Housing that sustains:

A case study of Bain Co-op and its historic buildings

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Abstract

This case study on a housing co-operative in Toronto and its historic buildings explores liveability and sustainability in multi-residential housing. It includes an analysis of the history of co-operative housing in Canada, public health and housing, and housing design methodologies that contribute to liveability and sustainability. Eco-social aspects of affordable housing design and the co-operative tenure model, as well as the aspects of housing that can contribute to human resiliency in a changing climate are also discussed. Primary data is drawn from resident questionnaires, expert interviews, and the author's first-hand experience as a member-resident of Bain Co-op. This paper considers the archi-cultural significance of Bain Co-op's housing built in the Arts and Crafts style, as one of the first social housing developments in Canada, and its associations with socialist, naturalist, and British colonial identities.

Foreword

This research project grows out of my plan of study that has combined planning fundamentals with research in green infrastructure, ecological economics, public health, climate change, political ecology, as well as housing and energy co-operatives. Research complimented by field experience in permaculture design, water planning, and social-ecological programming.

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INTRODUCTION

> Architecture, landscape architecture, planning, and other environmental design fields are practices whose primary aim is to make the world, to make something new. We give material form to some vision of human society and place. The shadow side of this creation, this making, is that these fields are also about "unmaking" the world. The world already exists, and every time we plan, design, and/or construct some aspect of worldness, we are replacing and therefore unmaking something else. In this sense, our professions and disciplines are always embedded in critique?" something else should be here." The work is inherently utopian/dystopian (Schneekloth, 1998: 1).

My research paper examines community sustainability and its connections to housing and green space**.** It argues that community resilience rests, more upon the existence of social networks and collective governance processes, than it rests on technical sustainability strategies. Such social networks and collective governance processes are fostered and enacted within shared spaces, particularly shared green spaces within residential settings that allow for individual quality of life and collective placemaking. The strength of cities lies in their ability to foster social interactions and yet contemporary built environments often reflect a lack of attention to the elements which support collective association through shared spaces of leisure and wellbeing. Isolating architectures must be reconsidered in favour of spaces that value shared moments and build trust among neighbours. The social is as essential an element as the environment and the economy in support of liveable spaces. Thus it is important to look for the land uses, housing types, tenure options, and governance models that will best serve our local communities moving into the future.

The information presented in my research draws on a case study of Bain Co-operative Apartments Inc. formed in the 1970s in Toronto, and the design of the early 20th century housing development it operates within. Built as a social housing development in 1913, the property's design blends built form and public space in a manner that is twice as dense as the surrounding single family homes, and through a series of shared courtyards, offers residents access to roughly sixty times as much green/open space as conventional backyards (Yew et al., 2015).

A leading scholar on courtyard housing, Donia Zhang (2016a) points out that this housing type has been used by the Chinese for several thousand years as its form is aligned with Chinese philosophy and cosmology. Zhang (2016a: 166) relates courtyard housing to sustainable development, which she defines with four pillars, including: "environmental responsibility, economic viability, social equity, and cultural vitality." Her research asserts that courtyard housing fosters cultural sustainability, in that archi-cultural and socio-cultural

aspects of the housing transmit culture, in material and immaterial ways, conducive to the development of future generations. Zhang (2016a) has conducted research in North America that reveals, courtyard layouts are common among co-operative housing developments in Toronto.

Parallel pursuits of urban density and suburban sprawl in the housing development sector in Canada are at odds with an urban sustainability agenda and represent patterns of inequality that call for greater attention. My research serves to highlight the potential for planning to facilitate mutually supportive interactions between social networks, built form and natural environments. It also documents a long-standing residential development and community that has proven its sustainability over time, and serves as a reference for community groups practicing in residential architecture, landscape design, co-working/living, and community development. Results from this inquiry have potential applications for future housing developments of both private, public, co-operative and other tenure models.

My Story

I moved into Bain Co-op in 2012, at a time when I was transitioning in life from working full-time to going back to school to get my master's degree. I had come from an apartment on Spadina Avenue next to Kensington Market, which was fun, close to work and good food, but super noisy and dark. It was frenetic the moment I stepped out my door and onto the street. On my way to work once I was accosted by a woman who took issue with my red boot laces. I was 30 and wanted something quieter. So our household decided that Bain Co-op would be a better place for us, and our cats, and we applied to be members.

I had at least one friend in the co-op already. I loved that I could garden, in the ground, and that our indoor cats had nice wood trim to sit on while looking out the porch windows. I loved the two floor layout of the apartment and the green views from the indoors. It does feel a bit like living in a Hobbits' Shire everything's smaller and more charming. I have met my neighbours mainly by tending to my front garden, where I have to stand on the semi-public path to reach it. When I first moved-in I greeted passersby that seemed open and many of them were other members of the co-op, who asked about me and exchanged some news or knowledge with me about living here. It was great, I thought.

As a member of Bain Co-op my volunteer job titles over the last 5 years include: 100@100 street festival co-organizer, workshop leader and media outreach for the Homemade Stories Project, founder of the Bain Landscape Group (BLG), founder of the currently dormant Community Engagement Committee (CEC), member of the Personnel Committee, and member of the board of directors, known in Bain Co-op as Residents' Council.

I have noted that there is great social capacity within the Bain Co-op community and that it plays out in many fluid, fun and organic ways. The caliber of community projects happening here can be really outstanding and generative. Projects such as installing a

professional kitchen in the community centre, hosting the long-running and renowned Lazy Cat Café: a folk/blues open-mic in the community centre, building and permitting an outdoor clay oven in one of the courtyards, and producing the quasi-annual Bain Co-op street festivals. Over the last year there has also been the Bain Restorative Practices Group engaging with member relations in the co-op, and the Bain Honour Canoe Project addressing the work of the Truth and Reconciliation Commission in Canada. These community projects pop-up as member-residents decide to organize them, and function as a form of urban acupuncture within the co-op that creates peaks of restoration and vitality in the community's lifeline (Lerner, 2014).

Parallel to these activities, there is sustaining and at times waning social capacity in the group of volunteers that work on the governance responsibilities of the co-op, including: primarily but among others, Residents' Council, the Property Committee, the Finance Committee, the Membership Committee, the Personnel Committee, and the Community Centre Committee. These are the core bodies of governance in Bain Co-op. A long-time staff, who for many long-time residents are like family, maintains the day-to-day administration of the co-op. This organizing structure represents a co-operative governance system, whose purpose is to sustain the co-op, its housing and its members. This work is tough because it involves being responsible for the co-op as a business, making hard decisions about people's housing, and sometimes having people disagree with you. I have found this type of volunteer work in the co-op tougher than the former, though I still feel that I am contributing positively to my co-op and that is very rewarding for me. Volunteering on committees and the board in the co-op has also caused me to gain new skills in collaboration, communication, and management. This learning comes from the positive and negative feedback and advice given to me by my fellow volunteers, and the co-op's staff, who have all sorts and depths of experience complimentary to my own.

In response to questions about my reflexivity or bias related to researching and writing about the housing where I live, I would argue that my experience and access in the Bain Co-op community has allowed for a much deeper analysis of it. Living here is what has inspired me to write about this place. I may not live here much longer, but the fact that people living here work co-operatively and use their skills to do what they can in order to leave it a better place is one of the co-op's aspects of sustainability. This research paper and its aim to document some elements of Bain Co-op's housing context is one of my contributions.

Academics that address space, support lived experience informing an analysis of it (Gehl, 2013; Harvey, 2010; Schneekloth and Shibley, 1995; Tuan, 1977). David Harvey who distills a theory of social justice tailored to the systems at work in urban areas, contends that philosophical questions about the nature of space can only be answered by human practices conducted within it. Harvey (2010) also notes, as does political ecology literature, that ideology exists in theory and its tendency to view facts as separate from values.

> These [studies of animal behaviour, spatial laws, and resource inventories] are important approaches, but they need to be complemented by experiential data that we can collect and interpret in measured confidence because we are human ourselves. We have privileged access to states of mind, thoughts and feelings. We have an insider's view of human facts, a claim we cannot make with regard to other kinds of facts (Tuan, 1977: 5).

Reflexivity is also valued in wellbeing literature, John F. Helliwell and colleagues argue the merits of subjective wellbeing data in the form of a life satisfaction question on the grounds that it is a measure of a person's experience of wellbeing rather than a measure drawn from various indicators of wellbeing (Hall et al, 2010; Helliwell & Barington-Leigh, 2010).

Nevertheless, as a researcher, I had to keep my personal knowledge of the site and access to residents in check, and I developed a multi-methodological approach in order to do that. The content of this research paper is informed by resident questionnaire responses, and expert interviews. Residents were asked to respond to questions about their lived experience in the housing development. Experts on architecture and co-operatives where asked to respond as to their definitions of liveability and their conceptions of sustainable and accessible housing. This data was analysed in reference to academic and grey literature on contemporary sustainability, housing, and design.

This planning related research is also based on historical analysis and archival research to provide dates and form timelines for this piece of land in order to capture some aspects of its evolution over a century. This analysis also encompasses co-operative and Canadian Arts and Crafts histories that intertwine with Ebenezer Howard's garden city planning, and eventually through policy and politics the predominantly unsustainable housing development patterns that can be seen today in North American cities. This provides a socio-political context against which to consider Bain Co-op as a housing development.

Co-operative Housing in Canada

Understanding that capacity requires organization, many housing co-ops struggle with governance at some or many points in their history (CHF, 2010). Struggles with democracy are common in any political sphere, it is how people organize within those struggles that builds infrastructure of all kinds. Non-profit housing co-ops in Canada today exist under housing policy that stands in relative isolation to the majority of the housing system. Bain Co-op's hybrid status as half government subsidized and half market rental puts it on either side of a dark line that divides publicly-owned from privately-owned housing in the affordable housing continuum that Canada Mortgage and Housing Corporation (CMHC) (2017) presents on its website, representing an edge that Canadian non-profit co-operative housing rides between public and private, government and market forces.

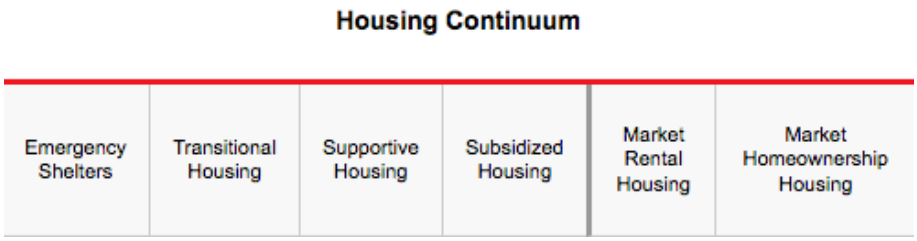


Figure 1: Affordable housing continuum (CMHC, 2017).

Stone (2008: 67) offers a broad yet fundamental definition of social housing, based on three criteria: "it is not owned or operated for profit, it cannot be sold for speculative gain, and it provides security of tenure for residents." While two of Canada's housing policy experts J. David Hulchanski and Michael Shapcott (2004) define the history of social housing in this country by the policy different governments have or have not enacted to help lower-income Canadians meet their housing needs:

- Period 1, 1949 - 1963: Leave it to the market and hope for the best
- Period 2, 1964 - 1984: Build an inclusive housing system by addressing the social need for housing
- Period 3, 1984 - 1993: From a small federal role in housing to no role at all
- Period 4, 1993 - 2004: Leave it to the market and hope for the best

Hulchanski (1988) notes that housing tenure options are a seldom analysed aspect of housing policy. Tenure is defined as the terms and conditions by which people own or have access to housing, which are rooted in social attitudes. Co-op and condo ownership both emerged as legal forms of housing tenure in Canada in the 1960s (Hulchanski, 1988). This was at a time when Canada's population was growing with a strong immigration policy and baby-boomers coming of age. Demographic upswings led to a limited supply of affordable housing ownership options in the private housing markets of big cities like Toronto and Vancouver (Statistics Canada, 2015; Hulchanski, 1988; Cole, 2008). There were also growing concerns around security of tenure within the rental market (Hulchanski, 1988). At this time in the 1960s and into the 1970s and 1980s the social capacity of a younger generation trying to meet their housing needs mixed with that of Canada's government in order to produce the country's most progressive era of housing policy. Bain Co-op exists today due to this period, when Canadians believed in building a diversity of tenure options into their country's housing infrastructure.

CMHC (2017) defines social housing as usually referring to rental housing subsidized by the government, but today this agency of the national government prefers to work with

the broader term, affordable housing, which includes all forms of housing tenure. This more macro lens on Canadian housing data obscures and signals of economic change within each of the tenure types at a time when Canadian social housing is at a crossroads, as many of CMHC's mortgage agreements with co-operative and non-profit housing providers are coming to an end (CHF, 2015; Tucker and Vassey, 2014). These agreements were signed during Canada's last period of social housing creation between 1968 and 1994, and are currently what sustains rent-geared-to-income units in Bain Co-op, and many other of the last truly mixed income housing developments, where there are no restrictions as to unit location or amenities based on income, thus providing income anonymity.

Bain co-op is currently sustaining in an ever tighter and more competitive Toronto housing market (CMHC, 2016b) and not-nearly as progressive a housing policy environment as we have previously seen during the history of Canada (Lo et al., 2015; Cole, 2008; Hulchanski, 1988; Hulchanski and Shapcott, 2004). Standing in relation to these political and market forces, Bain Co-op has the material value of its land and its buildings, which also have cultural value. Bain Co-op also has the social value of its residents and staff who are continually monitoring, learning and adapting in their management of this housing, for the good of its residents and future generations. The forces at work in sustaining Bain Co-op are complex and intertwined – not unlike those discussed in climate change literature (Bunch, 2016, Berkes and Jolly, 2001, IPCC, 2014). In its 2014 report on climate change for policymakers, IPCC authors argue that the complexity of adaptation across scales and contexts means that monitoring and learning are important components of effective adaptation. They further warn that underestimating adaptation as a social process, can lead to unrealistic expectations about intended adaptation outcomes. Thus I feel it is relevant in this study to elucidate the sustaining forces at play within Bain Co-op today and on this centennial site of social housing in Canada.

In Canada housing co-operatives are predominantly non-equity co-ops that seek to provide their members with quality affordable housing and relatively secure tenure (Sousa and Quarter, 2005). The majority of Canadian housing co-operatives receive government funding in the form of mortgage financing and rent supplements for low-income tenants, and thus they fall under the umbrella of social housing (2005). Though co-operative housing differs from other forms of social housing, such as public housing, in various key ways, most notably in its community-ownership and tenant-management model that gives co-operative housing an emphasis on volunteership, self-help and community development (Ziersch and Arthurson, 2005). Bain Co-op member-informed research for this paper shows that 91 per cent of residents feel it is either very or somewhat important to participate in the operation and maintenance of the co-op. It is also estimated that 37 per cent of the co-op's members spend eight to 29+ hours a month participating in the same.

All co-operatives operate under a set of common principles that include:

- open membership,
- democratic control,

- economic participation,
- independence,
- co-operative education,
- co-operation among co-operatives and community (CHFT, 1995).

Co-ops generally employ a staff to take care of the daily administration and maintenance needs, which means members use or gain skills in staff and property management, and that maintenance requests are handled by on-site staff that are accountable to the community rather than an absentee (private or public) landlord (Sousa and Quarter, 2005).

Community, although a very contested concept, is in this research paper defined as a group of people sharing space, interests, culture and/or affective ties, and more broadly as Evans and Advokaat (2001:13) identify, "community is invested with meaning by those people who define themselves as members of a community."

Health in this paper is defined, according to the Constitution of the World Health Organization (WHO) (1948: 1) as "a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity." This definition from WHO (1948) exists within a set of principles that speak to co-operation among states and individuals as a necessity for achieving health. WHO further explains that the best standard of health is a fundamental human right of every human being, and just as disease is a danger to all, good health is of value to all.

Sustainability

The effects of climate change are creating conditions of instability and deprivation that call upon people to manage complex problems at varying spatial and temporal scales (IPCC, 2014; Berkes and Jolly, 2001). Climate change mitigation is considered to be that which reduces the adverse effects of climate change, whereas adaptation is considered to be that which enables coping with the adverse effects of climate change (Demuzere et al., 2014). Two terms have been widely operationalised to help define how humans should respond to the effects of climate change: sustainability and resilience. While some consider these terms useful in their provision of a framework for future development goals, others warn against the totalizing effects of their overuse and lack of clear and consistent definition, which opens them up to misuse (Mulvihill and Milan, 2007; Marcuse, 1998; Overton and Scheyvens, 1999; Slater, 2014).

Marcuse (1998) points out that sustainability resonates very differently in a social justice context than an environmental one, assuming that its essential meaning refers to something that is capable of being maintained over time. His analysis of the widely cited Bruntland Commission's definition of sustainability is that its stated goal is to meet needs, while sustainability is a constraint upon the means used to achieve that goal (Marcuse, 1998: 105). Slater (2014: np) takes issue with resilience, because it can be twisted to legitimize economic austerity and "the territorial stigmatization that so often proceeds strategies of

dislocation"– resulting in rising numbers of urban residents living without security of tenure. Marcuse (1998) and Slater (2004) rightly keep justice and the question "for whom?" top of mind, while their criticism of the words sustainability and resilience seems to lie ultimately in their use as a form of "greenwash," masking the status quo of inequality and dispossession that results from the flow of capital through land and built form.

Mulvihill and Milan (2007) recognize that sustainability has expanded the scope of discussion on the environment to include social and economic considerations, while shifting focus to opportunities. However, they conclude that the assumed universality of such terms as "information" and "sustainability," supports practices that suppress diversity, cultural relativity and subtlety.

The definition of sustainability Overton and Scheyvens (1999: 3) offer is interesting; they write that "to be 'sustainable' our environmental, economic and social systems have to be able to exhibit a high degree of stability and integrity over a very long period of time." With its emphasis on systems (interconnected networks), demonstrating stability (not easily disrupted) and integrity (being honest and whole), this definition describes conditions that could allow groups of people in various contexts to meet their survival needs in ways that are just and long-lasting. With this definition of sustainability in mind, I speak about Bain Co-op as a housing development and co-operative community that has over time adapted to change while sustaining its purpose to provide liveable and affordable housing.

In 2006, the population of the North American continent was found to be 75-80 per cent urban (Pataki et al., 2006: 2092). Canada's six largest cities saw population growth increases of nearly 8 per cent between 2001 and 2006 and currently 81 per cent of Canadians reside in an urban setting (Zupancic et al., 2015). It is therefore crucial as urban populations trend upward to view climate change in an urban context. According to the IPCC (2014) the risks of climate change will be concentrated in urban areas. Cities will need to build greater resilience to extreme weather events and environmental conditions by focusing on mitigating the risks they pose to people, ecosystems, and built assets (2014). Toronto Public Health (City of Toronto, 2014) identified potential health impacts associated with a changing climate to include,

- More illness and death from extreme heat, poor air quality and vector-borne disease;
- Greater injury and illness arising from flooding of homes and businesses; and,
- Poorer mental health among those most adversely affected.

Indirect health impacts related to climate change include decreased or impaired "food security, social networks, employment opportunities, housing quality, income, and access to core services including electricity, transportation, and telecommunications" (City of Toronto, 2014: 7). So how can urban societies maintain their liveability within a changing climate?

From a landscape urbanism perspective, Mossop (2006) argues that the creation of ecologically functional systems that integrate human activity and natural processes in an urban setting represent the shift in urban landscape design that is required to address current conditions. Soja (2010) in his writings on spatial justice points out that geographies can have positive and negative effects on people's lives; he further asserts that the influences of social processes on spatial form are more widely acknowledged than the reciprocal influence of spatial form on social processes. Given that people are constructing geographies, it follows that people in urban settings can adapt the geographies or spaces they inhabit to better serve human needs at any given time (Soja, 2010). Current policy actions in Ontario support urban infill to build urban density and the curtailment of urban sprawl in the form of greenfield developments (MMAH, 2006). Yet state and market forces are often at odds when it comes to development policies, and even when they do align sustainable development remains an elusive combination of factors to achieve (Neuman, 2005).

Currently in Toronto the only neighbourhood meeting 2031 density targets are Yonge-Eglington Centre and North York Centre (MMAH, 2006). In these areas a few blocks of point towers and hi-rises are providing all the density and are otherwise mostly surrounded by single-family homes, while a minimal amount of public green space exists to serve these neighbourhoods. Van den Berg, Hartig and Staats (2007) argue that a paradox exists between the concept of a sustainable compact city and people's desires for spacious, green, and quiet environments, and that underestimating urban dwellers need for green space, could be a contributing factor to continued suburban sprawl. They argue that the best route to urban sustainability could lie in achieving a balance between density and green space. Concurrently, Dahmann et al. (2010) warn that though trends towards mixed-use urban density may contribute to more walkable neighbourhoods, these trends may also result in less access to green space and recreational opportunities, thus hindering an active lifestyle. A development trend that requires further consideration in light of the Toronto Medical Officer of Health's statement that 50 per cent of adults in the city are not physically active enough to maintain their health (Lauwers et al., 2010).

In his essay, "What is a City?" Lewis Mumford (1937: 95, 93) states that "limitations on size, density, and area are absolutely necessary to effective social intercourse, and they are therefore the most important instruments of rational economic and civic planning," and that "most of our housing and city planning has been handicapped because those who have undertaken the work have had no clear notion of the social functions of the city." These points have been taken-up more recently by authors who see little attention given to social sustainability in the built environment disciplines (Dempsey, 2011; Lo et al., 2015; Salingaros, 2015). Along with authors who make note that among the ten smart growth principles proposed by the Smart Growth Network, no studies were found on the more interpersonally oriented principles, to "encourage community and stakeholder collaboration" and to "make development decisions predictable, fair and cost effective,"

while the otherwise least studied principle was the goal to “create a range of housing opportunities and choices” (Durand et al., 2011).

Broadening one’s scope of research in the domain of urban social sustainability could manifest in the application of permaculture principles, which seek to gently transition society away from energy intensive ways of living (Holmgren, 2002). Holmgren states that permaculture systems are information and design intensive, and that patterns readily observable in biological systems provide the greatest array of models after which low energy human support systems can be designed (2002). Permaculture design principles, such as integrate rather than segregate, use small and slow solutions, use and value diversity, use edges and value the marginal – all have potential applications in urban planning processes (2002).

Another way forward can be found in Torjman’s (2007) “communities agenda”, which refers both to what and how communities can foster their own characteristics of resiliency. Torjman (2007) explains that resilience comes from strategic actions taken in four distinct but related clusters, which include:

- sustenance (e.g. affordable housing, and income security);
- adaptation (e.g. child care, social networks and literacy);
- engagement (e.g. recreation, cultural expression and local level decision-making; and
- opportunity (e.g. skills training, employment and asset creation).

Torjman (2007) further explains that work within the four resilience clusters will be enabled by three core elements: knowing (data, research, surveys); doing (collaborative process supports); and reviewing (evaluation, peer learning). Torjman’s (2007) theoretical framework underlies the arguments made in this paper that liveable spaces, which support individual and collective wellbeing will in turn support social networks and collective engagement that will increase the capacity of groups to adapt in response to complex localized problems and thus increase their resilience.

Methodology

Research Setting

My research uses a case study approach in its analysis of Bain Apartments Co-operative Inc. and the housing development it now operates in the neighbourhood of Riverdale in Toronto, Canada. On this site in 1913 construction began on one of Canada’s first examples of social housing, Riverdale Courts, and the buildings remain to this day (in 2017) as the homes of the members of Bain Co-op. This housing development was originally built by the Toronto Housing Company through a raising of share capital underwritten by the City of Toronto, and originally designed by architect Eden Smith in the Arts and Crafts style. Its 27 housing blocks, the majority being two and a half storey row houses, and the remainder being quadraplexes and semi-detached houses, contain 256 units, with nearly 80 per cent being one and two bedrooms, and remainder being three and four bedrooms. Most of the houses are oriented

around nine green courtyards, and there are 33 points of access between the housing development and the surrounding streets. The co-op is well served by surrounding neighbourhood services including two public parks, two elementary and two high schools schools, easy access to public transit, as well as shops and public health services along Danforth Avenue to the north. Bain Co-op is sited within municipal Ward 30, which encompasses a mixture of industrial, commercial, and residential areas that run from Lake Ontario to Danforth Avenue and the city's east-west subway line. Ward 30 was historically a working class area, as other east ends have been, it is demographically mixed known for its culturally identified neighbourhoods including Greek Town, Chinatown, and Little India. As Toronto housing prices have shot-up in the last decade there is a growing income divide in Ward 30 between private home owners and renters including residents of its established public and social housing developments.

Bain Co-op was formed in 1974 as a federally funded co-op under Section 61 (formerly Section 34.18) of Canada's National Housing Act (NHA). Bill C-133 passed by the Liberals and New Democratic Party in the Canadian parliament in 1973, amended the NHA and allowed for public funds to be administered by Canada Mortgage and Housing Corporation (CMHC) to support the creation of housing co-operatives. This funding was provided in the form of capital construction grants and 50 year fixed-rate mortgages. At the time when Bain Co-op's mortgage was signed the co-op agreed to maintain half of its units for tenants receiving a rent-geared-to-income subsidy funded through CMHC. When federal government funding for co-operatives was cut in the 1990s, CMHC downloaded much of its oversight responsibilities to The Agency for Co-operative Housing, which acts as a non-profit administrative body and main point of contact for federal co-ops in their continued compliance with the terms of their mortgages.

There exist equity and non-equity co-ops, but in Canada the majority of housing co-ops were formed through government mortgages, and thus non-equity housing co-ops are the norm here. Non-profit co-operative housing in Canada was also created by funding from provincial and municipal governments and thus the way co-ops operate in terms of their economic and legal contexts is to some degree affected by their respective agreements. Legally co-operatives are largely governed by the Co-operative Corporations Act R.S.O. 1990, their government mortgage agreement, and their own by-laws and policies, as well as longstanding co-operative principles. The Co-operative Corporations Act stipulates certain aspects of co-operative governance and ownership status including: one member has one vote, a by-law may only be passed by a majority vote at a meeting of the members, a non-profit housing co-op may not be converted to any other type of co-op or corporation nor any of its property distributed to its members at any time, much of common law relating to landlord and tenant relations does not apply to non-profit housing co-ops, and the by-laws which the co-op passes regulate its business and affairs.

Research Methods

My research employs qualitative data gathered through interviews with experts in the housing sector on the characteristics of liveability, as well as resident questionnaires on indicators of community sustainability and individual wellbeing within Bain Co-op, referencing particularly Dempsey et al. (2011: 294) who outline five dimensions of community sustainability: 1) social interaction/social networks in the community; 2) participation in collective groups and networks in the community; 3) community stability; 4) pride/sense of place; and 5) safety and security. Secondary research material includes texts on housing design and placemaking.

Qualitative research data is drawn from: four semi-structured expert interviews; questionnaires distributed online and in hard copy to Bain Co-op residents with 54 respondents; and, reference to Bain Co-op's collective archive of print, audio, and video records. Research participants include people with experience in the creation of housing communities and in the planning and design of mixed-use social spaces. Questionnaire responses from residents of Bain Apartments Co-operative reveal lived reactions to the spaces and places of Bain Co-op. Members also discuss how the design of common spaces influence the frequency and nature of their relations with neighbours.

Other than age, which informs discussions of intergenerational support, socio-demographic data on Bain Co-op residents was not gathered. The focus of the research project was on the building/site design and governance/ownership model and resident reactions to them. My position as a resident and a researcher meant I did not want to collect a lot of personal information about my neighbours or anything they would feel was invasive. While data on income or race/ethnicity could have proved helpful to conclude on the role of such factors on sustainability, the privacy of my neighbors was deemed more important for this particular research.

As a resident, I can attest to Bain Co-op's residents appearing to be predominantly white, and a general observation that in Toronto at least, co-ops tend to house more white residents and public housing tends to house more people of colour. At Bain particularly I can only speculate that a predominance of white residents may be attributed to a generational reverberation of the original intentions with which the site was built in 1913 for English Protestant workers, or perhaps that more people come to the co-op through word-of-mouth and social networks that may run along racial and ethnic lines. I hesitate to assume that there may be to this day some bias in members' membership practices, as I see diversity among new and existing members in the co-op. I would argue that upper and lower household income limits set by CMHC, (currently between roughly $48,000 and $72,000), do also influence member intake profiles. But I do not have strong data in any one direction. I do see a lot of governance roles being taken up by predominantly older and white members, so it may be that this old guard is setting a tone that keeps others from coming in. However, I would also point to Bain Co-op's strong social justice stance on labour and citizenship rights, and how the co-op has a history of offering refuge to groups such as political refugees

from Chile and United States' draft dodgers in the 1970s, to welcoming new Syrian families in the last year.

Interviews with three Toronto-based architects, and a professional in the co-operative housing sector in Canada address liveability in multi-residential housing, as it relates to housing design, greenspace, and community. Heather Dubbeldam is a fourth generation architect and founder of DUBBELDAM Architecture + Design in Toronto. Her firm specialises in sustainable energy efficient buildings, including single and multi-family housing, commercial and institutional projects, as well as landscape, furniture and installation design. Dubbeldam won the 2016 Professional Prix de Rome in Architecture from the Canada Council for the Arts in support of her research project *Next Green - Innovation in Sustainable Housing* which draws from sustainable housing solutions in Denmark, Sweden, Norway, and Germany.

Sheena Sharpe is a principal architect with Coolearth Architecture Inc., an architecture firm in Toronto that specializes in environmentally sustainable architectural solutions. Sharpe has been an architect for over 25 years, her portfolio includes both affordable and market multi-family housing, as well as retail and institutional buildings. She has expertise in energy analysis and retrofits, and experience with post occupancy studies. Sheena is also active in the governance of her profession through the Ontario Association of Architects.

Brian Smith is a retired architect whose private practice, between 1984 and 1992, specialised in the design and construction of non-profit co-op housing. In the early 1990s, Ontario's funding programs that supported the construction of non-profit co-op housing were terminated, and existing provincial housing assets were downloaded to municipalities. Smith then began working for the City of Toronto on "projects in difficulty," which entailed his assisting co-op housing providers that were suffering from economic, governance and building issues. For 12 years Smith worked with co-ops to apply some city funding to what he describes as often being serious mechanical and building envelope problems. Smith believes that his experiences growing up in poverty and not having a secure sense of home are what motivated him to study architecture. He now resides in Arcadia Co-op in Toronto and is active on the board and on building projects there.

Alexandra Wilson is the chief executive officer of The Agency for Co-operative Housing. The Agency provides compliance and risk-management services for Canada Mortgage and Housing Corporation (CMHC) in regards to the portfolio of housing co-operative mortgages that CMHC holds. Wilson started-up The Agency as its first CEO in 2005 and preceding that she was the executive director of the Co-operative Housing Federation of Canada for 15 years. Her career in the co-op sector began in 1974 when Wilson was instrumental in converting the Bain Avenue Apartments into a non-profit housing co-op, as noted in both Cole (2008) and Sewell (2015). Wilson was the second General Manager of Bain Co-op and worked there between 1975 and 1978.

The combination of expert interviews, resident questionnaires and a site analysis provide rigour to this research, presented as a case study on Bain Co-op.

1. HISTORICIZING CO-OPS

Co-operatives, it could be said, emerge out of a failure of the market and the state to meet the needs of citizens, particularly the poor and working classes. Co-operatives are constituted by a "mutual effort undertaken by equals to accomplish goals unobtainable by isolated human activity," and thus they are a reaction both to the individualism promulgated by capitalism and to the top-down hierarchy formed by the state (H. Silver, 1993: 190). According to Birchall (1995: 331),"[t]he idea of co-operative housing can be traced back to the Utopian thinkers of the early 19th century, notably Robert Owen and Charles Fourier." Moreover co-operatives are a means for people to empower themselves in their individual and community lives. This was the case in Stelarton, Nova Scotia in 1861 when a co-operative store was established by coal miners, and throughout the rest of the 19th century as 1200 co-operative ventures from creameries to mutual insurance companies were undertaken by groups of farmers from Ontario, Quebec, and Atlantic Canada in an effort to reduce their risk from weather and market losses (Cole, 2008). A similar impetus to have more control over their costs of production and the market value of their product caused farmers in Saskatchewan and Alberta to form co-operatives to store and sell their grain in the early 1900s (Cole, 2008).

The co-operative values of self-help**,** democracy**,** equity and solidarity that these early Canadian farmers shared would survive in the form of co-operative newspapers after the Depression when many co-operative operations failed (Cole, 2008). These newspapers would go on to inspire the formation of the Co-operative Commonwealth Federation (CCF) a political party, which in its union with the Canadian Labour Congress in 1961 gave birth to the New Democratic Party (2008). Agnes Macphail was a founding member of the Co-operative Commonwealth Federation and would represent the party as the first woman elected to Canada's House of Commons (1921 – 1940) (Marshall, 2008). Macphail was a strong social justice advocate, and champion of the working class, prison reform, and women's rights (Marshall, 2008). In 1944, CCF took power in the provincial legislature of Saskatchewan under Tommy Douglas, who set Canada on a course to universal healthcare and brought democratic socialism into mainstream Canadian politics (Marshall, 2008; Lovick, 2013). So indeed one could argue that co-operative values of self-help, democracy, equity, and solidarity formed the basis of Canadian values as enshrined in its government and social welfare policies.

> Co-operatives are based on the values of self-help**,** self-responsibility**,** democracy**,** equality**,** equity and solidarity**.** In the tradition of their founders, co-operative

members believe in the ethical values of honesty, openness, social responsibility and caring for others (International Co-operative Alliance, 2005-2015a, np).

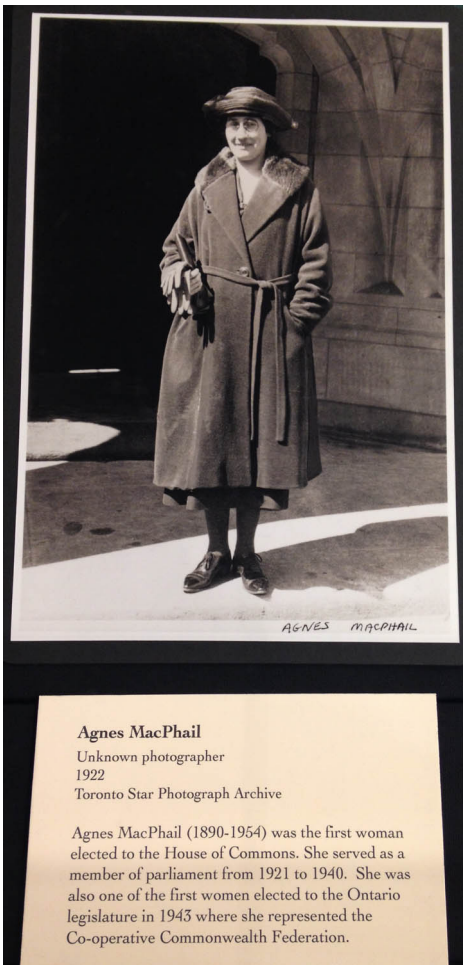


Figure 2: Agnes Macphail, still from an exhibition by the Toronto Reference Library of its Toronto Star Photograph Archive (photo by the author, 2016).

While co-operation itself is a practice that has existed since time immemorial and has allowed humans to meet their most basic needs for food, water, and shelter by working together to obtain those goods and then sharing them in common, co-operative associations grew out of a need for people to pool their skills and other economic resources in order to gain collective advantage within a competitive capitalist market.

The earliest record of a co-operative enterprise dates back to 1761, when a group of weavers in Scotland shared, at a discount, the cost of a sack of oatmeal, and thereby formed a consumer co-operative (International Co-operative Alliance, 2016). However, the broader emergence of co-operative societies was recorded in the mid-1800s throughout Western Europe, North America, and Japan (International Co-operative Alliance, 2016). This

emergence of co-op societies coincided with the rise of industrialism in the UK that saw production move from farms to factories (Kishtainy, 2012). The advent of coal-fired steam power and modern machines, moved labourers into darkened factory buildings. The way of life for workers changed dramatically as capital and labour moved into the cities, driving up urban land values and thus housing costs.

For artisans working in the cotton mills of Rochdale, England in 1844, working conditions were terrible, wages were low and the local prices of food and household goods were more than they could afford **(**International Co-operative Alliance, 2016). In response, a group of twenty-eight weavers pooled their resources and formed the Rochdale Equitable Pioneers Society, which ran a store that began selling basic food stuffs to its member-customers two nights a week, but quickly expanded its hours to five days a week and its offerings to include candles, tea, and fuel (Cole, 2008; International Co-operative Alliance, 2005-2015b).

It was in Rochdale, which is today part of Greater Manchester, that seven key principles for co-operative living and working were laid down in 1844 by the Rochdale Equitable Pioneers Society (Cole, 2008).

1. Open membership.
2. Democratic control (one person, one vote).
3. Distribution of surplus in proportion to trade.
4. Payment of limited interest on capital.
5. Political and religious neutrality.
6. Cash trading (no credit extended).
7. Promotion of education (Cole, 2008).

So universal were the Rochdale Co-operative principles that they remain the basis of co-operative ethos around the world, after being adopted by the International Co-operative Alliance in 1895 and maintained with some alterations since (Cole, 2008).

1. Voluntary and open membership.
2. Democratic member control.
3. Member economic participation.
4. Autonomy and independence.
5. Education, training and information.
6. Co-operation among co-operatives.
7. Concern for community (International Co-operative Alliance, 2005-2015a).

The name Rochdale would appear again in co-operative history in Toronto, Canada in 1968 when continuous housing co-operatives were beginning the ascent to their peak production in Canada (1968 to1985) and students in need of affordable housing in the city's core

founded Rochdale College a housing co-operative in a new high-rise apartment building (Cole, 2008).

Canadian census data shows us that on average the Canadian population has grown at a rate of about 1 per cent per year, since the mid-nineteenth century except for two points in history, which I will call the Industrialization period, when the growth rate increased to 3 per cent and the Post-War Period, when it increased to just over 2 per cent (Statistics Canada, 2015). These population growth spurts necessitated adaptions in the provision of housing to meet basic human needs. The industrialization period from 1901 to 1911 preceded the construction of Canada's first social housing complex at 100 Bain Ave (Statistics Canada, 2015; Toronto Housing Company, 1913), while the Post-War Period 1941 to 1961 was followed by Canada's peak period of co-operative housing production and the founding of Bain Co-op (Cole, 2008).

Bain Co-op History

Bain Co-op as we know it today stood as the first example of social housing in the Dominion of Canada in 1913, and drew its influences from ideas popular in England then, including co-partnership societies, garden city planning, and the Arts and Crafts movement (Toronto Housing Company, 1913). The need for affordable housing for the working classes was most urgently expressed by a report published by Toronto's Medical Health Officer in 1911 outlining his department's investigation into "slum" conditions in six districts of what is now considered downtown Toronto (Board of Health, 1911). The buildings were called Riverdale Courts when they were built by the Toronto Housing Company in 1913 (THC, 1913).

A 1911 report by Charles J. Hastings M.D. (1911: 3) states "much has been said, through the press and otherwise, during the past few years, in regard to the so-called 'slum conditions' as they exist in Toronto." The report goes on to document in some detail the conditions found in the 4,696 houses inspected and the comments and poor health outcomes of their predominantly new immigrant inhabitants (1911).

Hastings believed that good records were key to the development of a public health program, and thus statistics are diligently included in his 1911 report, as are photographs (by Arthur Goss) of the poor living conditions Hastings was chronicling (Sandomirsky, 1980; Board of Health, 1911). Sandomirsky (1980: 146) writes that photography and its "ability to portray reality in intimate detail" was the perfect counterpart to Hastings' rationalist approach to urban issues, and was instrumental to his educational programmes that raised public awareness. Hastings expanded Toronto's public health department from 27 staff with 1 public health nurse in 1910, to 500 staff with 114 public health nurses in 1920 (Sandomirsky, 1980: 145). Public officials and local reformers were called upon to improve Toronto's housing conditions and sanitation infrastructure (Sandomirsky, 1980; Toronto Housing Company, 1913).

According to Frizot (1998), the use of photography as a tool for social justice in housing and working conditions was most profoundly employed by Jacob Riis in 1890 in his book *How the Other Half Lives.* Riis pioneered social documentary photography by taking his camera into the living spaces of workers and new immigrants living in the tenements of Manhatten's Lower East Side and exposing their unsafe, unsanitary and overcrowded conditions (Frizot, 1998). By publishing his photos, Riis' message was heard by many, including Theodore Roosevelt, then New York's Chief of Police, later President of the United States, who offered to help with remediating efforts such as the closing of sweatshops and the transfer of care for the poor out of police hands (Frizot, 1998).

The coincidence of Hastings appointment as the Medical Health Officer in 1911, with that of Arthur Goss as Chief Photographer for the City of Toronto, marks the beginning of the use of photography in the City's records, most notably by the public health department and the public works department (Sandomirsky, 1980). Photographs were used at this time as fast and accurate documents of the rapid creation of public works that characterized this period of intense city building in Toronto (see figure. 30).

Figure 3: Home of an Italian Ragpicker by Jacob August Riis circa 1890 (Frizot, 1998: 352).

Figure 4: Health Department Photograph by Arthur S. Goss. Slum Interior, occupied (City of Toronto Archives, October 29, 1913).

Key health issues included a lack of drainage and water supply. Half of the houses had outdoor closets or privy pits and nearly half of those were deemed unsanitary (Hastings, 1911). Hastings' report shows photos of rows of outhouses in back lanes infiltrated with sewage, which the captions explained would lead to earth and dust laden with bacteria (Hastings, 1911). Hastings also documented conditions in which people had to live in rooms or basements with no windows and thus no access to light and air, or houses with holes in the walls that let in the wet and cold. Such conditions were vehemently criticized by the health officer and referred to as "soul-destroying conditions" into which Toronto's newcomers should not be permitted to be forced into (Hastings, 1911: 17).

However, "overcrowding in houses, rooms, and lots" was the most consistent 'housing evil' discovered by the inspectors in 1911. There was a great deal of doubling up in the downtown districts, with nearly half of all the houses accommodating two families. In one case, eleven people and near the same number of animals were living in a "3-room shack," where "all except the horse had access to the living room (Hastings, 1911: 5). The City Hall District also known then as The Ward was found to be the most densely populated with 11,645 people living across 142 acres, i.e., 82 people per acre (Hastings, 1911). Of course in todays' landscape of multi-story homes, such density would be considered moderate, but today's densities depend on a network of supporting infrastructures without which life would feel very different.

Figure 5: Slum courtyard at 142 Agnes Street (City of Toronto Archives, November 26, 1913).

So why were people living in the Ward? Workers and families who crowded into the Ward and the other districts were not there by choice, according to Hastings (Board of Health, 1911). They were mainly European minorities in a country where between 1900 and 1920 immigrants from the United Kingdom and the United States made up three-quarters of the immigrating population in Canada (Austin, 2013; Muir, 2014). Canadian painter Lawren Harris would walk through the Ward on his way to the Arts and Letters Club, a Toronto meeting place for artists and intellectuals and the place where the Group of Seven would be formed in 1920 (Hunter, 2016). His early paintings depict scenes in the Ward, with one showing a group of two-story buildings in a snowy foreground with the Eaton manufacturing building towering over them at roughly a dozen stories in the background (Hunter, 2016). In the lower left corner of Harris' painting, a man with a sack over his shoulder is walking towards a darkened house. This painting, is a socio-cultural artifact, that tells us something of the difficult living conditions and class divide happening in Toronto at that time. It may also be saying something more specific about the relation between a worker who is made small and the private retailer T. Eaton Co. Limited, which looms large and is bathed in warm light.

Figure 6: The Eaton Manufacturing Building (1911) by Lawren S. Harris (oil on canvas), (Toronto Savvy, 2016).

By 1911, industrialization and a wave of people had swept into the city over the last ten years, and Toronto's government was struggling to keep up with the provision of housing, sanitation, and transportation infrastructure. As the Hastings (1911: 18) report stated, "we lack housing by-laws and city planning." Many new immigrants could not find decent housing when they arrived in the city, and had no choice but to move into "expensive rented hovels owned by absentee landlords" (Hunter, 2016: 17). Hasting's (1911:20) report asked, "Inasmuch as there is a legal rate of interest permitted to be collected, why should anyone be permitted to charge rent which is out of all proportion to the returns simply because he is dealing with a foreigner who is not familiar with conditions and who is entirely at his mercy?"

The Toronto Health Department under the direction of Hastings (1911) documented that people living in Toronto's core were renting houses in abominable condition for anywhere from $10 for a five-room cottage with one dark airless room, or $17 for a house with no running water causing its female inhabitant to walk 66 paces each way to get water from a neighboring tap. While, the Toronto Housing Company (1913) documented that the price of a six-room house had increased from $12 to $16 a month, to $25 a month in 1913, roughly doubling over 20 years. While the average wage was "still considerably under" $15 a week, thus making housing 42 per cent of one person's income (Toronto Housing Company, 1913). This affordability gap no doubt contributed to the practice of families sharing houses, leading to overcrowded and unhealthy living conditions (Hastings, 1911, 1915).

In response, the Toronto Housing Company was formed in 1912, with the lofty goal of "seeking a solution to the housing problem" by building better housing for working people

(Toronto Housing Company, 1913: 18). Toronto Housing Company drew on a number of popular ideas and movements, mainly from the ways in which people were, both economically and aesthetically, addressing housing in the UK at the time through tenant co-partnerships, garden cities, and the Arts and Crafts movement (Toronto Housing Company, 1913, 1915). These ideas sought to ameliorate some of its negative effects of overcrowding, poverty, and a loss of beauty generated by industrialization. This industrial period in the history of cities is often depicted in art and literature as dark, oppressive, noisy, and carrying a stark class divide (C.G. Silver, 1993). Environmentally the denaturalizing effects of the fumes and black carbon that were pouring into the air in the "grey and hideous Coketowns" would no doubt block light, make breathing more difficult, and impede the healthy growth of both plants and animals (C.G. Silver, 1993: 2).

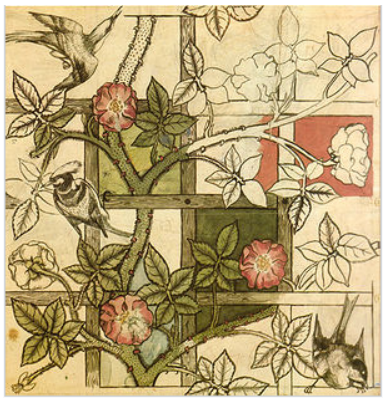


Figure 7: William Morris design for "Trellis" wallpaper, 1862 (DBpedia, n.d.).

Plants and animals were a motif in the Arts and Crafts movement which grew from Romanticism and its belief in free emotional expression and the importance of nature (Janson, 1995). A well-known proponent of the Arts and Crafts movement was the artist William Morris (1834-1896). Morris and his band of artist philosophers came of age in the early Victorian era, known for the horrors of its dark factories, and were particularly concerned by the "dehumanizing of workers" from craftsmen into mere "hands" in the production process (C.G. Silver, 1993: 2). Arts and Crafts thus became a style focused on craftsmanship and finely detailed works of decorative art (Janson, 1995). In 1859, William Morris married Pre-Raphealite muse Jane Burden, pointing to the connections with this parallel art movement, and set about building a home for he and his wife (C.G. Silver, 1993; Janson, 1995). Unable to find the finishes and furnishings he desired, Morris along with his fellow gentlemen formed a design firm called Morris, Marshall, Faulkner and Co., which specialized in mural décor, carving, stained glass, metalwork, jewellery, furniture and embroidery (C.G. Silver, 1993). Seeing themselves as a co-operative of artists they intended to build and craft their own designs and sought to tear down the divide between high art and handicraft, and thus in theory the divide between classes which it represented; they sought to reintegrate the arts and good design into daily life (C.G. Silver, 1993.)

In Toronto, an area known as Wychwood Park had cultivated a community of artists, architects, writers and academics, among whom were the founders of the Arts and Crafts Society of Canada in 1903 (C.G. Silver, 1993). Society member, Eden Smith (1858-1949) became Toronto's Arts and Crafts architect, much sought-after for his designs of English cottage manner homes, Smith was made famous by the homes he built for the upper-classes, though he also lent his hand to the design of Riverdale Courts and Spruce Court, as consulting architect to the Toronto Housing Company (C.G. Silver, 1993; Toronto Housing Company, 1913)

Figure 8: View of Riverdale Courts designed in the Arts and Crafts style by architect Eden Smith. (Toronto Housing Company, 1935).

The 1918 Report of the Medical Officer of Health on Housing, following an order of the Board of Health, turned its focus to ways of remedying the housing problem it brought to the fore in 1911. The report recorded that since the 1911 report, 15,000 of 17,000 yard closets had been replaced by "sanitary conveniences," and 1250 dwellings had been condemned and closed up (Hastings, 1918). A cartoon titled "Let Toronto First Do Its Duty," published in Jack Canuck in 1913, records local reactions to these effective evictions by the health department (Hunter, 2016). The caption of the cartoon reads:

> Dr. Hastings is condemning the little self-built houses of workingmen in Toronto because they lack up-to-date plumbing. As most of these houses are situated on streets where the City gives no water service, the injustice of this condemnation is patent (Hunter, 2016: 56).

Figure 9: "Let Toronto First Do Its Duty" by unknown cartoonist, first published in Jack Canuck newspaper in 1913 (Hunter, 2016: 56).

This injustice was also captured in the aforementioned photos by Arthur Goss, who followed the inspectors on their rounds, thereby capturing as Hunter (2016: 21) notes "haunting images often of lonely figures standing outside homes tagged with white paper notices declaring them condemned; forlorn and homeless bodies who would soon relocate to other parts of the growing city." Some displaced Ward dwellers would move to form the cultural villages of Kensington Market, around Spadina Avenue, College Street, and Bathurst Street, which today are a source of pride and identity for the self-proclaimed most "multi-cultural city in the world" (Boudreau, Keil, and Young, 2009: 86). Others from Toronto's first Black community and the Indigenous people of this land were dispersed and their histories obscured (Hunter, 2016). Meanwhile a small number of English-born workers would have the opportunity to live in new housing developments built by the Toronto Housing Company for the working classes (Austin, 2013; Toronto Housing Company, 1913).

The 1918 Health Report recorded that besides homes lost to health regulations, an additional 232 dwellings were destroyed to make way for a new hospital, fifty dwellings by the T. Eaton Company were to be replaced by its "manufactories," and 150 dwellings were removed by the Canadian Northern Railway in the Eastern Avenue area. These demolitions become notable when one learns that four members of the Eaton family were shareholders in the Toronto Housing Company and that the site of Spruce Court, Toronto Housing Company's first housing development in what is now Cabbagetown, was rented from the Toronto General Hospital (Toronto Housing Company, 1913; Spragge, 1979).

Hasting's 1918 report contains his endorsement of the co-partnership society as a successful model for "the housing of the artisan in any large municipality" (Hastings, 1918: 9). A visit to Toronto in 1911 by British co-partnership proponent Mr. Henry Vivian is mentioned by both Dr. Hastings and the Toronto Housing Company as having sparked

interest in cities across Canada in taking an organized approach to improving housing conditions (Hastings, 1918; Toronto Housing Company, 1913). Vivian was a carpenter and trade unionist who had founded a labour co-partnership of builders, and later went on to form Co-partnerships Tenants Limited (CTL) in 1907 (Birchall, 1995). Co-partnerships Tenants Limited would act as a development agency for many co-partnership societies that collectively built thousands of houses from 1901 into the 1920s (Birchall, 1995). Co-partnerships were a form of tenure that combined aspects of tenant co-operatives with those of limited dividend companies, thereby allowing for both tenant control and the raising of capital through shares, while maintaining a cap of five per cent on dividends, with any remainder going to the tenants in lowering rents or making capital repairs (Birchall, 1995). This type of housing investment, popular in the Edwardian Era (1904 – 1914) in England, was touted in Canada as philanthropy and five per cent by one of the founders of the Toronto Housing Company, Thomas Roden (Birchall, 1995; Hodge and Gordon, 2008).

Figure 10: Letchworth Garden City, UK. Homes developed for Garden City Tenants Ltd., by Co-partnerships Tenants Limited (CTL) starting in 1905, (photo by the author, August 2015).

Birchall (1995: 330) argues that "planning histories should take notice of housing tenures and the social relations which they entail," thus drawing attention to the role of tenure in dictating how social and economic forces compose as housing in the environment. Indeed, tenures play a key role in land development as legal forms of property ownership,

which define how one may own and generate revenue from land thereby affecting how it is occupied, managed, and maintained.

Another figure who thought along these lines and desired healthier surroundings for industrial workers, higher purchasing power and more regular employment, was Ebenezer Howard, town planner and author of *Garden Cities of To-Morrow* (1902). Howard (1902: 15) writes:

> There are in reality not only, as is so constantly assumed, two alternatives–town life and city life–but a third alternative, in which all the advantages of the most energetic and active town life, with all the beauty and delight of the country, may be secured in perfect combination; and certainty of being able to live this life will be the magnet which will produce the effect for which we are all striving–the spontaneous movement of the people from our crowded cities to the bosom of our kindly mother earth, at once the source of life, of happiness, of wealth, and of power.

Howard (1902) was concerned particularly by the agglomeration of people in cities and its effect on quality of life due to overcrowding, as well as the raising of prices that this economic and demographic trend caused (Spragge, 1979). Howard (1902) offered a garden city model as remedy: satellite towns connected by rail with lively town centers surrounded by greenbelts, practicing a form of permaculture in their local recycling of wastes, and all incorporated as a municipality that operates as both a form of land-trust and tenant co-operative. Howard has been referred to as an "ardent co-operative socialist" (cited in Birchall, 1995: 333), but ideas from Howard's influential book went on to inspire garden suburbs and the sprawling greenfield development deemed unsustainable by planners today (Hodge and Gordon, 2008). However, garden suburbs were a mutated form of the garden city that took up none of Howard's collectivist economic strategies.
Arising at much the same time in history many co-partnership housing developments, including those involving Henry Vivian, employed the garden city style of planning with an Arts and Crafts style of architecture (Birchall, 1995). The compatibility of this union between garden city and arts and craft styles, Birchall (1995: 333) argues, led to the "recognition that land and tenure are as important as spatial form."

Thus in 1912, the Toronto Housing Company (THC) was borne of all these influences, with the lofty goal of "seeking a solution to the housing problem" (Toronto Housing Company, 1915: np). The same rhetoric caused one shareholder to exclaim "this is not a company; it is a cause" (Toronto Housing Company, 1913: 18), though legally it operated as a "limited dividend, joint-stock company open to public subscription" (Spragge, 1979: 252). Toronto Housing Company's propaganda ascribes its choice to form a company rather than an association to the necessity of capital and incorporation for the business of house building. To raise the necessary capital, a stake in Toronto Housing Company was sold at $50 a share, payable in Canadian, US or English currencies (Toronto Housing Company, 1935).

But this was not an affordable rate for tenants to be buyers, as was the case in English co-partnerships, which offered shares at 1 to 10 pounds each, payable in monthly installments (Board of Health, 1918). So while membership fees or housing charges in a co-operative can earn enough to sustain a thriving enterprise, as Howard (1902) theorized, they are slower to accumulate through members enough capital to finance a building project, thus the turn to a broader sale of shares in real-estate development, inevitably sold to the plutocrats of the day (Toronto Housing Company, 1935; Howard, 1902; Birchall, 1995).

In the case of the Toronto Housing Company, an Act of Parliament and a meeting of local ladies succeeded in financing its building projects on Spruce Street and Cypress Avenue which was to be renamed Bain Avenue (Austin, 2013; Muir, 2014; Toronto Housing Company, 1913). This Act of Parliament was often referred to as the Hanna Act in reference to the Provincial Secretary W.J. Hanna who championed what is otherwise referred to as the Ontario Housing Act (Toronto Housing Company, 1915), but it was officially known the Act to Encourage Housing Accommodation in Cities and Towns (Austin, 2013; Spragge, 1979). This legislation set forth the ability of any municipality in Ontario to underwrite bonds in housing developments up to 85 per cent of total project costs (Toronto Housing Company, 1913; Austin, 2013; Spragge, 1979). Lady Gibson, wife of the Lieutenant Governor, had the will and influence to convene a meeting of local ladies that led to the sale of 2039 shares, worth $101,950 (millions in the day) (Austin, 2013; Toronto Housing Company, 1913). Buyers included Mrs. T. Eaton, Mrs. Albert E. Gooderham, Mrs. W.E.H. Massey, Mr. W.C. Laidlaw, Mr. Henry Pellet of Casa Loma and Mr. Lawren Harris of the Group of Seven, as well as the O'Keefe Brewing Company and two elevator companies, among others (Toronto Housing Company, 1913). These acts of "philanthropy" reaped share dividends of up to 6 per cent, and were otherwise imbued with the self-interest of business owners who knew the slogan that a healthy worker was a happy worker, and that lower-cost rents begot lower wages (Spragge, 1979). Ultimately, $101,950 was all that was raised by the Toronto Housing Company through share sales and yet despite their roughly $50,000 shortfall as stated in their 1913 annual report, the City agreed to guarantee the company's bonds (Toronto Housing Company, 1935). On October 1, 1913, the directors were authorized to issue $850,000 of bonds (Toronto Housing Company, 1935). Under the direction of President Frank G. Beer who was a retired undergarment manufacturer turned social reformer, the Toronto Housing Company purchased a five-acre parcel of land from the city to build Riverdale Courts a $400,000 project of 200+ units (Austin, 2013; Spragge, 1979; Toronto Housing Company, 1915). The project was located on a wet lowland site east of the Don River Valley, only fifteen minutes to downtown on the nearby streetcar line, and it was situated between two parks with a public school at the top of the street (Toronto Housing Company, 1915; Austin, 2013).

On this site, as shown in the drawings of architect Eden Smith, Toronto Housing Company constructed multiple blocks of townhouses or "cottage flats" in six different unit sizes ranging from one to four bedrooms, each with a front door to the street, and all in the

Arts and Crafts style (Toronto Housing Company, 1915). By 1921 there were 204 apartments available for rent, consisting of eighteen blocks arranged around nine green courtyards, today known as the Maples, Oaks and Lindens, on both the north and south side of Bain Avenue, as well as a four-plex that fronted directly onto Bain Ave (Toronto Housing Company, 1915; Government of Canada, 2013). An additional fifty-two units were added between the early 1920s and 1930s, overseen by architect F.H. Marani, and today called the Elms, Pines, Cedars, and South East Lindens (Heritage Toronto, 2011; Marani et al., 1932). The final additions to this housing complex on Bain Avenue, in the 1940s/1950s, were four small semi-detached houses, which make the up the total of today's 260 units (Bain Co-op, 2007). Buildings were equipped with heat and hot water from a central steam plant and all the units had electric lighting, gas stoves, combination sink/laundry tubs in the kitchens and claw-foot tubs in the bathrooms (Toronto Housing Company, 1915). This was quality housing, but was it affordable?

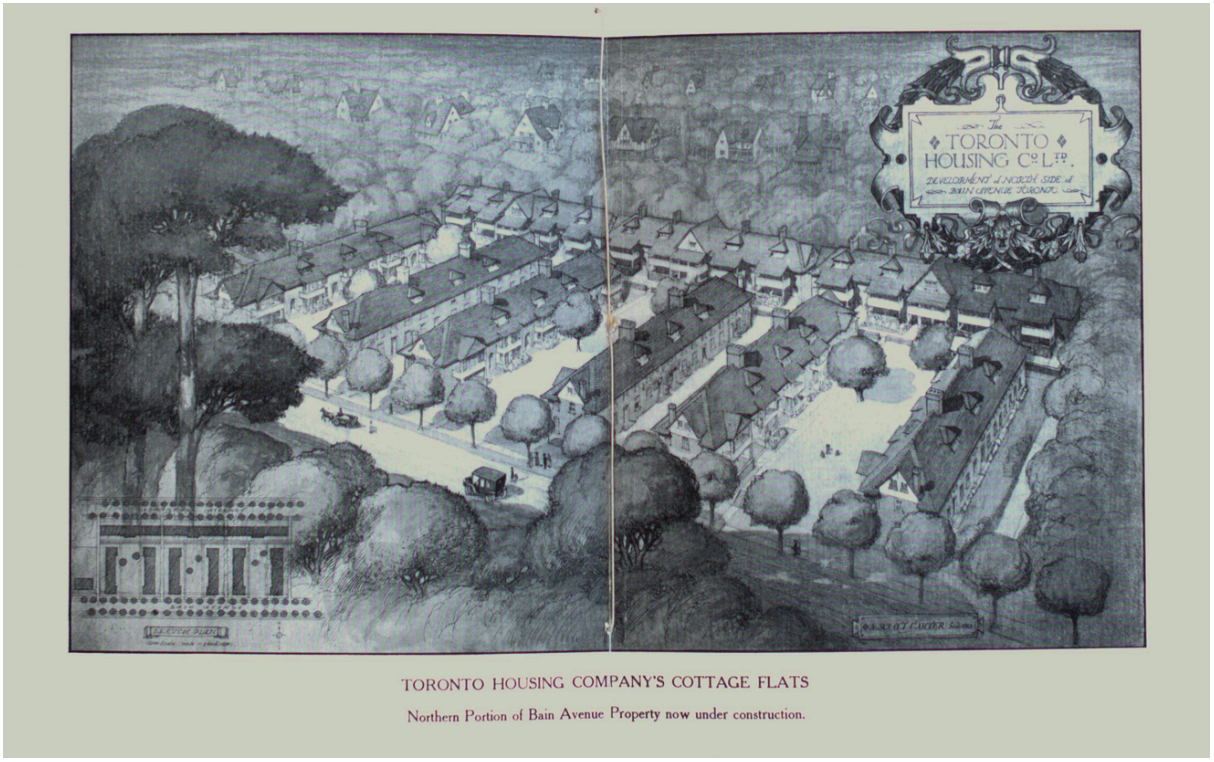


Figure 11: Toronto Housing Company's Cottage Flats on Bain Avenue, (Toronto Housing Company, 1915).

Figure 12: Interiors views of Riverdale Courts (Toronto Housing Company, 1935).

Spragge (1979: 262) argues that "cheap land, cheap transportation, and cheap mortgage money" should have led to affordable housing costs at Riverdale Courts, but that the company did not achieve these three requisites in sufficient scale to achieve a solution to Toronto's housing problem. The then Medical Officer of Toronto wrote in 1918 that the Toronto Housing Company had done good work but did not supply the low-priced homes that were in desperate demand at the time. The company's housing propaganda stated that rents were based on development cost and were as low as the company thought it safe to make them (Toronto Housing Company, 1915). Did Toronto Housing Company experience the same dilemma faced by the Rochdale Pioneers in England some fifty years earlier, i.e., the trade-off between quality and affordability? Quoting the Pioneers Almanach, published in 1865, Birchall (1995: 331), writes the Rochdale Co-operative Land and Building Company "has endeavoured to produce a superior class of dwellings for the working man [sic], and to some extent has succeeded. But the great misfortune is, when a comfortable house is built, that it has cost so much that the rent to pay for the outlay of capital is so high that few working men [sic] can afford to pay it."

Indeed, Toronto Housing Company (1915) had to balance their books as a housing provider and their ongoing costs included land taxes and water rates, plus paying shareholder dividends of six per cent per annum. The Toronto Housing Company was set-up as something between a charity and a joint stock company, which provided it with the start-up capital it needed, but also added dividend payments to its carrying costs, and ultimately allowed for a majority of company shares to be owned by one private landlord (Toronto Housing Company 1915; Spragge, 1979; Bain TV, 1983; Sewell, 2015).

When the effects of the Great Depression hit Toronto in the early 1930s, the Toronto Housing Company faltered like many businesses and defaulted on its loans (Spragge, 1979). The annual report of the Toronto Housing Company in 1935 claimed to have proven that its business, under the Ontario Housing Act, could be conducted soundly. The 1935 report restated the company's cause to address a shortage of affordable rental housing in the city, through the Act to Encourage Housing Accommodation in Cities and Towns, and goes on to report that "interest and sinking fund payments were met by the Company as and when due" showing detailed plans and budgets for its next housing project (Toronto Housing Company, 1935). By then the Company had plans for six other properties, in what have been identified as English enclaves at the time, within the broader city (Toronto Housing Company, 1935; Bain Archives: Frey, 2013a). Clearly the Toronto Housing Company thought their ventures were viable.

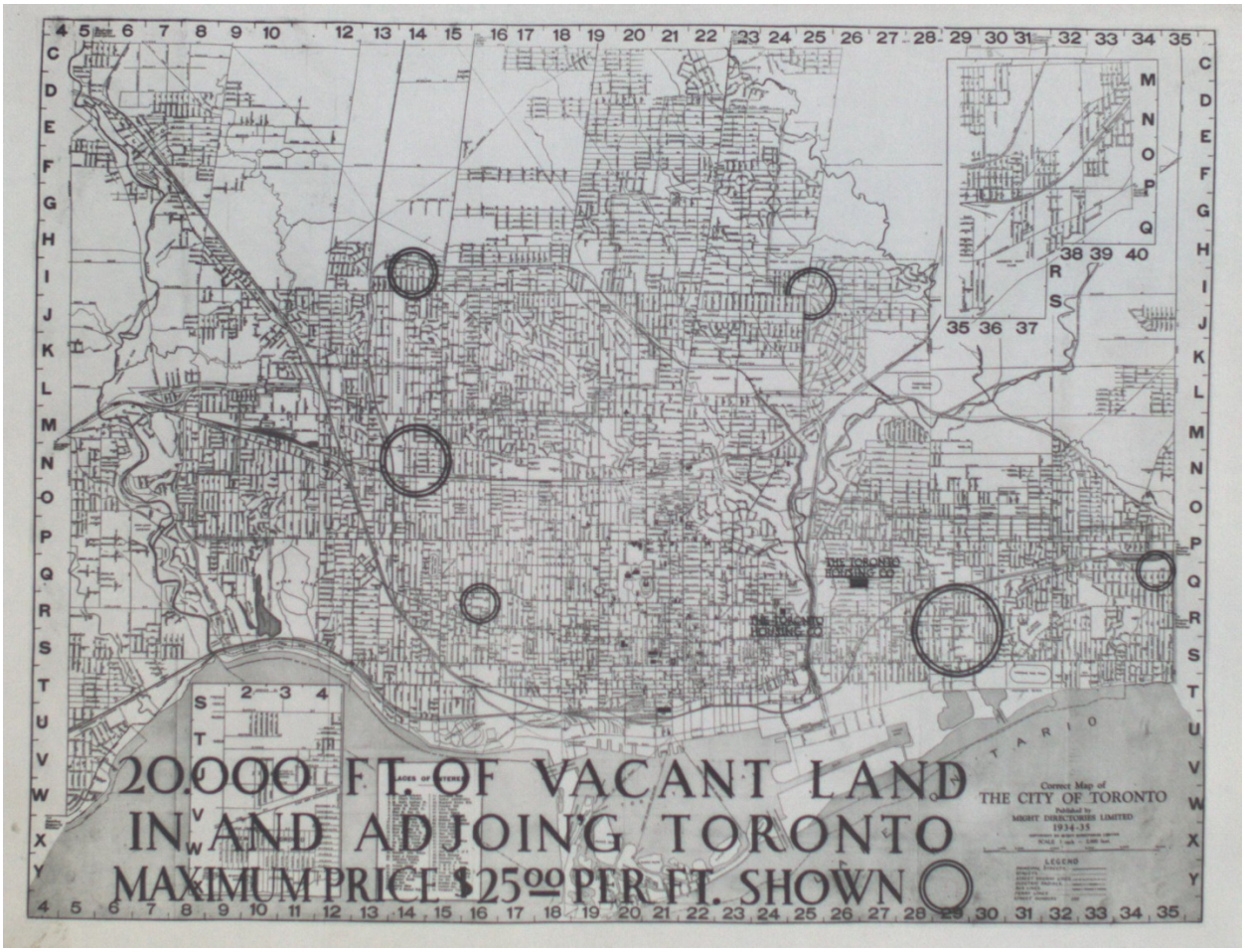


Figure 13: Toronto Housing Company's existing properties and sites identified for future housing development (Toronto Housing Company, 1935).

But alas it was not so, and Spragge (1979) records that when the Toronto Housing Company defaulted on its payments, it fell to the City to pay interest on shareholder bonds

in the 1930s and to administer the housing until the mortgage was paid off in the 1940s. Many of the tenant co-partnerships in the UK also changed ownership and ended up in private hands along similar timelines as the Toronto Housing Company (Birchall, 1995). The quasi-public ownership models established by Ebenezer Howard and the 5 per cent philanthropists that followed depended too much on the good will of those with a financial option in the companies, and thus resulted in a less stable tenure form than was foreseen (Birchall, 1995; Toronto Housing Company, 1915). Key distinctions that affected housing tenure were whether shareholders were residents or outside investors, whether each shareholder got one vote or those with more shares held more power, and whether the housing and land could legally be liquidated into private ownership (Birchall, 1995). In non-profit housing co-ops in Canada, under the Co-operative Corporations Act (1990), regulations dictate that the primary object of the co-op is to provide housing, not for the purpose of gain for its members (although secure housing is a gain), and that if the co-op dissolves after paying its debts, any remaining proceeds must be distributed among other housing co-ops or charitable organizations per Section 5 (3.1). Despite their vulnerability to market forces, a number of co-partnership housing societies established in England at the turn of the last century remain in tenant control until this day, able to both maintain their properties and keep the rents low (Birchall, 1995).

So who were the early residents of Riverdale Courts now known as Bain Co-op? Bain Co-op's resident-historian Alvyn Austin is the expert on this group of people. Austin has followed residents through taxation lists and census data, getting a group profile of working class British subjects, as well as a look into the lives of particular resident groups (families, women, soldiers) and into individuals, like the prosperous Mr. Lodge who lived at 1 the Lindens (between 1915 and 1921), and who earned $1000 yearly as an electrical contractor and was then the only person with a telephone in the whole complex - no doubt inundated with emergency calls, Austin (2013) notes.

In his book on 100 Bain Avenue, Austin (2013) says that Riverdale Courts first residents were not poor but rather working class, with most earning between $500 and $700 annually. So with rents ranging from $14.50 to $29 a month, most households were paying thirty to fifty per cent of their incomes on rent (Toronto Housing Company, 1915). This percentage is not quite affordable by today's standard in Canada, but in reality spending thirty to fifty per cent of one's income on housing has not been uncommon in Toronto, whether in 1913 or 2015 (Toronto Housing Company, 1913; Toronto Foundation, 2015; Canada Mortgage and Housing Corporation, 2016).

Demographically speaking, the people that were able to secure housing in Riverdale Courts in the early days (which called for a moderate income and two character references) were 'blue collar' workers, soldiers' families, under-housed families, and working women (Austin, 2013; Frey, 2013a). And it seems there have always been a group of artists and activists living in these buildings over the last one hundred years (Austin, 2013; Government of Canada, 1921).

Toronto Housing Company began renting its cottage flats, first at Spruce Court and then at Riverdale Courts, as the war started in 1914 (Toronto Housing Company, 1915). Each unit had its own electricity meter, and rents included heating, hot water, and a fixed sum for repairs as advertised in Toronto Housing Company's (1915) pamphlet. Toronto Housing Company's (1913; 1935) annual reports note that a five per cent management fee and outdoor maintenance costs were also taken out of rental income, as well as taxes, insurance and all other debt and dividend payments. Described as dwellings of moderate size and conveniences, rented at moderate rates, they were quickly occupied, receiving applications for double the amount of available units (Toronto Housing Company, 1913; 1935).

Going between the 1917 tax rolls and the 1921 census, one finds a James Taylor, 29 years old, living at 45 The Maples in 1917, while four years later the household is headed by a Jean Harriet Taylor, 34 years of age and a widow, living with her two children and younger sister (City of Toronto, 1917; Government of Canada, 1921). World War I (1914 to 1917) was known as a war of attrition that killed many men of the British Commonwealth, and Riverdale Courts' inhabitants did not escape the sorrow and loss of the first world war. Austin (2013) devotes a good portion of his book to the soldiers of Bain, one in four of whom died during or shortly after the war.

And who were left, but women and children? According to Austin (Frey, 2013a), Riverdale Courts "becomes a protective place where you can wait out the war rather than going back to Chatham to live with his family. What other arrangements are there for army wives?" Elizabeth Gillan Muir (2014) in her book on the history of the Toronto neighbourhood of Riverdale, where the Riverdale Courts were located, notes that during WWI the two most common occupations of men registered in the three local churches, were farmer and soldier. So there were a lot of widows – and records show there had been many women on their own in the town of York throughout the 1800s (Muir, 2014).

Whether they were widows running their husbands' businesses or single working women moving in from the country to work as a teacher in one of the new schools or a switchboard operator for Bell Telephone, there were a lot of women looking for decent housing in Toronto around the time Riverdale Courts were being built, and "there was no place for them!" (Muir, 2014; Frey, 2013a). Propriety and safety dictated that women could either live with family, in a female rooming house, or at the YWCA (Muir, 2014; Frey, 2013a). But what if nice little apartments were built for women, with all the necessary sanitary conveniences that might suit a mother and a daughter living together, or two sisters? Indeed, it seems that women were inspiration, advisors, and tenants that would influence much of the design of the Riverdale Courts (Toronto Housing Company, 1913). As stated in Toronto Housing Company's (1913: 9) earliest report, "the lady members of our Board gave valuable assistance in planning these houses."

Three years after Riverdale Courts now Bain Co-op had opened in 1917, there were forty households headed by women, roughly 20 per cent of the resident population (City of Toronto, 1917; Frey, 2013a). Women stand out in Toronto's 1917 hand-written tax

assessment rolls because their professions were not recorded as they were for men, instead we see mostly a “W” for widow or an “S” for single (City of Toronto, 1917). Female professions were recorded in the 1921 federal census and reveal women living in Riverdale Courts were working as teachers, bookkeepers, operators, stenographers, as well as painters, authors and designers. By the 1920s there are sixty-three female-headed households in the Courts, predominantly on the south side of Bain Ave (Government of Canada, 1921). This is partially attributable to the Local Council of Women, which as of 1915 had leased six houses on the south side of the complex (Toronto Housing Company, 1915). These six cottages would become known as the Aberdeen Club apartments in Riverdale Courts (today simply the Aberdeens), named after Lady Aberdeen, wife of the Governor General in the 1890s, who was remembered for her advocacy for women and the working classes (Austin, 2013).

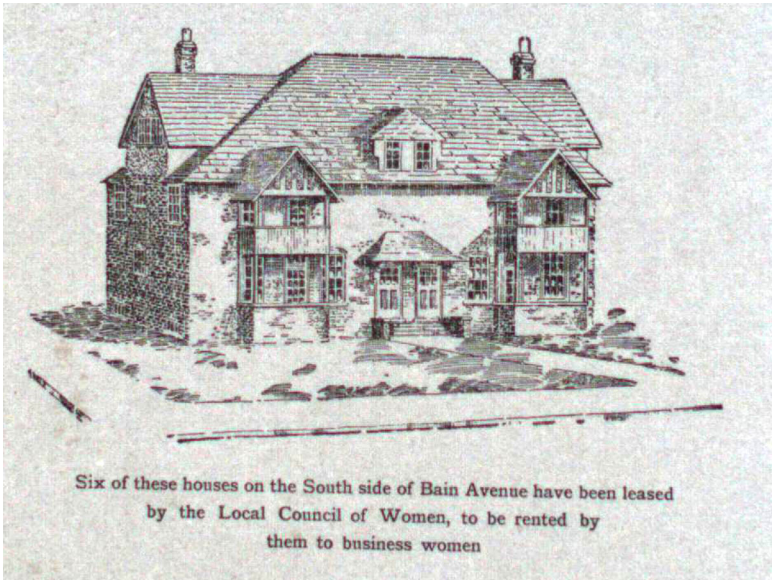


Figure 14: The Aberdeen Club apartments designated originally for female renters, (Toronto Housing Company, 1935).

Austin (Frey, 2013a) surmises that a number of families who were doubling-up in single-family homes moved into the Riverdale Courts. Indeed, for $25 a month a family could rent a 3-bedroom flat in Riverdale Courts with all the modern conveniences compared to spending the same for a small 6-room house that likely would not have had electricity, hot water, or been in a good state of repair (Board of Health, 1911; Toronto Housing Company, 1915). Records show, however, that overcrowding continued to some extent, as the same 2-bedroom units would be rented by singles and couples, as well as families of four or five (Government of Canada, 1921). This was also indicative of the mix of income earners living in Riverdale Courts as annual household incomes ranged from $500 to $2600, and higher income earners could afford to consume more housing (Government of Canada, 1921).

By early the 1960s the City sold its remaining shares in the Toronto Housing Company to a private owner, and with it the fate of its two housing developments, Spruce Courts in Cabbagetown and what had become known as the Bain Apartments in Riverdale (Bain TV, 1983; Sewell, 2015; Spragge, 1979). In his interview with Bain TV (active late 1970s to late 1990s) Peter Tabuns[1] describes how little to no money was put into the apartments after it became privately owned and the Bain Apartments went from being a property that was well maintained and where tour buses would pass by to get a view of its rose arbours, to a place that had a rising number of vacant units that were deemed uninhabitable (Bain TV, 1983; Sewell, 2015). In a later interview (Frey, 2013c) Tabuns noted that the private owner(s) of Toronto Housing Company were using its residential properties as collateral to buy shopping malls.

By 1972, residents at the Bain Apartments denounced the poor condition of their housing and formed the Bain Apartments Tenants Association (known as BAT) (Bain Apartments Co-op Inc., 1976; Diemer 1977; Bain TV, 1983). The tenants' association called in City inspectors who issued the landlord company with a stack of work orders to bring the property up to code (Bain Apartments Co-op Inc., 1976; Diemer 1977; Bain TV, 1983). This call brought some repairs and more maintenance staff to the Bain Apartments but during this time the company decided to get out of the rental housing business and to upgrade the units in order to sell them as luxury condos[2] (Bain Apartments Co-op Inc., 1976; Dineen, 1974; Sewell, 2015; Bain TV, 1983). A few units were renovated in late 1973 to show as models (Bain Co-op, 1976). Apparently, the tenants at Bain Apartments knew nothing of Toronto Housing Company's plans for their homes until a notice was sent out to them in February 1974 stating that they had two choices: to buy their apartment as a condominium or move out at the end of their lease (Bain Apartments Co-op Inc., 1976). As a Bain history and housing pamphlet (1976) describes, many tenants had lived in the complex for 10 to 20 years, and though many felt they had invested in their apartments, few tenants had sufficient income to carry a mortgage in order to buy their homes.[3]

In the late 1960s, Toronto had a pro-development City Council that showed little regard for community input, or even the idea that a city is for its people, writes Janice Dineen in her 1974 book *The Trouble With Co-ops*. Places like St. James Town – a stand of fifteen apartment towers downtown that demolished an entire city block of detached and semi-detached homes to become the densest block in Canada, at the time, with more than 11,000 people living in less than one square mile – had already been built (Dineen, 1974). People saw a pattern of modern high-rise development replacing solid attractive older homes and destabilizing the equilibrium of neighbourhoods that had grown up around

[1] Peter Tabuns lived in the Bain Apartments from 1971-1984. He worked as one of the first financial managers for Bain Co-op and is today the MPP for Toronto-Danforth.
[2] Condominium ownership and non-profit co-operative ownership were both introduced in Canada in the 1960s. By the end of 1970 all the provinces, except PEI, had adopted condo legislation (Hulchanski, 1988).
[3] Average residential mortgage lending rates in 1973 were 9.56 per cent (Statistics Canada, 2012).

Toronto's various immigrant communities (Dineen, 1974; Hunter, 2016; Sewell, 2015). Speaking of this era in his book, *How We Changed Toronto*, John Sewell (2015: 28) writes "Toronto's fervor for redevelopment at the time laid to waste so many of the city's finely crafted historic properties, because they 'didn't fit in' […] why wasn't the new development forced to fit in with the old?" Hundreds of people were showing up at City Council to oppose certain new high-rise developments seeking approvals for by-law amendments, but Council passed them anyway (Dineen, 1974).

This political climate gave rise to activist community groups that worked hard to elect a few of their proponents to City Council in 1972 under Mayor David Crombie (Dineen, 1974; Sewell, 2015). To give a sense of his legacy, the first time I heard of Crombie was as a teenager from my mother, a life-long Torontonian and a nurse, saying to me in the nineties that Mayor Crombie was responsible for keeping housing in Toronto's downtown, thus largely avoiding the high rates of crime that were being seen in inner-cities in the United States by the 1980s. Though it was thanks as much to community groups, activist alderman like Sewell, and the sound advice of urban activist Jane Jacobs (Sewell, 2015). Jacobs' family moved to Toronto in 1967 to protect their sons from the draft for the Vietnam War (Sewell, 2015). Keeping Canada out of the Vietnam War is attributed to Prime Minister Lester Pearson, along with what Sewell (2015: 29) describes as a "number of extraordinarily progressive initiatives" in Canada, including: universal healthcare, the abolition of capital punishment,[4] the Canada Pension Plan, student loans, and a new flag for Canada. Prime Minister Pearson (1963-1968) stated:

> The challenge confronting us all then is how our cities… may be designed to be satisfying for a good life as they are effective for better living. To facilitate these enriching social aspirations along with our economic objectives for stable economic growth, we must plan for the human and civilizing requirements of urban environment as well as provide for adequate housing for everyone (quoted in Cole, 2008, 44).

It was in this era of Pearson's Liberal government that Canada's first continuous housing co-op (only student or building co-ops before this time), Willow Park was completed in 1966, and a joint federal-provincial summit on housing was called in 1967 (Cole, 2008). Housing co-operatives begin popping up all over Canada thanks in good part to the active facilitatory role of the newly founded Co-operative Housing Foundation in 1968, which advised co-operatives on how to get started and lobbied the federal government on their behalf (Cole, 2008). Co-operative lobbying and a government task force on housing and urban affairs eventually led to Bill C-133 being introduced in the House of Commons in February 1973 by Ron S. Basford of the newly formed Ministry of State and Urban Affairs, for Pierre Trudeau's minority Liberal government (Cole, 2008). Bill C-133 would bring 36 amendments to the

[4] Agnes Macphail advocated against corporal punishment and initiated the reform of the penal system in 1935 (Marshall, 2008).

National Housing Act, a number of which subsidized private homeowners and others that would bring funds for residential rehabilitation and insulation to both homeowners and landlords (Cole, 2008). In debate, Basford referred to co-operatives as a third force in the housing market, and is recorded as saying, "I said, 'Go out, please, and build as many houses as you can.' I also told them that I do not want the National Housing Act in any way to be an impediment" (quoted in Cole, 2008: 66). Canada's Minister of State and Urban Affairs declared that housing was a human need, and that "good housing at a reasonable cost is a social right of every citizen of this country" (quoted in Cole, 2008: 66).

Liberal and NDP support in parliament passed Bill-133, and with it Section 34.18 that in 1973 gave housing co-ops the biggest push they have ever had in Canada, by allocating government funds to provide grants for 10 per cent of capital costs and a mortgage for the remaining 90 per cent of the costs in developing a housing co-operative (Cole, 2008). These would be mortgages lent by Canada Mortgage and Housing Corporation (CMHC) at a fixed rate of 8 per cent over a 50-year term. The Section 34.18 program ran between 1974 and 1978, when mortgages averaged between 10 and 12 per cent (Cole, 2008).

The policy support Bill C-133 provided went against the previous resistance to social-housing programmes seen in Canada's government during the mid-1950s to the mid-1960s, and more nuanced housing sector biases within CMHC's lending practices (Cole, 2008; Dineen, 1974). One such bias was found in CMHC's policies favouring large suburban home developers that had seen their share of Toronto's home building market go from 59 per cent in 1950 to 79 per cent in 1970 (Cole, 2008). Another bias against co-ops was attributed to senior CMHC officials and recorded in a 1972 report on housing policy in Canada:

> Home is a very private thing and anything to do with one's own private affairs is best kept independent and separate from the friendly contacts with friends and neighbours. This is the nature of life in cities… I can't imagine anything more likely to jeopardize this kind of stability of family life than becoming involved in a venture of co-operative housing (quoted in Dineen, 1974: 47).

What underlay these preferences was a belief in the need of individuals to gain equity through their homes, thus buffering themselves against inflation, and one might argue poorly regulated markets (Dineen, 1974). Of course, such sustained equity hinges on land assets and residential quality that have become ever more scarce in Toronto's private home ownership options today, when 78 per cent of housing completions are condos (City of Toronto, 2016).

In response to the landlord's ownership ultimatum of February 1974, a number of residents of the Bain Apartments began organizing (Bain Apartments Co-op Inc., 1976; Cole, 2008). This organizing group was characterized as a mix of long-time working-class residents and a younger group of social activists (Bain TV, 1983; Frey, 2013b). Among this younger group was Alexandra Wilson who was 18 in 1974, and had been living in the Bain

Apartments with her brother after they were evicted from other downtown housing due to redevelopment (Cole, 2008). A leader among the other group of more longtime residents was Bill Biney, who would become Bain Co-op's first property manager (Bain TV, 1983). Bain's neighbours joined forces to fight against pending eviction and at a first chaotic meeting, one tenant who was working as a janitor at Alexandra Park Housing Co-op brought up housing co-ops, and another tenant who worked as a community organizer brought up CMHC's new co-operative housing program, and with that collective knowledge residents decided to become a housing co-op (Cole, 2008). First, they had to get control over the property so they went to CMHC but the lender primarily funded new builds and had not financed a rehabilitation project as large as the one tenants at 100 Bain were seeking to undertake (Cole, 2008; Dineen, 1974). So they were directed instead to the City of Toronto's newly formed Housing Department, which had been given federal allocations for public non-profit housing (Cole, 2008; A. Wilson, 2016).

Luckily, both properties' municipal representatives, John Sewell and Karl Jaffary, proved most helpful in the residents' cause to maintain old building stock as affordable housing, in-line with their reformist election platforms (Sewell, 2015). Sewell is remembered by elders in Bain Co-op today as having been instrumental in getting control of the property in order to form a co-op (Miller, 2013). Sewell (2015) helped to organize tenants in both of the Toronto Housing Company's properties, and on behalf of the Bain tenants' association took a purchase offer to the owner who was residing in Los Angeles and whom Sewell found staying at the Four Seasons Hotel in Toronto. The City also aided in negotiations by promising not to approve a subdivision agreement, which the landlord would require to proceed with converting the Bain Apartments into condominiums (Sewell, 2015). The result was that in April 1974 the City of Toronto purchased the Bain Apartments for $6 million (and Spruce Court for $1.6 million) (Sewell, 2015). It was agreed that the City would temporarily own and manage the Bain Apartments, while the residents worked on incorporating as a non-profit co-op, and applying for a mortgage and rehabilitation grants from CMHC in order to purchase the property from the City and continue conducting the extensive renovations required (Cole, 2008; Sewell, 2015).

In October of 1974 the Bain Apartments Co-operative Incorporated was legally formed, and Bain's 400 adult residents went through a difficult 3-year democratic process in order to finally be in a position to take legal ownership of the property in 1977 (Cole, 2008; Diemer, 1977; Bain TV, 1983). The gap in organizing time between a private enterprise and a co-operative enterprise is something that continues to be true and in some cases puts co-ops at a disadvantage in competing for public funds and contracts, when it is not accounted for in policy-making (TREC Renewable Energy Co-operative, 2016). This democratic process that takes place in co-operatives was captured by Uli Diemer (1977), a local journalist and regular at Bain Apartments, who published an account of the resident's struggle to form a co-op.

> When you see that many working people, who have to get up for work the next morning, spending several hours – their entire evening – on several different occasions, in face-to-face discussion about the future of their homes, you can be fairly sure that you're seeing a form of democracy that's a cut above what is usually considered democratic in society (Diemer, 1977: np).

The City's intervention had saved residents of Bain Apartments from eviction but they found that life under the management of the City's newly formed public housing corporation, Cityhome, posed its own set of issues (Bain Apartments Co-op Inc., 1976; Diemer 1977; Bain TV, 1983). Botched renovations, neglected municipal tax payments, and unforeseen changes in regulatory status under city-ownership contributed to rent increases of 49 per cent between 1974 and 1977 (Diemer, 1977). At this transitional point Bain Co-op's governance processes were operating and conducting day-to-day property management, while Cityhome was the upper level manager controlling the finances and renovations (Bain Apartments Co-op Inc., 1976; Diemer 1977; Bain TV, 1983). Bain Co-op members voted to go along with each city-led rent increase because they did not want to jeopardize their chances of finally taking over ownership of their homes from the City (Diemer, 1977). Though rental subsidies were first provided under the City's ownership to half the units in Bain Apartments (Bain TV, 1983), rent increases, along with influence from an outside group called Wages for Housework, were enough to cause 26 units to participate in a rent strike on February 1, 1977 (Diemer, 1977). Bain Co-op's Board, which has always uniquely been called 'Residents' Council', responded by setting up an emergency internal subsidy for those tenants most impacted by the rent increases, but the internal battle was not over (Diemer, 1977). There was enough uncertainty in this transitional period, and division among tenants, for a group of them to go to the City saying they opposed the co-op taking over ownership of the property, which led to a City adjudicated vote of the tenants on whether or not they supported co-op ownership of their apartments (Diemer, 1977; Bain TV, 1983). This referendum triggered 87 per cent turnout among residents and resulted in a majority of roughly 60 per cent of residents in favour of co-operative ownership (Diemer, 1977; Bain TV, 1983).

Thus in October 1977, the Bain Apartments Co-operative Inc. with financing from CMHC under Section 34.18 of the National Housing Act took over ownership of the property. Rent-geared-to-income subsidies were continued under the federal co-op program for residents whose housing charges would be more than 25 per cent of their income per Section 44 of the National Housing Act, with contributions for rent-geared-to-income supplements also coming from the provincial housing ministry (Cole, 2008). As Cole (2008) notes, many aspects of the pioneering housing co-operatives became normalized with these National Housing Act amendments, among others the integration of different income earners in the same community (Cole, 2008). The amendments allowed for higher income earners to live in a federally funded co-op, provided they pay a 10 per cent surcharge on

their housing costs, and these monies would be applied through an internal subsidy system to lower-income earners in the co-operative (Cole, 2008).

The at times bitter and hard won 60/40 members vote that affirmed resident support for co-operative ownership of their housing, triggered a celebratory march down Bain Avenue, but once the co-op (under CMHC regulations) was the sole owner of a 63-year-old housing complex in need of major repairs, the real work of operating as a democratically-run housing provider began (Bain TV, 1983; Miller, 2013).

This chapter has discussed the historical and political context that gave rise to the social housing created in 1913 as Riverdale Courts and the subsequent conditions that spurred its residents to make it into a co-op with government support in the 1970s. This chapter also takes a planning perspective on health and housing by analysing the socio-demographic trends that led to two housing crises in Canada, which coincided with the formation of Riverdale Courts and subsequently Bain Co-op. Also as much misinformation and minimal recent information exists on Canadian housing co-operatives, it seemed important to clarify how exactly they came about, and how they have come to stand as an isolated housing model within a broader Canadian housing sector that is polarized into private or public housing, and very little in between. The outcry over the public health crisis in Toronto's new immigrant and worker housing at the turn of the 20th century, caused Bain Co-op's buildings to be invested with a public health legacy that provides for its sustainable and liveable conditions in the present day.

2.BUILDING DESIGN AND LIVEABILITY

> This social housing is commendable for the strong community it supports and for its rare sense of intimacy… The rational composition, of low brick buildings defining well-proportioned front courts and rear service yards, is not as simple as it first appears. In fact, the configuration is subtly layered and adjusted in relation to the topography, the hierarchy of city streets, sunlight, and practical understandings of private and public space… The thoughtful planning and traditional, 'country life' architectural language used by Eden Smith have proven capable of accommodating family groups and living patterns that could not have been envisioned in 1914. Still vital after three-quarters of a century, Riverdale Courts offers valuable lessons for affordable housing today (Jury Comments on Riverdale Courts, quoted in Callaghan et al., 1992: 24).

There are many elements of Bain's architecture and design that contribute to its unique liveability. The application of numerous subtle and functional elements points to a level of consideration in housing design perhaps lost to subsequent generations of builders who relied more heavily on energy intensive building systems rather than passive design systems.

Yi-Fu Tuan (1977: 104) writes that "there may be greater awareness of built forms and space in a traditional than in a modern community," and he attributes this greater awareness to active participation. Participation? Buildings in modern society are codified and regulated in such a way that institutional expertise is of primary value, while inhabitant intuition and idiosyncrasy are nearly irrelevant (Schneekloth and Shibley, 1995). The participation that Tuan (1977) speaks of harks back to an era when materials were more ephemeral, such as tents or mud walled homes. Though these homes did not last, they were relatively easily rebuilt and thus their inhabitants new intimately their forms and characteristics and understood the specifications that worked best for their families in the particular climates in which they found themselves (Tuan, 1977).

This example speaks to evolutionary biology, which is one of two supporting theories as to why biolophilia exists. Biophilia being the innate human urge to affiliate with other forms of life, or in other words, why a fire fascinates us and the sound of water soothes us (E.O. Wilson, 1984; Browning et al., 2014). One theory says human species first appeared in a savannah landscape, setting our genetic coding to environments with similar characteristics (Salingaros, 2015). Yet another theory argues that human biological structure is made up of patterns (fractals) that exist within nature and thus an affinity of kinship exists (Salingaros, 2015). Based on these findings, patterns of biophilic design have been identified, such as visual connection with nature, thermal and airflow variability, complexity and order, as well as prospect, refuge, and mystery (Browning et al., 2014). These are all elements of the design of Bain Co-op's courtyard housing. Salingaros (2015) writes that methods of vernacular design are both adaptive and biophilic, and yet they have been lost to contemporary architectural practice that favours ideology over intuition in their evaluations of form, space and surface. Thus the low-tech energy efficient building methods of vernacular architecture with curvature and ornamentation among their biophilic properties, were forgotten for the smooth surfaces and sharp edges of Modernism and the hermetic indoor environments that came with it (Salingaros, 2015).

Alexander et al. (1977) also talked of patterns of design and railed against the anxiety inducing height and isolating design characteristics of modern buildings and the rise of the car being the fall of urban social life. In their book *Pattern Language: Towns, Buildings, Construction,* surveys and studies done in the 1960s are cited showing the most contact between neighbours in single-family housing developments occurred in a roughly circular "tribal-like cluster"(Alexander et al., 1977: 199); or that poorer mental and emotional outcomes were more prevalent in people living on the higher floors of a mid- or high-rise building; that children with more connected play opportunities with their peers fared better in their social interactions and overall development (344), and that intergenerational living environments were essential to human development (141-145). Though approaches to building design have remained in the modernist realm, research about human wellbeing in housing environments since the 1960s is further corroborated by more recent research in

environmental psychology (Kuo and Sullivan, May 2001; Zelenski and Nisbet, 2014; Wolf et al., 2014).

Alexander et al. (1977) worked very directly with numbers in trying to find a balance within their patterns of design that scale up and down, from a city-scale to the layout of one room. Believing that people are best able to operate politically and socially within smaller groups, Alexander et al. believe that housing clusters should be limited to six to 12 homes or a neighbourhood of 500 people (200, 190). As their contemporary did and proponents of biophilia do, Tuan (1977: 116) believes that "the body responds, as it has always done, to such basic features of design as enclosure and exposure, verticality and horizontality, mass, volume, interior spaciousness and light." Alexander et al. (1977) also proposed that no building should be more than 4-storeys (474) and that buildings covering the ground should not exceed 50 per cent of the site (475), otherwise green roofs should be used (476).

For systems thinkers like Meadows (1997) numbers (subsidies, taxes, standards) hold the lowest rank within her list of places to intervene in a system. Meadows (1997) estimates that often 95 per cent of attention goes to numbers, even though there is not a lot of power in them to change behaviour. But critical exceptions exist such as the length of delay in a feedback loop, or when numbers become leverage points that trigger items higher-up on her list, such as information flows, the power of self-organization, or the number one leverage point: the mindset or paradigms that are the sources of systems (Meadows, 1997). One system highlighted both in permaculture design principles and architectural design patterns is the concept of edge (Holmgren, 2002; Alexander et al., 1977). Holmgren (2002: 223, 226) contends that the edge of any thing is where the most interesting things happen because they are dynamic and productive parts of natural systems, where the exchange of materials and energy take place, with the interface between the earth and atmosphere being the most important edge for all terrestrial life. Edge is considered equally important but comes out in other ways within architectural analyses. While advocating for relatively tight housing clusters, Alexander et al. (1977) caution against going so far as to exclude the larger community, holding that overlap between clusters is also essential to community vitality, thus maintaining flows of exchange at the edges of housing clusters. Zhang (2016a) finds that residents living in retrofitted courtyard housing in Beijing, when asked about the form of it, appreciated and found attractive the staggered, intricate, and unique aspects of the structure. This view correlates to the concept of a live building edge being one that creates a positive space for people by providing visual interest, places to stop, and corners to sit (Alexander et al., 1977; Gehl and Svarre, 2013).

One established pattern in property development is to face the short side of each property to the shared access route. As architects interviewed for this paper explained, this is a standard practice in multi-unit residential housing because it saves money in construction and maintenance costs, associated with transit ways such as corridors and lobbies, as it does for a municipality maintaining roads and sewers. In Bain Co-op, this pattern is maintained with the short ends of the courtyards and the housing blocks meeting

the street, while the wide frontages of all the blocks face the courtyard. In this way the east/west facing blocks get a broad view of the courtyard and the north/south facing blocks look upon a distant vista of two courtyards meeting end to end across Bain Avenue. The vista for the north and south units is heightened by the architectural detailing of their half-timbered gables that face one another.

Today Bain Co-op and its property is made up of nine green courts, 27 housing blocks, with 33 access points between the co-op and the surrounding streets. Access points are met by a network of breezeways and paths between the buildings (Orsini and Associates, 1992). Some of the key site and building design elements of Bain Co-op are its green courtyards, individual doorways to the outside, the elevation of the buildings that allow for basement windows and stoops, as well as the sleeping porches intended for summer cooling (Dendy and Kilbourn, 1986; Toronto Housing Company 1913, 1915, 1935).

As both Ryerson and Guelph architecture students have noted in their design analyses of the Bain Co-op housing complex, it is made up of nearly an equal amount of green space and built space (Danzker et al., 2009; Yew et al., 2015). Guelph students estimate that the Bain Apartments are twice as dense as the surrounding single-family homes and each resident has access to 3000 m2 of mostly shared green space, as opposed to 50 m2 of private greenspace in the backyards of the adjacent private homes (Yew et al., 2015).

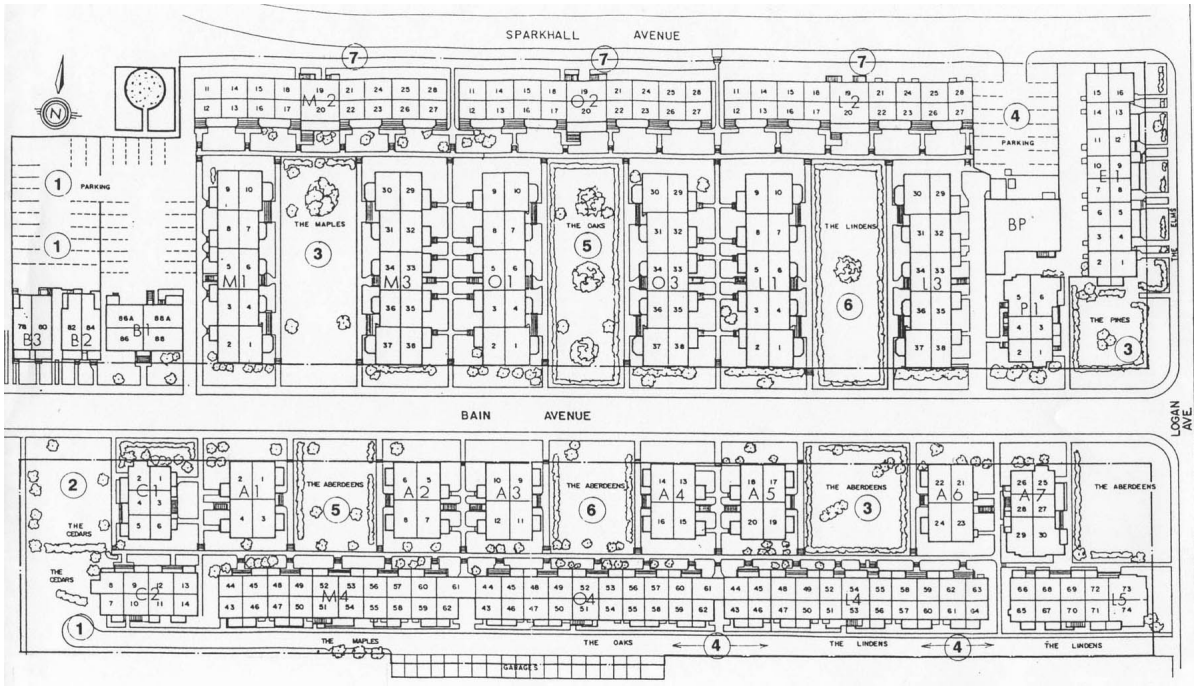


Figure 15: Map of Bain Co-op (Bain Apartments Co-operative Inc., n.d.).

Courtyards

The green courtyards contribute greatly to liveability in the co-op by providing light and air, green views, and acting as safe semi-private recreation and gathering spaces. They are roughly 20 by 10 metres and are contiguous across Bain Avenue extending their visual prospect. The courtyards are contained by the row housing blocks, thereby creating natural groupings of households that today provide an ordering system to the co-op's governance model as well. Each courtyard has a representative who participates on the committee of courtyard representatives (when active), and who facilitates the democratic spending of an annual budget allocated for courtyard improvements, such as grass seeds or picnic tables. The courtyards along with the pathways create space between the housing and thus passive flows of light and air. Zhang's (2016a) study of courtyard housing in Beijing found that residents were sensitive to courtyard sizes and building proximity as they related to flows of light and air. In Zhang's (2016a) study, some residents claimed that only rooms facing onto the courtyards ventilated well and some courtyards were too small and their walls too high to provide adequate light access (2016a). This point highlights the importance of scale and layout when designing courtyard housing.

Figure 16: Bain Arts Collective workshop happening in a Bain Co-op courtyard, (photo by the author, 2013).

According to Dendy and Kilbourn (1986: 184), courtyards in Bain "which give the complex an agreeably planned, spacious character that sets it apart from the regular streetscape of ordinary blocks, are an essential part of the development." One of the courtyards primary functions within the housing design, it is noted in the original housing

brochures, is to provide a safe area for children's play away from the traffic of the street, where parents can keep an eye on their children from inside their apartments (Toronto Housing Company, 1913, 1915). Sadly, this purpose was forgotten along the way somewhere and fences were put up around these common greens and children's play was forbidden (A. Wilson, 2016; Bain Apartments Co-op Inc., 1977; Orsini and Associates, 1992). This action seems unthinkable as today the courtyards are once again the domain of children. Twenty-something residents that grew up in Bain Co-op recall how when they were kids they were not allowed to play in the courtyards, proven by numerous photos taken of Bain kids through the 1970s to the 1990s that show them on the sidewalk, on stoops, on railings, but never in the enormous lawns that must have beckoned to them.

Providing safe areas for children's play is and has long been an important planning issue in urban development, and not just for the safety of children but also for their human development through socialisation and play (Alexander et al., 1977; Wells, Evans, and Yang, 2010). It was an issue in the bustling streets of 19th century London, England, as attested to by the Memorial to Heroic Self Sacrifice found today in Postman's Park, which describes how 9-year-old William Fisher lost his life in 1886 saving his little brother from being run over in Rodney Road (Watts, 1900). It remains an issue in the streets of Riverdale today, the neighbourhood of Toronto in which Bain Co-op is located, where nearly every other lawn has a sign asking drivers to slow down for the safety of the children, as shown in figure 17. In regards to safety from traffic and social development for children Bain Co-op's courtyards offer a valuable amenity that enlarges the domain of children, at a time when many youth in urban centres do not have easy access to spaces for recreation and socialisation activities (Dahmann et al. 2010; Gililand et al., 2006).

Figure 17: Lawn signs intended to slow car traffic in Bain Co-op's immediate neighbourhood of single-family homes (photos by the author, 2017)**.**

Though the fences came down under the co-op's ownership, it did not happen right away, nor did the unique shaping for play, gardening, and other communal uses that is evident in the courtyards today and gives each its own unique character. It took time before

residents felt agency in their collective spaces again. Today the courtyards, following the words of Tuan (1977) and Alexander et al. (1977), have been altered to meet members needs to such an extent that they exemplify a balance in their use of space, between definition and lack of definition. The co-op's member handbook states that the courtyards are for the benefit of all members, and that the space is for food gardens, ornamental gardens and recreation space, but not for dogs, sports or cycling (Bain Apartments Co-op Inc., 1977, 1999).

A myriad of socio-environmental dynamics, such as voice and noise levels are apparent in the way residents behave in the courtyards and other shared spaces of the co-op – behaviours corresponding to the nature of semi-public space where there is a sense that people could be looking or listening. I notice this when some of my friends or family visit me and I find they sometimes speak much louder than I am habituated to speaking in the courtyards.

Figure 18: Bain Co-op resident studying in her courtyard, (photo by the author, 2016).

Semi-Private Yards

Every apartment in the co-op has some bit of private or semi-private outdoor space, a factor highlighted as a key aspect of residential liveability in interviews with architects Heather Dubbeldam (2016) and Sheena Sharpe (2016). Some ground units have little back decks that face onto a roughly 10 x 10-foot backyard space. Some upper units have back balconies over secondary walkways. Others have either a roughly 5 x 5-foot front garden plot or a 10 x 10-foot front yard. This variation on a theme is a design characteristic that gives the Bain Apartments their idiosyncratic character within a greater harmony of form.

Figure 19: Semi-private yard in Bain Co-op, (photo by the author, 2016).

It is notable how people treat these small yard spaces, some give them over entirely to gardens, some keep grass, others do a bit of both. Having a space to sit-out is also a popular use for these spaces. Many co-op yards show evidence of what landscape professionals might refer to as “outdoor rooms,” where plants and shrubs are used to delineate space and create more privacy for seating areas.

Stairwells and Corridors or Pathways

Each apartment in the Bain Apartments Co-op has its own front door to the outside and this is a very important feature for producing liveability within this housing design. It is also a design feature that has long been used in collective housing design in Europe (Per and Mozas, 2013). For instance, in the Justus Van Effen complex in Rotterdam 1919-1922 (see figure 29), every unit has a door to the outside (Per and Mozas, 2013). How a collective housing design treats access, whether it internalizes or externalizes stairwells and corridors, has a great effect on the look and feel of the housing. In high-rises the verticality necessitates internalizing all these spaces, though usually leaves them outside of resident surveillance. Dubbeldam (2016) notes that having a view to the comings and goings of one's neighbours adds safety to residential living environments. Alexander et al. (1977) takes issue with directing all of a building's traffic through one opening as it causes an unwanted form of surveillance (buzz codes, door-person) and disables any impromptu drop-ins from friends. A number of modern collective housing models externalized both the corridors and the stairwells by having upper level units open onto an elevated walkway, though this model presented issues of access, upkeep, and shading of units below (Per and Mozas, 2013). In the Bain Apartments, corridors are externalized and stairwells are internalized. This is facilitated by the way the housing design breaks up density on the site using row housing in blocks with only an upper and lower unit. This way the corridors are externalized to the outdoor paths, which then provide an open-air garden-lined walkway that brings essential social interaction (Alexander et al., 1977) and can be easily surveilled by surrounding neighbours. The open-

ended path design also offers residents a number of choices as to how they enter and exit the development. The upper units have access to their living space from the outside via an interior stairwell, which contributes to the upper units' passive ventilation system as will be discussed, and extends the living space somewhat by providing a space to leave boots and hang coats. And while the upper units do have a number of stairs which present an accessibility issue, the fact that the stairs are not exposed to the elements, nor an unsurveilled public, contributes to their safety.

Doorways

A recessed entry way provides a covered space for upper and lower unit dwellers to access their apartments. This design element alone contributes to liveability as residents can have some cover from rain and snow when entering and exiting units. Sharing an entry space the doorways present a point of interaction between neighbours, though as Dendy and Killbourn (1986: 184-185) note the design through the orientation of the doors also provides a degree of privacy: "the two doors are neither side by side nor directly opposite one another: one entrance is always set in an angled wall, ensuring privacy even when both doors are left open to allow children to come and go, or for ventilation during hot sticky Toronto summers."

It is interesting to note how design features are slightly altered over time, sometimes without due consideration for the function that their original state provided. For example, on the south side of Bain Co-op's housing many more, if not all, of the doors are hung so that the lower unit door opens into the living room and the upper unit door opens out from the stairwell. This layout makes sense as a doorway opening into a stairwell is quite awkward. Yet this is how it is in most of the units on the north side, where the doors have been replaced and hung with a uniform inward swing.

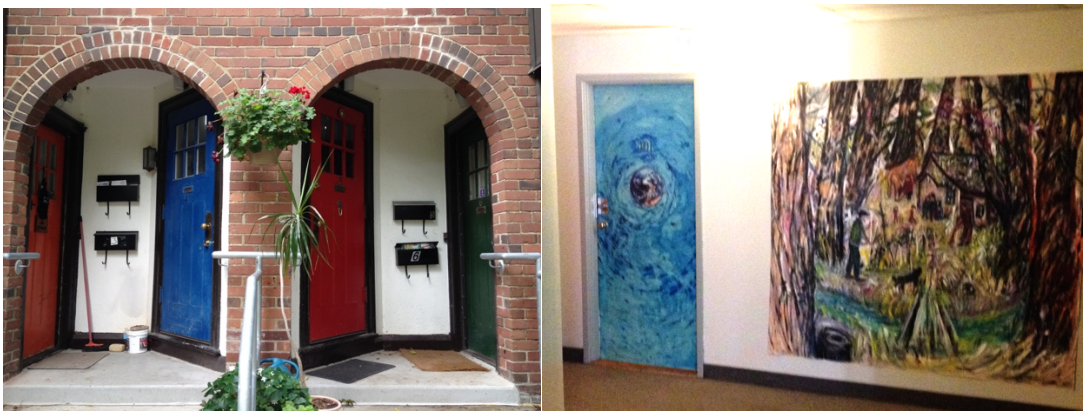


Figure 20: Doorways in Bain Co-op left, and Arcadia Co-op right, (photos by the author, 2016).

Doorways are also a key site for residents to express their identity within collective/multi-residential housing, and their treatment in private ownership enclaves are often enforced by restrictive covenants and occupancy agreements (Environmental Commissioner of Ontario, nd). My grandfather once bought a home in a private residential enclave, where all the doors were painted brown, he decided to paint his door red. He went away for a while and when he came back, he found his door had been painted back to brown to conform with the rest of the complex. This is not the case in Bain Co-op, nor Arcadia Co-op, where door décor is variable, as shown in figure 20. While the desire for identity within one's housing is not uncommon and relates to one's wellbeing (Evans, Wells, and Moch, 2003; Mikkonen and Raphael, 2010), design professionals say it demonstrates a lack of unity, thus reflecting poorly on the community as a whole (Orsini and Associates, 1992). Whether the act of personalizing one's door is condoned or condemned or just tolerated within a housing complex it is a key indicator of its ownership and governance model.

Stoops

Stoops are a lovely design element that often accompanies town and row housing. As good design does, they serve multiple functions. Their most obvious function is access to the building, but they also serve as informal seating and socialising areas (Dendy and Kilbourn, 1986). They are necessitated by a building that sits higher thereby giving the basement more natural light and air, and the first floor unit more prospect. All these functions are important, but it is the sitting out that contributes most to sociability within a neighbourhood and to its eyes on the street (Jacobs, 1961).

Stoops as a site of sociability and surveillance are recorded over and over again in cultural documents such as street photos of New York City in the 1940s. The photographs of Helen Levitt for instance show people sitting out on their stoops, watching from the first-storey window, and kids playing in the street (Levitt et al., 1987). In Sesame Street (1969 - present), the well-known educational children's television show from American public broadcaster PBS, Big Bird meets many of his neighbourhood friends out on the stoop, and most the show's stories start and end on the stoop (Sesame Street, 2002). In Bain Co-op, 57 per cent of residents surveyed said they have gotten to know people in the co-op by being on their stoop.

Porches

In Bain Co-op porches face the courtyards allowing each unit a nice broad view of the court and surrounding paths. They serve both functional and aesthetic purposes. Aesthetically they create a lively edge and visual interest by interrupting what would otherwise be long flat facades of housing blocks. Functionally they provide a view not only of the courtyard but

also one's front door when inside the apartment. When sitting out on one's stoop the porches also provide some shade and shelter, so one can feel a sense of privacy and protection.

The original housing brochures speak of them as sleeping porches for summer cooling (Toronto Housing Company, 1913, 1915, 1935). Originally the porch windows were open and later screened, and there was a doorway with a transom and a wide window between the interior of the apartment and its porch. This feature would have offered a variety of ventilation options throughout the year. During the rehabilitation of Bain Co-op it was decided that the porches would be winterized with insulation and thermally efficient windows so that they could provide more functional living space during the longer winter season here in Canada (Bain Apartments Co-op Inc., 1994). In this iteration, the porches function as more useable living space that still provides light, air, and garden views.

Liveability defined

Two terms "wellbeing" and "liveability" are at the core of my research interests on climate change adaptation. Wellbeing is essentially one's quality of life or satisfaction with life, which can be measured and constituted variously. Liveability refers to the characteristics of an environment or situation and how well it meets species needs in order for them to survive and thrive (as the different design features of Bain Co-op described above show).

When asked what makes multi-residential housing liveable or not, expert interviewees spoke of a range of elements from basic necessities like heat and indoor plumbing to elements like pleasant views and outdoor greenspace. These latter elements are generally considered housing amenities (Hulchanski and Shapcott, 2003) though researchers in environmental psychology have effectively shown that green space and natural views greatly improve human health and wellbeing (Kuo and Sullivan, 2001; Wells, Evans, and Yang, 2010; Van den Berg et al., 2007; Zupancic et al., 2015; Browning et al., 2014). A number of elements identified by expert interviewees overlapped showing an alignment, which can be applied to a baseline for liveability in multi-residential housing.

When asked what contributes to liveability in multi-residential housing, architect Sharpe (2016) explains:

> I think in general you have to have a certain amount of privacy and I do think the trend to much smaller space is unfortunate. Particularly with children, so amenity spaces outside that are important. Liveability, it is so hard to define, like in designing housing for people who are effectively living on the street, having a warm house with a door that locks... it's like a thousand times better!... There are these jumps in design, so getting the basics: control over your own space (e.g. door that locks, control over light, air, and sound) is the number one jump, the number two jump is durability, well maintained, ability to control the heat and that sort of agency, [number three jump] then you get into amenities: view

> of a park, a distant vista, all that. So I think there are some basic jumps depending on what kind of housing you're focusing on.

On residential liveability, architect Dubbeldam (2016) remarks:

> In my practice we have a whole thesis about residential spaces being more liveable with access to, ideally private outdoor space, but some type of outdoor space. The model of a condominium where you have residents in towers with glass facades, and a little balcony that's too high up and not safe, and you have a lot of exposure isn't liveable, and I guess a better term for us would be culturally and socially sustainable in the long term. Having access to some sort of outdoor space, seems to make all the difference for people. It's almost like their own little mini backyard, whether it's up on a higher level or it's a shared common space on the ground plane, but some access to a little space that is carved out.

When asked about liveability in housing, retired architect Smith (2016) reflects:

> Staying with multi-residential, I think accessibility is one of the things that really does it, and by that I mean physical accessibility, but I also mean financial accessibility. Often rental, which is not dedicated or supported, is still economically accessible because the costs for the individual are a bit less. In multi-residential there is less need for you as an individual to maintain the whole thing. Living in multi-unit housing I contribute to the maintenance, living in a co-op I contribute to the governance as well, but I think that makes it more liveable, it makes it more accessible.

Wilson (2016), chief executive officer at The Agency for Co-operative Housing, adds her views on multi-residential housing liveability:

> Well there's lots of factors. And I want to make a general comment about housing first. I think human beings are placemakers innately so even when they are presented with a place that is unsatisfactory in so many ways, they'll still make it their place. [...] We would say obviously a home with indoor plumbing is better, everyone would say this all over the world, but it gets very subtle when all of the physical things are there. You have enough bedrooms, it's dry, it's warm in the winter, you have indoor plumbing. These are the essentials right?
>
> Now let's assume those are required. I think what makes a place liveable is actually quite minimal, depending on what you mean by liveable? But if you're interested in how people interact with each other, and you're interested in environmental questions, then it does matter what you have beyond the bare essentials. That's why I think Bain is an interesting case study...

Based on expert interviewee responses to the question of what constitutes liveability in multi-unit residential housing it could be said that there are a base set of factors that begin with meeting the most basic human needs, then a mid-range set of factors that improve liveability, and then an upper-tier set of amenities that further improve liveability, in that they contribute a great deal to quality of life. The following table, illustrates these tiers in a progression of liveability based on expert interview responses to what constitutes liveability, specifically in multi-unit residential living environments.

Table 1: A hierarchy of liveability factors based on expert interviews.

Tier 1	warm, dry, indoor plumbing, door that locks, privacy, financially and physically accessible, degree of acoustic control
Tier 2	enough living space, private/dedicated outdoor space, control over the heat
Tier 3	view of a green space or distant vista, recreation spaces, amenities

Liveability as experienced by residents

Primary data for this case study was collected from questionnaires distributed to residents of Bain Co-op. Questionnaires were distributed in hard copy at an annual general meeting of the co-op members, and using an online questionnaire option that was promoted through Bain Co-op Facebook pages, and group emails to neighbours.

Fifty-four residents were surveyed from among the entire population of roughly 450-500 people living in Bain Co-op in 2016. Among this group of survey participants, 42 were female and 12 were male. As discussed earlier, female-led households have been prevalent throughout the history of Bain's housing. Female-headed households in Canada have risen steadily since 1971 from 10.4 per cent to 16.4 per cent in 1991, and are more likely to be found in tenure-types other than home-ownership (CMHC, 1997). Females are prevalent in filling board, committee and office management positions within Bain Co-op. General meetings of the members of Bain Co-op I've attended over the last five years were more or less equally attended by both sexes. When distributing surveys face to face the dominance of female respondents was also partially attributable to more women being willing to participate in sharing their thoughts about the co-op and more men declining to participate.

As Table 2 shows, the majority of survey respondents were between 30 and 69 years of age with 58 per cent being over 50 years of age.

Table 2: Age of questionnaire respondents.

Age in years	Number of respondents
20 – 29	4 (7%)
30 – 39	9 (17%)
40 – 49	10 (18%)
50 – 59	9 (17%)
60 – 69	16 (30%)
70 – 79	6 (11%)

An undated Bain Co-op Fact Sheet (Bain Apartment Co-op Inc., circa 1990s) that speaks of the 1990 working budget, records the co-op's total population as 509 people. Among this population (recreated in figure 21), 60 per cent were females and 40 per cent males, while 55 per cent of the members were between 26 and 64 years old. Among those surveyed for this research project, as seen in Table 3, the majority have lived in Bain Co-op for between two and 20 years.

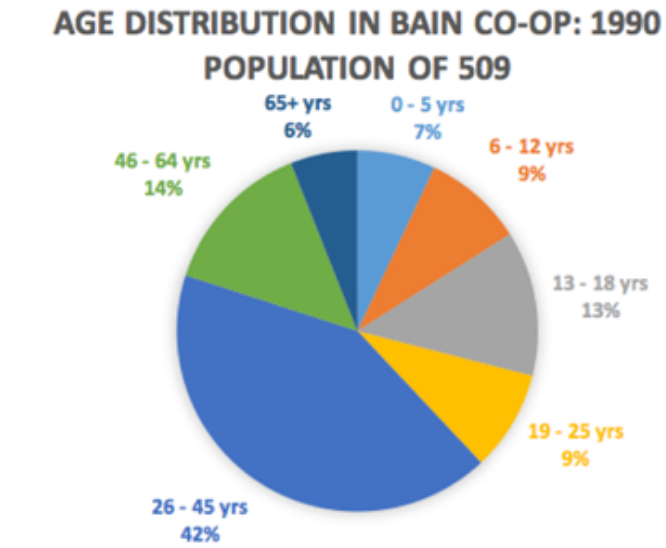


Figure 21: Age distribution of Bain Co-op residents in 1990, (Bain Apartments Co-op Inc., circa 1990s).

Table 3: Years lived in Bain Co-op.

Years lived in the co-op	Number of respondents
1 to 5 years	14 (26%)
6 to 20 years	29 (54%)
21 to 40 years	9 (17%)
Over 40 years	2 (3%)

Having the option to live in co-operative housing as compared to private or public housing was considered very important to 70 per cent of residents surveyed, with no respondents considering it not at all important to have the option of co-operative living. Twenty-three out of the 31 respondents that commented as to why co-op living was important to them mentioned the word “community,” while ten spoke of the opportunity to participate in governance.

Sixty-three per cent of respondents said it was very important for them to have the option to live in affordable housing (i.e. rent is 30 per cent or less of household income). Twenty-six out of 54 respondents chose to comment on the reasons for their answer to the question about affordable housing. Among this group of commenters nearly 40 per cent reported having lower incomes because they were either a single mother or a senior.

Interior Spaces

When asked in the questionnaire about how the design of the 100 Bain Ave housing complex's interior spaces (e.g. unit layout, views) affect their quality of life, the majority of Bain Co-op residents surveyed (see figure 22), said they found the design of the interior spaces in the complex positively or somewhat positively affected their quality of life. The aspects of units most appreciated by members were: the sun porches, the garden views, and the good natural light entering the units.

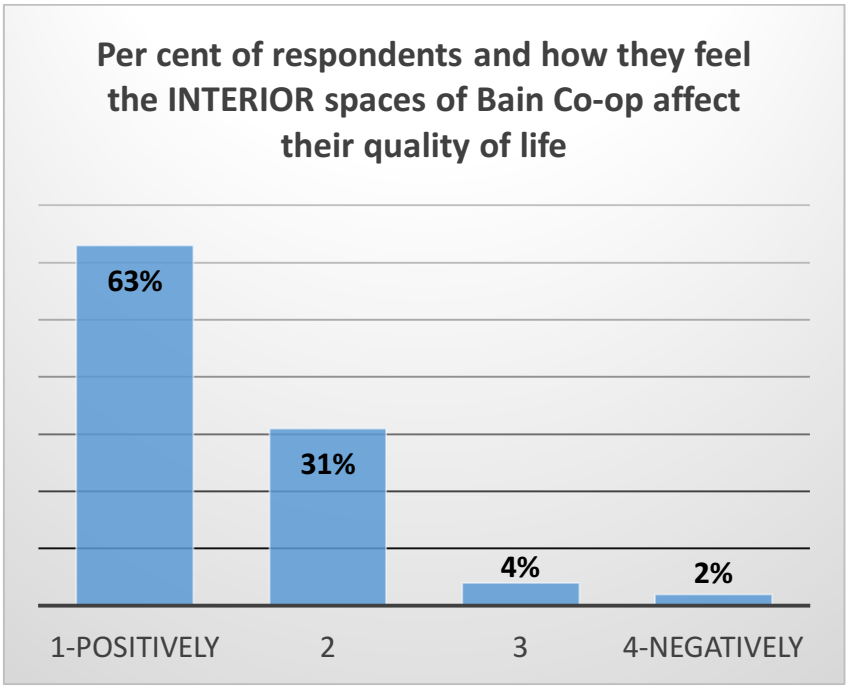


Figure 22: Residents' feelings about Bain Co-op's interior spaces.

However, some aspects of the units that many members found frustrating were the noise transference between apartments, the small kitchens, and the awkward bathroom access for guests because a number of the smaller units access the bathroom off one or two of the bedrooms.

On the question of layout, quantity of space, and storage, there were no clearly consistent trends. Some appreciated the unit layout, while many wished for more open concept spaces. Units with basements felt they had lots of storage, while others said they had no storage or wished for more cupboards and closets. Some appreciated having a small space, saying it was cozy and easy to clean, while others said their units felt tight, and still others found their units to be spacious. This range of comments indicates that perception of adequate space varies by unit type and by member preferences.

Exterior Spaces

When asked "How does the design of the 100 Bain Ave housing complex's exterior spaces (e.g. housing block layout, paths) affect your quality of life?" the majority of respondents questioned (see figure 23), said they found the design of the exterior spaces in the complex positively or somewhat positively affected their quality of life.

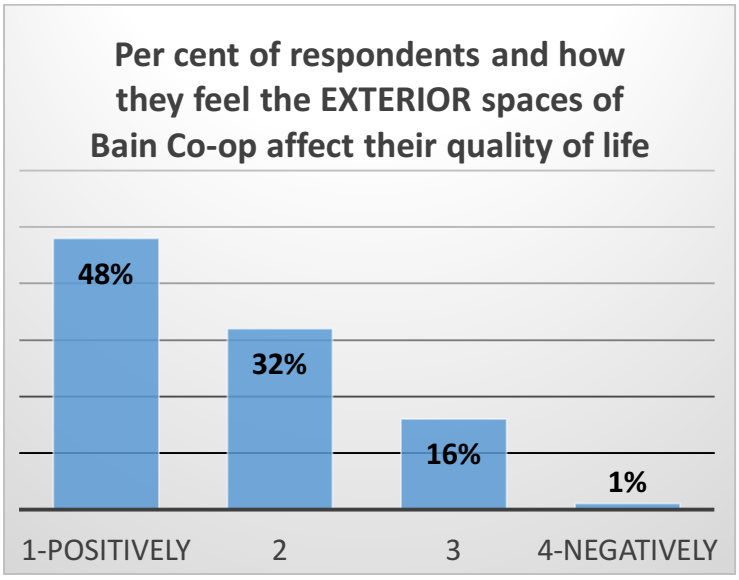


Figure 23: Residents' feelings about Bain Co-op's exterior spaces.

The most common comment regarding exterior space layout was that it was conducive to interacting with neighbours, whether through spontaneous meetings that happen along the interior pathways or in the many communal activities that take place in courtyards. Many residents liked the chance to interact with their neighbours on their way in or out. While others appreciated that the different choices available to them as to how to enter or exit their unit allowed for them to have some control over seeing or not seeing people depending on how they are feeling. One resident that rated the exterior design as somewhat negative commented that "[w]ith a newly acquired mobility impairment, I notice a lot of stairs, and wonder about ramps." This comment speaks to the concerns of accessibility in building design that are becoming more prevalent as Canada's population ages. Many people also spoke about the courtyards as being a great element of design that allows for various benefits including safe space for children to play, green space views and access, a place to come together with neighbours, and a quieter space away from street traffic.

Green Space Access

When asked "How easy is it to access a green space on co-op grounds?," 43 out of 54 respondents or 80 per cent of respondents, replied that it was very easy. When asked to describe the reason for their answers, 17 respondents commented to the effect that all they had to do was step outside their front door to be in a green space, with many referring to the courtyards in this regard.

Of the four respondents that gave a low score for green space access, two of their comments indicated that they interpreted the question as being about having access to private gardening space, which is dependent upon either sharing a small front or backyard with one's upper or lower unit neighbour, or expressing interest in having a plot in one of

the communal courtyard gardens, which depends on availability, but can sometimes lead to disputes between neighbours. One respondent referred to "garden wars" and "controlling people." Another respondent spoke about garden access as a limiting factor in green space access, but did "not see it as a huge problem," noting that "sometimes we need to re-visit the distribution of the land and accommodate new people or create the common gardens, where everyone can take part and have real stewardship." Access to gardening space is contingent on social organizing and sharing negotiations. Another respondent that gave greenspace access in the co-op a low score was a resident who lives in the Elms, which are the block of row houses that front onto Logan Avenue. While these units face onto Withrow Park, they are not oriented around a common courtyard as are most of the other units in the co-op. This resident of the Elms said, "I feel weird entering a courtyard for use unless someone who lives there is with me." The fourth respondent who gave a low score to green space access stated "[l]ots of communal green space, that's great! But I miss solitary green space (e.g., balcony or own backyard)."

Figure 24*:* Jeannie Richardson, The Old Tree, oil on canvas, 2008.
(Copyright 2008, Jeannie Richardson).

Architecture

A number of people spoke about the architecture of Bain Co-op and how they love it and feel it has an old timey quality or charm, and how it has interesting contours. Some Bain Co-op questionnaire respondents wrote: “Lovely, European village feeling to the architecture”… “I love the architecture and charm of the grounds”… “It feels cozy and I love coming home here.” One resident commented about Bain’s exterior spaces that “[t]his place inspires my art.” Indeed, a number of residents have chosen to depict the Bain apartments in their paintings, photos, and published writings (see figures 24, 25, 26). All of which demonstrate a

love and fascination for Bain Co-op's buildings and landscape. An interest shared by a number of local and resident journalists who have written about Bain Co-op as seen in figure 25 (M. Wilson, 2003; Bradburn, 2013; Micallef, 2013).

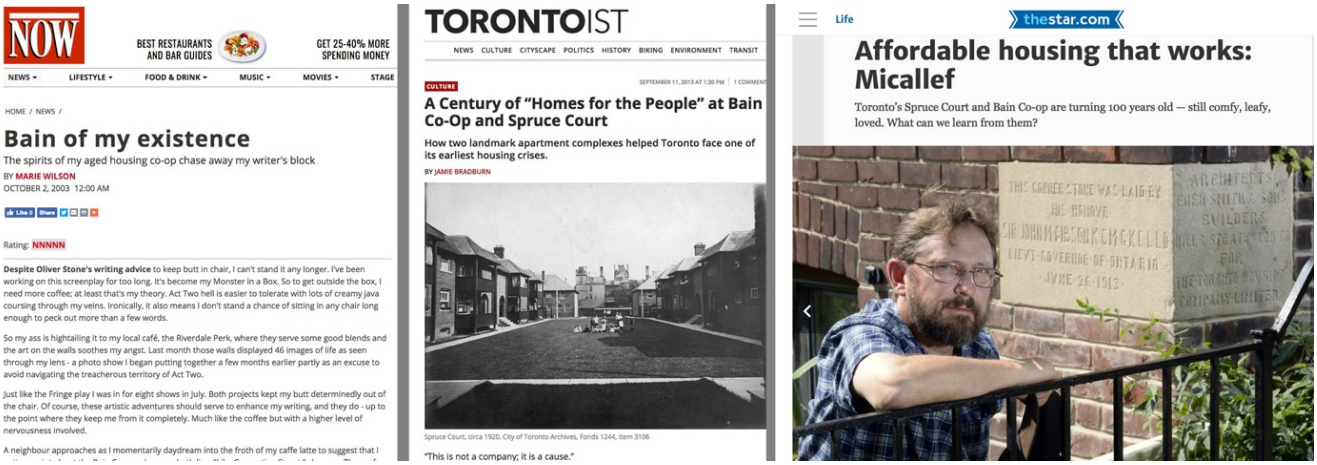


Figure 25: Press coverage on Bain Co-op (M. Wilson, 2003; Bradburn, 2013; Micallef, 2013).

There is something significant in all of these comments, which is that in some cases old represents charm and value rather than being outdated and useless. A sentiment mirrored in the sight-gag comedic cinema of Jacques Tati (1949-1974), that set the cold and fast-paced modern Parisian suburbs against the warm charm of historic Paris (Tati, 1958). Literature on healthy communities today highlights the need for quality not just in natural and built environments, but also in social and cultural environments by connecting people with the past and each other (Zhang, 2016b).

As stated by a resident,

> [Bain Co-op's exterior space], it's inextricably linked to the amount of happiness in the place. Without the beauty and functionality of the courtyards with their overlooking stoops, we might not be nearly as happy or interact as much. It's a fabulous design, searched for carefully by the people who made it happen, and should be duplicated where intensive rental housing is needed. When the pathways were cleaned up, levelled, and widened a tad, made moving buggies, strollers and walkers around much better. The trees deserve a mention.

Figure 26: Bain buildings under snow. (Photo by Aaron Schwartz, copyright 2016).

Trees

Bain Co-op is home to a beautiful canopy of trees that are seen in members' artworks and appreciated in one of LEAF's urban tree tours (Irvine et al., 2011 - 2016). The trees in the co-op provide important cooling during summer months, and many of them are fruit bearing trees, such as mulberry, apple, cherry and elderberry that members tend to and harvest. Tree concerns have come to the forefront recently as disease, blight, old age and extreme weather have all contributed to a few branch breaks and a number of tree removals. The co-op had a total of 14 native ash trees removed – 10 of them were removed by the City because they were infested with emerald ash borer.

In 2015, the co-op commissioned an arborist report that inventoried 226 trees on its property (UFA, 2015). It revealed that 30 per cent of evaluated trees were Norway and Manitoba maples. As seen later in figure 37, these trees are known for their intense shade. Of all the trees inventoried, 79.2 per cent were either invasive or non-native species (UFA, 2015). Among those non-native species are the co-op's beloved centennial London plane trees (a hybrid of the Oriental plane and the American sycamore) (Irvine et al., 2011) that stand twice as tall as our houses and define Bain Avenue as it passes through Bain Co-op. A neighbour told me he read something from the collective Bain Co-op Archive that spoke of these London plane trees being sent by ship from England, already quite tall, to be planted in Toronto Housing Company's English-style development being built an ocean away in Canada.

I founded the Bain Landscape Group (BLG) in late 2013, around the time of the ash removals, with several of my neighbours who like to garden to help communicate tree information between members and the co-op's maintenance staff and property committee.

One of BLG's notices to members in the Bain Community Newsletter in 2014 read "[y]our Co-op will be adopting beautiful new trees in the spring to replace some of our fallen friends. So many of our existing trees are reaching the twilight of their leafy lives, and further planning is required if Bain Co-op is to maintain its reputation for lush greenery." As a result of the collective work of co-op members in a matter of a year, the co-op held a forum on the 12 new and replacement trees it planted on its property. It also hosted and participated in a LEAF Tree Tenders Course held in the co-op's community centre and advocated for the City to replace the 10 Ash trees it had removed with a greater variety of species this time (and kept all these new trees, in private and public spaces, watered).

> Looking down the length of this path gives you a clear sense of what it is that makes the Bain apartments unique: buildings are so close together that if residents were to lean out their windows they could nearly touch hands. Yet, rather than feel cramped and confined, this compact design creates a cozy, warm environment. The children's toys left about, flowerbeds teaming with colourful plants and lazy cats meandering throughout all contribute to a safe, welcoming feel. A feeling that big is not always better, and that when well- designed, high-density housing presents a healthy way to live (Irvine et al., 2011–2016).

The important role that design plays in the liveability of multi-residential housing has been illustrated through expert interviews, resident questionnaire responses, and an analysis of Bain Co-op's architectural form. Architecture in its use of visual interest, physical accessibility, and the relation of masses to voids greatly affects human experiences of space. While noting that a sense of having enough space is subjective and often culturally or socially informed, questionnaire data was discussed, revealing that access to green space, light and air flows and some control in shaping space are all of primary importance for resident feelings of wellbeing and liveability in residential environments.

3. AFFORDABLE HOUSING MODELS AND SOCIAL WELLBEING

A few weeks after moving into Bain Co-op, I had agreed to co-organize with my next-door neighbour, a street festival to celebrate the 100th anniversary in 2013 of the first cornerstone being laid for the buildings Bain Co-op members live in today. With the support and guidance of my new creative and collaborative neighbours we pulled off a beautiful event that was open to anyone. It began on the street for games, tables, and food followed by some Bain Arts Collective community theatre in the park, on the street, and the courtyards of our homes. The public wandered through and many expressed how special the space felt to them. The buildings, the trees, and the community of people were the main attributes of Bain Co-op living that visitors appreciated. And the publicly advertised arts

workshops that happened in the courtyards all through the summer, culminated in an awe inspiring night of community theatre that spoke about the good and the bad aspects of living in Bain Co-op, from the beauty of community meals to the difficult relations between neighbours.

Oxford scholar Donia Zhang (2016a) attended this event as she was conducting some research in Bain Co-op that summer for her publication, *Courtyard housing in North America: Chinese design for health and happiness*. Through this street festival and community effort Bain Co-op members invited the larger community into their home and told them a story about the history and design of its centennial buildings, now owned and governed by a housing co-op. As I describe my Bain Co-op Street Festival story and the birth of the Bain Arts Collective, I am also describing a social network of people with a significant collective capacity to organize around an activity.

Figure 27: Bain Arts Collective, *The Homemade Stories Project*, September 14, 2013.
(Photo by Aaron Schwartz, copyright 2013).

Based on his research in human evolutionary biology, Dunbar (1993) asserts that group size among primates is dependent upon the maximum number of social relationship that may be maintained by personal contact. Dunbar (1993) correlates the information-processing capacity of our brains, and the amount of time we can devote to social activities after securing food and shelter, to how many close personal connections people can maintain, and thus the scale of our social networks. Dunbar's equation, based on the modern human's neocortical volume, yields a maximum predicted group size for humans of

147.8. This number, Dunbar (1993) finds, repeats itself as the average clan or village size for traditional hunter-gather societies as well as many contemporary human societies. As Dunbar (1993: 686) writes, "[s]trong bonds based on direct personal knowledge" are what characterizes a group of roughly 150 people – a number that is likely not far off from the population of Bain Co-op's courtyard housing clusters. Beyond this number, Dunbar (1993) says personal identification is based on more gross categories of "us" and "them," it becomes difficult to control behaviour by peer pressure alone, and social cohesion is no longer maintained.

Alexander et al. (1977), who contend that 500 people is the right number for a housing development or neighbourhood, also hold that people in different stages of the human lifecycle, from infancy to adulthood to old age, provide important mutual support and guidance for one another. These authors stipulate that for a community to be balanced each cycle of life must be represented within it. Helliwell and Putnam (2004: 1437) in their paper on "The Social Context of Well-being" find that despite conventional economic theory, material wealth does not predict an individual's subjective wellbeing as much as the "breadth and depths of one's social connections."

There are various ways to measure a person's or a population's wellbeing. For instance, there are a number of wellbeing indexes, which calculate statistics on indicators of wellbeing such as the quality of health, education, living standards, environment, economy, social networks, and levels of income, leisure time, and political participation, in order to generate numerical values of wellbeing (Canadian Index of Wellbeing, 2014; Office for National Statistics, 2014; Jahan, 2015). Another way, known as a measure of subjective wellbeing, is to ask a person how satisfied they are with their life on a scale of zero to ten (Bonikowska et al., 2013; Hall, Barrington-Leigh and Helliwell, 2010). Helliwell and colleagues (2010) argue the merits of subjective wellbeing data in the form of a life satisfaction question across several publications (something like a simple question easily implemented in a survey and collected consistently over time) is a measure of a person's experience of wellbeing (rather than a measure drawn from various indicators of wellbeing) and can be applied at different levels of aggregation, while offering a means to compare social and economic data (Hall, Barrington-Leigh and Helliwell, 2010; Helliwell and Barington-Leigh, 2010). Assuming that one understands the role of government to be the provision of the greatest public good, wellbeing metrics are key to good governance decisions. According to Bonikowska et al. (2013: 2) "[m]easures of subjective well-being are increasingly prominent in international policy discussions about how best to measure 'societal progress' and the well-being of national populations." Wellbeing is essentially one's quality of life or satisfaction with life, which can be measured and constituted variously. Most countries, including Canada, measure their progress through their gross domestic product (GPD) index, which is a composite index of all the economic output of a country (Policy Horizons Canada, 2013a, 2013b). Recent evidence shows a significant decoupling of GDP and wellbeing over the last decade, along with an increase in inequality (Canadian Index of Wellbeing, 2014; Boarini et al., 2006). If the adage that "you manage what you measure" (Policy Horizons Canada,

2013b) is true then it is clear Canada needs to reevaluate what national success is and adopt more accurate and inclusive methods of measuring the wellbeing of its population.

While it is often difficult to perform, there are multiple, ongoing, and interrelated benefits to be derived from what is perhaps best referred to as critical *community* placemaking, such as shared knowledge, social networks, health and wellbeing, citizenship skills and justice. Critical placemaking can access the benefits of shared or group knowledge. By granting that all people's knowledge is subjective and contingent upon their values and experience, a dialogue can occur within the practice of critical placemaking that negotiates, interprets, relates and consolidates different knowledge bases in order to construct a new knowledge that has the potential to be more versatile and equitable (Schneekloth and Shibley, 2000).

When people come together to work on a shared objective relationships are inevitably formed, as Schneekloth and Shibley (2000: 133) put it, "placemaking is not just about the relationships of people to their places; it also creates relationships among people in places." In turn social networks and the reciprocity and trust they engender, often referred to as social capital, have a powerful effect on individual and community wellbeing (Helliwell and Putnam, 2004). Value is associated with social capital and its outcomes, such as lower crime rates, improved child welfare, and better public health (Helliwell and Putnam, 2004).

On the topic of human relations within space, Yi-Fu Tuan (1977) writes that people organize space to cater to their biological and social needs, and that spaciousness is associated with a sense of freedom, mitigated by human fear of solitude and exposure. So there is a balance that people are seeking to strike in their residential environments between spaciousness and crowding in order to achieve social wellbeing, but how is space defined and experienced? Tuan (1977: 65) writes that "the world feels spacious and friendly when it accommodates our desires, and cramped when it frustrates them." Seeing human perception of space as contingent on social dynamics within it, Tuan (1977: 64) suggests that, "people crowd us but they also enlarge our world", as "heart and mind expand in the presence of those we admire and love," and that "when people work together for a common cause, one man [sic] does not deprive the other of space; rather he increases it for his colleague by giving him support."

I have greatly benefited from the social support I have received from my neighbours in the co-op, and though I could write another paper on the nuances of how it plays out and its benefits, it is everything from someone smiling and saying hello when I walk out my front door, to the support of more intimate personal connections and friendships, as well as exchange in working relations within governance positions. All these degrees of social interactions are required for the wellbeing of the community.

Table 4: Residents that feel they can trust their neighbours in the co-op.

Can trust neighbours	Number of respondents
1 – yes a lot	11 (20 %)
2	29 (54%)
3	12 (22%)
4	1 (2%)
5 – no not at all	1 (2%)

Bain Co-op resident questionnaire data (see table 4) reveals that the majority of residents carry some degree of trust for their neighbours in the co-op, and no doubt this trust contributes to the high degree of safety resident respondents, many of them women, also report feeling within the co-op. These results are contrary to data gathered in a landscape analysis by Orsini and Associates commissioned by the co-op in 1992. It stated that nearly all of the women who participated in Orsini and Associates' (1992: 16) audits and questionnaires "felt unsafe/uncomfortable while walking/moving/being in and about the Co-op." Spaces with poor visibility in terms of lighting or sight lines that were under populated were where women felt most unsafe, and thus the report recommended lighting should be increased and greenspace developed for more recreational use. These changes have slowly come about over time, and now some 25 years later statistical results as well as resident comments gathered in this research reveal a greater sense of safety among women, parents and the elderly living in the co-op. One female resident stated, "I get home late (11 - 11:30 pm) and as a single woman I am a little uneasy walking from the TTC until I reach the co-op, then I feel safe." An older resident spoke of "experience when I fell and could not get up, neighbours came to the rescue– and stood by for months." Another resident sees Bain Co-op as "safer than the real world out there [as] we all know each other." Helliwell and Putnam (2004: 1436) write that dense social networks are closely associated with social trust and that "high levels of social trust in settings of dense social networks often provide the crucial mechanism through which social capital affects aggregate outcomes."

Table 5: Residents that feel safe in the co-op.

Feel safe	Number of respondents
1 – yes a lot	37 (69%)
2	13 (24%)
3	4 (7%)
4	0 (0%)
5 – no not at all	0 (0%)

While the lighting and signage were improved in the co-op to respond to safety issues, not much about the design of the property has changed. However, Orsini and Associates' (1992) recommendation to develop recreational use of the co-op's greenspace indicates that they were not used as actively then as they are today. A transition around freedom of use in the co-op's greenspaces will be later discussed. It also begs the question as to whether more outdoor shared recreation space has had an effect on safety by increasing social network sizes among residents?

The 2016 questionnaire data collected in my research reveals that Bain Co-op residents know a lot of their neighbours by name (see table 6), with the majority of respondents knowing 11 or more people by name, 50 per cent knowing between 11 and 40 neighbours by name, and six people knowing over 70 residents by name! In the South London, sustainable community of BedZED, which will be later discussed, residents in this eco-housing development know on average 20 of their neighbours, while they cite the local average as being eight (Bioregional, n.d.).

Table 6: Number of residents that respondents know by name at Bain Co-op.

Number of neighbours known by name	Number of respondents
0 - 5	3 (5%)
6 - 10	2 (4%)
11 - 20	8 (15%)
21 - 30	11 (20%)
31 - 40	9 (17%)
41 - 50	6 (11%)
51 - 60	9 (17%)
70+	6 (11%)

Social determinants of health

Mikkonen and Raphael (2010: 29) state in *Social Determinants of Health: The Canadian Facts* that "[h]ousing influences health in many ways. People experience qualitatively different material environments depending on their housing quality." Adverse health outcomes in housing can arise from the presence of mold, lead, poor heating and ventilation, dampness, vermin, and overcrowding (Mikkonen and Raphael, 2010). Most often social determinants

of health overlap, in that poverty, gender, and race can all contribute to living in unsafe, unaffordable and insecure housing (Mikkonen and Raphael, 2010).

In their article entitled “Toronto observed: Its Architecture, Patrons and History,” Dendy and Kilbourn (1986: 184) provide some interesting insights into the architecture of the Bain Co-op buildings. Firstly, they note the location, close to downtown in between two parks in a "solidly built middle class neighbourhood." The siting, they say, as well as the hiring of Eden Smith as architect, known for his work in upper class domestic architecture and his use of the then popular 'Cottage Style,' "provided the right image for these flats" and were all important in helping to spare residents from the stigma of poverty (Dendy and Kilbourn, 1986: 184).

The Cottage Style, linked to the Arts and Crafts Style, romanticizes simple country life, and is characterized by brickwork and stucco exterior walls, roofs with half-timbered gables, and bay windows, verandahs and porches that look onto gardens (Dendy and Kilbourn, 1986). It is known that Smith developed a range of finishes for his housing projects and had his suppliers produce them on mass (Dendy and Kilbourn, 1986; Neal, 1976). This process allowed Smith to offer higher quality door, window, staircase and interior moulding details to his clients at a lower cost (Dendy and Kilbourn, 1986). Eden Smith knew that it was the details that denoted craftsmanship, and would indicate the class and quality of his homes. Canadian architectural scholar, Annmarie Adams writes that “Smith’s houses leaned on English precedents –on the surface– and were then rearranged inside to suit a less formal lifestyle” (Adams, March 1993: 111).

This notion of aesthetics in buildings is well established in zoning regulations that seek to protect a common good by controlling building height and massing, as well as land uses. In heritage districts or areas of civic significance, it is also common for municipalities to develop zoning by-laws that allow for more detailed aesthetic input on points such as building facades and exterior finishes in order to uplift or distinguish an area (Hodge and Gordon, 2008). This view indicates that building aesthetics and a degree of consistency relate to community identity. Alternately in public and social housing, consistency of aesthetic or sameness within a housing development, while in contrast to the rest of the neighbourhood, is usually what indicates its ownership status and can lead to residents experiencing social stigma within their broader community. Evans, Wells and Moch (2003: 492) write, "symbolically, both structural quality and maintenance of the home provide feedback to residents about quality in their environment and are often primary factors in how others view the residents."

This sense of image seems to play out in a mixed way within Bain Co-op today. Many resident-respondents felt that they live in a beautiful garden village that is unique within the city. When asked if and why they take pride in living in Bain Co-op, 32 per cent of residents used the word “beautiful” in their response. One respondent commented that “pride is

evident in the care we take of our buildings and our gardens and the way we take care of each other."

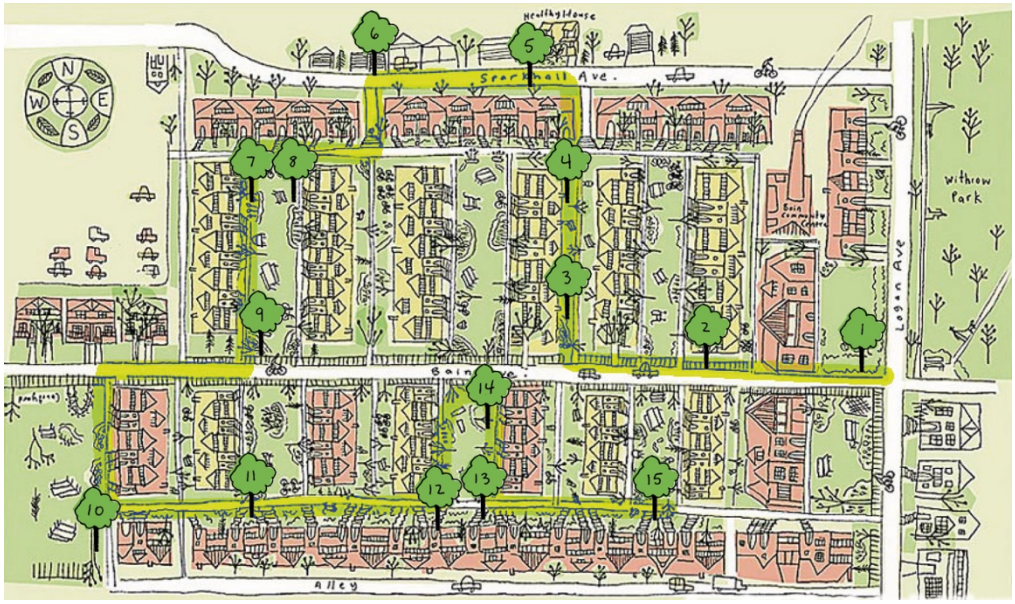


Figure 28: Illustration by Marlena Zuber from LEAF's self-guided Bain Co-op Tree Tour, (Irvine et al., 2011 – 2016).

However, a few residents explained when and how they did not feel pride living in Bain Co-op. One lifelong resident shared that when she was a child in the 1990s she felt Bain Co-op was seen as a ghetto. Another resident commented that today she feels the housing development is "messy, loud, and generally associated with low-income housing by the rest of the surrounding neighbourhood." This resident also noted that she did not feel good about "living behind the trash heap on Bain Avenue," by which she means the bulk items collection area. The co-op keeps its garbage bins in its east and west parking lots, but items that do not fit in bins, are supposed to go to the bulk area on Bain Avenue in front of one of the courtyards, and this area often coalesces into a dumping ground, whether by co-op residents or the wider community.

How garbage is handled is important to residents as it is generally thought to reflect poorly on the character of the community (Evans, Wells, and Moch 2003). In Sousa and Quarter's (2005) research on Atkinson Co-op's conversion from public housing, it is noted that one reason residents cited for wanting to become a co-op was to have more control over how the property was maintained, and that having a say where the waste bins were kept, which may seem trivial, was actually very important to residents because they did not want them in front of their homes. In their 2003 paper, Evans, Wells, and Moch outline a taxonomy of psychosocial processes –identity, insecurity, parenting, social support, and control– that are commonly identified as connectors between housing and psychological

wellbeing in human populations. Sousa and Quarter's (2005) case study speaks to two psychosocial processes in housing: identity and control. Control is a theme that appears again and again in this study's primary data, as well as in the literature on social housing and co-housing, as something that people strive for in their living environments (Bresson and Denèfle, 2015; Sousa and Quarter, 2005; Wasylishyn and Johnson, 1998). A Bain Co-op questionnaire respondent, on the question of pride, spoke to "the unique privilege of being able to exert some measure of control over my environment" and "the housing security of a community-based democracy."

Placemaking happens in relation to power or control and reflects how people identify in their environments. It is a practice that can be seen in Bain Co-op in many ways but one way that Alexandra Wilson noted is in how members treat their semi-private yards. They are found between the housing rows, growing all matter of vegetation every which way in a symphony of human activity. Quite detailed and professional landscape work is done in some of these yards. Some are dug up by new tenants in a fervor of activity, and then left to the weeds, many of them edible my neighbours tell me. It is such a small and precious bit of the earth we each have to engage with fairly autonomously. I love to walk the paths, and look at the gardens, and see what different people do with their outdoor space. The rule is that upper and lower units share these spaces. This can create interesting compromises where the yard is split down the middle and each side tended to by individual priorities, such as growing vegetables or keeping an ornamental garden. In design and today in their tending, these semi-private places encircle and enliven the courtyards of collective green space. While courtyard function remains more flexible for their multiple users, children remain the most avid courtyard users for daily play. This landscape design, which mingles private and shared space, is often seen in collective housing (see figure 29), from Dutch social housing design in the 1920s, to the work of BIG a widely respected Danish design firm today (Dubbeldam Architecture + Design, 2014; Per and Mozas, 2013).

Figure 29: Collective housing designs that integrate shared and private outdoor space. Rotterdam: Justus Van Effen Complex, built 1919-1922 (red brick bike pads previously private gardens) (Per and Mozas, 2013)**. Toronto: Bain Co-op, built 1913-1914, 1922-1923** (photo by the author, 2016). **Copenhagen: 8 House, built 2008** (BIG-Bjarke Ingels Group, n.d.).

Placemaking is a practice that people engage in consciously or unconsciously to meet their needs or fulfill their desires within the spaces they inhabit (Schneekloth and Shibley, 1995, 2000; Mattson, 2014). It can include any number of activities including urban design, cultivating land, participation in community events and utilization of public space, or painting one's home or decorating one's bedroom (Schneekloth and Shibley, 2000: 132-133). Placemaking is neither an inherently positive nor negative practice. It can serve to meet the needs of some groups of people while denying the needs of other groups (Mattson, 2014; Schneekloth and Shibley, 2000). However a critical practice of placemaking as it is defined by Schneekloth and Shibley in their 1995 book *Placemaking: The Art and Practice of Building Communities*, "attempts to give legitimacy to all forms of knowledge" (6), and set relationships, between people and their places, as its goal. Critical placemaking refers largely to shared spaces and actions that affect the public realm, and is contingent upon a reasoning that the more actors involved in the process of placemaking the more likely those places are to serve the people affected by them (Schneekloth and Shibley 1995: 6, 4). Simultaneously, Schneekloth and Shibley (2000) acknowledge that place is a contested and active terrain subject to ongoing acts of maintenance, renovation, erasure and rewriting

City of Toronto Archives, Fonds 200, Series 376, File 5, Item 6

Figure 30: City Engineer's Department. Bain Avenue Paving.
(City of Toronto Archives, 189?).

Such transformation is present in the study site itself. The Riverdale courts were built on atop a marsh, and its feeding rivers put underground, beneath the streets and the houses (see figure 30). Nearly any direction you go from Bain Co-op is up. The site would have required a lot of infilling. Former resident Peter Tabuns (Bain TV, 1983) recalls a story he heard about back when the single-level cottages were being built in the 1950s and the workmen had set the footings for the houses, but one morning after a big storm they came back to find all their efforts had washed away. Luckily many great trees were planted with the housing development and in the area, which hold the soil and take-up water (Irvine et al., 2011–2016). Bain Co-op has been the site of a few tree tours and other learning events put on by LEAF, a non-profit advocate educator on Toronto's urban forest (see figure 28).

Figure 31: Fencing around Bain Co-op courtyards.

Photographs and written records, made mainly by residents of the Bain Apartments, indicate certain dynamics have played out concerning the site's outdoor greenspace in the last hundred-and-four-years (see figure 31) (Toronto Housing Company, 1913, 1915, 1935; M. Wilson, 2003; A. Wilson, 2016; Bain Handbook, 1977, 1999). Within the property there are two main kinds of greenspace, the common courtyards, and the semi-private back, front and sometimes side yards of each upper and lower unit pair or housing block. The Toronto Housing Company's original intention was for the courtyards to be for children's play and for the grounds to be maintained by the property management (Toronto Housing Company, 1913, 1915, 1935). Fences were put up and children's play banned, likely during public

ownership by the city between the late 1930s and 1950s/60s (Bain Archive, nd; Orsini and Associates, 1992). Under this public regime the courts and yards were maintained in much the same way as public or institutional greenspaces, with a clean appearance and little biodiversity (Hough, 2004; Orsini and Associates, 1992).

Finally, under Bain Co-op's ownership the greenspaces gradually transitioned to more free-flowing uses by the members, the removal of all the courtyard fences, save those that face the street, and the majority of greenspace maintenance being conducted by residents. Today in 2017, the approach to greenspace use is negotiated on a unit by unit and courtyard by courtyard basis among residents, but the overall compromise is that, for the most part, the courtyard is for shared recreational uses, and the yards are for individual gardening activities.

Alexandra Wilson (2016) notes how "blown away" she was, upon returning to Bain some ten to 15 years after she left in 1979, by how the gardens between the back rows of the buildings (particularly between Oaks and Lindens) had grown (see figure 32).

Figure 32: Views of back yards, (Toronto Housing Company, 1935; copyright Aisha llea, 1988/2008; photo by author, 2016).

Wilson (2016) finds it interesting that the changes she saw in Bain's landscape were the product of many hands and many individual visions of what people wanted for their back yards. While she notes that these changes happened many years after the co-op took over ownership, Wilson (2016) attributes this diversity of gardens and the removal of chain link fences partially to the co-operative ownership model, thinking that a) a private landlord would not go to the expense to remove fencing that was still in good condition, just for aesthetics or access, and b) renters in a private multi-unit residential development would not have enough agency or interest in modifying its outdoor spaces.

On a visit to a housing development in Estonia that had transitioned from government-owned housing to essentially a condo-strata or equity co-op ownership model, Wilson (2016) noticed that all of people's placemaking efforts were turned inward and focused solely on the interior of their apartments (A. Wilson, 2016). Wilson (2016: np) states: "whereas in Bain no doubt people have always invested psychologically, physically,

financially in their apartments, but it was not until sometime after it became a [non-profit] co-op that people began investing in its outdoor spaces."

Building quality and its impacts on resident quality of life

If a building is constructed to a relatively high quality, it is often not affordable in its initial rates for tenancy. This was an issue faced by the Rochdale Pioneers in 1865 and the Toronto Housing Company in 1913, and social housing providers today (Birchall, 1995; Toronto Housing Company, 1915; 1918). It is a dynamic that points to a quality-to-cost ratio in housing development that is fairly constant and dependent primarily on approaches to capital financing, and construction materials/methods (Hulchanski and Shapcott, 2004).

British co-partnership building societies in the Edwardian Era, and Eden Smith in Toronto, manufactured or mass produced interior finishes they used again and again in their homes in order to improve their quality-to-cost ratio (Birchall, 1995; Dendy and Kilbourn, 1986). Canadian building co-operatives and non-profit housing co-ops made use of sweat-equity to reduce costs in constructing their homes (Cole, 2008). Bain Co-op's rehabilitation project worked with a class of women builders from George Brown College in Toronto to barter education for labour (Bain Apartments Co-op Inc., 1994). This shows that there are ways to improve upon a building's quality-to-cost ratio and they are more often sought when future residents are involved in the planning processes (Sharpe, 2016; Smith, 2016).

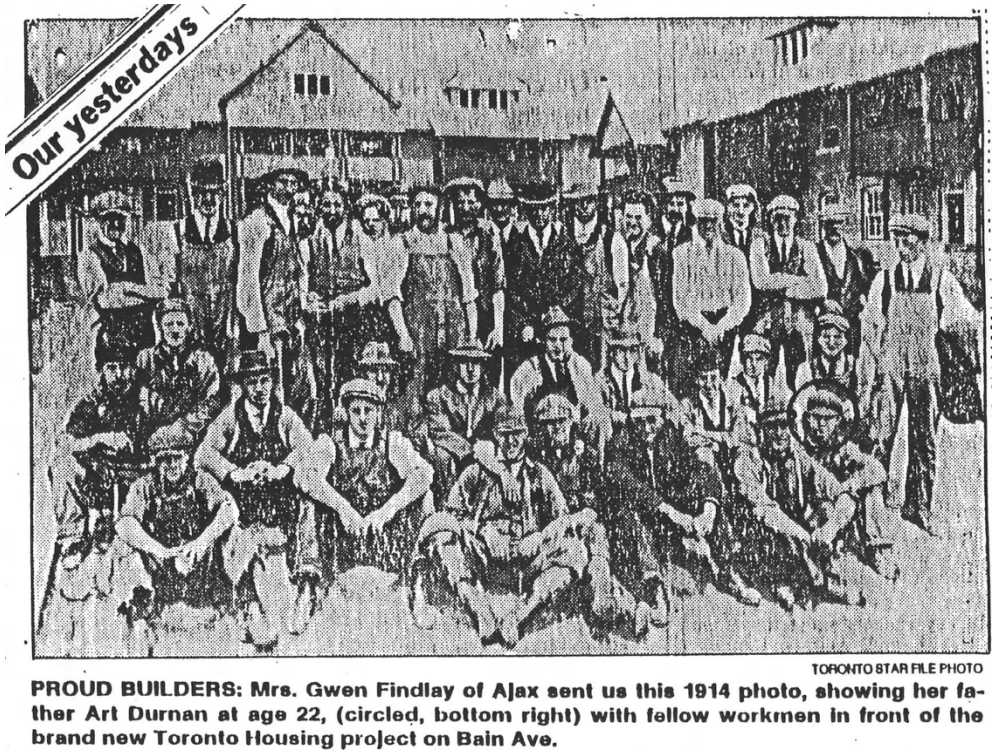
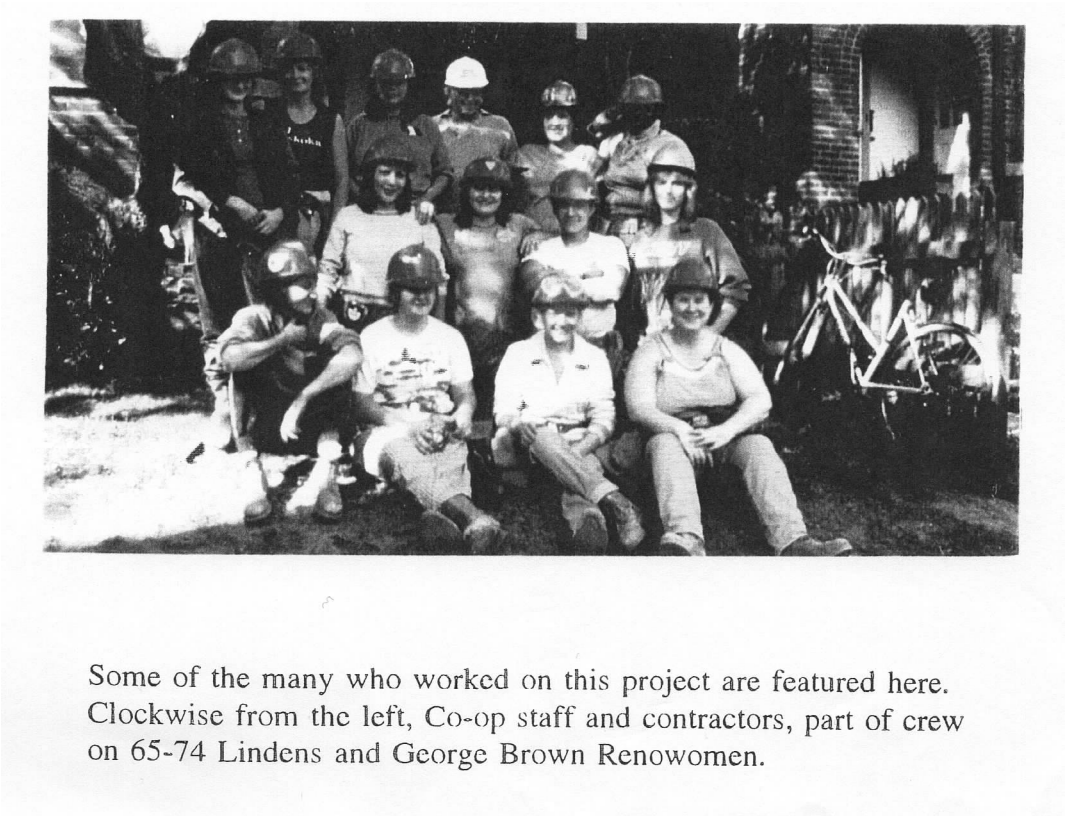


Figure 33: Riverdale Courts building crew, 1914, (Toronto Star, n.d.). **Austin (2013) supposes that a number of these men became residents once building was completed.**



Some of the many who worked on this project are featured here. Clockwise from the left, Co-op staff and contractors, part of crew on 65-74 Lindens and George Brown Renowomen.

Figure 34: Excerpt from summary report to CMHC on Bain Co-op's rehabilitation project, (Bain Apartments Co-op Inc., 1994).

Demonstrating that co-ops continue to play a role in land development, and that financing options can be designed to support housing accessibility and long-term stability, Options for Homes is a non-profit condominium developer that has created a unique model to balance the quality-to-cost ratio of its homes and involve residents in the building process. Options for Homes homebuyers form a building co-operative that oversees development of the building, and once built they dissolve the co-op and become individual owners in a condo strata development (Labbé 2016).

Approaches in the Options for Homes development model that keep costs lower for buyers, include: 1) avoiding premium sites, but ones that have neighbourhood advantages (often near the ends of transit lines in Toronto); 2) eliminating costly amenities (e.g., pools and gyms); 3) reducing marketing and sales costs (existing owners speak to prospective owners at information sessions); 4) not taking a profit, lower development fees; 5) offering a 2nd mortgage for 10-13 per cent of an Options suite purchase price, and 6) green measures such as solar hot water, heat recovery ventilation, and timed garage lighting (Options for Homes, 2016b, 2016d, 2016e; Labbé, 2016).

Options for Homes has created a laudable hybrid housing development model by drawing on both social and private housing finance and organizational mechanisms. It

reduces initial costs and market speculation by offering home buyers a down payment loan that appreciates at the same percentage as the condo increases in value, and requires no payments until the unit is sold or rented, at which time the loan is due back in full (Options for Homes, 2016d). In a 2016 lecture founder Michel Labbé asserted that an ownership housing model is more cost-effective than a rental one, and that maximizing profits inherently undermines services. An area in which Options does not demonstrate much innovation is in its building designs that appear heavy architecturally and make little to no use of passive energy or community supportive design measures.

Another way building tenancy becomes more affordable is in relation to the age of the structure. This is because a new building will still be carrying its capital costs as well as its operational costs both of which need to be offset by its tenants and thus make it more expensive. An older building has most likely paid off its capital construction costs and thus its occupancy charges to its tenants may be lower as they are based on the remaining costs for operating and maintaining the building. On top of both of these scenarios is also a landlord's desire to extract profit from their properties, which does factor in, but is generally determined by market demand and supply, or what a particular real estate market will bear.

The importance of old buildings to a city's diversity and thus popularity and economic success was argued by Jane Jacobs in *Life and Death of the Great American City* (1961), most pointedly in her chapter entitled "The need for aged buildings". "Minglings of old buildings" Jacobs writes (1961: 194), "with consequent minglings in living costs and tastes, are essential to get diversity and stability in residential populations, as well as diversity in enterprises." As Jacobs (1961) points out there is a value in old buildings that cannot be bought but only accrued over time. Buildings of different ages are required in a diverse city in order to provide a variety of price points, so that people earning various wages can house themselves via the real estate market at any given point in time.

This case study on the Bain Apartments has found that the site's buildings were constructed to a level of quality, in reaction to the poor housing conditions seen in the clapboard and unserviced dwellings of the Ward (Toronto Housing Company, 1913, 1915). This led to housing constructed of brick, with sturdy foundations, indoor plumbing, electricity, and many wooden interior and exterior details consistent with the Arts and Crafts cottage style (Toronto Housing Company, 1913, 1915). Now a hundred years later we can look back and see that while the Bain Apartments may not have been affordable to the poorest classes in Toronto at the time they were built, they were affordable to the working classes then, and have remained at a general level of affordability throughout their hundred-year existence as they changed hands from private-social housing under the Toronto Housing Company, to public-social housing under the City of Toronto, to private-rental housing under a landlord, briefly back to city ownership and finally to co-operative ownership. For as Jane Jacobs (1961: 189) observes, "time makes the high building costs of one generation the bargains of a following generation."

Interviews with residents of the Bain Apartments who moved in (notably Tabuns and Wilson and their friends moved to Bain after fleeing redevelopment in the Donvale neighbourhood the other side of the Don River) under the private landlord in the early 1970s note how cheap the rent was, but also how badly maintained the buildings were (Bain TV, 1983; Frey, 2013b). Rents went up precipitously (49 per cent in 3 years) when the City took over ownership while the co-op was getting on its feet because repairs had to be made to bring the housing back up to code (Bain Apartments Co-op Inc., 1976; Diemer, 1977). Other contributing factors were the high price paid to the private landlord for the property in relation to its state of disrepair, as well as the fact that under city ownership it was taxed at a higher commercial rather than residential rate – market and government forces at work (Bain Apartments Co-op Inc., 1976; Bain TV, 1983; Diemer, 1977).

With Bain Co-op as the development's current custodian a relative equilibrium seems to have been reached in its rates for market rental units. That is housing charges have gone up by more or less 2 per cent every year for the 5 years I have lived here. This increase is based on an annual market rent assessment (commissioned by the co-op and required by CMHC) and the Rent Increase Guideline set by the Ontario government (Ontario Ministry of Housing, 2016; Ontario Tenants Rights, 2017). The provincial guide's increases in the last five years yield an average annual increase of 1.4 per cent, but fluctuate more widely, from 0.7 to 3.1 per cent, than the co-op's increases. Cost-of-living increases are not mandatory for Ontario employers and thus wages do not go up every year by 2 per cent (Torobin, 2012). Bain Co-op members have pointed this out at the annual general meeting when the members must vote to approve the co-op's capital and operating budget, including the housing charge increase.

Bain Co-op's vision statement as published on its website states: "We recognize that our historic buildings and beautiful property are resources which must be tended wisely if they are to continue to serve our evolving needs and those of future residents" (Bain Apartments Co-operative Inc., 2007). The social capacity upholding this vision of sustained housing is comprised of what one can witness at one of the co-op's budget meetings: we go through the capital repair as well as the operational costs for our housing development. Members learn that most operational costs for items such as water, waste, and power go up by as much as 5 to 10 per cent every year (Moloney, 2013; Torobin, 2012; Ontario Ministry of Housing, 2016). We also learn about the costs for our large capital building projects such as roof or boiler replacements and we then see that all this must come out of our housing charges, and we vote to raise our rents.

Figure 35: 100 years of 100 Bain Ave., from Riverdale Courts to Bain Apts. Co-op Inc.
(Toronto Housing Company, 1935; photo by the author, 2013.)

At Bain Co-op, it is a generally accepted wisdom among members that maintaining the buildings in a general state of good repair staves off larger costs and inconveniences that come from building system failures due to poor upkeep. This is a wisdom that both private and public owners of housing have been known not to heed (City of Toronto, 2012; Dubbeldam, 2016).

> Over the past several years, Council has been made aware of the significant and growing repair needs in the City's social housing portfolio and, in particular, the backlog of needed repairs in the Toronto Community Housing (TCH) stock of social housing. In response, Council has requested on numerous occasions that the provincial government upload the full costs of social housing and that the federal and provincial governments provide ongoing, sustainable funding for social housing repairs. The costs of social housing have not been uploaded and at the present time, there is no ongoing, sustainable program for repairs. As a result, the funding challenge in Toronto's social housing continues to deepen. This report, therefore, recommends the sale of stand-alone dwellings to generate revenue to help fund repairs of the multi-unit buildings in TCH's portfolio (City of Toronto, 2012: 1).

Non-profit housing co-ops in Canada were generally of two kinds, those that bought existing properties and retrofitted them to suit their needs, and those that were purpose built from scratch for the co-op (Cole, 2008). In both cases, likely more so the latter, government imposed limitations on capital costs led to significant issues in building quality (Cole, 2008; Smith, 2016). As Smith (2016: np) comments, "because a lot of the professions (engineers, architects) looked upon [social housing] programmes as kind of cash cows, and they would assign the junior person, didn't put a lot of effort into it, their fees would be

lower because of the government, but that meant they didn't supervise it really closely. And that meant a lot of these buildings continued to have problems." Retired architect Brian Smith in his work in the design and later in the retrofitting of non-profit co-op housing in Ontario has a clear picture of how building design and construction costs affected building maintenance costs down the road, and in turn affected resident wellbeing as co-operative boards and memberships struggled to manage their buildings when their systems began to fail.

> Quite often the failure of governance led to a failure of a building system, which then led to a failure to be able to do anything about it. In other circumstances the failure of a major building element, led to failure/collapse of governance. So we'd have these groups that weren't functioning well and didn't know where to go. My job was to shepherd them through these periods, find solutions with them, work with the communities, work with some funding from the city to actually address really serious mechanical and building envelope problems, and I did that for 12 years and then I retired (Smith, 2016).

Architect Heather Dubbeldam has had her own experiences with the perils of poor quality construction as an architect working within large firms commissioned to design privately-owned condominiums, and with building system failures in condominium housing that her firm has been hired to retrofit.

> So in some cases, when a developer builds a building its very short term thinking. They build it in order to sell it to a number of people who all own a piece of it and then they're gone. They're not involved for more than a few years, generally, and then they are out of the picture. Do they really care about the quality? They want to maintain a certain reputation some of them, but I've been involved with some condo projects where I really questioned what was being built. So the condo owners are left with this building they own and the condo fees go into a pool to cover maintenance fees and everything else, the pool grows, then all of a sudden the roof fails, and they don't have enough money... I've seen this over and over again, because I get approached by condo boards to fix their buildings (Dubbeldam, 2016).

When asked "if sustainable housing can also be affordable housing?" Dubbeldam (2016: np) responds, "[a]bsolutely I think so. It's a way of approaching the design and construction of the building. It's harder to build those buildings at a low cost, because you have to invest up front in an approach to building and in systems that make it sustainable." Dubbeldam goes onto explain the key tenet of sustainable housing construction that higher capital investments at the time of construction, can offset operational costs for life of the structure, and says "the affordability piece is not just when its first built its all the costs of

operating that building" (Dubbeldam, 2016: np). In houses that Dubbeldam Architecture and Design have retrofitted using sustainability approaches energy costs have been reduced by as much as 75 per cent.

One lesson Bain Co-op seems to have learned with experience is that if you don't annually increase the housing charges to cover incremental operational cost increases, this eventually leads a large jump in housing charges to address building operational and maintenance costs. Such a jump is more likely to adversely affect tenants than is a gradual increase over time to which people can better adapt. The dynamic between housing affordability and quality is important and so is its impact on the wellbeing of residents.

4. HOUSING ADAPTED TO CLIMATE CHANGE

When recently asked by reporters of the *The Globe and Mail* (Church et al., 2015) newspaper about the most pressing issue for cities, mayors of Vancouver, Calgary, Winnipeg, Toronto and Montreal unanimously spoke of infrastructure. Transit, housing and water infrastructures are perennial priorities for cities, but even more so nowadays with the pressures of population growth, the effects of climate change, aging infrastructural systems, and limited allocations of financial resources. As Canadian cities find themselves on the threshold of major infrastructure upgrades, it seems an ideal time to be asking, how they can be done in a way that is ecologically and economically sustainable, and beneficial for communities of people? How might infrastructure planning be leveraged to mobilize action on multiple fronts, including the provision of more shared open spaces, renewal of common infrastructures, and better community health? In recent decades, significant increases in urbanization and population around the world, as well as the issues and effects of climate change, have led many municipal and regional governments to consider how to plan for urban sustainability under these new conditions.

The City of Toronto has direct experience with the extreme weather events related to climate change, and the costs they incur. In 2013 alone Toronto experienced a severe summer rain storm which caused widespread basement flooding, numerous summer heat alerts with corresponding health effects, and a winter ice storm that damaged many of the City's mature trees and with them power lines and private assets (City of Toronto, 2014). The direct costs of the 2013 summer rainstorm to the City of Toronto and Toronto and Region Conservation Authority were calculated to be a little over $70 million, while the expense to private property was reported by the Insurance Bureau of Canada to be just under $1 billion (City of Toronto, 2014). In comparison, the City of Toronto annually spends $94 million on planning and $251 million on public health (City of Toronto, 2015).

The Toronto Public Health under Dr. Hastings direction spoke out against slum dwellings at the beginning of the last century and is today speaking out about the health impacts associated with a changing climate. The department predicts more illness and mortality due to extreme heat, polluted air, and communicable disease. It also predicts greater incidence of flooding in homes and businesses, and poorer mental health outcomes for those most directly affected. Nowadays, indirect health impacts related to climate change include decreased or impaired "food security, social networks, employment opportunities, housing quality, income, and access to core services including electricity, transportation, and telecommunications" (City of Toronto, 2014, 7). This is evidence of the complex social, ecological and economic challenges that face society in an age of climate instability (Bunch, 2016; IPCC, 2014).

Innovative ideas on how to engage these complex and cross-sectoral sustainability issues bring to mind, cultural vitality, as the fourth pillar of sustainability (Zhang, 2016), and dominant paradigms as Meadows' (1997) number one place to intervene in a system. Systems thinking and ecohealth represent just such cultural innovation and paradigm shifting theories. Bunch (2016: 615) writes that "health outcomes emerge from interrelationships within coupled human and natural (social-ecological) systems" and based on this the ecohealth approach has been developed to apply to situations of complexity failed by reductive scientific approaches. Understanding that human and environmental health are interdependent, an ecohealth approach seeks to improve health by studying and managing eco-social relationships in order to produce co-benefits for both humans and the environment (Bunch, 2016).

The environment in this line of thinking can be seen as a form of infrastructure that supports human wellbeing. Infrastructure is largely considered from socio-economic perspectives. A socio-economic perspective highlights infrastructure as capital goods, the benefits of which are derived through human use and the resulting outputs (Frischmann, 2012). Thus infrastructure provides multi-purpose functionality by acting as a means to a variety of ends to which human capacity, productivity, and innovation choose to apply it (Frischmann, 2012). As Frischmann, (2012: 64) writes, "[i]nfrastructure resources enable many systems (markets and non-markets) to function and satisfy demand derived from many different types of users." Understanding that infrastructure is of value for its use purposes rather than as a consumable unit, perhaps explains why, as Frischmann (2012: 4) states, "that 'free' markets often fail to meet society's demand for infrastructure," and that conventional economic analysis of infrastructure by focusing on supply-side issues and private or individual demand fails to accurately capture societal demand for infrastructure, and the interdependent nature of economic and social systems.

Insufficient management of a common good due to outdated theories and measures, and the need for a radical rethink is also called out in Wilkensen's (2011) analysis of social-ecological resilience and its implications for planning. Social-ecological resilience, Wilkensen (2011) writes is based upon the assumption that ecological systems and socio-economic

systems are linked, that social-ecological systems are complex adaptive systems, and that building adaptive capacity for resilience is the key objective in governing linked social-ecological systems. Mossop (2006) argues that conceptualizing landscape as the base infrastructure upon which other urban systems rely, rather than as nature or ecology itself, provides a more useful framework for the design of urban systems. The creation of ecologically functional systems that integrate human activity and natural processes in an urban setting represents a shift in urban landscape design that is required to address current conditions (Mossop, 2006).

Shaping infrastructure to meet human civilization's core needs as they stand today, is a key piece in the puzzle of climate adaptation. Human needs are met by the same elements – light and air, water, shelter, food, community – that compose liveability for most people. It is how to manage them for sustained use within ever changing local contexts that presents a challenge. Infrastructure and land-use planning go hand-in-hand as how we use land depends on how we conceive to provide public services like electricity and water to each individual home and business in communities scattered across vast political landscapes. Public infrastructure meets the needs of private dwellings, and there is at an edge of exchange, where social value is created. Housing in its provision as a form of archi-cultural infrastructure, represents a key place to intervene in socio-cultural paradigms, and thus a nation's energy consumption.

The energy consumed in the operation of buildings for human use has grown enormously in the age of fossil fuels. Today buildings, including single-family homes and office towers, consume roughly 40 per cent, and represent nearly half of all energy consumption in Ontario, and globally (ECO, May 2016; Geetha and Velraj, 2012). Primarily natural gas used for water heating and thermal regulation, accounted for 37 per cent of energy consumed in Ontario in 2014 (May, 2016). This has led to a prudent focus on reducing the energy consumption in buildings, through improvements in building shell construction, much more efficient home appliances and electronics, as well as new standards for lighting and water heating (National Energy Board, 2013). In 2013, the Canadian government projected residential energy demand to increase at an average annual rate of 0.7 per cent, with home energy-use per square metre declining at an average rate of 0.6 per cent (National Energy Board, 2013). This represents a flat-lined pattern of energy consumption, but given the high social, economic and environmental costs involved in producing and consuming energy in Canada, this pattern needs to be trending downward.

A building's design has much to do with its energy efficiency (Geetha and Velraj, 2012), and building retrofits can be costly. Thus when considering sustainable housing models, it is important to build and operate with passive energy flows in mind. Bain Co-op's building design and landscape practices contribute a great deal to its passive energy supply. But first a story about Bain Co-op's heating system.

Riverdale Courts was built in 1914 with a district steam heating system operated from a central boiler room with first coal and now gas fired boilers used to heat the water to

steam, which is then piped throughout the co-op on both sides of Bain Avenue through a network of pipes into our household radiators. It is the best household heat I have ever experienced; it is a very strong heating source that warms the house up quickly and effectively. The co-op's apartments have radiators in most if not every room and residents can adjust their heat by adjusting the flow of steam into the radiators. This is one of those control measures that improves liveability. While Bain Co-op's recent review of alternative heating methods showed that switching from a steam to hydronic heating system would be more energy efficient, its relatively long return-on-investment and significant construction required in all 260 units, left this option out, in favour of new high-efficiency boilers and system upgrades. Replacing the boilers is a large project for the co-op that requires a good deal of social capacity to execute with trusted professionals within Canada's four- to five-month non-heating season. Currently co-op staff and a dedicated group of volunteers are working on this project.

For the last 22 years Bain Co-op has employed a very good stationary engineer to run our heating system. One day while writing this paper he came to check up on my apartment's radiators and I asked him about the heating system. He explained to me and showed me in his gas consumption log sheet that during his tenure here he was able to halve the total gas consumed by the heating system, while greatly increasing steam pressure in the further reaches of the system. He did this mainly through subtle and discreet system modifications, such as coating steam exchange pipes, downsizing unit radiators, and fixing leaky valves. In a culture obsessed with large-scale technological overhaul, this is an example of how the commitment and careful observation and experimentation of the co-op's stationary engineer made a huge difference in the energy efficiency of its centennial steam system. This recalls Torjman's (2007) core elements of work in resilience: knowing, doing, and reviewing.

Most of a building's energy consumption is used to provide lighting, heating and cooling (Geetha and Velraj, 2012). What Bain Co-op's building design and other forms of vernacular architecture do so well is to provide light and thermal comfort by means of construction material (e.g., thermal mass) and design methodologies (e.g., natural light and air), rather than by any additional or ongoing energy inputs (e.g., artificial lighting, air conditioning), for the operation of a building. Natural and passive cooling or heating refers to all processes and techniques for cooling and heating buildings that are achieved without energy inputs, excluding renewable energy sources such as solar and wind (Geetha and Velraj, 2012).

Geetha and Velraj (2012) discuss three categories of passive building cooling techniques: solar/heat protection, thermal moderation, and heat dissipation, the following table applies this framework to Bain Co-op's buildings.

Table 7: Passive cooling techniques at work in Bain Co-op's buildings

Solar and Heat Protection	Microclimate: landscaping, vegetation, courtyards, trees, gardens
	Solar control: interior shading by front porches, roof overhangs sufficient to provide shading for upper windows
Thermal Moderation	Thermal mass: brick, concrete, soil volumes
	Night ventilation: windows, porches, breezeways, courtyards
Heat Dissipation	Natural ventilation: courtyards, breezeways, front doors, porches, windows
	Buoyancy driven stack ventilation: stacked stairwells with doors and windows open
	Ground cooling: stone/concrete basements in ground level apartments

Solar and Heat Protection

Global data on the effects of heat stress consistently show a correlation between an increase in daily temperatures and an increase in mortality, illness, and hospitalization (Zupancic et al., 2015). As cited in a report on urban greenspace published by the David Suzuki Foundation (Zupancic et al., 2015), Toronto Emergency Medical Services (EMS) experiences a 29 per cent increase in ambulance calls due to heat related illness for every one-degree Celsius increase in maximum temperature, and a 32 per cent increase in calls for every one-degree increase in mean temperature. Evidence also shows a positive association between heat-related mortality and a population's growth and age (2015). A report on Toronto's future weather found that in a projection for the years 2040-2049, the city's number of degree days, and in turn air conditioning demand, will increase 560 per cent; the city will receive fewer rain days in summer, but more extreme ones, with an 80 per cent increase in rainfall in July, and 50 per cent increase in August (Toronto Environment Office, 2012).

Trees can reduce surface temperatures and solar heat gain in buildings thus reducing heat related fatalities along with energy demands for indoor cooling (Demezure et al., 2014, 109). Mature trees have been found to reduce surface temperatures by as much as 15 degrees Celsius (Gill et al., 2007: 128). The Suzuki Foundation report (2015) on urban green space found that all types of greenspace provided relief from heat stress, a reduction in urban heat islands, and improved air quality (Zupancic et al., 2015: 41). Factors which modify the ability of green space to cool and clean the air are primarily wind, as well as vegetation density, type, and spatial configuration, along with the height and placement of buildings (Zupancic et al., 2015: 42). Land use planners and urban designers would do well to apply these factors to their methodologies. Van den Berg et al. (2007) found that the intersection of human stressors, needs for restoration, and preference for nature have important implications for spatial planning and urban design, and that the best route to urban sustainability could lie in achieving a balance between density and green space.

During the summer, 46 per cent of Bain Co-op residents report spending eight to 31 hours per week in a green space on co-op grounds. While 54 per cent of residents spend 7 hours or less per week in these spaces.

Table 8: Hours per week spent in a green space on co-op grounds during the summer.

Hours per week	Number of respondents
0 - 3 hrs	17 (31%)
4 - 7	12 (22%)
8 - 10	9 (16%)
11 - 13	3 (5%)
14 - 16	1 (2%)
17 - 19	2 (3%)
20 - 22	4 (7%)
23 - 25	0 (0%)
26 - 28	1 (2%)
29 - 31	2 (3%)
It varies according to projects I'm involved in.	1 (2%)

Figure 36: Eating outdoors and sharing food are popular practices in the courtyards in the summer months, (photo by the author, 2016).

Figure 37: Bain Co-op apartments cooled by maple trees,
(photo by the author, August 2016).

Microclimate

I've noticed that inside Bain Co-op's housing development, there is a microclimate created largely by the vegetation as it is most noticeable in the warmer months. In the summer months, Toronto can get quite hot and has many more air quality warnings. When I step into Bain Co-op from the surrounding streets, I feel a notable drop in the ambient air temperature and a freshness to the air, such that I feel I can relax in the coolness and breath deep again. Vegetation modifies the microclimate and the energy use of buildings by lowering the air and surface temperatures and increasing the relative humidity of the air (Geetha and Velraj, 2012: 915).

One of my neighbours who has particularly good tree cover from a grove of maple trees at the back of the co-op on Sparkhall Avenue (see figure 37) told me that she has no need of an air conditioning unit in summer as she finds the tree shade keeps her unit cool enough. I have also noticed in summer that the number of air conditioning units protruding from windows in Bain Co-op is fairly minimal overall whereas I have noted other buildings in Toronto in the summer, with cooling units in virtually every apartment (see figure 38). Such buildings are usually designed with low tree cover and high sun and wind exposure. In other words, most buildings are not designed with the local climate in mind.

Figure 38: Stanley Knowles Co-op apartments cooled by A/C units, (photo by author, August 2016).

Solar Control

Brise-soleils are a popular design feature in sustainable buildings. They allow passage to the lower winter sun, while blocking much of the higher summer sun; thereby achieving the ideal solar control for energy efficiency (Geetha and Velraj, 2012). Eden Smith's design for the cottage flats at 100 Bain Avenue saw that each window and doorway had cover whether from a roof overhang or a recessed front door entry. Dendy and Killbourn (1986: 184) write, "as he [Eden Smith] did in his private houses, he designed steep shingled roofs with broad shadowed eaves that clearly symbolized the comfort of a good home." It is this shade produced by the building's design that continues to contribute to the apartments passive cooling in the summer months.

The porches also provide solar control by allowing less direct light into the interior front rooms in the summer, while also providing a sunny spot in the winter. The porches, like brise-soleils, exploit solar aspect to reflect seasonal climatic changes. Smith (2016: np) describes an Ontario farmhouse he once saw that was wrapped by screened porches, as a “house with an overcoat”.

Thermal Moderation

As *The Architectural Record* (Craick, 1914) magazine out of New York noted in its profile of "Cottage Flats in Toronto", "construction is of solid brick with cement basement" (544). It is these building materials used 100 years ago in the construction of Riverdale Courts that provide thermal mass and ground cooling, which help to regulate temperatures inside the apartments of Bain Co-operative to this day. The row house design also thermally regulates by sharing heating between units.

Thermal mass in a building is a temperature modulation technique that can be used to store cooling or heating and thus reduce demand for active methods of thermal moderation (Geetha and Velraj, 2012). Ground cooling is a heat dissipation technique based on the principle that the ground is always a few degrees cooler (or warmer depending on the seasonal climate) than the ambient air temperature (Geetha and Velraj, 2012).

BeDZed is a sustainable housing development, in Sutton, South London, UK, completed in 2002 (see figure 40), which I visited in 2015 as research development for this case study. As figure 39 shows, BeDZed's key efficiencies in its building design are that it makes use of greater wall massing on its shorter north-facing side; a windowed facade, including solar panels, across its higher south-facing side; and airflow is conducted using passive displacement ventilation, facilitated by variously coloured cowls that have become a defining feature of these buildings (Schoon, 2016).

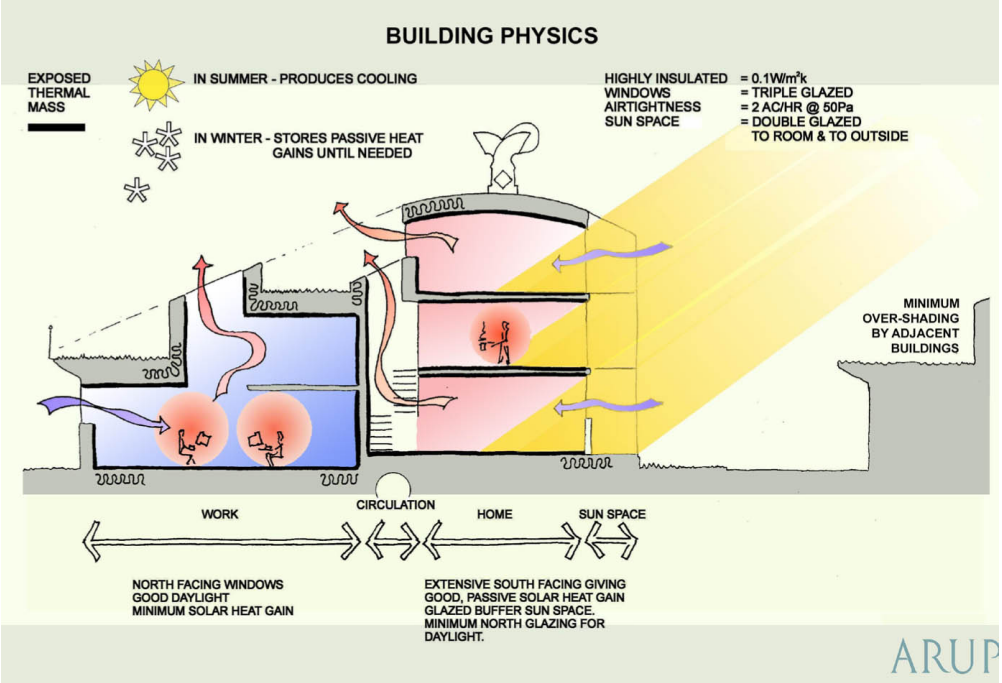


Figure 39: BedZED passive building design, (Schoon, 2016).

Figure 40: View of BedZED buildings (photo by the author, August 2015).

Heat Dissipation

I have noticed in my apartment how drafts can open and close doors sometimes. I used to wonder if maybe there was a ghost in this old place until I realised that opening windows and doors in the apartment/building envelope, seems to create pressure differentials, depending on outside conditions, that can drive strong airflows (see figure 41) (Geetha and Velraj, 2012). It is most noticeable in the first level stairwell, where if the front door to the outside opens it will pull air out and shut the door at the top of the stairs. Contrarily if the door to the upstairs is opened it can sometimes pull open the front door if it is not locked. The stairwells being closely stacked in the apartments provide displacement ventilation, otherwise known as a stack effect, because it acts like a chimney in that it relies on differences in air density to draw cool air in at low points and let warm air out at high points (Geetha and Velraj, 2012).

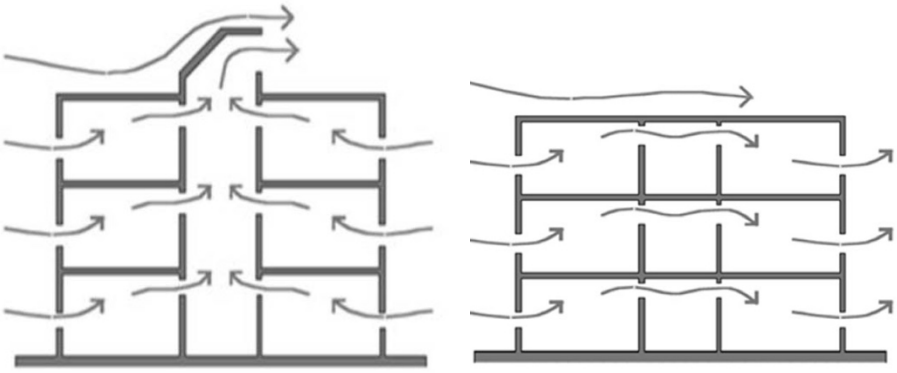


Figure 41: Passive stack and cross ventilation (Geetha and Velraj, 2012).

Bain Co-op's apartments have good cross ventilation, at least on the first and second floors that have front and rear openings in the building. In my one-bedroom plus dining room unit (see figure 42) the front porch windows, door to the back room, and back window, have enough alignment that air crosses well if all three are open at once. Architectural plans for Riverdale Courts show this aligning of building envelope openings in use in many different units and rooms. This system isn't entirely passive in that it relies on residents to have a knowledge or sense of airflow in order to open cross-windows or upstairs and downstairs doors simultaneously, and at the right times of day, to achieve the best passive ventilation effects.

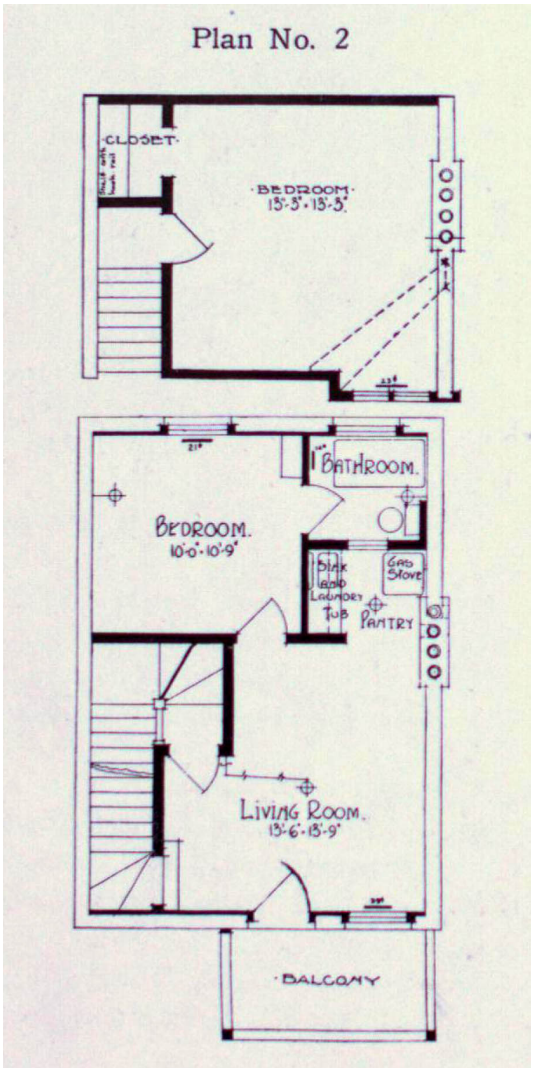


Figure 42: Original floorplan for a two bedroom apartment, which under today's regulations is a one bedroom plus dining room in Bain Co-op (Toronto Housing Company, 1918).

Ventilation is required for indoor environments to maintain both oxygen levels and air quality (Dubbeldam, 2016; Geetha and Velraj, 2012). Geetha and Velraj (2012: 926) consider natural ventilation the key passive cooling technique, and note that "the successful design of a naturally ventilated building requires a good understanding of the air flow patterns around it and the effect of neighbouring buildings," that "the objective is to

ventilate the largest part of the indoor space," and that this "depends on the window location, interior design and wind characteristics." Several studies have shown that displacement ventilation systems can provide superior air quality (especially at the breathing level), as well as thermal comfort, when compared to mechanical ventilation systems that recirculate a percentage of indoor air (Geetha and Velraj, 2012).

In adapting to climate change, addressing economic inequality and aging and outdated infrastructural systems are some of the first steps that need to be taken by human populations in Canada to become more resilient. People working in all sectors need to put their minds to achieving more output with less energy. In terms of housing many such efficiencies can be found in vernacular architecture, which had been refined by humans for thousands of years, before being recklessly replaced by post-WW2 modernism and its energy intensive building design. Buildings like humans are a part of nature and thus to be resilient must work with the energies that flow through natural environments, rather than against them, if we are to conserve energy and significantly reduce greenhouse gas emissions.

Using passive techniques to regulate thermal conditions in a building has been demonstrated as an approach at work in Bain Co-op's housing. This housing was designed by Eden Smith before the age of Modernism, and reflects that the architect and the developer, Toronto Housing Company, had some care for the working-class people they were designing for in Riverdale Courts. Smith's attention to detail is evident in his approaches to thermal regulation using mass, sun angles, as well as cross- and stack-ventilation, his provision of gardens and safe shared recreation spaces, along with the aesthetics of quality and tradition his buildings exude. All these elements in Bain Co-op's building design have served to contribute to its sustainability over time, through various energy regimes.

CONCLUSION

Housing in its provision as a form of archi-cultural infrastructure (Zhang, 2016b) represents a key place to intervene in socio-cultural paradigms (Meadows, 1997), and thus a nation's energy consumption. Human health conditions and the effects of climate change demand action in all areas related to energy. Housing over-consumption, contributing to price increases, is a direct result of rising inequality and unsustainable land development practices. As CMHC's (2016a) last and now discontinued CHS Demography report shows:

- households led by Canadians 45 to 65+ years old have doubled between 1991 and 2011, while trending downwards for those 15 – 34 and remaining static for 35 – 44 year olds;
- crowding in Ontario, where the vast majority of dwelling starts exist, doubled in the 20 years between 1991 and 2011;

- single-family homes are 55 per cent of Canada's housing stock, with semi-detached and row housing claiming a mere five and six per cent respectively;
- owner-occupied housing at 69.3 per cent far outweighs rental housing at 30.7.

These statistics reveal a status quo approach to housing stock provision in Canada that is not providing affordable homes to first-time buyers and younger renters, thus leading to household overcrowding. Household overcrowding, as discussed earlier, has serious repercussions for public health. CMHC's (2016b) housing market assessment finds strong to moderate overvaluation as the most significant cause of problematic housing conditions in nine out of Canada's 15 largest cities. This represents an imbalance in the system, and in this case one with social, environmental, and economic consequences.

Hulchanski and Shapcott (2004) note that while only one housing market exists to serve the needs of all Canadians, there are two distinct pools of housing consumers with dramatically different financial profiles. They state that the housing market is skewed towards the needs of owners, who also have twice the income of renters (Hulchanski, 2005). With housing being the single most expensive item in a household's budget, this gap in affordability represents the market failing an ever growing percentage of the Canadian population (2004, 2005).

In their economic analysis of shelter affordability in Canada, Smetanin et al. (2015: 2) argue that "market competition between the needs of some and wants of others" has made behaviours related to housing more complex, affecting housing attributes such as: structure, land, proximity to necessities, and proximity to other popular activities and locations. It is clear that those with housing wants are pushing up costs for those with housing needs, but a number of hidden increases to housing costs lie in policy and regulatory frameworks (Smetanin et al., 2015). The federal and provincial governments downloaded infrastructure and service provision to Canadian municipalities without concurrent increases in transfer payments, powers of taxation, nor financing instruments. This has led to further cost downloading onto buyers of new housing, who are paying more than their fair share of essential infrastructure costs (Smetanin et al., 2015). In Toronto, this is contributing to a dearth of housing typologies as initial development charges are similar across building sizes and types, housing developers seeking good returns on their investment will utilize economies of scale by constructing ever taller buildings on ever smaller pieces of land (Smetanin et al., 2015). So while Canadians malign foreign investors for driving up housing prices, Smetanin et al. (2015) show that a good deal of the power to act on this issue lies with upper level governments. Since abandoning social housing provision in the 1990's (Cole, 2008; Hulchanski and Shapcott, 2004), Canada and in turn the provinces have not been allocating tax payer dollars effectively to maintain essential infrastructures and have neglected their responsibility to meet the shelter needs of Canadian citizens (Smetanin et al., 2015).

Understanding power and its misuse by government to be a fundamental factor in Canada's issues with affordable housing provision, it may be useful to ponder an alternative view that enlarges a linear concept of power. For instance, as Schneekloth and Shibley (2000: 138) write: "[i]f we move into a postmodern discussion, the concept of power quickly fractures into multiple modes: power over, power to control, power with, power for, power to act, and power to share, that is, to empower. Indeed Schneekloth and Shibley (2000) remind their readers that power is not only wielded by individuals, but by groups, and associations between those groups, which can determine the distribution of material and ideological resources in society – think labour and credit unions, church groups, non-profit organizations and their relative associations. Notably these are also the groups that supported housing co-operatives in Canada before any government became involved in their production (Cole, 2008). It is along these lines of justice conferred through the redistribution of capital and power that co-operative housing and critical placemaking begin to converge.

Upper levels of government in Canada seem unable or unwilling to see housing policy as social policy. The provision of quality affordable housing for all citizens, makes more global economic sense, when accounting for its co-benefits for local and national economies, health care costs, children's school performance, and immigrant integration into society, to name a few (Carter and Polevychok, 2004). This leaves an unsustainable weight of responsibility on municipalities, associations and individual Canadians to try to meet housing needs without the economic tools to do so. While Canada's social housing program is one of the smallest among Western nations, and is thus not meeting the need for affordable housing in this country, research on co-operative housing consistently shows positive social outcomes associated with this tenure model that could easily be expanded through the same government subsidies and regulations that support the private housing market (Smetanin et al., 2015; Hulchanski and Shapcott, 2004; Cole, 2008).

> Since the mid-1970s, most new private-sector rental housing has been subsidized by a string of expensive subsidy programs. None of these programs helped create any low-rent housing. The only way to produce low-rent housing for people in serious need, and to keep the rents on those units low, is to subsidize construction and to protect this public investment by keeping the housing off the market (that is, in non-profit and non-equity co-op forms of ownership). There is nothing new in this observation (Hulchanski and Shapcott, 2004, 188).

This paper has discussed how public health requires the meeting of citizens' basic needs for shelter, clean air and water, heating and cooling, personal food production, etc. Housing is one of a series of life sustaining urban infrastructures people rely upon and yet Canada has one of the smallest social housing programmes in the Western world. Non-profit housing co-operatives are an heirloom of Canada's most progressive era for housing policy from 1964 to 1984. Co-operative ownership helps groups of people compete better in a

capitalist market system by pooling their resources, including but not limited to financial inputs.

Bain Co-op's buildings designed by Eden Smith are an example of vernacular architecture invested with a detailed consideration for the needs and wellbeing of its residents. A large part of indoor comfort for people depends on thermal factors – being too hot or too cold. The buildings and open spaces in the co-op use design to contribute to indoor thermal regulation through passive forms of energy, such as light, air, heating and cooling, by making use of energies that flow freely from the natural environment. Courtyard housing has been employed as a design feature since antiquity, and is aligned with Chinese philosophy and cosmology (Zhang, 2016a). Courtyards also seems to make housing more liveable and energy efficient depending on the proportions used. In Toronto, 30 per cent of existing housing co-ops use courtyards in their housing design (Zhang, 2016a).

Bain Co-op's built form and property design contribute in multiple ways to resident wellbeing. Liveability can be defined in tiers, from a human need for basic housing essentials to desirable housing features that contribute to quality of life. Sustainability can beget affordability in housing, through good design and a considered use of materials. Current housing policy and market signals are not adequately supporting a transition to more sustainable forms of housing in Canada.

The findings of this research paper on Bain Co-op align with other Canadian studies on housing co-operatives in revealing common themes, including: tenants desire for greater control over their living circumstances and the health and wellbeing it brings them to have it; the conflict that arises during collective governance processes; and the skills and benefits that tenants gain by taking on management roles and having to work together to achieve their common objectives (Sousa and Quarter, 2005; Wasylishyn and Johnson, 1998). Sousa and Quarter (2005) highlight how increased tenant participation in all aspects of a housing development's management can improve the general conditions of the property and the lives of its tenants. While Wasylishyn and Johnson (1998: 77) make an interesting point that "an outlook focused on community welfare" within contemporary western society that puts so much emphasis on individual growth and achievement, "requires a major philosophical shift." A philosophical shift towards greater community welfare and group work also aligns with the tenets of critical placemaking put forward by Schneekloth and Shibley (1995, 2000).

Primary data gathered from Bain Co-op residents revealed that:

- Living under a co-operative tenure model is important to people, and contributes to resident feelings of security and control;
- Instances of knowing neighbours by name is relatively high;
- Female residents feel safe in the co-op;
- Elders feel social support in the co-op, but could use more mobility supports;
- The design of the co-op's outdoor spaces leads to a good deal of socialisation between neighbours;

- Greenspace in the co-op is readily accessible, and highly valued by residents;
- The indoor spaces of the co-op are appreciated for their connection to the outdoors (porches, green views), but are also sometimes found to be small and awkward;
- Resident perception of the need for their participation in the co-op's maintenance and governance is higher than actual rates of volunteering;
- Residents speak of the co-op as a village within the city.

Researchers suggest that an increase in average global temperatures will see a rise in feelings of aggression (Demezure et al., 2014). Whereas exposure to nature has been documented as promoting pleasant moods and restoring self-control resources (Zelenski, 2014), access to nature has also been shown to correlate with lower incidents of disease, and to reduce the risk of mortality associated with income inequalities (Demezure et al., 2014; Zelenski, 2014).

Community stewardship of green space is also supported by evidence from community parks and climate programs that find participants gain in their level of social competence, feelings of self-efficacy, and sense of civic responsibility (Demezure et al., 2014). Berkes and Jolly (2001) find that climate change adaptation strategies are greatly supported by cultural values that encourage generosity, reciprocity, and communitarianism. The IPCC (2014) concurs that the success of adaptation strategies is contingent upon societal values, particularly those that favour holistic environmental and social practices, and that systems of Indigenous, local and traditional knowledge offer a wealth of adaptation resources that remain, thus far, largely underutilized.

'Think globally, act locally' as the popularized trope for positive environmental action goes, implies the potential for local agency in global phenomena, and brings to mind the matter of scale, both of which are recurring themes in discussion around policy responses to climate change (Shove, 2010; Wilbanks and Kates, 1999; Wilbanks, 2007; Berkes and Jolly, 2001). Research over the last two decades related to scale and climate change, provides important data for the purposes of policy formation. Wilbanks (2007: 285) states that, "scale matters most because it is directly related to how and where governance decisions are made that affect sustainable development." An earlier study by Wilbanks and Kates (1999: 616) pointed to "a grave mismatch between the knowledge that is needed to act locally and what is currently being done globally to generate knowledge about climate change." Berkes and Jolly (2001: 12) contend that "climate change provides a good example of a complex systems problem for which place-specific case studies and participatory methodologies are particularly apt." While Shove (2010) asserts that a focus on tackling issues of climate change through individual behaviour change, may be more efficiently managed through government-led interventions, and the creation of environments that support more sustainable ways of life.

As there is a tension between individual and group identity in society there also exists a tension between the homogenization of space by state and market forces and a

need to engage with greater complexity in an age of climate change. Sousa and Quarter (2005) find that due to the complexity that social problems pose, both government and residents have favoured the formation of single-family households at the expense of developing community systems. While Schneekloth and Shibley (2000) advise that for architecture to move beyond a culture of making that privileges expert status (conferred by states and markets), a love for, or at least a tolerance of, complexity is required. So it would seem if state and market forces are to foster more critical and just practices of housing provision, they must find a better balance between their power to transform places and their responsibility to provide them in safe and sustainable ways. Imagine what could happen if more governments and professional experts were to collaborate with citizens, such as the people discussed in this paper, who stand willing to engage with the complexity of localised issues that affect their daily lives. Community resilience, as seen in the case of Bain Co-op, rests upon the existence of social networks and collective governance processes that are fostered and enacted within shared spaces, particularly shared green spaces within residential settings that allow for individual quality of life and collective placemaking.

This research presented a fairly positive view of the research site's historical and contemporary sustainability. However, to assume that Bain Co-op is not the site of tensions among neighbors (or else) might be misleading, particularly when resources are scarce and political and economic pressures constantly loom inside and outside the site. Tensions exist in Bain Co-op as in any other community. The fragile social balance in co-ops that enhances resilience and sustainability requires both work and energy to maintain.

Figure 43: Pow wow gathering ceremony led by Indigenous residents of Bain Co-op.
(Photo by Aimee Haskell, copyright 2013).

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