Bilbao	Mexico	2015		Designed as a response to Mexico's social housing shortage. The prototype is a low-cost house that can be adapted to suit varying numbers of residents, and can be expanded as a family grows. It can also be altered to suit the variety of climates around the country by using a variety of materials and spatial layouts. As a part of her research, Bilbao spoke to over 2,000 existing social housing residents to help understand what is considered most important. One of the things she found was that residents want a house that looks like a finished house.	Site	Government subsidy			https://www.dezeen.com/2015/10/06/tatiana-bilbao-low-cost-social-housing-mexico-chicago-architecture-biennial-2015/
Sustainable Design		BedZed Community	Bioregional, Peabody Trust, Bill Dunster Architects	London, United Kingdom	2002	mixed-use hybrid	BedZed is a mixed-use sustainable community built from the ground-up with 100 homes, office space, a college and community facilities. Eight apartment buildings of three storeys, with community spaces integrated. The community was designed with energy-efficiency and passive design principles in mind. A variety of housing styles (ranging from multi-floor apartments, one-room apartments, and townhouses) helps develop a diverse sense of community.	Community	Private			https://www.bioregional.com/bedzed/

Comparative Typology Case Study List

Alternative Construction and Design	Open Building	Almere Poort Housing Project	City of Almere, various architects	Almere, The Netherlands	2005	innovative partnerships	Individuals can purchase a plot designated by the local authority. Once the plot is secured and a mortgage in place, the buyer is free to customise their home from a wide variety of different "ready-made" homes, many designed by in-house architects. This project targets affordable housing for low-income households of €20,000 (£14,500) a year. The project removes the developer from the process and establishes a relationship between the city and the home owners. Self-built communities trust that individuals will feel supported enough to naturally build what is best for them and their community.	Community	Private	City and Citizens	Individual members of the community design and construct their own homes.	https://www.theguardian.com/housing-network/2015/dec/15/almere-dutch-city-alternative-housing-custom-build https://www.macleans.ca/news/world/canada-learn-netherlands-self-build-movement/
		Villa Verde	Elemental	Constitución, Chile	2010	adaptive and flexible design, alternative intensification strategies	In response to a major earthquake, the firm Elemental rebuilt housing for the town of Constitución by building half of a house, and allowing space for the other half to be built by the residents over time. This provided the basic space typically occupied for more low income families, while allowing families to expand their living space as they were able to. Workshops and manuals are provided to the residents so that they can learn how to expand their house.	Site	Public		Residents are provided with the resources needed to develop the remaining space of their home over time.	https://www.archdaily.com/447381/villa-verde-housing-elemental https://99percentinvisible.org/episode/half-a-house/
		Solid 11	Tony Fretton Architects	Amsterdam, The Netherlands	2011	mixed-use hybrid, participatory design	Designed to last 200 years and without a pre-determined purpose. The building acts as a shell, ready to be reformed into any use that it needs to serve. It was built without any interior walls, and future residents (using the space as residential, commercial or social space) would request how much space they wanted. With no pre-determined layout of the structure, the building is designed to fit the needs of the user, rather than the users being required to fit into a pre-defined space.	Site	Private	Public, non-profit	Community "bid" on the size of interior space, and the interior space was designed around their needs	https://ca.perkinswill.com/sites/default/files/D%20PWRJ_Vol0701_02_Developments%20in%20Residential%20Open%20Building.pdf
	Pre-Fabrication	Dortheavej Residence	Bjarke Ingels Group, Lejrerbo	Copenhagen, Denmark	2018		The Residence creates 66 new homes for low-income residents ranging between 60 to 115 square metres in area. Each one has 3.5-metre-high ceilings, full-height windows and south-facing balconies. The building was constructed using prefabricated modules to reduce the building costs. It is developed for a nonprofit social housing association that rents out approximately 38,000 residences all over Denmark.	Site	Non-profit housing association			https://www.dezeen.com/2018/10/09/big-bjarke-ingels-affordable-housing-dortheavej-residence-copenhagen/
		Microflat prototype	Piercy Conner Architects	London, United Kingdom	2002		The prototype measures 32 sq metres (around 345 sq ft) and is two-thirds the size of an average one-bedroom flat in the capital, and can be assembled in a factory, just like a car. Still in prototype form, architects Piercy Conner hope they will be on sale for less than £100,000 by the end of the year.	Site				https://www.nytimes.com/2002/01/31/garden/in-london-microflat-is-packing-them-in.html
		Grønneviksøren Student Apartments	3RW Arkitekter	Bergen, Norway	2013	sustainable design	Two separate building blocks, with 18 groupings of buildings reaching a maximum height of eight storeys. The project has a total capacity of 750 students. The units were created in the form of prefabricated modules of varying sizes that were delivered to the building site and installed in the building form.	Community				https://www.archdaily.com/586716/gronneviksoren-student-apartments-3rw-arkitekter
		Murray Grove Apartments	Cartwright Pickard Architects.	London, United Kingdom	2001		"Murray Grove's five storeys provide sixteen one-bedroom apartments and fourteen two-bedroom apartments on a 2,150m ² site, adjacent to existing houses, offices, shops and a pub. The flats are built in two strips along Murray Grove and Shepherdess Walk, hinged together by a circular staircase tower at the street corner 180h which rises a storey height above the main building, echoing the curved skyline of taller buildings visible beyond the block and completing the corner of the block." This project is a good example of the use of prefabricated technology to produce quickly assembled affordable and modular housing.	Site	Private	Foundation trust		https://webarchive.nationalarchives.gov.uk/20110118200005/http://www.cabe.org.uk/case-studies/murray-grove/team
	Reuse of Historic Sites	Clear Spirit Condos	Architects Alliance	Toronto, Ontario	2012		40 storeys, 347 units, split between 1 & 2 bedrooms, Clear Spirit stacks a 40-storey tower above a five-storey masonry base, while The Gooderham mounts a 37-storey tower above a rebuilt distillery tank house. The high-rise elements mark the eastern boundary of the Distillery District on the City skyline, while at ground level, the new low-rise and restored heritage buildings define a gateway and courtyard space at the southeastern corner of the District, read as a single architectural composition. This project represents a philosophy for intensifying urban neighbourhoods: deference to the scale and massing of an historic neighbourhood, counterposed with carefully considered, high-density contemporary architecture, and by doing so provides a reuse, and a successful revitalization strategy.	Site	Private			http://urbantoronto.ca/database/projects/clear-spirit http://www.architectsalliance.com/projects/xl/distillery-district-clear-spirit-gooderham
		Radio City	Architects Alliance, KPMB Architects.	Toronto, Ontario	2005		Radio City is the residential component of Radio City/National Ballet School Grand Jeté – an award-winning mixed-use development that has helped to revive an historic neighbourhood in Toronto's downtown core. Two slender and transparent point towers, 25- and 30-storeys respectively, were set back from the street to minimize their apparent bulk. A row of three-storey townhouses, set at right angles to the towers, echoed the roofline and form of adjacent Victorian rowhouses and created a new street wall along Mutual Street. The design of Radio City reinforces the neighbourhood's fabric of 19th century heritage buildings and residential side streets, arranging built form and public space to establish a clear relationship between the residential program and that of Canada's National Ballet School, the developer's partner in this innovative revitalization scheme.	Site	Private			https://www.radiocitycondo.com/
	Alternative Intensification Strategies	Laneway Housing		Toronto, Ontario	2018		Laneway suites are non-severable units that are located along a rear access lane and are intended for use by family members, rental apartments or aging-in-place. The dwellings are hooked up to the main house's utility supply, but are accessed via a separate entrance in the rear laneway. This kind of development allows for gentle intensification, and a diversity of housing types, in the neighbourhood setting.	City	Private		Extensive community consultation process and residents will be responsible for designing and constructing their own laneway houses.	https://www.toronto.ca/wp-content/uploads/2017/10/97ac-Laneway-Suits.pdf
		Beverly Sullivan Cooperative, "Hydro Block"	Diamond & Myers	Toronto, Ontario	1978	non-profit housing co-operatives	City Home social housing project: 152 subsidized rental units, stacked mid-rise block housing, with street accessible units, and a mix of one storey and two story units with both single and double orientation, to a central courtyard greenspace. Retention of 12 Victorian houses on site, that were retrofitted to create 39 rental units. Hydro Block is a mix of unit types to serve a variety of occupants. With the upper stories of the 5-6 storey complex being accessible from corner service cores, while most of the lower floors are accessed from a street access.	Site	Co-operative financial model			https://www.toronto.ca/lehdocs/mmis/2007/lehdord/backgroundfile-1043.pdf https://issuu.com/urbanstrategiesinc/docs/citizens_guide_to_density_-_cmhc/40
		Mimico GO Station Development	Vandyk Group	Toronto, Ontario	2018	mixed-use hybrid, alternative intensification strategies	This is a recently approved project by the Ontario government. In what the provincial government is calling a "brand new kind of partnership," a private developer will rebuild Mimico GO station in exchange for development rights above the site. Developer Vandyk will refurbish and add new features to the existing station in exchange for receiving the air rights above the property. The company intends to build a mixed-use development above the station, though specific details about it are not yet available.	Site	Private	Public and private		https://www.cbc.ca/news/canada/toronto/metrolix-mimico-development-1.487720

Comparative Typology Case Study List

Re-Imagined Communities	Innovative Partnerships	Weston Hub Village Apartments	Graziani + Corazza Architects, Artscape and Rockport Group	Toronto, Ontario	2018		In conjunction with the Rockport Group's 350 unit rental development, Artscape is helping to transform vacant ground floor space in the podium of an adjacent highrise apartment building into indoor programming space and 26 affordable housing units. An adjacent outdoor programming space will also be programmed by Artscape as well as its tenants and partners. Artscape will have legal and financial responsibility for the operations and managements of these facilities. The project is an example of partnership development between private development and not for profits to build community facilities as part of redevelopment.	Site	Private and public	Private and non-profit partnership	https://artscapeweston.ca/
		Pan Am Village / Canary District Condos	Architects Alliance, Kuwabara Payne McKenna Blumberg Architects (KPMB)	Toronto, Ontario	2015	alternative financial models; diverse economic, demographic, and multicultural communities	Portions of the development were first used as temporary accomodation for the athletes and officials of the 2015 Pan/Parapan American Games. The Canary District has launched the MyHome Program specifically designed for first-time homebuyers. The program helps qualified applicants with down payment assistance and is designed to provide a way for first-time homebuyers to start building equity and enjoying the benefits of homeownership. This project is a good example of leveraging public development for the games to produce in the longer range mixed tenancy housing, that responds to the need for mixed income, and mixed use affordable housing. It also provides a financial program for first time buyers MyHome program.	Community	Down payment assistance	Public and private partnership	http://urbantoronto.ca/database/projects/pan-am-village-west-don-lands
		Alexandra Park Revitization	Levitt Goodman Architects, Toronto Community Housing, and Tridel	Toronto, Ontario	2019		This multi-phase redevelopment of TCHC's Alexandra Park is being undertaken by TCHC and the Tridel Corporation. In exchange for selling portions of the existing site to Tridel (who will construct more than 1,500 market units), TCHC will replace 333 of its existing RGI Rental Units and refurbish an additional 473 existing RGI Rental Units. Proceeds from the sale of land will also go towards constructing new amenities such as a public park, larger community centre and create new connector streets through the site. An additional 5,700m2 of retail space will also be added. This project is a good example of a collaboration between a for-profit developer, and a non-profit organization, replace 410 rental units, to refurbish 396 existing rental units, and to add additional 1540 market units, along with new community amenities facilities.	Community	Private/public	Public and private partnership	https://www.torontohousing.ca/alexandra_park_revitalization
		Richmond Hill Hub	Van Mar Construction	Richmond Hill, Ontario	2016		This 202 unit apartment building which includes a community hub and social enterprise space was constructed under a design-build collaboration between York Region Housing and Van Mar Constructors. Under this approach, Van Mar was responsible for obtaining a suitable property and all required development approvals, the design of the building and site works and constructing the building and site works to the approved drawings. York Region Housing provided capital funding for the building as well as input on the design and building specifications (e.g. finishes, unit layouts etc.). Once completed, York Region Housing assumed ownership and operation upon completion. This project is a good example of design build in partnership with the local municipality, York Region Housing. The building is sustainably designed with LEED certification, with reflective roofing, recycled building materials, Low VOC carpets and paints, and low flow plumbing fixtures amongst other approaches.	Site	Private/public	Public and private partnership	http://www.york.ca/wps/portal/yorkhome/support/yr/housing/housinglocations/richmondhillhousingandcommunityhub/ut/wa004_Si9CPvkssv0xPLMnMz0vMA(GjzOIG_Hd09PTy8Dbz8TSycDRwN_B29MwtDFx9zPUIsh0VAQFAdhQI/#_W_TaBRNKId
		Bayside Non-Profit Housing	Tridel and Hines	Toronto, Ontario	2019	new notions of affordability	Bayside Non-Profit Housing is corporation that was created by the City of Toronto to own 80 units of affordable housing in private developer Hines/Tridel's Aquavista development. Hines and Tridel designed the units and will be constructing the building (which are part of a larger market rate residential development). The 80 units will be leased and operated by Toronto Artscape Inc. for a 50 year period. Artscape was chosen by the City through a competitive RFP process in 2014. Funding was provided through a variety of means including 'Investment in Affordable Housing' via Canadian Mortgage and Housing Corporation and other capital funds from the City of Toronto.	Site	Private/Public	Public, private and non-profit partnership	https://www.evergreen.ca/downloads/pdfs/2017/HAJ_Scaling_Up_Joint_Ventures.pdf
		North Toronto Collegiate Institute	Toronto District School Board and Tridel	Toronto, Ontario	2010	mixed-use hybrid, alternative intensification strategies	Redevelopment of a deteriorating high school with the addition of two residential towers with 538 units and a community green space. Partnership between the TDSB (school board) and Tridel allowed for the school to be redeveloped with a portion of the construction cost being funded by the development. The process relied heavily on community input.	Site	The new condo construction was privately financed by Tridel who also paid for a portion of the	Public and private	Extensive community input was requested at various steps throughout the process
	Mixed-Use Hybrid	Silodam Amsterdam	MVRDV	Amsterdam, The Netherlands	2003	Diverse economic, demographic, and multicultural communities; flexible design	Situated on the IJ River, Silodam is the result of an urban transformation of a former dam and silo building. Designed for mixed-use, the ten story high building encompasses residences, offices, workspaces, commercial spaces and public spaces. The building is raised up over the water and externally, it resembles a stack of shipping containers. Each cluster of units was given its own unique character with a variety of different colours and material finishes creating stripes across the facade. The apartments differ in size, price and layout, which appeal to a wider range of people and speaks to the desire for individuality.	Site	Private		https://www.mvrdv.nl/projects/SILODAM/
		Linked Hybrid	Steven Holl Architects	Beijing, China	2009		Designed as a "city in a city", Linked Hybrid aims to create an inviting public space through its design. Green spaces, commercial and community spaces and residential spaces are all linked. It is intended to provide housing as well as meet the needs of all its inhabitants in one building.	Site	Private		https://www.archdaily.com/34302/linked-hybrid-steven-holl-architects https://www.dezeen.com/2009/07/08/linked-hybrid-by-steven-holl-architects/
		8House	Bjarke Ingels Group	Copenhagen, Denmark	2010	Diverse economic, demographic, and multicultural communities	Features three different types of residential housing, commercial and office space. It's design allows residents on the upper levels to still reach their units by bike. All the different layers and typologies are connected by a path that weaves through the entire structure.	Site	Private		https://www.archdaily.com/83307/8-house-big
	Diverse economic, demographic and multi-cultural	St. Lawrence Neighbourhood	various	Toronto, Ontario	1982	participatory design	The St. Lawrence Neighborhood is a mixed-income, master-planned community on 56 acres in downtown Toronto. Its 4,310 units house approximately 10,000 residents. The neighbourhood was a response to a housing affordability crisis in Toronto and was a new model of public housing at the time. The neighbourhood is centered around a six block long linear park. The residential units are structured as follows: 39% condominium apartments, 30% non-profit co-ops and private non-profit rentals, 27% public non-profit rentals and 4% townhouse ownership.	Community	Government Subsidy	Public, private and non-profit partnerships	Citizen's working committee (reps from community groups, public housing projects, non-profit co-op housing, private developers, planners and politicians)

Comparative Typology Case Study List

	communities	Village	MoDA & RNDSSQR	Calgary, Canada	proposed	alternative intensification strategies	78-unit condo with different typologies: loft, condo, townhouse and studio. The larger units are located at the top of the building (normally, townhouse style units are located at the bottom). The goal is to have a mixed demographic living in the building. Highlights aspects of single family home ownership (like friendly neighbourhood and having access to a yard - in this case an oversized patio).	Site	Private			https://www.theglobeandmail.com/real-estate/calgary-and-edmonton/moda-brings-an-inverted-condo-to-calgarys-bankview/article32481591/	
	Participatory Design	Wohnprojekt Wien (Co-housing Vienna)	einszueins Architektur	Vienna, Austria	2013	co-housing and communal living, adaptive and flexible design, participatory design	This is a collaborative housing project for 67 adults and 34 children, finished end of 2013 and situated next to a park in the 2nd district of Vienna. It houses 40 apartments from 36 to 150m ² , 400m ² for trade or commerce and 700m ² of community spaces. The core of the project is a self-organised community and the shared dream to live together in a sustainable, collaborative and open-minded way. This started out as a group of 15 people (one of which was an architect), they partnered up with a developer in order to acquire land (through a competition) at a price that is subsidized by the government. This project used the "Sociocracy" model, developed in the Netherlands, as the internal form of organisation and decision-making. Sociocracy shares the values of high democratic participation in decision-making processes and joint responsibility. The dominant system of decision-making consists on the circle method and consensus principle, which means that decisions can only be taken when no one has a serious objection. In this way the decision-making processes have a strong participatory character. Furthermore the members and residents decided to undertake the responsibility to do eleven hours of community work a month for the maintenance of the facilities.	Site	Government Subsidy	Citizens and Developer	Sociocracy model of governance. Residents of the building each designed the layout of their individual units, and all residents share responsibility for the use and programming of the communal space.	https://psh.urbanmonde.org/#/en/community/284	
New Notions of Affordability	Alternative Financial Models	Daniels First Home Communities - First Home Boost Program	The Daniels Corporation	Toronto area, Ontario	2004		This is a Down Payment Assistance program that provides an interest-free and payment-free loan for an additional 10% of the purchase price, boosting the 5% deposit to a 15% down payment on the buyer's first home. When buyers purchase their new home, the buyer is to provide an initial deposit of \$3,500 when signing the Agreement of Purchase and Sale, and a further \$3,500 10 days from when the agreement is signed, and then \$1,000 each month until the buyer reaches 5% of the purchase price before moving into the new home. The BOOST program provides qualified purchasers with a 10% down payment assistance, together with a further \$25,000 towards the down payment. These funds are provided in the form of an interest-free and payment-free second mortgage.	Community	Down payment assistance			https://danielsfirsthome.ca/	
		Artscape Triangle Lofts	UrbanCorp, Active 18	Toronto, Ontario	2011	Co-live, co-work	Artscape Triangle Lofts provides live-work space to artists and arts professionals in the Queen West Triangle. The site used to be occupied by a former factory that was home to a number of artists who used it as a live-work space, but was not legally zoned. Local group Active 18 advocated for a development plan that reflected the needs of the community, including its artist residents. Adapting an affordable home ownership program model by not-for-profit developer Options for Homes, 48 of these units were then sold to full-time artists or employees at an arts-based not-for-profit organization.	Site	The market-value units had no interest and no payment second mortgages for 25% of the purchase price.	Private and non-profit partnership	Community group Active 18 advocated for artists residents to be built on the site	https://www.artscape.ca/portfolio-item/artscape-triangle-lofts/ https://www.artscape.ca/wp-content/uploads/2018/03/2018-03-02_ArtscapeTriangleLofts_CaseStudy.pdf	
		Daniels Rent-to-own Program (Cinema Towers, NY2 Condos)	The Daniels Corporation	Toronto, Ontario	2003		The Rent-to-Own program offered exclusively by Daniels to qualified renters, submits a portion of your first year's monthly rent towards the 5% down payment. At the end of the one-year period, buyers simply top off the down payment and can then close on the property. "They'll be able to accumulate somewhere between 40 and 50 per cent of the down payment in one year," explains Daniels vice president Martin Blake, Daniels designates a portion of the units to the rent-to-own program (i.e. about 40 per cent of NY Place will be part of the Rent to Own program). However, the qualification process is very strict.	Site	Rent-to-own		N/A	https://www.thestar.com/life/homes/2011/09/09/daniels_brings_back_rent_to_own_program.html	
	Non-profit Housing Co-operatives	60 Richmond Street Housing Cooperative	Teepie Architects	Toronto, Ontario	2011	sustainable design	This 11-story, 85-unit mixed use building is among the first new housing co-ops to be built in Toronto in recent years. The project results from collaboration between the local city councillor, the hospitality workers' union 'UNITE HERE', and Toronto Community Housing. Many of the tenants are being relocated here as part of the revitalization of the Regent Park social housing project. The new residents are primarily employed in the hospitality and restaurant industry. Key design element includes social spaces that is dedicated to food and food production. The resident-owned and operated restaurant and training kitchen on the ground floor is supplied with vegetables, fruit and herbs grown on the sixth floor terrace. The kitchen garden is irrigated by storm water from the roofs. Organic waste generated by the kitchens serves as compost for the garden. The use of sustainable and energy-efficient building materials met the client's request for lowered maintenance costs.	Site	Government Subsidy	Multiple Public Agencies			http://hospitalitytrainingcentre.com/co-op-housing-places-of-opportunity/ https://www.archdaily.com/85762/60-richmond-housing-cooperative-teepie-architects
		Fraserview Co-op	dys Architecture	Vancouver, Canada	2018	community land trusts	Fraserview Housing Co-op is the most recent Community Land Trust housing development to open its doors. It offers a community of 278 homes for families and singles located at two sites adjacent to Vancouver's thriving River District in southeast Vancouver. Fraserview Riverside offers a mix of 90 modern two-bedroom and three-bedroom townhouses and apartments along the Fraser River. Fraserview's members have a voice in how their homes are managed and maintained and have the benefit of security of tenure. This means that as long as you abide by the rules the co-op sets for itself and pay your monthly housing charges (rents), you will be able to live in your home as long as you like. This project is a good example of the affordable funding being provided in Vancouver by the Vancouver CLT.	Site	Community land trust		Developed by Vancouver's Community Land Trust	http://fraserviewcoop.ca/ http://fraserviewcoop.ca/our-homes/	
		Naismith Non-profit Housing Co-op	Tridel	Toronto, Ontario	2018		7 two-bedroom units in a 65-storey luxury condominium. The deal was negotiated between the local city councillor and Tridel as part of the Section 37 benefits for increased density. The rents of the units are \$1,075 a month plus utilities.	Site	Funded through Section 37 benefits (community)	Public, private and non-profit partnerships			https://ilercampbell.com/blog/2017/08/applications-now-open-for-torontos-first-new-housing-co-op-in-7-years/
		Bain Co-Op	Eden Smith	Toronto, Ontario	1977		Created in 1970 due to housing crisis in Toronto, it provides low income homes with shared access to open and green space. The houses are in the cottage style. Rents range from \$914 for a one bedroom to \$1500 for a four bedroom. The community-ownership model of housing allows for lower than market-rate rents and a sense of community that is difficult to find in other established neighbourhoods in a city.	Community	Funded through community - was able to first purchase the properties with the help of the	Public and non-profit partnership	Democratically run by community members		https://co-ophousingtoronto.coop/bain-co-op/

Comparative Typology Case Study List

	Equity-Based Housing Co-operatives	Low Impact Living Affordable Community (LILAC)	LILAC, White De	Leeds, United Kingdom	2013	co-housing and communal living, sustainable design	A co-housing complex of 20 eco-build households. "The home and lands are managed by residents through a Mutual Home Ownership Society, a pioneering financial model that ensures permanent affordability. Each member has a lease which gives them the right to democratically control the housing community they live in. Members pay an equity share to the co-operative and retain equity in the scheme. After deductions for maintenance, insurance etc, these payments pay the mortgage. The payment that leaseholders pay each month is set at around 35% of net income."	Community	Mutual Home Ownership Scheme		Democratically run by community members	https://www.lilac.coop/
	Community Land Trusts	Parkdale Neighbourhood Land Trust	n/a	Toronto, Ontario	2014		The PLNT buys land and leases it out to non-profits who can provide services or help meet the needs of members of the community. They have a focus social, economic, cultural and environmental well-being. Land is seen as a common asset.	City	Community-based	Community and non-profit partnership, with funding from the	It is a membership-based model open to everyone who lives in the Parkdale neighbourhood. Democra	http://www.plnt.ca/
		St Clement's East London Community Land Trust	n/a	London, United Kingdom	2009		Will provide 23 new homes at a third of the open market value by linking the price of the home to local rent. A further 229 homes will be sold at market price to help fund the scheme. Owners must sell back to the trust if they wish to move. The UK's first urban community land trust	Site	Community-baed			http://www.londonclt.org/about-us/what-is-a-community-land-trust/

APPENDIX B

LIST OF REFERENCES AND
ADDITIONAL RESOURCES

Book Publications

Allison, A. Burkhart, B. (2002). **Prefab I & II**, Gibbs Smith Publisher, Layton, Utah, ISBN-10: 1586851322.

Bergdoll, B. Christensen, P. (2009). **Home Delivery: Fabricating the Modern Dwelling**, MOMA, New York.

Brand, S. (1995). **How Buildings Learn: What Happens After They're Built**, Penguin Publishers, 12-13

Friedman, A. (2005). **Homes Within Reach**: a guide to the planning, design and construction of affordable homes and communities, Hoboken, NJ: J. Wiley, ISBN: 0471469866.

Gualart, V. (2006). **Self - Sufficient Housing**: IAAC 1st Advanced Architecture Contest, Institut d'Arquitectura de Catalunya, Ingoprint S.A., ISBN: 84-96540-43-X.

Hayden, D. (1986). **Redesigning the American Dream**: The Future of Housing, Work and family Life, WW Norton & Co., London, Penguin Books, ISBN-10: 0807064734.

Haraguchi, H. (1989). **A Comparative analysis of 20th Century Houses**, Rizzoli Intl., New York.

Kendall, S. Teicher, J. (1999) **Residential Open Building** Spon Press Publications.

Mackay, D., (1977). **Multiple Family Housing: From Aggregation to Integration**, Architectural Book Pub. Co., New York.

Sherwood, R. (2002) **Modern Housing Prototypes**. Harvard University Press, ISBN-10: 0674579429.

Sewell, J. (1993). **The Shape of the City**, Published by University of Toronto Press, ISBN 0-8020-7409-x.

Serrats M. (2012). **Prefab Houses Design Source**, Harper Design and Loft Publications, ISBN 978-0-06-211354-2.

Smith, R. (2010). **Prefab Architecture: A Guide to Modular Design & Construction**, John Wiley & Sons, New Jersey.

Stang, A. & Hawthorne, C. (1970). **The Green House: New Directions in Sustainable Architecture**, Princeton Architectural Press.

Williams R. J. (2018). **Complex Housing: Designing for Density**, Routledge, Taylor & Francis Publishing, London, New York, ISBN 9781315639925.

Yin, R.K (1984) **Case Study Research: Design and Methods**. Sage Publications, Beverly Hills, California.

Articles

Alderton, M. (2018, April 24). **Co-Living, Custom-Order Homes, and Creative Economies**: Is this the Future of High Density Housing?, Architectural Daily.

Addictions and Mental Health Ontario, (2018, April). **Promising Practices**: 12 Case Studies in Supportive Housing for People with Mental Housing and addiction Issues, CMHA Report, Toronto, CMHA Ontario.

Anzilotti, E. (2018, April 26). **Permanently Affordable Housing gets Its Own Accelerator Program**, World Changing Ideas, CityLab, Fast Company.

Aurand, A. (2010). **Density, housing types and mixed land use: Smart tools for affordable housing?** *Urban Studies*, 47(5), 1015–1036.

Berkes, E. & Gaetani, R. (2017, October 11). **Income Segregation and Rise of the Knowledge Economy**. *2018 Meeting Papers, 213, Society for Economic Dynamics*. Retrieved from <https://ideas.repec.org/p/red/sed018/213.html>

Bernardo, L.(2015). **The new role of student housing: connecting campus and community**. *Real Estate Review*, 44(1), 3-9.

Biau, V., & Bacqué, M.H. (2010). **Habitats alternatifs: Des projets négociés?** Paris-Val de Seine: ENSA

BMO Wealth Management. (2018, July). **The gig economy: Achieving financial wellness with confidence**. Retrieved from https://www.bmo.com/assets/pdfs/wealth/bmo_gig_economy_report_en.pdf

Brannan, A. (2018, September 27). **What Canada Will Look Like in 2036: Canadian Immigration, Diversity, and Language from 2011-2036**. IMMI group. Retrieved from <https://www.immigroup.com/news/what-canada-will-look-20-years>

Business Development Bank of Canada. (2013, October). **Mapping your future growth: Five game-changing consumer trends**. Retrieved from https://www.bdc.ca/Resources%20Manager/study_2013/consumer_trends_BDC_report.pdf?ref=shorturl-consumertrends

Canadian Architect (2014, May). **60 Richmond East Housing Co-operative**. *Canadian Architect*. Retrieved from <https://www.canadianarchitect.com/features/60-richmond-east-housing-co-operative/>

CBC. (2017, December 26). **2018 to mean more challenges for Canadian retailers**. Retrieved from <https://www.cbc.ca/news/business/retail-2017-year-end-outlook-1.4458112>

Canadian Mortgage and Housing Corporation,(2018, November) (n.d.). **About Affordable Housing in Canada**. Retrieved from <https://www.cmhc-schl.gc.ca/en/developing-and-renovating/develop-new-affordable-housing/programs-and-information/about-affordable-housing-in-canada>

Canadian Mortgage and Housing Corporation. (2005). **Critical Success Factors for Community Land Trusts in Canada**. Retrieved from http://publications.gc.ca/collections/collection_2011/schl-cmhc/nh18-1-2/NH18-1-2-123-2005-eng.pdf

Canadian Mental Health Association, (2014, March). **Housing and Mental Health**, CMHA Report, Toronto, <https://toronto.cmha.ca/>.

Canadian Urban Institute for the GTA Housing Lab, (2017, June). **Scaling Up Affordable Housing in the GTA**, Report, Toronto, www.CANURBAN.ORG

CBC News, (2017, July 20). **Parkdale Neighbourhood Land Trust purchases first piece of community land**, Metro Morning Report, Toronto, CBC Radio Canada.

Chance, T. (2009). **Towards sustainable residential communities; the Beddington Zero Energy Development (BedZED) and beyond.** *Environment and Urbanization*, 21(2), 527–544.

CityTO, (2016). **Transformative Change for the TCHC**, A report from the Mayor’s taskforce on Community Housing, Toronto.

City of Toronto (2002). **Official Plan.** Retrieved from <https://www.toronto.ca/city-government/planning-development/official-plan-guidelines/official-plan/chapters-1-5/>

City of Toronto Housing Information, (2003). **Social Profiles – Neighborhoods, Immigration, Ethnicity, and Language.** Source: Statistics Canada, Land Information Toronto, Copyright City of Toronto.

City Planning Division, (December 2003 – July 2006). **Profile Toronto.** Toronto’s Housing Bulletins, City Planning Division, Policy and Research, Toronto.

Cote, A. (2013). **Affordable Housing in Ontario: Mobilizing Private Capital in an Era of Public Constraint.** IMFG, Institute on Municipal Finance and Governance, ISBN 978-0-7727-0913-4.

Czischke, D. (2018) **Collaborative housing and housing providers: towards an analytical framework of multi-stakeholder collaboration in housing co-production,** *International Journal of Housing Policy*, 18:1 (p.55-81).

Czischke, D. (2013). **Social Innovation in Housing:** Learning from practice across Europe, Delft University of Technology, The Netherlands.

Drone Delivery Canada. (2018, August 3). **Drone Delivery Canada Granted Approval by Transport Canada to Commence Testing its 25lbs Heavy Lifting Drone in the Canadian Skies.** Retrieved from <http://dronedeliverycanada.com/news/press-releases/drone-delivery-canada-granted-approval-by-transport-canada-to-commence-testing-its-25lbs-heavy-lifting-drone-in-the-canadian-skies/>

Eastman, C. Sacks, R. (2008). **Relative Productivity in the AEC Industries in the United States for On-site and Off-site activities,** *Journal of Construction engineering and Management*, 134(7) 525.

Evergreen (2018). **What is the Missing Middle? A Toronto Housing Challenge Demystified.** Retrieved from <https://www.evergreen.ca/downloads/pdfs/2018/What is the Missing Middle Evergreen CUI s2.pdf>

Evergreen, Ryerson city Building Institute, (2017, October). **Getting to 8000: Building a Healthier Rental Market for the Toronto Area,** Toronto.

Fleury, D., & Fortin, M. (2006). **When Working is Not Enough to Escape Poverty: An Analysis of Canada’s Working Poor.** Ottawa: Human Resources and Social Development Canada.

Fraserview Housing Co-operative. (n.d.). **Fraserview Housing Co-operative – A co-op community along the Fraser River.** Retrieved from <http://fraserviewcoop.ca/>

Grenier, É. (2017, May 3). **Canadian seniors now outnumber children for 1st time, 2016 census shows.** CBC. Retrieved from <https://www.cbc.ca/news/politics/2016-census-age-gender-1.4095360>

Haines, G., & Aird, B. (2018). **Finding the Missing Middle in the GTHA.** Ryerson University City Building Institute. Retrieved from <https://www.citybuildinginstitute.ca/portfolio/missing-middle/>

Homes & Community Agency, PTE Architects, Levitt Bernstein Associates, Design for Homes UK, (2009). **HAPPI: Housing our Ageing Population:** Panel for Innovation, UK.

Hulchanski, J. D. (2010). **The Three Cities Within Toronto: Income Polarization Among Toronto's Neighbourhoods, 1970-2005**, Toronto: Cities Centre, University of Toronto.

Jacobs, K. (2017, December 14). **The Future of Living: Housing Innovation in Underserved Markets**, A Q & A with Booth Hanson Architects, Metropolis Magazine, NY.

Jacobs, K. (2016, October 25). **Maurice Cox's Detroit**, Journal of American Institute of Architects, USA.

Kaufman, R. (2018, May 7). **Community Land Trust Model Taking Off in Vancouver**. Retrieved from <https://nextcity.org/daily/entry/community-land-trust-model-taking-off-in-vancouver>

King, E. (2016, April). **Fortress of Solitude**. **Frieze**. Retrieved from <https://frieze.com/article/fortress-solitude>

Koster, H. R. A., & Rouwendal, J. (2012). **The impact of mixed land use on residential property values**. Journal of Regional Science, 52(5), (p.733–761).

Lawrence, N. (2015, March 1). **Mutual Home Ownership Society | Low Carbon Leeds**. Retrieved November 20, 2018, from <https://lowcarbonleeds.wordpress.com/tag/mutual-home-ownership-society/>

Lee, Yanki. (2008) **Design participation tactics: the challenges and new roles for designers in the co-design process**, CoDesign, 4:1, (p.31-50).

Macintyre, C. (2003). **New models of student housing and their impact on local communities**, Journal of Higher Education Policy and Management, 25(2),109-118.

Momani, Bessma & Jillian Stirk (2017) **Diversity Dividend: Canada's Global Advantage**. Centre for International Governance Innovation and The Pierre Elliott Trudeau Foundation.

Moos, M., Vinodraj, T., Revington, N., and Seasons, M. (2018). **Planning for Mixed Use: Affordable for Whom?**, Journal of the American Planning Association, 84:1 (p.7-20).

Morris, A. (2018) **Modular home system turns empty commercial buildings into co-living spaces.** Dezeen. Retrieved November 21, 2018 from: <https://www.dezeen.com/2018/11/16/vivahouse-prefabricated-co-living-modular-london/>

Mounk, Y. (2018, June 8). **Even Canada Is Not Immune to the Rise of Populism.** Slate. Retrieved from <https://slate.com/news-and-politics/2018/06/doug-fords-victory-in-ontario-shows-an-alarming-rise-of-populism-in-canada.html>

NMHC (National Multifamily Housing Council). (2018, January). **Disruption: How Demographics, Psychographics and Technology Are Bringing Multifamily to the Brink of a Design Revolution.** Retrieved from <http://disruption.nmhc.org/wp-content/uploads/2018/01/NMHC-Multifamily-Disruption-Report.pdf>

NYC Public Design Commission (2018). **Designing New York: Quality Affordable Housing,** New York Department of City Planning, NY.

Ontario Association of Architects, (n.d.). **North Toronto Collegiate Institute/Republic Sustainable Design Case Study.** Retrieved November 22, 2018, from <http://www.oaa.on.ca/professional%20resources/sustainable%20design/case-studies-details/North-Toronto-Collegiate-Institute-Redevelopment-Republic/23>

Ontario Municipal Board, (April 3, 2007). **City of Toronto Official Plan Housing Policies,** As approved by the OMB, Toronto.

Pacini, A. (2017). **Housing Horizons: models for real estate community investment.** OCAD University. Retrieved from http://openresearch.ocadu.ca/id/eprint/1758/1/Pacini_Adrienne_2017_MDes_SFI_MRP.pdf

Pagliaro, J. (2017, September 28). **City on hook for \$1.6 billion to fix crumbling public housing |** The Star. Retrieved November 19, 2018, from https://www.thestar.com/news/city_hall/2017/09/28/city-on-hook-for-16-billion-to-fix-crumbling-public-housing.html

Paradis, E. (2018). **Saving room: Community action and municipal policy to protect dwelling room stock in North American cities** (p. 35). Retrieved from http://www.pnlt.ca/wp-content/uploads/2018/11/Saving_room.pdf

Parkdale Neighbourhood Land Trust, (2017, May). **No Room for Unkept Promises: Parkdale Rooming House Study,** van Nostrand Developments, Toronto.

Park, N. (2014, March 13). **The Cheat Sheet: Co-ops.** Retrieved November 19, 2018, from <https://nevillepark.ca/2014/03/12/the-cheat-sheet-co-ops/>

Parolek, D. (n.d.). **Missing Middle Housing: Responding to the Demand for Walkable Urban Living.** Retrieved from <http://missingmiddlehousing.com/dev/wp-content/uploads/2015/04/Missing-Middle-Housing-Responding-to-the-Demand-for-Walkable-Urban-Living-by-Daniel-Parolek.pdf>

Post, R. (2014, August 25). **Are Tiny Houses and Micro apartments the Future of urban Homes?**, The Guardian, Sustainable Design Hub, Rockefeller Foundation.

Powell, J. A. (2003) Opportunity-based housing, in: E. Buchwald (Ed.) **Toward the Livable City**, pp. 181–211 (Minneapolis, MN: Milkweed Editions).

Profile Toronto, Toronto's Housing Bulletins, City Planning Division , Policy and Research, City Planning Division, December 2003 – July 2006

Puigjaner, A., & López, G. (2015). **Revisiting Systems: Ricardo Bofill and Waldenmania**. The Avery Review, 7, 1-5. Retrieved from <https://averyreview.com/content/3-issues/7-7/3-revisiting-systems/puigjaner-and-lopez.pdf>

Reason, C. (2018, November 1). **Advocates hopeful developer will bring affordable housing to Mimico GO Station**. Toronto.com. Retrieved November 22, 2018, from <https://www.toronto.com/news-story/8998391-advocates-hopeful-developer-will-bring-affordable-housing-to-mimico-go/>

Roberts, Y (2018, May 01). **The Experiments providing Homes Around the World**, The Guardian, Rockefeller Foundation.

Royal Bank of Canada. (2018, September 28). **Canadian housing affordability at worst level in nearly 30 years: RBC Economics**. Retrieved November 19, 2018, from <http://www.rbc.com/newsroom/news/2018/20180928-q3-housing-afford.html>

Shanesy, L. (2016, January 19). **A Close-Up Look at the 'Apartment of the Future'**. MFE, Multifamily Executive, Affordable Housing finance.

Song, Y., & Knaap, G.-J. (2004). **Measuring the effects of mixed land uses on housing values**. Regional Science and Urban Economics, 34(6), (p.663–680).

Stapleton, J., Murphy, B., Xing, Y. (February 2012). **The "Working Poor" in the Toronto Region: Who they are, where they live, and how trends are changing Toronto**, George Cedric Metcalf Charitable Foundation, Toronto.

Statistics Canada. (2017, October 25). **Aboriginal peoples in Canada: Key results from the 2016 Census**. Retrieved from <https://www150.statcan.gc.ca/n1/daily-quotidien/171025/dq171025a-eng.htm>

Talen, E. (2006) **Design for Diversity: Evaluating the Context of Socially Mixed Neighbourhoods**, Journal of Urban Design, 11:1, 1-3

The Conference Board of Canada. (2018, November 19). **Canadian Outlook 2019: Canada and the U.S. Are Not in Tune**. Retrieved from <https://www.conferenceboard.ca/e-library/abstract.aspx?did=9901>

Toronto and Region Conservation Authority. (n.d.). **Climate Change Impacts**. Retrieved from <https://trca.ca/conservation/climate-change/climate-change-impacts/>

Tellis, W. M. (1997). **Application of a Case Study Methodology**. The Qualitative Report, 3(3), 1-19. Retrieved from <https://nsuworks.nova.edu/tqr/vol3/iss3/1>

Toronto Community Housing. (2010, September 30). **60 Richmond Street East: Closing Report**. Retrieved from <https://www.torontohousing.ca/events/Documents/Archives/6839Item%204%20-%2060%20Richmond%20Street%20Closing%20Report.pdf>

Toronto Community Housing, (2018, November 19) (n.d.). **Who we are**, retrieved from <https://www.torontohousing.ca/about/Pages/default.aspx>

Tyndorf, T. (2006). **Perspectives on Affordability**, Toronto City Planning, Chief Planner and Executive Director City Planning Division, Policy and Research, City Planning Division, Toronto.

Tyndorf, T. (2006). **Toronto Plan: Flashforward Addendum: Projecting Housing Demand by Tenure to 2031**, Toronto City Planning.

UK Co-Housing Network (2016, June). **Co-Housing: Shared Futures**, ESRC, Economic and Social Research Council, UK.

United Way Toronto, (2011). **Poverty by Postal Code 2: Vertical Poverty: Declining Income, Housing Quality and Community Life in Toronto's Inner Suburban High-Rise Apartments**, Toronto.

Vertovec, Steven (2010) **Toward post-multiculturalism? Changing communities, conditions and contexts of diversity'**. Unesco World Report on Cultural Diversity, Max-Planck Institute for the Study of Religious and Ethnic Diversity

Vincent, D. (2012, December 14). **Downtown Toronto condo building set to include affordable rental units** | The Star. Retrieved November 20, 2018, from https://www.thestar.com/news/gta/2012/12/14/downtown_toronto_condo_building_set_to_include_affordable_rental_units.html

Welch, T. Warkentin, J. German, M. (2017, July). **Scaling Up Joint Ventures between Social Housing Providers and Private Sector Builders**, Evergreen, Tim Welch Consulting, CHBA, Canadian Home Builders Association, Toronto.

Welch, T. (2017, July). **Recent Examples of Collaborative Developments Between Home Builders or Renovators and Social housing Providers**, Tim Welch Consulting, Toronto.

Wiebe, K. (2016, September). **Strategic Partnerships Advancing the Development of Affordable Housing**, CHRA Congress Sessions Series 2016. (p.13)

Wong, N. & Marotta, S. (2018, September 27). **Who Just Beat the Bay Area in Tech Jobs?** Toronto. Bloomberg. Retrieved from <https://www.bloomberg.com/news/articles/2018-07-24/toronto-beats-bay-area-in-new-tech-jobs-and-new-york-in-talent>

York Region (2018). **Richmond Hill Hub**. Retrieved November 22, 2018, from http://www.york.ca/wps/portal/yorkhome/support/yr/housing/housinglocations/richmondhillhousingandcommunityhub!/ut/p/a0/04_Sj9CPykssy0xPLMnMz0vMAfGjzOI9Hd09PTy8Dbz8TSycDRwN_B29jMwtDFx9zPULsh0VAQEAdhQ!/#.W_ggBjFRfRY

Zainal, Z. (2007). **Case study as a research method**. Journal Kemanusiaan, 9, 1-6. Retrieved from https://www.researchgate.net/publication/41822817_Case_study_as_a_research_method

n.d (2014) **Human Rights Fact Sheet no.21**. Office of the United Nations High Commissioner for Human Rights, UN Habitat

A

Affordable Housing: Housing is considered affordable when 30 per cent or less of a household's gross income goes towards paying for your housing costs.

Alternative Development Process: Development not driven by a developer; some examples include self-build housing where home buyers partner directly with local authorities.

Alternative Financing: Alternative financial models for home ownership beyond typical means like obtaining a mortgage; Examples of these strategies could be rent-to-own or shared equity (co-ops, private sector subsidies and land trusts)

Alternative Intensification: Alternative strategies for increasing the density of a site beyond typical means such as redevelopment of a site into traditional "high-density" building types. Alternative intensification strategies could include new building typologies for urban infill (laneway housing) or different living standards (micro-units)

B

Below-market Rental Housing: Below-market rental housing is housing with rents equal to, or lower than, average rates in private-market rental housing.

C

Canadian Housing & Renewal Association (CHRA): The organization that provides advocacy, policy and research, on affordable housing and homelessness issues at the national level.

Canada Mortgage and Housing Corporation (CMHC): The agency responsible for carrying out the current responsibilities of the federal government with regard to affordable housing. In 1999, CMHC signed the Canada-Ontario Social Housing Agreement that transferred the funding and administration of social housing, which had been developed under federal programs, into the hands of the provincial government.

Community Land Trust: A means of restricting use of land and housing through not-for-profit ownership of land with leases to the land users. It is often used to protect low-income housing from speculation.

Co-operative housing: Households in a co-operative housing project are all members of the co-operative corporation that owns the building. They elect from amongst themselves a board of directors who are responsible for overseeing the management of the building. They are subject to rules in the Co-operative Corporations Act and are not considered to be landlords, and are therefore not subject to the Residential Tenancies Act.

F

Fixed Rate Rent: A monthly rent amount that a housing provider sets for a unit. The amount does not change during a tenancy.

Flexible Design: Flexible design is the design of a building or interior space that allows it to be adapted to fit the users' needs as time progresses.

I

Inclusionary Zoning: Inclusionary zoning is a zoning tool that incentivizes or requires real estate developers to set aside a percentage of the units in a residential development to be affordable to households under a certain income level.

Intergenerational Housing: Intergenerational housing is a housing model that encourages more than one age demographic living in the same housing development (such as seniors and youth).

L

Live-Work: A live work dwelling arrangement combines residential living space with facilities needed for work.

M

Market Rent: A rent amount that is generally similar to the rent of other units in the private (non-subsidized) housing market.

Micro-Living: Micro-Living Units are private residential dwellings that do not conform to minimum dwelling standards in their respective jurisdiction.

Mixed Demographic Housing: A housing model that supports a diverse population of residents, most commonly supporting a variety of family sizes and types.

Mixed Income Housing: Mixed income housing is a model that supports a diverse population of residents from various economic backgrounds and levels of financial affordability.

Mixed Use: A development model that supports multiple uses in one space, such as commercial, residential and office.

Modular Housing: A modular home is a home that is built off-site, as opposed to on-site. These homes are often called factory-built, system-built or prefab (short for prefabricated) homes.

N

Naturally Occurring Affordable Housing: housing that is available on the regular market, open to anyone and not subsidized by a government or nonprofit, but which happens to be within the budget of many families. In many cities the naturally occurring affordable housing tends to be older, less well cared for and/or not in the most desirable neighborhoods compared with the housing that is only accessible to higher income families.

Net-Zero Development: is a development with zero net energy consumption, meaning the total amount of energy used by the development on an annual basis is roughly equal to the amount of renewable energy created by the development.

Non-profit housing: Community-based affordable rental housing provided by non-profit corporations, overseen by a volunteer board of directors. A percentage of non-profit housing tenants pay rents geared to their incomes (known as rent-geared-to-income housing), and the remaining pay market rents. The percentage of tenants paying rent-geared-to-income ranges from 25 to 100 per cent of tenants in a building or community; generally the ratio is around 60 per cent rent-geared-to-income and 40 per cent market rent.

O

Open Housing: Housing concept that accepts diversity, change and transformation and incorporates the user as part of decision-making processes.

P

Prefabricated Construction: A prefabricated building or structure is one that has been made from parts that were made in a factory and then quickly put together at the place where the structure was built.

Private Non-Profit Housing: This housing is usually owned and managed by a sponsoring group such as a religious group, labour union, or other community organization.

Public Housing: A housing development that the government or a non-profit housing partner owns and operates.

R

Rent geared to income: This means that rent is calculated based on your income type and amount at 30% of the gross household income.

Rent Supplement: Rent Supplement units are located in conventional rental buildings, but tenants pay their rent geared-to-income.

S

Self-Built Housing: Self-build housing is where the individual partly or wholly controls the design, funding, planning and building of housing. This can involve building part or all of a home oneself or alternatively hiring a contractor to do the same. Self-builders can work as individuals or as a group.

Shared Accommodation - In shared accommodation, an individual will usually have his or her own room, but share amenities such as the kitchen, bathroom, and other common living spaces with other tenants in their unit.

Social Housing: A housing development that the government or a non-profit housing partner owns and operates.

Subsidized Housing: housing that is made to be affordable, not through the private market, but by nonprofit or government subsidies

T

Tenure: In the context of housing, tenure means ‘the conditions under which property is occupied’.
Domestic properties – homes – may be owned outright or secured on a mortgage; rented from the local authority, housing association, registered social landlord, or private owner; or may be subject to a shared ownership agreement.

