Democratizing Residential Architecture

Platform Based Spatial Agency

by

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1.1 Author's Declaration

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

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

1.2 Abstract

The systems which produce residential architecture do not work to serve the needs of residents and instead have primarily become investment vehicles for capital growth. The conventional developer-driven approach is devoid of inhabitant agency especially for renters and first-time buyers. With an imbalance in power between *speculative serial investors* and *home seekers*, the hyper financialized architecture produced is at best reductively standardized and poorly constructed and at its worst socially discriminative and economically precarious which furthers societal inequity. This thesis explores how *home seekers* can reclaim spatial agency through collective action by using digital platforms to develop homes themselves.

Siting the application of this proposal in Toronto's *Yellow Belt,* this thesis empowers the community to transform this large and underused area into a more equitable, democratic, and resilient neighborhood. Other high-agency housing procurement processes found globally, such as the *Baugruppen* (German) and *Nightingale* (Australian) models, are adapted for the context of Toronto and are modified to serve as a direct alternative to the speculative condo typology. By being actively involved in the design process, home seekers are empowered to leverage mechanisms normally controlled by developers. This co-zoning, co-development, and co-design process is assisted by communication and interaction strategies in the platform's UI (User Interface), acting as a mediator for communication between stakeholders. The proposed platform is developed through analysis of previous participatory design methods pioneered by Yona Friedman, Nicolas Negroponte, and Cedric Price.

The targeting of *Yellow Belt* properties for both policy and future development, when combined with digital platforms to ease communication between stakeholders, produces a participatory design method that can be mobilized to deliver residential architecture that accommodates a gradient of spatial needs. The goal in giving design agency back to the larger public is to reintroduce the functional specificity found in vernacular dwellings so that new development prioritizes the needs of future inhabitants instead of capital, while also increasing the effectiveness of the densification process in urban contexts. The resultant architecture is one of greater spatial agency, increased financial accessibility, and higher quality spaces for inhabitants. Navigating participation theory, multi-actor communication mediation, policy making, development practices, and digital platform design, this thesis proposes a step towards a viable future where urbanity becomes a project for all.

1.3 Acknowledgments

Over the course of this thesis, I had the incredible opportunity to engage with an incredible graduate community.

Thank you, Jonathan Enns for your continual support and perspective. As my supervisor, your drive to foster a graduate community, interest in methodology, and focus throughout the thesis process has brought a richness to the research. Your mobile data powered video calls from north of the 60th parallel will not be forgotten.

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To Maya Przybylski, thank you for joining the thesis committee as the internal reader. Your research on SED materials and stakeholder analysis has played a significant role when I was first considering the themes of this thesis.

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To Levi, Wayne, CJ, and Alice, between the online conversations, cooking sessions, and F_RMlab projects there have been countless conversations that will remain in my memory. Our discussions about the future of the architectural industry and housing crisis played a significant role in shaping the direction of this thesis. To Winston, thank you for the intense brain storming sessions and casual discussions that has inspired me throughout this thesis.

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To my family, thank you Yan, Jiehe, and Franklin for listening to my frustrations with hyper financialized housing. Your support throughout my journey has been more than what I could ask for.

I look forward to starting a building group with all of you!

The University of Waterloo and the City of Cambridge, my home for the past six years, is situated on the Haldimand Tract, land that was promised to the Haudenosaunee of the Six Nations of the Grand River, and is within the territory of the Neutral, Anishinaabe, and Haudenosaunee peoples.

I also acknowledge the City of Toronto, which my thesis is sited on, is the traditional territory of the Mississaugas of the Credit, Anishinaabe, Chippewa, Haudenosaunee, and Wendat peoples.

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1.6 Structure

This thesis is structured around seven chapters comprised of numerous sections. Each section within the chapters begins with exploratory questions in italics and consists of an introduction in bold, content in condensed, and conclusion in bold. The closing statement of each chapter is in bold and framed by a card-like graphic element. The italicized key words are defined in the glossary at the end of the document.

The first chapter introduces the origins and problems of the financialized housing procurement system. The second chapter establishes the importance of inhabitant agency and the evaluation framework for housing development models.

The next two chapters, Bottom-up Platforms for Design Communication and Development for Affordability, form the literature and precedence review. Bottom-up Platforms for Design Communication explores the methods employed by previous architects for design democratization. Development for Affordability investigates two examples of housing development methods that deliver affordable and high-agency spaces for inhabitants. The chapter High-Agency Housing in Toronto locates the proposed sites and investigates how the high-agency housing methods can be applied in the social, economic, and political context of Toronto. The final two chapters Space:is a Collective Story and Visioning proposes a new design communication platform and experiments with a new housing typology to together deliver an alternative housing procurement system.

1.7 Preface

As someone who grew-up in Toronto, or specifically Don Mills, I always operated with the notion that staying in my hometown was a possible option. However, as the 2010s wore on to become the 2020s, housing affordability eroded to the point where even a 30% crash in real estate prices would not help most home seekers. Meanwhile, as I researched housing during my thesis process, an online algorithm continuously worked in the background to serve me a discouragingly endless supply of real estate ads, pushing some form of seemingly identical version of the latest 'luxury-boutique condo starting from the low-500s!'

Observing the complete disconnect between the values of the advertised spaces and those around me who were looking for a home, I started to wonder what the potential causes were for this gap and options to address it. Though initially intrigued and optimistic about the capacity of the architecture profession to provide 'design solutions' to this problem, I realized that the impact of a new building type is limited. Switching gears to explore the potential of a digital communication platform, I again realized that alternative development methods, or even a zoning policy alone could not create the impact needed to change things.

The work I have done in this thesis is my attempt at establishing agency and proposing changes that push against the structures that propel the financialization of living. I believe that taking one of these methods alone would make no noticeable dent, but together there is a real chance for change to happen.

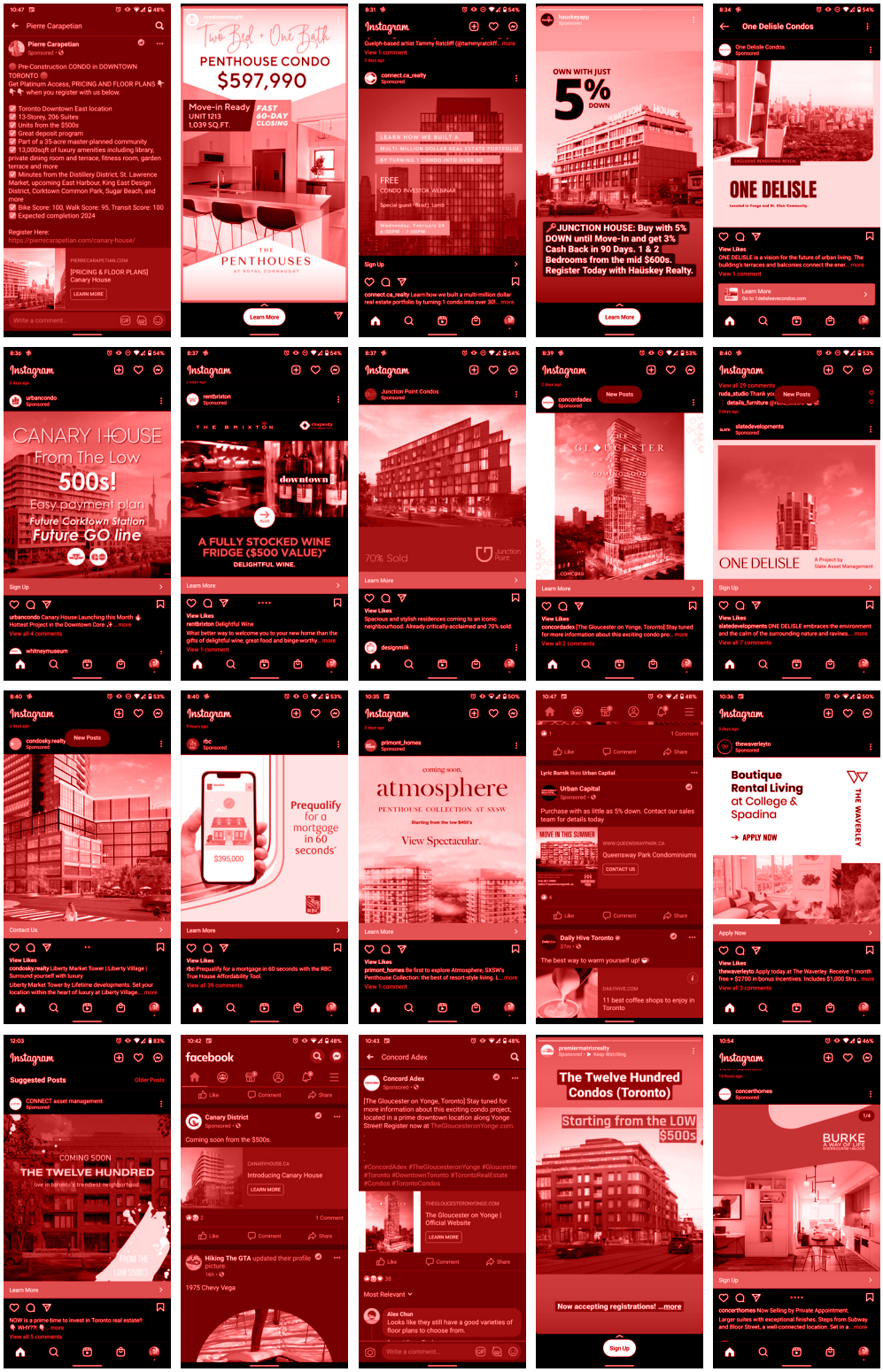

Fig. 1.1 | Collage of condo ads from Instagram and Facebook

2.0 Low Agency Architect[ure]

[Giant] boxes on the hillside
[Giant] boxes made of ticky tacky
[Giant] boxes on the hillside
[Giant] boxes all the same

Little boxes [up in] the [sky]
Little boxes made of ticky tacky
Little boxes [up in] the [sky]
Little boxes all the same

Fig. 2.2 | Modified Lyrics of Little Boxes, by Malvina Reynolds in 1962.

Originally a political satire about the development of suburbia and conformist middle-class attitudes in post-war America. The lyrics *little boxes and up in the hillside* is replaced by [giant] and [up in the sky] to represent the rapid mansionization of 60s tract housing and construction of high-rise condos indicative of the hyper-financialization of housing. The disappearance of modest suburbia also signifies the disappearance of the middle-class and impact of the K-shaped economic recovery following multiple major economic crises.

2.1 The Fictitious Average User

What is the communication problem in the design process? Who is the fictious future user?

Traditional architectural design processes rely on the manual processes of data collection, standards development, and professional assumption. This data collection bottlenecks during the design process when architects must reduce complexities manually in order to consume, comprehend and respond to conditions for designing. This results in an unsatisfactory set of standards, represented as the *fictitious average user*, are adopted in the industry. Historically, vernacular architecture was free from typological generalization since the hierarchy between designer, builder, and end-user did not exist as it does today. Inhabitants filled all these roles, practicing one-to-one translations between the need for a building, conceptualizing it, and building it. Typifying the vernacular method is the traditional barn raising process, where a community gathered to construct a barn, a type of building that would evolve as part of this process to accommodate local needs and intuitions. This traditional approach to space making was replaced by an economy of specialization as industrial forces outpaced the efficacy of local economies. The designer, the builder, and the end-user were no longer the same person. Thus, financial profitability in standardizing the design process became a main driver in contemporary development for residential typologies. As a result, a paternalistic and top-down approach to design cemented the *Real Estate-industrial complex* as the authority of how we ought to live.

The idea of *existenzminimum* or dwelling for the minimum level of existence, took hold of the modernists during the II CIAM Frankfurt conference of 1929.[1] Initially conceived as a method to increase architecture's capacity to provide for the masses, it soon became a method of justification for capitalist forces to standardize, generalize, and profit through the simple act of living. The problems that plague this development model, which reduces everything to the standardization of needs, was highlighted by Yona Friedman in his 1975 book *Towards a Scientific Architecture*.[2] When a client can hire an architect to design a custom home, the communication relationship in the

1 Marson Korbi and Andrea Migotto, "Between Rationalization and Political Project: The Existenzminimum from Klein and Teige to Today," Urban Planning 4, no. 3 (September 30, 2019): 299, https://doi.org/10.17645/up.v4i3.2157.

2 Yona Friedman 1923-, *Toward a Scientific Architecture* (Cambridge, Mass.; Cambridge, Mass. : MIT Press, 1975), 4-6.

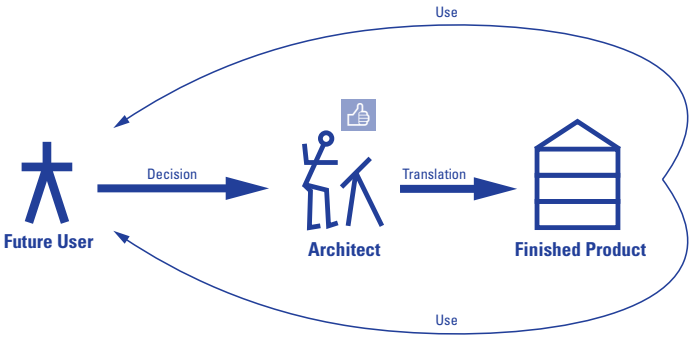

Fig. 2.1 | Direct Information Circuit

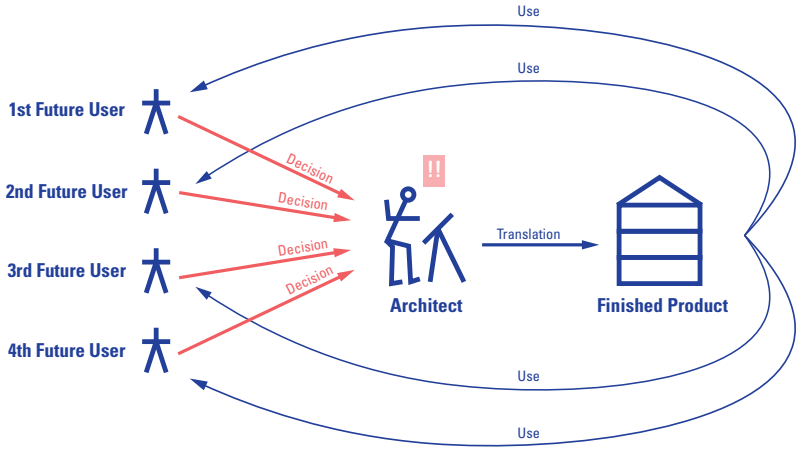

Fig. 2.2 | Jammed Information Circuit

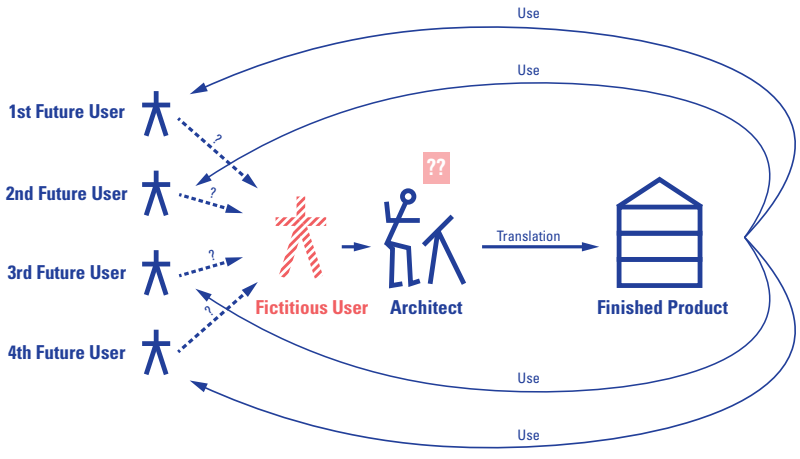

Fig. 2.3 | Broken Information Circuit

Legend

Source of Low-Agency

Direct

Indirect

design process is direct as shown in fig. 2.1. This large bandwidth results in spaces that are highly customized and specific to the needs of the end-user. These projects, however, are always reserved for those with large amounts of capital, essentially those who can afford the luxury of customization. If we were to scale-up this direct relationship between inhabit and designer to a multi-user project, a communication bottleneck would occur since the number of users influencing the project increases dramatically. Describing the traditional design process as a 'jammed information circuit' (fig. 2.2) between users and architects, Friedman established that the crux of contemporary architectural problems lay in the use of a *fictitious average user* (fig. 2.3).[3] In a for-profit development this *fictitious user* is defined by developers whose goals are to extract value from the market. Without comprehensive communication with the future users of a space, architecture becomes an industry commanded by those who define who the *fictitious average user* is and what their needs are. The invisible hand, no longer guided by fair market practices but rather actors of hyper-financialization, dictates who the ideal future user is becomes the gatekeepers and profiters of the housing production system. Stephen Brown's diagrams from his book *Communication in the Design Process* further clarifies this by revealing end-users, in most cases, are not involved with a building until its occupation, long after the designer, contractor, and most importantly the developer have left the table (fig. 2.4).[4]

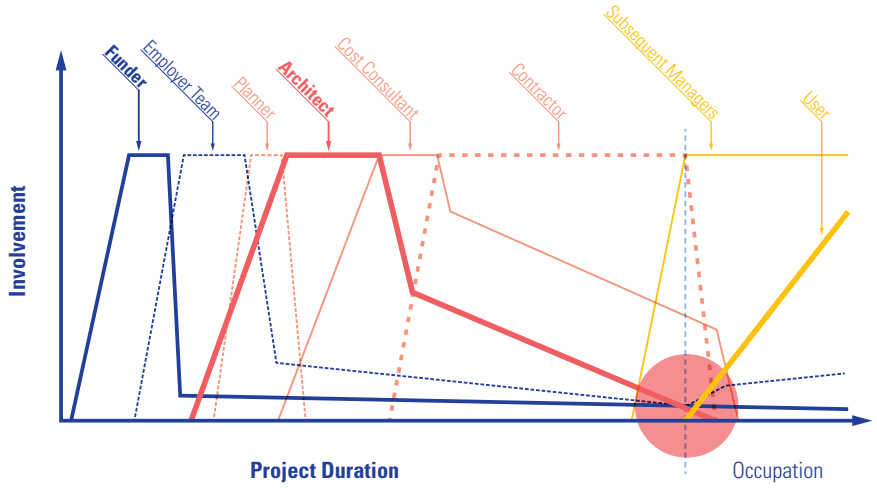

Fig. 2.4 | Project Stakeholders Timeline

Legend

- Financier
- AEC Teams
- Inhabitant
- Source of Low-Agency

3 Friedman, 4-6.

4 Stephen A. Brown 1953-, *Communication in the Design Process* (London ; New York: Spon Press, 2001),138.

The existing system not only isolates the future inhabitant as a passive consumer of space, but also relegates the architects to practices centred on space making for development. An early skill taught in architecture school is the necessity for architects to generate contextual research, learn to relate to and empathize with future inhabitants, and as a result come to understand the potential needs of the end-users of their imaginative studio projects. However, the existing profit-driven model of housing procurement forces architects to design the spatial minimum investors are willing to buy. John F.C Turner, an influential British architect who exhaustively researched informal architecture, poignantly declares that:

> *"The reason it is so difficult to earn a living as a would-be grass-roots architect is that the only employers (or 'clients' as they are euphemistically called) are large organizations and a very small and rapidly diminishing number of wealthy individuals. And it is the former who cut off the specialist from the people he or she wishes to serve, while the latter are irrelevant except, perhaps, for providing opportunities to experiment."*[5]

In a 2014 New York Times article, Steven Bingler and Martin C. Pedersen expressed that the architects have become disconnected with the end-users, while "attempting to sell the public buildings and neighborhoods they don't particularly want, in a language they don't understand."[6] All the while the morphology of much of the built environment has been ceded to for-profit developers building spaces for investors. This distinct lack of communication between architects and end-users has become the crux of the issue.

5 John F. C Turner, *Housing by People: Towards Autonomy in Building Environments* (New York: Pantheon Books, 1977), 25.

6 Steven Bingler and Martin C. Pedersen, "Opinion | How to Rebuild Architecture," *The New York Times*, December 15, 2014, sec. Opinion, https://www.nytimes.com/2014/12/16/opinion/how-to-rebuild-architecture.html.

2.2 The Real Estate-Industrial Complex

Who controls the fictious future user? Why don't home seekers have agency?

In the current investor-centric state of the housing delivery system, both the architect and future inhabitant lack spatial agency. Moreover, policy makers are co-opted into the process of real-estate financialization as the revenue generated from property tax and municipal land transfer tax, which forms a combine 37.3% of city income in Toronto, directly co-relates to the assessed value of real-estate. Policy makers are therefore incentivized to drive out whatever that is known to decrease property values: types of buildings, businesses, land uses or even people.

Within the contemporary context of the condo design process, Friedman's communication diagram is modified in (fig. 2.5) to include the diversity of home buyers present. Friedman assumes in his model that all future users are inhabitants of those spaces, whereas in the financialized housing market additional actors are present. Two major players, outside of owner-occupiers, are the *Speculative Serial Investor* and the *Mom & Pop Investor*. The *Speculative Serial Investor* can be characterized as either an individual or private equity fund that transforms the buying, selling, flipping, and renting of a vast portfolio of condos into a lucrative business model. This type of investor will often have so many properties that they must hire property managers to operate turn-key units for short-term rentals. The *Speculative Serial Investor* habitually does not hold property for extended periods of time, since building maintenance fees often creep-up with older condos. This style of investment significantly contributes to the number of unoccupied homes in the City of Toronto, which crept up to 99,236 homes as revealed in the 2016 Census.[7] To contextualize that figure, in the same year the number of households on the waitlist for social housing was 91,994 according to the Canadian Center for Economic Analysis.[8]

7 Statistics Canada Government of Canada, "Population and Dwelling Count Highlight Tables, 2016 Census," February 8, 2017, https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/hlt-fst/pd-pl/Table.cfm?Lang=Eng&T=208&SR=1&S=6&O=D&RPP=25&PR=0&CMA=0&CSD=0. This figure is the difference between number of census surveys sent out and those returned. The estimate represents homes that are not occupied as primary residences.

8 Paul Smetanin et al., "Toronto Housing Market Analysis" (Canadian Urban Institute, Canadian Center for Economic Analysis, January 2019), 39.

Representative of this type of investor is the controversial real estate agent, turned HGTV show host, turned developer, Brad J. Lamb. In an investment and condo-presale webinar Lamb proudly declared:

> *"In the Bauhaus project I am buying 12 units. And the last project we (Lamb Development Corp.) completed, I bought 26 units. In our project in Ottawa, I bought 60 units. My numbers are in the hundreds and hundreds and I can tell you that the amount of money that I've made buying condominiums from myself (Lamb Development Corp.) or from some other developer… I have made over 100 million dollars buying condominiums and selling on my own account… It is an obscene amount of money."* [9]

In that same presentation Ryan Coyle, a real estate agent and convicted cocaine and gun trafficker[10] with a comparatively more modest portfolio of 35 units, revealed that:

> *"I've structured [my portfolio] through corporate entities that have allowed me to buy more than I should, and you know, where there's a will – there's a way"* [11]

The second principal investor type, the *Mom & Pop Investor,* often only holds around two investment units and usually views the properties as a supplement to their retirement income. In this instance, these additional properties are typically rented out to strangers and the *Mom & Pop Investor* becomes a small-scale landlord where property management and maintenance are handled by themselves. However, there are also instances where the *Mom & Pop Investor* buys into the market to secure housing for their children, often when the children are pursuing post-secondary education or if the children are first-time buyers and need to give their income a boost to qualify for a mortgage. This latter example works to exacerbate the

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9 Ryan Coyle, *Bauhaus Condo Investor Webinar* (Toronto: CONNECT Asset Management, 2021), https://www.youtube.com/channel/UCblpp0AhYsyBnYS8cac3rIA.

10 Peter Small, "Four Men Get 6 to 8 Years for Drug Ring," *Toronto Star*, January 7, 2010, https://www.thestar.com/news/gta/2010/01/07/four_men_get_6_to_8_years_for_drug_ring.html.

11 Coyle, *Bauhaus Condo Investor Webinar*.

housing supply problem and directly contributes to intergenerational inequality, as parental support becomes a pre-requisite to homeownership for anyone in the market. Moreover, the rental housing produced by this type of investment is considered the least secure, as the excuse of reverting the unit to 'owner-use' is a permittable reason for eviction.

Back in 2015 Andy Yan, the director of the City Program at Simon Fraser University in Burnaby, coined the term *hedge city* in a report he authored researching the level of foreign investment in the Vancouver Metropolitan Area. He describes the *hedge city* as an economic phenomenon, where perceptions of stable social, political, and environmental qualities in a city then attract the world's ultra-rich, crime syndicates, and multinational investment firms to park their cash by buying up vast amounts of property.[12] In British Columbia and Ontario there has been a push for and implementation of various forms of non-resident speculation and vacancy tax policies in 2016 and 2020, respectively. The resultant policies have contributed to a minor softening of the housing markets in 2018 and 2019, however, the unintended consequence is that these taxation policies, along with historically unparalleled cheap debt during the pandemic, has further emboldened local *Speculative Serial Investors* to fill the void. Steven Poloz, the Governor of the Bank of Canada at the start of the pandemic, expressed that the housing bubble is a necessary manufactured step to stimulate the economy. In a Bloomberg Markets interview in March 2021, he reaffirmed that "we cut interest rates in order to boost the economy. Well, if we're not going to have a hot housing market, we won't have any reaction at all to [low rates], and so that's all part of the side-effect of the job you're there to do."[13] However, what he did not mention is that the unprecedented fiscal policy was only meant to secure the positions of existing landowners, line the pockets of those who's incomes can clear the mortgage stress test, and encourage those who are looking to trade-up their home to do so, while anyone who works for wages can suffer a lifetime of unaffordability. As a result, tax policies meant to curb speculation and increase affordability provide nothing more than the perception of government action on housing affordability when mechanisms of financialization rapidly raise the bar of entry to housing. In a 2019 Guardian article that found nearly 40% of Toronto Condos are not owner-occupied, Yan asserted that housing prices are now completely detached from income and are instead propped up by access to capital – granting investors a significant advantage over the average Canadian. "It's not about supply or demand any more," said Yan. "It's who are we building for?"[14]

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12 Terry Glavin, "Andy Yan, the Analyst Who Exposed Vancouver's Real Estate Disaster," *Macleans*, February 14, 2018, https://www.macleans.ca/economy/realestateeconomy/andy-yan-the-analyst-who-exposed-vancouvers-real-estate-disaster/.

13 *Canada's Hot Housing Market a Trade-off to Stave off a "Bad Recession": Poloz* (Bloomberg BNN, 2021), https://www.bnnbloomberg.ca/canada-s-hot-housing-market-a-trade-off-to-stave-off-a-bad-recession-poloz-1.1579136.

14 Tracey Lindeman, "Nearly 40% of Toronto Condos Not Owner-Occupied, New Figures Reveal," The Guardian,

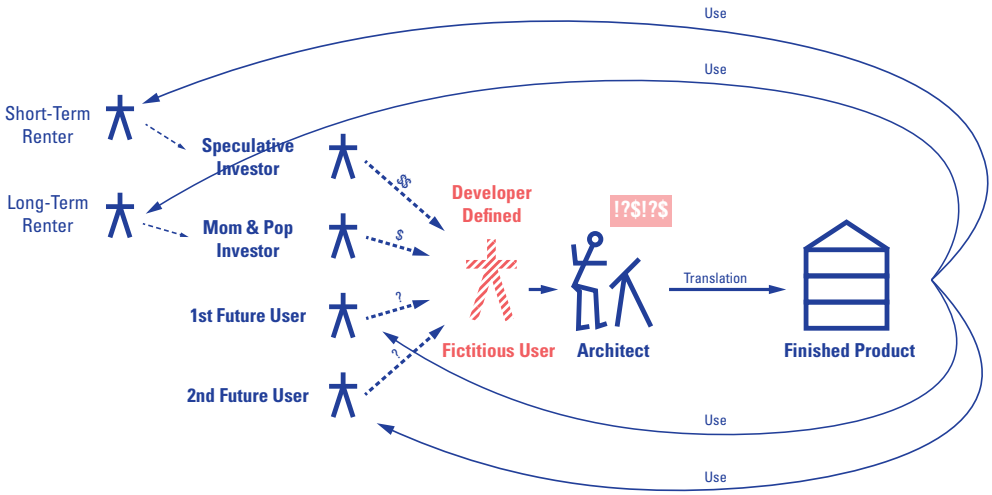

Fig. 2.5 | Broken and Inefficient Information Circuit

The adjustment of Yona Friedman's Broken Information Circuit diagram to include investors as primary future 'users' of the project results in the Broken and inefficient Information Circuit.

Legend

Source of Low-Agency

Direct

Indirect

The consequences of this detrimental investor-forward approach to zoning, designing, and developing housing is ultimately shouldered by those who need to live in those spaces, who encounter either unaffordable rent or mortgages. In a report published in 2021 by the Urban Reform Institute and Frontier Centre for Public Policy, housing in Toronto has descended into severe unaffordability. The report calculated that housing affordability had deteriorated by 1.3 times the median household income in 2020, which is the equal to 1 year and 4 months of pre-tax income. This effectively launches Toronto into being the 5th most unaffordable city in the report, far more unaffordable when compared to San Francisco, London, Los Angeles, and New York.[15]

When short-term investment capital becomes the target market for developers it is inevitable that the spaces produced will not respond to the needs of the inhabitants. Instead, these spaces prioritize capital growth rather than a desirable quality of life. In a 2018 Sotheby's pioneering study involving 1,743 families across multiple metropolitan areas in Canada found that:

> *"…only 5% of modern family homeowners reported that they would prefer buying a condominium if budget were not a consideration… In Canada's major metropolitan centres, desire for higher density living is clearly being driven by homebuyers outside the modern family demographic, while purchases by families are motivated by necessity over personal preference.*[16]

On February 17th, 2021, Sal Guatieri, Senior Economist and Director at BMO Capital Markets, authored an AM Charts Report titled *Your House Makes More Than You Do*. He revealed that in Canada, and particularly Ontario, median real estate prices significantly outgrew the annual median household income. He did not, however, use the GTA as an example to focus on. Instead, he reported on Woodstock, a city nearly 150 kms outside of Toronto with a population just over 40,000. His report drew lots of attention from local media but was ultimately deleted from BMO's servers. Fortunately, Scott Barlow, a Globe and Mail market strategist, tweeted a

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July 7, 2019, http://www.theguardian.com/world/2019/jul/07/toronto-housing-owner-occupied-canada-affordability.

15 Wendell Cox, "Demographia International Housing Affordability - 2021 Edition" (Houston, TX, USA: Urban Reform Institute, February 2021), 8–15.

16 Sotheby's International Realty Canada and Mustel Group Market Research, "2018 Modern Family Home Ownership Trends Report," November 1, 2018, https://sothebysrealty.ca/insightblog/2018/11/01/2018-modern-family-home-ownership-trends-report/.

screenshot just before the removal. Included below is a transcription of the original report:

"Normally asset prices start to raise red flags when they consistently outrun growth in underlying income or earning. But across much of Canada, and notably Ontario, house prices are not only rising faster than family income, they are rising more than total annual income. Take Woodstock for example, where benchmark prices are up a cool $118,200 in the past year to January (or 31.7%), while the median family earned $ 86,970 (in 2018). Draw your own conclusions."[17]

This phenomenon indicates the consequences of how low-agency housing systems will produce undesirable options for homebuyers. When the condo market needs to play catchup to make up for the lack of density in the remainder of the city, severe housing unaffordability forces many to relocate out of Toronto and into the exurbs of southern Ontario. Ultimately, this migration of people into the exurbs is the exporting of the housing crisis in Toronto out to the greater region. The result is a domino effect of unaffordability as demand begins to outweigh supply, impacting the livelihood of those who make local wages in those cities. When we have a housing market that primarily targets the fiscal needs of investors, the purpose of real-estate becomes a vehicle for wealth to accumulate. While the actual inhabitants of those spaces are the ones experiencing the by-product of this process.

Thomas Piketty reveals in the exhaustive research of *Capital in the Twenty-First Century* that the politics of capitalism ultimately defaults to a state where return on assets increase far faster than income growth.[18] In other words, a life of labour will be incapable of matching the profits of an acquired fortune. This results in inherited wealth being the fundamental factor of class distinction in the late-stage capitalist system, reducing the chances of social mobility to a moonshot. In a Zoocasa report in 2019 it was found that a Toronto household making the median pre-tax income of $78,373 would need 32 years to save enough money to make up the difference between the maximum mortgage they could afford and the median house price within the city.[19] The projected 32 years does not account for this continuously widening gap between income verses real estate growth, which means the actual time could be far beyond the prediction.

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17 Sal Guatieri, "Your House Makes More Than You Do" (BMO Economics AM Charts, February 2021).

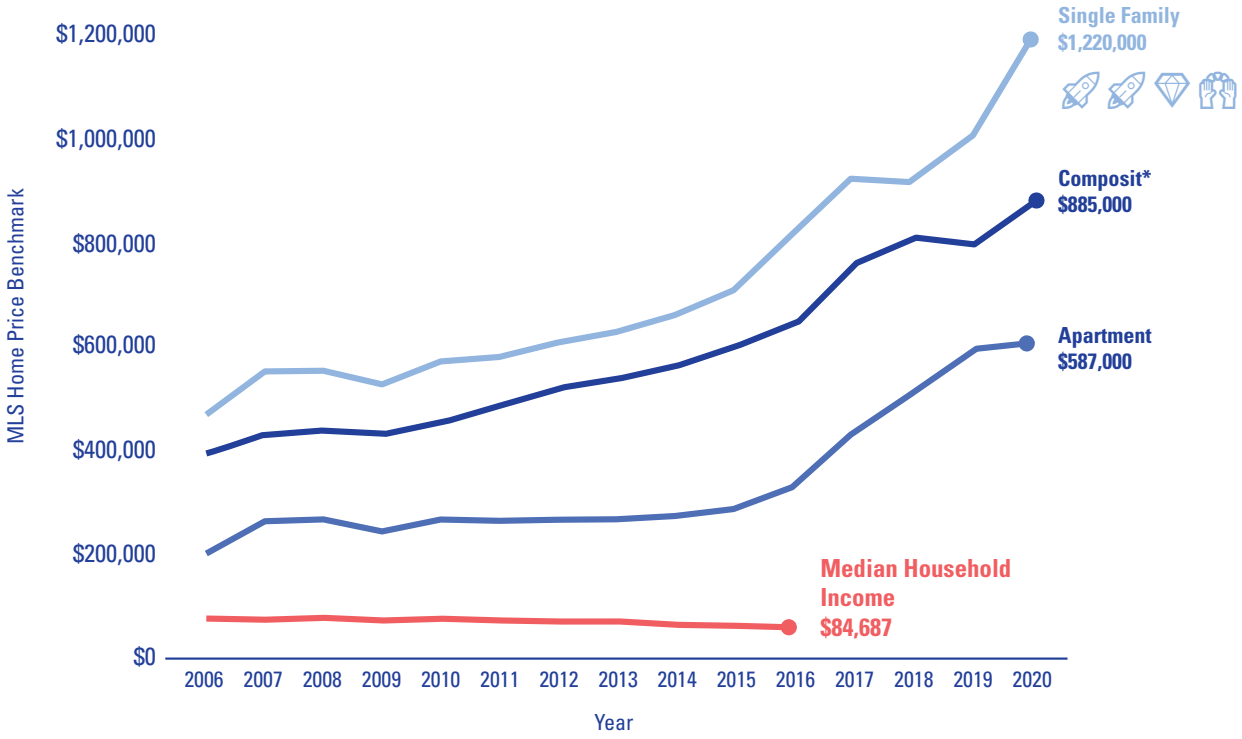
18 Thomas Piketty, *Capital in the Twenty-First Century*, trans. Arthur Goldhammer, Reprint edition (Cambridge, Massachusetts; London: Belknap Press of Harvard University Press, 2017), 20–22.

19 Graham Penelope, "Can a Median-Income Household Afford a Home in Canada?," *Zoocasa* (blog), September 26, 2019, https://www.zoocasa.com/blog/canada-down-payment-required/.2,28]]},"issued":{" date-parts":[["2019",9,26]]}}},"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}

When the most optimistic timeline to save for a modest dwelling in Toronto (32 years with an additional 30-year mortgage amortization period) equates to nearly 2.5 life sentences – we firmly find ourselves in a housing structure, political environment, and economic system that is rigged against those who work to pay for a place to live. Co-opted by the *Real Estate-Industrial Complex,* architects have simply become a tool for speculative developers to wield, and home seekers are the hungry masses begging to sign a 30-year death pledge (mort-gage) to have a mere 500 square feet of space which is 'theirs'. When home seekers are dropping at minimum 62 years of savings into their homes to make one of the largest purchases in their lives, it is perplexing that a greater degree of agency is not present.

An aphorism often used to justify free-market policies is "a rising tide lifts all boats". This is distinctly not true in housing, particularly when housing is considered a financialized commodity, as it currently is. This sentiment can be countered with the idea that some boats are larger than others – and many do not even have a boat. In a low-agency world where architects and end-users have little to no means to communicate, housing is a tool of financialization.

Welcome to the real estate nation.



Source: MLS Home Price Index, 2006-2020; Canada Mortage and Housing Corporation, Statistics Canada, Candian Income Survey 2012-2015, Survey of Labour and Income Dynamics 2006-2011

Figures in 2020 constant dollars. Household income is for the Toronto Census Metropolitan Area. No census data for the years 2017-2020.

Fig. 2.6 | MLS Home Price Index 2006-2020 vs Toronto Median Household Income Adjusted for Inflation

3.0 Systems for Spatial Agency

ago = to make

Proto-Italic

agere = to act

Latin

agentia = doing

Medieval Latin

Fig. 3.1 | Etymological Origins of Agency

3.1 Systems of Agency

What is agency? What frameworks exist to evaluate and understand agency?

To understand how agency can increase in the space of residential design, the idea of agency must first be unpacked. In the field of architecture discussions surrounding agency have been explored but only in limited ways. By borrowing theories from psychology, sociology, and political policy as frameworks, we as architects can learn to better understand and evaluate spatial agency in the built environment, particularly as it affects residential design. To break free from the profit-driven systems architects frequently find themselves in, we must rethink the role and priorities of existing architectural delivery systems. The goal is to explore and create a better path where home seekers can exercise their existing financial power to achieve the highest potential agency.

Albert Bandura, a seminal researcher on human psychology, expressed that agency is fundamentally based on the ability for one to intentionally influence their functioning and life circumstance. Comprised of four elements, human agency relies on the ability to exercise intentionality, forethought, self-reactiveness, self-reflectiveness.[1] These abilities are dependent on the efficacy of communication between people. In 2011, Nishat Awan, Tatjana Schneider, and Jeremy Till produced a physical and digital catalogue that contained examples of high-agency architecture. They prefaced this catalog, *Spatial Agency: Other Ways of Doing Architecture*, by unpacking the agency/structure duality. Expanding on the work of Anthony Giddens, a prominent contemporary sociologist, who explores this duality in his seminal research – Awan, Schneider, and Till apply this duality in an architectural context. In the preface they state that "agency [can be] described as the ability of the individual to act independently of the constraining structures of society; structure is seen as the way that society is organized."[2] Despite being identifiably separate, both agency and structure are logically bound in action. Giddens further emphasizes that "agency is 'all there is' in human history. Agency is history, where 'history' is the temporal continuity of human activities."[3] In other words to be human is to exercise agency within our shared contextual structure, perhaps as a reaction to it, but also to build a new shared contextual structure that better responds to the needs of the present. Bandura arrives at a similar conclusion where he expressed that

1 Albert Bandura, "Toward a Psychology of Human Agency," *Perspectives on Psychological Science* 1, no. 2 (June 2006): 164.

2 Nishat Awan, Tatjana Schneider, and Jeremy Till, *Spatial Agency: Other Ways of Doing Architecture*, 1st edition (Abingdon, Oxon England ; New York, NY: Routledge, 2011), 29.

3 Anthony Giddens, *Social Theory and Modern Sociology* (Cambridge: Polity Press, 1987), 221.

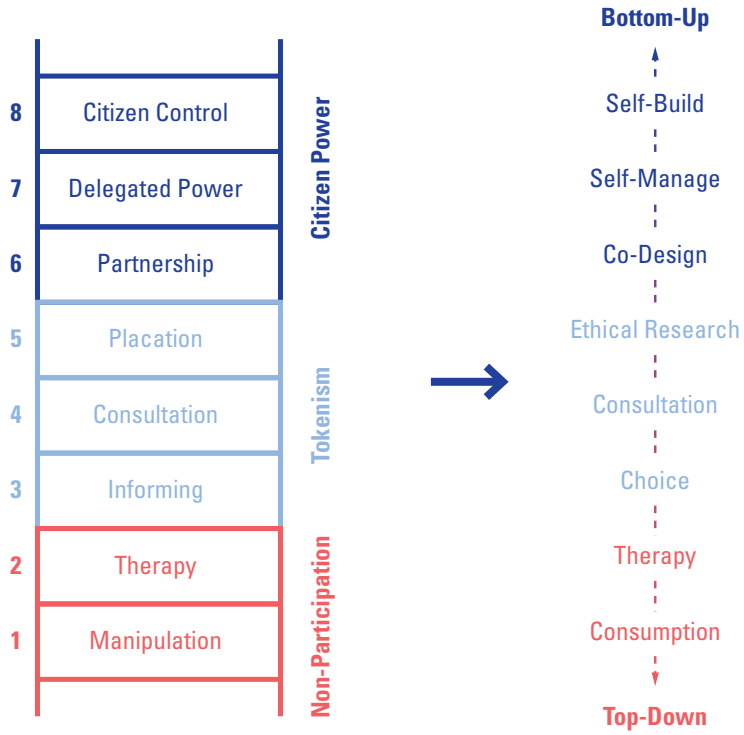


Fig. 3.2 | Sherry Arnstine's Ladder of Citizen Participation vs Spatial Agency Ladder

Referencing Sherry Arnstein's Ladder of Citizen Participation a new Spatial Agency Ladder can be established to evaluate existing high-agency housing developments models.

to be an agent within a system is to break away from the role of a bystander and become contributors to their circumstances, which can be interpreted as structure. [4]

"People are self-organizing, proactive, self-regulating, and self-reflecting. They are not simply onlookers of their behavior. They are contributors to their life circumstances, not just products of them." [5]

Exercising agency is also fundamental to Sherry Arnstein's concise categorization of participation into different levels. Her research demonstrates that the path to increasing agency in a particular system is fundamentally linked with active participation and direct citizen control. Setting up the duality of have-nots and powerholders, Arnstein demonstrates how participation can range from acting as a manipulator to being shared and ultimately controlled by participants.[6] She condenses this into an eight rung "ladder" which serves as a framework for evaluating citizen participation. Arnstein declares that "the nobodies" in several arenas are trying to become "somebodies" with enough power to make the target institutions responsive to their views, aspirations, and needs.[7]

The bottom category within the ladder of participation, which includes manipulation and therapy, Arnstein declares as nonparticipation. Manipulation can be understood as the use of illusionary participation committees that have no legitimate power to enact change. Their existence is primarily to present a façade of democracy and rubber stamp proposals placed on their tables. Therapy strategies view citizens as mere patients to group treatment. The overall attitude is that it assumes the powerless have a disability and must be 'cured'. [8]

Tokenism is the middle category of participation, and includes informing, consultation, and placation. As the first step towards true participation, informing is the one-way communication to citizens their rights, responsibilities, and choices. Consultation involves the invitation of citizens to express their concerns and ideas during meetings, however, there is little to no obligation to meaningfully respond to them if it does not fit the goals of more powerful actors. This is often used by government or developers in the form of surveys, neighborhood meetings, and public hearings. Placation involves a strategy where only a selected few of the powerless are picked

4 Bandura, "Toward a Psychology of Human Agency," 164.
5 Bandura, 164.
6 Sherry R. Arnstein, "A Ladder of Citizen Participation," *Journal of the American Planning Association* 85, no. 1 (January 2, 2019): 24–25, https://doi.org/10.1080/01944363.2018.1559388.
7 Arnstein, 25.
8 Arnstein, 26–27.

as a token member in a community board. Majority power is still held but the tradition elite and the have-nots can be outvoted or outsmarted. [9]

At the top of the ladder are examples of citizen power, which includes partnership, delegated power, and citizen control. Within this category, power is restructured through negotiations between citizens and powerholders. The degree of power sharing at the partnership rung is determined prior to discussions by both parties, thus allowing for shared understanding. Delegated power occurs when the negotiations of power restructuring results in citizen groups to become the dominant party and can enforce accountability of action. Finally, at the highest rung is citizen control in which residents become the prime governing body of a program or institution. Arnstein highlights the importance that no single group can be the primary force of control, but rather it is the intent of self-governance.[10]

Though Arnstein's ladder was established as a means of evaluating public planning policy, the metrics can be adapted to evaluate housing procurement methods through a modification of terminology to better reflect the residential design process. With top-down modes of housing at the lowest level and bottom-up methods at the highest. Using a housing agency evaluator, existing methods can be assessed and analysed.

9 Arnstein, 27–30.
10 Arnstein, 30–33.

3.2 Current State of Spatial Agency

What is the current state of agency in the condo preconstruction market? How can we increase spatial agency in housing?

To increase agency within existing residential architectural systemic structures is it imperative to allow home seekers the direct ability to address three key factors: planning, design, and development.

In Fig 3.3 all factors related to the building of homes are displayed in blue, while the actors responsible are displayed in red. Architectural design decisions is broken down to the collective scale and individual scale. The practice of architecture is traditionally concerned with elements at the collective scale, while the inhabitant and the interior designer will often only operate at the individual scale. As an example, in current condo development systems future inhabitants can typically only act upon their immediate personal spaces directly through surface finishes (through design package options in preconstruction) and furnishing with objects (after they move in and with their choice of furniture). Everything else is all predetermined by real estate developers, government bodies, and 'market forces', from location, site, and size, to the layout of units, durability of façade systems, and building amenities. Of course, there is also a limited level of indirect influence on these categories by future inhabitants, the limited binary choice of whether to buy into the market or not and election of government officials that influence policy and planning. Since the *Real Estate-industrial complex* is mostly made up of speculative investors and for-profit developers this structure of society is incentivised to maintain their hegemonic stronghold over defining the nobodies and somebodies. It is difficult to imagine that any significant benefits can come from the indirect influence inhabitants have on these larger systems at the collective scale. As a result, decisions made at this larger level all have direct impact on livability, affordability, longevity, and desirability of residential units, but blatantly do not serve the needs of future inhabitants.

The closest an inhabitant can get to acting as a 'free agent' within the financialized housing market is to decide whether to buy into the unsatisfactory condos or remain a renter of investor condos. In a seller's market, where dozens of offers are placed on a property and buyers are lined up in droves to join the VIP list of condo presales, there is little reason for-profit developers will produce meaningful designs for future inhabitants. So called 'luxury developments' continue to be the dominant typology across all market-rate housing projects in Toronto. These projects look to sell an

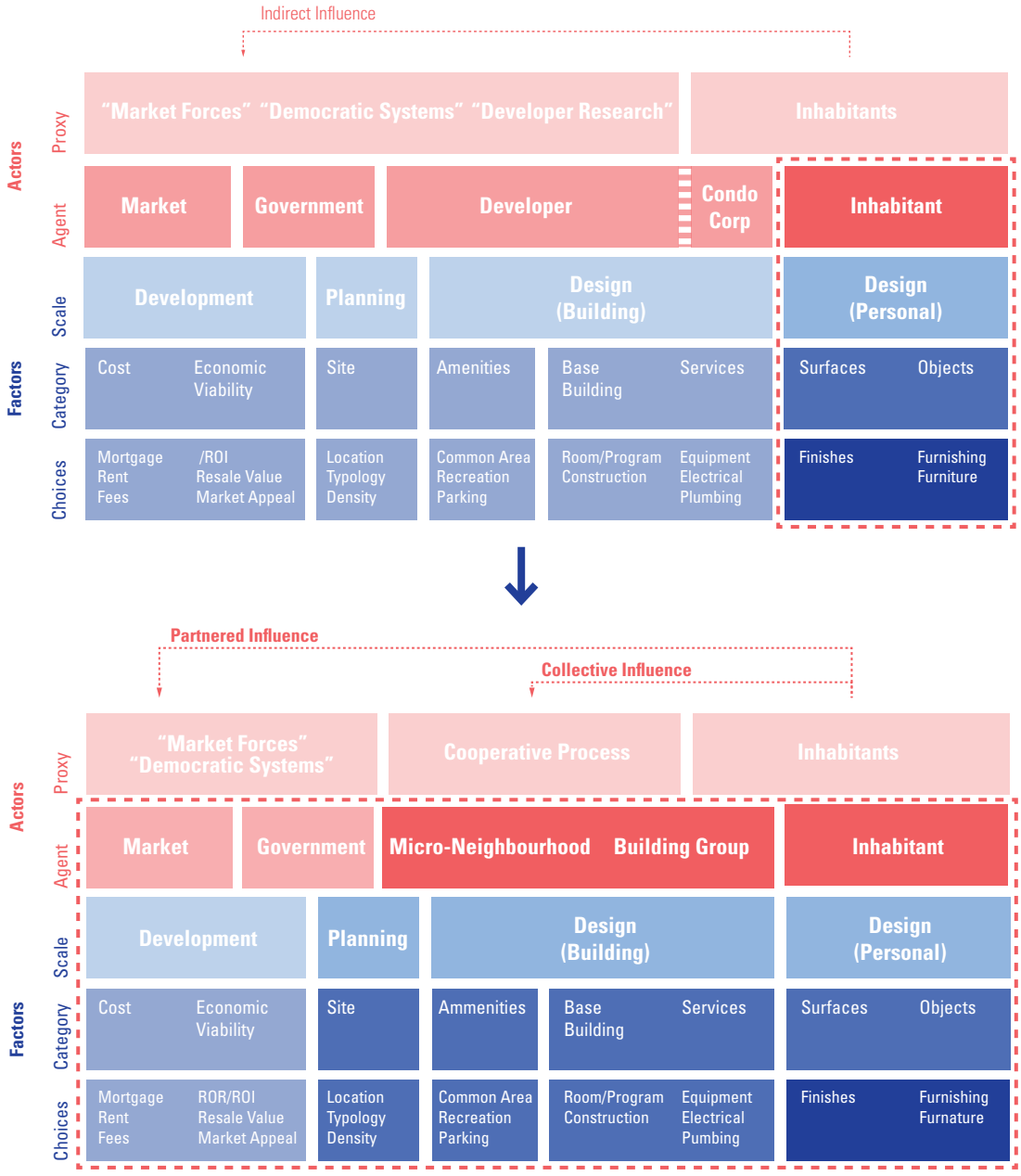


Fig. 3.3 | Pre-construction Condo Spatial Agency vs Proposed Spatial Agency Affinity Diagrams

Comparative affinity mapping diagrams explores the different degrees of direct control between the existing pre-sale condo development process and the proposed process. Each horizontal layer represents factors (in blue) and the associated actors (in red).

Legend

Actors — Sphere of Control

Factors — Influence

opulent lifestyle rather than a home and these buildings are typified by expansive recreational facilities, 'designer' lobbies, and occasional celebrity endorsements. With maintenance fees starting at the price of a room in a shared rental unit[11], it is far more profitable for developers to target the exceptionally well-off urban professional, trust-fund child, or speculative investor than it is to design for the majority of the population that cannot afford and often is not looking for this particular brand of living. Situated on the third rung (informing) of Arnstein's participation ladder, the current condo system only informs home seeker with a one-way flow of information as developers attempt to sell the units.

In this system, public consultation by local government is exactly as described in Arnstein's ladder; nothing more than tokenism. There is limited incentive and accountability for planners or the government to act on the information collected through consultation.[12] Moreover, due to the nature of the consultation method, policy created out of this process will be reactive rather than proactive to problems that already impact the livelihood of cities. As problems that individuals' faces are hardly addressed by government until a significantly larger and socially influential group brings the issues to the light.

To address this lack of agency, a new method must be developed to allow home seekers to directly exercise their embedded financial power in the planning, design, and development of their housing. By expanding their degree of influence to include all three of these scales, housing can truly be for its inhabitants. In the introduction of Nabeel Hamdi pioneering book on participatory architecture, *Small Change*, he recalls a story about a student's answer to the question: what is development?

"Development, he said, happens when people, however poor in money, get together, get organized, become sophisticated and go to scale."[13]

What Hamdi makes clear here is that the participatory design process is dependant on the capacity of people to get together. Only with collective action can there be agency. In fig 3.4, a mapping of types of housing procurement methods currently available is located on two spectrums, top-down versus bottom-up and isolative versus collective methods. It becomes clear that existing market housing options sit firmly in the isolative realm. Agency in this realm is directly related with the amount of financial capital

11 Shane Dingmang, "Rising Toronto Condo Fees Continue to Outpace Inflation," *The Globe and Mail*, February 12, 2019, https://www.theglobeandmail.com/real-estate/the-market/article-rising-toronto-condo-fees-continue-to-outpace-inflation/.

12 Arnstein, "A Ladder of Citizen Participation," 28.

13 Nabeel Hamdi, *Small Change: The Art of Practice and the Limits of Planning in Cities*, ed. Julie Richardson and Adrian Henriques, 1st edition (London: Earthscan, 2004), 16.

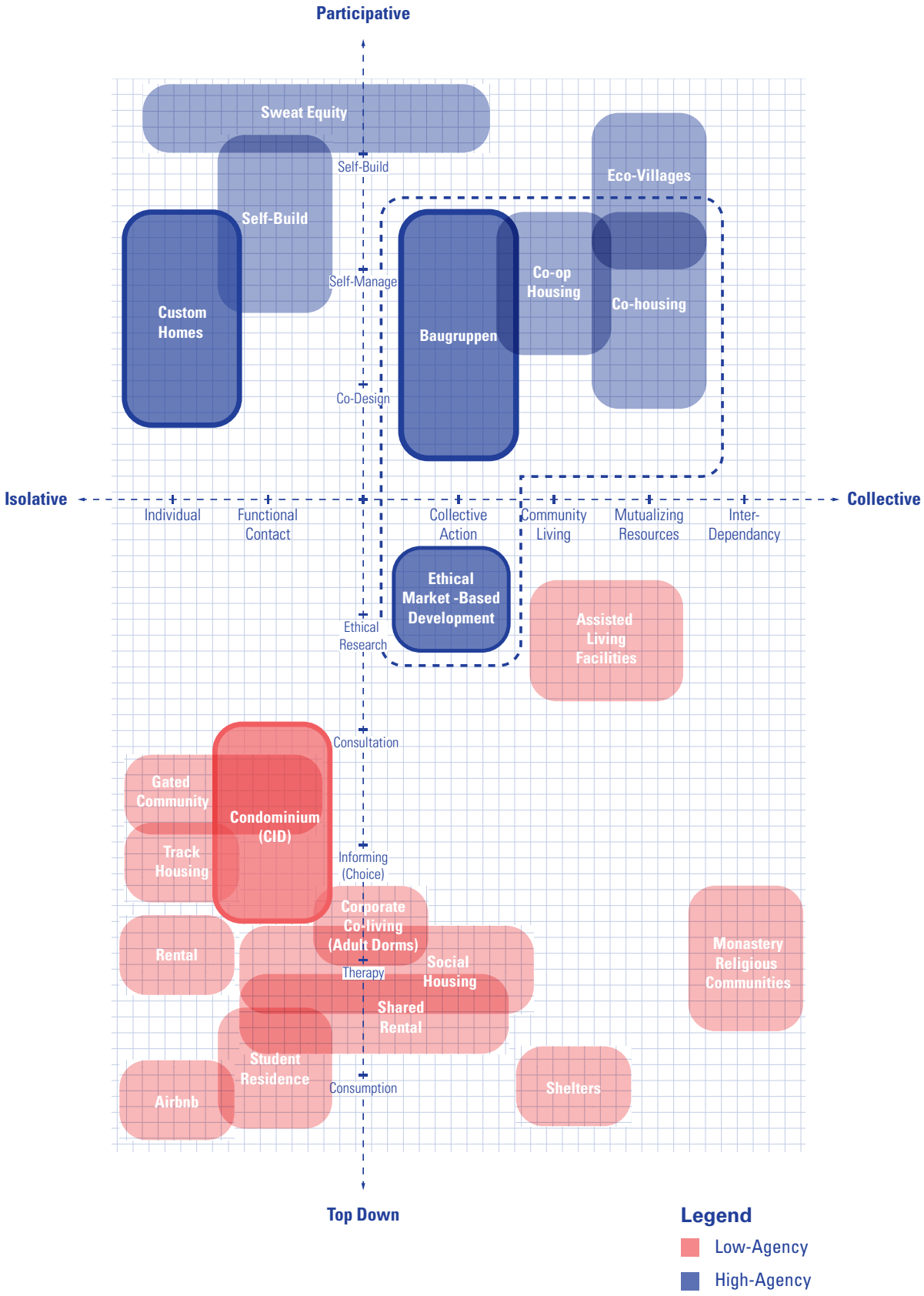


Fig. 3.4 | Development Methods Mapped on the Axis of Agency and Involvement

the individual has access to, spanning from those who can afford an architect to directly translate their needs into a custom home at the top to those who rely to the condo market to meet their basic needs at the bottom. Since home seekers are reduced to a singular individual who makes choices within the broader market, agency is limited for anyone without the capital means. As a result, the condo housing model sits in the low agency and isolative quadrant of the map. Directly opposite to it is the various co-housing models where collective action produces high levels of agency for all inhabitants. Within this quadrant is where an opportunity is presented for the majority of home seekers to gain spatial agency within the residential realm. As Bandura continued to apply his understanding of human agency later in his research, he observed the important connection between the advancement of accessible digital communication technology and increased collective citizen action. With the expanded capacity for communication to occur in a system, the greater the ability for citizens to gather and act.

To address this lack of agency, a collective method that empowers inhabitants to take charge of decisions made at the architectural, urban, and financial levels must be developed. Home seekers and architects should be empowered to exercise their embedded power and reject the current financialized housing market that systematically warehouses the human spirit.

The ambiguity of indirect influence has been opened as an opportunity for housing speculators and profiteers to turn the space of living into hedged assets. The real estate and financial industry gatekeeps knowledge and promotes systemic opacity to preserve political, financial, and judicial power. Therefore, instead this system must be replaced by direct collective organization that involves immediate stakeholders of a housing project. Referencing the agential methods in Arnstine's ladder of citizen participation as system to expand the capacity for home seekers and inhabitants to directly influence the systems that construct their living environment. It is through collective action where a more equitable housing model can be created.

4.0 Bottom-up Platforms for Design Communication

4.1 Role of the Tool

How should design communication work?

To address the communication bottleneck at the crux of the current market of low-agency architecture, alternative modes of communication must be explored. The idea that a co-design tool could serve as a communication platform to facilitate the process is explored in the pioneering research work of the Architecture Machine Group at MIT and the imaginative projects of Cedric Price.

The North American notion of self-built housing closely aligns with the bottom-up approach of spatial agency processes. However, the often-romanticized ideas of traditional building no longer hold true in the contemporary conditions of higher density and complexity housing. Rather the developer driven narrative of maximizing rate of return is the primary driver of multi-unit housing. Nicolas Negroponte explains in *Soft Architecture Machines*, that the paternalistic nature of building currently used has an intrinsic risk. When important decisions are taken out of the hands of the end-user he poses the question:

> *"Can you seriously trust that someone who has no ultimate personal stake in the built artifact will do his utmost to achieve your personal and complex goals?"* [1]

For an effective bottom-up space making approach to occur in the contemporary context, a more effective communication process between all stakeholders of a project must be developed. To address the delamination of the architects and inhabitants from the residential space making process, a communication platform is needed to mediate the complexity of communicating mass quantities of information. This problem can be summarized as:

> *Architects don't know what they don't know.*
>
> *People don't know what they don't know.*

Therefore, a communication platform can serve as an environment for future inhabitants to express their needs, discover spaces that fit these needs, and for architects to uncover and understand the distinct inhabitant needs when producing spaces. For complete communication to occur,

1 Nicholas Negroponte, *Soft Architecture Machines* (Cambridge, Mass.; Cambridge, Mass. : the Mit Press, 1975: MIT Press, 1975).

future inhabitants must be informed to make the optimal decisions to fulfill their needs. For the expert to design better spaces they must develop an understanding of the *home seekers'* unique spatial needs. It is evident that in response to the complexities of existing self-built housing, an alternative method of communication between future user and architect is required. Traditional ethnographic and demographic research methods can serve as a starting point to this investigation. Often researchers will try do what they do best and integrate some research into their process in an attempt to gain understanding about a community.

In the example of Giancarlo de Carlo's project, Terni Housing, a housing development constructed for Italy's largest steel company's employees and their families, it was not only important to discern the wishes of the future inhabitants but to do so on company time. De Carlo's use of research interviews and sessions could be considered the primary communication platform with which he engaged the community. He asserted that the employees should be paid for these sessions and that management should not be allowed to attend.[2] Despite the breath of investigation that was performed, this process is still inherently top-down as all information is interpreted by the architect, an outsider and gatekeeper. The steelworkers and their families were involved in each part of the design process but only to provide information for a more holistic model of the 'future user'.

Giancarlo De Carlo declares in his article, *Architecture's Public*, that "architecture is too important to be left to architects". Instead, he insists the importance of designing 'with' the user rather than 'for' the user.[3] However, as admirable as the ethnographic strategies that de Carlo employed are, the inherent fragility of this method is in its dependence on the generosity of either a wealthy funder or government entity who would buy-in to the value of this participatory method. This is a direct and mutually understood transfer of power, and without this transfer of power from the financier of the project to the inhabitants the hyper-financialized real estate market would have no means to implement Giancarlo De Carlo's methods in the present day on a large scale.

2 Nishat Awan, Tatjana Schneider, and Jeremy Till, *Spatial Agency: Other Ways of Doing Architecture*, 1st edition (Abingdon, Oxon England ; New York, NY: Routledge, 2011), 158.
3 Peter Blundell Jones, Doina Petrescu, and Jeremy Till, eds., *Architecture and Participation*, 1st edition (London: Routledge, 2005), 10–12.

To address the fragility of the ethnographic methods explored prior, and to find alternatives to the *fictious future user*, new information translation methods must be considered. Negroponte locates this opportunity in the architectural field and champions for the individual's input. Presenting three attitudes towards the definition of user participation, Negroponte demonstrates the potential methods of achieving user driven architecture.

1. The first attitude is mass data analysis, whereby the architect is behind the gathering and analysis of user needs. This process does not account for direct user input. Results from the process are evaluated by their probability to succeed and simulations are used to allow for enhanced decision making. A higher resolution fictious future user is established for future design. Giancarlo de Carlo's ethnographic method falls into this category.
2. The second attitude is advocacy planning, which is implemented through a representative who promotes the needs on behalf of certain user groups.
3. The third attitude is the Yona Friedman paradigm, where the complete removal of the expert and architect from the planning process allows for each person to become their own DIY architect. Through a process of learning, the users are then equipped with the knowledge of how to create spaces. To Friedman this process could be facilitated by a technological intervention, an architectural 'speedwriter', which would allow future users to access a repertoire of all possible design solutions and be informed of the consequences of their choices. As each future user accesses and considers the consequences of each design iteration the intention is that they will be capable of developing an option that best fits their context.[4]

4 Nicholas Negroponte, *Soft Architecture Machines* (Cambridge, Mass: The MIT Press, 1975), 101–2.

Negroponte locates his perspective within the architectural design field, as a result, suggesting that the third attitude is the truest form of de-professionalization. Carefully crafted design tools allow non-experts to become their own architect. However, what Negroponte did not account for is the increase of agency in bottom-up development methods. When the architect is hired not by a developer but rather by future inhabitants, the resultant architecture will not be a mechanism for profit but rather a space for the activities of living.

Planning, development, and design, therefore, must be addressed concurrently to promote bottom-up architectural processes. The presence of a completely autonomous architectural 'speedwriter' is not necessarily the ultimate step to achieve agency. Instead, when communication between a group of future users and architects is efficient in replacing the top-down *fictious user,* a democratized form of housing will emerge. Since the communication process results to a direct translation of space rather than a higher resolution *fictious user*.

4.2 Spatial Graphing Methods

What communication methods could be employed in the context of housing? What should be the medium of design for non-experts?

Negroponte's asserts that the democratization of space making requires technological intervention, however, rather than developing a tool to replace designers and architects, the technological intervention could instead become a platform for home seekers to gather and communicate their spatial needs to an architect of their choosing. Narrowing the focus to the communication bottleneck, there are two distinct and relevant user-driven spatial communication methods presented in the Architecture-By-Yourself project by a team led by Nicholas Negroponte and the Generator project by Cedric Price.

Architecture-By-Yourself

Situated within the larger digital participatory research agenda of the Architecture Machine Group of MIT, Nicholas Negroponte and Guy Weinzapfel developed an experiment in 1976 that allows non-experts to become architects, developers, and builders. The experiment, titled "Architecture-By-Yourself", was conducted through a series of meetings over 8 weeks with a young couple seeking to design and construct their own detached home.

Weinzapfel implemented the YONA System, a digital program operating on an early prototype of a graphical touch-based interface where users would input room placement, connectivity, and size in the form of a graph. Referencing the graph theory process Yona Friedman describes in his book *Towards a Scientific Architecture,* system nodes represented rooms and lines represented connections. Size and other preferences for each room were inputted through sliders. The program would then translate the graph into a bubble diagram and ultimately into plans and massing.[5] By allowing for a continuous translation between an abstracted diagram of spatial needs and a finalized visualization of spatial arrangement, users were capable of immediately visualize the spatial consequences of their design decisions. Cost estimates were continuously generated off the total area required, thus allowing the users to identify financial trade-offs early in the process; this feature proved helpful during the early design stages. In giving users the power to iterate rapidly, the findings showed that plans for an ideal home could be generated by manipulating the residential base units of rooms and connections even by non-experts.

5 Guy Weinzapfel and Nicholas Negroponte, "Architecture-By-Yourself: An Experiment with Computer Graphics for House Design," *Computer Graphics (New York, N.Y.)* 10, no. 2 (1976): 74–78, https://doi.org/10.1145/965143.563290.

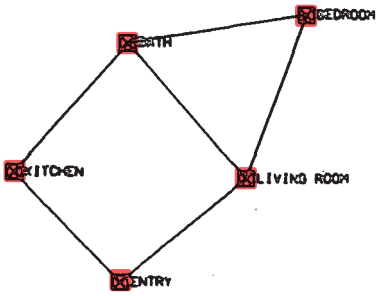


Fig. 4.5 | Program Nodes and Connections

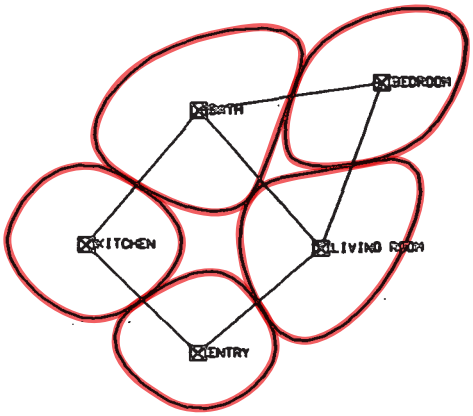


Fig. 4.6 | Program Nodes with Areas

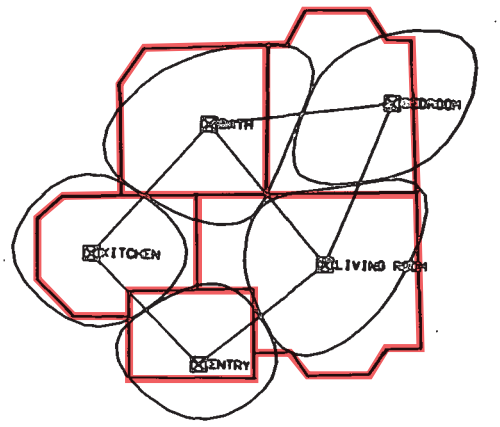


Fig. 4.7 | Plan Overlay

The Generator Project

Cedric Price's Generator was an ambitious unbuilt proposal developed over 3 years in 1976 looking to produce a truly interactive environment for visitors. Situated on White Oak Plantation, a forest and wetland near to coast between the Florida-Georgia border, Howard Gilman commissioned Price to design an environment that supported creative industries and charitable activities.

Visioned as a kit of parts, the project consisted of 150 12x12 ft blocks, catwalks, screens, and walkways that could be manipulated by a visitor using a mobile crane. Visitors would be presented with a collection of baseline configurations, what he called 'menus', of blocks to operate as starting points. To determine which menus would be used for a group of guests a questionnaire was employed. Consisting of a matrix of visitor defined activities, the questionnaire allowed visitors to compared and evaluate if the activities were compatible, neutral, or noncompatible with one another. Listing each activity on the left of the matrix, the visitors would cross reference each relationship between the activities by using quick hand drawn symbols. Activities could be as banal as eating, drawing, and cooking to as specific as radio repairs and horse riding.[6] Visitors would then test the recommended menu through a self-assembly model made of slotted base and Plexiglas components before construction. By starting the collective spatial design project from a series of activities, the Generator serves as a testbed for users to discover containers of activities in their daily life rather than designing space with the preconceived notion of specific rooms.

6 Molly Wright Steenson, *Architectural Intelligence: How Designers and Architects Created the Digital Landscape* (Cambridge, MA: The MIT Press, 2017), 147–51.

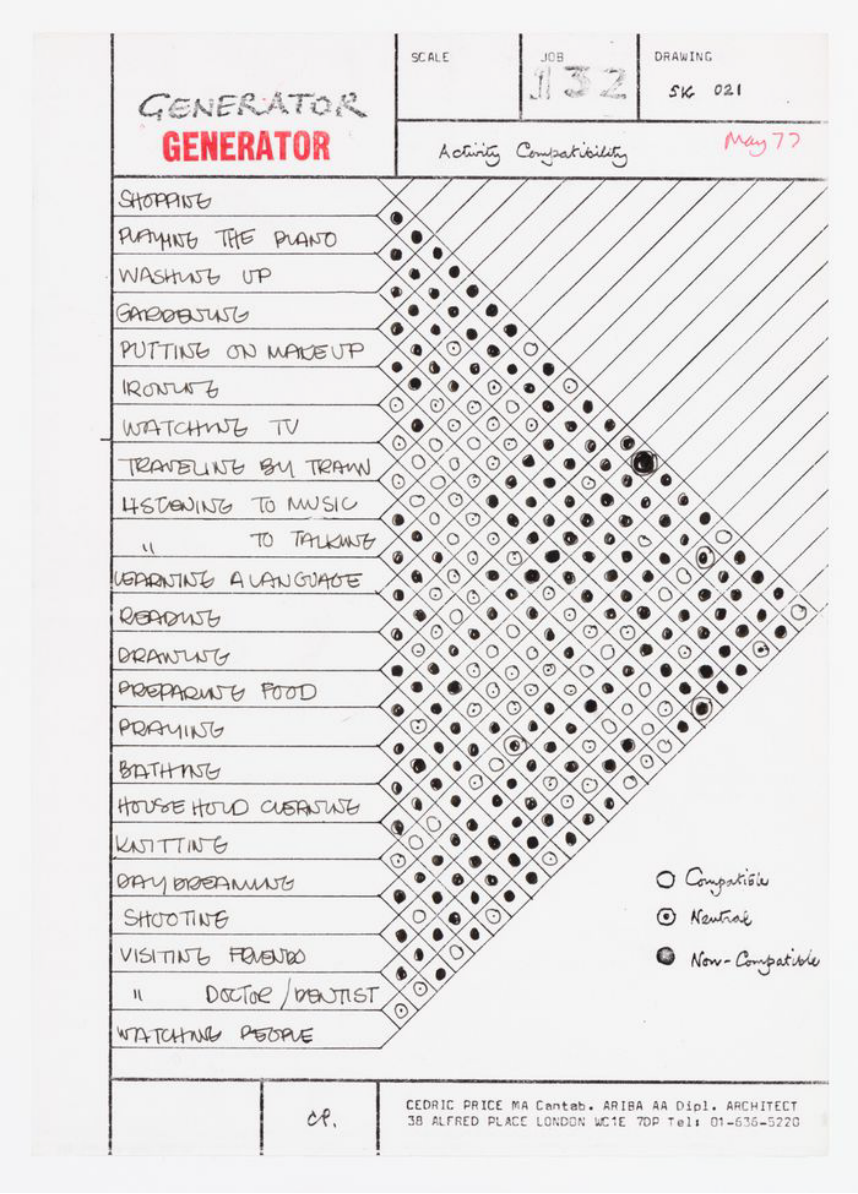


Fig. 4.8 | The Generator Activity Matrix

In the YONA System experiment, navigating a touch-based interface and the clarity of translation between abstracted diagrams to actual layouts were features that significantly increased the usability of the tool for non-experts.[7] However, by defining standard rooms as the base-unit in this system it limited the potential for non-conventional space making or the integration of highly specialized spaces in the schemes. The problem when operating at this level of detail, the room as base-unit, is that users are unable to truly design to their needs. As a consequence, their spatial imagination is restricted to previous experiences, marketing tactics, and real estate reality television when they look to communicate their needs in this system. As an example, we might imagine that some version of these restrictions could manifest with the recent rise in 'open-concept' living. Presently, inhabitants might desire larger open spaces but if we were to examine their day-to-day activities, if perhaps someone in the household was working from home, it might illuminate the need for more privacy, enclosure, and acoustic separation for maximum comfort. Rather than interrogating what spaces are truly needed to match the inhabitant's unique lifestyle, it is much easier to default to imagining standardized spaces in the form of the room-as-base-unit. Cedric Price's Generator, on the other hand, uses desired activities as the base-unit of design. This allows for a significantly finer grain of customization. The methodical process of visually coding in personal preferences within the activity matrix provides users the opportunity to question, group, and structure their spatial needs on their own accord. Drawbacks to operating in the resolution of the activity is that the process is quite exhaustive, and the legibility of the matrix developed by Price is lacking. The inherent spatial relationships each visitor encodes into the matrix is not evident upon review by other parties or even to themselves. Further, when operating in a completely relational realm, the diagram of the users' spatial desires is visually abstract and does not suggest a clear architectural solution when revisited. This method requires more work and more time to get the project from platform to building, despite the complete engagement of non-experts in the process.

Referencing the strengths of the YONA system and the Generator project, an alternative spatial visualization platform can combine the legibility and manipulability of the YONA system and the resolution of the Generator project to form a new digital communication platform fit for today.

7 Weinzapfel and Negroponte, "Architecture-By-Yourself," 76.

The public often does not conceptualize their daily life through the spatial lens of rooms, doors, and windows, but instead through a subjective perspective composed of a series of activities. This experiential over formal sense of the spatial can be utilized during the design process to get to the root of inhabitant needs. A spatial communication platform, if it is imagined to empower those who use it with maximum agency, needs to work with activities as the primary base-unit. Through this platform *home seekers* are easily able to communicate, uncover, and realize their spatial needs and the unique configurations and buildings it could produce.

5.0 Development for Affordability

5.1 Vernacular?

When looking at the various models of housing development in the North American context, it is evident that there are two ends of a spectrum: for-profit market rate housing or publicly-funded affordable housing. Despite forming opposing ends of the funding spectrum, the two poles are dominated by top-down methods of implementation. For-profit market rate housing is driven by the capital-oriented developer, while publicly funded affordable housing is subject to the whims of local government housing policies, both options rely solely on the paternal benevolence of the corporation or state. This reliance on benevolence becomes an issue in urban centers where a clear gap between supply and demand for housing exists. There has been very little evidence that either the government or the developer has taken the necessary steps to deliver an adequate supply of housing that suits the needs of the citizens. This resultant lack of housing options presents an opportunity for alternative architectural solutions.

Alternatives to these existing development options are methods that operate between the for-profit and not-for-profit models. In this low-profit and breakeven spectrum are procurement processes that can independently and directly represent the needs of future users since the users themselves fund their own projects.

An emergent form of housing that is loosely grouped around the term co-development can serve as a blueprint for developing a high-agency typology. The common thread between these development methods is that they require various degrees of resource sharing in the design, construction, and inhabitation phase and rely on participative design methods throughout. In its most reductive form corporate co-living management companies charge high rents for rooms in trendy neighborhoods, essentially adult dorms. While in its more radical form are co-housing communities that take advantage of low-cost land in rural areas, and often ecology or agriculture is a key aspect of resource mutualization. However, the highest area of opportunity for a co-housing model is where inhabitants collectively pool their finances to start their own development projects that maximizes each inhabitant's spatial value through co-design input.

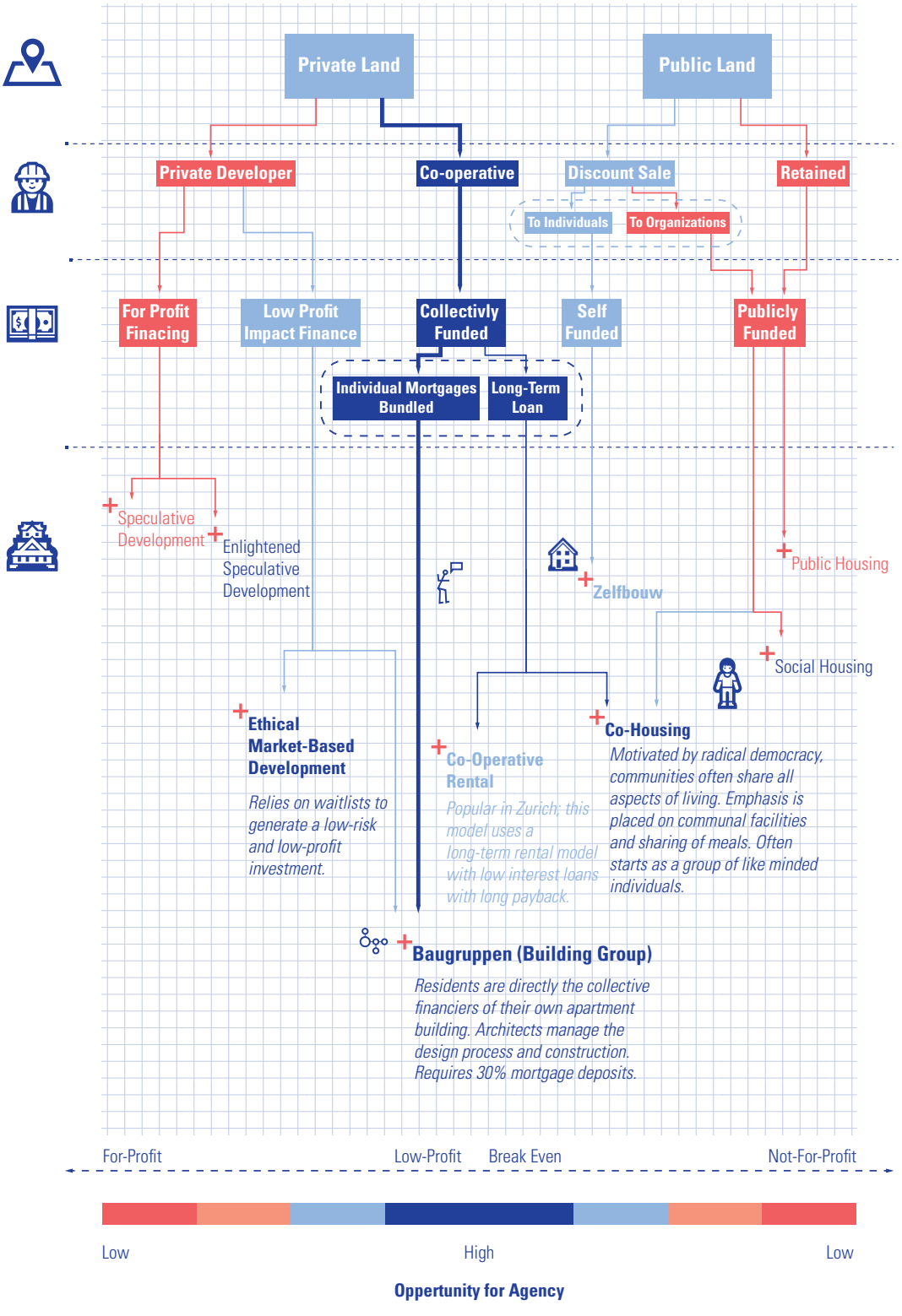


Fig. 5.1 | Mapping of Housing Development Methods

A New Toronto Vernacular

In looking for architecture that reflects current cultural conditions, systems which best represent the collective will of the inhabitants must be reconsidered. Historically, the anthropological study of existing 'types' of architecture informed an analysis of the 'vernacular'. The vernacular is characterized as built forms made of local materials and informed by community expertise. Without the involvement of professional architects, the architecture is primarily constructed in pre-industrial contexts. Despite this, the vernacular is often based in a romanticized traditionalism when re-approached and revived by the architectural profession. This romanticized vision of traditionalism restricts a community's capacity to adapt to their current context even though historically it represented a bottom-up process. Dell Upton highlights the faults in the purely traditionalist line of thinking on the vernacular in his 1996 keynote address by stating:

> *…the assumption that ethnicity is invested in the material world and can be read in it, which is to say that like the English we assume that artifacts are bearers of culture… we believe that some artifacts are more essentially connected, that they are more authentic signs of ethnic culture than others.* [1]

In this quote, Upton delaminates and calls to question the relationships between artifacts and culture. Through his rhetoric, we can come to understand that artifacts and culture form a reciprocal relationship with one another which is not always only representational. This opens the vernacular and its resultant artifacts, including buildings, up to readings which can extend beyond symbolism. Instead, we can now look to the vernacular as a system which better represented the needs and desires of the current inhabitants of a land than what our contemporary top-down systems do.

Current developer-driven for-profit housing has turned architecture into a manifestation of the values of capital. This new vernacular, prevalent across Toronto, is not a vernacular of humanity but a vernacular of capital. Through standardizing, optimizing, and subdividing property into neat volumes in the sky for consumption and speculation it is evident that there is a disconnect both physically and socially between the artifact, which is the high-rise condominium tower, and its inhabitants. This is not only a social and economic problem, but also a distinctly architectural problem, and as a result architects must address the disappearance of bottom-up

1 Dell Upton, "Ethnicity, Authenticity, and Invented Traditions," *Historical Archaeology* 30, no. 2 (1996): 1–7.

representation. Alternative methods of procurement can systemically address the development of vernaculars so that architecture can respond directly to the need of inhabitants. Marcel Vellinga champions this modification of the study of the vernacular to encompass contemporary systems in flux.[2]

> *"Break free from the limitation of the current conceptualization by adopting a more dynamic interpretation..."*[3]

By expanding our understanding of culture not only as artifacts but rather the manifestation of existing systems, architecture can respond with agility to better reflect the changes in the society its inhabitants live in. Analyzed in the following chapters are two distinct projects that embrace bottom-up development to regain inhabitant agency in the architectural procurement process.

2 Marcel Vellinga, "The End of the Vernacular: Anthropology and the Architecture of the Other," *Etnofoor* 23, no. 1 (2011): 96.

3 Vellinga, 171.

5.2 R50 Baugruppen

A development method that has been gaining popularity in Berlin is the concept of community-driven development or *Baugruppen,* German for "building group". Unlike co-housing projects which are often developed in rural or suburban contexts to take advantage of the flexibility of low land prices, *baugruppen* projects are multi-family developments in high density urban contexts. As a response to the rising costs of homeownership, citizen-led groups self-initiate housing projects that can then addresses their specific needs within their budgets.

The *Baugruppen* process can be broken down to four distinct phases:

Interessensgemeinshaft (Interest Committee)

In this first phase, the idea of a self-development project is proposed and interest is garnered between individuals with complimentary needs. With no legal obligations, the potential future residents investigate which groups best fit them and their spatial preferences and organize themselves accordingly. To assist with the difficulty of finding suitable building group members, cohousing-berlin.de was established as a classified site for the *baugruppen* projects within the city.

Planungsgemeinschaft (Planning Committee)

In the second phase, an established group approaches an architect or planning consultant to assist with the design, programming, and construction of the development. A series of planning sessions with the various members of the baugruppen takes place to determine the design. During this phase, the members form a binding legal agreement and approach the bank for a collectively bundled mortgage.

Bauherrengemeinschaft (Building Committee)

The client group then proposes the building and purchases property for construction. Unlike for-profit developers, *Baugruppen* often take longer to apply for bundled mortgages and as a result are at a disadvantage when the bidding process for land is time sensitive. Therefore, the City of Berlin implemented a program to support *baugruppen* projects through providing access to government funds to temporarily hold the land for the duration of the planning process. However, only projects that are approved through an evaluation of its ability to provide high-quality low-profit housing is permitted to use those funds. Construction management is then handled by the chosen architectural firm.

Betrieb (Operations)

Day to day functioning of the building is taken over by the collective as a co-operative or condo corporation.

Fig. 5.2 | Street Elevation of R50

Data Sheet

Living Area: 2,037 SM
GFA 2,780 SM
Units: 19
Residents: ~50
FSI: 1.35
Height: 22 M
ppH: 74

Situated between existing post-war towers, the site is oddly shaped and contributes to the low FSI. However, this allows for the entire perimeter of the building to have glazed openings. The circulation is services by one central stair and elevator.

Named after its address, Ritterstrasse 50, R50 is a project that was initiated by the architects Heide & Von Beckerath who posted the project on a Berlin *baugruppen* website in order to gather a group of like-minded designers and artists. The project became a six-storey development located within the post-war tower blocks in Kreuzberg, a working-class neighborhood in Berlin.

In this process there was a core group consisting of 50% of the future inhabitants that had the monetary resources to kick start the legal process. Consisting of 19 units, the architects interviewed and held 45 meetings over a period of a year and half to understand what the group individually needed. Verena von Beckerath, co-principal of Heide & Von Beckerath, reflects on this process as an engaging one for the firm as it contributed to developing a new means of funding and designing a housing project. She states that:

> *We on one hand worked on how to do affordable housing and on the other hand – as a parallel development – how to do customized housing. . . not in order to raise the value of the house but to give people who want to stay in the city an idea to how to adapt the apartment to their own needs.*[4]

An extensive participatory process that employed program bubble diagrams to represent each unit was used to help people visualize and prioritize how they would like to arrange their spaces. Towards the end of the 18-month long design process each member had developed a fine-grain approach in customizing the formal design of their apartments. A simple 600mm x 600mm grid became the structural framework for translating the detailed needs of the future users and a library of millwork, wall, and window types were used throughout to establish a cohesive architectural language.[5]

By selecting durable materials such as a concrete structural system paired with a CLT modular shell system, the units were left minimally finished to reduce initial costs but also to allow for the inhabitants customize the finishes in their units after moving in. In the plans of the units it is clear that the personal priorities of each inhabitant are represented. Unlike standardized apartment units where plans are optimized to reach a certain bedroom and washroom count in the smallest amount of space to optimize profitability, these units represent the diverse need of each household as authored by the household.

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4 Jessica Bridger, "What Cohousing Looks Like: Inside Berlin's Radical R50 Baugruppen Project," *Metropolis* (blog), June 10, 2015, https://www.metropolismag.com/architecture/residential-architecture/

5 Frances Anderton, "Berlin's R50 Baugruppe Is a Model of Living Affordably, Collectively," accessed April 4, 2020, https://www.kcrw.com/culture/shows/design-and-architecture/

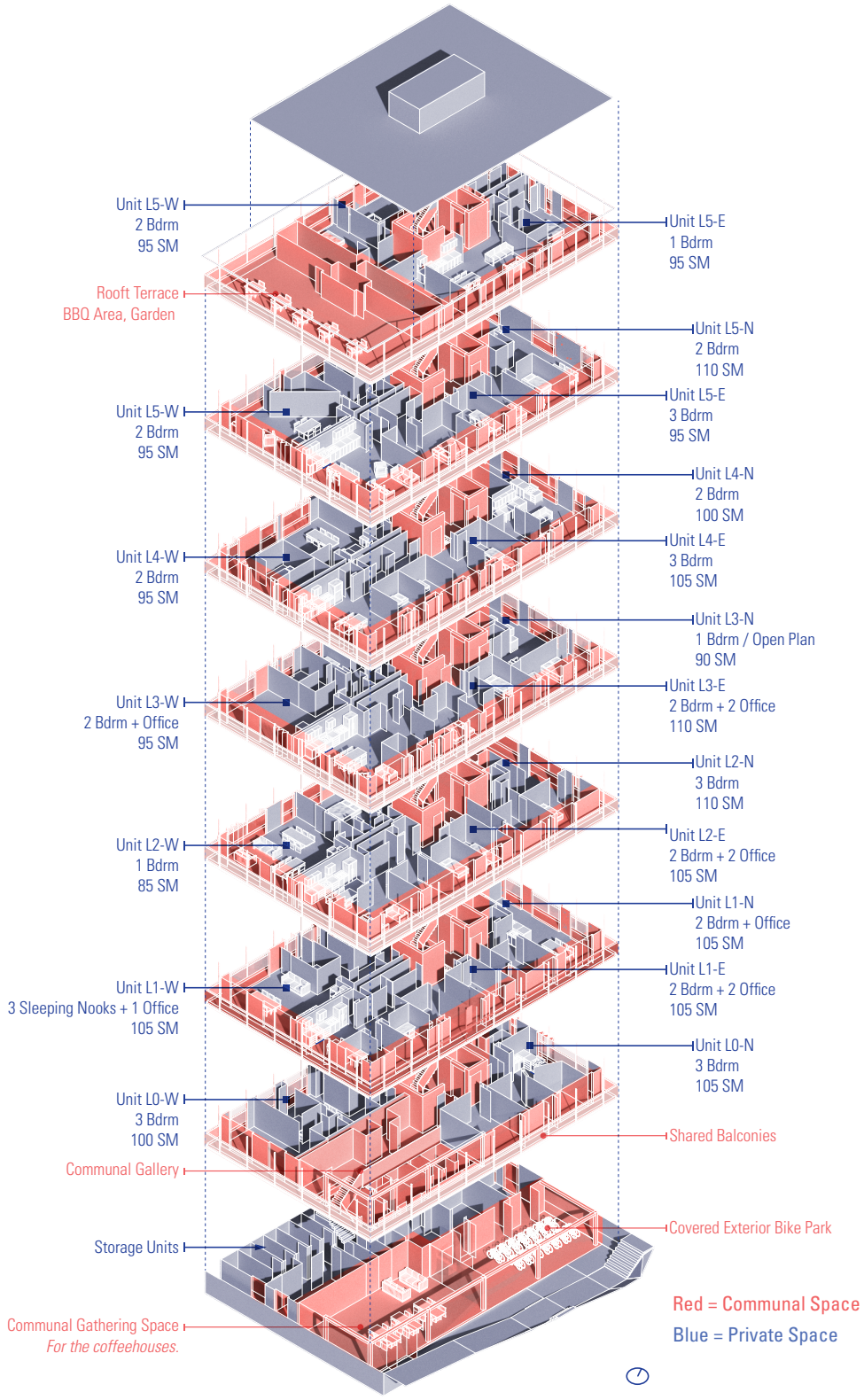
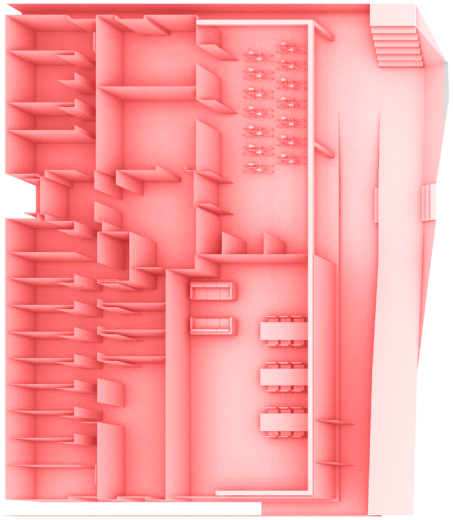


Fig. 5.3 | R50 Exploded Axonometric



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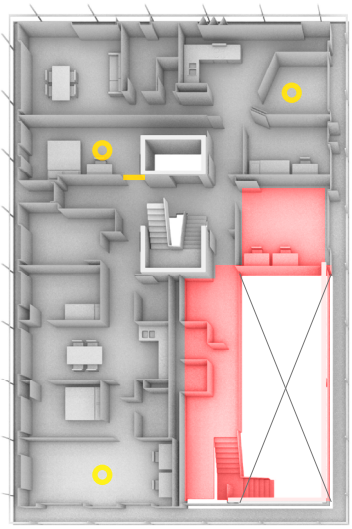

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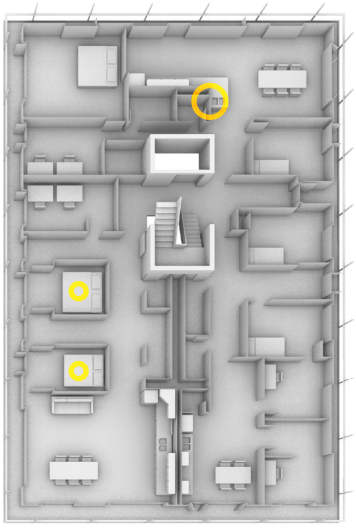

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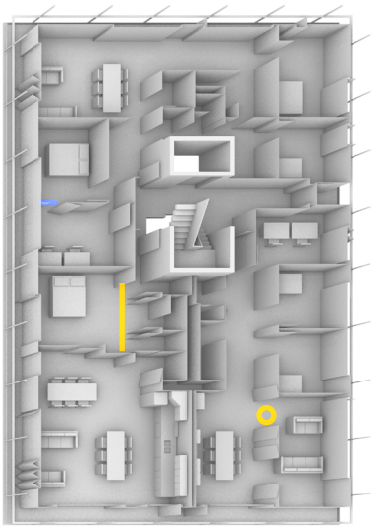
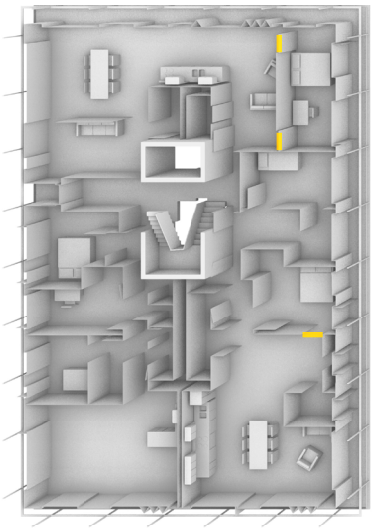


Level 2

Fig. 5.4 | R50 Perspective Plans



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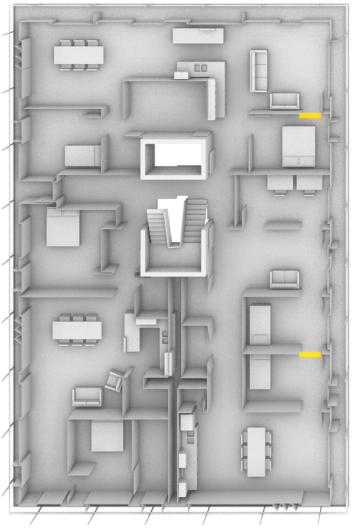

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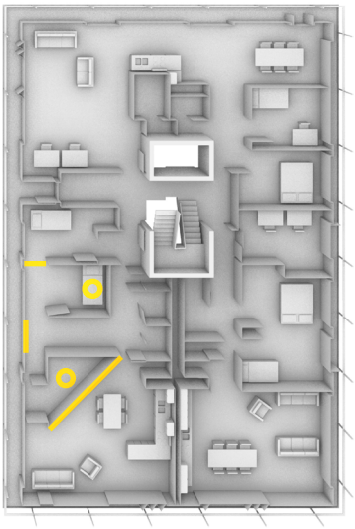

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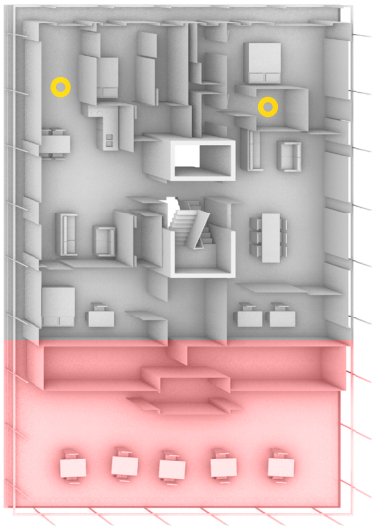


Level 6

Legend

Highlighted elements represents differences to conventional condo developments.

- Communal Areas
- Custom Wall/Opening
- Custom Room/Program

The most significant dispute during the design process was establishing what the communal space included and where these spaces would be distributed in the building. The social complexity of navigating what constituted "shared living space" for each individual proved to be a challenge for the architects. They resolved this by developing a process of visualizing the collective choices of the inhabitants through diagrams. This allowed the architects to arrive at a system where the members of the group could clearly see which amenities were deemed more desirable across the majority of the inhabitants. In the end the group opted out of conventional apartment amenities including unnecessary lobby space and under-used gym, ultimately settling on a scheme that included a flexible half basement that could transform from a communal dining and gaming area to a small event space; undivided balcony space on each floor for semi-shared gardening space; and a rooftop garden. This manual and diagrammatic collective design process occurred over 45 bi-weekly meetings with the architects either as individual household or collectively as a large group.

When compared to conventional mid-density housing the custom units resulted in more generous spaces, however, the reduction in cost per square meter from €3250 to €2700 when compared to similar apartments in the district was more than enough to compensate. In the event of future resale of the units, unlike a co-operative, R50 does not have a committee to set up resale price limits. However, a collective manifesto exists to maintain the affordability of the flats and pass on the initial savings. Which then the municipality steps in to hold the land for the civilian *baugruppen* during the extensive consultation process. Without the municipal assistance, for-profit developers would easily out compete on price and lead times. However, other than serving as a platform for affordable self-development, the *baugruppen* process does not dictate the day-to-day operations of the building activities.

Both the architectural and economic accomplishment of R50 exemplifies how the *baugruppen* method can reintroduce the much-needed user agency in the ecology of residential housing.[6] As a highly manual approach to collective development, R50 succeeds in delivering extremely customized housing solutions at below market rate. However, without addressing the communication bottleneck between inhabitants and architects, the high degree of inhabitant involvement isolates those who cannot afford the time off work to attend co-design sessions. As a result, the high degree of time and monetary commitment during the co-design phase remain as the primary barrier to widespread adoption of the *baugruppen* development method.

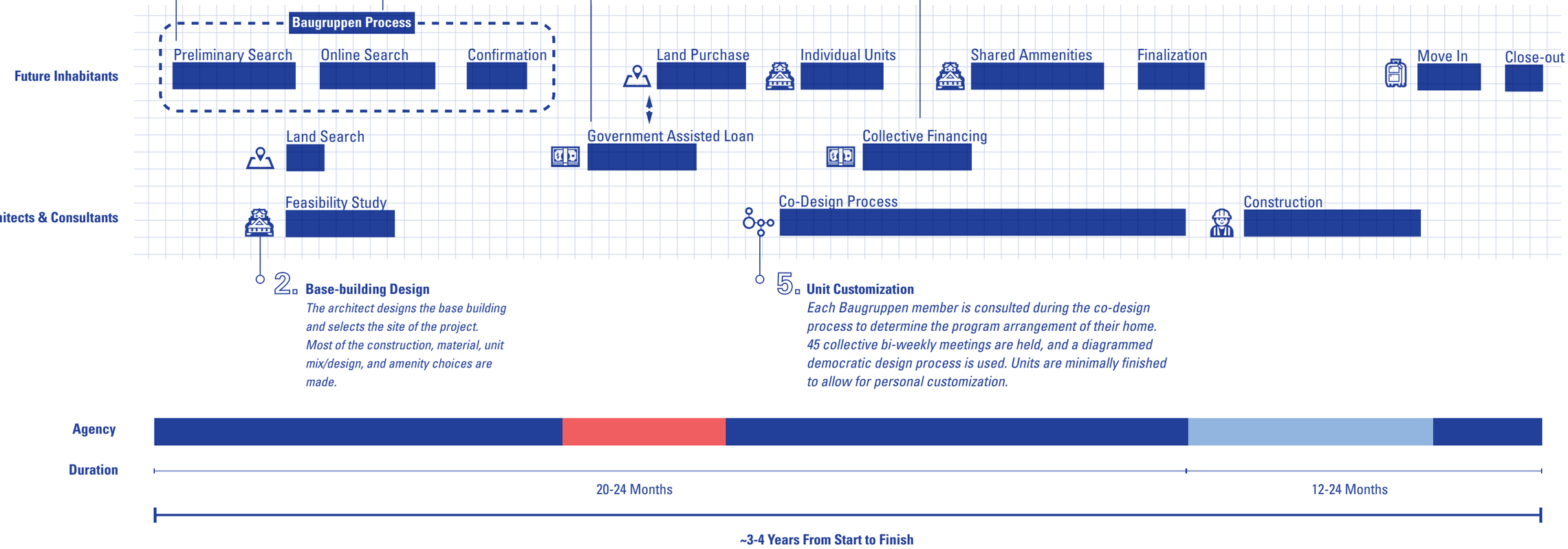
6 Anderton, "Berlin's R50 Baugruppe Is a Model of Living Affordably, Collectively," 50.

1. Architect Lead Kickoff
The architects gather potential future residents from their personal social network of friends and acquaintances (50%).

3. Online Member Search
When preliminary research and member building is achieved the project can be posted on cohousing-berlin.de to reach a larger audience.

4. Local Government Assistance
City of Berlin evaluates development's ability to provide high value spaces to the community. Approved projects will receive the support of a temporary municipal grant to hold on the land. This policy allows for the baugruppen to compete with developers and cash buyers.

6. Banking Support
Banks such as GLS and Umwelt Bank support the formation of collective mortgages to finance self-developed projects.



2. Base-building Design
The architect designs the base building and selects the site of the project. Most of the construction, material, unit mix/design, and amenity choices are made.

5. Unit Customization
Each Baugruppen member is consulted during the co-design process to determine the program arrangement of their home. 45 collective bi-weekly meetings are held, and a diagrammed democratic design process is used. Units are minimally finished to allow for personal customization.

Fig. 5.5 | R50 Project Gantt

Fig. 5.6 | Unfinished CLT Walls

Fig. 5.7 | Undivided Shared Balcony and Built-in Beds

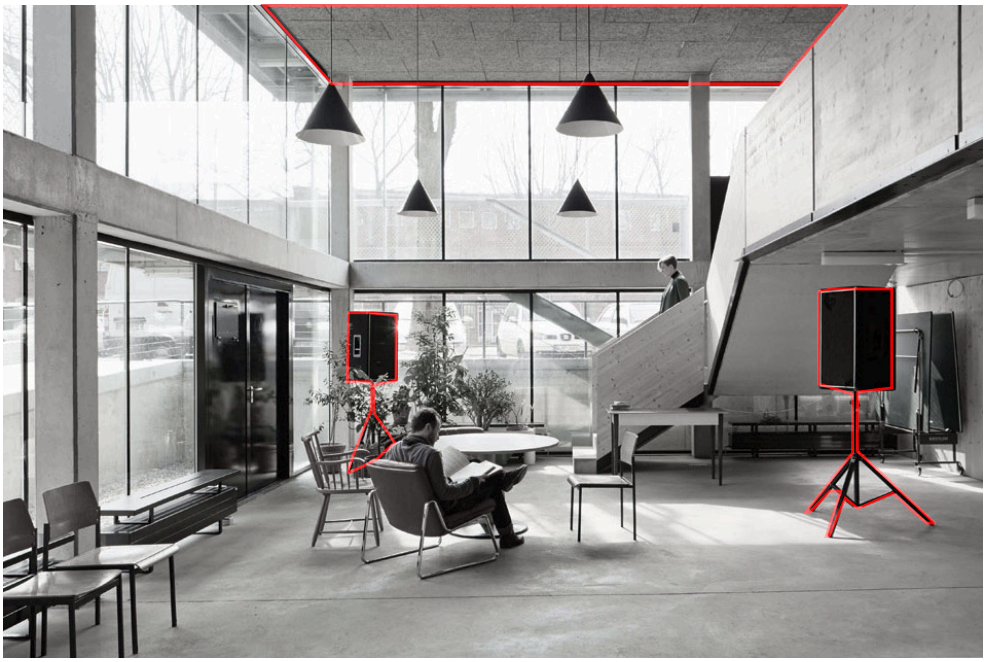


Fig. 5.8 | Communal Room Finished

Rather than spending space on a unused lobby, members determined through a series of meetings and diagrammed voting processes that a gallery space, programmed for collective games night, potlucks, and coffeehouses, better suited their needs.

5.3 + Nightingale 1

Nightingale Housing is an equitable housing development model that provides at-cost owner-occupied housing in Australia, born out of the frustration architects experienced in the developer-driven culture of Melbourne. Using popular predetermined social values such as at-cost development pricing, communal living, and carbon neutrality, the process relies on a database of buyers to reach out to when a new project is proposed. The pre-baking of shared values can also be seen in developer driven models where architects are designing the spaces to a *fictitious future user* imagined by the marketing team. However, in the case of Nightingale the *fictitious future user* is not drawn up to sell ever higher priced units but rather seeks to address the needs of the people of Melbourne. This development movement, which started as a single development in 2016, has grown to four completed, eleven under construction, and two planned projects as of early 2021.

Similar to the R50 project, Jeremy McLeod who is an architect and founder of Breathe Architecture, began his first development *The Commons* in 2007 for his family, friends, and acquaintances. As the communal living, at-cost development, and carbon neutral qualities of the project drew interest, the demand for this sort of development expanded into the first open-to-the-public development, Nightingale 1 in 2016. This marked the formation of Nightingale Housing Inc. which included a small team of architects and development managers, as well as a consortium of architecture firms. The company's goal was to provide an economically viable and socially responsible alternative to the developer driven model which commodified housing.[7]

In a lecture series held by Renew, an Australian sustainability advocacy non-profit group, McLeod provided a view into the financial mechanics of Nightingale Housing. By cutting out the perceived risk developers hold when investing in land, re-zoning fees, planning soft-costs, marketing fees, and real estate agent fees, the Nightingale model creates a low-risk development method that architects could leverage. Unlike conventional for-profit development, the financials of each Nightingale project are open for homebuyers to review. Since they are at-cost developments, real estate agents are not required to negotiate prices. By reducing risk through a database of interested homebuyers and removal of real estate agents in the transaction process, profit margins can be capped at 15%. The savings

7 Renew, *Sustainable Architecture - Nightingale and Level AK*, 2019, https://www.youtube.com/watch?v=UM5EoMEx1E0&ab_channel=Renew.

Fig. 5.9 | Nightingale 1 Street Elevation

Data Sheet

Living Area: 1,994 SM
GFA 1,994 SM
Units: 20
Residents: ~46
FSI: 4.00
Height: 16 M
ppH: 372

Located in the historically industrial neighborhood outside of downtown Melbourne, the development is easily accessible by tram lines that are just adjacent to the site.

are then be transferred to the homebuyers in the below-market rate units. Moreover, because of the smaller scale of the projects, Nightingale could gather the initial capital needed to start the projects from a variety of small investors. Without a board of directors to answer to, whose main concern is often how housing can generate higher returns, Nightingale can take more risks in developing projects that do not fit the conventional confines of for-profit housing.[8] Moreover, the land title of Nightingale projects is directly purchased and held by the future inhabitants. In this way, Nightingale acts simply as a manger for the development as opposed to a developer who extracts value in a profit-driven model. Project associate, Dominica Watt expressed that "Nightingale projects foster early engagement with purchasers through a deliberative design process – involving future residents from the beginning of the design stage right through to completion. By the time they move in, their community is already formed."[9]

The Nightingale's unique development model starts with gathering interested homebuyers through public information sessions. Interested individuals will then register in the Nightingale Database as a future Nightingale Resident to be informed of future projects developed. This registration in the Nightingale Database is the start of the direct architect-to-resident relationship integral to this process. Based on Future resident information submitted into the database, Nightingale then seeks out potential sites and architects to partner with on future developments. When a site is secured, schematic design is completed, and permits are obtained, registered Future Nightingale Residents are contacted for the balloting process. In each project, 20% of units are reserved for community contributors, essential workers, individuals with disabilities and Indigenous peoples. The balloting process for the remaining 80% of the building is a lottery so no priority is given to the order in-which future residents registered. Apartments for the project are assigned when ballots are drawn, names not drawn are placed on the building's waitlist in case accepted ballot residents have to back out. If a future resident has been through the balloting process more than three times and have not received a unit, they will be placed in the priority ballot pool for future projects. When a unit is accepted by a resident, a $10,000 commitment fee is required and is held in a trust to later be used as a portion of the deposit.[10]

During the design development phase, a couple of community meetings are held with the future residents where shared communal spaces, such as the rooftop garden, laundry, and other amenities, are discussed and determined. A limited number of add-ons to unit furnishings are also selected at this stage. A Contract of Sale is established, and deposit is due at the end of this phase.

8 Renew.2,10]]},"issued":{"date-parts":[["2019",8,7]]}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}

9 "Is the Nightingale Housing Model the Architecture of the Future?," Brickworks, March 20, 2019, https://www.brickworks.com.au/nightingale-housing-model-architecture-future/.

10 "Nightingale Housing," Nightingale Housing, accessed February 10, 2021, https://nightingalehousing.org.

+ Nightingale 1

2. Embedded Values

Future inhabitants actively select the Nightingale method as they agree on the pre-determined principals.

Ex) carbon neutrality, sustainable transportation, healthy materials, reduced cost of living, equitable resale.

3. Balloting Process

Interested parties within the Nightingale Database enter a balloting process for all new projects. 20% of units are reserved for priority ballots, which are given to key community contributors, essential works, individuals with disabilities and Indigenous peoples.

Successful ballotters put down a $10,000 commitment fee.

6. Options

Standard Nightingale Housing amenities of shared laundry, roof terrace, and community garden are offered in the amenity's determination stage. Any modifications must be made collectively.

7. Equitable Resale

The unit must be offered to existing Nightingale Resident Members unless sold or transferred to a family member. Traditional sale channels may be used following a one-month period on the internal market. The maximum resale price is capped at the original price plus the percentage of property values increase in the immediate neighborhood over the duration of ownership.

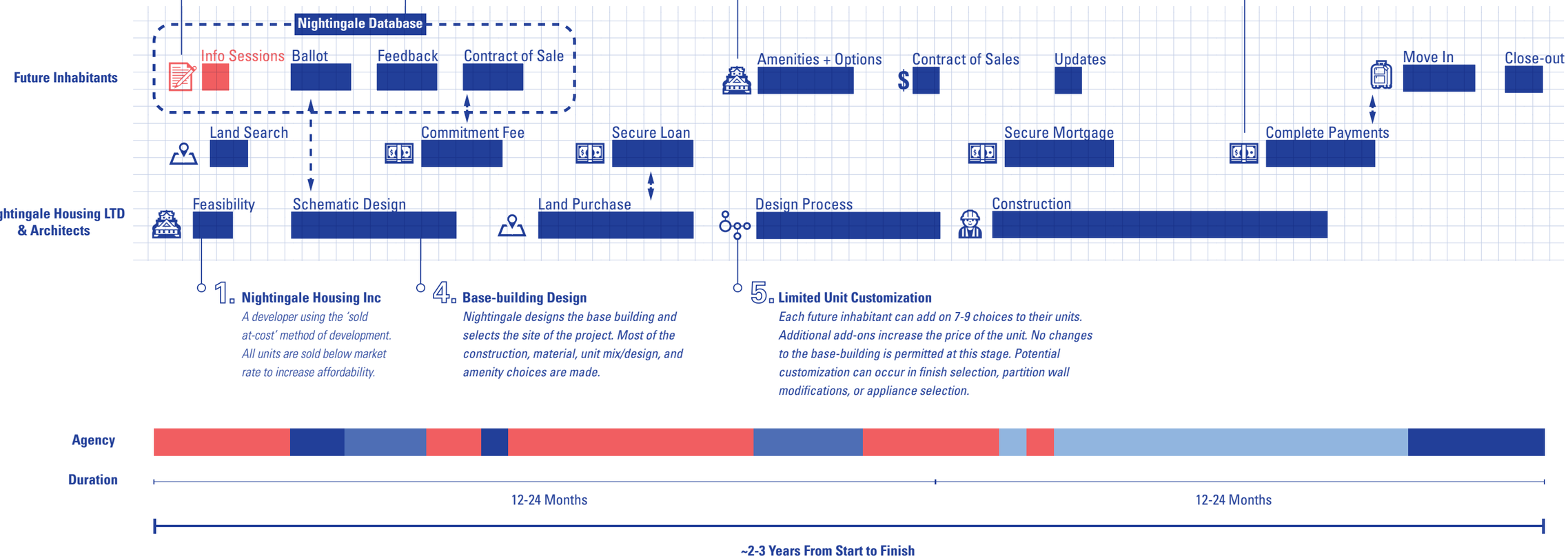


Fig. 5.10 | Nightingale 1 Project Gantt

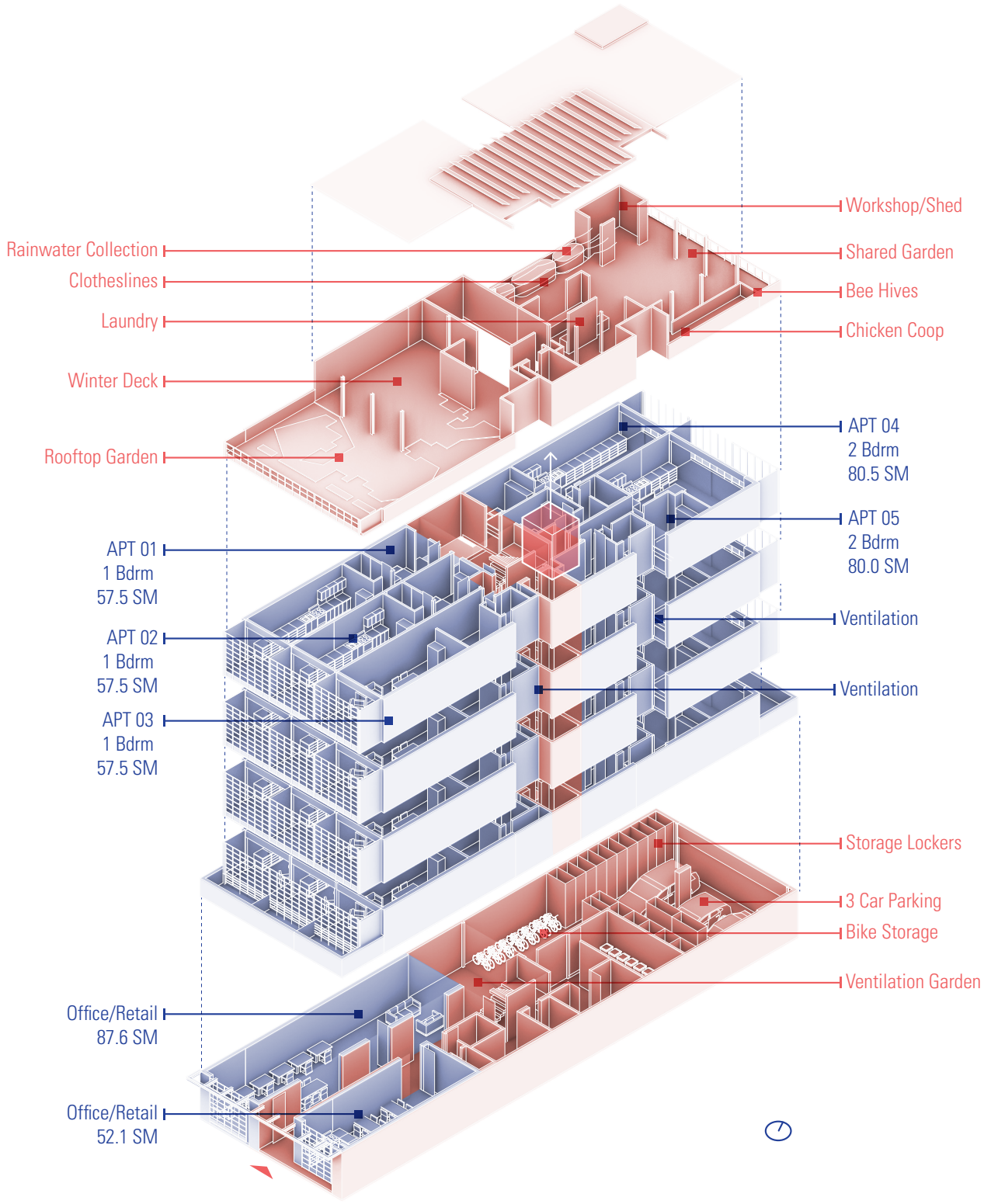


Fig. 5.11 | Nightingale 1 Exploded Axonometric

Red = Communal Space
Blue = Private Space

When the project is in the construction phase, residents can take part of occasional meetings and site visits. Three to six weeks before closeout, future residents work to finalize their mortgage and prepare for handover.

Equitable re-sale policies are in place because the units are sold to the residents 'below market rate'. To maintain affordability and prevent speculation on the units, there are strict resale policies contain two aspects. Firstly, the unit must be offered to existing Nightingale Resident Members unless sold or transferred to a family member. Traditional sale channels may be used following a one-month period on the internal market. Secondly, the maximum resale price is capped at the original price plus the percentage of property value increase in the immediate neighborhood over the duration of ownership. The goal of these policies is to ensure that the homes remain as owner-occupied units and not as investment vehicles for speculators.

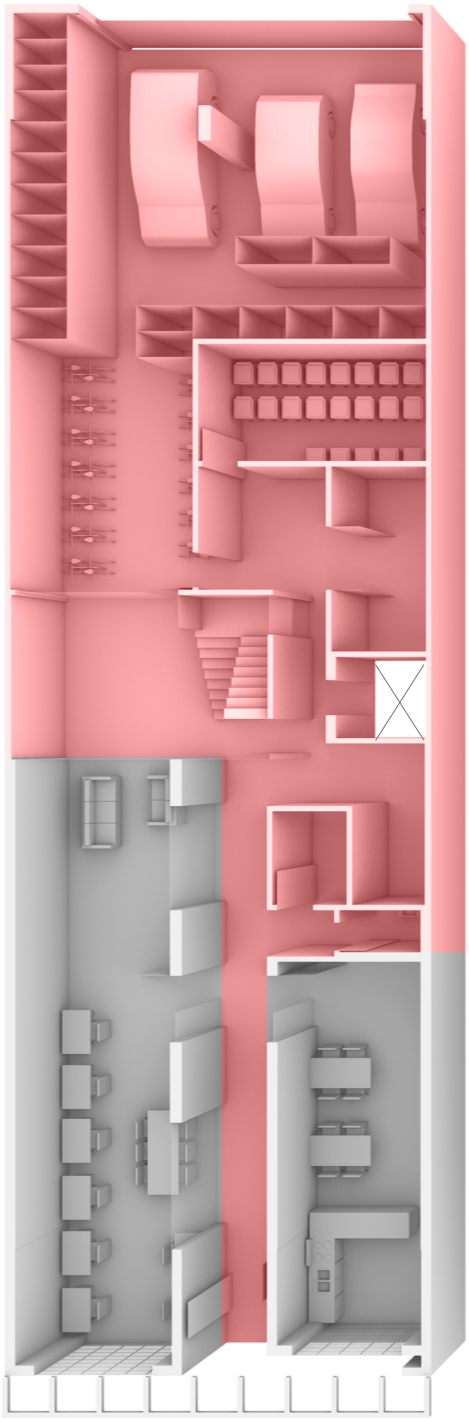
While the Nightingale model seeks to operate within the existing framework of ownership-housing markets it proceeds to establish a high-value proposition for most real estate seekers, subverts the process of conventional profit-driven development, and delivers high quality apartments built with the end inhabitants needs in mind.

> *As an equitable development method, Nightingale acts as an at-cost developer for sustainable, community-driven, and affordable housing.*

Nightingale 1 is located in Brunswick across the street from their first project, The Commons. It was designed with other successful multi-unit and multi-use housing blocks in Berlin and Spain in mind. The intent was to design a repeatable typology for Melbourne that would increase engagement with the street front while maintaining a high-density of units. The neighborhood Nightingale 1 is in was previously dominated by industrial programs but with the advent of the Upfiled Rail Line in Victoria, the neighborhood transitioned to become an ideal district for residential development. Without existing residential zoning restrictions, the project consisted of five stories and a communal roof, containing a total of twenty units. On each floor there were two 2-bedroom units and three 1-bedroom units. Two commercial units were located on the ground floor to engage the community, while the resident's storage, bike parking, waste storage, and some limited car parking were located at the rear. As of 2020, the ground floor commercial units are occupied by a local café and office space. The communal roof terrace includes shared laundry facilities and clothesline as well as outdoor and sheltered gardening space and a barbeque.[11]

11 Colin Chee, *Never Too Small 50sqm/538sqft Small Apartment - Nightingale 1*, 2020, https://www.youtube.com/watch?v=FKc5WvMrx6g&ab_channel=NEVERTOOSMALL.

Level 1



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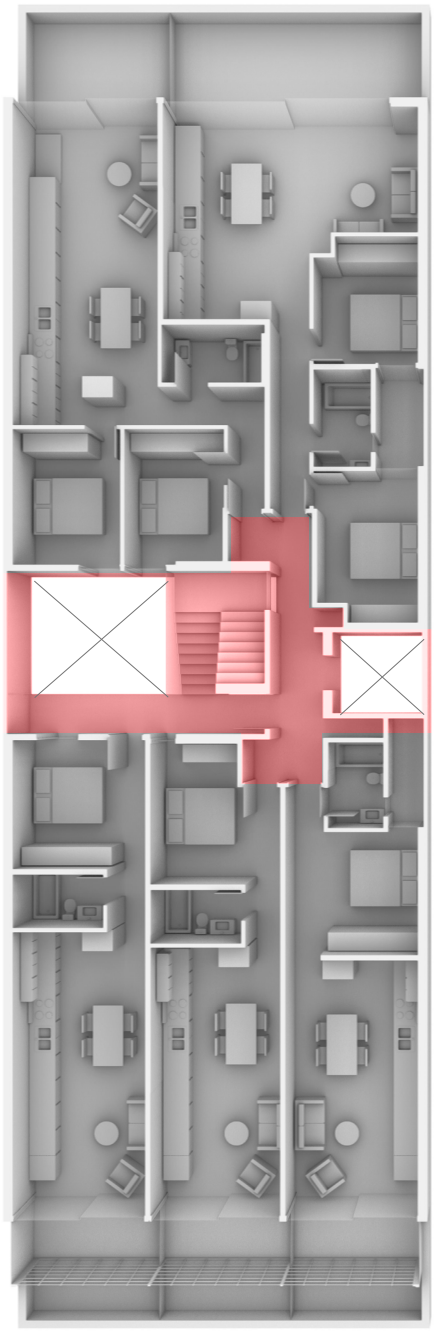
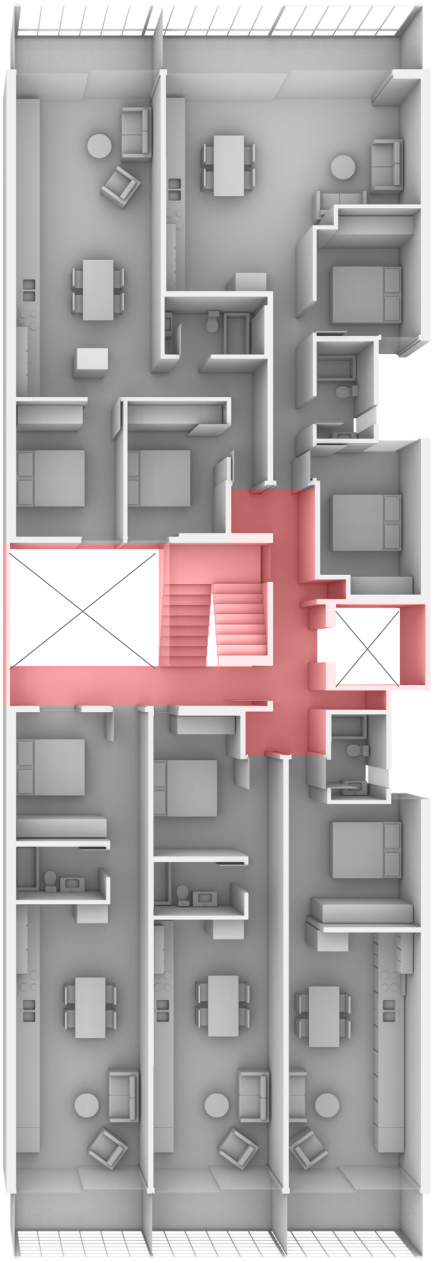
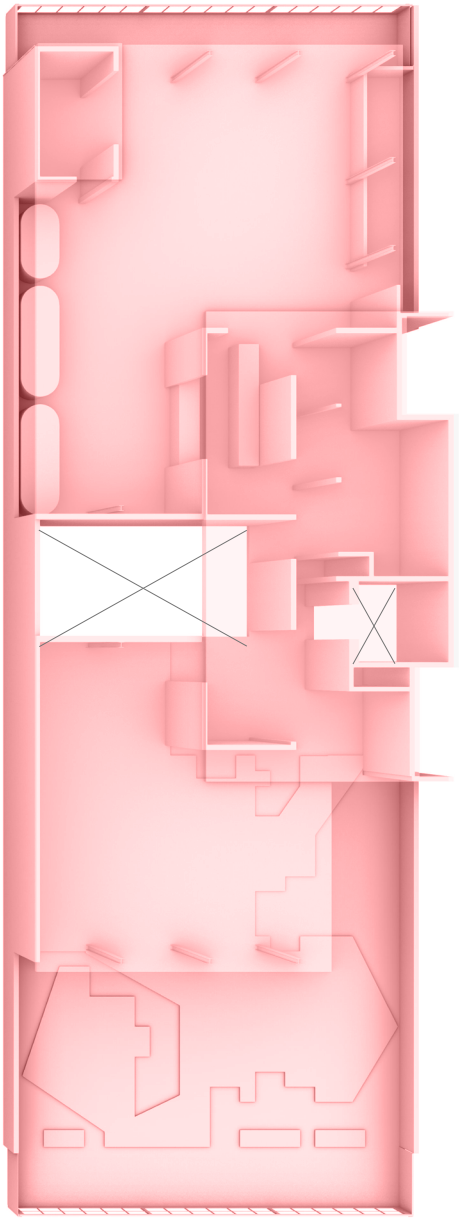


Fig. 5.12 | Nightingale 1 Perspective Plans

Level 3-5



Roof



Legend

Highlighted elements represents differences to conventional condo developments.

Communal Areas

Environmental strategies including passive cross ventilation for every unit, heat pump HVAC and water heaters, rooftop photovoltaics, rainwater storage systems, and an absence of natural gas appliances allow for a carbon neutral operation of the apartment. Additional material selection strategies such as the use of brass hardware, unfinished concrete, reclaimed brick, recycled hardwood, and elegantly exposed mechanical work form a design language that values durability, serviceability, and economy.

Nightingale also implemented a limited number of Teilhaus Apartments, German for "part house", in their developments. The Teilhaus apartments are small in footprint and low in price, roughly the size of a standard studio apartment and priced from $220,000 to $320,000 they are subsidized by the 2-bedroom and 3-bedroom units in the same development. This lower barrier to entry opens an opportunity for lower-income households to break-out of the rental market. To maintain the affordability of Teilhaus units, they are reserved exclusively for first-time home buyers.[12]

By designing with values that view the homeowners exclusively as residents and not investors, Nightingale has produced a development model that has attracted extremely high levels of interest from homebuyers. This in turn has allowed them to obtain lower construction-lending risk because they are able to prove there is a long waitlist, and thus increase investment capital from small-scale investors. When there is a large established pool of interested, established, and committed future residents to draw from, the demand for the project becomes extremely quantifiable and clear before even investment is secured. As a result, this reduced the investment risk substantially. The at-cost model fosters a virtuous cycle which side steps the purely profit driven model of conventional residential architecture where what is typically built is lowest common denominator a developer can manufacture that can then be sold to the highest perceived price to speculative buyers. Despite being at-cost, the process remains expert-centric as the developer and architect are the primary decision makers at the conception of each project. The values that the Nightingale method proposes, such as sharing of key amenities and car-free living, are fundamental to each project. While future inhabitants are only involved at the later phases where they can make minor adjustments to the units.

12 "Nightingale Housing."

Fig. 5.13 | Open Rooftop for Community Activities

Fig. 5.14 | Interior Dinning Area with Unfinished Concrete and Brass Hardware

5.4 Future Co-development

Existing methods of high-agency development are limited in their efficacy due to the highly manual nature of the architect-driven collaborative design process and the limitations of architect and developer driven equitable development models.

The two methods of high-agency ownership-driven residential architecture: R50 Baugruppen and Nightingale 1, represent two different approaches to what can be considered democratic design processes. The Berlin *Baugruppen* process is one where a conventional architect-driven consultation process is used to achieve custom architecture for a group of homebuyers. The Nightingale method breaks this process down even further and researches the values of homebuyers to produce a development that prioritizes these needs and generates the potential for owner-occupied housing. If we evaluate both these method through Arstein's ladder of participation to evaluate the amount of agency future residents have, it is clear that both in the process as well as the built form that the manual approach favoured by R50 allowed for the highest amount participant control. This conventional one-to-one architect-to-future inhabitant relationship can be categorized as the partnership level, or level 6 on Arstein's ten rung ladder of participation. The customized unit layouts, along with the highly specific communal spaces is evidence that R50 is a project that is born from direct design consultation.

This stands in contrast with Nightingale 1, where future residents can only make minor furnishing choices and changes to the units and rooftop amenity terrace. However, by pre-designing and promoting values that aligns with the needs of most home seekers disenfranchised with the subpar quality and unaffordability of for-profit developments, the Nightingale model succeeded in capturing efficiencies in the development process and directly pass them onto the homeowners. By reducing the financial barrier of entry, Nightingale's projects translate to increased financial agency for the greatest number of *home seekers* that enter their system.

In both high-agency development models challenges to implementation remains. However, when compared to for-profit condos the two methods are vast improvements and provide much higher degrees of agency, value, and transparency to home seekers. The next stage of high-agency housing development must address the communication bottleneck.

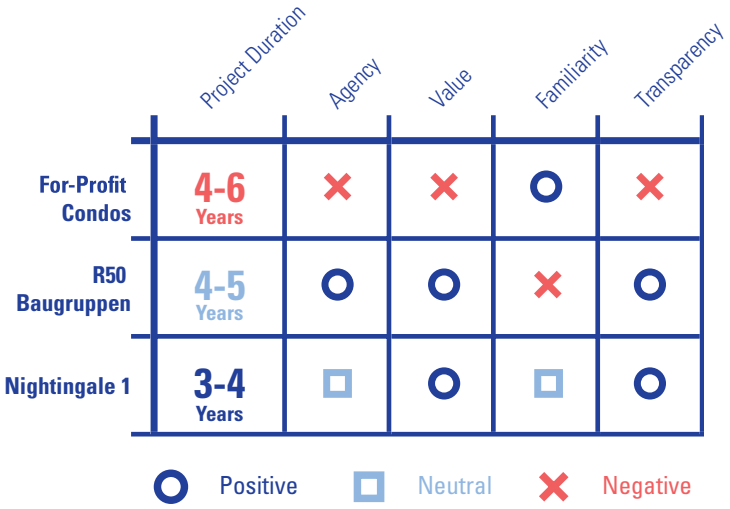


Fig. 5.15 | Development Method Comparison

6.0 High-Agency Housing in Toronto

Co-Zoning

Co-Design

Co-Develop

6.1 Methods for Affordability

What is an affordability-first direction for Toronto-based residential architecture?

Real estate development methods vary on a spectrum between developer-driven for-profit projects and government-funded public housing. An opportunity lies in the center where future inhabitants gather to self-develop their homes.

At the global scale, two opposing methods of supplying affordable residential architecture came to define affordability-first projects in the 20th century: extensive social housing projects in Vienna, highly managed by government policies and funding; and the rental-driven 'free' market of Montréal. Following the end of World War I, Vienna was a city desperately in need of housing. With a wave of rural citizens migrating into cities to support the rapid industrialization of Austria, overcrowded living conditions began to plague the urban fabric as supply could not keep up with demand. Following the Municipal Socialist Party's rise to power in 1919, Vienna embraced a high-taxation policy to fund the construction of grand public housing schemes, which worked to combat overcrowding by rapidly increasing supply. These modernist super blocks were constructed on city-owned land and experimented with the integration of mixed-used programming in addition to fulfilling the need for residential housing stock. The super blocks contained a nearly exhaustive diversity of municipal facilities such as clinics, libraries, kindergartens, gymnasiums, post offices, cinemas, theaters, and cafes.[1] During this time tenants also only had to pay about 3.5 percent of their monthly salaries on the rent of these units, which meant the supply of housing was deeply affordable to the general public. [2] By reducing housing costs to the absolute minimum through high-taxation and the development of city-owned lots, the Vienna model allowed the rapidly urbanizing population upwards mobility within the urban context.

Despite the idealism of other social-housing programs around this time in history, the subsidized apartments of Vienna are successful because these super blocks continue to remain key housing supply in the city. Furthermore, Vienna continues to invest in and expand the significance of the city's public housing stock, which builds on its longstanding tendency to apply a supply-first method to address affordability and housing in the city. As of 2018, 68% of Vienna's residents live in these public housing projects[3], standing in stark contrast to the estimated 11% of Torontonians housed in public housing

1 Eve Blau, The Architecture of Red Vienna, 1919-1934 (Cambridge, Mass: MIT Press, 1999), 45.

2 Alex Bozikovic et al., House Divided: How the Missing Middle Will Solve Toronto's Affordability Crisis, First (Toronto: Coach House Books, 2019), 20.

3 Hope Daley, "Vienna Leads Globally in Affordable Housing and Quality of Life," Archinect, July 25, 2018, https://archinect.com/news/article/150074889/vienna-leads-globally-in-affordable-housing-and-quality-of-life.

projects in the same year. In Toronto, only 123,450 affordable units in 2018 [4] were considered affordable, contrasted by the estimated 1,112,930 households in the City of Toronto in the 2016 census.[5]

In comparison, the rental-driven market of Montréal is equally as successful in providing a supply of affordable housing in the city because of the social attitudes and architectural typologies evident in the city. Unlike in Toronto, where multi-unit rentals were stigmatized and systemically rejected in urban planning policies and by the property-owning public culturally,[6] Montréal permitted an owner-driven densification model.[7] In many of the working-class neighborhoods the *superpose flat* is a distinctive typology which developed, that consisted of three-storey structures with exterior stairs. This typology dominated the urban fabric in Montréal and continues to provide a density of housing units within the city boundaries not seen in Toronto. In a CMHC report, Hanna David found that in Montréal "[t]he appeal of real estate ownership resided in the potential rental income, rather than the property of one household to own its own dwelling."[8] With an abundance of small-scale investors that were able to self-develop their lots, this urban form provided landowners with an opportunity to live on one floor while generating rental income from the other two floors of the three-storey typology. Not only did the 'superpose' flat create a democratic model of land development, but it also flooded the rental market with an abundance of units that proved to increase housing affordability by rapidly increasing the supply of units available. This typology carries forward into the present where zoning policies have allowed for low-rise apartments, duplexes, and triplexes to be developed in subdivisions in Montréal to increase the general density of these neighbourhoods. Due to the pervasiveness of the *superpose flat* typology and rental housing in the housing market, Montréal has a wider cultural acceptance of and willingness to build denser residential neighbourhoods within the city. As a result, Montréal's mortgage payment as a percentage of income (MPPI) rate at the start of 2021 sits comfortably at 31.3% for non-condo and 23.3% for condos. Compare this to Toronto's MPPI rate of 58.2% for non-condos and 34.5% for condos and Montréal evidently is able to provide a higher level of financial and social agency to home seekers by leveraging the rental market, densifying the urban fabric to increase supply, and culturally integrate both homeownership and rental as legitimate forms of housing in the city.[9]

4 Paul Smetanin et al., "Toronto Housing Market Analysis" (Canadian Urban Institute, Canadian Center for Economic Analysis, January 2019), 39.

5 Government of Canada, "Census Profile, 2016 Census - Toronto [Census Metropolitan Area], Ontario and Ontario [Province]," Statistics Canada, February 8, 2017.

6 Bozikovic et al., House Divided, 42.

7 Bozikovic et al., 21.

8 David B. Hanna, Montreal: A Rich Tradition in Medium Density Housing, Research Report (Ottawa: Canada Mortgage and Housing Corporation, 2002), 43.

9 Kyle Dahms and Camille Baillargeon, "Housing Affordability Monitor" (National Bank of Canada, February 2021), 2–3.

Toronto's market is quite different than both Vienna and Montréal in that it is highly homeownership-based. Toronto continues to lead in home ownership rates at 66.5% according to Statistics Canada's 2016 survey when compared to Vancouver at 63.7% and Montréal at 55.7%. However, on average Canada stands in further contrast to the 37.2% home ownership rate of Berlin.[10] This is because during the population booms of the 20th century caused by rural to urban migration, Toronto forged a different path to urbanization. To address the 'unsanitary' conditions of apartments in the downtown and under the direction of the city's medical officer of health Dr. Charles Hasting, urban planning and development policies pushed for a ban of the apartment typology in residential neighborhoods. In the socially conservative climate of Toronto, this higher density typology was perceived as a gateway to the corruption of the family unit in disturbing family privacy, persuading women to forgo domestic duties, and desecrating the well-being of children.[11] Moreover, contextually appropriate mid-density examples of experimental public housing, such as the Spruce Court in Cabbage Town, were perceived as government handouts and as a result its residents and the typology were socially stigmatized. This hostile housing market left the working-class and working-poor of Toronto with little choice but to move outwards. While the American south had the overtly racist and segregationist policies exemplified by the Jim Crow Laws, elsewhere in North America and specifically in Toronto, zoning was used as a tool to 'clean up' the cities of the immigrants, poor, and people of colour. In Toronto's first post-WWII attempts at a comprehensive urban plan, the *Proposals for a New Plan for Toronto* in 1965 broke down the city into three classifications: 'improvement areas' (inner-city areas slated for publicly funded revitalisation projects), 'areas of stability' (most low-rise residential neighbourhoods), and "areas of private redevelopment' (concentrated areas where high-density apartments would be permitted).[12] By dividing the city into these three extremes the seeds of single-family residential zoning protectionism was planted. This planning document is where single-family landowners solidified their dominance in city politics, became a symbol of 'stability', and were championed as the aspiration for future homeowners – while the rest were pushed upwards or outwards (or under). As Richard White describes in his essay in *House Divided,* "here is the genesis of the Yellow Belt". [13]

10 "Focus on Canada's Housing Market," RBC Economic Research (RBC, February 28, 2019).
11 Bozikovic et al., House Divided, 19.
12 "Towards a New Plan for Toronto" (City of Toronto, 1965), 21.
13 White et al., *House Divided*, 46.

As the UK urban planning historian Anthony Sutcliffe poignantly declares:

"Zoning originated not only to promote safer, healthier cities but also to keep the poor in their place." [14]

The deep-seated desire for homeownership and single-family residential zoning in Toronto drove citizens who were unwelcome in the centre of the city to embrace the lateral spread of residential neighborhoods away from the city core and developers looking to turn a profit happily delivered. As a result, lower-income families were often displaced and resorted to moving out of the city to inexpensive but underserviced lands outside of the city core where they could self-develop housing by purchasing semi-constructed kits. Despite being displaced to the literal margins of the city, these neighbourhoods allowed these families the opportunity to self-develop, own land, and consequentially build-up wealth.

In the introduction of a series of essays in *House Divided*, John Lorinc, expresses that "housing markets are shaped, often for long periods of time, by policy and political decisions made at the local level." [15] Adjacent to this and almost more importantly, social attitudes serve as a foundation for the decisions made in the democratic municipal government which generates housing and urban planning policy. In looking to meaningfully address the lack of agency in the Toronto housing market for non-landowners it is important to recognize the difficulty of completely flipping socio-cultural attitudes toward densifying residential neighbourhoods and the stigmatization of apartment buildings. As a result, adopting completely different housing strategies such as the socialist subsidized approach in Vienna or the bottom-up rental market of Montréal will likely not be feasible if we are looking for impactful solutions to address the Toronto housing crisis.

However, by building on the existing socio-cultural attitudes which value the homeownership model of housing; planners, architects, and policy makers can work alongside present-day social forces to create policies and new vernaculars that better adapt to the needs of the citizens of Toronto. And if we observe how the self-planned and self-built blue-collar communities outside of downtown are successful, it can inform the type of densification and development closer to the downtown core to empower those who have historically been left out.

14 Sutcliffe, 115.
15 Lorinc et al., *House Divided*, 23.

6.2 New Policies for a New Typology

How can policy changes unlock the Yellow Belt for densification while preventing over-speculation? What is a good site within the Yellow Belt to develop a novel micro-midrise typology?

Restrictive zoning, ineffective public consultation, and complex approval processes remain as key hurdles preventing high-agency co-developed architecture in the *Yellow Belt*. The goal of proposing a set of new policies is to encourage *building groups* to densify the generous *bungalow lots* of the *Yellow Belt* and discourage the continued construction of low-density mansions. Implementing a policy like Berlin's city-funded land acquisition program is unlikely in the political climate of Toronto, therefore the city must move to create zoning and taxation polities that can meaningfully address the hurdles co-housing may encounter during the planning process.

In the previous chapter a form of co-developed low to mid-rise apartment typology is called out as the ideal method for increasing residential spatial agency in the context of Toronto. However, the question of where and how to locate this radical typology in the city remains. If we look at the existing properties in the City of Toronto, there are 850,000 detached single-family dwellings representing approximately 40% of the cities' total housing stock. This number is significantly greater than the city's total number of semi-detached, row-house, townhouse, multiplex, and low-rise apartments, which stand at a total of about 628,000 units.[16] This wide swath of city-designated suburban neighborhoods comprised exclusively of RD (single-detached residential) zoning has been coined as the 'Yellow Belt' by urban planner Gil Meslin. The *Yellow Belt* stands approximately 1.8 times larger than the total land of all other residential zones and is an exclusive stronghold in Toronto of ultra low density and high-cost housing. With an aging population within these communities Toronto has created neighborhoods that are significantly over-house. In 2019 the Ontario Association of Architect (OAA) commissioned a housing affordability report from SvN Architects + Planners and found that approximately 2.2 million bedrooms lay empty in many households in the *Yellow Belt* as the residents continue to age and consequently become two-person empty nesters residing in housing built for larger families.[17] In the report a significant discrepancy was also found between the proposed densities in Ontario's Growth Plan (2017) and the allowed density in Toronto's Official Plan. Consistently, the city's official plan sets allowable density at more than half of what is proposed by the provincial government.[18] This problem of the missing middle in Toronto at its core is a policy problem that it situated in the politics of the *Yellow Belt* neighborhoods.

16 Bozikovic et al., 109–10.

17 John van Nostrand, Liana Bresler, and Blair Scorgie, "Housing Affordability in Growing Urban Areas" (Ontario Association of Architects, February 2019), 10.

18 van Nostrand, Bresler, and Scorgie, 20.

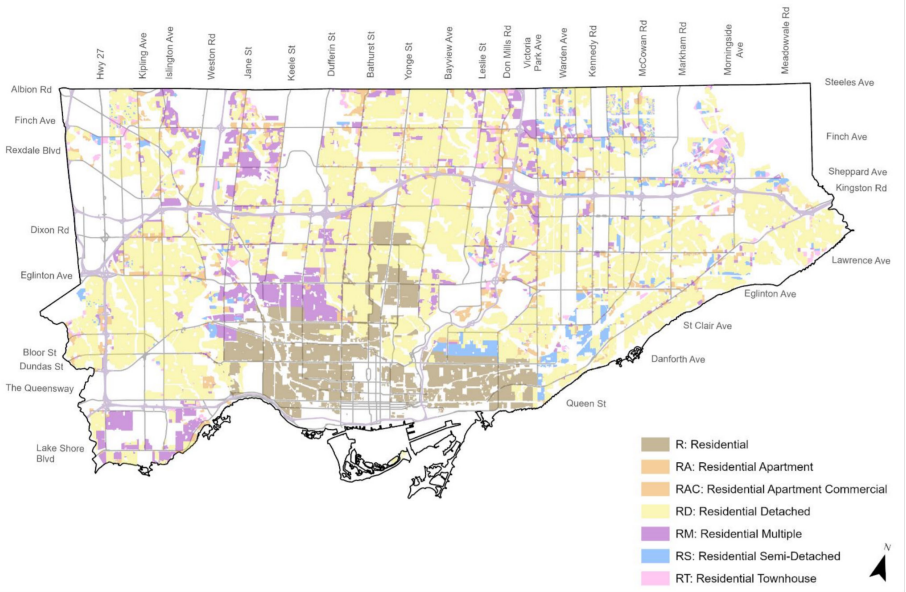


Fig. 6.1 | Residential Zones of Toronto

2.2 million bedrooms lay empty as many households in the Yellow Belt continue to age and consequently become two persons.[19]

The existing permitted methods of missing middle densification: rooming houses, basement suites, laneway houses, and garden suites are weak attempts at increasing housing affordability, diversifying housing stock, and genuine democratization of development. Rooming houses are restricted to a small number of downtown neighborhoods near post-secondary institutions. Secondary suites and basement apartments, permitted by city council in 1999, provide a limited number of often sub-par options for renters. The policies, which allow basement and secondary suites, were initially feared as it was believed that this would decrease property values. Instead, there has been a meteoric rise in demand for these units since their allowance as a viable development method. Nineteen years later Toronto has only begun to timidly explore the potential of laneway houses as an alternate typology in the same vein as the basement and secondary suite developments. The issue with all these attempts at densification is that they only serve to benefit existing landowners or speculators who can afford a multi-million-dollar mortgage. Essentially, people with their foot already firmly in the door of landownership. Without a simple process to stratify land and in only focusing on creating density in existing lots, the power imbalance between landlord and tenant is reinforced and exacerbated. This imbalance has been made particularly clear during COVID-19. Moreover, back in 2015 while the attention of the media has focused on policies regarding laneway houses, at the same time Official Plan Amendment 320 (OPA 320) was adopted by city council. This consequential policy stagnated the potential for density within neighborhoods and instead

19 Tetyana Bailey and Cheryll Case, "Protecting the Vibrancy of Residential Neighbourhoods" (Community in Public Planning, 2017).

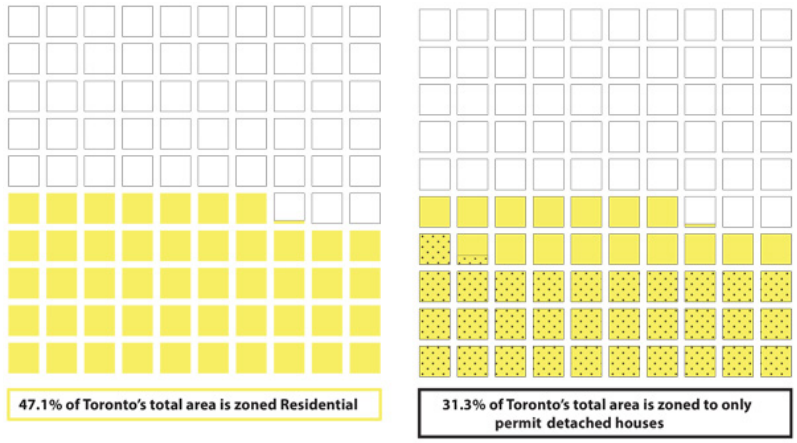


Fig. 6.2 | Sample of Existing Density in the Yellow Belt

focused conversations on defining what the existing 'prevailing physical character' of a neighborhood was. [20] This meant attention went towards defining the surface-level appearance of the neighbourhood of yesterday, instead of imagining how the built environment can form a resilient future. As wealth disparity continues to rise, Toronto finds itself in a state of increasing spatial inequality due to restrictive zoning policies, socially conservative values, and the rapid rate of land speculation, all of which contributes to the decline in agency of future home seekers.

Proposals to solve the missing middle problem have been widely discussed in both Toronto, as well as in Vancouver. In the 2019 OAA Housing Affordability Report prepared by SvN, the report proposed that at baseline the Municipal Density Targets needs to match the guidelines of the Provincial Growth Plan (2017). This included allowing a densification in all city centers, transit corridors and a focus on neighborhoods in the *Yellow Belt*.[21] The goal was to allow for a greater diversity of building types to be permitted in these existing low-density single-family lots. Building on this, in the 2018 Missing Middle Competition hosted by Urbanarium, a Vancouver non-profit that serves as a platform for urban discourse, emphasized the importance of a city-wide approach to the re-zoning of residential neighborhoods.[22] Without a city-wide approach land densification, the current approaches will continue to form a system that inequitably reward those with the capital to lobby for change.

Strong Towns, a grassroots moment started by Charles Marohn, approached this urban planning density problem through a financial perspective. As a civil engineer, Marohn did not directly critique the inhospitality of car centric sprawl or the housing affordability low-density neighborhoods cause. Rather he employed a method of calculating the tax revenue value per acre of

20 George Popper, "How City Hall Is Keeping Needed Change out of 'Stable Neighbourhoods,'" Spacing Toronto (blog), March 5, 2019, http://spacing.ca/toronto/2019/03/05/how-city-hall-is-keeping-needed-change-out-of-stable-neighbourhoods/.

21 van Nostrand, Bresler, and Scorgie, "Housing Affordability in Growing Urban Areas," 18–33.

22 "Missing Middle Competition Resulting Recommendations" (Urbanarium, November 2018), 8.

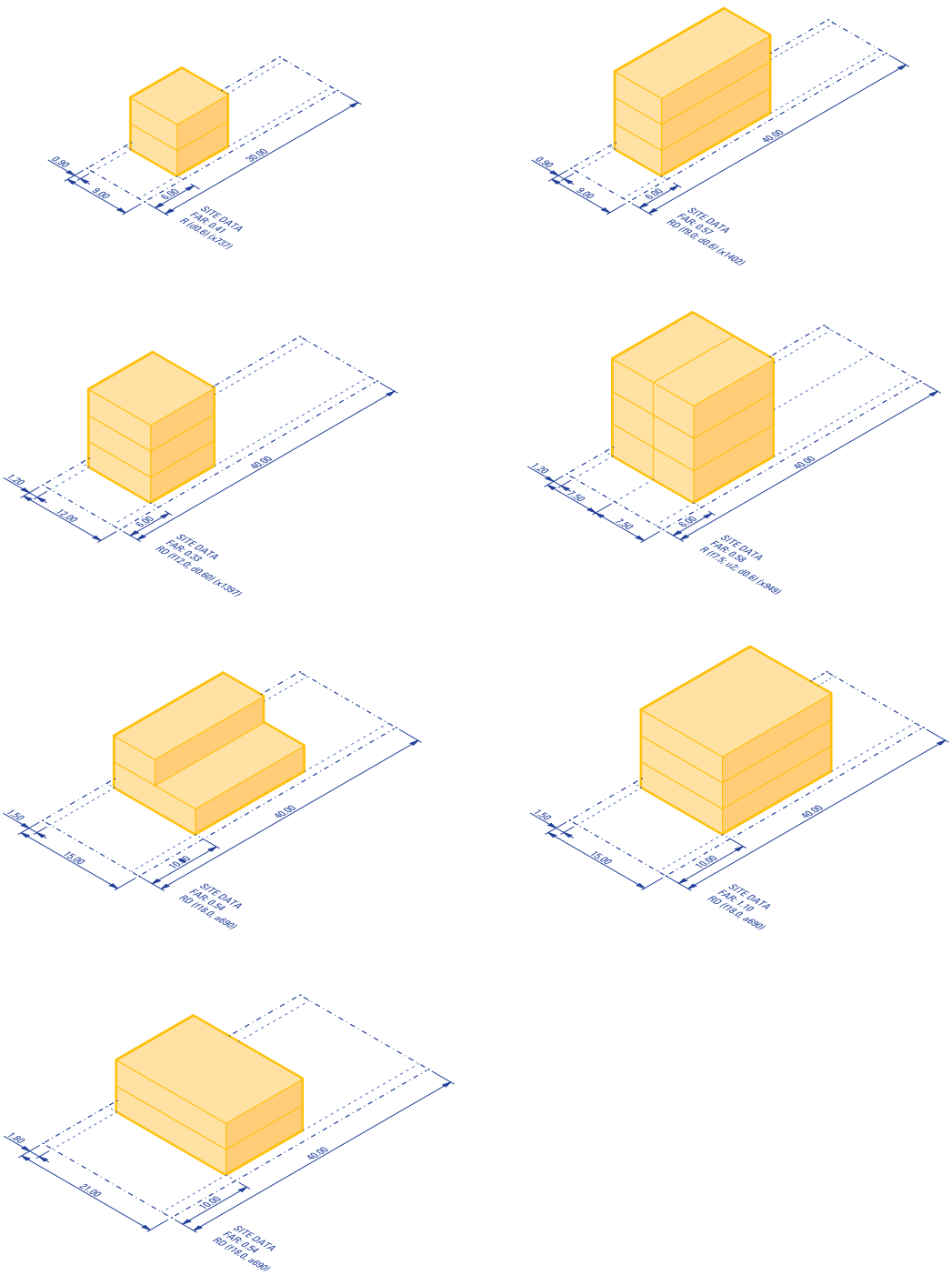


Fig. 6.3 | Sample of Existing Density in the Yellow Belt

different urban fabrics. His research reveals that the 'growth without prosperity' model of contemporary development is at its core a municipal ponzi scheme.[23] Essentially when municipalities inherit the low-density infrastructure of suburban neighborhoods upon completion, the property taxes collected will never cover the cost of future maintenance. Therefore, to maintain solvency cities resort to charging high development fees to continue subsidizing a flawed typology.

When comparing the tax income for municipal governments of the car-centric developments favoured by postwar planners, he found that the dilapidated downtown of the industrial age actually outperformed the driveway deserts of the suburbs by over three times. Currently the capital driven housing market has selected the two most resource intensive housing typologies as investment vehicles. Both the low-density *Yellow Belt* and ultra-high-density condominiums stand to require immense capital investment to maintain. Either it be the municipally funded horizontal infrastructure of suburbs or condo fee covered vertical infrastructure of super tall structures. This highlights the taxation incentive the city has for implementing a solution to the missing middle problem directly in the existing low-density neighborhoods of Toronto.

As a result, the natural site to deliver the missing middle would be the low density lots of the *Yellow Belt* in Toronto. With most of the lots offer generous frontages ranging from 12 to 25 meters wide and 40 to 60 meters deep, these 600-1200 square meter lots currently only hold on average a 0.4 FSI of density at 25-50 persons per hectare (PPH).[24] With massive development potential for densification, these lots are currently restricted by zoning and planning laws to maintain the low density of the *Yellow Belt* suburb. To address the restrictive zoning policies in Toronto there must be new policies that can permit for a city-wide densification of the *Yellow Belt* lots. The proposed maximum density of these developments should be set at 2.0 FSI with a target 200PPH. Despite this change in policy, the new typology to be developed in these lots does not have to become monumental or intimidating in any way. By following existing setbacks in the Toronto Chapter 10 Residential zoning bylaws and adapting the maximum envelope heights in the Toronto Mid-rise Performance Standards (2010) a new set of recommendations can allow for the construction of a new typology which produces neighborhoods with collective land ownership while densifying and increasing affordability; the micro-midrise.

Urban planning policy must address the needs of all citizens of the city. Rather than pitting existing landowners with home seekers through policies such as OPA 320, policies that seek to provide value to current and future owner-occupiers need to be explored. Existing strategies of densification without stratification does nothing more than increase the incomes of those who already bought into the right lots for development. To create an equitable direction forward, the micro-midrise typology highlights an opportunity to densify

23 Charles Marohn, *Strong Towns: A Bottom-Up Revolution to Rebuild American Prosperity* (New Jersey: John Wiley & Sons, Inc, 2019), 20.

24 van Nostrand, Bresler, and Scorgie, "Housing Affordability in Growing Urban Areas," 20.

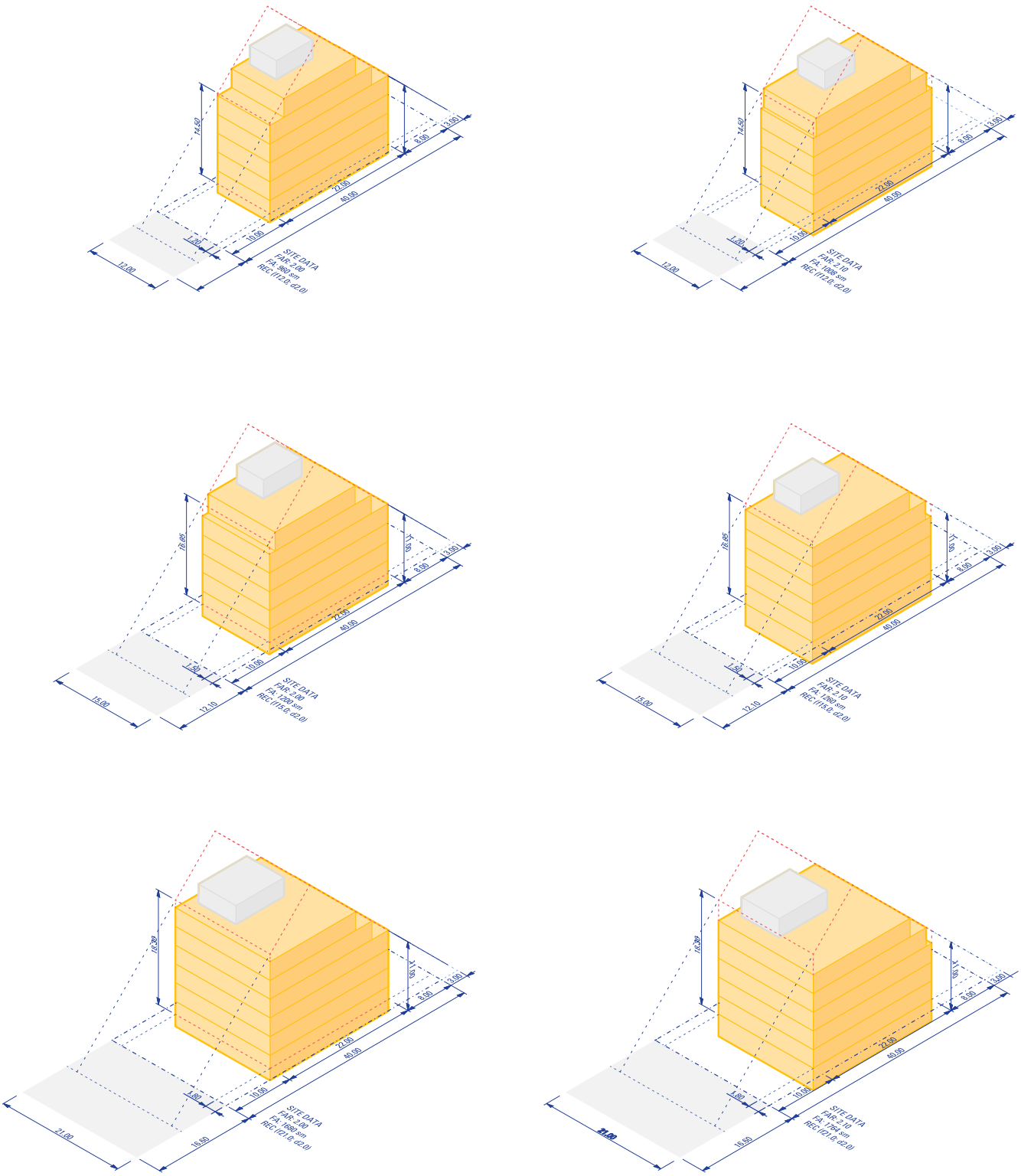


Fig. 6.4 | Proposed Density in the Yellow Belt

6.3 Collective Zoning

Achieving the level of political support to enact a policy with wide reaching change is difficult when most of the impacted constituents within the *Yellow Belt* are landowners that prefer maintaining the status quo. Therefore, a policy strategy must consider the goals of the city, preferences of existing homeowners in the community, and the members of the building groups.

Minneapolis, being one of the first North American cities to adopt a city-wide up-zoning of single-detached neighbourhoods in 2019, experienced a wave of opposition from NIMBYs (Not-In-My-Backyard) when the Minneapolis 2040 plan was debated in municipal hearings. Their usual concerns can be summarized to two main points. Firstly, the standard concern for change in 'neighborhood character' was brought up. The supporters of the plan pointed out that currently the character of the neighborhoods was changing for the worst as the community was facing dramatic *mansionization*. Many of these houses, of the same volume as the proposed triplexes, were replacing the modest post-war homes. In-fact it was found that the leader of the community group apposing the motion lived in one of the new 4,500 square foot mansions.[25] However, the second point concerning the potential for builders and developers to be the primary benefactors from the policy was valid. If the single-family houses were all rapidly converted to luxury duplexes and triplexes, there can be minor easing in the high-end home market, but the trickle-down effect will be limited for those who truly need housing. As a result, an inclusionary zoning requirement was added in the 2040 plan, which meant that even high-end developments are required to meet a quota for affordable units on site.

With the call to build in the Toronto *Yellow Belt* it is important to recognize the demographic nature of the neighborhoods. Currently the single-family homes of the *Yellow Belt* are 82.7% owner-occupied in Ontario. This incredibly high percentage is contrasted with the significantly lower 57.3% of owner-occupiers in the for-profit condominium towers.[26] As a result, for development to occur in neighborhoods that existing families have deep emotional investment, it is imperative to address the anonymity issue prevalent in the design and occupation of investor forward development. When existing residents of a neighborhood have no idea who 40% of their new neighbors will be, where this massive influx of funds is coming from, and why strangers in slick suits are looking to 'engage' with their opinions,

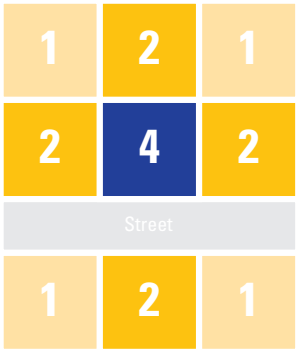
25 Richard Kahlenberg, "How Minneapolis Ended Single-Family Zoning," The Century Foundation, October 2019, https://tcf.org/content/report/minneapolis-ended-single-family-zoning/.
26 "The Daily — Canadian Housing Statistics Program, 2018" (Statistics Canada, June 11, 2019), https://www150.statcan.gc.ca/n1/daily-quotidien/190611/dq190611a-eng.htm.

Fig. 6.5 | Yellow Belt Micro-Neighborhood Axonometric

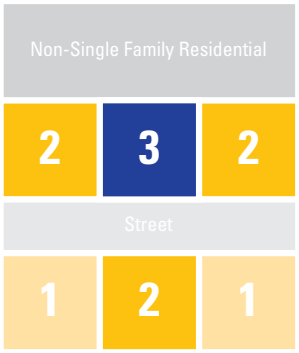
it is not difficult to understand why resistance is strong to the financialized model of development. Therefore, a development method that fundamentally includes the neighbors as owners of the projects and is driven by a group that is majority owner-occupied are important factors to operating in the *Yellow Belt*. By implementing a collective approach to zoning at the scale of the micro-midrise, the existing Official Plan and Zoning By-law Amendment and Minor Variance Adjustments process can be replaced. Instead of setting up a platform for public hearings that invites only fruitless opposition, *micro-neighbourhoods* can offer an opportunity for existing landowners within one to two lots adjacent to site in question to be direct stakeholders in the design, development, and ownership of the project. Moreover, this strategy sidesteps the current prohibitively high cost and risk of submitting rezoning applications to the city, which remains to be a major barrier to affordable mid-rise development.[27] The ideas of *Baugruppen* model can be expanded on and applied to a North American context simply by establishing collective development methods as opposed to a top-down zoning strategy. The potential here is that prospective *building groups* can be matched with neighborhoods that have similar interests in specific amenities, such as home studio spaces, facilities to age-in place, and child-care options. As a result, complimentary needs and interests become the driving force for zoning instead of the top-down universalist approach to planning that favours the ever-vague 'prevailing physical character' of a neighbourhood. A maximum-density and height is established by municipal planners, which then it is up to the neighbours and *building group* to collectively define what density is ideal for their *micro-neighbourhood*.

On a prospective site in a typical grid neighborhood there would be a total of four adjacent neighbours and four tangential neighbours, forming the *micro-neighbourhood*. When a voting process is required during the design process to determine zoning specifics, a gradient voting system is used to equitably distribute power amongst these stakeholders in the *micro-neighbourhood*. Adjacent neighbours have two votes, tangential neighbours have one vote, and the building group is assigned four votes for a total of 16 votes. To reach a majority, the *micro-neighbourhood* requires 9 votes to pass a motion. For sites that back onto non-single family residential lots or major avenues the number of neighbors can decrease to 5 or less, thus majority can be achieved with 6 votes, redistributing the voting power in this process accordingly. This new policy making process of neighbourhood co-zoning through weighted voting can be categorized as a process of power delegation, the second highest level of participation on Arnstein's ladder. The specific balance of power between *building group* and existing neighbors will need to be evaluated during the initial city-wide re-zoning process. Alternatives vote weighting to the 54-56% majority can be explored to introduce a higher degree of negotiation during *micro-neighborhood* co-zoning process. While an

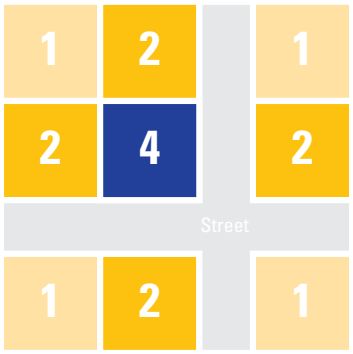
27 Shane Dingmang, "Toronto Wants Mid-Rise Housing, but Can We Afford It?," *The Globe and Mail*, June 26, 2018, https://www.theglobeandmail.com/real-estate/article-toronto-wants-mid-rise-housing-but-can-we-afford-it/.



Micro-Neighbourhood	Votes	Vote %
Building Group	4	25%
Adjacent Neighbours	8	50%
Tangent Neighbours	4	25%
Total	**16**	100%
Min Votes for Majority	9	56%



Micro-Neighbourhood	Votes	Vote %
Building Group	3	27%
Adjacent Neighbours	6	54%
Tangent Neighbours	2	19%
Total	**11**	100%
Min Votes for Majority	6	54%



Micro-Neighbourhood	Votes	Vote %
Building Group	4	25%
Adjacent Neighbours	8	50%
Tangent Neighbours	4	25%
Total	**16**	100%
Min Votes for Majority	9	56%

Fig. 6.6 | Micro-Politics Voting Scenarios

expansion to neighbors not directly connected to the site, for example those who are a lot over, can be investigated in other iterations of this strategy. The intention of this policy to increase direct citizen planning participation, provide home seekers a voice within the zoning process, and establish a re-zoning platform exclusively for owner-occupied developments.

To operate within the asset based real estate economy of Toronto the co-development process needs mechanisms for support from *Mom & Pop Investors* to gain traction. In this co-zoning process not only will existing landowners within the *micro-neighbourhood* become active participants in the design and use of the amenities, but (in true Toronto fashion) they also have priority access to purchase one of the limited units designated as non-owner occupied. Maximum allowable rent will be capped at a rate the reflects the evaluated price difference between market and *Building Group* units at the time to transfer levels of affordability to the renters. Immediate family members and registered future *building group* members will have priority ballot to rent these units. This directly flips the current landlord-tenant relationship prevalent in the basement suite homes in Toronto, where those who lack agency as renters are subjected to occupying 30% of the least desirable space in the home just to pay 50% of the landlord's mortgage. This strategy further provides a capital incentive for neighbours to become literally invested in the development and design of the project.

Resale of the designated owner-occupied units will need to follow similar priced capping policies like the Nightingale method. Primarily owner-occupation must be enforced for building group members, while the affordability of the units needs to be maintained by capping the maximum sale price to the original price multiplied by the overall property value change in the neighborhood. Sale of units will be given priority to future members looking to join the building group. If there are more than one home seeker, a balloting process will be used to determine the final purchaser. This strategy effectively prevents the micro-midrise units, and in turn housing produced from this method, from becoming a financialized asset.

Since the co-zoning process relies on the shared ownership model, the *building group* becomes an integral component of the densification process. Moreover, to discourage land speculation of these existing lots by developers or individuals, the rezoning process will be established to only be accessible by building groups looking to co-develop majority owner-occupied housing. As a result, those who benefit from the re-zoning will be directly those who have a stake the *micro-neighborhood*. Capital is therefore, not extracted out of property by developers looking to turn a profit, but rather social, cultural, and importantly economic capital remains in the hands of those who choose to live in the community.

The creation of the *micro-neighbourhood* is a form of micro-politics that empowers individuals to be active participants within their immediate surroundings. Instead of relying exclusively on top-down policies from planners, politicians, commercial interest groups, and NIMBYs, this form of governance shares the planning responsibility with and provides a reasonable platform for the immediate inhabitants of land to determine their futures. By grouping together to densify the lowest density neighborhoods in Toronto, building groups can take back housing from the grips of speculators through collective power.

6.3 Policy Changes

Interpretations

Building Groups:

Housing co-operatives with the objective to self-develop majority owner-occupied housing. At minimum 80% of co-op shares must be inhabited by members as a principal residence within 6 months of construction closeout and in perpetuity. No single member can own more than 20% of shares. 20% of shares may be owned by members and used as leased property for rental residential, commercial, or employment purposes.

Micro-Midrise:

Multi-unit 4-6 storey housing developments constructed on existing single detached lots in residential neighbourhoods. Housing developments that are between the scales of the midrise typology and low-rise apartment blocks.

1. Permit building groups access, without the requirement of an official plan amendment:

    A. Rezoning of all existing RD and RS Residential Zone Categories to REC (Residential Employment Commercial).

    B. Increase existing density from FSI 0.4 to FSI 2.0.

2. All developments must follow the following guidelines:

    A. Developments must be at minimum 80% owned and occupied as the primary residence by members of a certified building group.

    B. City of Toronto Micro Mid-Rise Building Performance Standards will be applied to the allowable development volume.

    C. The resale of share prices must be capped and follow standard equitable resale policies to maintain affordability.

3. Eliminate Off-Street Parking Requirements

Increase Density

(Allow for FSI 2.0 developments)

Majority Owner-Occupied

(80% of shares are in perpetuity held by owner-occupiers)

Equitable Resale Policy

(Price-capped ballot based resale)

Collective Ownership

(No single member can own more than 20% of shares)

No Off-Street Parking Requirements

(Abolish the need for off-street parking)

Fig. 6.7 | Policy Proposal Summary

6.4 Municipal Land Transfer Credit

In the R50 Baugruppen project, due to the increased complexity of organizing a collective mortgage, a key hurdle is competing with for-profit developers during the land purchasing phase.

To overcome this problem the local government evaluates projects based on their benefit to the neighbourhood and pre-purchases the site temporarily to accommodate for the time required for collective action. In the context of Toronto, the potential for the municipal government to implement a similar program is unlikely and the bureaucratic process will hinder co-development. As a result, there needs to be an incentive for land sellers to accommodate the different purchasing timeline. Mechanism that the municipal government can employ are the Municipal Land Transfer Tax rates (MMLT), which is between 0.5-2.5% (2020) of the sale price, and the property tax rates, which is at 0.59904% (2020) of the assessed property value.[28] The implementation of a *Municipal Land Transfer Credit* (MLTC) can be given to land sellers who decide to sell to building groups. This policy takes the amount of the *Municipal Land Transfer Tax* (MLTT) collected in the transaction and transferred to the land seller after a building group successfully is builds a micro-midrise. This proposal promotes downsizers to accommodate for the co-development process. Additionally, to makeup any shortfalls in tax revenue and to increase the effective purchasing costs for single-family buyers, the city can explore options to significantly increase the MMLT for homes sold over 1.5 million dollars to individuals.[29] Consequently, most lots in Toronto large enough to accommodate the building groups are around the 1.5 million mark. However, *Building Groups* will be exempt from these increases.

A similar tax increase is already being considered in 2021 by the City of Toronto, where councillors are proposing a one percent MMLT increase on property sales higher than 2 or 3 million. Just a 1% increase would generate a predicted additional $24.5 million of revenue. There is pushback from the Toronto Regional Real Estate Board (TRREB), who are lobbying off the concern that it will increase the demand for 1–2-million-dollar homes and reduce affordability for families looking to become single-detached homeowners. However, their concern is inconsequential when supply of 2–3-bedroom units, family friendly units, in micro-midrises increases. Other policy options, such as increasing property taxes rates for new single-family homeowners, can also be explored. However, through framing it as a policy that will benefit existing Yellow Belt landowners, there will a wider support when proposed.

28 "Property Tax Rates & Fees," City of Toronto (City of Toronto, November 16, 2017), Toronto, Ontario, Canada, https://www.toronto.ca/services-payments/property-taxes-utilities/property-tax/property-tax-rates-and-fees/.
29 Heather Taylor, "2021 Potential Revenue from a Luxury Home Tax" (City of Toronto, January 2021).

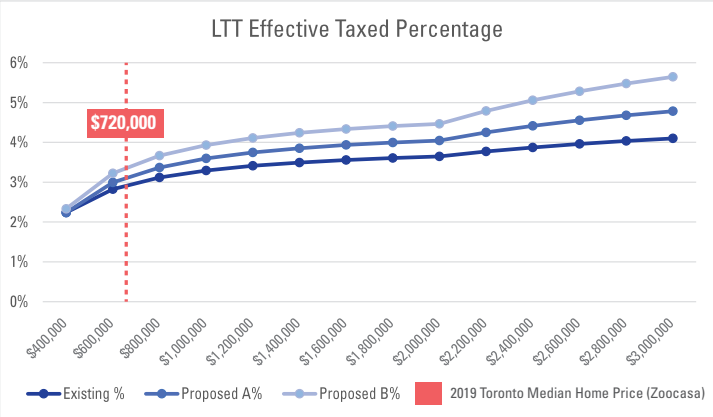


Fig. 6.8 | Municipal Land Transfer Tax Effective Taxed Percentage

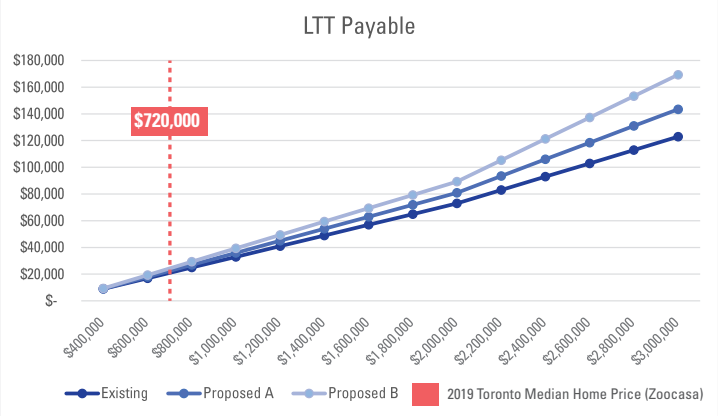


Fig. 6.9 | Municipal Land Transfer Tax Payable

Designed to balance the number of potential buyers of the *Yellow Belt* lots and prevent double digit increases in property values, the policy financially supports *Building Groups* in the development of micro-midrises and reduce the financial appeal of *mansionization*. Through implementing land transfer tax policies, the intent is to not impact the on-paper 'value' of the homes in the Yellow Belt. The intention of this policy is to empower those within the *Yellow Belt* neighbourhoods to downsize within the neighborhood they currently live in, while not impacting those who choose to remain their existing homes.

Municipal Land Transfer Credit (MLTC)

1. Designate all proposed Municipal Land Transfer Tax (MLTT) to be applied as a credit for the land seller if below conditions are met:

   A. Purchaser is a certified Building Group.

   B. A Micro-midrise was constructed on the lot within 2 years of land transfer.

If conditions are not met, the MLTC will be withheld and the standard MMLT rate is charged.

2. Allow for the first-time home purchase tax rebate to apply to Building Group members.

3. Increase the existing MLTT single family lot tax rate scheme to the proposed Rate A in first year of implementation and to Rate B in second year of implementation.

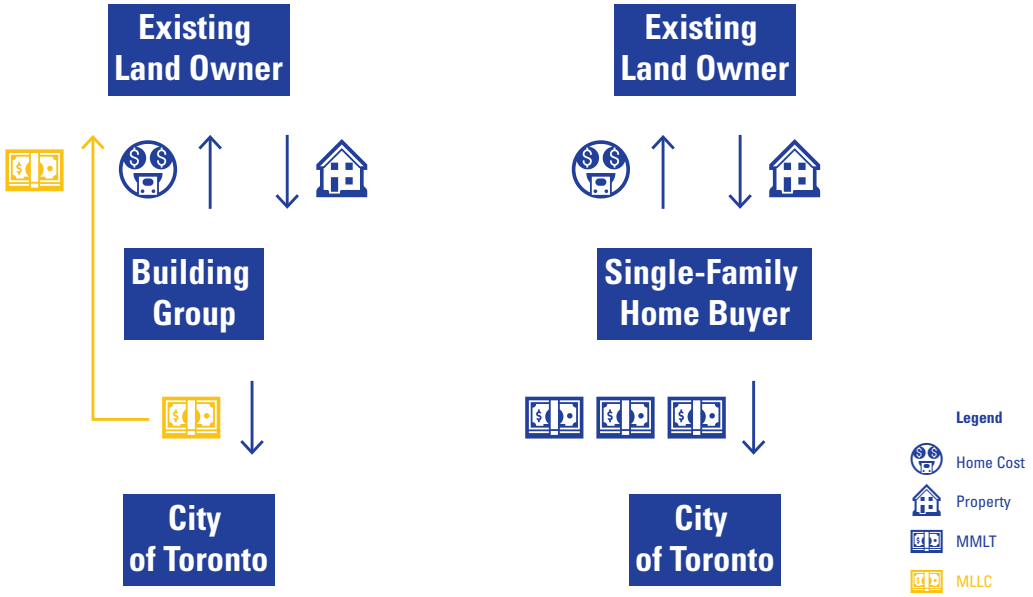


Fig. 6.10 | Municipal Land Transfer Tax Process

6.5 Micro-Midrise Test

The micro-midrise typology, though radical within the *Yellow Belt* neighborhoods is not completely new to the fabric of Toronto. When combing through the residential neighborhoods of Old Toronto a surprising number of residential apartments 3-5 storeys are present and co-existing with single-family homes. With this in mind, this thesis proposes three building types to fit in the standard lots of the Yellow Belt as a test of these exploratory testing ground for these strategies and the building it may produce.

To illustrate the economic viability of the micro-midrise type in the Yellow Belt, three lot types at 12, 15, and 21 meters wide and over 40 meters deep were selected. Hypothetical sites across Toronto that were sold in 2019 and had access to mass transit, grocery stores, and schooling options within walking distance were used to test the financial viability of development type.

In my tests, despite being in highly desirable and centrally located neighborhoods, while developing one level below the maximum height, all the case study units delivered through the co-development method produced units at or significantly below the 2019 Toronto condo price average. The Type 01 typology, the micro-midrise for 21m wide lots, proved to be most efficient and provided the highest value. This calculation includes expected "developer" 10-12% of levered profits. The profit for the building groups could be utilized and held to serve as a maintenance fund or distributed back to each member to increase affordability. However, and more importantly, in Fig. 6.12 the studio and 1-bedroom and 2-bedroom units are affordable or within reach to households making the median annual income in Toronto. While all units types in the tests were substantially more affordable than the Toronto median 'market rate' apartments sold.

Fig. 6.11 | An example of mid-rise apartment on 160 Huron Street now owned by Akelius, a Swedish multinational real estate management firm notorious for renovictions.

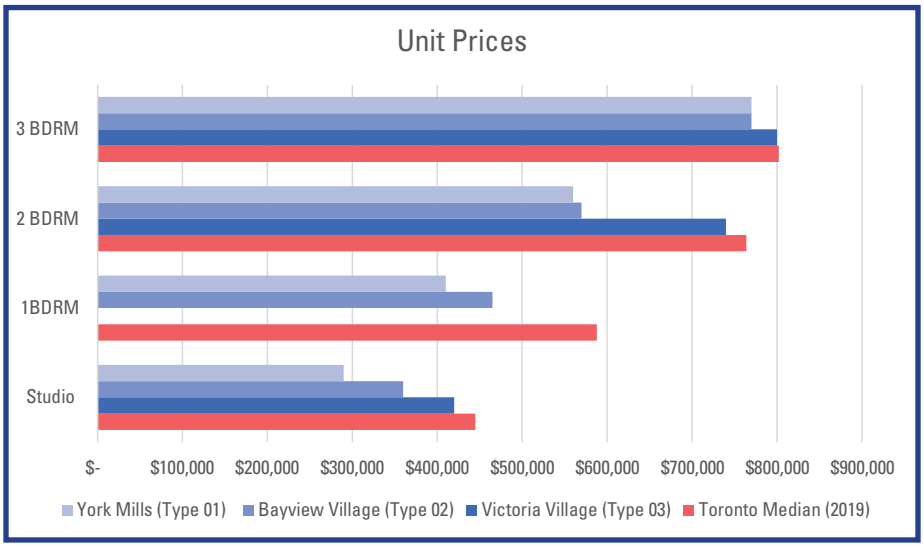


Fig. 6.12 | Unit Development Costs vs Toronto Condo Average

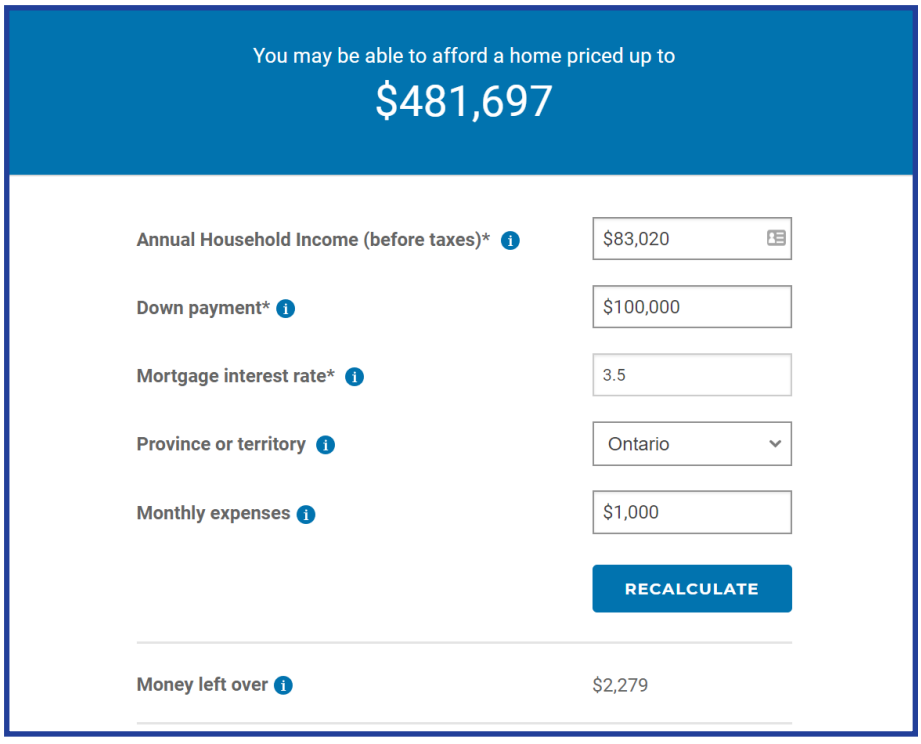


Fig. 6.13 | Median Household Income Housing Affordability

6.6 Type 01

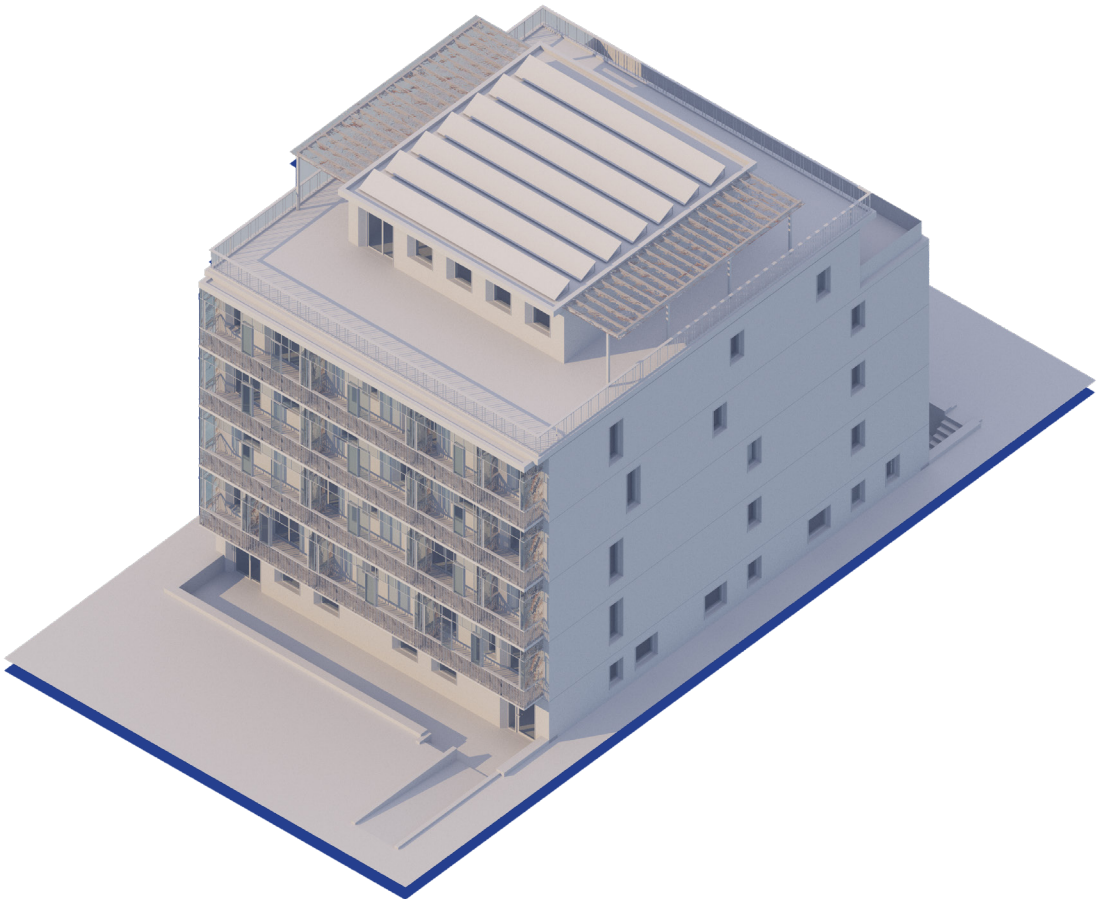


Fig. 6.14 | Type 01 Axonometric

Data Sheet

Living Area: 1,292 SM
GFA 1,292 SM
Units: 12-15
Residents: ~35
FSI: 1.58
Height: 17.5 M
ppH: 427

Type 01 is 20m in width and allows for four generous units or six studio units on each level. The size of the lot allows for increase arrangement flexibility. Interior circulation can be served with a core of scissor stairs and elevator.

Fig. 6.15 | Type 01 Data Sheet

Fig. 6.16 | Type 01 Elevation

Fig. 6.17 | Potential Site: 225 York Mills Rd, St. Andrew-Windfields - North York

Item	Total	Per Unit
Costs		
Land	-$ 1,705,002	-$ 121,786
Hard Costs	-$ 3,255,831	-$ 232,559
Soft Costs	-$ 1,414,325	-$ 101,023
Total	**-$ 6,375,158**	-$ 455,368
Revenue		
Residential Units	14	
Total Sale Revenue	$ 6,910,000	$ 493,571
Sales Fees (3%)	$ 207,300	$ 14,807
Total Sale Value	**$ 6,702,700**	**$ 478,764**
Final Value		
Cap Rate (In)	-	
Cap Rate (Out)	-	
Commercial Sale	$ 504,612	
Total Value	**$ 7,207,312**	**$ 514,808**
Total Cost		
Mortgage Repayment	-$ 3,585,713	
Initial Equity	-$ 2,789,446	
Final Cost	**-$ 6,375,158**	**-$ 455,368**
Net Profit		
Net Profit (unadjusted)	$ 832,153	$ 59,440
NPV	**$ 275,195**	**$ 19,657**
Return		
ROI: DCF Levered (NPV/Equity)	**10%**	
ROI: Levered (Profit/Equity)	**30%**	
ROI: DCF Unlevered (Profit/Cost)	**13%**	

Fig. 6.18 | Preliminary Pro-forma Summary - Andrew-Windfields

Tested Scenario Data

2 Studio
4 One Bed
7 Two Beds
1 Three Beds
14 Units
~35 Residents

Distance To:

Bus Stop 52M
Subway (L1) 1.5KM
Groceries 200M
School 600M

Fig. 6.19 | Type 01 Tested Scenario Data

6.7 Type 02

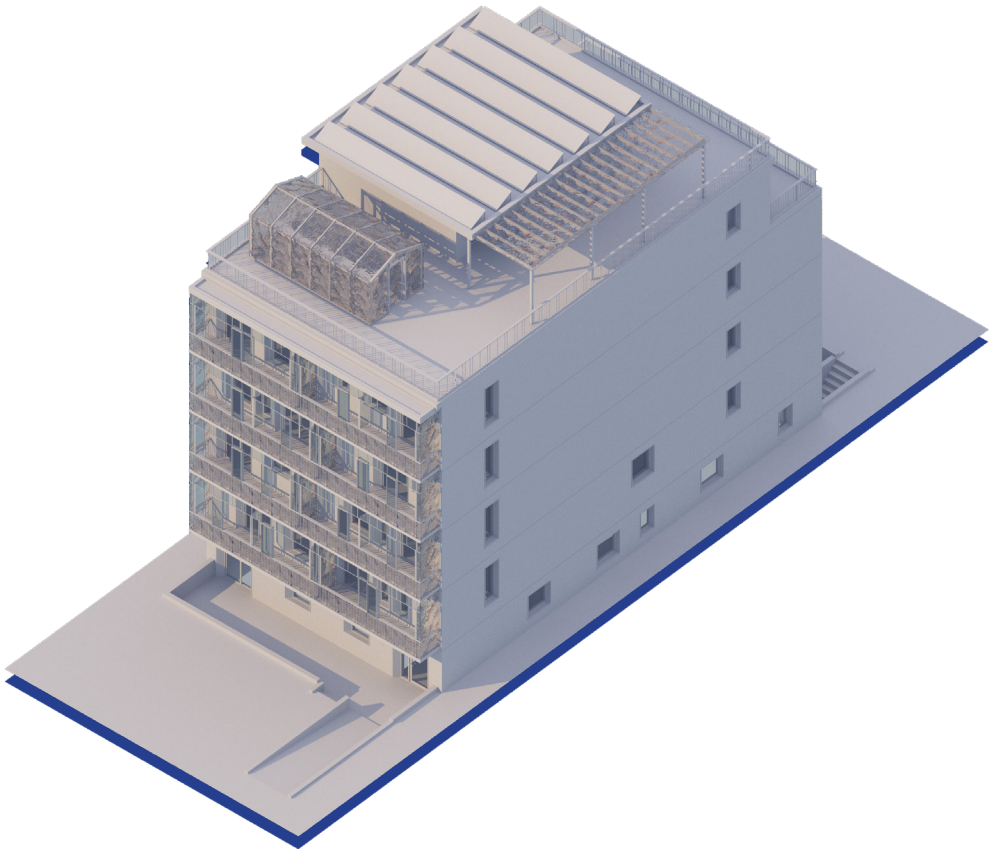


Fig. 6.20 | Type 02 Axonometric

Data Sheet

Living Area: 873 SM
GFA 873 SM
Units: 8-15
Residents: ~20
FSI: 1.46
Height: 17.5 M
ppH: 433

Type 02 is 15m in width and allows for a maximum of four units or two generously sized units on each level. Representing the most typical type for the suburban lots of Toronto, the arrangement works for lots that are 18m wide. Interior circulation can be served with a core of two scissor stairs or a single stair and elevator.

Fig. 6.21 | Type 02 Data Sheet

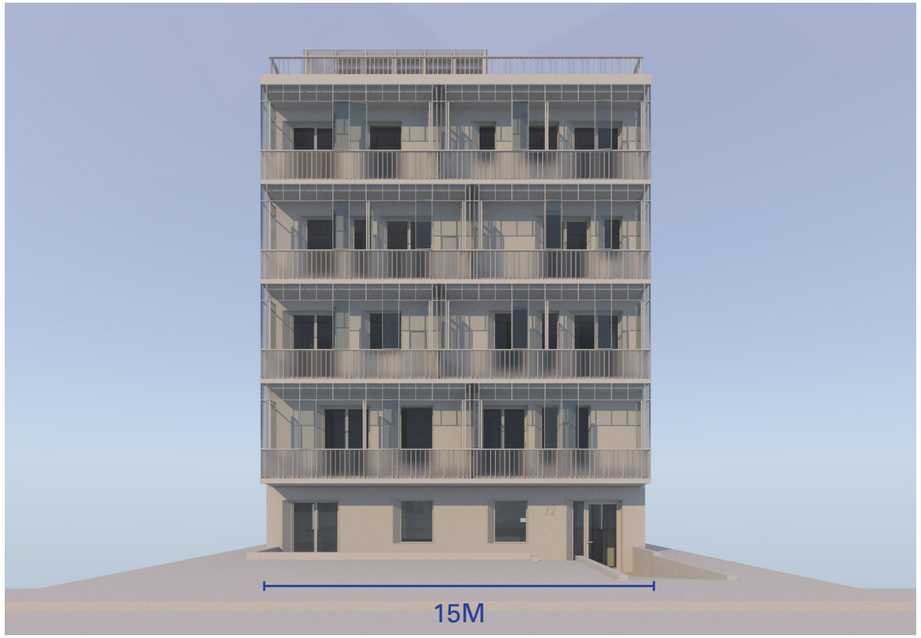


Fig. 6.22 | Type 02 Elevation

Fig. 6.23 | Potential Site: 17 Arrowstook Rd, Bayview Village - North York

Item	Total	Per Unit
Costs		
Land	-$ 1,782,502	-$ 127,322
Hard Costs	-$ 2,930,816	-$ 209,344
Soft Costs	-$ 1,354,696	-$ 96,764
Total	**-$ 6,068,014**	-$ 433,430
Revenue		
Residential Units	14	
Total Sale Revenue	$ 6,690,000	$ 477,857
Sales Fees (3%)	$ 200,700	$ 14,336
Total Sale Value	**$ 6,489,300**	**$ 463,521**
Final Value		
Cap Rate (In)	-	
Cap Rate (Out)	-	
Commercial Sale	$ 504,612	
Total Value	**$ 6,993,912**	**$ 499,565**
Total Cost		
Mortgage Repayment	-$ 3,227,766	
Initial Equity	-$ 2,840,248	
Final Cost	**-$ 6,068,014**	**-$ 433,430**
Net Profit		
Net Profit (unadjusted)	$ 925,898	$ 66,136
NPV	**$ 368,976**	**$ 26,355**
Return		
ROI: DCF Levered (NPV/Equity)	**13%**	
ROI: Levered (Profit/Equity)	**33%**	
ROI: DCF Unlevered (Profit/Cost)	**15%**	

Fig. 6.24 | Preliminary Pro-forma Summary: Bayview Village

Tested Scenario Data

7 Studio
4 One Bed
0 Two Beds
3 Three Beds
14 Units
~35 Residents

Distance To:
Bus Stop 350M
Subway (L4) 500KM
Groceries 500M
School 2KM

Fig. 6.25 | Type 02 Tested Scenario Data

6.8 Type 03

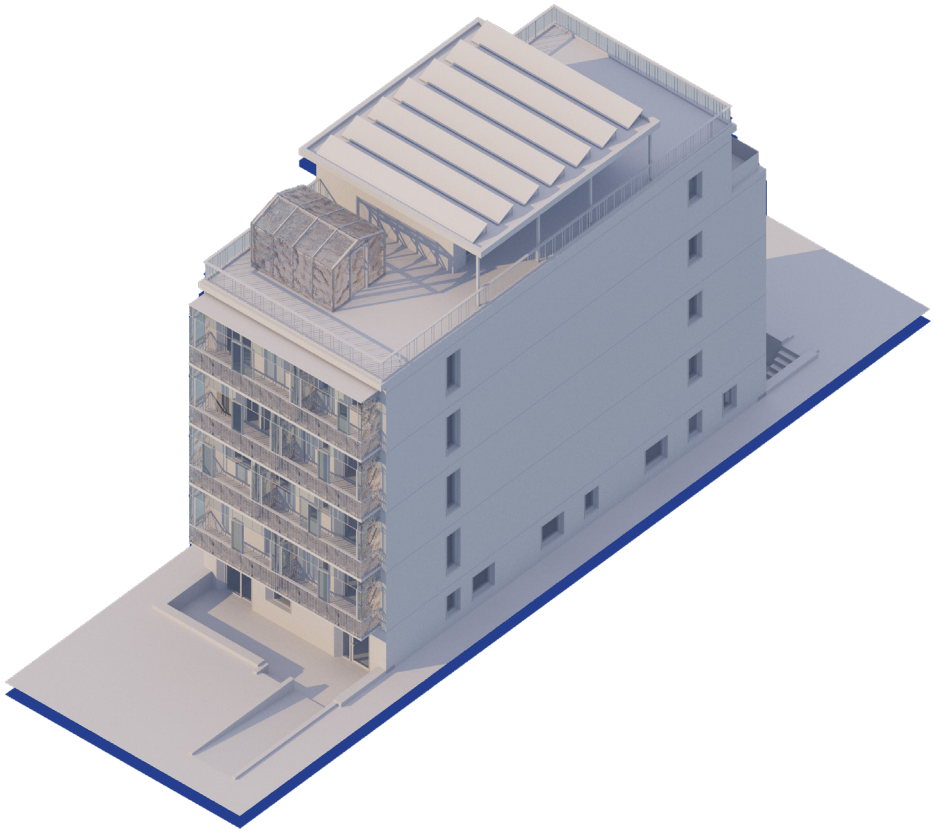


Fig. 6.26 | Type 03 Axonometric

Data Sheet

Living Area: 665 SM
GFA 665 SM
Units: 6-8
Residents: ~18
FSI: 1.39
Height: 17.5 M
ppH: 375

Type 03 is 12m in width and represents the minimum lot width for the development of micro mid-rises. The envelop allows for a maximum of two generously sized units or one very large unit on each level. Interior circulation can be served with a core of two scissor stairs or a single stair and elevator.

Fig. 6.27 | Type 03 Data Sheet

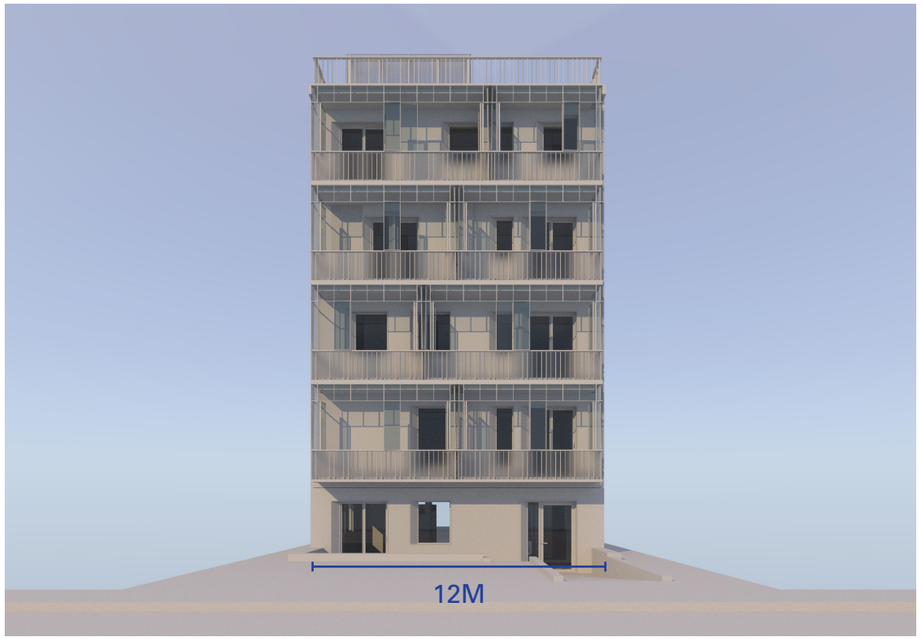


Fig. 6.28 | Type 03 Elevation

Fig. 6.29 | Potential Site: 30 Halkin Cres, Victoria Village - North York

Item	Total	Per Unit
Costs		
Land	-$ 1,085,001	-$ 120,556
Hard Costs	-$ 2,444,624	-$ 271,625
Soft Costs	-$ 1,255,654	-$ 139,517
Total	**-$ 4,785,279**	-$ 531,698
Revenue		
Residential Units	9	
Total Sale Revenue	$ 5,100,000	$ 566,667
Sales Fees (3%)	$ 153,000	$ 17,000
Total Sale Value	**$ 4,947,000**	**$ 549,667**
Final Value		
Cap Rate (In)	-	
Cap Rate (Out)	-	
Commercial Sale	$ 504,612	
Total Value	**$ 5,451,612**	**$ 605,735**
Total Cost		
Mortgage Repayment	-$ 2,692,313	
Initial Equity	-$ 2,092,966	
Final Cost	**-$ 4,785,279**	**-$ 531,698**
Net Profit		
Net Profit (unadjusted)	$ 666,333	$ 74,037
NPV	**$ 237,715**	**$ 26,413**
Return		
ROI: DCF Levered (NPV/Equity)	**11%**	
ROI: Levered (Profit/Equity)	**32%**	
ROI: DCF Unlevered (Profit/Cost)	**14%**	

Fig. 6.30 | Preliminary Pro-forma Summary: Victoria Village

Tested Scenario Data

2	Studio	**Distance To:**	
0	One Bed	**Bus Stop**	550M
6	Two Beds	**Crosstown (L5)**	550M
1	Three Beds	**Groceries**	1.8KM
9	Units	**School**	550M
~20	Residents		

Fig. 6.31 | Type 03 Tested Scenario Data

6.9 Micro-Midrise Impacts

The strategies proposed are by no-means exhaustive but provides an over arching intention as a foundation for future policies.

Through creating policy that does not financially impact existing land values; the city's property tax income is maintained, existing landowners are respected, and future growth is sustainable. The proposed polices and development process effectively protects the Yellow Belt from the precarity of future hyper-financialization and instead replaces the speculative market with an equitable collective market. As a co-design, co-zone, and co-development strategy, the typology takes a serious approach at including stakeholders through the procurement process.

With a projected population difference of nearly 500,000 between the Natural Growth and the provincial Places to Grow target, the 2019 Toronto Housing Market Analysis report found that an additional 220,000 housing units will be required on top of the 111,000 units (370,000 people) by 2041.[30] Assuming the average *Building Group* development containing an extremely modest 10 units, 22,000 micro-midrise developments can fill this projected gap. This equates to converting only 2.6% of the 850,000 single detached homes in the Yellow Belt or 1100 projects a year. [31] At the optimal development density of around 14 units the micro-midrise will have the capacity to level off housing costs in Toronto while providing affordable units for the citizens who live, work and call Toronto their home.

To begin the creation and implementation of policies that support the of development of the micro-midrise in the Yellow Belt, local government can support a limited number of landowners and home seekers on specific sites. This government support will need to be advocated from the side of the citizens, which the projects can serve as a case study and test for the widespread implementation of these policy strategies.

30 Smetanin et al., "Toronto Housing Market Analysis."

31 Statistics Canada Government of Canada, "Population and Dwelling Count Highlight Tables, 2016 Census," February 8, 2017, https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/hlt-fst/pd-pl/Table.cfm?Lang=Eng&T=208&SR=1&S=6&O=D&RPP=25&PR=0&CMA=0&CSD=0.

By broadly rezoning the *Yellow Belt* for *Building Group* specific densification, implementing of co-zoning methods that support citizen self-zoning, and creating incentives for existing landowners to support *Building Group* projects, the proposed policies aim to radically provide housing options for lower-middle income households in the City of Toronto.

The simultaneous encouragement of owner-occupied multi-unit development and discouragement of luxury mansion development supports sustainable neighborhood practices, provide high-quality housing, and reduces excessive land speculation. Under the new zoning policy, the new single-lot micro-midrise typology can super charge the density of the Yellow Belt and provide high-agency affordable homes.

7.0 Space:is a Collective Story

Baugruppen

=

Building Group

:

Group Building

7.1 Space:is a Collective Action Platform

rWhat is the role of a communication platform?

A digital communication platform allows for a critical mass of people to begin dialogue and to organize. In developing a communication platform that facilitates the co-zoning, co-development, and co-design processes, high agency architecture for the multi-unit housing sector can emerge. Moving beyond being simply serving as a tool for designing spaces, the objective of the platform is to allow *home seekers* to connect with those in the community who share complimentary values and similar needs. Through this communication platform which prioritizes spatial needs, future inhabitants that take part in the collaborative process facilitated by the platform form *building groups* and then can self-develop housing that fits their personal and their *micro-community's* needs

Potential challenges in implementing bottom-up housing development methods in Toronto can be summarized under three categories:

1. **Community Development**: Finding, connecting, and gathering interested parties is often time consuming and difficult to start. There are no easy or automated methods/platforms for a critical mass of like-minded individuals with aligned values and needs to gather.

2. **Design Communication**: The communication bottleneck, a problem in the architectural industry highlighted by Yona Friedman, is costly for the inhabitants and difficult to manage for the architect.

3. **Zoning Policy:** Co-zoning of the Yellow Belt requires a system and space for democratic action to occur.

Responding to these problems, the Space:is platform creates an online environment for *home seekers* to gather digitally and go to scale. Existing websites, such as cohousing-berlin.de, simply act as an online classified section for *Baugruppen* who have reached critical mass to seek for additional interested members. In these platforms the communication bottleneck is never addressed.

Operating within the designated Yellow Belt of Toronto, a development method which includes the Space:is platform facilitates communication among home seekers allowing them to form *building groups.* The platform empowers members to communicate their spatial needs through diagrams to architects and enables an environment for political, design, and community action to occur at the community level.

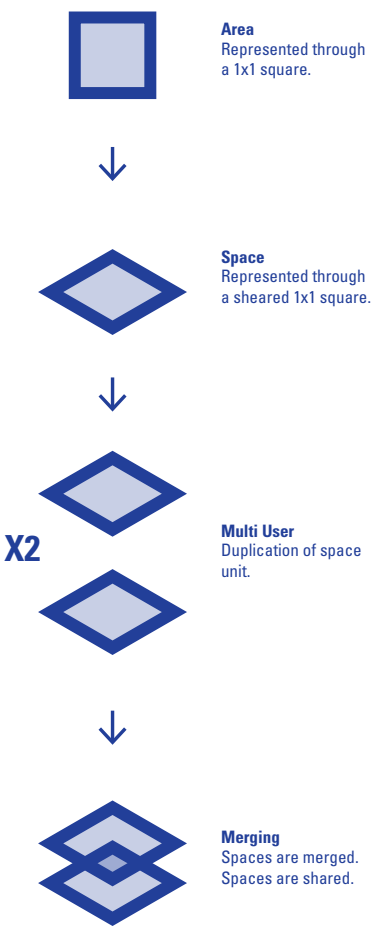


Fig. 7.1 | Space:is Promotion

Fig. 7.1 | Space:is Promotion

7.2 Space:is Method

The Space:is method begins with home seekers adding a budget range and locations of interest to the platform. To prepare for potential *building group* member matchings, home seekers then input their spatial needs through an activity-based diagraming process. By diagraming, a set of values and shared interests between individuals and a larger community emerges.

Examples of shared values as they relate to spatial needs range from the sharing of facilities for seniors considering downsizing to young couples looking to settle into an affordable urban unit for their family to grow. Additionally, hyper-specific shared amenities that stem from common interests/spatial needs, such as at-home physiotherapy, digital fabrication, organic gardening, or even dungeons and dragons, can serve as the grounding program that brings a group together. Happening co-currently, the neighbours of the land sellers who are selling to *building groups* will also diagram out what shared activities and types of rental units they are looking to own. By producing a comprehensive diagram of the potential activities members desire, those with complimentary or similar spatial needs can be matched to form *building groups*. Those who already have a set group of members in mind can elect to join the platform as a collective to ensure they remain together in this process. The Space:is platform currently focuses on shared activities as the primary driver for group formation, however, architectural typology and stylistic preferences can be incorporated in this sorting process in the future.

In the group confirmation phase, specifics on proposed density are decided through a digital voting co-zoning process. All interested future inhabitants enter a balloting process for units in *building group* projects they wish to share amenities with. Any members who do not receive a spot during this balloting process will be placed 'on the bench' in the event any spots open prior to financial commitment. At the conclusion of the Space:is co-designing phase, the goal is to create *building groups* that have negotiated and summarized their needs into a clear, detailed, and realistic building program for the site selected.

In the co-development phase, the newly formed *building group* uses the proposed building program made in Space:is and approach an architectural office for design services and banks for financing. Interested architects can use Space:is to view the *building groups'* detailed building program and submit their firm's profile, essentially an RFP (request for proposal) process. To jump start the first few *building group* projects, financing can be secured through a collective of community members or by negotiating with smaller banks interested in alternative housing models. Design reviews and detailed decision making, such as the selection of interior finishes, can be done through comments on material uploaded to the Space:is platform.

By frontloading the preliminary design process to the *building group,* an opportunity is presented to inhabitants to take an active role in developing their own dwellings.

1. Co-Design By Needs Analysis

Future inhabitants are prompted through a series of diagramming exercises to establish their individual spatial needs. Parties with similar/compatible needs and matched into building groups.

3. Co-Zoning By Group Building

Building groups are matched with landholder and micro-neighborhood members base on their aligned spatial needs, values, and stylistic considerations.

Building groups gain access to pre-approved zoning with micro-neighborhood sign-on.

5. Co-Development

The building group finds a way to collectively finance the project with a bank. Connecting with ecommended financial advisors that are registered on the platform. Applications are prepared and managed with assistance from financial consultants.

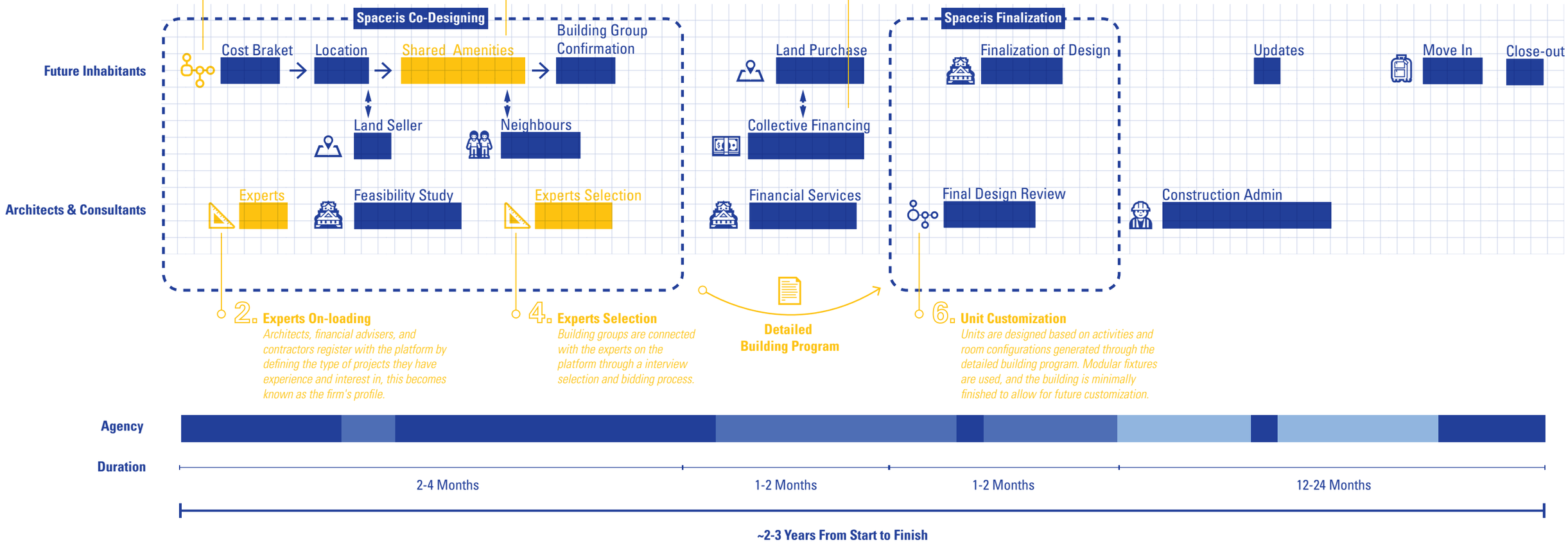


Fig. 7.2 | Space:is Process Gantt

7.3 Space:is User Interface

There are three types of action members can take during the Space:is diagraming process: authorial tools, modes switching, and data review. By always presenting all three actions concurrently, members constantly move between various modes of thinking and consider the effects of their active choices spatially and socially. In the Space:is platform these action types are organized into three distinct elements at the top, left, and right sides of the UI (User Interface). At the center is the large workspace where diagraming spatial needs takes place, while the workspace specific functions are located at the bottom of the interface.

The Tool Bar (top bar) contains diagraming components such as activities, rooms, objects, and connections, and are accessed through a series of drop-down menus with icons. This toolbar aims to present all the potential components members would use to input their spatial needs. However, typed entries/commands for customized needs can be inputted though a command line in the Tool Bar as well. When looking to input their spatial needs, members can simply click and/or type the name of any kind of component to enter it into the workspace. By presenting two methods of accessing tools, members can first discover the range of functions available to them through visual cues and can then wield them through the command line when they become familiar. Within the command line, searching also produces autocomplete suggestions to expedite the input process.

The Mode Drawer (left bar) presents three states for members to interact with on the platform. Toggling between View Modes allows members to change the type of information displayed in the workspace. Work Modes present members with a clear distinction between when they are editing needs within their unit and when they are collaborating with the *building group* on shared spaces. The in-built separation between private and shared views ensures that member privacy is clear during the design and negotiation process. Finally, Connect Modes are designed to allow members to review the recommended building group matchings and to chat with future members or architects.

The Data Sheet (right bar) provides context responsive data according to the selected activity, room, or object. Area estimates (top right) serve as the backbone of generating cost estimates (middle right). These estimates are however only generated when initiated by the members.

The point of allowing inhabitants to directly navigate and negotiate their spatial needs within the *building group* means that the workspace becomes a dynamic and multi-layered grounds for increasing individual agency in the design process. By moving beyond static representations and finalized drawings of space by architects and developers for clients, the process can shift to respond directly to inputs, view modes, and interactions initiated, thought of, and produced by the inhabitants themselves.

Tool Bar

Access all tools to add, modify, or change elements in the workspace.

Add Activity or Room

Add Object

Add Connection

Project Name

Command Entry

Allows for searching and typing of commands.

Active Resident

View Modes

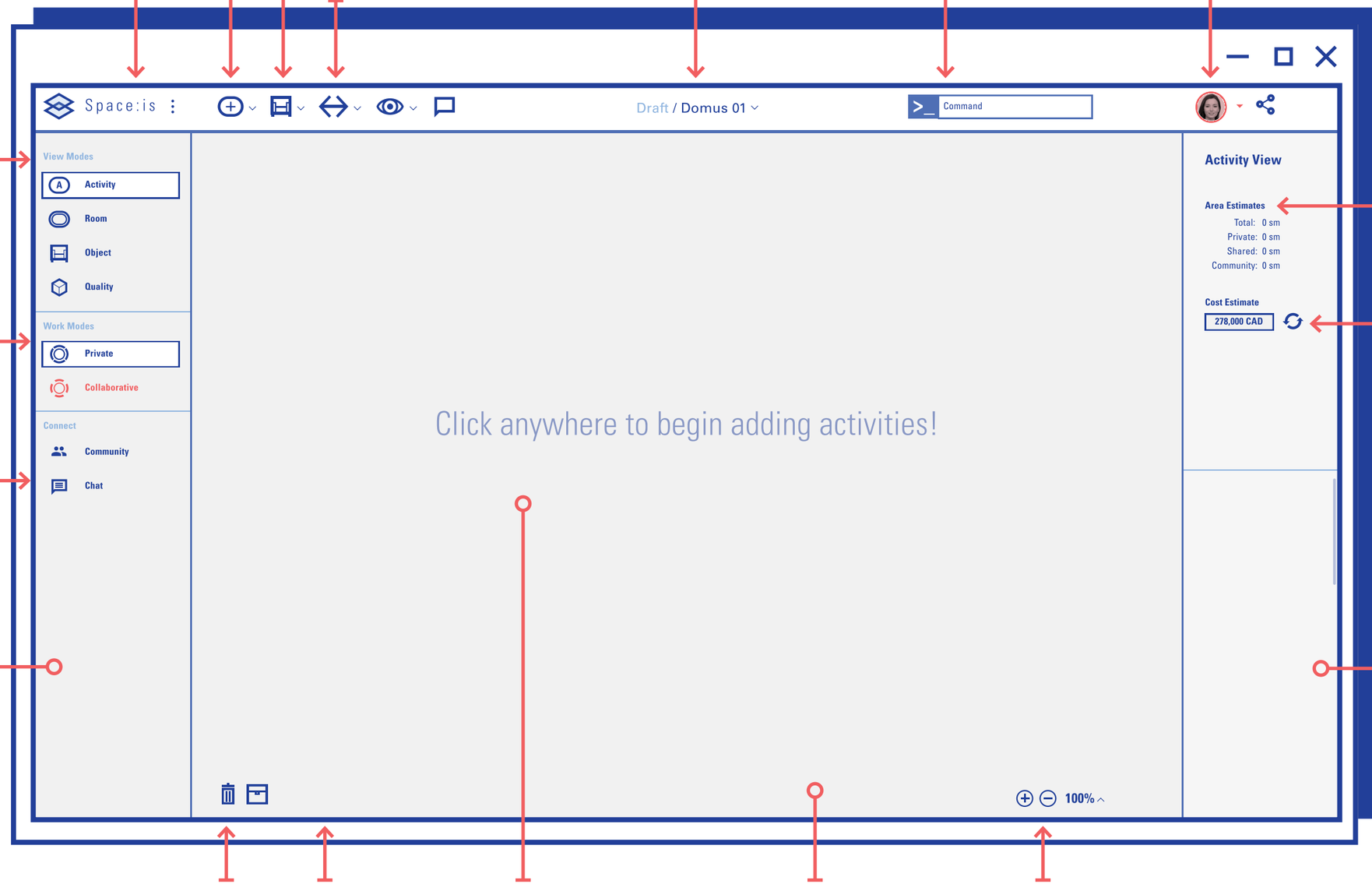
View modes allow for rapid switching between different levels of understanding spatial needs.

Work Modes

Work modes allow for rapid switching between private and collaborative activities. Clear separation allows for privacy.

Connect Modes

Community allows for the viewing of profiles of future *building group* members. Chat allows for connection between building group members and registered experts.



Mode Drawer

View modes allow for toggling between different levels of understanding space needs.

Remove

Archives

Workspace

Workspace Bar

Access workspace specific functions.

Scale View

Area Estimate

Preliminary area calculations are automatically generated based on inputted activities, objects, and qualities.

Cost Estimate

Preliminary costing is automatically calculated based on location and area estimates.

Data Sheet

Information displayed responds to the current view or selected component.

Fig. 7.3 | UI

7.4 Space:is Functions and Interactions

Functions and interactions within the platform can be mapped along two spectrums, manual versus automated and passive versus active. To maintain member agency all passive and automatic functions must be initiated by an active interaction. As UI design involves direct interaction between inhabitants with the digital environment, some key interactions are defined below:

Click

Serving as an act of confirmation, clicking interactive elements is used to trigger control UI elements such as confirming choices, digitally voting, and selecting objects.

Drag

The visual diagramming process requires members to freely move activity chips around the workspace. Mimicking the real-life physics of working with paper cut outs, card sorts, and models, the interactivity of the platform uses dragging as the primary communication interface.

Type

The flexibility of the interfaces to accommodate for both technically experienced and inexperienced users relies on the typing of commands to trigger and pull up activities and objects. The integration of typing also ties into the searching and chat functions.

Comment

Detailed commenting is embedded into each aspect in the workspace to allow all users to point out unforeseen functions required in a project. Moreover, the integration of digital voting and chatting within comments creates a sense of communal effort during the co-design process.

Generate

The generate functions are always triggered by active interactions such as through clicking. The primary use of generated data is to serve as a baseline to expedite the diagraming process. Aggregating data from prior members' preference and architect's experience, the generated baseline is an average that reflects the knowledge of prior projects.

Search

The search function assists members when entering activities, objects, or commands. Completely new entries can be made manually through typing out the custom need. Autocomplete functions in the search bar assist members by accessing data about needs and custom actions from prior projects.

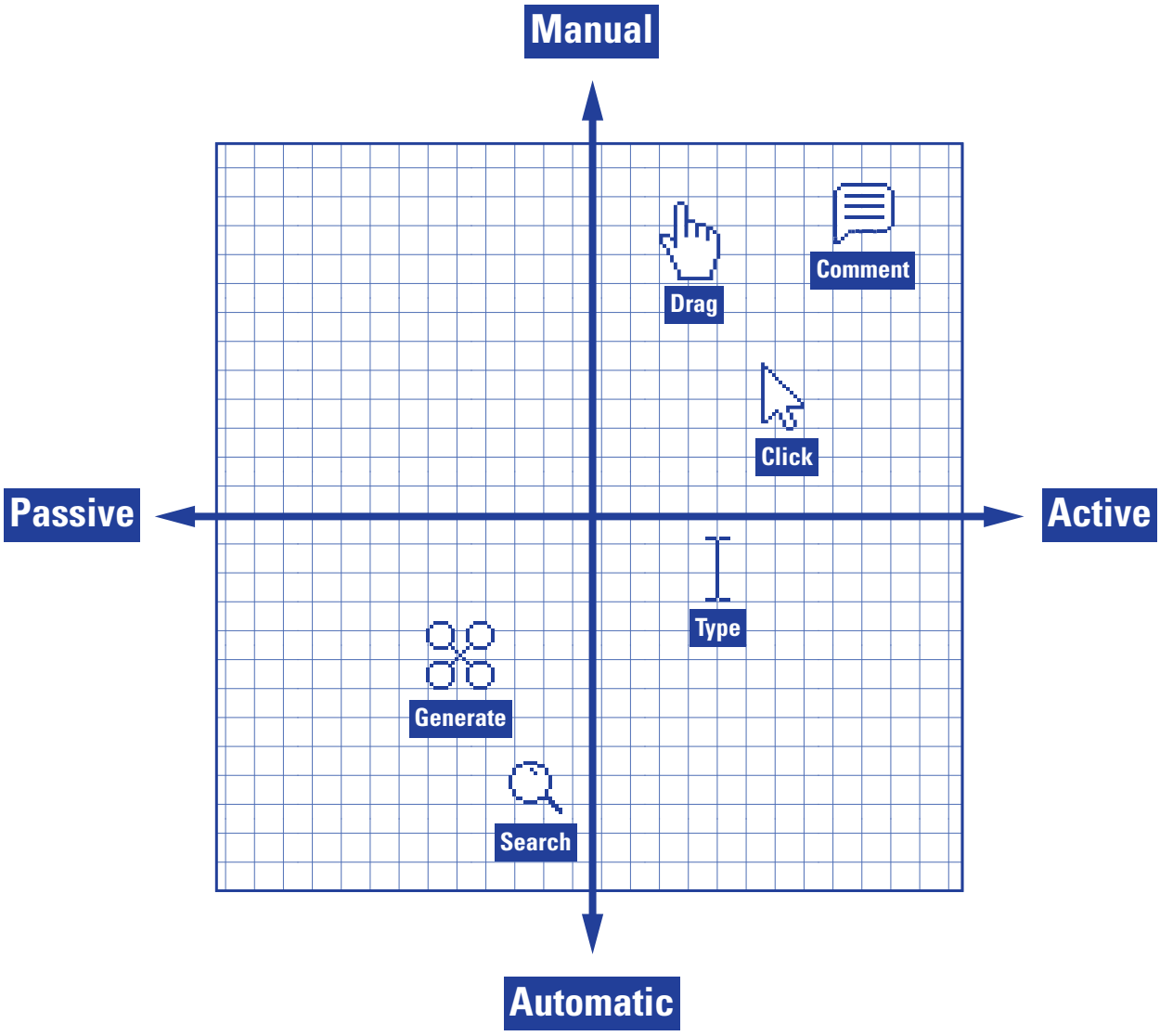
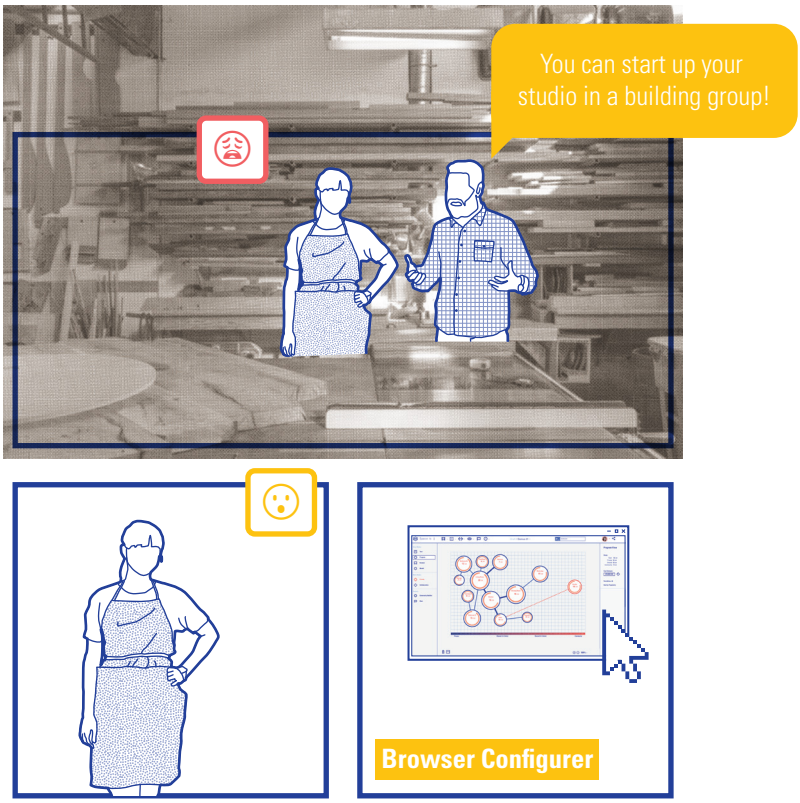


Fig. 7.4 | Mapping of Interactions

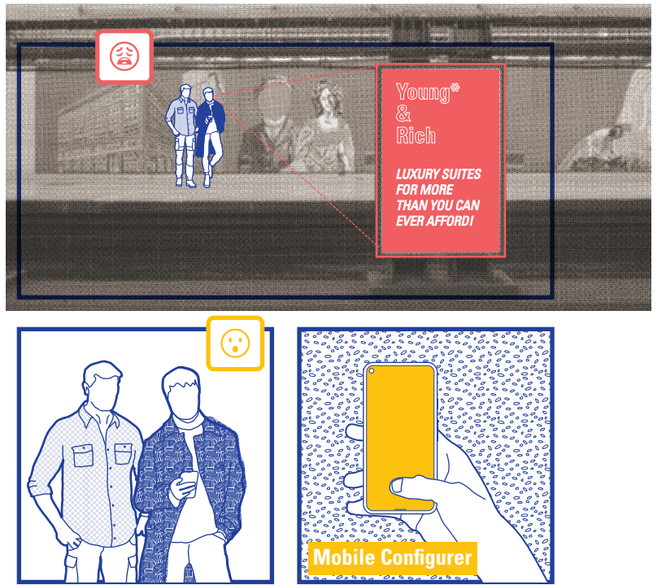
7.5 Sample Member's Process



Sophia

Sophia is an woodworker and is looking to start her own wood turning studio. She cannot afford to rent a shop at the moment and is looking for ways to impliment a live/work situation. She hopes to find an apartment near a transit stop and has a budget of 500k. Sophia curretly works full time at a local cabinet manufacturer and teaches at a community college at night. Drawn by the flexibility of how she can work on her initial needs planning for Space:is online, she signs up onto the platform.

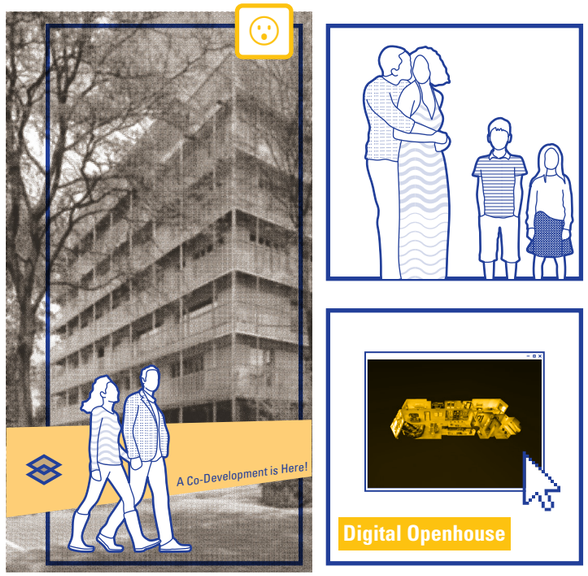
Fig. 7.5 | Sophia's Persona



Greg & Hyeon

Greg and Hyeon consistently collaborate on installation and sculptural art projects. They have been looking around Toronto for spaces to run their part-time art practice but renting a studio space proved to be far outside of their budget. Disenchanted with the lack of affordable condo options available, they look for others who have a need for studio space in the city.

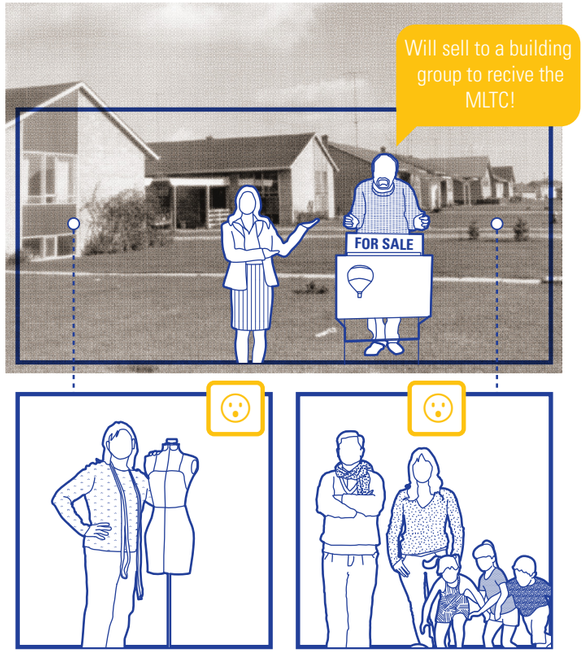
Fig. 7.6 | Greg & Hyeon's Persona



Gwen & Thomas

Gwen and Thomas started a family in a condo down-town and as their children have become older, they are looking for more space. Refusing the move out to a home where car ownership is required, they are looking for alternative methods of affording more space in a transit friendly location. With busy work schedules they tour VR models of past Space:is projects as they consider the co-development model.

Fig. 7.7 | Gwen & Thomas' Personas



Kim

Kim is an existing neighbor to the property sold. She runs a tailoring service out of her home but with her daughter moving back she needs more space for her business.

Stan & Vanessa

Stan and Vanessa are engineers and like to work on personal projects. They babysit their grandkids very often and are looking for a space for their projects.

Fig. 7.8 | Existing Neighbors: Kim, Stan & Vanessa's Personas

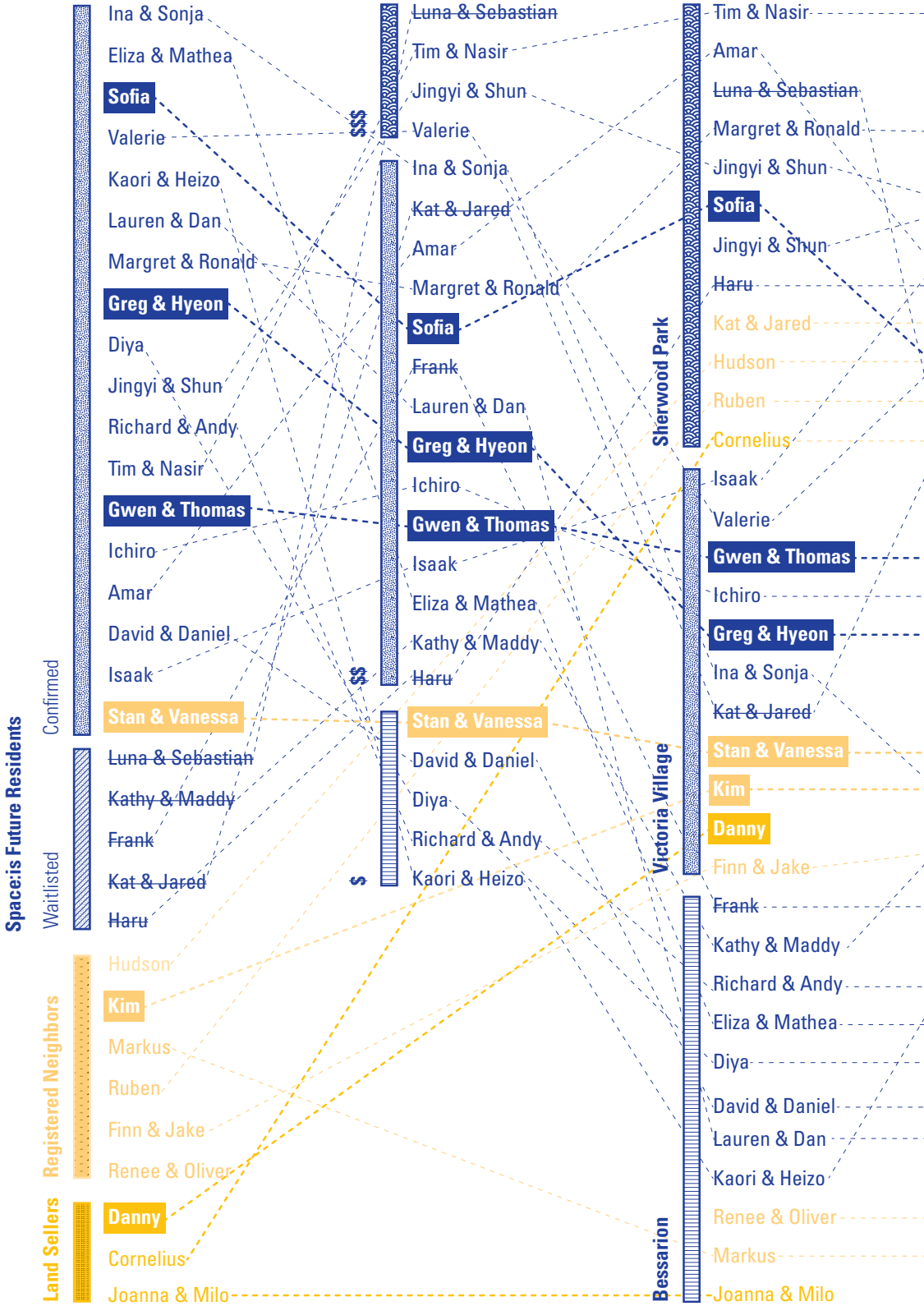
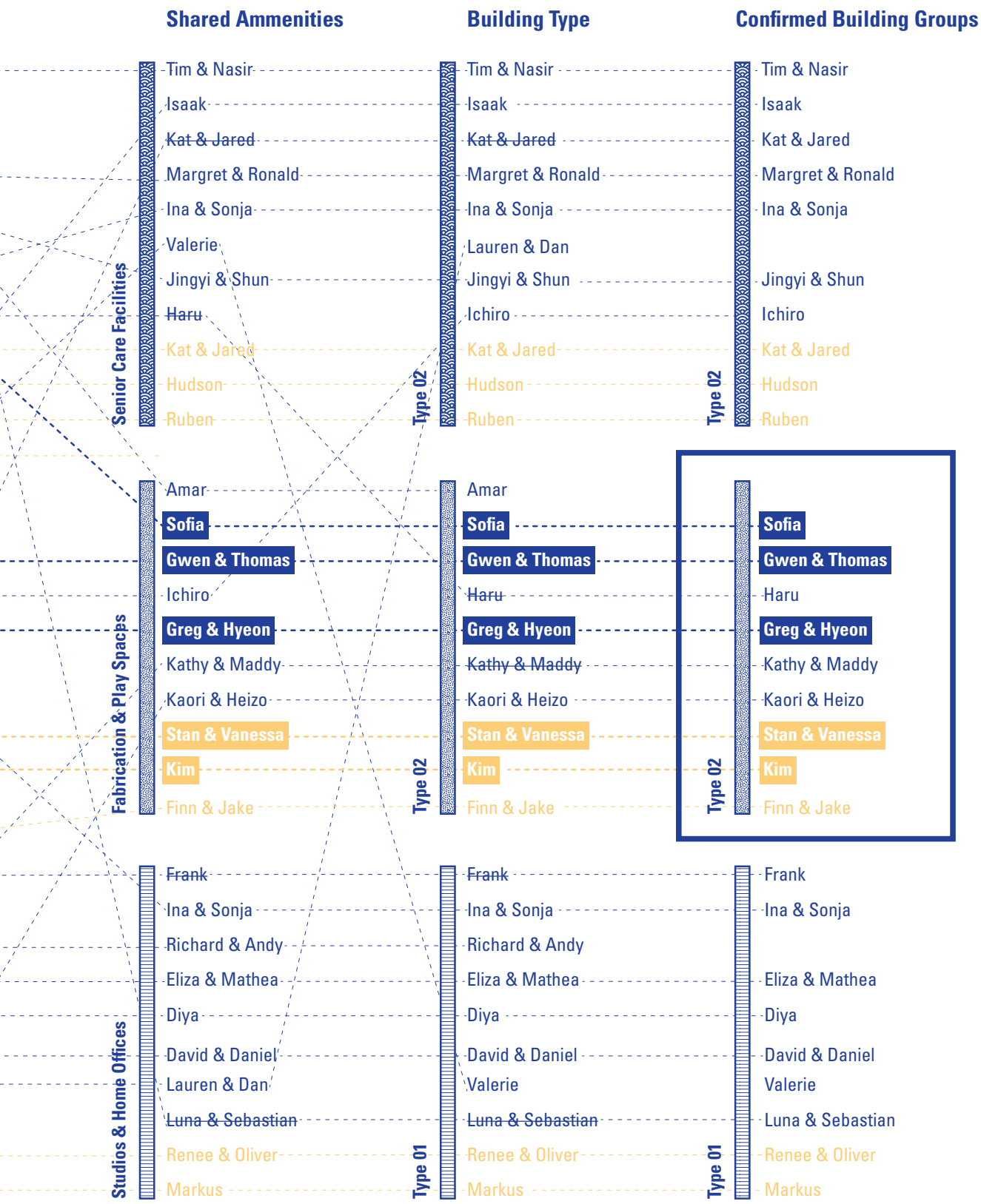


Fig. 7.9 | Process of Connecting Members


Shared Ammenities
Building Type
Confirmed Building Groups
Senior Care Facilities
Fabrication & Play Spaces
Studios & Home Offices
Type 02
Type 01
Tim & Nasir
Isaak
Kat & Jared
Margret & Ronald
Ina & Sonja
Valerie
Jingyi & Shun
Haru
Kat & Jared
Hudson
Ruben
Amar
Sofia
Gwen & Thomas
Ichiro
Greg & Hyeon
Kathy & Maddy
Kaori & Heizo
Stan & Vanessa
Kim
Finn & Jake
Frank
Ina & Sonja
Richard & Andy
Eliza & Mathea
Diya
David & Daniel
Lauren & Dan
Luna & Sebastian
Renee & Oliver
Markus
Lauren & Dan
Jingyi & Shun
Ichiro
Kat & Jared
Hudson
Ruben
Amar
Sofia
Gwen & Thomas
Haru
Greg & Hyeon
Kathy & Maddy
Kaori & Heizo
Stan & Vanessa
Kim
Finn & Jake
Frank
Ina & Sonja
Richard & Andy
Eliza & Mathea
Diya
David & Daniel
Valerie
Luna & Sebastian
Renee & Oliver
Markus
Tim & Nasir
Isaak
Kat & Jared
Margret & Ronald
Ina & Sonja
Jingyi & Shun
Ichiro
Kat & Jared
Hudson
Ruben
Sofia
Gwen & Thomas
Haru
Greg & Hyeon
Kathy & Maddy
Kaori & Heizo
Stan & Vanessa
Kim
Finn & Jake
Frank
Ina & Sonja
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Diya
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Valerie
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Renee & Oliver
Markus

Space:is Co-Design Process

Independent Design

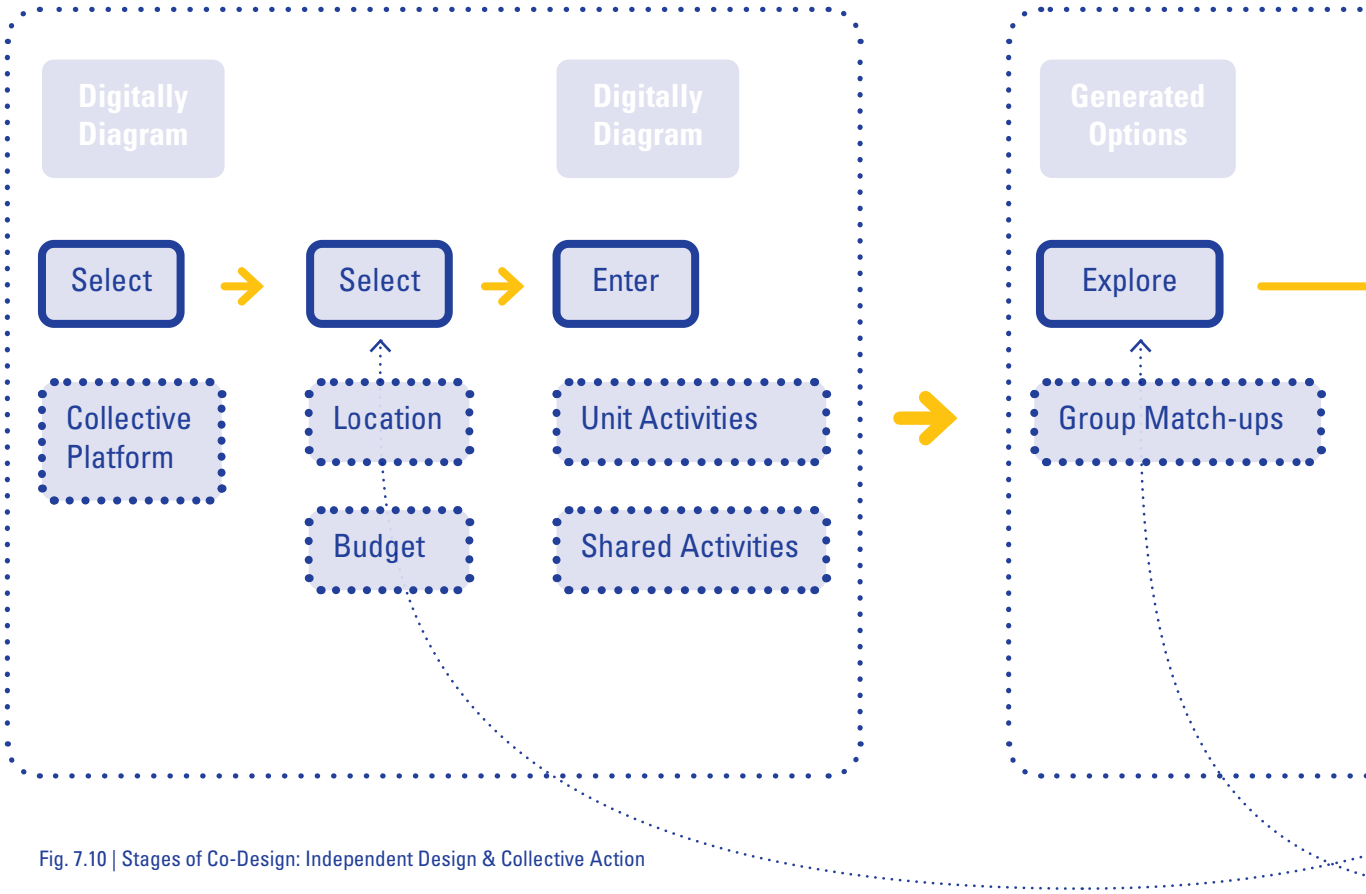
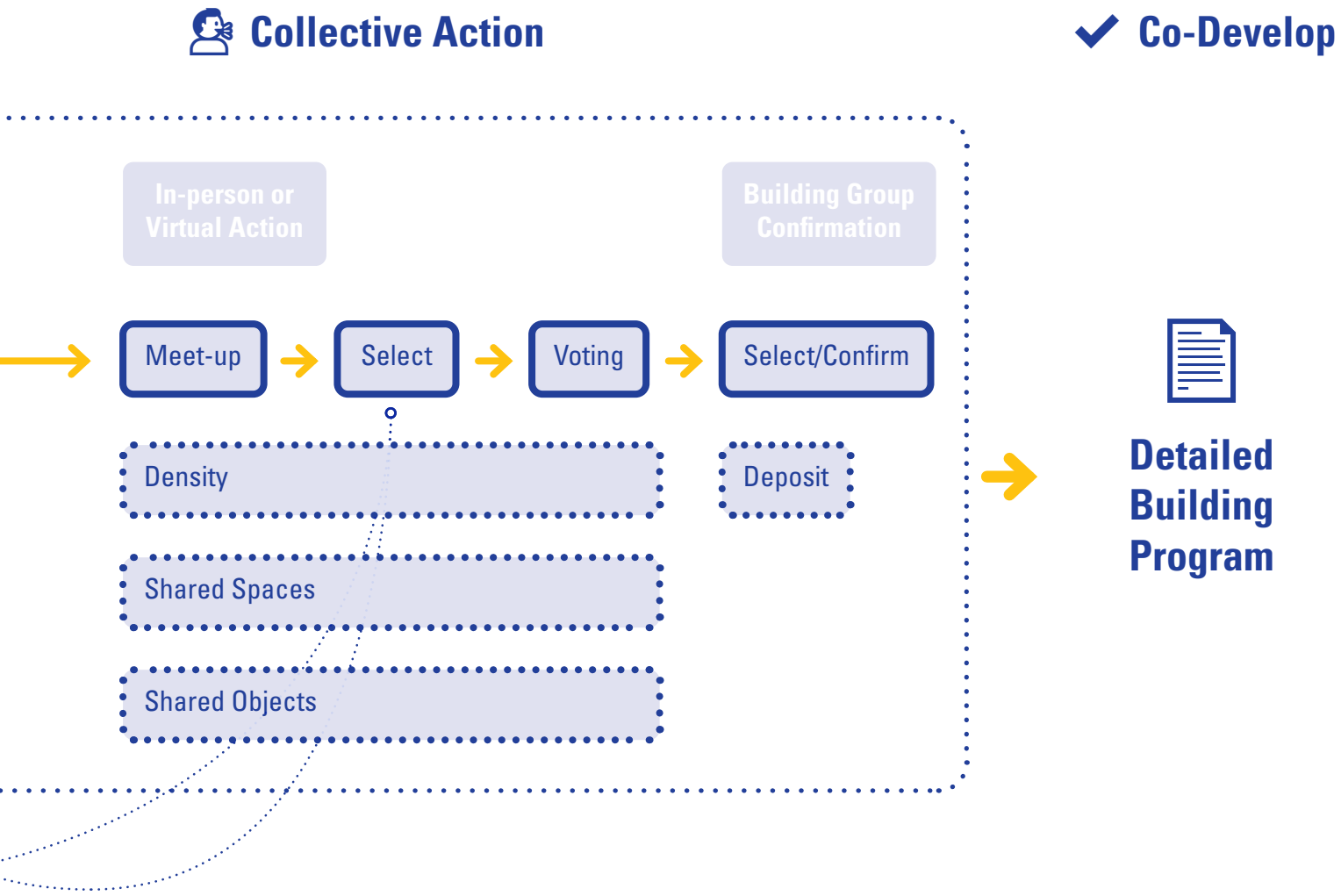


Fig. 7.10 | Stages of Co-Design: Independent Design & Collective Action


Collective Action
Co-Develop
In-person or Virtual Action
Building Group Confirmation
Meet-up
Select
Voting
Select/Confirm
Density
Deposit
Shared Spaces
Shared Objects
Detailed Building Program

7.6 Activity Definition

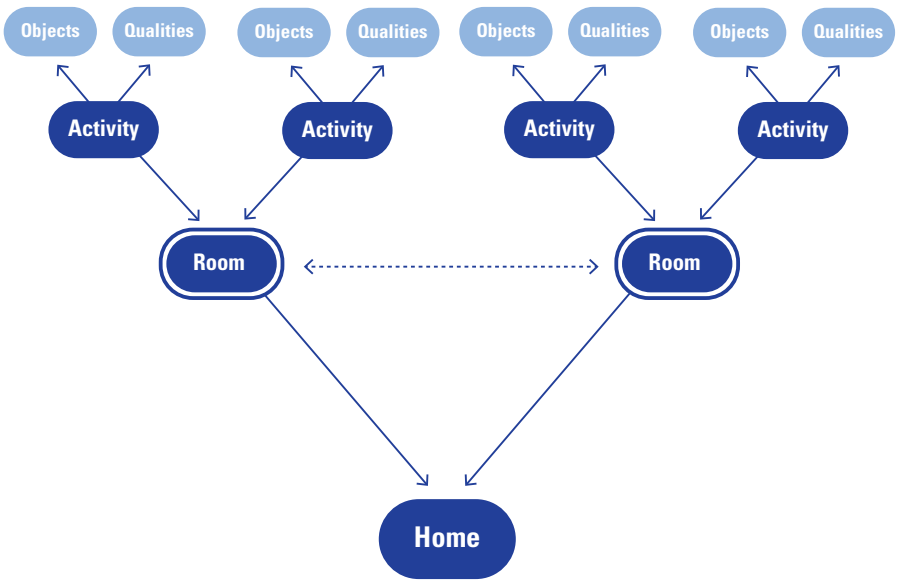
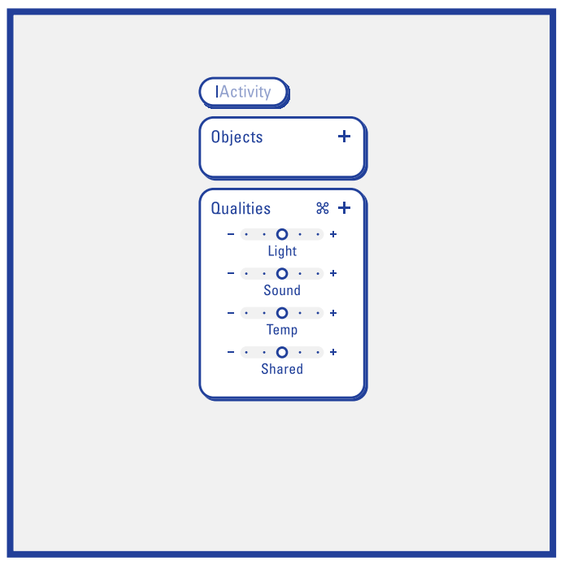


Fig. 7.11 | Formation of Home Through Activities

Activities serve as a the base-unit of customization in the Space:is platform. Rather than using room names or architectural tectonic elements, where the prior is restricted by cultural connotations and the latter is an abstraction of spatial needs, the use of activities as a container of information on members' spatial needs helps get to the core of what people would like to do in their spaces.

By combining user triggered automation and manual editing, members can easily generate a preliminary diagram without decision exhaustion. Members enter actives with associative objects and qualities into the workspace which assists in generating rooms and ultimately their homes.

1. 

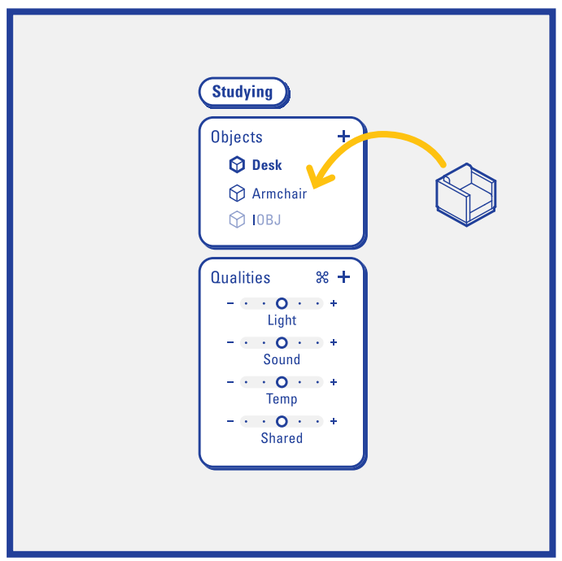


Typed/Searched Activity Entry

Members click anywhere in the workspace to begin adding activities. Typed entry will be predictively matched with existing activities in the database. When activities are selected two drop down menus appear for finer-grain detail about the activity including of objects and qualities desired.

Add objects and qualities to each activity.

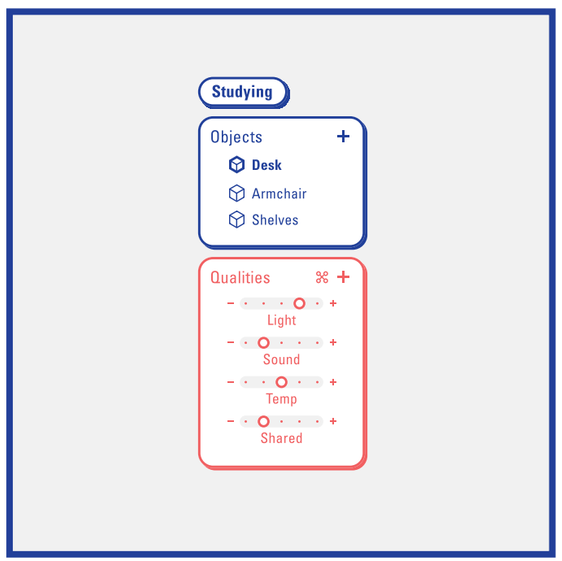
2. 



Manual Object Allocation

Objects can be added to the activity through the addition button or through the dragging and dropping of objects from the Object bar. The information produces area and cost estimates, as well as activity compatibility.

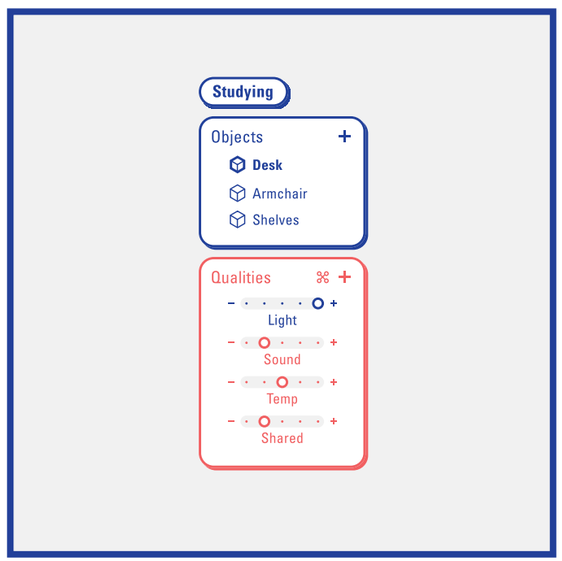
3. 



Generated Typical Qualities

Members may choose to automatically generate spatial qualities for the activity. This allows for a rapid customization process that reduces user decision exhaustion. The generated settings are learned through averaging previous user preferences and an architect recommended baseline. Settings that are generated are highlighted in red to allow for clear identification.

4. 



Manually Modified Qualities

Members can then modify generated qualities with personal preferences through the discrete sliders. The five levels simplify this decision to capture a general sense of what the member needs.

Fig. 7.12 | Process of Defining Activities

7.7 Area Calculations

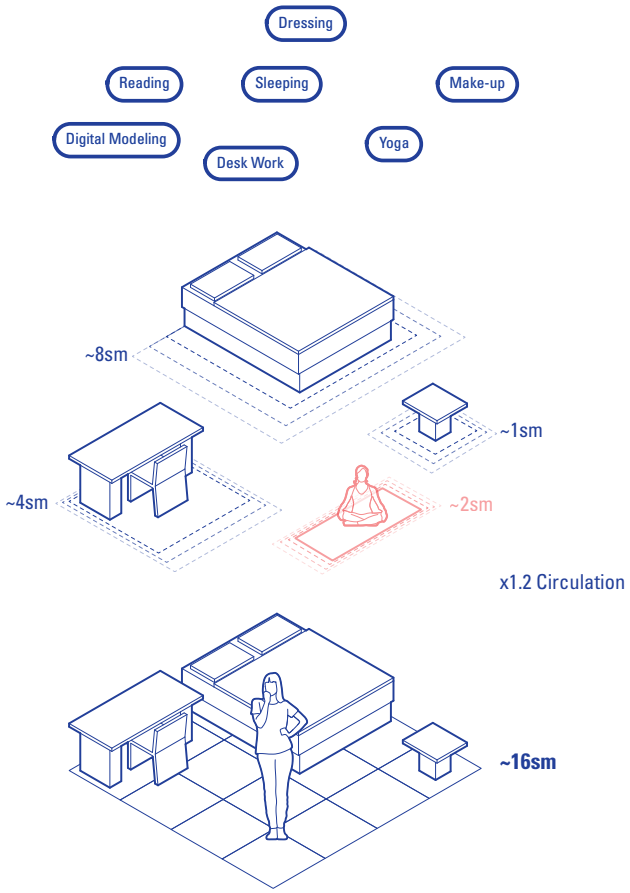


Fig. 7.13 | Area Calculations Based on Activities and Objects

Each activity's area calculations are conceptualized as a bubble that accommodates the use of all the objects assigned to each activity. There can be a degree of overlap between each object. Temporal activities are also tracked to allow for flexibility. Each activity when grouped to form rooms, results in areas where the bubbles overlap as repeating objects between the activities are shared. The objects allocated to each activity provides a rough area calculation, which then translates to rough cost estimates when multiplied by the estimated cost/sf for the selected sites and cost bracket. The projections allow for members to quickly edit down their needs according to their budgets.

Input all the activities you wish to include in your home, building, and micro neighborhood.

Refresh the cost estimates whenever you're ready.

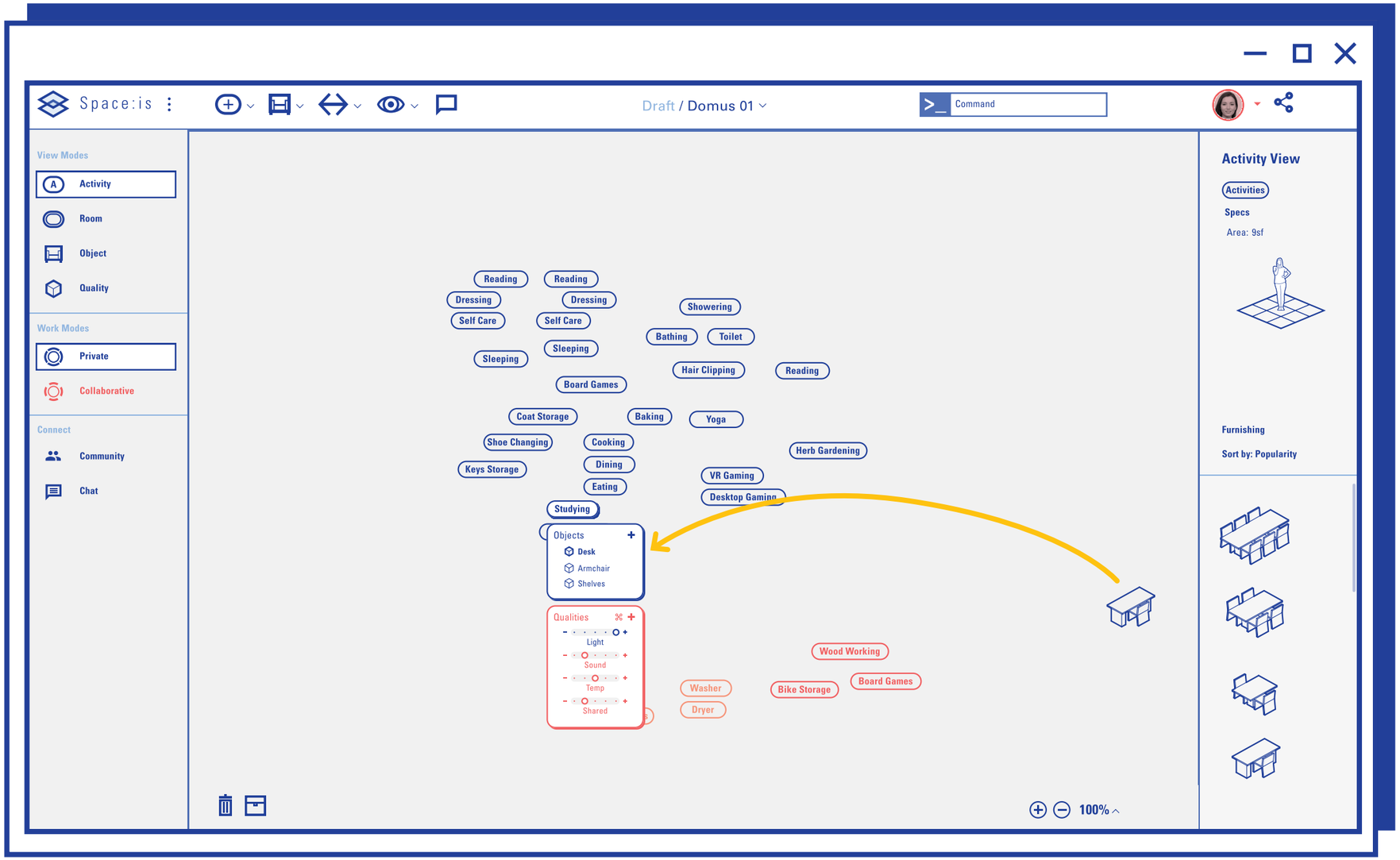


Fig. 7.14 | Process of Defining Activities

Manual Mapping of Activity Qualities

Qualities of all the activities inputted can always be revisited after their initial inputing. Members can select up to two qualities to automatically generate mapping diagrams to assist in comparative decision making. By presenting all activities onto a field, comparisons can be made visually and understood rapidly. In providing two visual graphing scales, the granular sliders within selected activities and comparative activity mapping diagrams, members can operate at two distinct levels of understanding regarding their spatial needs. Moreover, spatial qualities are entered and edited at different stages of the process, thus, different visualization methods need to be used.

Select two qualities to map.

Drag activities to comparatively adjust their qualities.

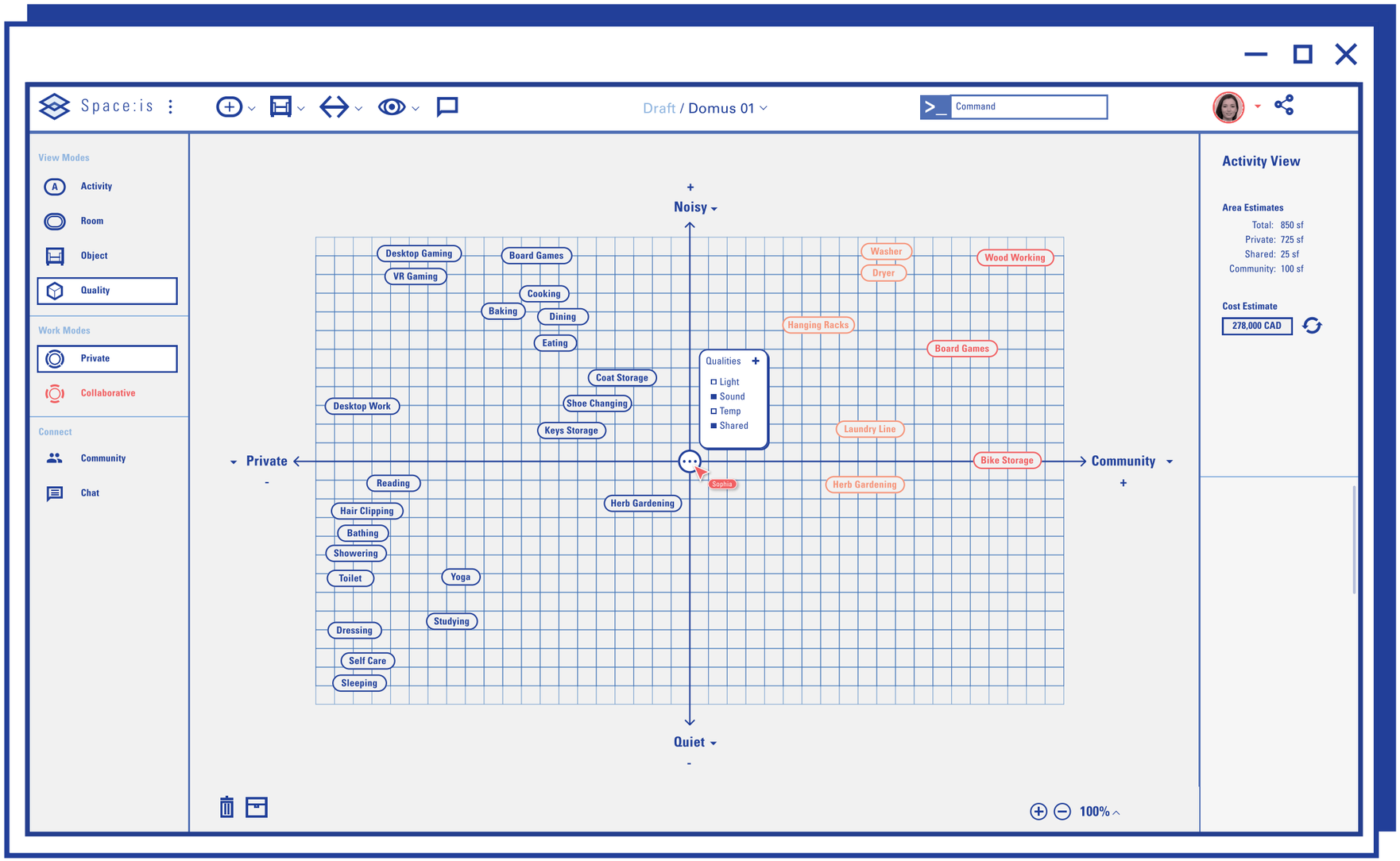


Fig. 7.15 | Activity Mapping Diagram

7.8 Activity Oriented Design

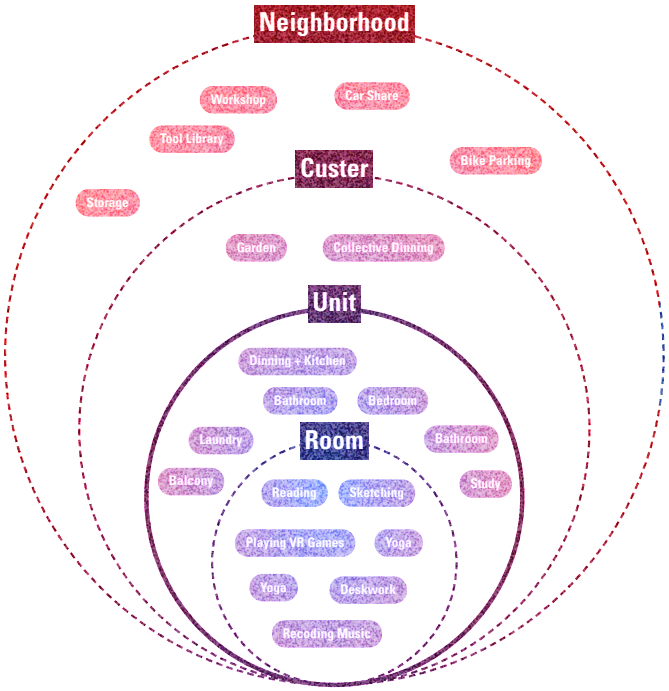
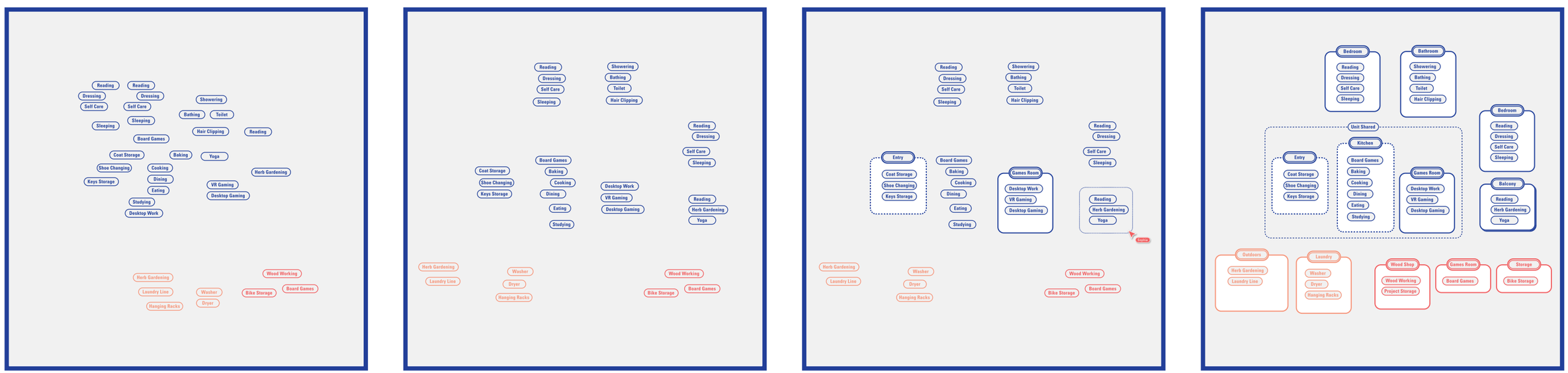


Fig. 7.16 | Activity Oriented Understanding of Spatial Needs

The activity oriented approach to design allows for the clustering of activities into four degrees of separation, room, unit, cluster(or level), and micro-neighborhood. By providing a gradient of options for locating shared spaces, the process is freed from the private versus public binary. The process of activity clustering and grouping based on complimentary qualities (light, sound, temperature) and shared objects (furniture, appliances, fixtures) between various programs within the unit supports the logic of extending these relationships beyond to adjacent units within the level/cluster or to adjacent neighbors within the *micro-community*.

A Activity → Room

1. 2. / 3. 4.



Typed Activity Entry

Members determine the private activities they would like to have within their unit. Shared activities with the floor are displayed in orange and building-wide shared activities are displayed in red.

Input all the activities you wish to include in your home, building, and micro-neighborhood.

Activity Clustering

Compatible actives are clustered into distinct groups automatically based on common qualities and objects. They can then be manually rearranged based on personal preference.

Room Grouping

Activities are grouped manually into rooms. Degree of enclosure is input at this stage. Open plan spaces such as entry ways and dining areas are represented by dotted boxes and closed spaces such as bedrooms and washrooms are represented by solid boxes.

Shared vs Unit Room Grouping

Specific unit and shared rooms are reviewed at this stage. Proposals for potential shared spaces are determined.

Fig. 7.17 | Process of Locating Activities

Program Connection

Members make connections between rooms they wish to be connected through doorways, openings, and views. Different types of connections can be specified through customizing the line used in the diagram. Enclosed rooms are shown with solid outlines and open spaces are represented with dotted outlines.

Try connecting rooms together!

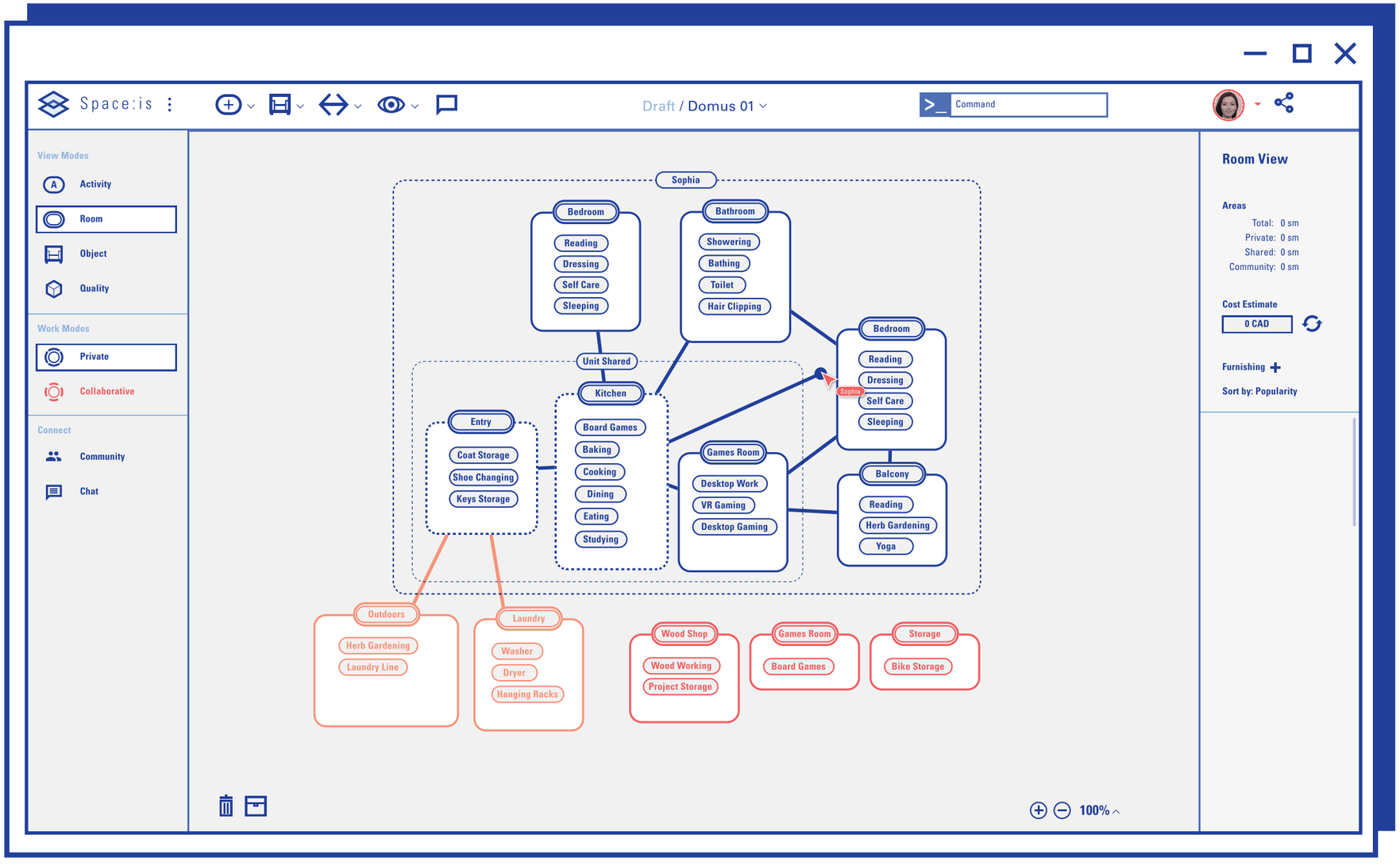


Fig. 7.18 | Drawing Connection

7.9 Digital Collaboration

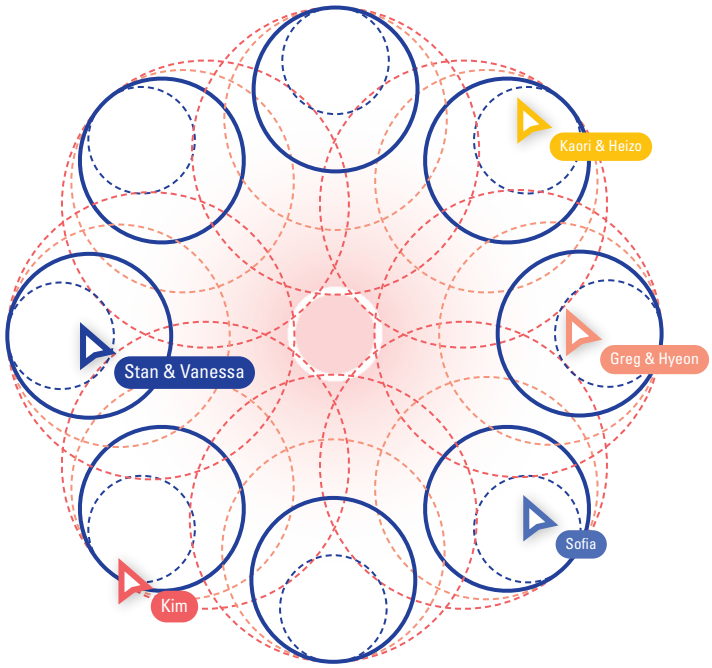
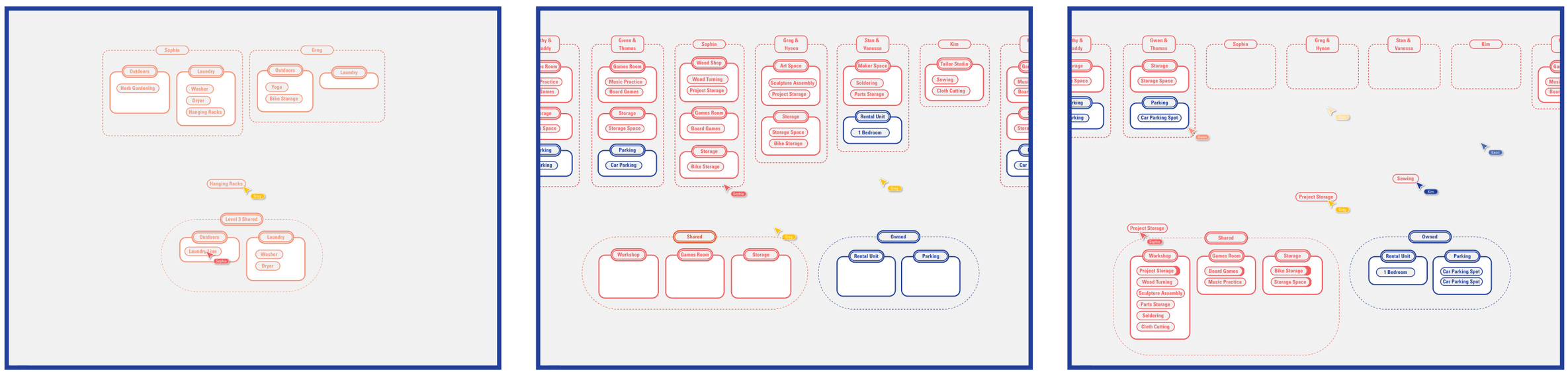


Fig. 7.19 | Digital Collaboration

The Spaces:is Platform UI presents predefined interfaces to facilitate the digital collaboration process. Because space is conceptually visioned as a gradient of sharing options within this interface, each of the degrees of separation needs a collaborative environment. Each member goes through a process of comparing their own and their peers' proposals for shared spaces and responding through dragging and dropping to finalize.

Cluster (Floor) → Building (Micro-Neighborhood)

1. 2. / 3.



Within-Floor Shared Spaces Binning

In the floor shared spaces stage future home seekers are matched with other Spaces:is members with similar shared spatial needs. Their personal unit data remains private while their ideal shared spaces are displayed and editable. Each member's proposed shared spaces are displayed at the top of the workspace. Collectively the members within the same floor determine their ideal amenities.

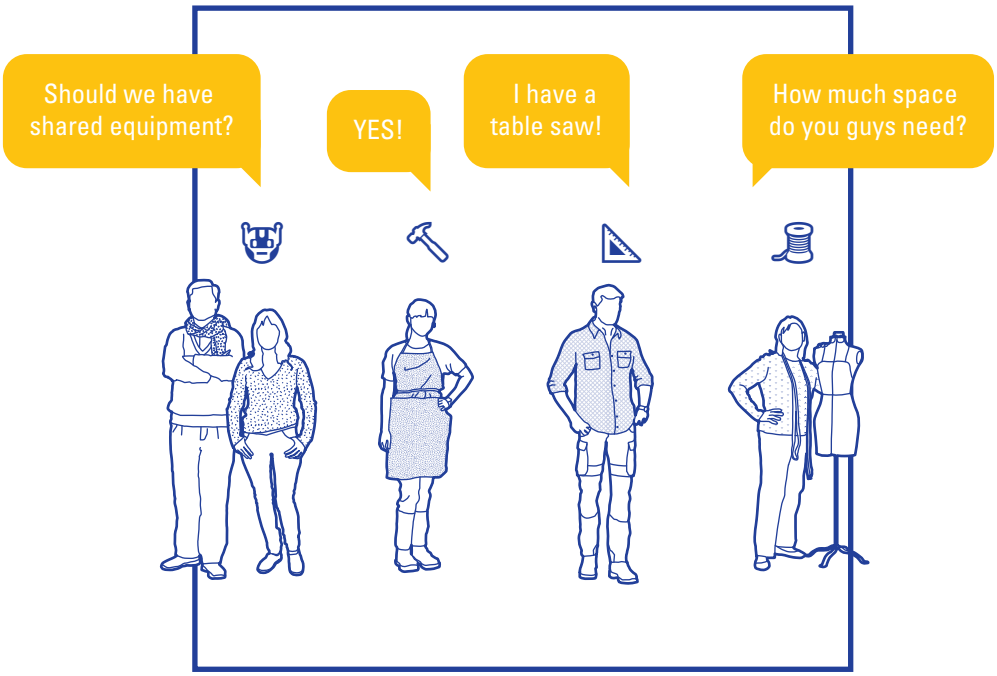
Building Shared Spaces Proposals

In the building share spaces stage, again all members proposed shared spaces are displayed at the top. Shared amenities, such as games rooms, fabrication spaces, and shared storage, are displayed in red while owned amenities, such as parking spaces, rental units, are displayed in blue. The blue owned units are reserved for members in the micro-neighborhood who are looking to take part as stakeholders in the micro-midrise.

Building Shared Spaces Binning

Collectively members can vote by dragging and dropping their proposed final shared spaces. Same or similar activities can be combined into a 'stack' to visually show the degree of support each activity and amenity has. Activities are arranged with the highest collective support at the top of the list and lowest support at the bottom.

Fig. 7.20 | Process of Collective Designing Shared Spaces



Digital Voting and Comments

Allowing for digital voting and commentary kick-starts a sense of community in the co-design process prior to move-in and facilitates a democratic design environment for collective decision making. Specific needs or ideas can be addressed through activity or room tagged comments. Within the comments, chat conversations and polls are used to reach a consensus.

Drag and drop the activities you would like to share with the micro-neighborhood.

You can create comments and polls tagged to each instance.

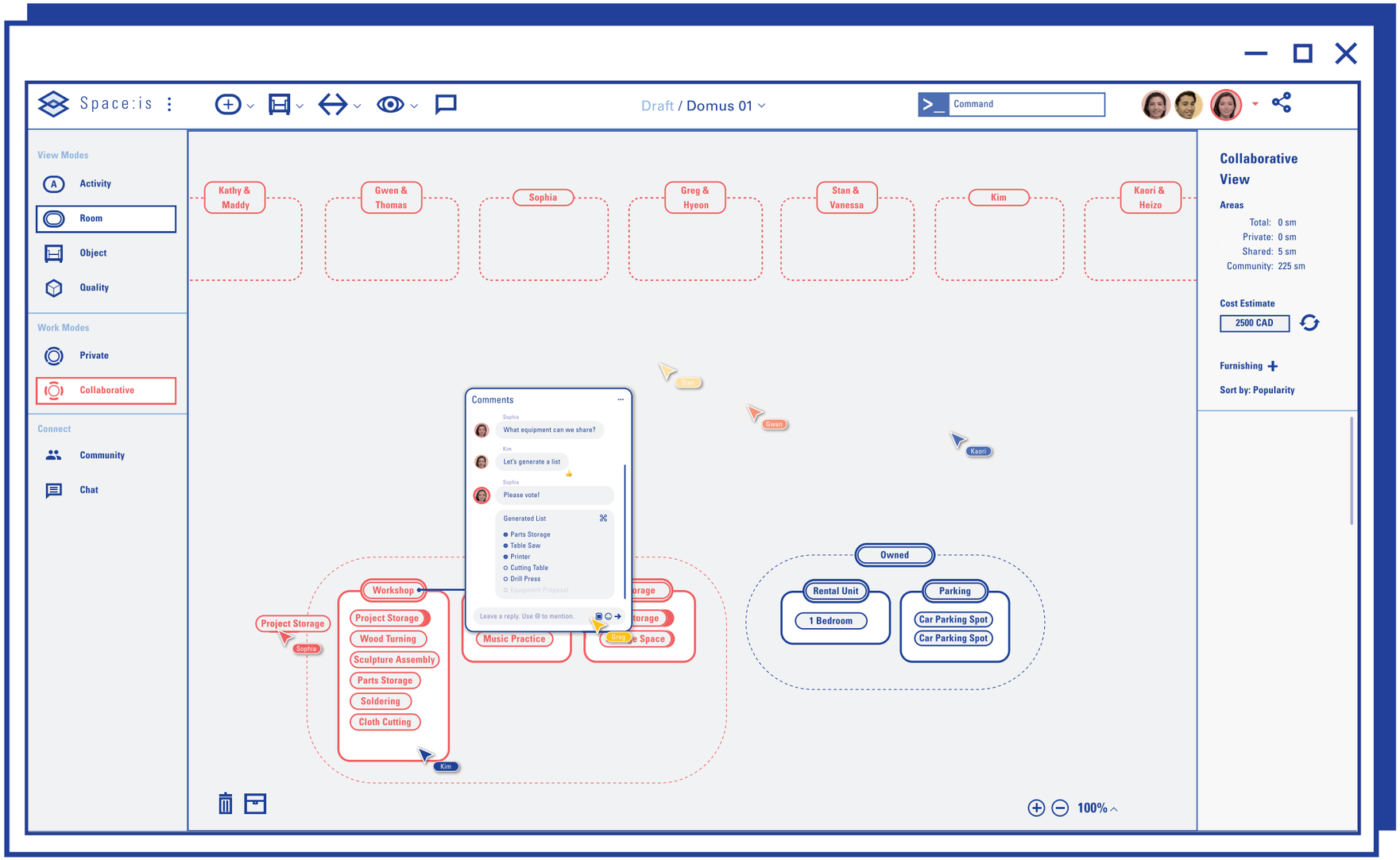


Fig. 7.21 | Digital Voting

Space:is Collective Zoning

The Space:is platform serves as a key space for gathering support for *building group* projects within single family neighborhoods. By facilitating a collective zoning process, neighbors adjacent to the site join the platform to diagram out shared amenity proposals and choose the type of rental properties they would like to be financial stakeholders.

As part of the co-zoning process, existing neighbors who support a building group development on the site will participate in the process of defining the height. The higher the density the greater number of non-owner occupied units and amenity space for the neighborhood is available. Working within the allowable volume and FSI defined through the broad rezoning of the Yellow Belt, neighbors who support the development and seek to be financial stakeholders work with a building group to define the density they are comfortable with. To reach a majority and successfully rezone the site, depending on the site, support from 2-3 neighbors will needed. This voting process is facilitated and visualized with-in the platform for review by all the members. A simple 2D lot diagram of the micro-community involved serves as the primary voting tool. Proposed adjustments to the density can be made through the chat/comment function, while diagrams of each density can be generated automatically to assist with the decision making. Additionally, each neighbors' views to the project from adjacent lots can be reviewed on the platform when the architect is brought on.

This co-zoning process is integral to the densification of the Yellow Belt as gaining support for building groups at the local level is dependant on aligned spatial needs and stakeholder inclusion.

Vote on the density and height of the project.

Would you like to own a rental unit?

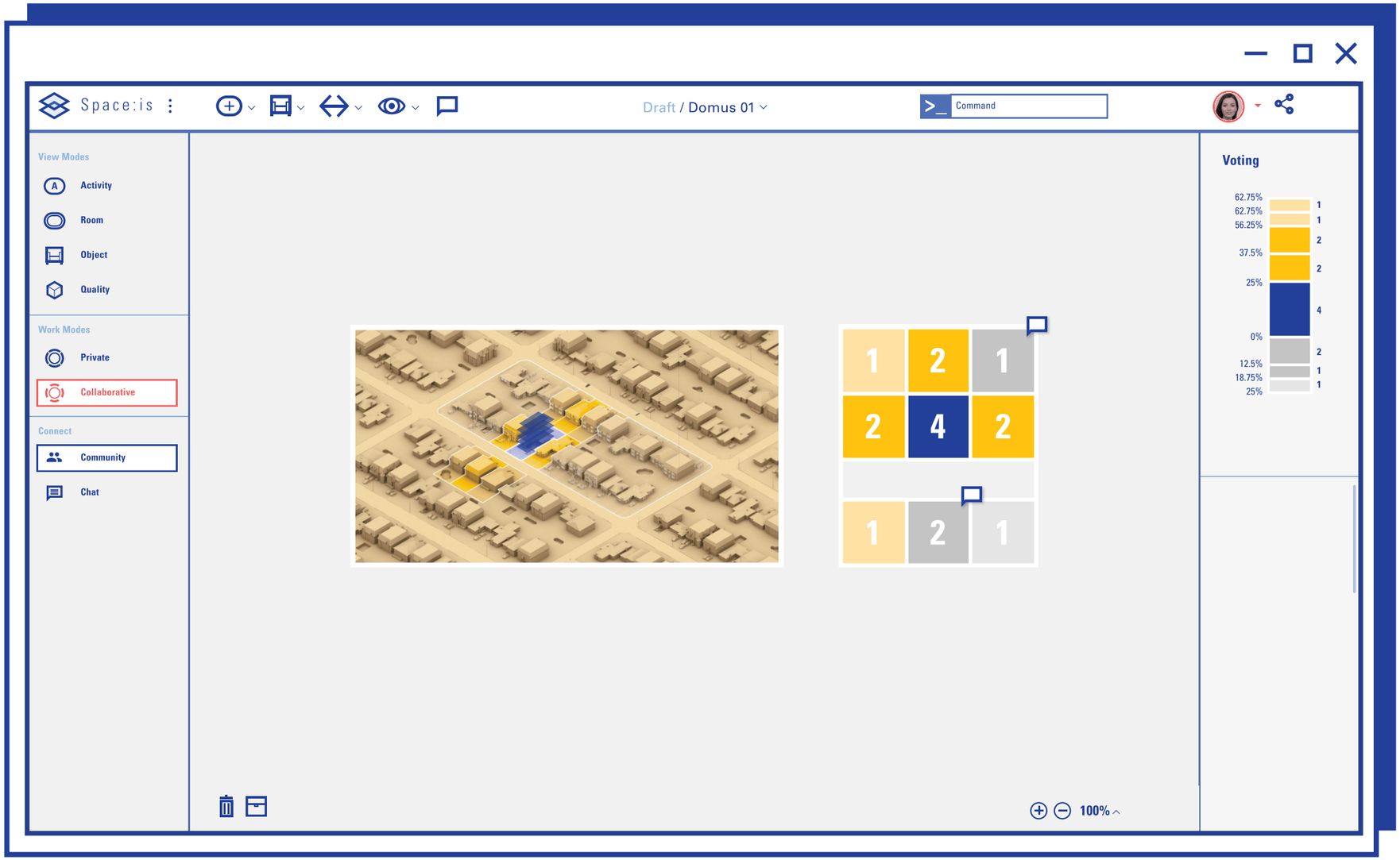


Fig. 7.22 | Collective Zoning Process

Architect's View

The architect's view of the Spacie:is platform contains a dynamic programmatic representation of all the spaces, rooms, activities, and relationships that the co-designing process produced. Additional clarification and feedback can be reviewed and logged within the platform. Design sessions, either in-person or virtual, can be held review a series of concerns, design questions or options.

Different degrees of architect-led design development can be determined amongst the building group members within the platform prior to the on-loading of the architect. At the most basic level, the architects can determine the ideal base-building type that satisfies the collective programmatic requirements to then design customized units based on the needs expressed on the platform. Minor design adjustments can be made a few times during this phase as the number of iterations is limited to reduce the design time. While at the most involved level, the architect can hold a series of design review meetings with multiple base-building and unit design options. This process will inherently be more costly and time consuming, however, this remains as a potential option for those looking to get into the details to determining and customizing the spaces. As the initial cost of the units within a building group development is below market-rate, the degree of highly customized spaces becomes more obtainable to more future inhabitants.

Visualized summary of all activities and spaces the building group is looking to include.

Click into each unit, room, or activity for details.

Add comments or feedback to any elements.

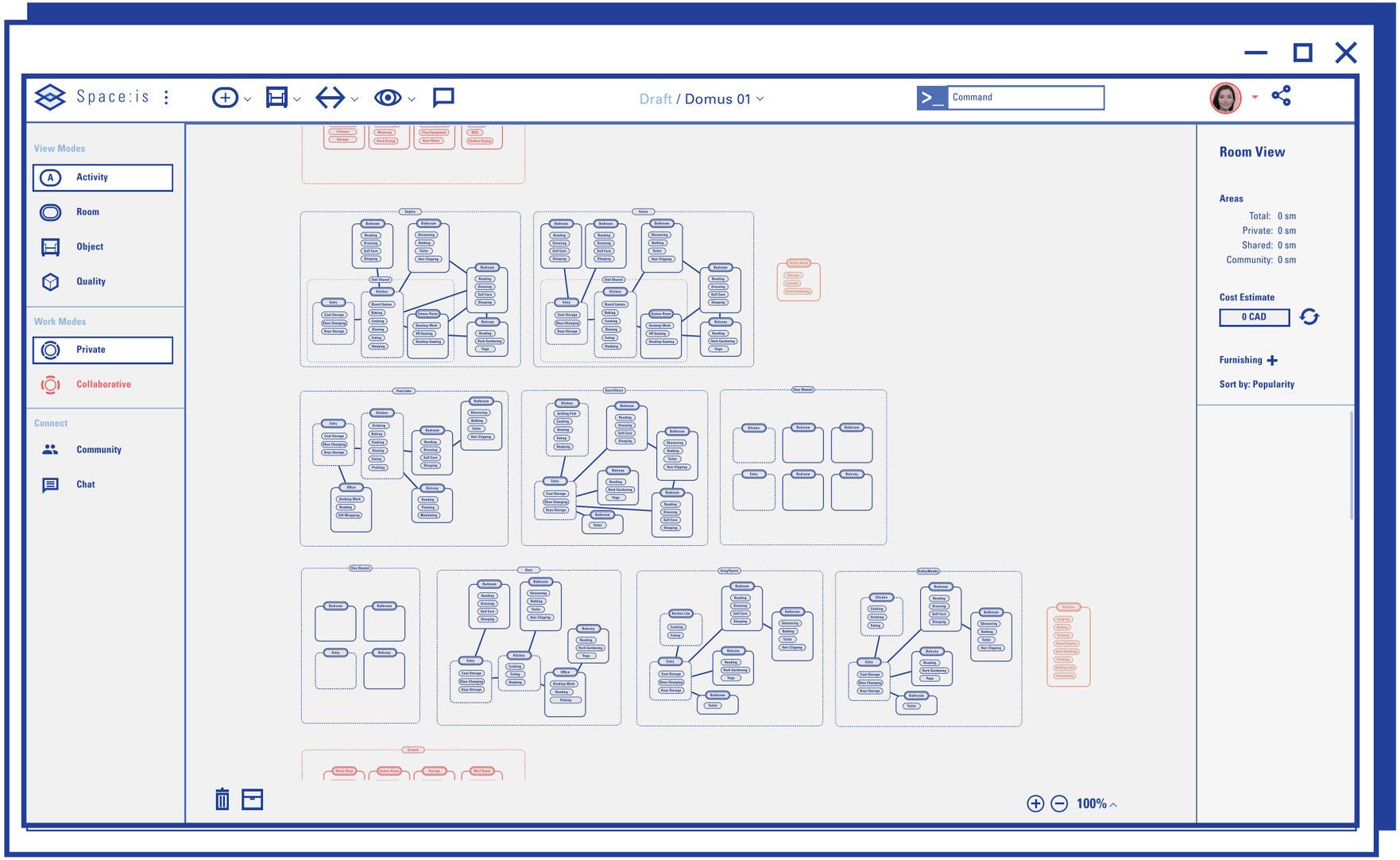


Fig. 7.23 | Architect's View of Member's Needs on the Space:is Platform

7.10 Platform Agency

How does the Spaces:is compare to other bottom-up housing development methods? How does Space:is address the lack of agency in the for-profit condo market?

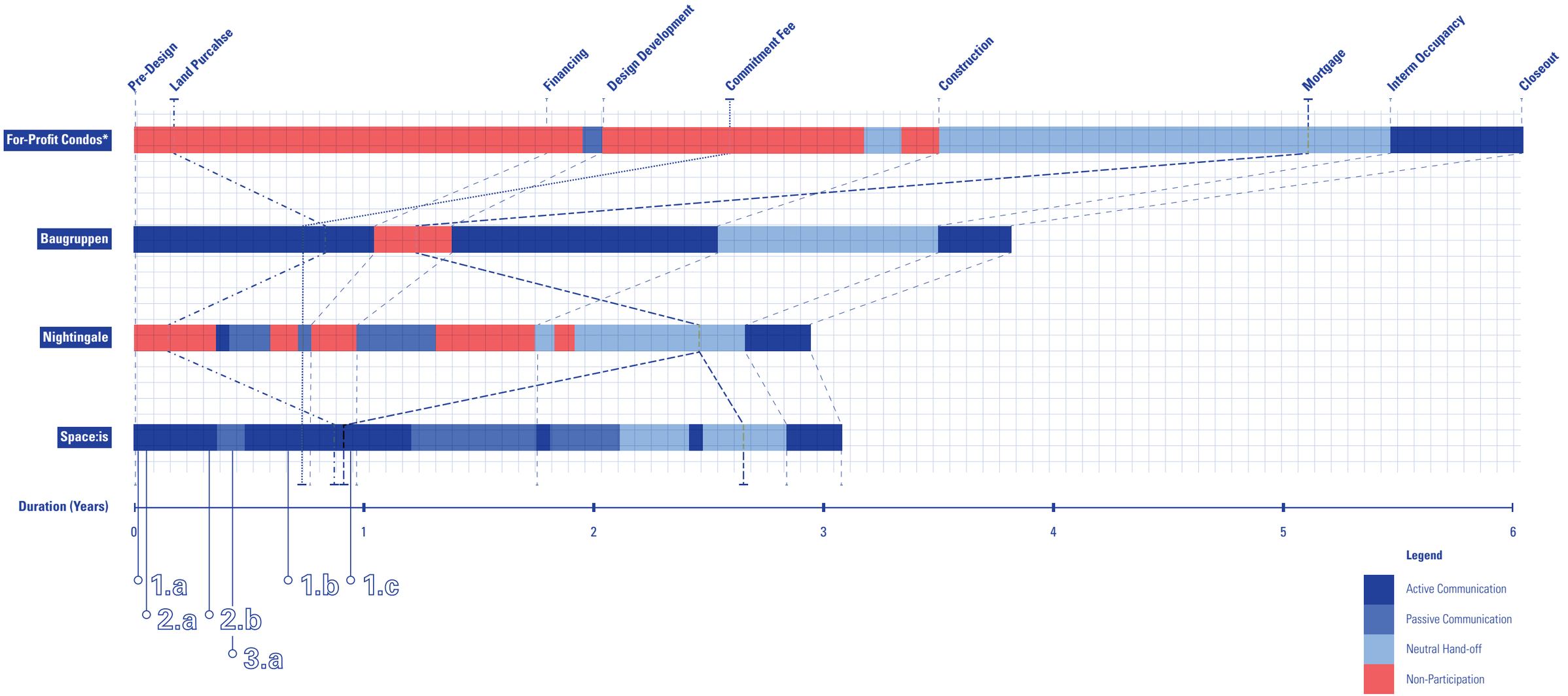
The design of a self-organization platform addresses the lack of agency in the profit-driven condo market through building upon the Baugruppen and Nightingale development methods to maximize stakeholder agency. Operating on the baseline notion of future residents being the foundation for the design, planning, and development process, which is fundamental to the two alternative housing procurement methods, Space:is proposes an alternative development model to specifically target those who are unsatisfied with the options in the for-profit housing market of Toronto. Comparing the agency component of the methods gantt charts, the Space:is method addresses instances of low-agency in the Baugruppen and Nightingale process.

Icons indicate development method addressed:

= Baugruppen + = Nightingale

The strategies applied in the designing of the Space:is Platform can be summarized in to points that target a specific aspect of the alternative housing development methods. These can be sorted into three categories:

1. **Community Development:**
    a. / + Provide a virtual space optimized for group members with complimentary needs to gather.
    b. Entirely Resident-funded development.
    c. + Integrate land purchasing into the development process.
2. **Design Communication:**
    a. + Incorporate of all stakeholders within the micro-community before the start of development.
    b. / + Visualize members spatial needs to expedite communication with peers and experts.
3. **Zoning Policy:**
    a. / + Collective rezoning process that integrates both future owner-occupiers and existing neighbors.



*Duration estimates are for reference only. Construction times may vary widely depending on the scale of the development.

Fig. 7.24 | Development Methods Compared

The nature of platform design inherently provides a high degree of agency and power to the original system designer and investor. Problems of low agency are not only prevalent in real-estate, but it is also rampant in the platform economy. Similarities between the two problems are that both are examples of unchecked investment capital which becomes the primary driving force of design rather than the individuals using the platform.

To address this, like the Nightingale method, the development of the any spatial design platform needs to be directly funded by its members and must operate at-cost with openly reviewed finances. Data generated from the platform must also always be accessible exclusively by members of the building group and be downloadable in a shared format that can transition to other alternative design platforms.

The communication, diagraming, and visualization strategies used in the Space:is platform presents a potential path for a platform driven approach to high-agency architecture. By introducing options for design communication, a multitude of methods can be developed to address the communication bottleneck.

8.0 Visioning

Space:is for you.

8.1 Urbanity as a Project for All

How can the micro-midrise typology transform the Yellow Belt communities of Toronto? How will a platform approach to bottom-up housing impact inhabitants, neighborhoods, architects, and the city?

Through the implementation of *Yellow Belt* rezoning policies and collective development methods, an opportunity is presented for future inhabitants, community members, architects, and the city to deliver high quality spaces built on the foundation of increasing stakeholder agency. The proposed three-pronged approach of co-zoning, co-design, and co-development aims to empower those who currently lack agency and are taken advantage of in the financialized housing development process.

In this proposed model, home seekers gain access to more affordable home ownership options that are conceived with their existing incomes as a start point. Since each micro-midrise development is initiated directly by future inhabitants, existing landholders, and neighbors, the process supports an increase in citizen spatial agency when compared to for-profit condo development or subsidized government housing projects. Not only does this model benefit home seekers, existing inhabitants of the community also have an opportunity to increase their agency by socially and financially investing in the development of their neighborhood. The Space:is platform provides an opportunity to turn the existing socially isolative suburbs into a tight-knit community where amenities are shared. The capacity for residents of the micro-neighborhood to own a rental unit within the building introduces an investment incentive for neighbors to become stakeholders. Further, by replacing top-down community engagement with bottom-up *micro-neighborhood* participation, the collective zoning process puts the future of the neighborhood directly in the hands of those who choose to live there. The co-zoning process incorporates both existing and future inhabitants' needs right from the beginning so that all stakeholders may work together to co-design their own micro-midrise.

For architects, the platform-driven approach to design democratization reduces the existing communication bottleneck in the process, when spatial needs are communicated by the client (non-expert) to the architect (expert). Additionally, rather than being tied down by the current financial demands of real estate speculators and navigating rezoning applications with developers, architects can instead directly work for and address the spatial needs of inhabitants who will occupy the spaces designed. Due to the multi-unit nature of the micro-midrise and its potential to radically alter the fabric of the existing suburbs, architects can play a crucial and direct

Fig. 8.1 | Proposed Future Micro-Midrise Community Axo

role in designing and constructing housing with the citizens of Toronto for the citizens of Toronto. As it currently stands, the presence of architects in the for-profit housing sector is limited and low agency. Projects are often funded by developers, led by developers, designed with strict city zoning and bylaws in play, and inhabited by those that can afford to pay $2500 a month to live in the sky. Architects, same as the condo-dwellers, occupy a space where design agency is limited, often settling to flex their design skills by choosing the right finish for the mullions on the curtain wall or artistically randomizing the placement of balconies on the exterior façade. Because the micro-midrise typology engages home seekers and neighbors directly, both socially and financially, even if architects do have to randomize the balconies on the façade, they are doing it in the service of the future inhabitants instead of the for-profit *Real Estate Industrial Complex*.

For the City of Toronto, the policy changes will improve financial solvency and both increases and sustains population growth by densifying existing neighborhoods. By introducing a density that is appropriate for the infrastructure cost of the Yellow Belt, these neighborhoods can ensure financial sustainability is built-in to the urban fabric. Without ambitious policy change, Toronto is risking the future livelihood of its citizens for the perceived stability and clear stagnation of a broken Yellow Belt typology against all the warnings from a multitude of sources. The city risks losing its young citizens at the cusp of their most productive years to other metropolises of the world.[1] Joy Connelly in her essay titled "Two Million Empty Bedrooms" in *House Divided*, emphasizes that collectively we are "sacrificing our children [for] the 'single-detached lifestyle'." [2] Citing a 2018 Angus Reid poll, Connelly found that 59% of renters between 18 and 34 are seriously considering leaving the Greater Toronto Area because of the high cost of housing.[3] The inhabitant-driven micro-midrise process outlined in this thesis highlights an accessible opportunity for the city to address the unsustainably high social, economic, and generational costs associated with the single-detached typology; all the city has to do is prioritize its citizens over the profit of developers and take action.

Through this bottom-up urbanization process an alternative neighborhood, one that stands in contrast to the highly speculative nature of condo developments can be established to provide value directly to the community involved.

1 Wendell Cox, "Demographia International Housing Affordability - 2021 Edition" (Houston, TX, USA: Urban Reform Institute, February 2021), 8–15.

2 Alex Bozikovic et al., *House Divided: How the Missing Middle Will Solve Toronto's Affordability Crisis*, First (Toronto: Coach House Books, 2019), 124.

3 "GTA Housing: Most See Affordability Worsening, Say It Will Continue 'No Matter What' Government Does," *Angus Reid Institute* (blog), August 27, 2018, https://angusreid.org/greater-toronto-housing-prices-policy/.

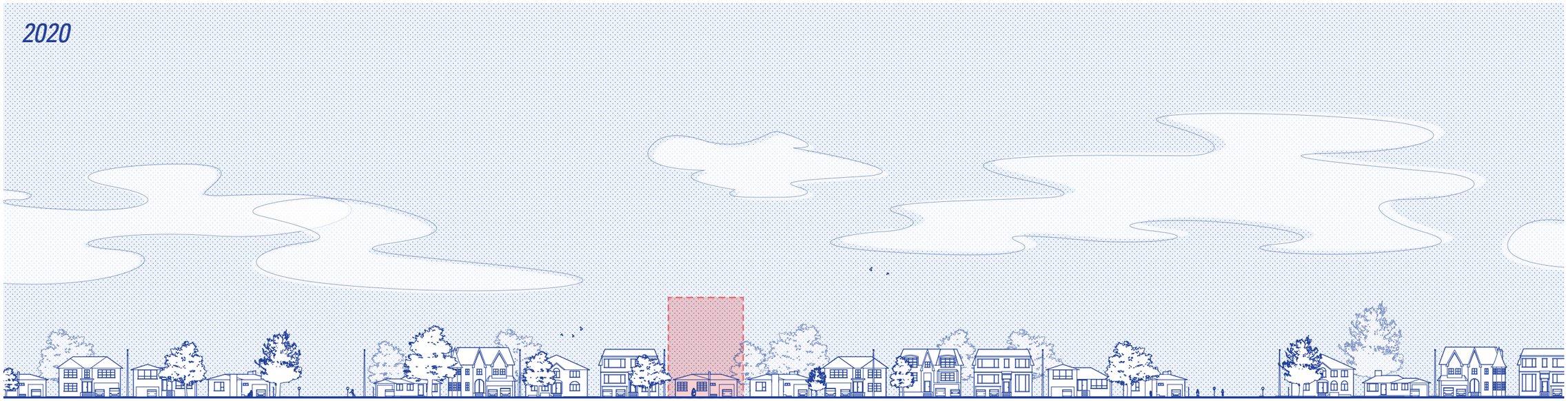


Fig. 8.2 | Existing vs Proposed Future Yellow Belt Block Elevations

8.2 Space:is for you.

Design choices in the micro-midrise are made with the inhabitants' best interests in mind. Throughout the building, enclosure, interior finishes, and structure are focused on value, durability, flexibility, and maintenance which can provide the highest return to members as the long-term owner occupiers.

The Type 02 typology as a case study shows the ability for this typology to accommodate for a variety of needs in a tight footprint. Residential level types can be divided into three categories of unit arrangements. The first option splits the floorplate into quarters, each quarter being studio/1-bedroom units. The second option contains two units with 2 or 3 bedrooms each taking up half a floorplate. Both arrangements can be paired with a communal space shared between the two units at the center of the floor by foregoing some unit space for a communal space. This opens the possibility for the studio unit kitchens to be relatively spartan since there can be a larger communal kitchen to provides a space for these units to host gatherings or cook complex meals. In the two-unit configuration the shared space can also be transformed into an office/ studio space. The third option contains two 3-bedroom units which splits the entirety of the floorplate in half. A reduced floorplate level is common with a micro-midrise above 12 meters as the building needs to pull back to conform to zoning regulations. This reduced level can accommodate various arrangements of units. As a note, all unit types are equal or larger than the industry-standard condo while providing additional shared spaces on levels with smaller units.

Materially, the micro-midrise sits on a poured-concrete foundation. The primary structure is cross-laminated timber panels on glulam columns arranged in a regular structural grid to promote freedom and flexibility for unit arrangement. The relatively small building is serviced by a fire-rated circulation core which eliminates the need for additional shear walls. This also adds to the typology's flexibility as unit partitions are free to move at any time during the building's lifespan because of the separation between structure and partition. Wood and metal siding forms the primary exterior enclosure, while the ground level could be constructed out of standard masonry units or concrete to ensure long-term durability. Interior CLT panels are left exposed on the ceiling to take advantage of the wood finish. Mechanical services can be accommodated in a perimeter bulkhead and to further reduce initial costs for the building group, inhabitants could choose to have their units half-finished. High complexity elements such as washrooms and kitchens can be installed during construction, while interior finishing can be completed by the unit's inhabitants post-occupancy. Wrapping the front and back of the micro-midrise are a series of galvanized steel and translucent polycarbonate wintergardens. Tempering the significant seasonal temperature fluctuations in Toronto, the wintergardens are outfitted with operable openings to allow members to inhabit and make use of the interstitial balcony zone while maintaining a cohesive face for the building.

Fig. 8.3 | Exterior View: Front Day

Type 2 Unit Scenario Sheet

Scenario 1	Scenario 2	Scenario 3	Scenario 4
7 Studio	**0** Studio	**1** Studio	**8** Studio
4 One Bed	**0** One Bed	**2** One Bed	**7** One Bed
0 Two Beds	**1** Two Beds	**4** Two Beds	**0** Two Beds
3 Three Beds	**7** Three Beds	**2** Three Beds	**0** Three Beds
14 Units	**8** Units	**9** Units	**15** Units
~23 Residents	**~23** Residents	**~19** Residents	**~22** Residents

8.3 Member's Units

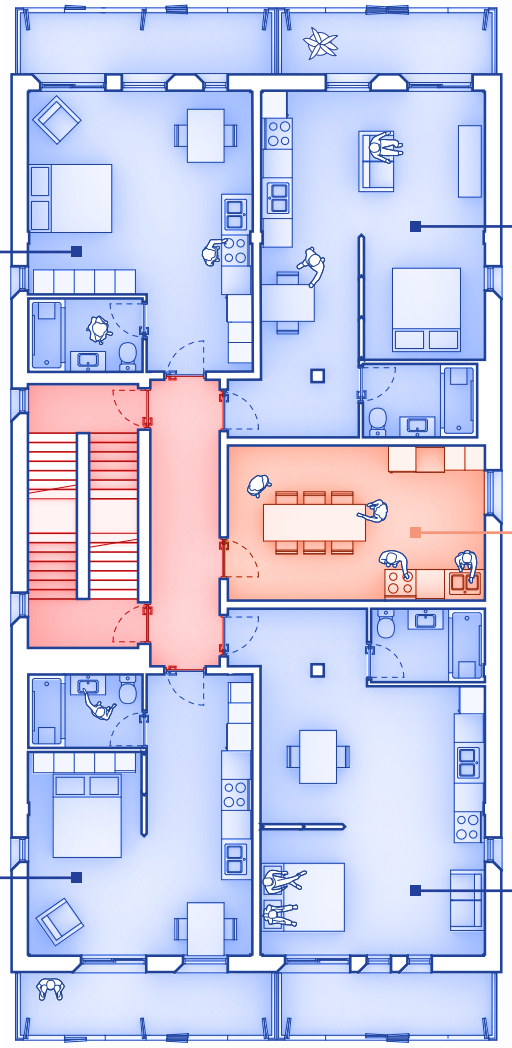


Fig. 8.4 | Plan: Studio Unit Level

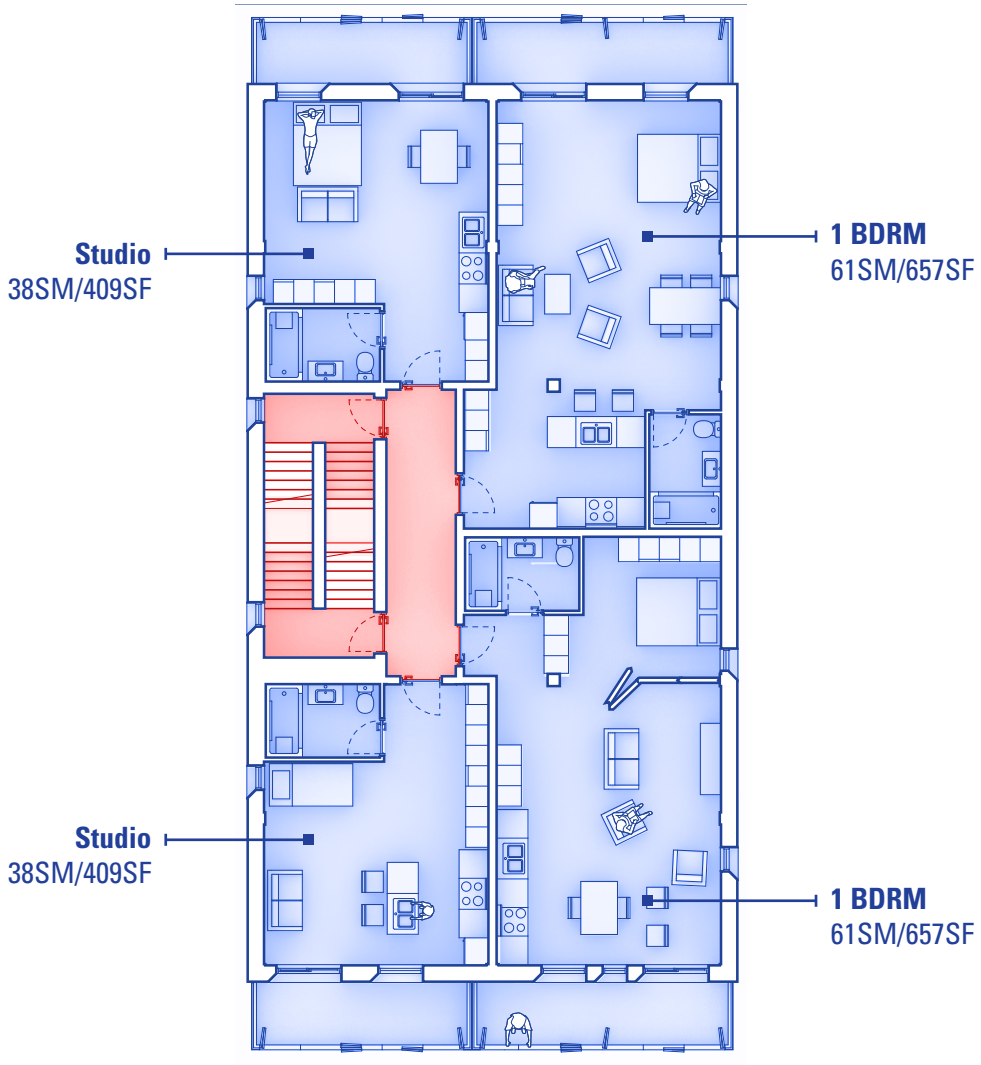


Fig. 8.5 | Plan: Studio/1 Bedroom Unit Level

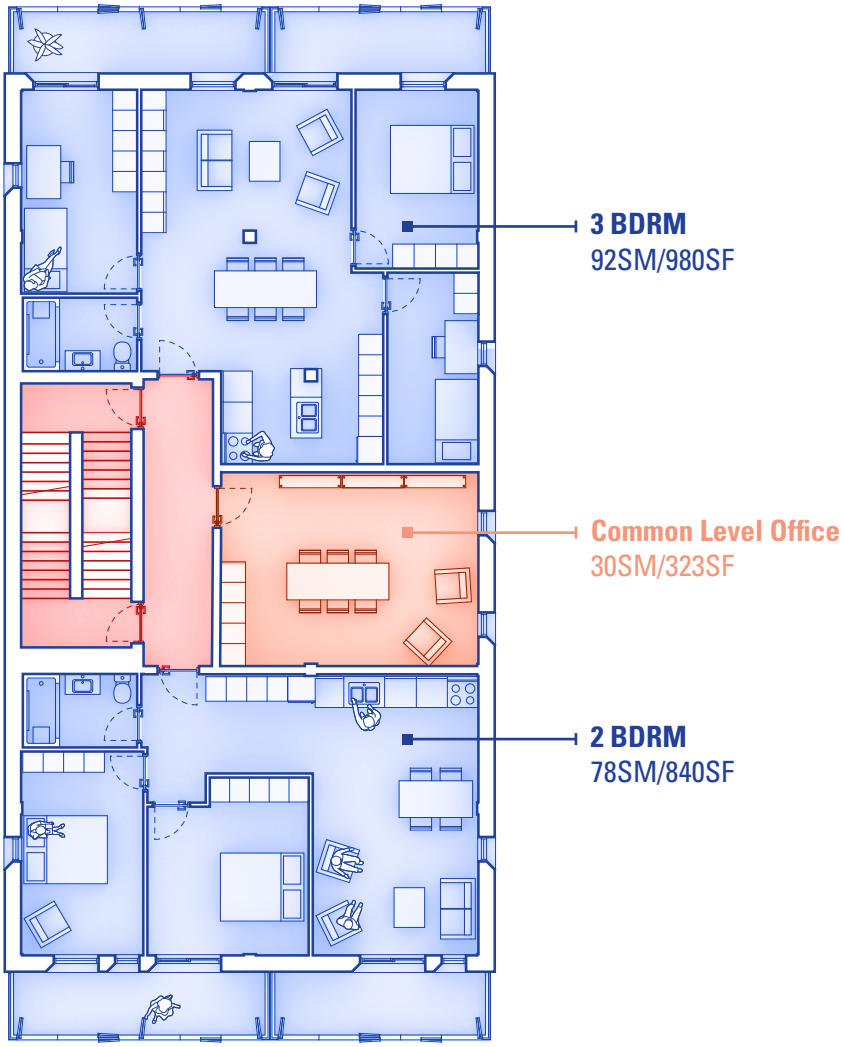
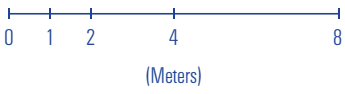


Fig. 8.6 | Plan: 2 Bedroom / 3 Bedroom Unit Level



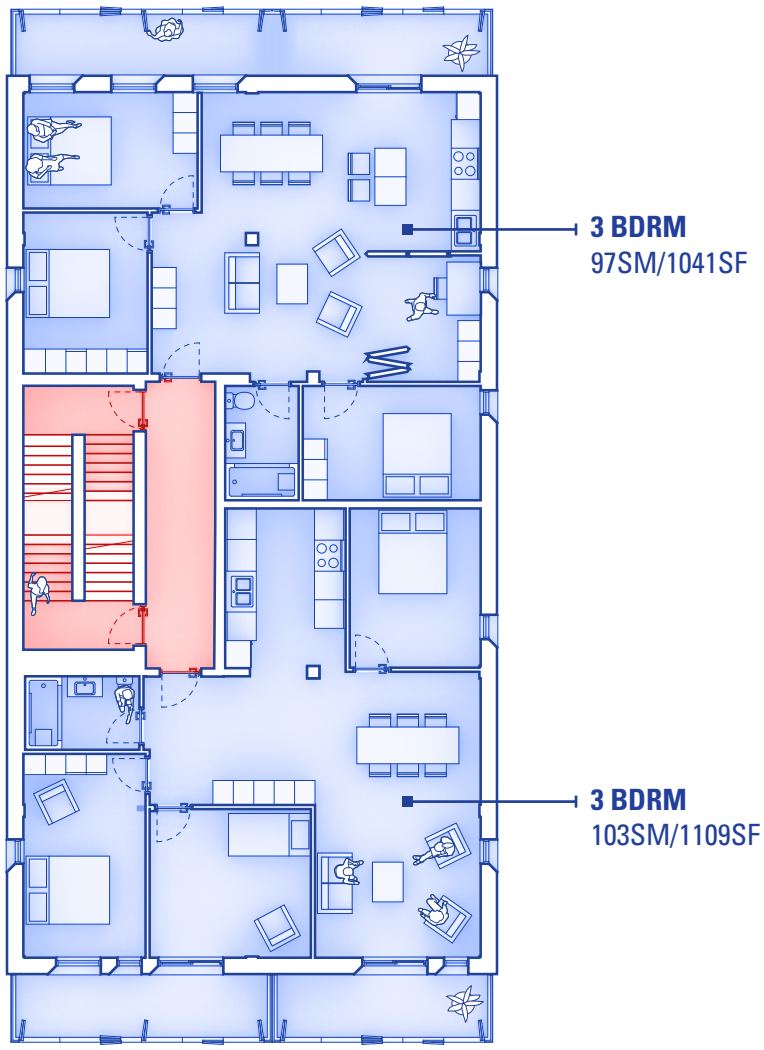


Fig. 8.7 | Plan: 3 Bedroom Unit Level

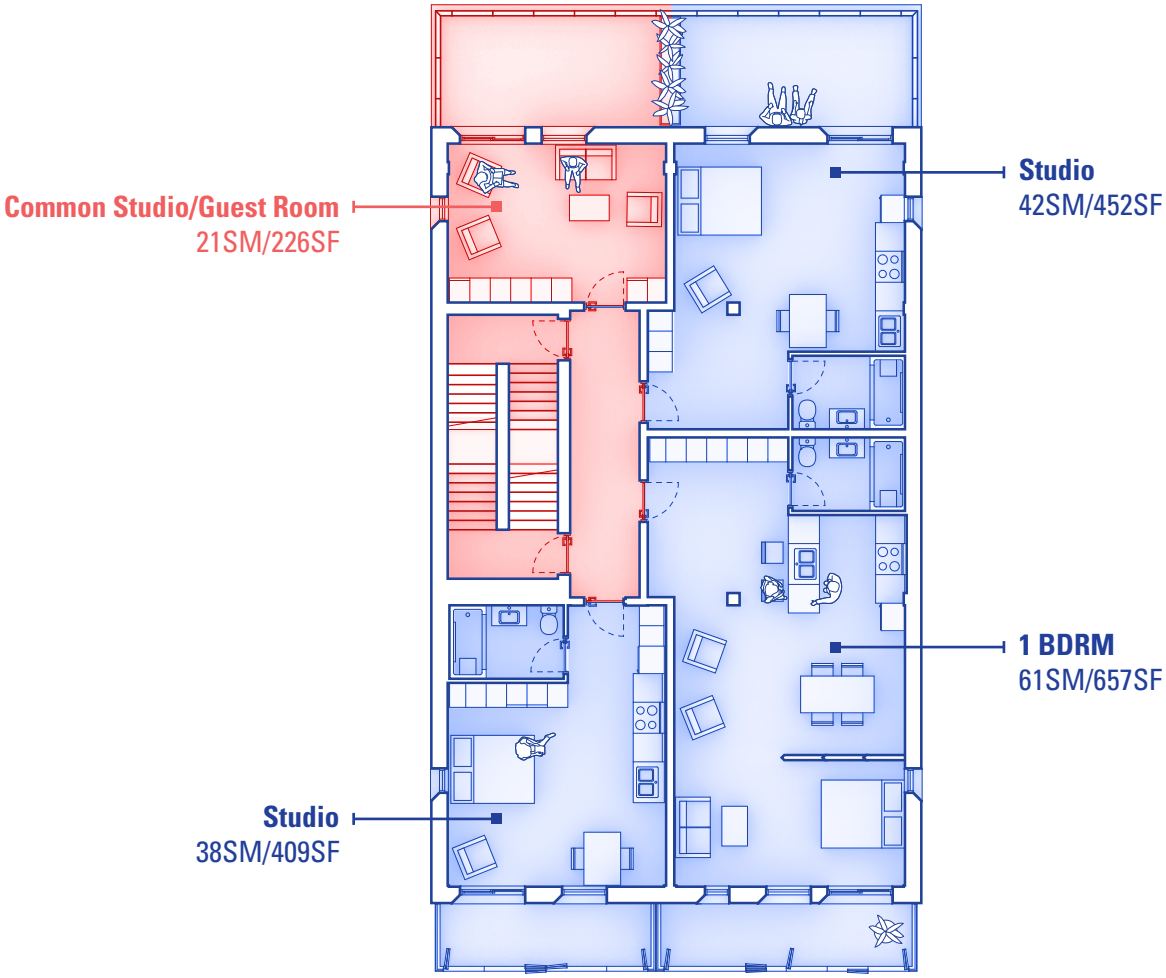


Fig. 8.8 | Plan: Studio Unit Level (Reduced Area)

0 1 2 4 8

(Meters)

Following existing Toronto Fire Code and Ontario Building Code the micro-mid rise can accommodate for two fire rate means of egress using a scissor stair core with direct exits to the side lot. Future architect supervised relaxations to that requirement may potentially allow for one enclosed half-turn stair. This also allows for the potential for an elevator to bring accessibility to all units. Whereas in the first egress strategy only the ground floor/half basement is completely accessible. Ground floor units can be provided for building groups with members who require accessible units.

8.4 Collective Shared Spaces

Communal spaces, which serve as one of the primary grouping strategies during the co-design phase, play a significant part in the design of the micro-midrise.

The larger communal spaces in the micro-midrise typology can be located at the ground and roof levels of each building, in addition to being scattered throughout the different levels. For micro-midrises that occupy a corner or main street facing lots, the ground level could be adjusted to allow for commercial units to site themselves in the development. These commercial rental units could be owned individually by micro-neighborhood stakeholders or collectively by the *building group* who occupies the building. Alternately, the *building groups* could elect to include additional micro-community shared amenities on these floors. As a result of the increased density to suburban neighborhoods, brought by the densification through micro-midrises, commercial units could be viable as a steady stream of revenue for the building group and micro-neighborhood to fund more intensive specialty programs. The ground floor could also accommodate a couple accessible units if the *building group* desires.

In the Type 02 case study, the larger communal spaces occupy the ground and roof levels. The ground level amenity space primarily serves as a communal gathering space and mailroom with an open floorplan. The plan, however, does allow for an additional enclosed space at the back for shared program that could require more sound isolation, such as a fabrication studio, recording studio, or band space. Space for indoor bike parking can be accessed by the entry ramp and is located towards the back of the ground level. The front and back of the ground floor are sunken outdoor gathering spaces for barbeques, benches, and gardening space. At the roof level, the primary fully enclosed space is attached to the building core for ease of circulation. This space has the potential to contain programs such as a shared laundry, library, or gym. The outdoor terrace is free for modification during the lifetime of the building. There is lots of room for gardening, relaxing, and eating here. Self-built structures that do not need to be completely enclosed, such as greenhouses, laundry drying areas, and three-season rooms could be modified or constructed by the inhabitants themselves.

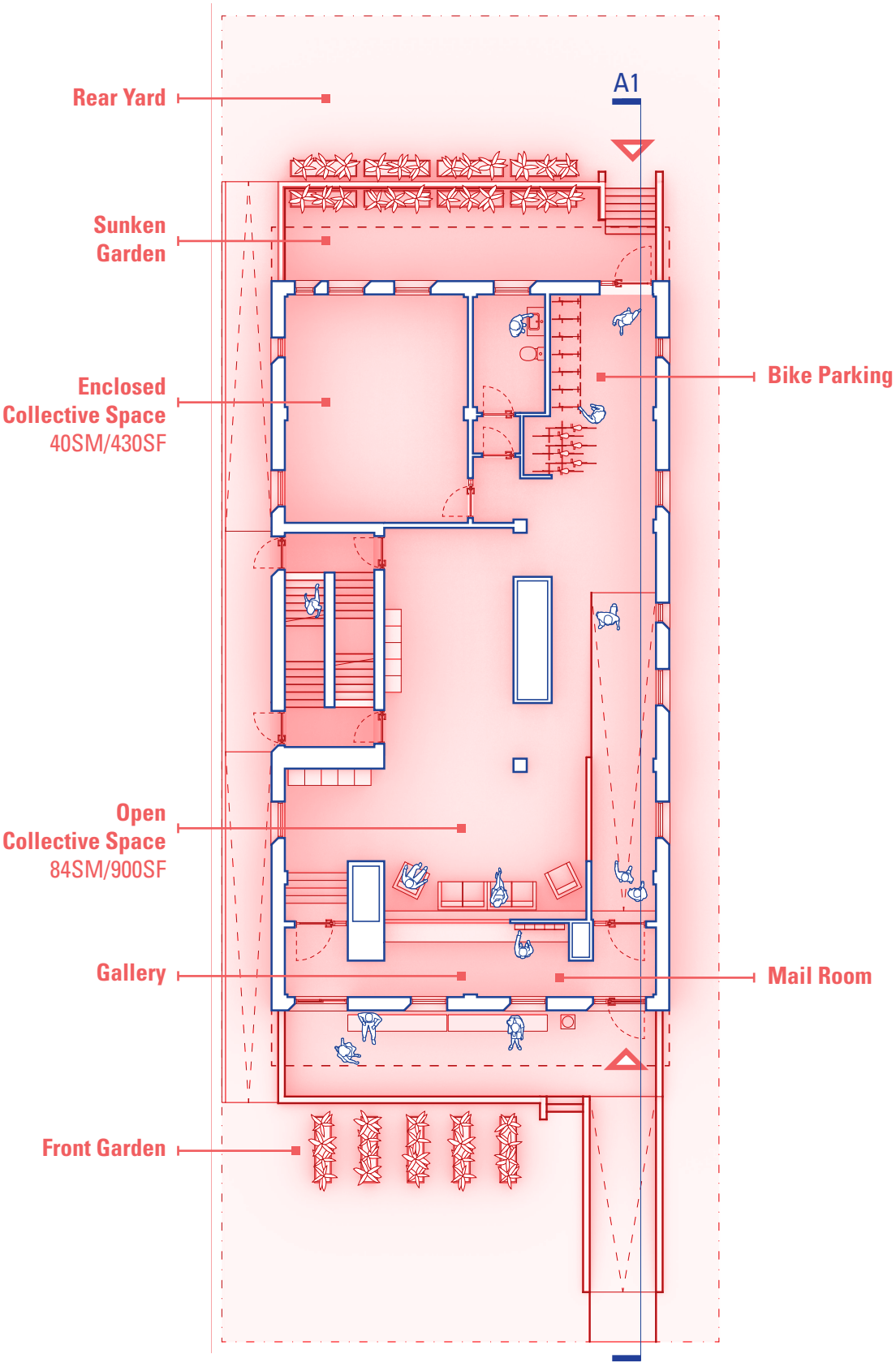


Fig. 8.9 | Plan: Collective Ground Level

Fig. 8.10 | Interior View: Communal Games Room

Fig. 8.11 | Interior View: Mail Room Overlooking Communal Games Room and Entry Area

Fig. 8.12 | Roof View: Communal Outdoor Dinning Area

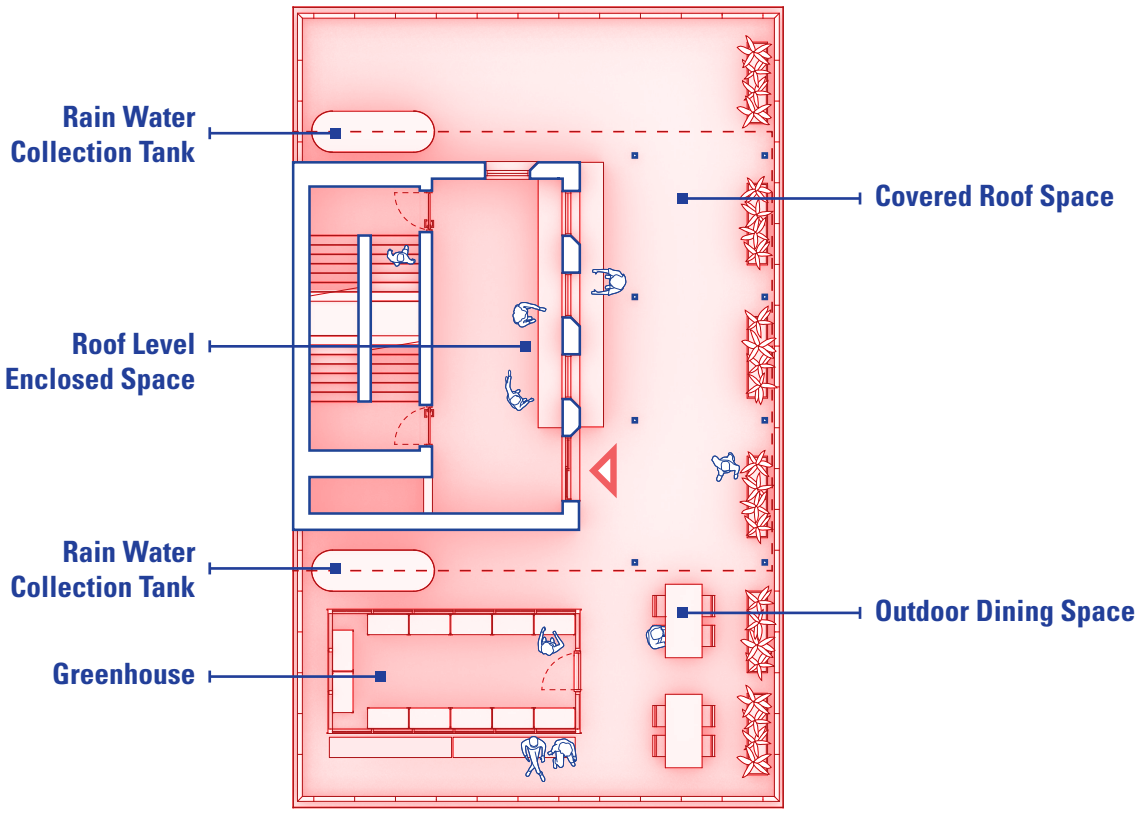


Fig. 8.13 | Plan: Collective Roof Level

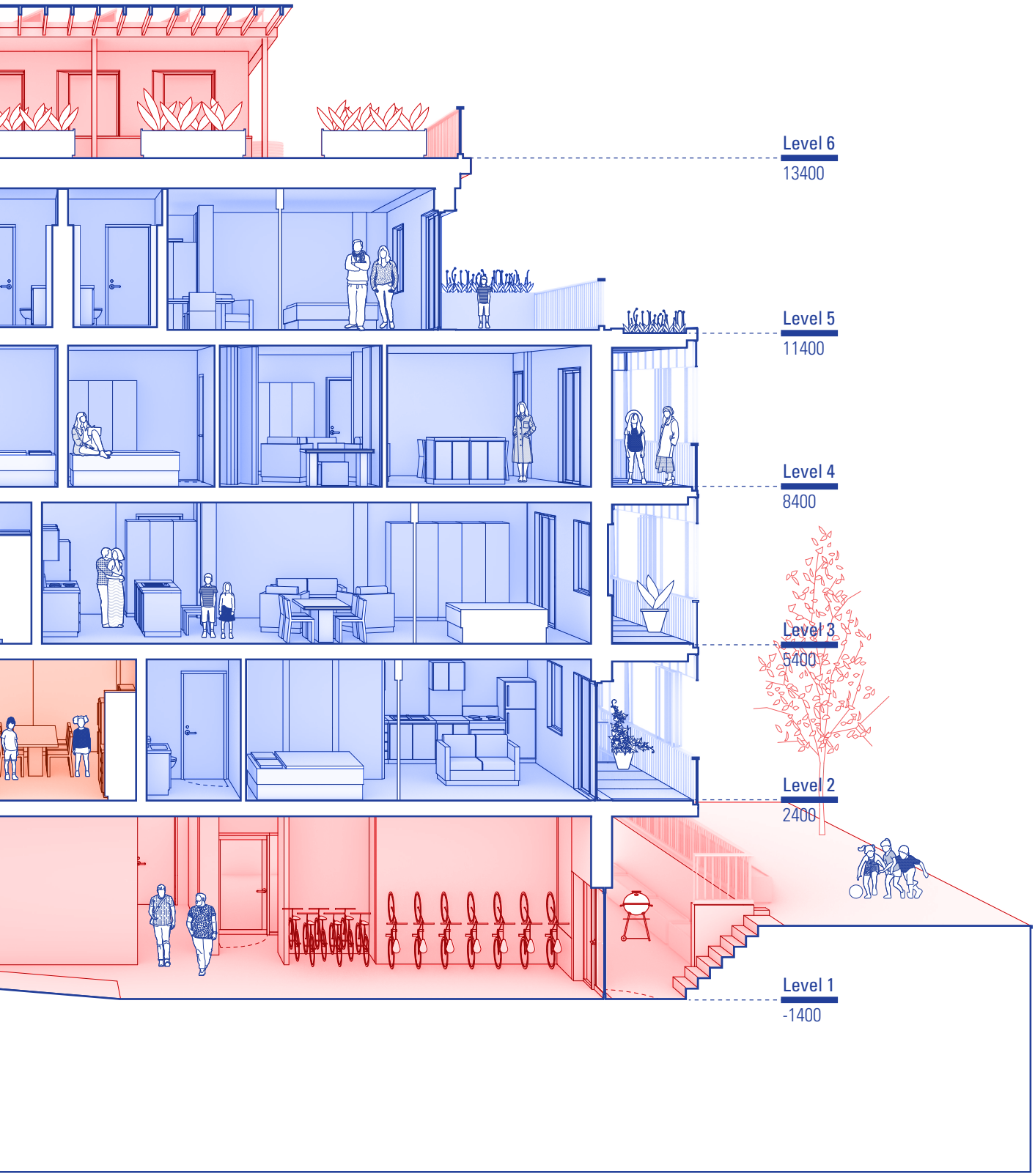
0 1 2 4 8

(Meters)

Fig. 8.14 | Roof View: Communal Greenhouse and Dinning Area

Fig. 8.15 | Interior View: Shared Laundry Room

Fig. 8.16 | Sectional Perspective: A1


Level 6
13400
Level 5
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Level 4
8400
Level 3
5400
Level 2
2400
Level 1
-1400

Collective Shared Spaces

Fig. 8.17 | Existing vs Proposed Future Yellow Belt Street Elevations

Fig. 8.18 | Exterior View: Front Night

8.5 Conclusion

By recognizing, naming, and acting to address the spatial agency dilemma, housing affordability crisis, and design communication bottleneck as a series of interconnected symptoms of the for-profit housing sector, it becomes clear that an alternate system must be found. The current issues which we face are not in fact problems, but unavoidable features of a system designed to expedite the process of capital accumulation for a very few and provide housing for those that can pay for it.

Rather than searching for a band-aid solution to one component of this systemic issue, this thesis proposes a strategic reimagining of the fundamental systems that influence housing. Developing an analysis framework that references the methods used by Sherry Arnstein's ladder of participation, existing high-agency housing developments models were examined to determine the key barriers each method experienced.

Meanwhile, building-upon the spatial graphing methods developed by the Architecture Machine Group at MIT and Cedric Price, a direction and opportunity were highlighted for the development of a platform that allows for non-experts to directly communicate their spatial needs.

Through breaking the larger low-agency problem down to separate policy, development, and design questions – methods that best response to the nuance of each component can be applied. Therefore, instead of positioning the design tool as a simple communication tool between non-experts and experts, the proposal centers around the definition of a design platform that operates between the questions of design, development, and policy. In combining, adjusting, and improving the methods from the literature and precedence review, a comprehensive solution is incorporated into the design platform that addresses the unique context of Toronto.

The establishment of a digital space and development method for building groups to form and collectively engage with these systems offers an opportunity for future home seekers to exercise their agency to push against the systems of for-profit housing.

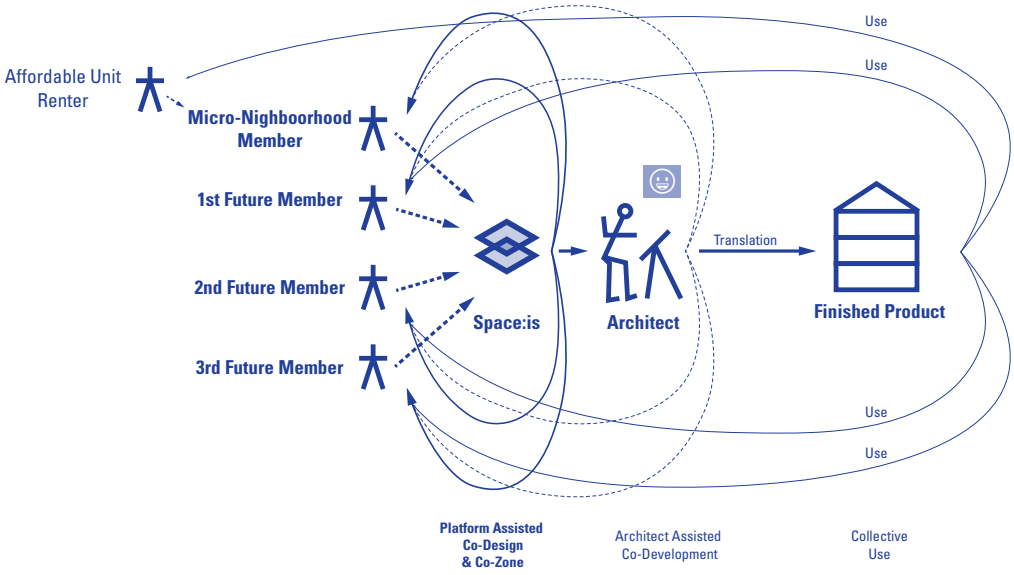

Fig. 8.19 | The Platform Driven Information Circuit

The proposed Space:is Platform driven approach to collective design allows for future users to discover, gather, and communicate through an understandable spatial language.

By exploring options for high agency development practices, multi-actor design communication strategies, and citizen action driven urban policies, a three-pronged approach to housing procurement is created: co-zone, co-design, co-develop.

By designing the Space:is communication platform, citizen participation can be integrated at the start of any project within the *Yellow Belt*. When future inhabitants are not only designing their personal unit but also connecting with each other to form groups with shared goals and values; a higher level of agency is achieved.

By inverting the existing top-down power structure in this way, future owner-occupiers and existing neighbours are empowered to exercise their own spatial agency that is not present today.

Though the co-zoning, co-design, and co-development strategies presented are not exhaustive, a viable direction has been highlighted for citizens, architects, and the city to advocate for and strive toward. There are undoubtedly numerous approaches to tackle any one of these singular problems, however, cities should be for their inhabitants – and the inhabitants should be the ones who determine how they live.

9.0 Back Matter

9.1 Letters of Copyright Permission

From: Noshe
Sent: January 18, 2021 4:35 AM
To: Vincent Min
Subject: Re: Images of R50 Baugruppen

Lieber Vincent,

you have my permission if you going to use the image for your thesis exclusively in an academic setting. (please photocredit as ©Noshe)

best wishes from Berlin
Andreas

Am 17.01.2021 um 23:45 schrieb Vincent Min <vincent_min@outlook.com>:

Lieber Andreas Gehrke,

I am a Canadian architectural masters student currently researching co-housing in my thesis research. I came across some of your photos of the R50 Baugruppen project in this Metropolis article, https://www.metropolismag.com/architecture/residential-architecture/dont-call-it-a-commune-inside-berlin-radical-cohousing-project/, and was wondering if I can use them within my thesis document.

The document will used exclusively in an academic setting and will be published as a PDF free for the public to view. You can take a look at past thesis that were publish in the school here: https://uwspace.uwaterloo.ca/handle/10012/16623.

Please let me know if I have permission to use the images. Or if you have any additional questions on their use.

Best,

Vincent Min

Candidate, Master of Architecture
Honors B.Arch Studies
University of Waterloo

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M +49(0)178 51 52 533

Commissions
www.noshe.com
Work

From: Becky Papaspyrou
Sent: January 26, 2021 5:09 PM
To: Vincent Min
Subject: Re: Nightingale 1 Photography

Hi Vincent,

Please see below:

*We grant usage to **Vincent Min** to publish the Nightingale 1 project images in his thesis document for the University of Waterloo.*
Please credit photography to Peter Clarke.

Becky Papaspyrou
On behalf of Peter Clarke

Thanks,
Becky

Becky Papaspyrou
Producer / Account Manager
0452 628 248

Latitude

4c Cecil Place Prahran Victoria 3181
03 9529 5299
latitude.com.au | peterclarke.com.au

From: Vincent Min <vincent_min@outlook.com>
Date: Tuesday, 26 January 2021 at 11:42 am
To: Becky Papaspyrou <becky@latitude.com.au>
Subject: RE: Nightingale 1 Photography

Hi Becky,

Thank you for the permission! Should I attribute the images to Latitude or Peter Clarke? All I need is quick statement of permission through the email.

Again thank you so much.

Best,

Vincent Min

From: Nightingale Housing
Sent: January 25, 2021 7:39 PM
To: Vincent Min
Subject: Re: Nightingale 1 Case Study

Hi Vincent

You're welcome to use the images with attribution.

Kind regards,
Daniel,
The Nightingale Housing team

NIGHTINGALE

nightingalehousing.org
Instagram: nightingale.housing
Learning and working on Wurundjeri land.

Out of respect for the COVID-19 containment measures taking place all over Australia, Nightingale Housing has shifted temporarily to working from home. All our projects are continuing as usual.

On Sat, 23 Jan 2021 at 01:40, Vincent Min <vincent_min@outlook.com> wrote:

> Hi Nightingale Housing Team,
>
> I am a Canadian architectural masters student currently researching how digital platforms can facilitate co-housing projects in my thesis at the University of Waterloo. I came across your Nightingale 1 project and was extremely interested in the method of development used as well as the spatial qualities of the project. I plan to use the project as a case study within the research component of my thesis and was wondering if I have permission to use some of the images on your site (https://nightingalehousing.org/nightingale-1).
>
> The document will used exclusively in an academic setting and published digitally strictly for educational purposes. No revenue will be made by the thesis document. You can take a look at past thesis that were publish in the school here: https://uwspace.uwaterloo.ca/handle/10012/16623.

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9.3 Appendices

Notes Addressing the Micro-Midrise

Siting

Within the Yellow Belt the micro-midrise needs to be a walkable distance to rapid public transportation such as subway stations, LRT stops, GO Train stations, or express bus routes to maintain the limited number of car parking for residents. Corner lots is preferred if possible but not required to allow for more openings and balcony space. As acceptance for the micro-midrise increase permitted on-street parking can be explored in the Yellow Belt.

Height

The allowable height is capped at 6-storyes and the adapted Toronto Mid-rise performance guidelines. Specific heights at each site are determined by the micro-neighborhood co-zoning process.

Egress and Accessibility

Following existing Toronto Fire Code and Ontario Building Code the micro-mid rise can accommodate for two fire rate means of egress using a scissor stair core with direct exits to the side lot. Future architect supervised relaxations to that requirement may potentially allow for one enclosed half-turn stair. This also allows for the potential for an elevator to bring accessibility to all units. Whereas in the first egress strategy only the ground floor/half basement is completely accessible. Ground floor units can be provided for building groups with members who require accessible units.

Waste Collection

2-4 extra-large Toronto Waste Management bins can be used for each type of waste. These can be stored at the side of the building in a nook or in the backyard. An alternating schedule between building group members can be used to determine who is on waste collection duty. Alternatively, the City of Toronto can begin to implement in-ground communal waste drop off containers, like those used in many northern European cities, to replace the existing highly inefficient curbside pickup program. These community drop off containers can be installed on a street-by-street bases in building group front yards, in front of schools, or parks.

Water Supply and Wastewater Treatment

Existing waterlines and sewage lines installed during the late 50s and early 60s are reaching the end of their life and are being replaced. When replacing these lines, the City of Toronto can invest in higher capacity infrastructure to accommodate the increase density in the Yellow Belt.

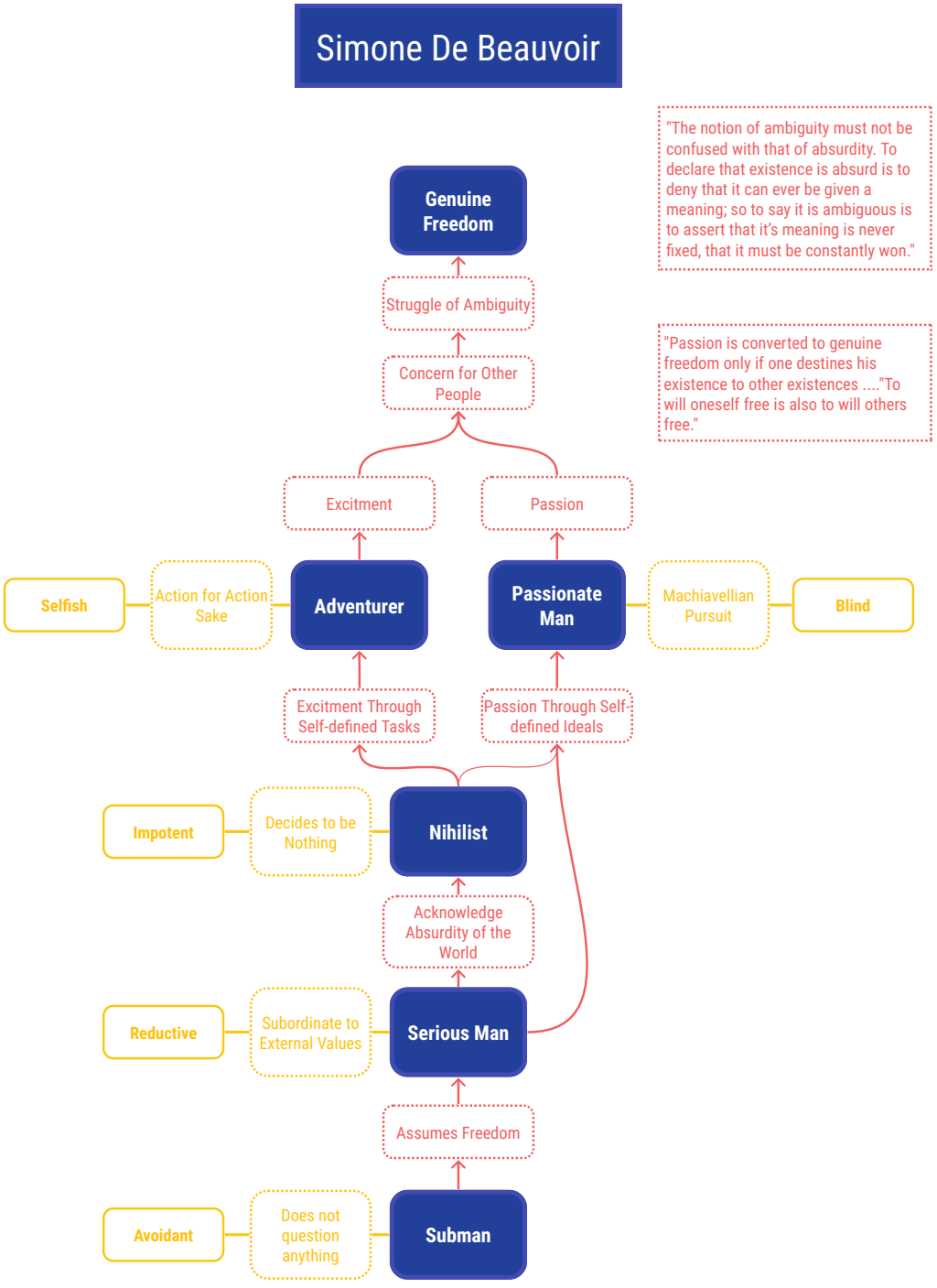

Fig. 9.20 | Visualized Summary of Simone de Beauvoir's Ethics of Ambiguity

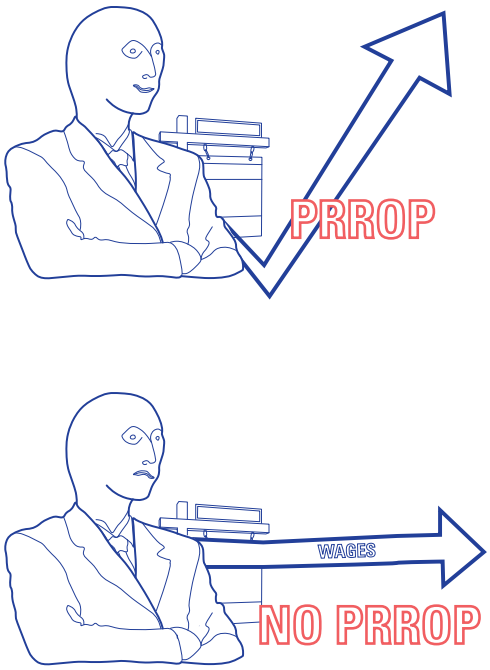

Fig. 9.21 | Vectorized Variation of the *Stonks* Meme
Highlighting the Housing Crises

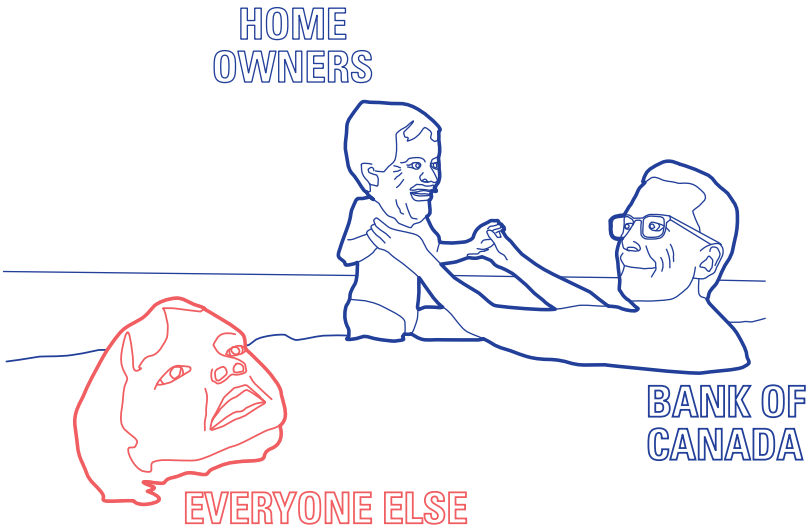

Fig. 9.22 | Vectorized Variation of the *Mother Ignoring Kid Drowning In A Pool* Meme
Highlighting the Consequences of Quantitative Easing

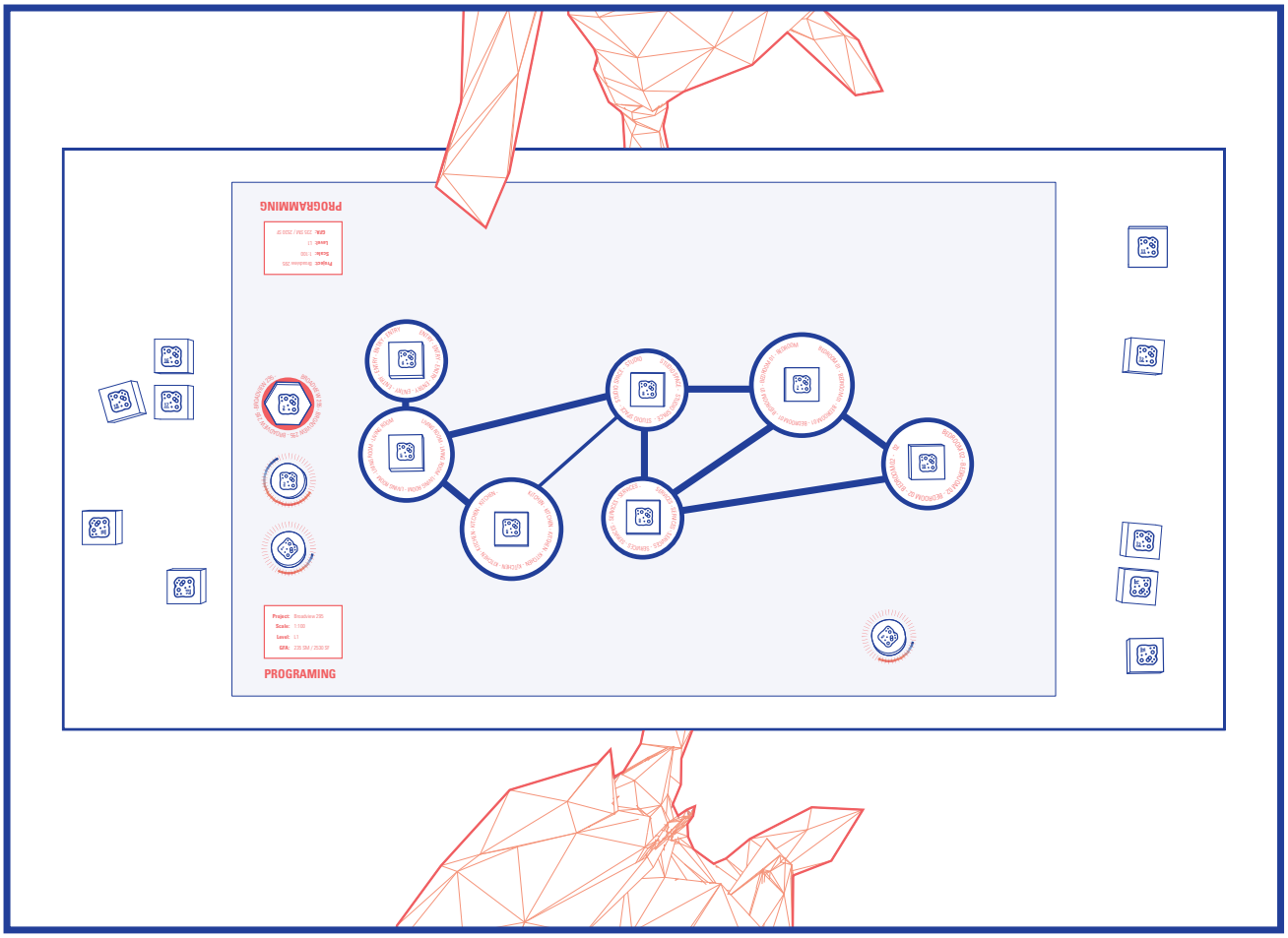

Fig. 9.23 | Early UI Experimentation: Communal Program Configurer

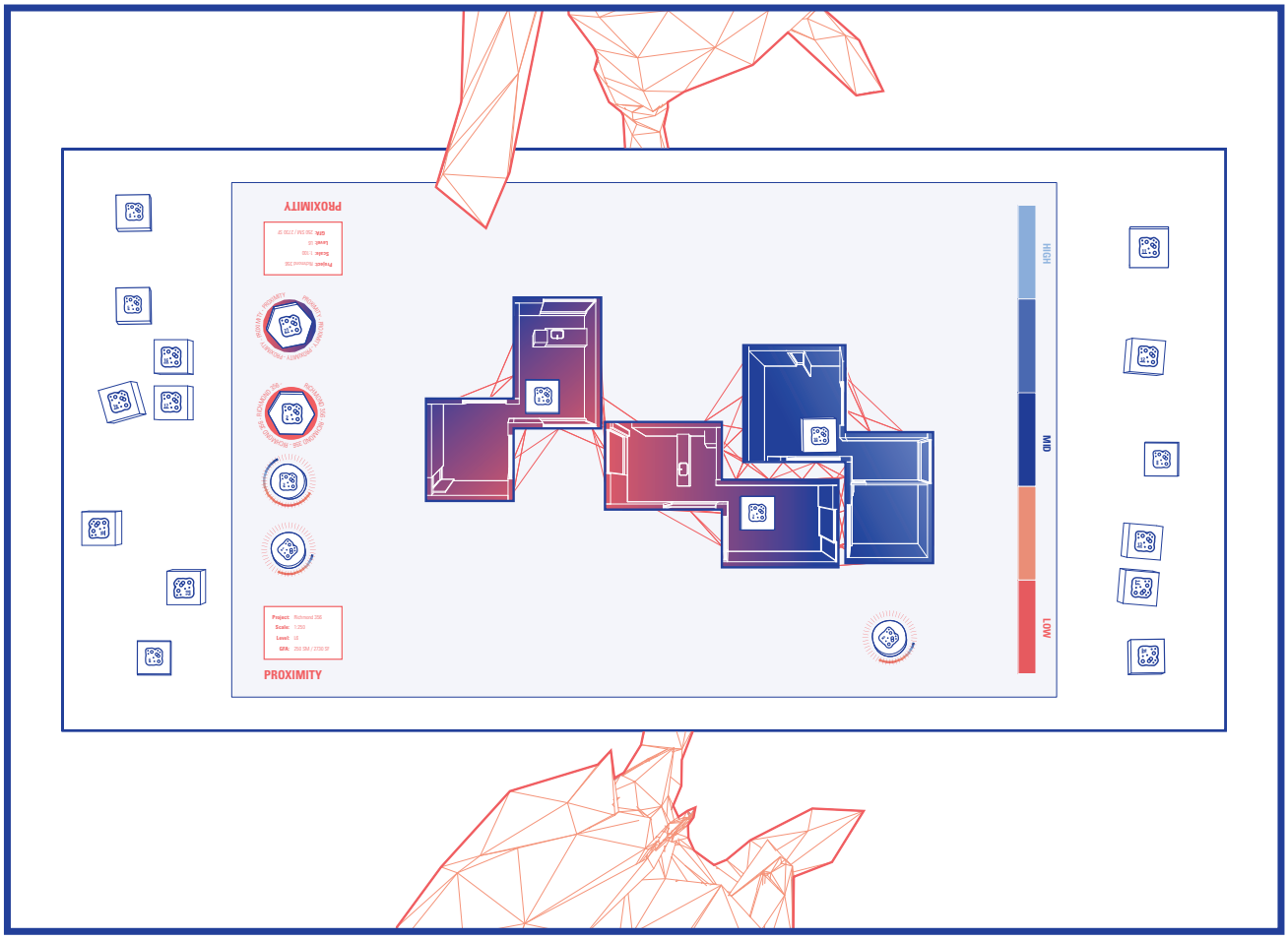

Fig. 9.24 | Early UI Experimentation: Communal Room Configurer

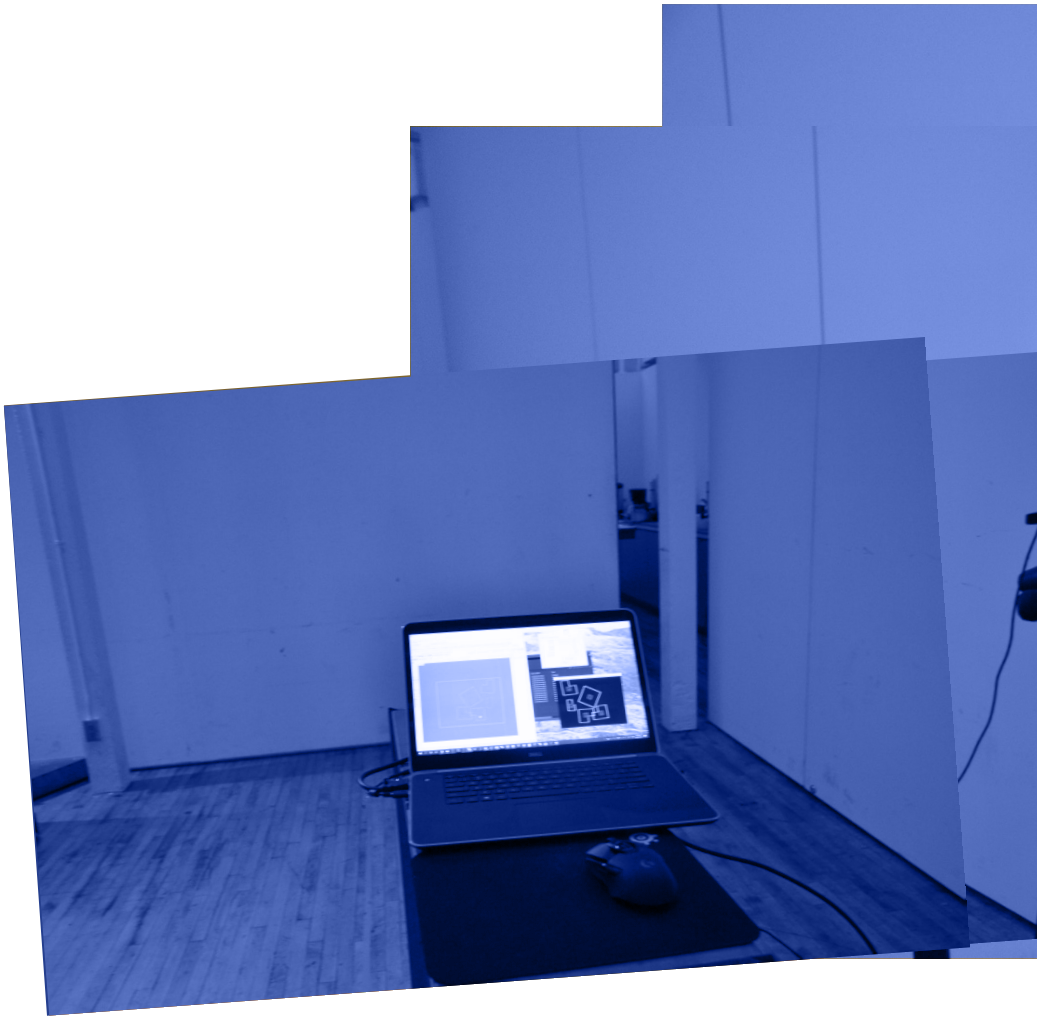

Fig. 9.25 | Early UI Experimentation: Fiducial Code Interface Prototype Setup

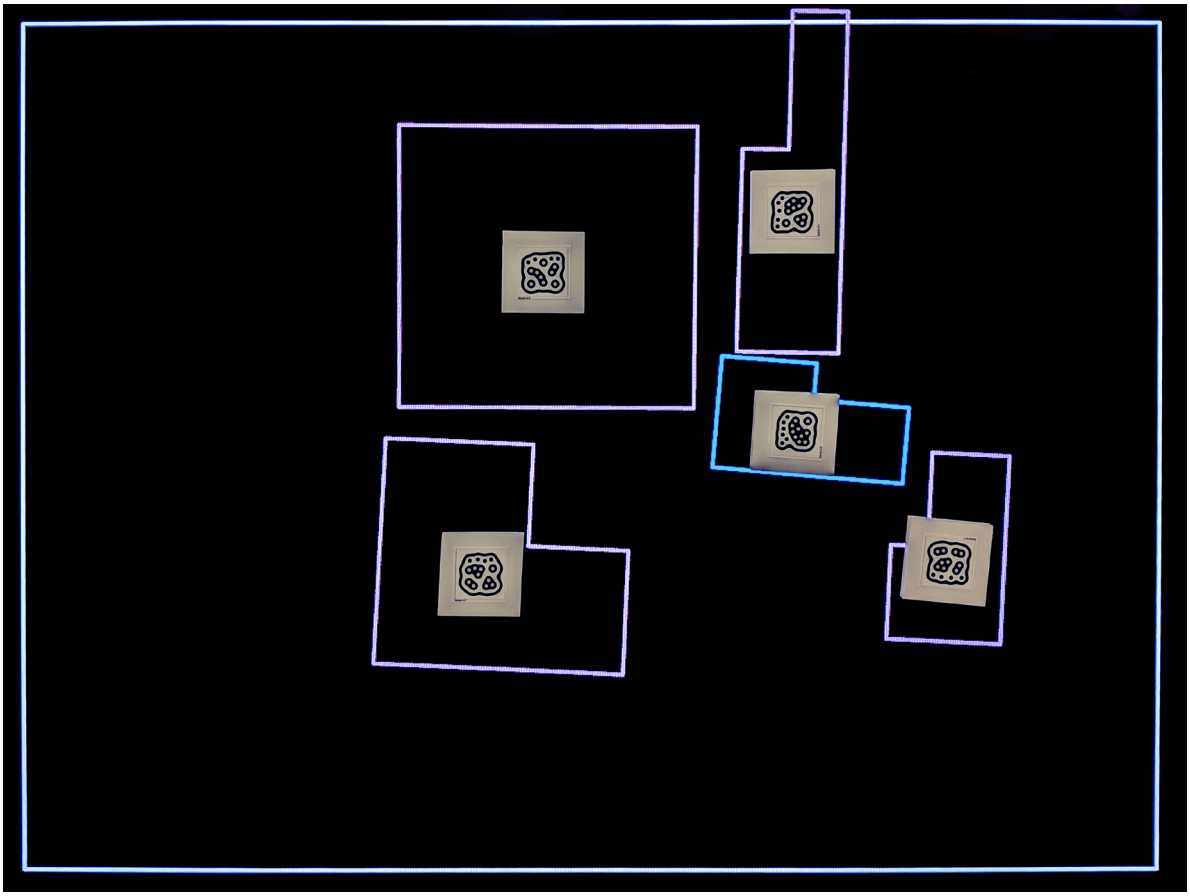

Fig. 9.26 | Early UI Experimentation: Programming Prototype

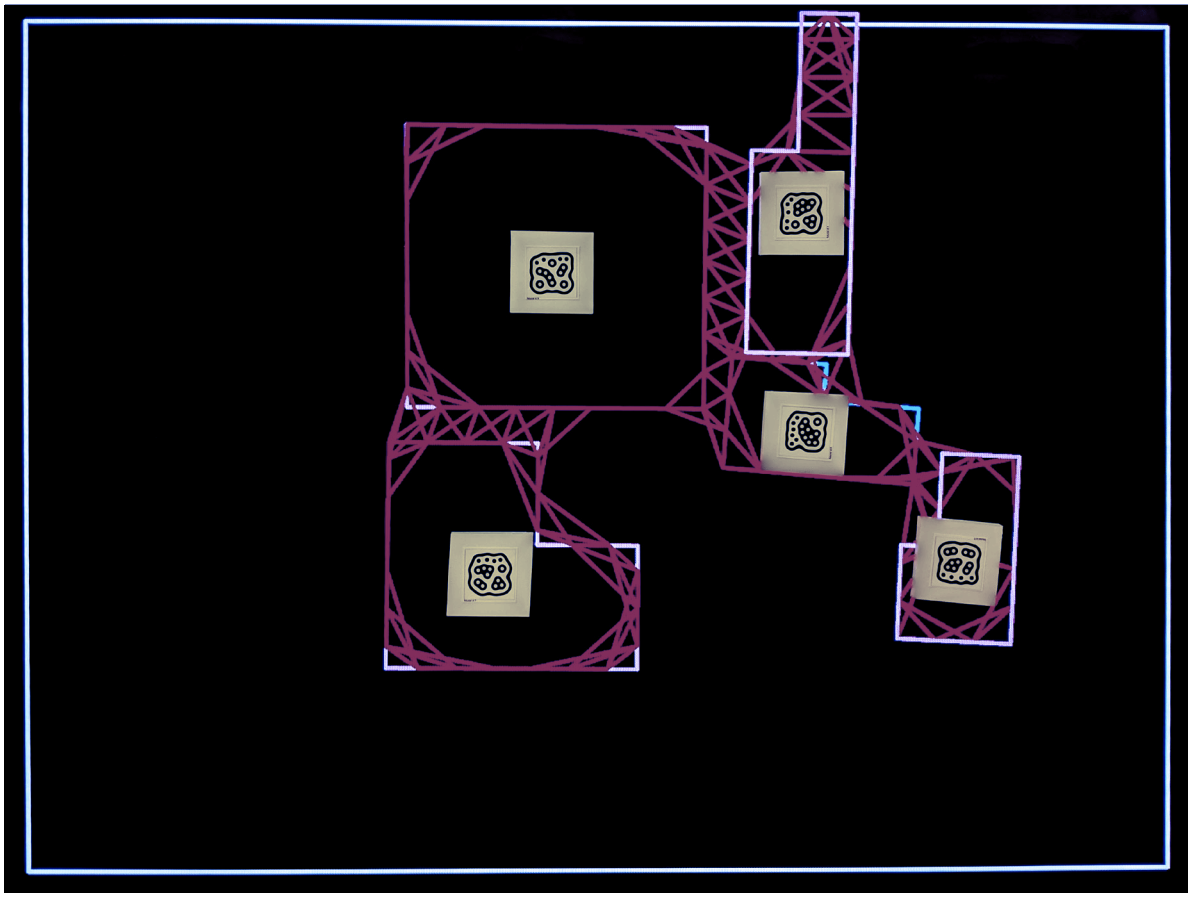

Fig. 9.27 | Early UI Experimentation: Proximity Prototype

9.4 Glossary

Agency – The capacity for an individual intentionally influence their functioning and life circumstance.

Baugruppen – A German term translating to 'building group' is the collectively minded housing development movement that began in Berlin.

Building Group – A strict legal definition of a housing co-operatives with the objective to self-develop majority owner-occupied housing in the Toronto Yellow Belt. At minimum 80% of co-op shares must be inhabited by members as a principal residence within 6 months of construction closeout in perpetuity. No single member can own more than 20% of shares. 20% of shares may be owned by members and used as leased property for rental residential, commercial, or employment purposes. Resale of any shares must follow the equitable resale policies to maintain affordability.

Existenzminimum – A German term that came to use in the 1920s and 30s New Objectivity moment translating to 'subsistence dwelling' to represent a standard minimum quality and quantity of space required for basic living.

Fictitious Average User – A term originally coined by Yona Friedman, a strategy used by architects to overcome the jammed information circuit between experts and non-experts. Through the establishment of a potential future user, the needs of final inhabitants is generalized to reduced to complexity of the spaces built.

Hedge City – A term originally coined by Andy Yan, they are urban centers with perceptions of stable social, political, and environmental qualities that attracts the world's ultra-rich, crime syndicates, and multinational investment firms to save their capital in local real estate to hedge against other investment methods and inflation.

Home Seekers – Individuals actively looking for housing options. Differentiating from home buyers, home seekers are willing to explore paths outside of the conventional for-profit development and 'market rate' routes to home ownership.

Micro-Neighborhood – Neighborhoods formed by the sites directly adjacent or tangential to a micro-midrise through collective democratic action.

Mom & Pop Investor – An individual who owns, rents, and self-manages a limited number of properties primarily for the purpose of saving for retirement.

Real Estate-industrial Complex – A socioeconomic concept in which property developers, property speculators, architects, and real estate agents become entwined in the social and political systems, thus creating a profit economy from these systems. Such a complex follows its own economic interests regardless of, and habitually at the expense of, interests of society and individuals. The Real Estate-industrial complex directly profit financially from manufacturing a socially detrimental, ecologically devastating, and inefficient housing market.

Spatial Agency – The capacity for an individual to intentionally influence the structural systems of spatial delivery that impact their functioning and life circumstance.

Speculative Serial Investor – An individual or equity fund that is dependent on the buying, selling, flipping, renting, and leveraging vast portfolios of real estate as the primary method of gaining capital. Management of properties is outsourced to third parties.

Superpose Flat – A distinctive Montreal rental housing typology consisting of three-storey structures with exterior stairs. Often, they are developed and managed by *Mom & Pop Investors*.