STRANGERS IN THE SKY:

A Designer's Guide to Tackling Urban Loneliness

by

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AUTHOR'S DECLARATION

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

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

ABSTRACT

Research in cognitive science has revealed that being social is a fundamental component of being happy and studies have shown that mental health is greatly affected by the spatial and social construct of the built environment. The contemporary urban dweller in today's society often experiences social isolation and loneliness despite living in close proximity to thousands of other people. For those living in high-rises specifically, issues surrounding chronic loneliness are now recognized as a concern to public health. People living in high-rises are reported to be more socially isolated, know very few of their neighbours and are generally less embedded in their community. The way we have constructed the built environment has created increasingly anti-social and hostile spaces, which lends itself to a more negative perception of society as a whole.

This thesis will investigate the spatial conditions that contribute to the relatively new phenomenon of urban loneliness, with a focus on student accommodation buildings. The primary objective of this research is to graphically translate architectural findings based on case studies, readings, and other sources and distill them into a set of design principles for socialization in high-rise buildings for future use. Guidelines not only create a precedent for future architectural projects but are incredibly important to the practice itself. This research will identify opportunities to facilitate human connection within urban communities and imagines methods of minimizing the effects of loneliness in high rises of the future.

ACKNOWLEDGEMENTS

Firstly, I would like to thank my thesis supervisor, Jonathan Enns for your insight and guidance throughout this process. Your perspective and passion towards creating tools for design helped shape this project and encouraged me to think about architecture from the perspective of its users.

I would like to thank my committee member, Marie-Paule Macdonald for your expertise in the field of contemporary architectural theory and urbanism. Your enthusiasm and suggestions were incredibly valuable.

To Paul Born, Alex Piticco, and Melissa Blewitt, thank you for taking the time to speak to me about loneliness, building community, and helping me to understand the legacy of student residence design at the University of Waterloo.

Thank you to my parents and friends for your encouragement and support.

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[Fig.45] List of precedent projects referenced to generate design guidelines. *Images retrieved from https://static.turbosquid.com/Preview/2016/06/03__14_24_55/01.jpg12a832ca-fd66-4ad1-8de7-a9bb4daceef2Original.jpg*
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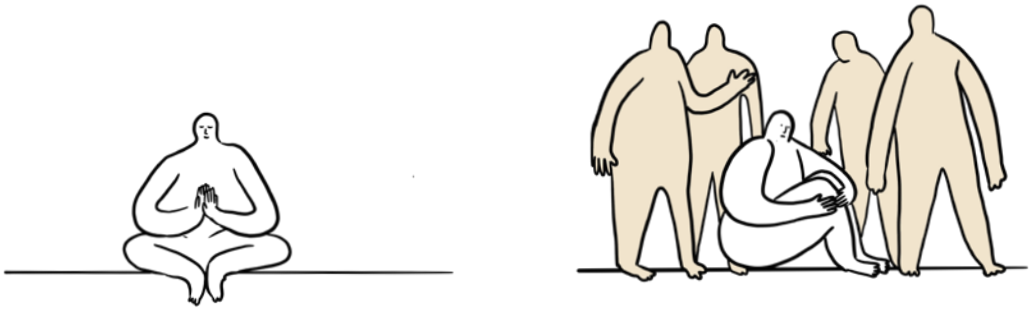
INTRODUCTION

WHAT IS LONELINESS?

OBJECTIVES AND RATIONALE

THE IMPACT OF GUIDELINES



SOCIAL ISOLATION/
SOLITUDE

LONELINESS

[Fig.01] The difference between social isolation and loneliness

INTRODUCTION

Through readings of recent scholarship on loneliness across disciplinary boundaries such as sociology, cognitive science, and psychogeography, I will be discussing the varying perspectives on this topic and their intersection with architecture and urbanism. In the following sections, I will begin by defining what loneliness is, how the perception of loneliness has changed throughout history, and then go on to examine how the built environment can negatively impact mental health.

WHAT IS LONELINESS?

Simply put, loneliness is a mismatch between an individual's social relations and the individual's desired social relations.[1] Loneliness is a subjective and negative experience that affects all ages and socioeconomic backgrounds. Although loneliness is often caused by social isolation, they are not to be considered one in the same. Objective isolation does not necessarily lead to loneliness, but it is subjective isolation, where one perceives that they do not belong or lacks confidants, which leads to loneliness.[2] Whether or not you are surrounded by others, you may still feel lonely and socially isolated. On the other hand, someone who is alone, quite literally, or in a state of solitude can be perfectly content.[3] The concept of being alone and feeling lonely should not be confused with one another and being lonely always refers to negative feelings and unhappiness.

1 Aiden, Hardeep. "Isolation and Loneliness an Overview of the Literature" (British Red Cross, 2016), 6

2 Perlman, Daniel and Letitia Anne Peplau. "Toward a Social Psychology of Loneliness." Personal Relationships in Disorder (1981), 31

3 Griffin, Jo. "The Lonely Society", Mental Health Foundation (2010), 3

LONELINESS AND HUMAN EVOLUTION

John T. Cacioppo and William Patrick's book, Loneliness: Human Nature and the Need for Social Connection (2008), focusses on the biology of loneliness and some of its startling impacts on physical and mental well-being. Cacioppo argues that the "sensations associated with loneliness evolved because they contribute to our survival as a species".[4] "Physical pain protects the individual from physical dangers" and "social pain, also known as loneliness, evolved for a similar reason: because it protected the individual from the danger of remaining isolated".[5] In a lecture Cacioppo gave at Cornell University's College of Human Ecology, he states that humans lack the defensive evolutionary advantages that other animals have (i.e. sharp teeth, claws, wings, etc...). However, our advantage is our mind's ability to reason, think and work collectively. It is through collaboration and developing dependence in groups that has allowed us to survive and thrive. Throughout evolution, collaboration amongst mates with the investment in protecting their offspring meant that their offspring would become more mentally and behaviorally complex. This led to greater diversity, innovation and the rapid cultural development of our species.[6] Much like hunger and thirst reminds us that we need food or water, loneliness reminds us of when we are lacking in social interaction.[7]

LONELINESS IN ANTIQUITY

Barbara Taylor, Professor of Humanities at Queen Mary College London discusses the relationship between loneliness and solitude and how it has changed over the centuries. Taylor leads research into the health-related history of modern Western solitude. In her interview on the BBC's podcast called "The Anatomy of Loneliness", she describes an aphorism derived from Aristotle but originally coined by Francis Bacon which states:

"Whosoever is delighted in solitude is either a wild beast or a God" - Francis Bacon [8]

This quote emphasizes the perception of solitude as extreme and unnatural. The comparison to a "beast" is made because being truly human means you would seek the company of others. A "god" refers

4 John T. Cacioppo & William Patrick. "Loneliness : Human Nature and the Need for Social Connection" (New York and London: W.W. Norton & Company, 2008), 7

5 Ibid

6 Cornell University College of Human Ecology. "The Anatomy of Loneliness", Cornell Cast (2010). https://www.cornell.edu/video/the-anatomy-of-loneliness

7 Cacioppo et al. "Evolutionary Mechanisms for Loneliness", National Institute of Health (2014), 1

8 Bacon, Francis. "The Moral and Historical Works of Lord Bacon" (London: George Bells & Sons, 1882), 73-74

[Fig.02] 'Evening (Melancholy I)'. Edvard Munch (1863-1944)

to someone who is self-sufficient and exists on a different realm than other human beings. So far, we have understood humans as social beings so those who sought the opposite were condemned.

Romanticism, however, places more value on solitude as part of a "rich realm of experience".[9] There are different implications of solitude for people of superior creativity like poets, artists, and religious figures. For the rest of society, solitude was associated with melancholy and depression. Philosophers like Jean-Jacques Rousseau wrote about solitude as a condition of desolation but at the same time he describes melancholy as "pleasurable pain".[10] During this time, the concept of aloneness wavered between something positive and negative.

According to Taylor's hypothesis, the modern phenomenon of loneliness doesn't come into existence until mid to late 19th century. In our minds today, there is a link between modern society and loneliness with a critique of the modern world as an "alienating and estranging place".[11]

DIMENSIONS OF LONELINESS

Humans as a social species not only require the presence of other people but it is essential to be amongst significant others whom we trust.[12] Loneliness is an incredibly complex construct to understand but scholars have further compartmentalized loneliness into 3 types (or

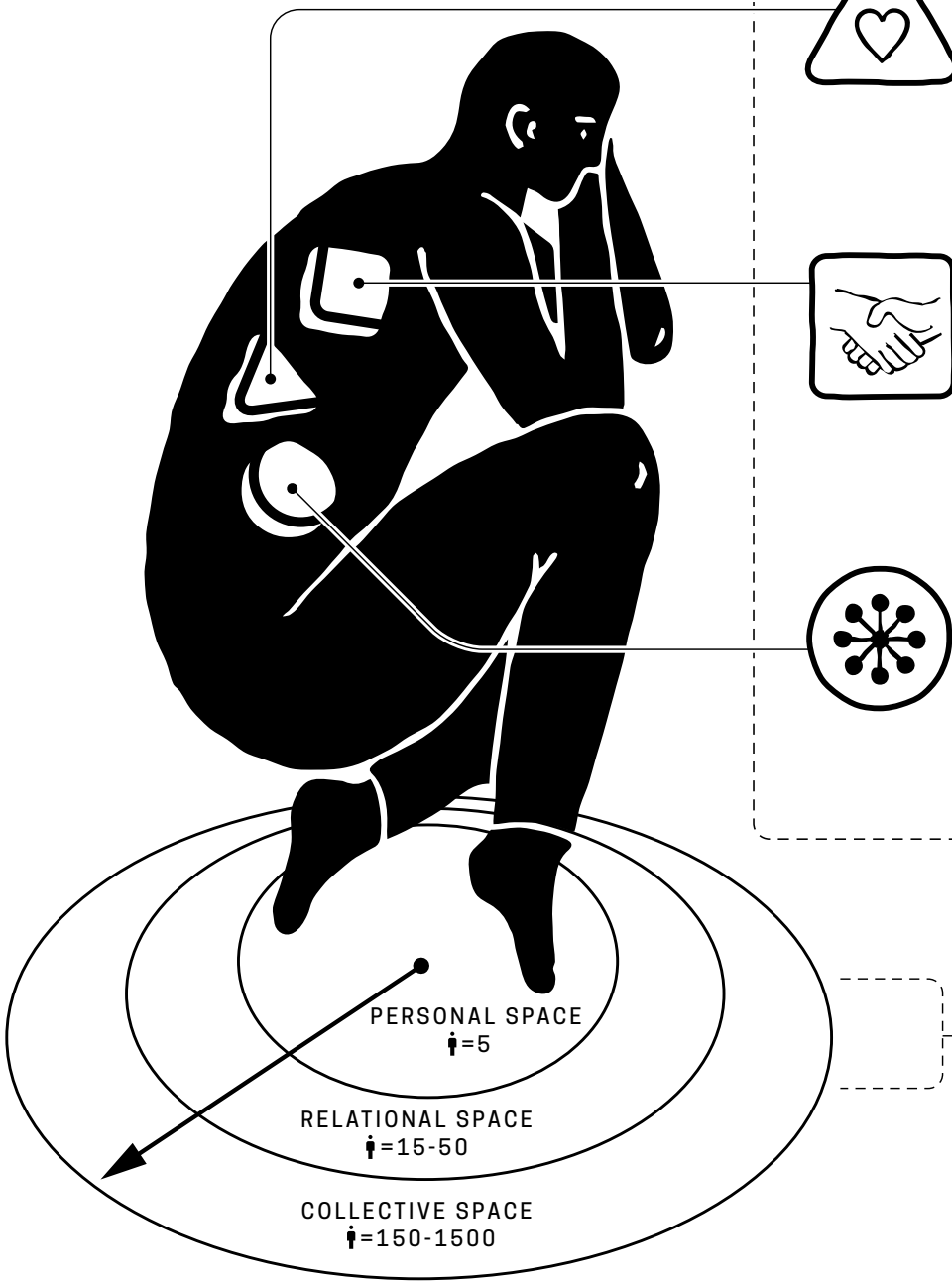
9 Hammond, Claudia (host). "The Anatomy of Loneliness Episode 1"(BBC Sounds, 2018). https://www.bbc.co.uk/sounds/play/m0000mj8

10 Franiczek, Aleksander. "The Pleasurable Pain of Melancholic Solitude: Examining Rousseau's Emotional Self-Indulgence in Reveries of the Solitary Walker" Undergraduate Awards (2017), 3

11 Hammond, Claudia (host). "The Anatomy of Loneliness Episode 1"(BBC Sounds, 2018). https://www.bbc.co.uk/sounds/play/m0000mj8

12 Cacioppo, Stephanie, Angela J. Grippo, Sarah London, Luc Goos- sens, and John T. Cacioppo. "Loneliness: Clinical Import and Interventions." Perspectives on Psychological Science 10 (2) (2015), 239

3 DIMENSIONS OF LONELINESS



1. INTIMATE LONELINESS

Intimate loneliness describes the lack of an intimate partner or someone who can offer a strong emotional support and emotional connection. This is also known is emotional loneliness. Studies have shown that those with an intimate partner/spouse have a reduced level of intimate loneliness.

2. RELATIONAL LONELINESS

This type of loneliness refers to the lack of friendships and family members in one's life and also reffered to as social loneliness. This group includes 15-50 social partners and the frequency of contact with friends and family is the best predictor of relational loneliness.

3. COLLECTIVE LONELINESS

Collective loneliness refers to how one identifies in collective space (an active network of 150-1500 people). The collective space is usually made up of weak tie relationships as opposed to very intimate/ close ones.

ATTENTIONAL SPACES (HALL, 1966)

Edward T. Hall's studies on proxemics looks at human interpersonal distances in which various types of interactions occur.

[Fig.03] Types of Loneliness and Attentional Spaces

	DIFFERENT COMPARTMENTS OF SPACE				
	Social Spaces		Attentional Spaces		Architectural Spaces
3 Dimensions of Loneliness	Weiss, 1973	Dunbar, 2014	Hall, 1966	Ortigue et al., 2006	
Intimate	Emotional	Inner Core	Intimate	Personal	Private Space
Relational	Social	Sympathy Group	Social	Near Extrapersonal	Semi-Public Space
Collective	-	Active Network	Public	Far Extrapersonal	Public Space

[Fig.04] Compartments of space adapted to include architectural spaces

"dimensions"): intimate loneliness, relational loneliness, and collective loneliness.[13] Each dimension corresponds to one's attentional space based on Edward T. Hall's work on human distances. These spaces are known as: personal space, relational space, and collective space.[14] As architects and designers, we can also imagine this as the three scales of space we most commonly work between: private, semi-public, and public.

This hierarchy of spaces also exists within the context of a high-rise building and will be further discussed in later sections. Private spaces include the private dwelling or apartment unit. Semi-public spaces can be corridors, balconies, circulation spaces, and amenity spaces alike. Finally, public spaces can be translated as larger public amenities or publicly accessible spaces that exist in high-rise buildings.

CONSEQUENCES OF LONELINESS

Unfortunately, loneliness does not travel alone. There are a number of dangerous physical and psychiatric health problems that loneliness contributes to including alcoholism, depression, suicidal thoughts, and anxiety.[15] It is also a risk factor for premature mortality, cognitive decline, the progression of Alzheimer's disease and other harmful ailments.[16] In many reports, loneliness is proven to be worse for health than smoking 15 cigarettes a day[17] and increases mortality risk more than obesity, excessive alcohol consumption and air pollution.[18]

13 Ibid, 240

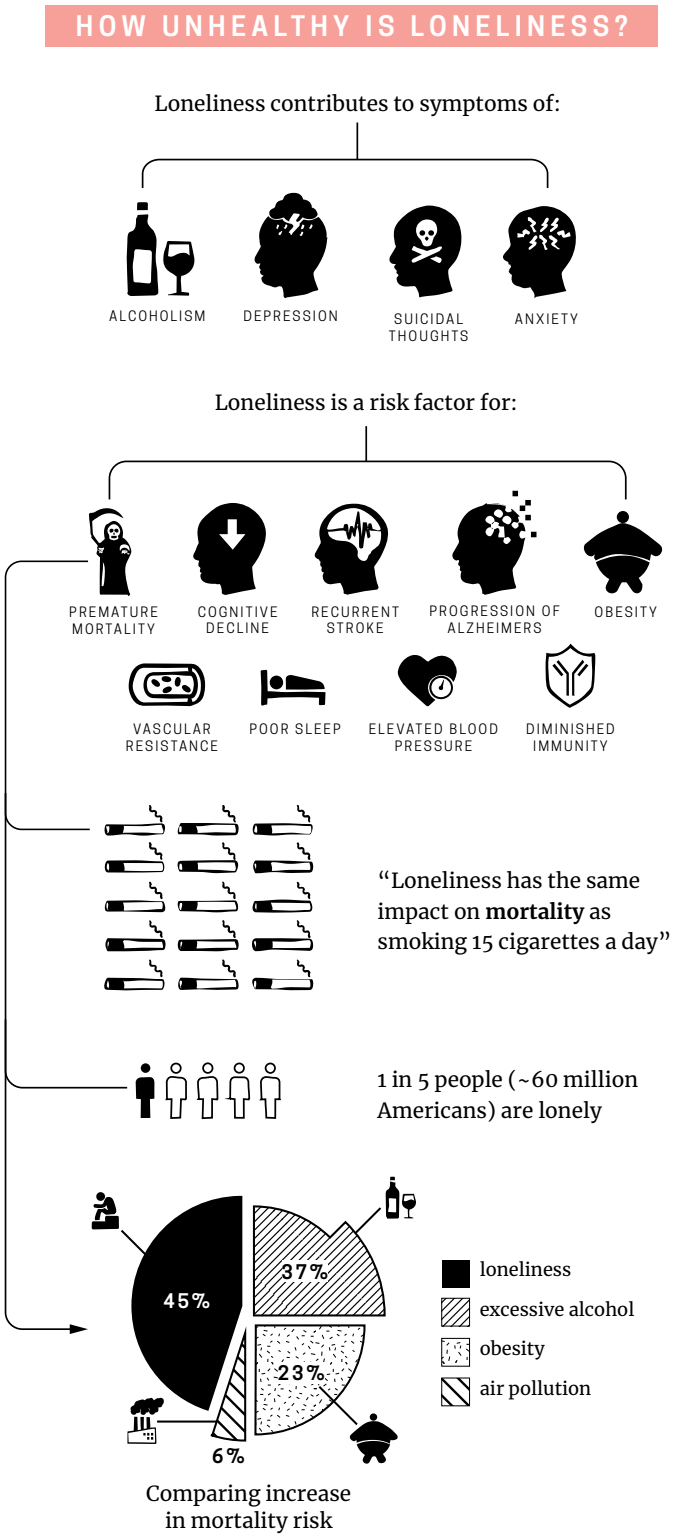
14 Hall, Edward T. "The Hidden Dimension". (Doubleday, Garden City, N. Y, 1966)

15 Cacioppo, Stephanie, Angela J. Grippo, Sarah London, Luc Goos- sens, and John T. Cacioppo. "Loneliness: Clinical Import and Interventions." Perspectives on Psychological Science 10 (2) (2015), 241

16 Ibid

17 Anderson, G. Oscar and Colette E. Thayer. "Loneliness and Social Connections" (AARP Foundation, Washington, DC: 2018), iv

18 Holt-Lunstad, Julianne and Timothy B. Smith. " Loneliness and Social Isolation as Risk Factors for Mortality: A Meta-Analytic Review", Perspectives on Psychological Science 10 (2015), 3

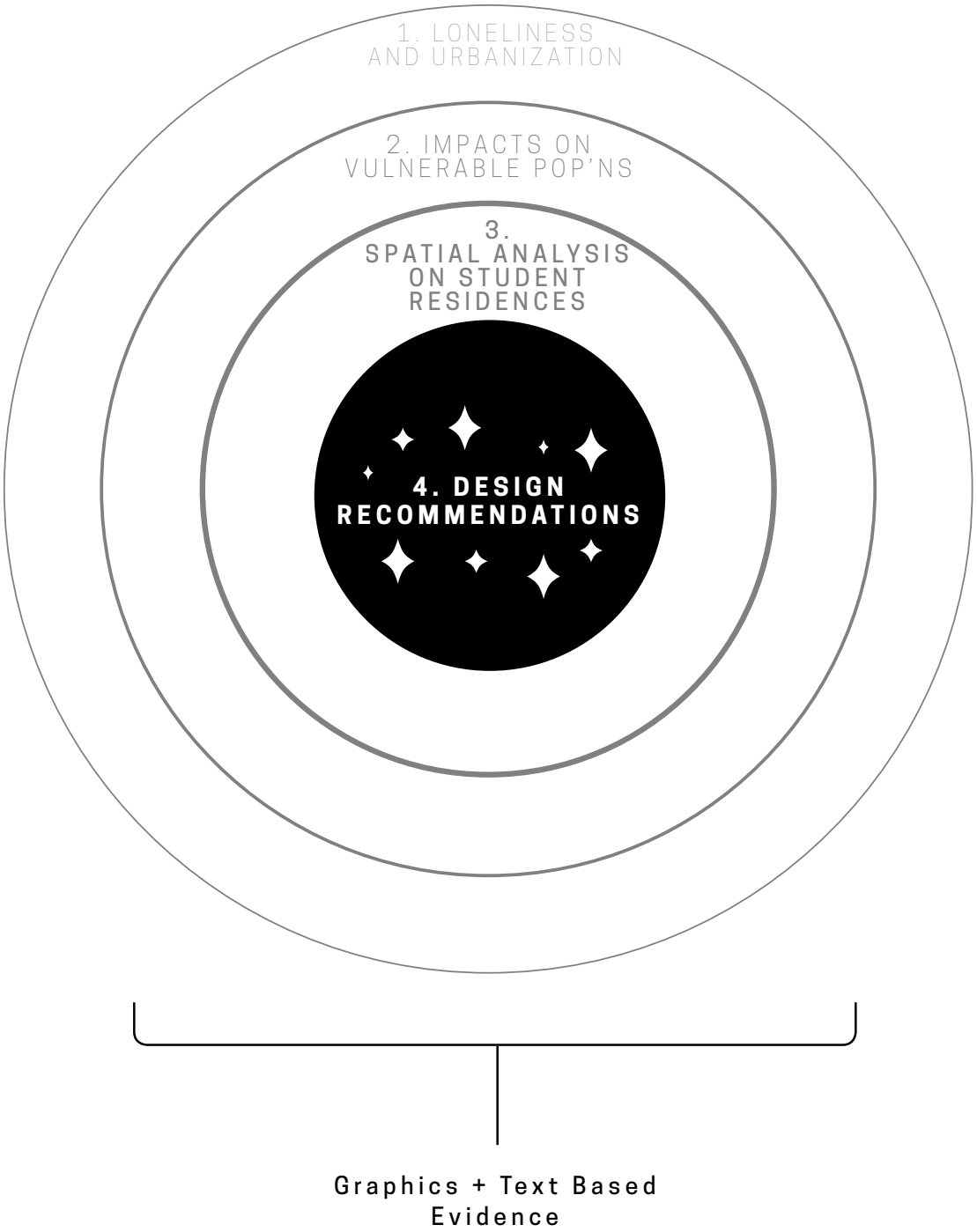


[Fig.05] Infographic of health problems related to and accelerated by chronic loneliness

OBJECTIVES AND DESIGN APPROACH

This research has been heavily invested in understanding the impact that architecture and space design have on loneliness through evidence-based findings. The objective of this thesis is to generate a suite of design suggestions for tackling loneliness in high-rise student accommodation buildings. The reasoning behind selecting students as s demographic group will be detailed in later sections but the ways loneliness negatively impacts public health has been made quite obvious already. The design recommendations will vary in size and scale but can be valuable information for property developers, architects, institutions, designers and non-designers alike who are interested in this topic. The culminating design project will be a physical booklet that utilizes architectural graphics and illustrations to easily communicate ideas and raise awareness of this population level problem.

The overall framework of the thesis is broken down into 3 main parts but first provides a high-level introduction into loneliness, how it is defined by specialists, and an overview of existing literature on the topic. PART A looks at the factors that contribute to loneliness in cities and identifies university or college students as a vulnerable segment of the population. PART B is a case study of various buildings on the University of Waterloo's Campus in Ontario, Canada. In order to understand the ways student residence buildings are constructed and occupied today, site visits were conducted to compare both campus-owned and developer owned properties. This section also includes a list of existing architectural projects from around the world which possess design elements that could contribute to reducing loneliness. PART C takes the findings and research from the previous sections and distills them into 8 core values that can reduce loneliness. Attached to each are a series of specific design suggestions that can be implemented in various ways. This section includes a series of illustrations which reimagines a hypothetical high-rise building with the design principles in mind. The vignettes are snapshots of how the design suggestions might be embodied. Finally, the conclusion of the thesis reflects on the results of this process, summarizes the feedback and initial impressions of the guidelines, and discusses next steps on how the document can be improved moving forward.



[Fig.06] Thesis Framework Diagram

THE IMPACT OF GUIDELINES

In the previous sections, the basic description of loneliness has been laid out, but what do we do with this information and how do we address this problem with the maximum impact possible? The decision to present this information in the format of a design guideline book reflects many of the recommendations listed in existing studies on loneliness, which urges government agencies to partner with architects.[19] In addition to this, directors of housing at institutions like the University of Waterloo, have expressed a desire for more effectively designed student residence buildings on campus.[20] Design guidelines are used in the architectural practice regularly and act as a starting point for other architectural projects to emerge. ***A good set of design suggestions offers a foundation of basic principles without restricting creativity in design.*** These principles are not intended to be a highly technical construction manual but instead, offer a catalogue of ideas to inspire the layperson, property owner, architects, and policy makers who wish to address the issue of loneliness.

While creating the "Strangers in the Sky", other guideline documents were researched and used as references. Studying the framework of other design guideline documents helped to develop the format of the guideline, determining a structure for organizing information. Designed to Engage[21] is a series of policy recommendations to promote sociability in multi-family housing design. The Avenues and Mid-rise Buildings Study[22] presents a series of performance standards and optimal conditions for designing mid-rise buildings. Finally, Neufert's Architect's Data is an important reference book for architects.[23] Its graphic style is highly effective in communicating detailed spatial conditions and even provides space needs for furniture and various relevant objects.

Knowledge on urban loneliness and designing high-rise student residences was acquired through existing literature on the subject, speaking to experts, and performing case studies. The research gathered was is also supplemented by the author's own experiences with loneliness and the built environment. The successful integration of good design principles will help to promote healthy and livable communities while reducing the effects of loneliness.

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19 Elmer, E.M."Social isolation and loneliness among seniors in Vancouver: Strategies for reduction and prevention. A report to the City of Vancouver and Vancouver Coastal Health". Vancouver, BC: City of Vancouver Seniors' Advisory Committee (2018), 102

20 In conversation with various housing coordinator staff at the University of Waterloo (2019)

21 Rios, Paty et al. "Designed to Engage". Happy City (2018)

22 Brook McIlroy Planning + Urban Design/Pace Architects et al. "Avenues and Mid-rise Buildings Study"(2010)

23 Neufert Foundation. "Architects Data Fourth Edition". Oxford, UK: Wiley-Blackwell, John Wiley & Sons (2012)

[Fig.07] Examples of other design guideline documents. Neufert's Architect's Data (top), Designed to Engage by Happy City (left) and Avenues & Mid-Rise buildings Study (right)

PART A : A CATALOGUE OF URBAN LONELINESS

LONELINESS IN CITIES ILLUSTRATED

VULNERABLE POPULATION GROUPS

LONELINESS IN CITIES ILLUSTRATED

Now that the basic definition of loneliness, its origins, and how it has been perceived over centuries has been outlined, we will now look at the phenomenon of *urban loneliness*.

Urban loneliness describes lonely individuals living in cities; an intersection between a mental state with the built environment.
As mentioned previously, Professor Barbara Taylor describes the alienating and estranging nature of modern society as a contributor to this problem.[24] Taylor's hypothesis is correct in many ways when you consider how life in the 21st century is unlike any other in human history. We are living longer, and the pace of technological innovations has completely transformed the way we live, work, and play. At the same time, the rise of the Internet, the prioritization of career building and the fast-paced lifestyle in the urban metropolis means we spend less time maintaining relationships and forming meaningful bonds with other people.

Recent statistics[25] have revealed how common loneliness is (especially so in developed countries) but why exactly are cities becoming the new capitals of social isolation?
There is no single answer to this question. Instead, a number of factors surrounding urban life have contributed to the growing sense of isolation among city dwellers.
The following section includes an analysis of the spatial conditions that have contributed to urban loneliness represented by annotated isometric illustrations. This spatial catalogue of loneliness was created using evidence from literature, film & media, as well as first person experiences:

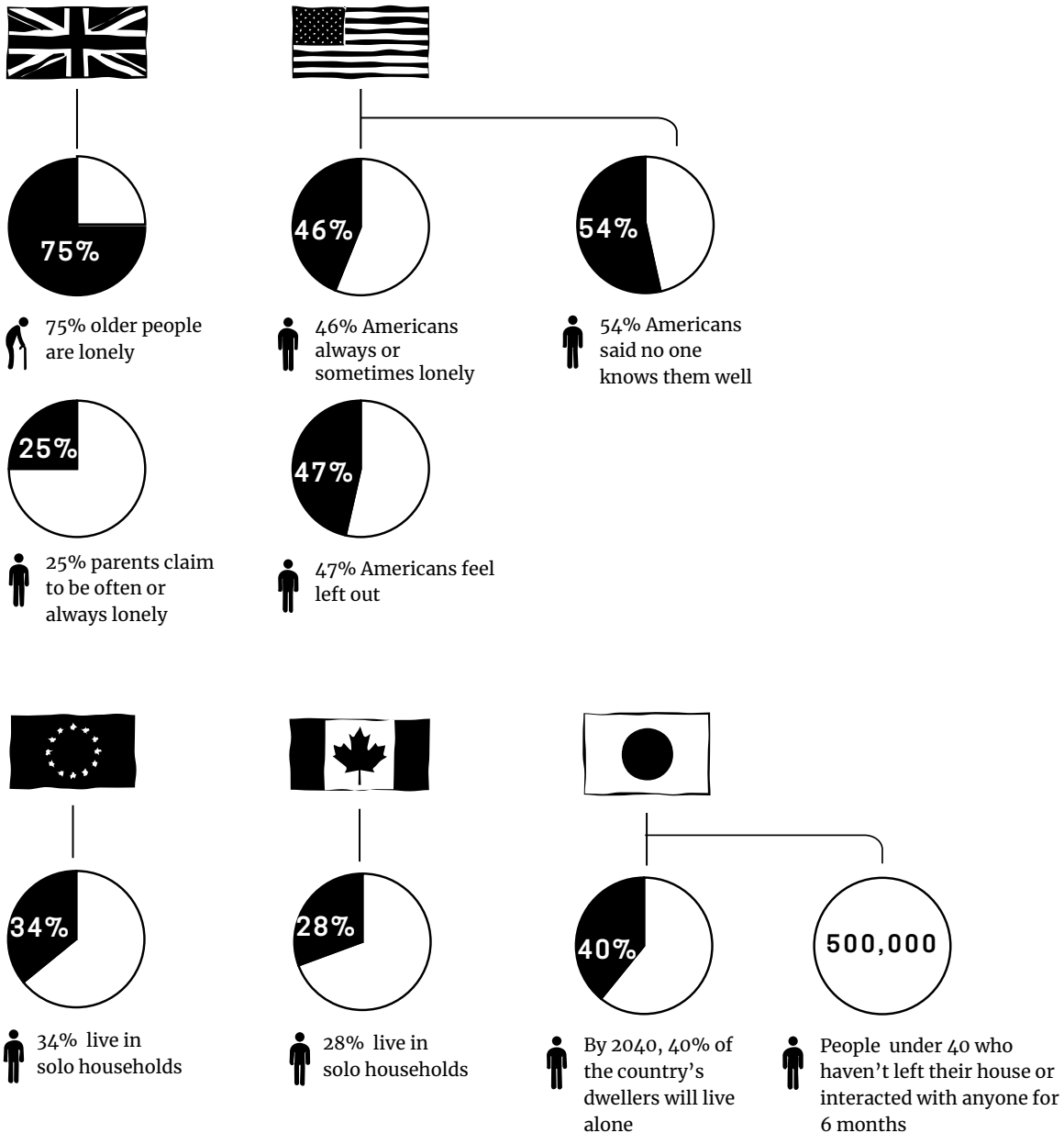
- The Rise of Solo Living
- Technology
- Long Commutes and Decentralized Suburban Living
- Commercialization of Loneliness
- Anti-social and Hostile Public Spaces

As previously mentioned, loneliness is a response to social isolation that encourages survival in groups as opposed to being alone. Over time, humans have developed heightened sensitivities in fear of threats that can potentially cause bodily or psychological harm. Colin Ellard draws the connection between the rapid urbanization of our society today and the deteriorating state of our health. He says that

24 Hammond, Claudia (host). "The Anatomy of Loneliness Episode 1"(BBC Sounds, 2018). https://www.bbc.co.uk/sounds/play/m0000mj8

25 Polack, Ellie. "New Cigna Study Reveals Loneliness at Epidemic Levels in America", Cigna.com (Accessed 2019) https://www.cigna.com/newsroom/news-releases/2018/new-cigna-study-reveals-loneliness-at-epidemic-levels-in-america

GLOBAL STATISTICS ON LONELINESS, BY COUNTRY



[Fig.08] Infographic: General statistics on loneliness categorized geographic region

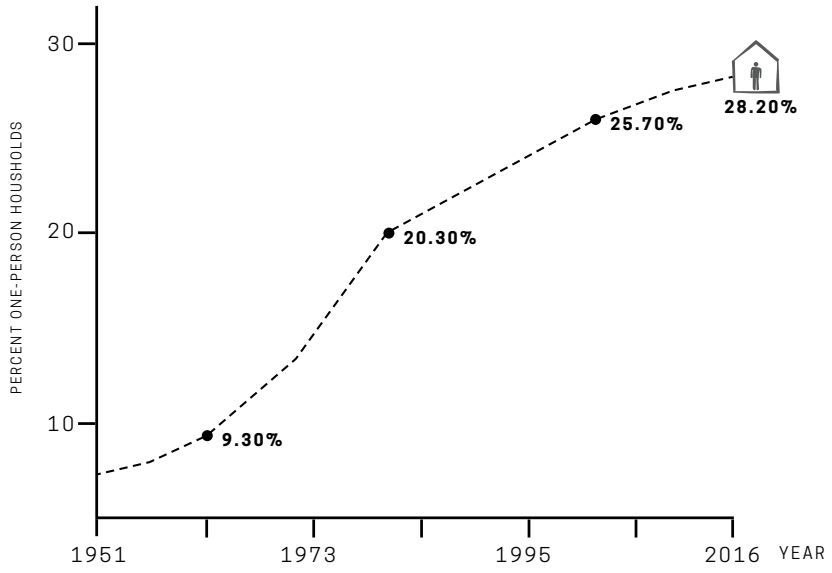
"for urban dwellers, there is also some irony in the fact that the same set of impulses that we use to protect ourselves from the prying eyes of strangers is partly responsible for one of the greatest psychological blights of big cities; the epidemic of loneliness".[26]

THE RISE OF SOLO LIVING

There is no clear-cut explanation or single cause for urban loneliness but many specialists have identified possible influences such as immigration, low marriage rates, solo living, decentralized suburban living resulting in longer commutes and technological media.[27] Although each of these factors carry their own set of circumstances and issues, they can all be considered by-products of rapid urbanization, which is one of the main societal shifts in recent history.

People once relied on tribalism and social bonding which occurred naturally in small groups as opposed to mass societies. There has been an obvious transition from rural or suburban living arrangements

26 Ibid
27 Ibid,147



[Fig.09] Percentage of one-person households in Canada from 1951-2016

(which prioritized habitation in small groups and staying in close proximity to members of kin) to the metropolitan lifestyle that idealizes the one-bedroom bachelor pad in a shiny downtown condominium. According to a recent study conducted using Canada's 2016 Census data, the number of persons living alone in Canada has more than doubled over the last 35 years, from 1.7 million in 1981 to 4.0 million in 2016.[28] Solo dwellers represented 14% of the population aged 15 and over living in private households in 2016, up from 9% in 1981.[29] With that said, Eric Klinenberg, a Professor of Sociology, Public Policy, and Global Health at New York University, does not believe that living alone necessarily means you will experience isolation and loneliness. Instead, Klinenberg sees these as three distinct conditions (living alone, being socially isolated, and feeling lonely).[30] According to his research, the risks of social isolation are dependent on where in the world you live and the quality of the social environment.[31]

The illustration titled "The Solo Dweller" is an axonometric view of a generic apartment unit and focusses on the typical activities that would take place there. Although someone who lives alone is not necessarily lonely, it is more likely that they spend more time socially isolated within their dwelling and may be more prone to keeping to themselves. The price of real estate and rental costs in densely populated downtown areas could also be a key reason why many people choose to live alone. Many young professionals move away from friends and family to urban centers in pursuit of their careers or higher education. The social changes that have occurred in the past decades led to more flexible attitudes towards family structure making living alone common.[32] The diagram shows how technological systems make it convenient for the solo dweller to remain in isolation. Food delivery apps (i.e. Uber Eats, Foodora, DoorDash, etc.) have become extremely popular and an individual can order meals from their local restaurants without leaving the comfort of their bedroom. People who live alone may choose to spend more time socializing online and even eating alone.

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28 Tang et al. "Living Alone in Canada". Insights on Canadian Society, Statistics Canada (2019), 1

29 Ibid

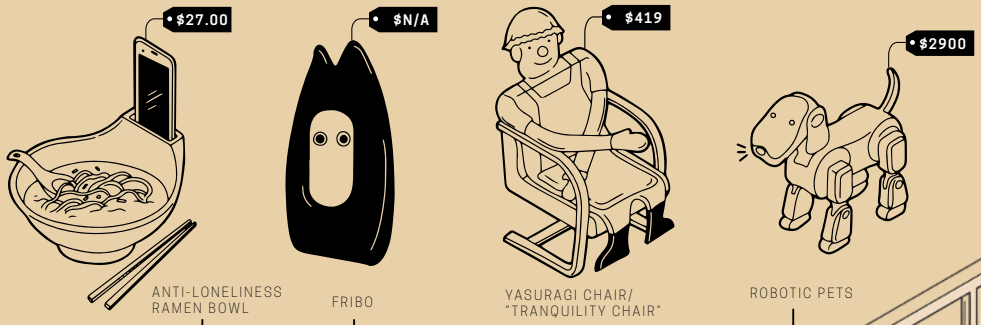
30 Klinenberg, Eric. "Social Isolation, Loneliness, and Living Alone: Identifying the Risks for Public Health." American Journal of Public Health 106 (5) (2016), 786

31 Ibid

32 Weikle, Brandie. "More Canadians live alone than ever before: StatsCan report". CBC News (2019) https://www.cbc.ca/news/business/canadians-living-alone-single-statistics-canada-1.5045116

THE SOLO DWELLER

[Fig.10] Loneliness amongst people who live alone



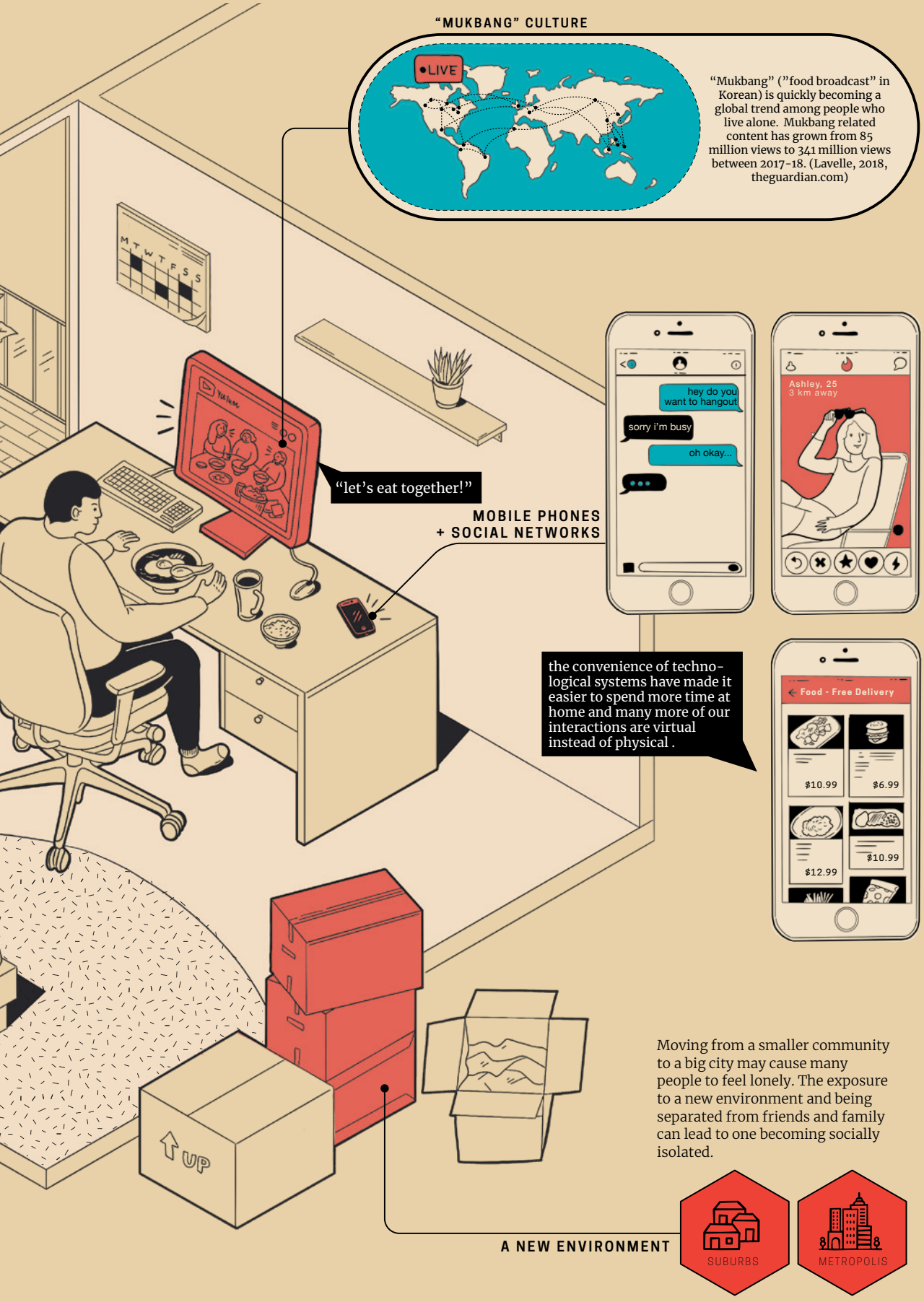
PRODUCTS TO ALLEVIATE LONELINESS

THE MANNEQUIN - ASEPTIC STUDIO

London-based Aseptic Studio has designed an ergonomic cushion in the shape of a headless torso to provide physical and emotional support for lonely millennials living in cities. (Yalcinakaya, 2018. dezeen.com)

VIRTUAL REALITY

Virtual relationships are only temporary fixes and act as a veil for the desire of true human intimacy. This can only be achieved with face-to-face interaction in real life that allow us to connect on a much deeper level; through subliminal cues like body language and body chemistry. (Cacioppo, 2008: p.259).


"MUKBANG" CULTURE
LIVE
"Mukbang" ("food broadcast" in Korean) is quickly becoming a global trend among people who live alone. Mukbang related content has grown from 85 million views to 341 million views between 2017-18. (Lavelle, 2018, theguardian.com)
"let's eat together!"
MOBILE PHONES + SOCIAL NETWORKS
hey do you want to hangout
sorry i'm busy
oh okay...
Ashley, 25
3 km away
the convenience of techno-logical systems have made it easier to spend more time at home and many more of our interactions are virtual instead of physical .
Food - Free Delivery
$10.99
$6.99
$12.99
$10.99
UP
Moving from a smaller community to a big city may cause many people to feel lonely. The exposure to a new environment and being separated from friends and family can lead to one becoming socially isolated.
A NEW ENVIRONMENT
SUBURBS
METROPOLIS

TECHNOLOGY

Since the birth of the Internet, the way we interact with our built environment and with each other has been completely transformed by new media technologies. Is it possible that our devices are partially responsible for the loneliness epidemic we've found ourselves in? On the one hand, the temporal and spatial boundaries that once limited creative production no longer exist and the wealth of knowledge that is available online at nearly instantaneous speeds is a sure sign of progress. For the vast majority of the population, we have been quick to trade in aspects of our real lives for virtual ones.[33] The perceived dangers in the physical world have left us to fill the void left by the decline of community with computer-mediated social encounters; an environment where we can be anonymous if we choose to be, continuing to retreat further from reality. However, these virtual relationships are only temporary fixes and act as a veil for the desire of true human intimacy. This can only be achieved with face-to-face interaction in real life that allow us to connect on a much deeper level; through subliminal cues like body language and body chemistry. Cacioppo and Patrick state in their book *Loneliness*, that the "the mind that seeks to connect is first about the body and leaving the body behind can make human connections less satisfying".[34]

In the 2018 documentary film, The People's Republic of Desire, real life human connections are being replaced by virtual relationships. The film follows a group of working-class Chinese people turned internet celebrities as they navigate their way through the lucrative business of online streaming. This trend has exploded, and live streaming has reached 325 million users.[35] The backdrop of The People's Republic of Desire is set in various urban cities in China to emphasize the fast-paced nature of city life in contrast with simpler conditions in rural villages. Many career-oriented people rely on live-streamers as a default source of entertainment. One woman said that " [she] needs to find something else to do other than trading stocks [and that her] social circle is too small".[36] Live streaming gained popularity not only in Asian countries but have recently been adopted by North American Youtubers [37] which simulate the feeling of dining with a companion. Some may say this is an honest attempt and connecting with people

33 Tan, Çetin, Mustafa Pamuk, and Ayşenur Dönder. "Lone- liness and Mobile Phone." Procedia - Social and Behavioral Sciences 103 (2013), 607

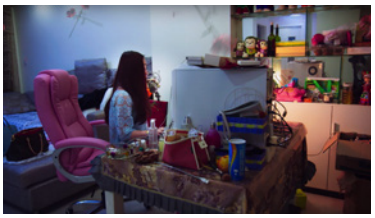
34 John T. Cacioppo & William Patrick. "Loneliness : Human Nature and the Need for Social Connection" (New York and London: W.W. Norton & Company, 2008), 259

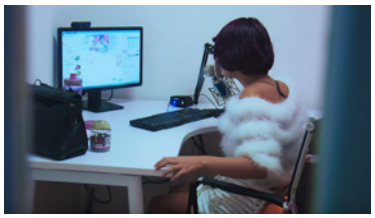
35 Jing, Meng. "325 million lured by live streaming apps", ChinaDaily.com (2016) http://www.chinadaily.com.cn/bizchina/tech/2016-08/04/content_26336721.htm

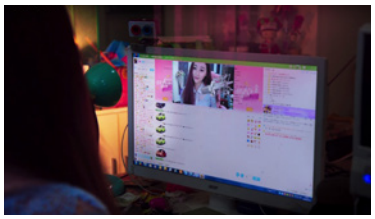
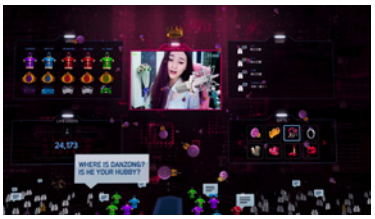
36 Wu, Hao (Producer and Director). "The People's Republic of Desire" [documentary film]. (Russia, 2018)

37 McCarthy, Amy. "This Korean Food Phenomenon is Changing the Internet" Eater.com (2017) https://www.eater.com/2017/4/19/15349568/mukbang-videos-korean-youtube

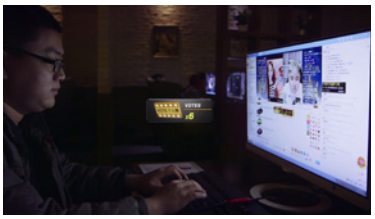
[Fig.11] Scenes from the documentary film, "The People's Republic of Desire"(2018)



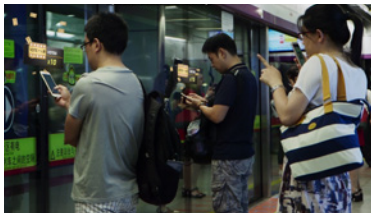







in 2020 but more would say online entertainers are capitalizing on a growing society of lonely people.

Other technological systems are seamlessly integrated into our built environment often aimed at crime prevention. However, it has a paradoxical effect and creates a heightened sense of fear and lack of trust within society. As our technology gets more intelligent, it enables us to discriminate against certain individuals and prevent unwanted interactions between citizens and authorities. Some low-tech repellent systems such as the mosquito device or blue and pink neon lights have proven to be controversial and criticized for being a violation of human rights.[38] With the introduction of surveillance systems and CCTV (closed-circuit television)[39] we've become accustomed to being monitored in public. The use of technological design as a method of social control can be a visual marker of security but it actually undermines the individual and collective responsibility for each other's safety. It not only discourages the presence of strangers, but it also increases people's fear of strangers entering their environment.

LONG COMMUTES AND DECENTRALIZED SUBURBAN LIVING

A recent study out of UBC's Vancouver School of Economics and McGill University looks at factors which influence happiness in densely populated Canadian cities such as Toronto and Vancouver. They concluded that long traffic commutes and housing unaffordability greatly contribute to anxiety and depression.[40]

Long commute times have also been proven to be bad for community life. Each additional ten minutes of commuting in daily commuting time cuts involvement in community affairs by 10%.[41] Those who commute by car are stuck in the prison of their vehicles for hours a day, often with only the radio or a podcast for company. The average person will rarely talk to someone while commuting, and people have found ways to signal the fact that they want to be left alone by creating barriers in public space (i.e. putting their bags or feet up on nearby seats so no one will sit there, looking down at our smartphones to seem busy, wearing headphones to block out the noise of other people....etc.). Trains often put up "Quiet Zone" signs, which discourage social interaction on public transit by prioritizing respecting the privacy of others. In many cases, people are less likely to stop and chat with someone during their commute and are generally more concerned about getting where they're going.

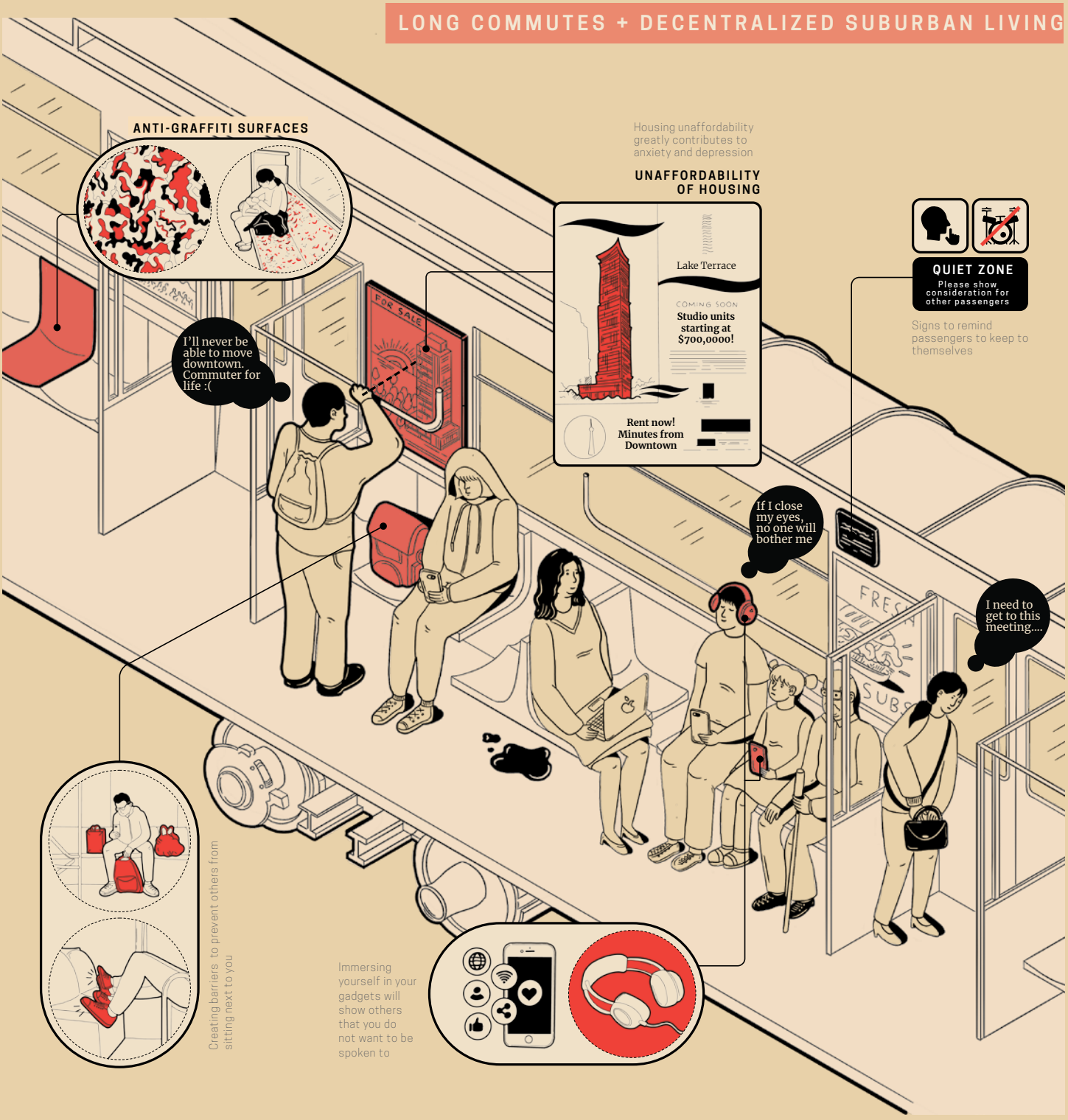
38 Savičić, Gordan, and Savić, Selena. Unpleasant Design. (Belgrade: G.L.O.R.I.A., 2013), 40

39 Aked, Jody and Minton, Anna. 'Fortress Britain': high security, insecurity and the challenge of preventing harm. (New Economics Foundation, London, 2013), 1-13

40 Todd, Douglas. "Douglas Todd: Why are Vancouver and Toronto so unhappy?" (Vancouver Sun, 2018) https://vancouversun.com/opinion/columnists/douglas-todd-why-are-vancouver-and-toronto-so-unhappy

41 Putnam, Robert D. "Bowling Alone: The Collapse and Revival of American Community".(New York: Simon & Schuster, 2000), 230

LONG COMMUTES + DECENTRALIZED SUBURBAN LIVING



[Fig.12] Loneliness in transit and long daily commutes

COMMERCIALIZATION OF LONELINESS

Not only are more people living alone in today's society, but many businesses are beginning to cater to the needs of the "loner". People who live and work in cities often need a place to have a "quick but substantial knife-and-fork meal before heading back to their busy, overworked lives".[42] The stigma surrounding dining solo is slowly dissolving and many people spend less time to getting together with friends and loved ones to share a meal. The "one-person eatery" is becoming more common creating physical changes in the public dining space. Partitioned booths and cubicles have replaced small tables, and, in many restaurants, digital ordering systems mean that the patron no longer has to interact with a server or hostess. Anti-loneliness cafes like Moomin House, in Japan, provide patrons with a plush doll to keep them company during their stay.[43] At a popular Japanese ramen chain, Ichiran, , customers pre-order their food on an arcade game-like slot machine before being led down a "dark narrow path" to their individual booth.[44] There is a small curtained opening in front of each booth where two disembodied hands will hand you your order when it is ready. A customer described their experience in a solo stall at Ichiran as "like a library carrel, a peep show, or a confessional".[45] While the concept of solo dining has proven to be trendy and also efficient, the communal aspect of dining and food's ability to bring people together has been broken.

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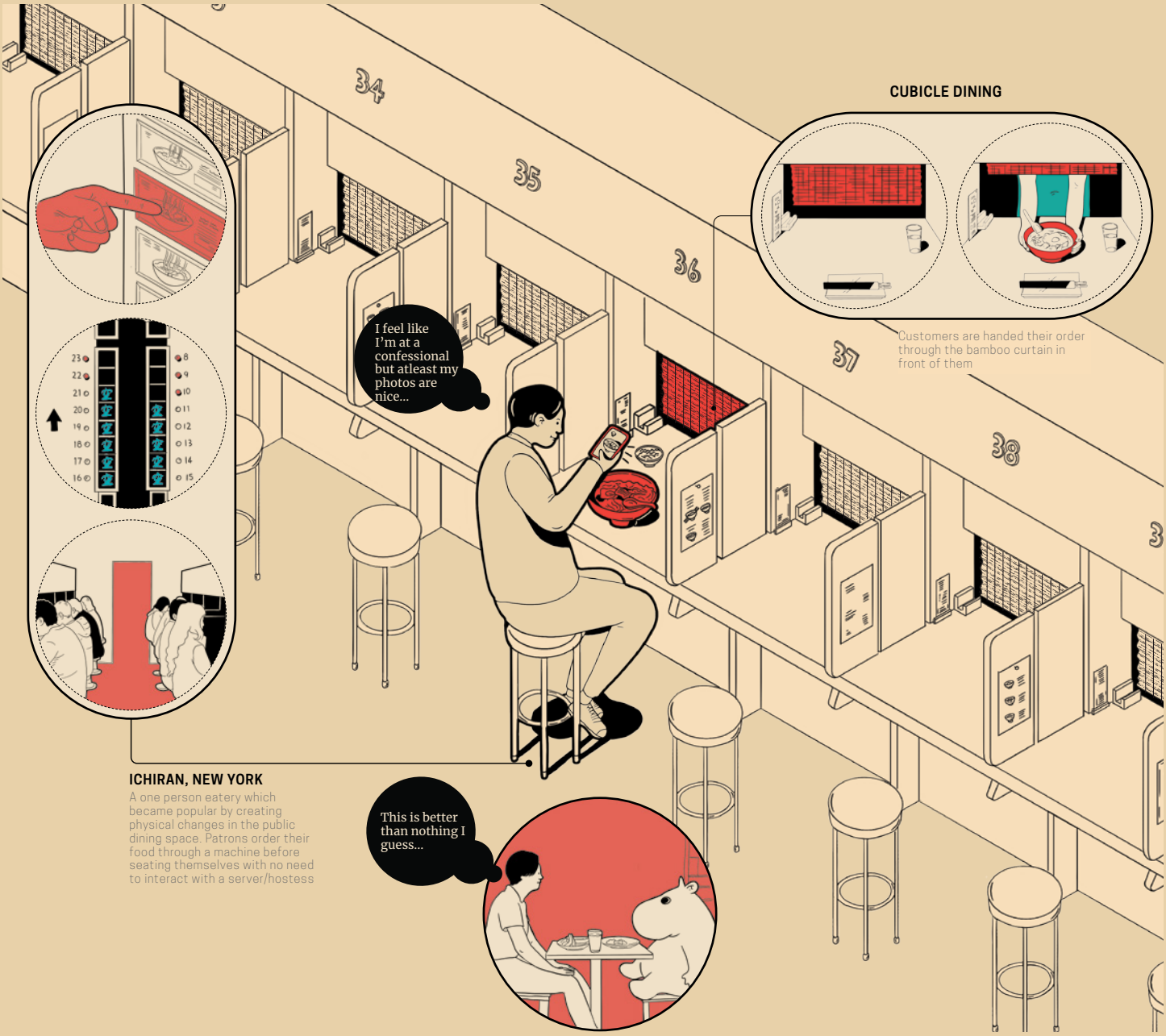
42 Kim, Eric. "This Solo Dining Trend is Changing the Way People Eat" (Food52.com, 2019) https://food52.com/blog/23699-honbap-solo-dining-table-for-one

43 Ibid

44 Ibid

45 Wells, Pete. "Slurping Solo, in Sweet Isolation, at Ichiran in Brooklyn". (New York Times, 2017) https://www.nytimes.com/2017/01/17/dining/ichiran-review-ramen-brooklyn.html

THE COMMERCIALIZATION OF LONELINESS



[Fig.13] Loneliness in commercial spaces and the growing trend of solo dining

ANTI-SOCIAL AND HOSTILE PUBLIC SPACES

Human beings possess the ability to creatively seek novel solutions for their problems and throughout history, we have been utilizing architecture to create symbolic and material barriers that separate us from perceived threats. The fortresses and castles of 11th century Europe were built to prevent invasion by implementing elements like moats, drawbridges, and often sat on cliffs and mountain tops. This category of design is known as defensive or hostile architecture; spaces constructed not for "pleasantness", but with the purpose of deterring undesirable behaviour. In a way, defensive architecture is important, and even necessary, for keeping us safe from the real and tangible dangers in our world. But we have reached a point where the desire for protection and privacy is hindering social intimacy and physical interaction between people. For centuries, hostile architecture has been an effective method of social control in public spaces. Hostile design has the ability to control our movement within the built environment and our interactions with others. However, it leads to a new set of problems by creating anti-social spaces and compromises the enjoyment and usability of public space. Hostile design is also referred to as unpleasant design.

"Unpleasant design refers to things that are intentionally and successfully rendered unusable, or uncomfortable for people to use. It's not about objects that are badly designed, but the opposite - objects, devices and spaces that are well designed in order to prohibit a particular use or behaviour. In other words, it's a form of social control. Design a bad bench so homeless people don't linger; fence off your sitting-out area so people don't spend too much time there."[46]

-Serbian architect, Selena Savic in an interview with South China Morning Post

Furniture and objects in public space generate a sense of permanence and non-negotiability that prevent people from engaging in specific activities. Instead of a police officer or security guard telling someone to leave the premises, a surface with anti-sleeping spikes or a bench with no backrest can do the same job in a subtle way. An inanimate object bolted to the ground takes away the possibility of conflict between a person and an authority figure. In many ways, hostile architecture makes this kind of human interaction unnecessary. By removing a level of individual freedom, it leaves no room for spontaneous social encounters. There are countless examples of street objects that are purposely designed to be unpleasant for certain

46 Cheung, Rachel. "How Hong Kong's hostile architecture hurts city's homeless and poor". (South China Morning Post, 2016) https://www.scmp.com/lifestyle/article/2019619/how-hong-kongs-hostile-architecture-hurts-citys-homeless-and-poor

individuals. These day to day objects ranges from a park bench to a sculpture which are intended to exclude already marginalized populations (most commonly, youth and the homeless).

The careful placement of street furniture or seating can manipulate the behavior of its users and in some cases, seating is removed altogether. Terminal 5 of the London Heathrow Airport provides 700 seats for an estimated 35 million people who travel through the airport annually.[47] The only other alternative for seating is inside the 25 restaurants located within the airport. This discourages loitering and sleeping and those who would like to sit must be willing to pay for it.

The Camden Bench, designed by Factory Furniture, has been praised for its design as an anti-crime and ASB-resistant (anti-social behavior) public object.[48] The commission for the London Borough of Camden was created to address of list of problems the area was experiencing with rising homelessness and crime. The bench is a concrete slab made with materials that are resistant to graffiti and plastering. Along with a number of other unique characteristics, its lack of backrest and undulating shape make it uncomfortable to sit on for long periods of time and is very difficult to sleep on. The bench successfully prevented rough sleeping in the public but this also caused property values in the area to go up.[49] While this may not seem like a negative result, but the Camden Bench played a role in gentrifying the borough and displaced people rather than addressing the underlying social issues.

Anti-skating bolts, usually made of metal, are attached to a surface and render any object used for grinding or performing skate tricks useless. Anti-tagging surfaces can be created using a special coating or finish that allows graffiti to be washed away easily. The Berlin Metro uses a graphic print to cover its windows and seats to conceal any additional shapes and markings. The visual complexity of the pattern is used to deter street artists, taggers, and activists. Anti-climbing paint, usually a non-drying oil-based paint, prevent climbers, graffiti artists, and burglars from scaling walls by keeping surfaces greasy and slippery.

Cold seating constructed with stainless steel or anodized aluminum targets the homeless and general public making it uncomfortable to

47 Swain, Frank. "Secret City Design Tricks Manipulate Your Behavior". (BBC, December 2, 2013) http://www.bbc.com/future/story/20131202-dirty-tricks-of-city-design

48 Gamman, Lorraine and Willcocks, Marcus. "The Anti-bag Theft and ASB-resistant 'Camden Bench'". (Design Against Crime Research Centre, London, 2011)

49 Unpleasant Design Team. "Interview with Factory Furniture," in Unpleasant Design (Belgrade: G.L.O.R.I.A., 2013), 155-157

(Wikipedia.com, 2018) photo by Sunmist

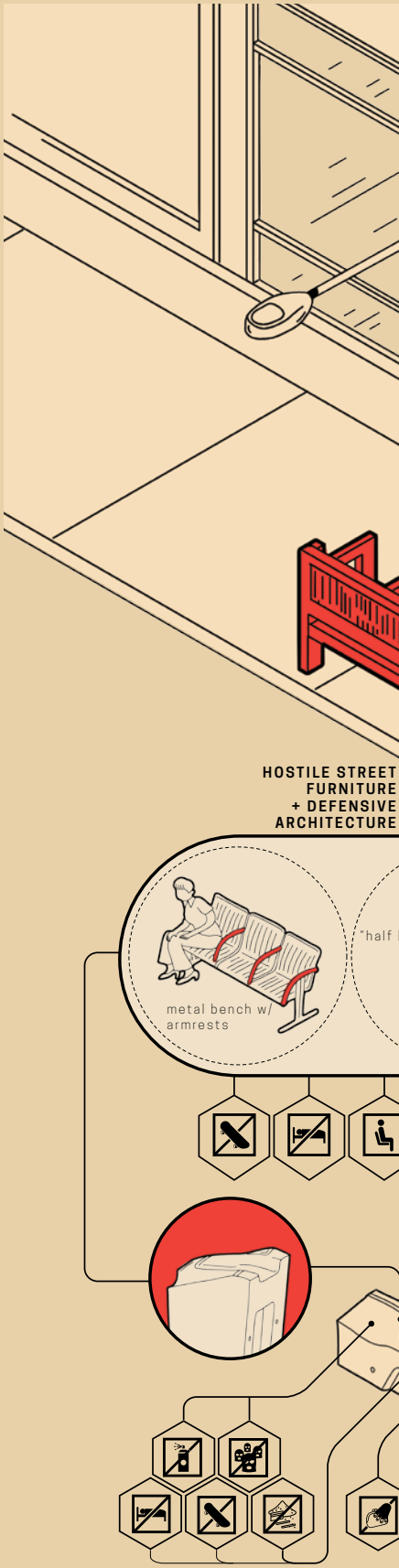
[Fig.14]
"Mosquito Device mounted outside a store in Philadelphia"

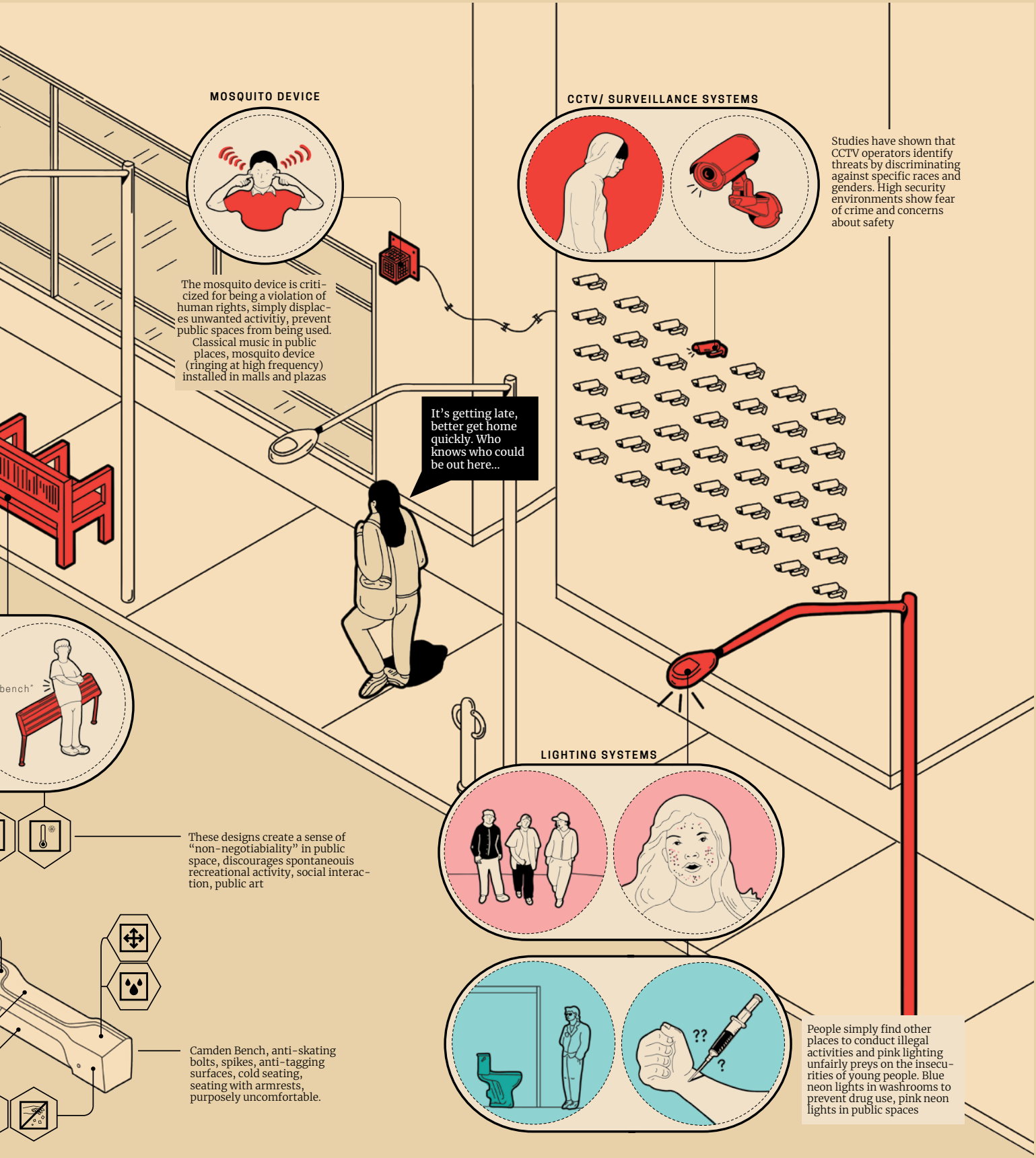
(2006), photo by Dan Lockton

[Fig.15]
Blue lights in a toilet in Edinburgh

"Spy, cameras, Toronto, 2016" (Flickr.com, photo by Retis) #galleryone

[Fig.16]
Wall of surveillance cameras





[Fig.17] Loneliness public spaces and examples of hostile design

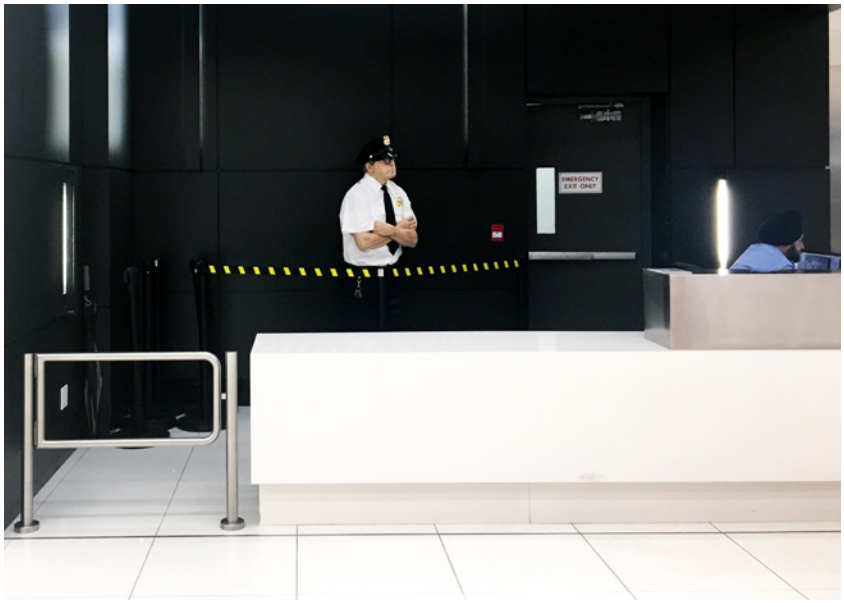
sit for a long time.[50] Other hostile seating designs include the half bench or the "leanable" bench making it impossible to sleep and rest for more than a few minutes.[51]
Seating with armrests is very common and often goes unnoticed. What we often do not consider is that each space between the handles are only wide enough for one person to occupy in a seated position.[52] The fixed dimension is purposely to stop someone from laying down.

The ability to design objects that manipulate our behaviour is both a benefit and a detriment to society. On the one hand, it can successfully prevent certain activities like vandalism, theft, skateboarding and sleeping. On the other, it excludes the homeless, artists, skateboarders and at times, even the general population. The regulation of public space takes away opportunities for spontaneous encounters and therefore, it is important to design for sociability as opposed to creating environments that perpetuate the fear of other people.

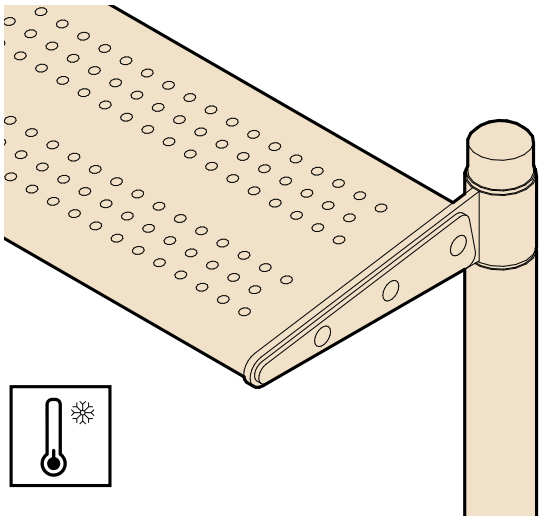
50 Savičić, Gordan, and Savić, Selena. "Unpleasant Design" (Belgrade: G.L.O.R.I.A., 2013), 49

51 Ibid, 50

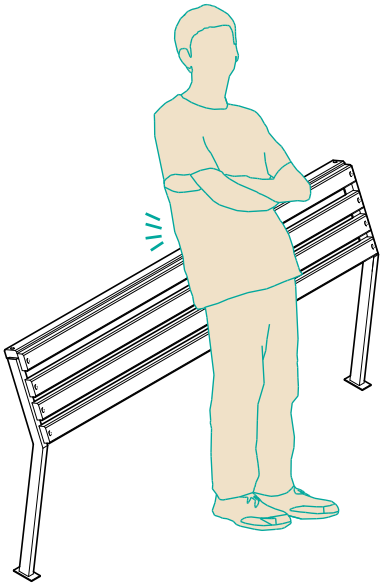
52 Ibid, 51



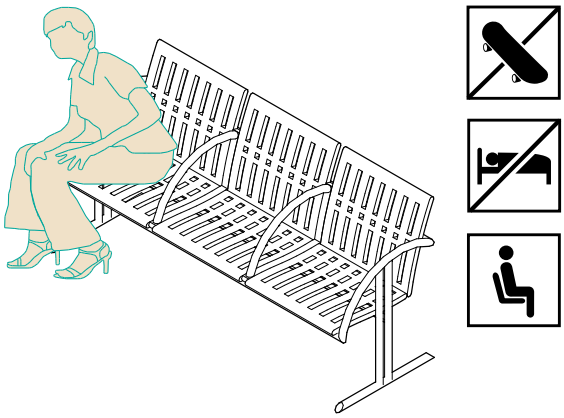
[Fig.18] Security guard sculpture creates the illusion of authority.



[Fig.19] Stainless steel bench stays cold to the touch



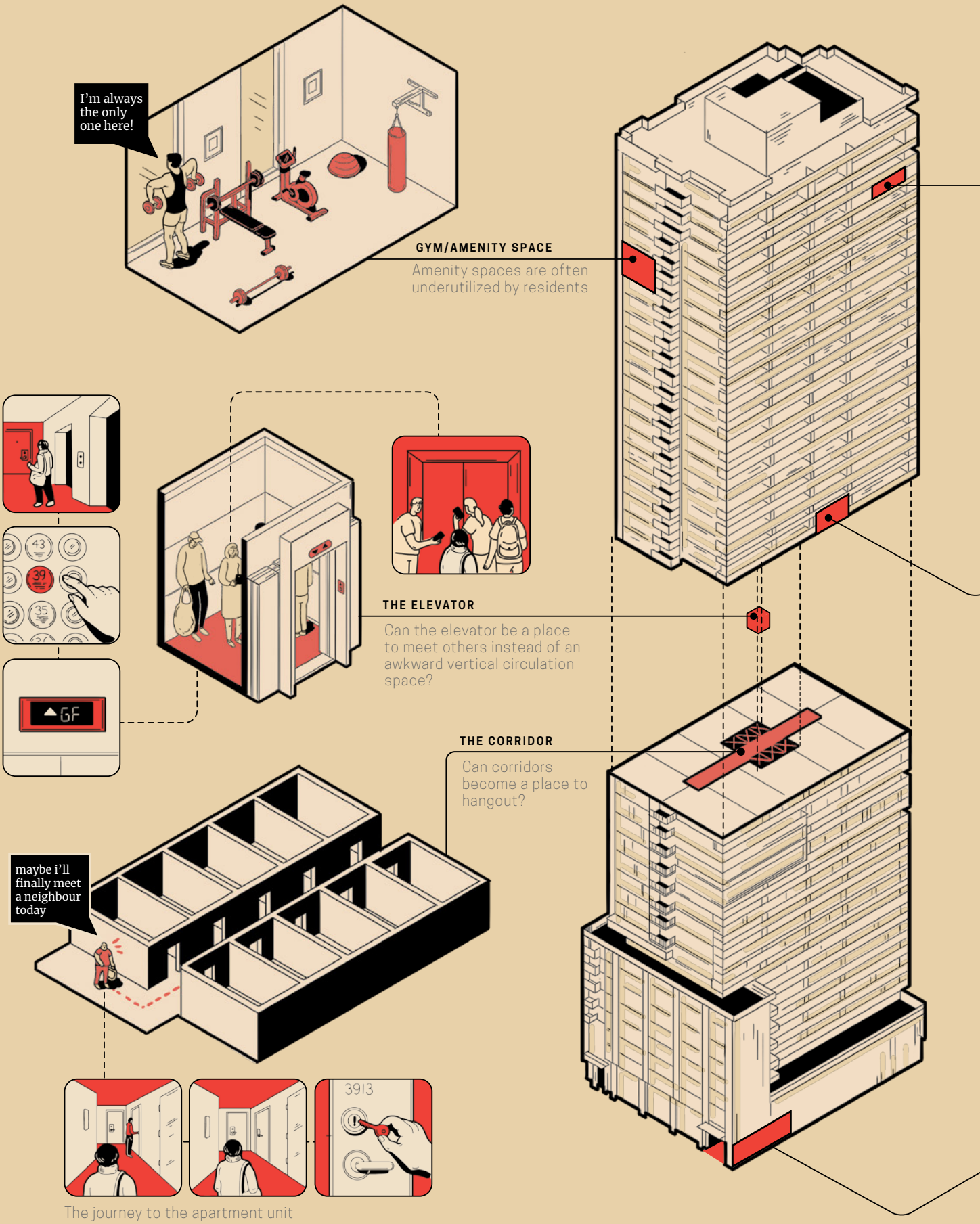
[Fig.20] Lean on wooden bench or “half bench” is a type of urban furniture that acts as more of a rest stop than a place for relaxed sitting



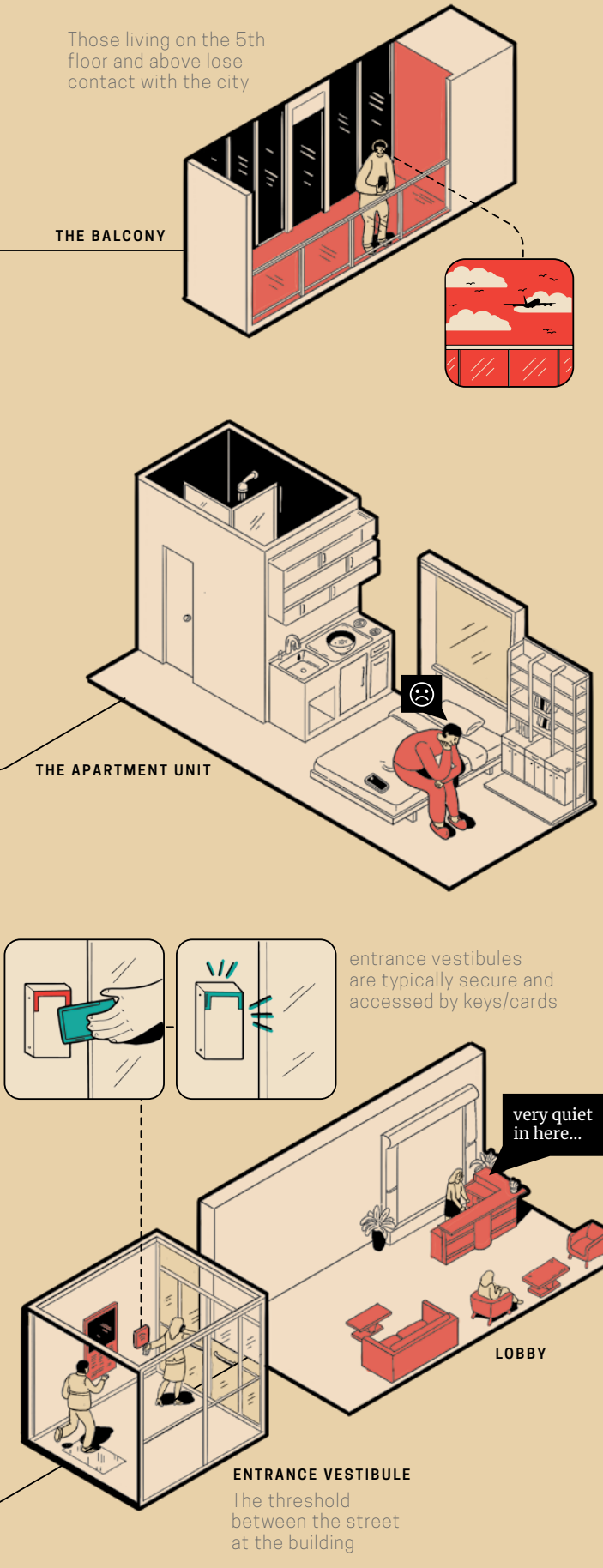
[Fig.21] Metal bench with armrests. Each seat is only wide enough for one person and prevents rough sleeping and skateboarding

THE LONELY HIGH-RISE BUILDING

[Fig.22] The typical high-rise building mapping the journey from the ground to the apartment



The journey to the apartment unit



THE HIGH-RISE BUILDING

The previous subsections summarized how loneliness is evident in many aspects of urban life. This section looks at the high-rise building as a site of loneliness to be analyzed further. High-rise buildings make up for the vast majority of development in cities. For developers and city planners in cities with a growing population and housing in high demand, it seems like the best direction to go is up. ***In a city like Toronto, 44% of residents live in some form of apartment and nearly 3 in 10 dwellings in Toronto were in high-rise apartments buildings.***[53] As of April 2019, 80 new residential and mixed-use skyscrapers have been proposed in the city.[54]

There are consequences of living in high-rises and the architecture of the buildings themselves contribute to loneliness. People who live in high-rises are reported to be more socially isolated and know very few of their neighbours.[55] According to Jan Gehl, residents living on the fifth floor and above lose contact with the city and can only focus on views of the sky. Living further from the ground means that they are less likely to interact with their neighbours.[56]

In a typical journey from the street to one's apartment, residedents would travel through the entrance vestibule, lobby, take an often-silent elevator ride up and proceed down a narrow corridor towards their unit. It is very rare for them to speak to any of the residents in their building.[57] Upon visiting several high-rise apartment buildings located in downtown Toronto, it was also observed that many of the amenity spaces were underutilized and often completely empty (mail room, gym, games room, party room, etc.).

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53 Statistics Canada, "Dwellings in Canada" Cencus 2016 (released May 2017) https://www12.statcan.gc.ca/census-recensement/2016/as-sa/98-200-x/2016005/98-200-x2016005-eng.cfm

54 Syeda, Anika. "Vertical city: 80 new skyscrapers planned in Toronto as demand climbs" (Financial Post, 2019) https://business.financialpost.com/real-estate/property-post/vertical-city-80-new-skyscrapers-planned-in-toronto-as-demand-climbs

55 Gifford, Robert. "The Consequences of Living in High-Rise Buildings." Architectural Science Review 50 (2007), 2-7

56 Gehl, Jan. "Cities for People" (Washington D.C. Island Press: 2010), 40

57 Interview with residents of a high-rise apartment building (Toronto, 2019)

THE DECLINE OF COMMUNITY

One of the reasons why we are so lonely is due to the lack of embeddedness in our own community, also described as collective loneliness. Robert Putnam elaborates on the decline of civic and social life in American cities as a whole. Putnam explains that Americans began a pattern of "cocooning" beginning in the 1970s which describes a massive increase in activities like "staying home" and "watching tv" and steep decrease in activities like "visiting friends", "dining out", "dancing" and etc...[58]

In the wake of the September 11th attacks, the incident impacted North American culture and architecture greatly. The Twin Towers which were once totems of American "financial might and technological prowess" were suddenly destabilized, shattering the illusion of permanence.[59] Skyscrapers and densely populated public spaces, once considered to be architectural achievements, were now perceived as targets of violence and hysteria. Media driven fear has also escalated due to the never- ending 24-hour news cycle and other social media platforms spawn further frenzy surrounding world events.[60] In the 21st century, fear and hysteria has become ingrained into our culture in almost every aspect, from film and art, to the architecture of the spaces we inhabit. The negative perception of society as a whole has impacted the quality of our social relationships and many urban residents fine themselves feeling lonely because the psychological needs of community life are not satisfied.[61]

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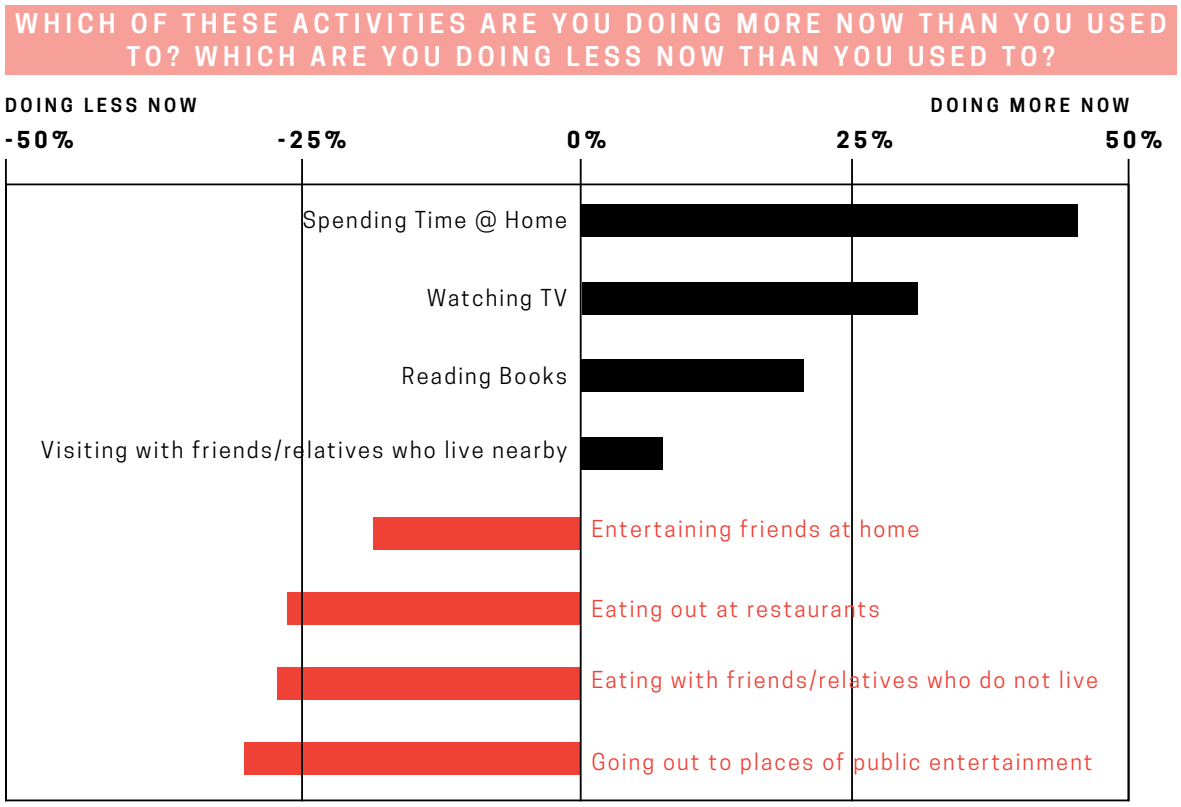
58 Putnam, Robert D. "Bowling Alone: The Collapse and Revival of American Community".(New York: Simon & Schuster, 2000), 545

59 Kamin, B. "Terror and Wonder: Architecture in a Tumultuous Age". (Chicago: The University of Chicago Press, 2010), 5

60 Giroux, Henry A. and Susan Searls Giroux. "Challenging Neoliberalism's New World Order: The Promise of Critical Pedagogy" in Cultural Studies ↔ Critical Methodologies, Vol. 6 Number 1 (Sage Publications, 2006), 23

61 Yang, Qingqing. "Space Modernization and Social Interaction: A Comparative Study of Living Space in Beijing." (Berlin: Springer-Verlag Berlin Heidelberg, 2015)



[Fig.23] Americans Began Cocooning in the 1970s.

VULNERABLE POPULATION GROUPS

Feeling lonely is a part of the human experience and affects all age groups and socio-economic backgrounds. Studies have compared loneliness amongst different demographics to further understand the problem. The Angus Reid Institute conducted a study in 2019 which revealed the 62% of Canadians wish their friends and family would spend more time with them.[62] The study also generated an Index on Loneliness and Isolation (ILSI) which divided the Canadian population into 5 groups[63]:

- The Desolate - People who are both lonely and isolated, or "very lonely" and "very isolated"
- The Lonely but not Isolated - People who are either "very lonely" or "somewhat lonely" but does not feel isolated
- The Isolated but not Lonely - People who are either "very isolated" or "somewhat isolated" but does not feel they are lonely
- The Moderately Connected - People who are neither "very lonely" or "very isolated" but are not necessarily "not lonely" or "not isolated". They occupy the middle of the spectrum.
- The Cherished - People who are "not lonely" and "not isolated"

Another interesting finding revealed that the youngest age group (18-24 years old) makes up for 32% of the Desolate and 43% of the Lonely but not Isolated categories. Other studies have shown that Generation "Z" (adults age 18-22) are reported to be the loneliest generation and in worse health than older generations. This age group also coincides with the typical age range of university and college students. Loneliness, anxiety, and depression seem to be a consistent problem amongst the student population[64]. Furthermore, a study that compared satisfaction in low versus high-rise student residence buildings found that students living in high-rise dorms had a much lower satisfaction rate.[65] For these reasons, this thesis focusses on university students as a vulnerable segment of the population and presents an opportunity for architecture to play a role in addressing problems experienced by students.

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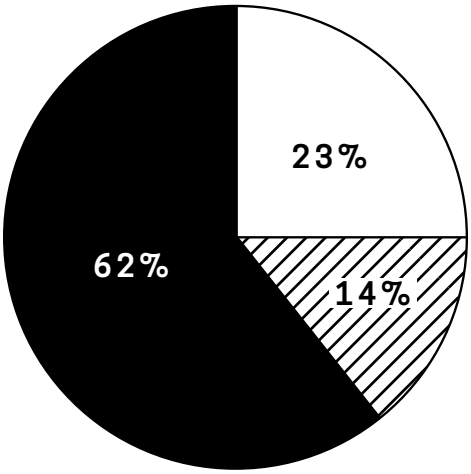
62 Korzinski, Dave. "A Portrait of Social Isolation and Loneliness in Canada Today". The Angus Reid Institute (2019), 1

63 Ibid, 9

64 Diehl, Katharina et al. "Loneliness at Universities: Determinants of Emotional and Social Loneliness among Students." in International Journal of Environmental Research and Public Health 15 (9): 1865 (Published 2018), 1

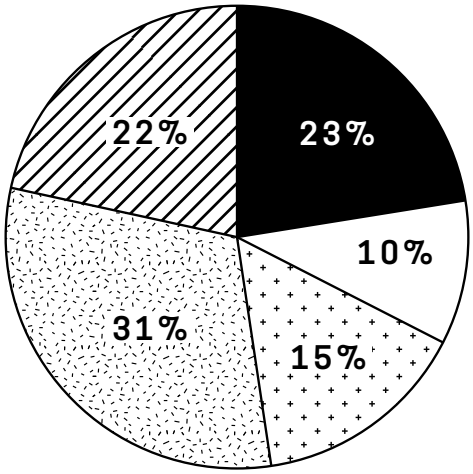
65 Gifford, Robert. "The Consequences of Living in High-Rise Buildings." Architectural Science Review 50 (2007), p. 5



QUALITY OF CANADIANS' SOCIAL LIVES

% Canadians who wish their friends + family would spend more time with them

% Canadians who think their social lives are "very good"



INDEX ON LONELINESS AND SOCIAL ISOLATION IN CANADA

The Desolate

Lonely but not isolated

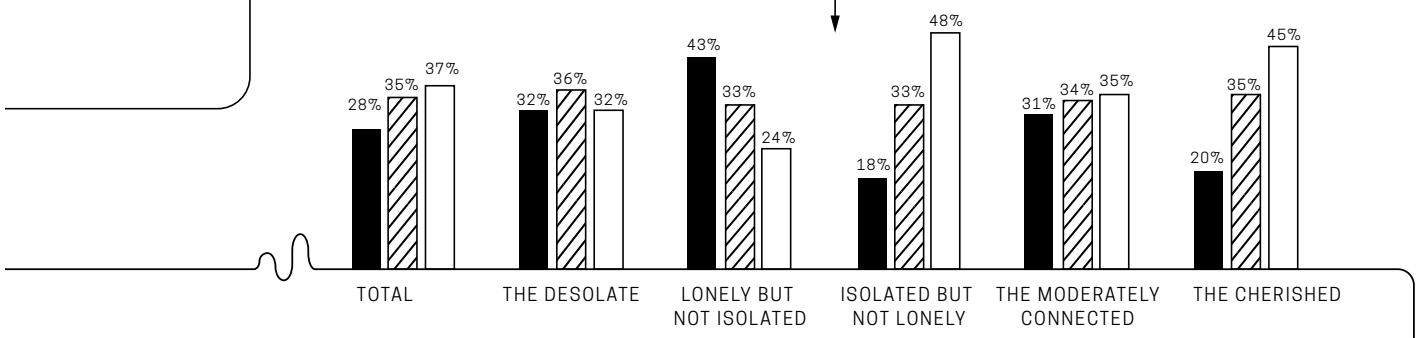
Isolated but not lonely

The Moderately Connected

The Cherished

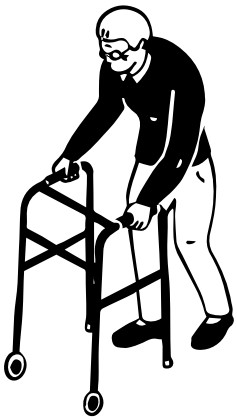
[Fig.24] Quality of Canadian's Social Lives and Index on Loneliness and Social Isolation in Canada

INDEX ON LONELINESS AND SOCIAL ISOLATION IN CANADA, BY AGE



AGE GROUP — **55+** — **35-54** — **18-24**

Overly represented and High level of awareness



born mid-90s and early 2000s

"GENERATION Z"

The lonelinest generation and claims to be in worse health than older generations (Cigna, 2018)

- LGBTQ
- VISIBLE MINORITIES
- INDIGENOUS CANADIANS
- MOBILITY CHALLENGED

Other vulnerable groups who experience loneliness/social isolation

THE ELDERLY

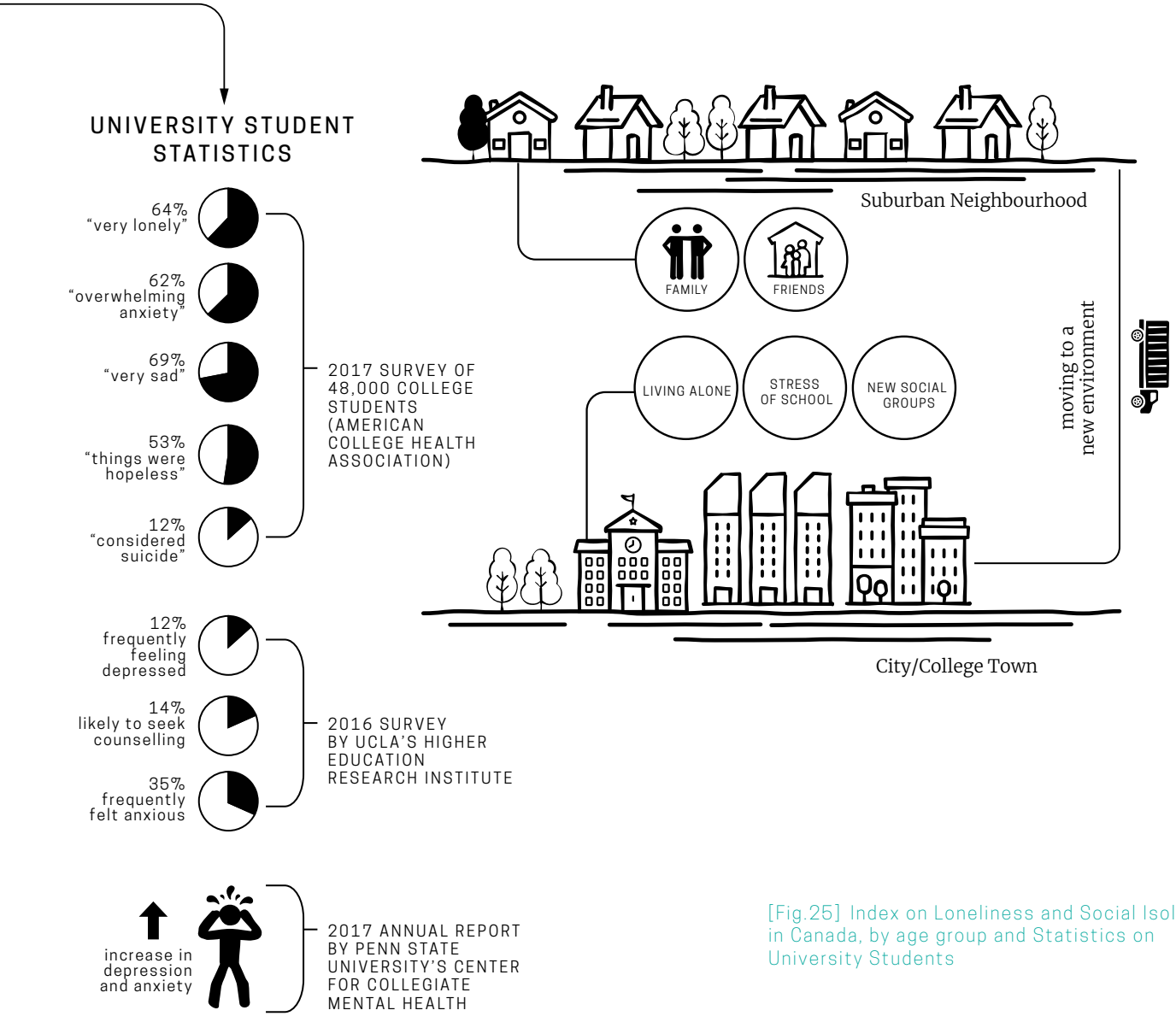
- DECLINING HEALTH
- WIDOWED/LOSS OF LOVED ONES
- CHILDREN MOVING AWAY

ADULTS/ MIDDLE AGED

- USUALLY MARRIED
- USUALLY HAVE CHILDREN
- CAREER> SOCIAL LIFE

ADOLESCENTS/ YOUNG ADULTS

- STRUGGLES WITH IDENTITY
- NOT FEELING UNDERSTOOD
- PRESSURES OF SOCIAL MEDIA



[Fig.25] Index on Loneliness and Social Isolation in Canada, by age group and Statistics on University Students

PART B : HIGH-RISE STUDENT RESIDENCES

THE UNIVERSITY OF WATERLOO

BUILDING AUDIT/STATISTICS

PRECEDENT PROJECTS

THE UNIVERSITY OF WATERLOO

This section is a summary of findings based on case studies which look at student residence buildings at the University of Waterloo and later on, a series of existing architectural projects from around the world. While Part A reflected on how cities have been designed to make us feel lonely, Part B focuses on identifying various conditions that can help mitigate loneliness and promote sociability. The purpose of documenting these projects architecturally and including first person observations is to further understand how various buildings perform and how spaces are occupied by students. For institutions and the neighbourhoods, they are situated in, it is important to incorporate design approaches that promote healthy and vibrant communities which in turn, contribute to the successful growth within a region. For the past 28 years, the University of Waterloo (located in Southern Ontario, Canada) has been recognized as the country's most innovative university[66] with a steady increase in student enrollment and an even steeper increase in international students over the past few years.[67] After all, higher education, more specifically post-secondary education, is considered to be at the heart of Canada's economy.[68] Post-secondary institutions have committed to providing a well-rounded learning environment for students to grow and excel academically. The University of Waterloo, which opened in 1957 with only 74 students, now has a 1,000-acre main campus with 100+ buildings, six faculties, and 40,000 students.[69]

Residence buildings are a key component to ensuring the wellbeing of students. "Student housing is a vital aspect of university life...[and]... an individual's living circumstances will affect not only his social relations but his satisfaction with the university itself and very likely the realization of his academic potential".[70] Waterloo is not considered to be a commuter school, so many of the students who attend the institution live on or around the campus. As a result of the growing student population, the demand for housing has also increased. The Kitchener-Waterloo region has experienced a building boom with a number of new high-rise buildings currently under construction and many more residential projects in various phases of development.

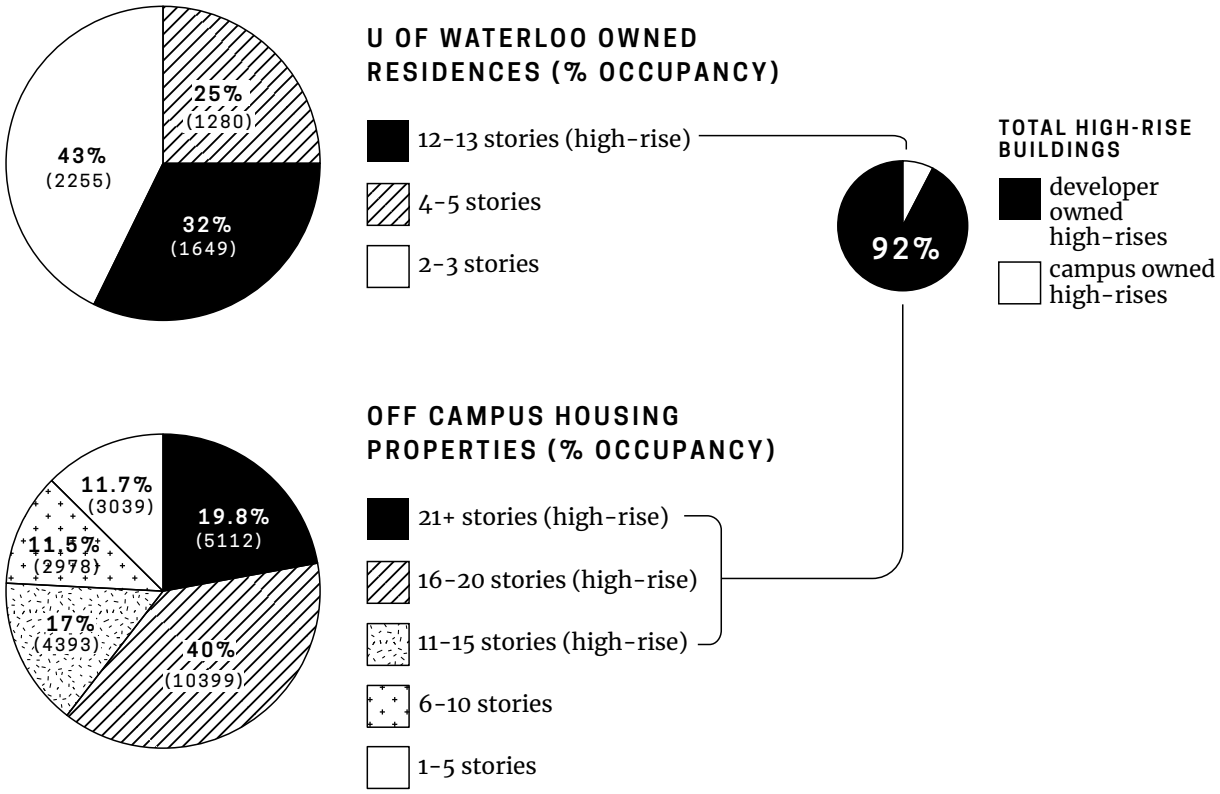
66 Maclean's. "Canada's best universities by reputation: Rankings 2020". (Maclean's, 2019) https://www.macleans.ca/education/canadas-top-school-by-reputation-2020/

67 University of Waterloo. "Student Headcounts". (Institution Analysis and Planning, 2019)https://uwaterloo.ca/institutional-analysis-planning/university-data-and-statistics/student-data/student-headcounts

68 Drummond, Don and Craig Alexander. "Time to Wise up on Post-Secondary Education in Canada". (TD Bank Financial Group, March 2004), 1

69 University of Waterloo. "Waterloo Facts". (University of Waterloo, 2018) https://uwaterloo.ca/about/who-we-are/facts

70 Pencer, Irwin and John L. Williams. "A Comparison among Student Residences at the University of Waterloo". Waterloo, Ontario: Counselling Services University of Waterloo (1971), 1



[Fig.26] Comparing university-owned residence buildings versus off-campus housing properties, categorized by height and % occupancy (left). The ratio of campus owned high-rises and developer owned high-rises (right)

Nearby downtown Kitchener, is anticipated to undergo radical transformation over the next few years with 18 projects worth almost $1 billion including the tallest tower in the region (39 stories at the intersection of Frederick & Duke Street).[71]

In general, the housing options for incoming students at the University of Waterloo include living at UW residences (campus-owned buildings) or renting from an off-campus listing. A diagram was generated to categorize the university-owned residence buildings and the off-campus housing properties by height and by the percentage of total occupancy. The results show that the majority of students who live in UW residences are 2-3 stories in height however 32% occupy 12-13 storey buildings. To contrast this, 76.8% of rooms available for students to live in are 11 stories in height and above. 92% of high-rises around the campus are owned by developers or other property management companies.

With these statistics in mind, it is important to focus on high-rises as it appears to be the most common typology for new development in communities with a growing population. This observation may seem obvious since tall buildings generally offer increased profits for developers and is perceived as an economic phenomenon.[72] While high-rises may offer a solution to density problems and the lack of available land for development, tall buildings are often critiqued as being "more about power, prestige status, where they play an important role in meeting occupier demand for large prestigious headquarters, and aesthetics than efficient development".[73] In sections to follow, we will look more closely at whether or not this is true for the student residences at the University of Waterloo and whether or not developer owned high-rises are contributing to urban loneliness.

OWNERSHIP MODEL

Through conversation with various staff members and directors at the University of Waterloo, there are 9 on-campus residences which are owned by the institution itself.[74] The university will collaborate with architects, engineers, and in more recent construction projects will also facilitate co-design sessions with students to engage them in the

71 Thompson, Catherine. "Kitchener's Billion-dollar building boom". (Waterloo Region Record, 2019)https://www.therecord.com/news-story/9207779-kitchener-s-billion-dollar-building-boom/

72 Ibrahim, Eldemery. "High-rise Buildings - Needs & Impacts". (CIB Building Congress, 2007), 1999

73 Ibid, 2000

74 University of Waterloo. "Our residences". (Waterloo Residences, 2019) https://uwaterloo.ca/housing/residences

process of designing a new residence building.[75] The institution is in charge of maintenance and filling up the units with students.

On the other hand, developer owned buildings also involve architects and engineers in the design process but there doesn't seem to be much evidence pointing to student involvement or any co-design strategies. As previously mentioned, the "student condo" is seen as a profitable investment opportunity, especially the ones on the luxury end that appeal to well-off international and domestic students.[76] "Some [investors] are buying newly built apartment-and-townhouse condos targeted at this niche, while others are investing in private real-estate investment trusts (REITs) that own student accommodations".[77] Developers/building owners often partner with property management companies who are responsible for maintenance and managing occupancy in the buildings.

UNDERSTANDING STUDENT LIFE

While the Waterloo region is not considered to be a densely populated metropolis like Toronto or Vancouver, it is still a valuable site for studying urban loneliness amongst university students. The housing market in the Waterloo Region is reported to be 10% more competitive than the Greater Toronto Area as of July 2019.[78] Based on interviews conducted between University staff members and residence coordinators, loneliness is quite common amongst students at this school. Waterloo students are more inclined to be introverted and shy, prefer indoor amenities, prioritize academics and career goals, and value privacy.[79] Residence coordinators and have found it difficult to convince students to leave their dorms and come out to community events and social gatherings. In the University's Report on Student Mental Health, nearly a third of students who participated in a 2016 survey reported feelings of loneliness.[80] Popular discussion website, Reddit.com, contains a subforum for the University of Waterloo (r/uwaterloo) with over 46,000 members and well over 250 threads dedicated to the topic of loneliness.[81] The high percentage

75 Conversation with various University of Waterloo staff and housing directors (2019)

76 Won, Shirley. "Student housing proves to be a lucrative niche for investors". (The Globe and Mail, 2019) https://www.theglobeandmail.com/investing/globe-wealth/article-student-housing-proves-to-be-a-lucrative-niche-for-investors/

77 Ibid

78 Deutschmann, Ariel. "Waterloo region housing market competitive compared to rest of Canada". (Kitchener Today, 2019) https://www.kitchenertoday.com/local-news/waterloo-region-housing-market-competitive-compared-to-rest-of-canada-1596174

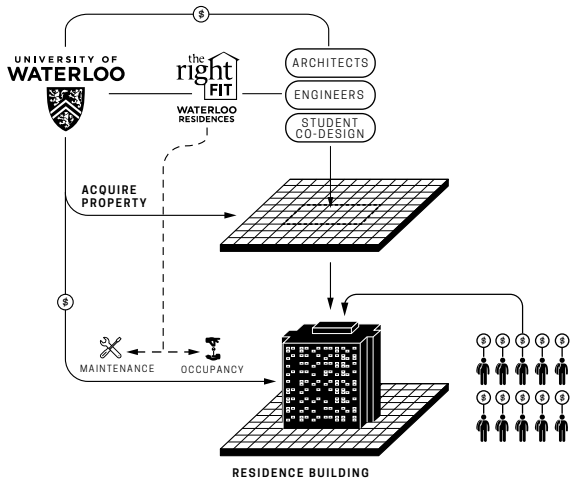
79 Conversation with residence coordinator (2019)

80 University of Waterloo. "Final Report". President's Advisory Committee on Student Mental Health (2018), 20

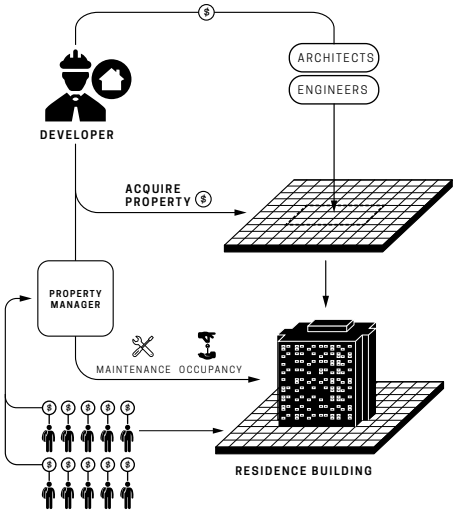
81 Reddit. (Search results using keywords "lonely" and "loneliness" in the subforum, r/uwaterloo) https://www.reddit.com/r/uwaterloo/search/?q=loneliness&restrict_sr=1

OWNERSHIP MODELS

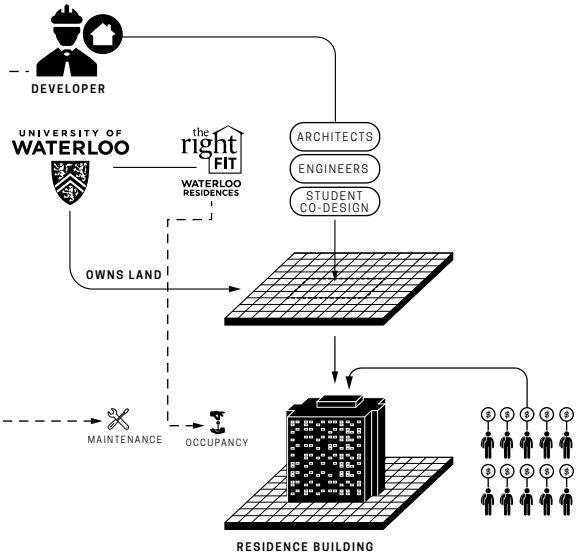
INSTITUTION OWNED RESIDENCES



DEVEOPER OWNED RESIDENCE BUILDINGS



PUBLIC-PRIVATE PARTNERSHIP



[Fig.27] Ownership model of institution owned residences, developer owned residences, and public-private partnerships at the University of Waterloo

of international students mean that many are transitioning to life in a completely different country and a culture they may not yet be adjusted to. The pressures to excel academically and heavy course load can cause students to feel higher levels of stress and anxiety, socialize less, and attend fewer campus events.

Studies have been conducted in the past at the University of Waterloo in attempts to evaluate the impact that architecture has on loneliness compared to the physical structure of residential buildings. The objective of the research was to assess general attitudes towards residences and identify differences in how students feel about their place of living.[82] Although none of the 3 buildings used in the study were high-rises, the differences in floor plans seem to promote sociability and create opportunities for human connection. The arrangement of spaces particularly in The Co-op (see Fig. 29), show smaller living units within the larger residential structure which is considered to be more "sociopetal" (brings people together) versus the layout of Village II (see Fig. 30), which is more "sociofugal" (tending to keep people apart).[83] This further emphasizes the valuable role that physical spaces play in our emotional state and comfort.

BUILDING AUDIT/ STATISTICS

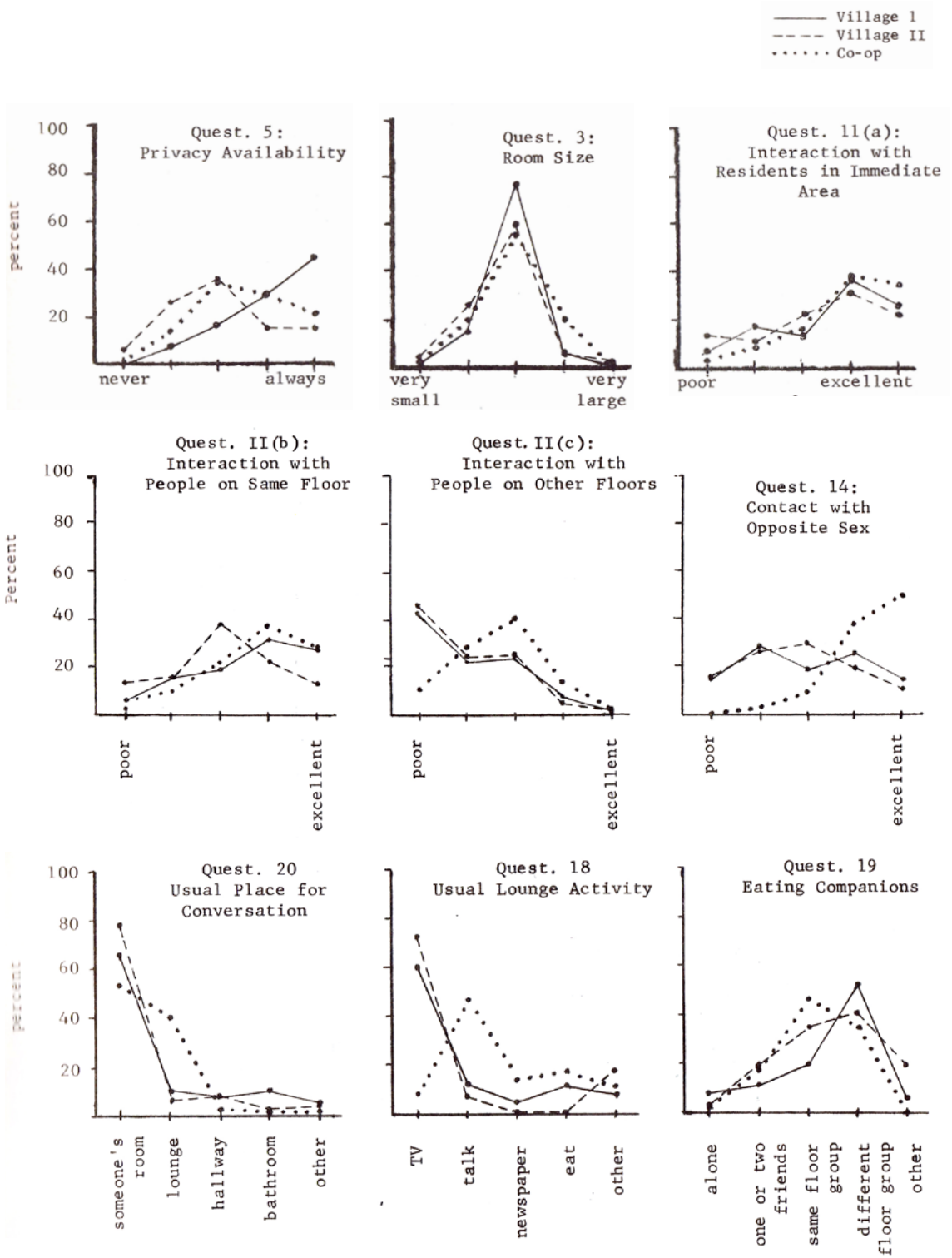
For this thesis, maps were created to show the locations of both campus-owned and developer-owned residence buildings at the University of Waterloo to demonstrate how student residences are distributed throughout the immediate periphery of the university (approximately a 4km radius surrounding UW).

Residential buildings that belong to the University of Waterloo's campus are divided into 2 groups; buildings 12 stories in height or greater, and buildings which are lower than 12 stories. Similarly, off-campus housing properties are divided by height based on the same criteria. The red "OFC" icons represent the off-campus housing properties that are 12 stories or taller and the map identifies a greater concentration of these buildings at the intersection of Columbia Street and King Street. This area was further documented through diagrams and photographs.

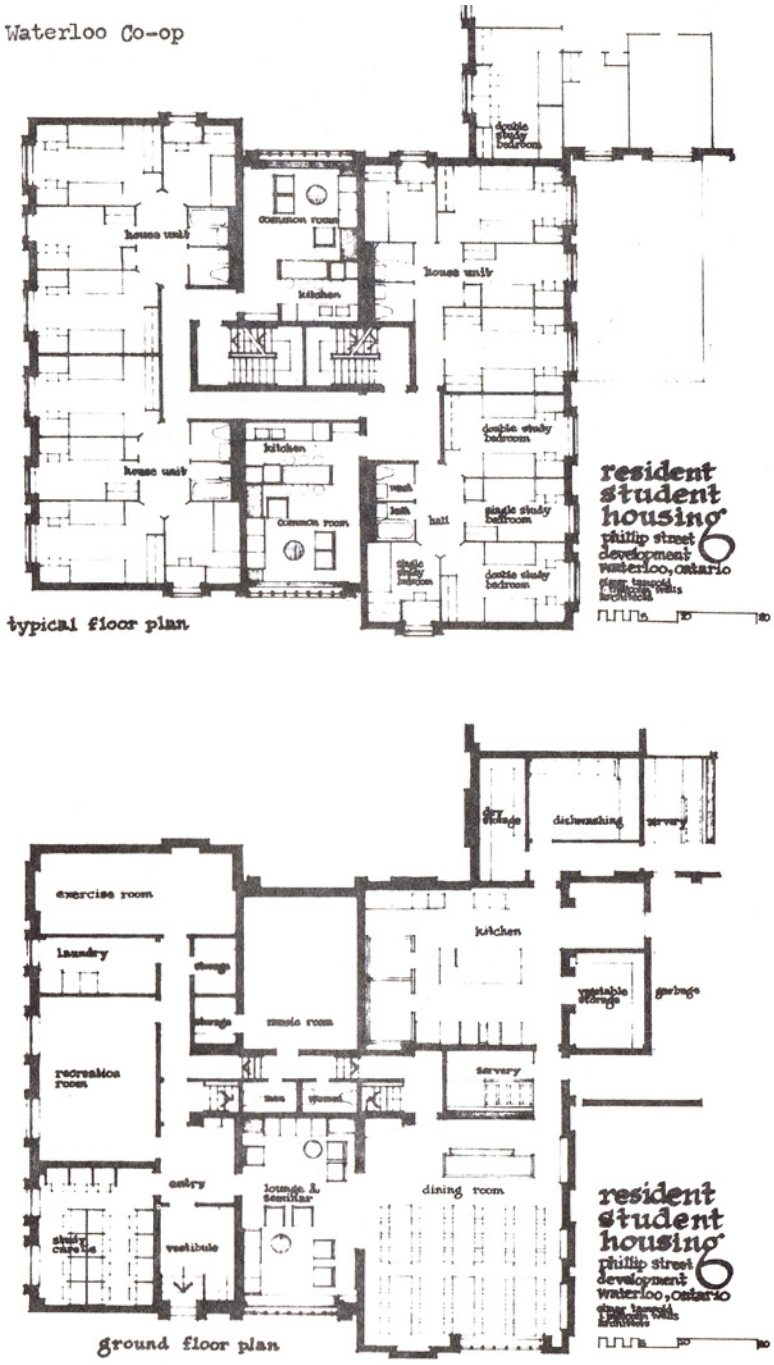
High-rise (12 stories in height and above) student accommodation buildings located around the University of Waterloo's campus were identified and categorized based on property management companies/ developer owned buildings versus institution owned buildings. The red

82 Pencer, Irwin and John L. Williams. "A Comparison among Student Residences at the University of Waterloo". Waterloo, Ontario: Counselling Services University of Waterloo (1971), 1

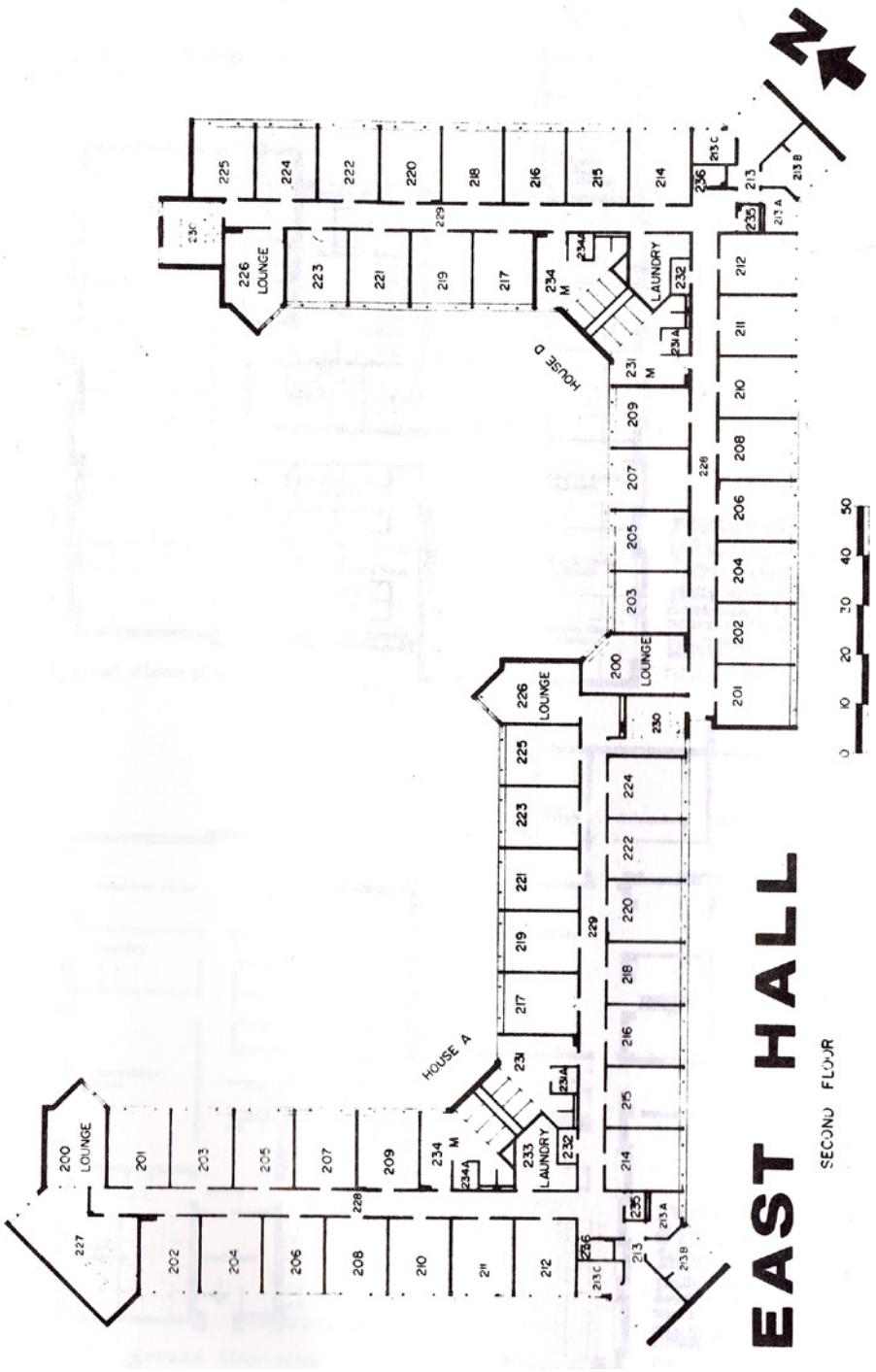
83 Ibid, 12-13



[Fig.28] Response from University of Waterloo student to questions related to socability in residence halls.



[Fig.29] Floor plan of Waterloo Co-operative Residence (Phillip St.). This building has 3 floors of bedrooms (each floor divided into 4 units) and the ground floor has dining halls, recreation rooms, study carrels, music room, exercise room, laundry room and lounges. Every two units form a house with double rooms (180 sq. ft.) and single roooms (~115 sq. ft.)



[Fig.30] Floor plan for Student Village II. Village II consists of 4 halls which each contain 5 houses. Only double rooms are available (~180 sq. ft. each) and the rooms are situated on either side of the corridor with lounges at the end

outlines around specific properties indicate the residences that were documented in-person and further discussed in the sections to follow.

STUDENT DORMS AT UW PLACE

One of the key areas of study for this thesis included the student dorms located at UW Place. This particular part of campus is home to the only university-owned residence buildings that are 12 stories high and above; Eby Hall, Beck Hall, and Claudette Millar Hall. These buildings were useful for studying the architectural impacts on sociability and the physical structures of these buildings differed greatly as well as their effects on the students who live there.

UW Place is a centrally located residence complex bounded by University Avenue West to the north, Seagram Drive to the south, the newly constructed LRT to the west, and just before Lester Street to the East. This residence provides a variety of living arrangements for students including low-rise apartments (Wilmot, Wellesley, Waterloo, and Woolwich Courts) but what makes this complex unique is that the only high-rise residence buildings are located here (Eby Hall, Beck Hall and Claudette Millar Hall). Based on in-person building tours and through conversations with residence coordinators, the quality of living conditions at UW Place vary from building to building.[84] Beck and Eby Hall are virtually identical in layout and provide 2, 3, or 4 bedroom suites for approximately 555 students. They are visibly older (constructed in the early 1980's-90's) and in worse condition compared the third tower, Claudette Millar Hall (CMH). Students have described Beck and Eby Hall as "super depressing", "dark", and "[terrible] from a social standpoint".[85] These towers were originally constructed for married students and families with maximum privacy as a key design feature.[86] The suite style units include fully functional kitchens and washrooms within every unit (see Fig. 33). While this would seem appealing to young adults craving independence in their new environment, this may also cause an individual to spend long periods of time without leaving their unit. The corridors at Beck and Eby Hall are dark, lack vibrance and do not have many places to meet other residents (see Fig 31, 32, and 34).

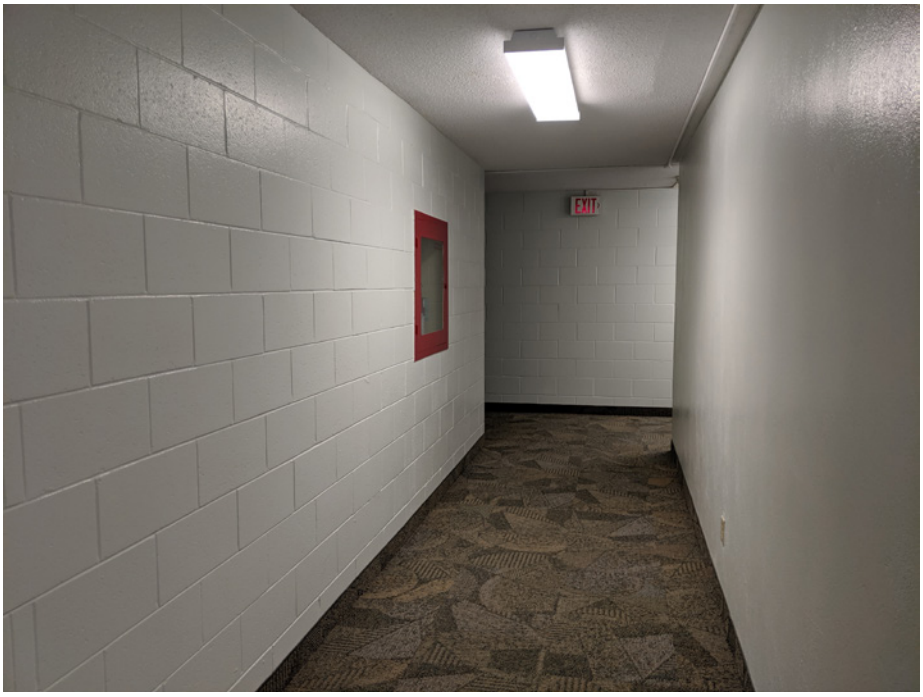
Presently, the university has recognized the importance of sociability amongst students for mental health and wellbeing and started to prioritize this in the design of new residential buildings. Claudette Millar Hall, a 12-storey tower which opened in 2017, focuses on

84 In conversation with residence coordinator at the University of Waterloo (2019)

85 Reddit. "Questions about Eby Hall in UWP". (Found in subforum: r/uwaterloo, 2019) https://www.reddit.com/r/uwaterloo/comments/azai34/questions_about_eby_hall_in_uwp/

86 In conversation with residence coordinator at the University of Waterloo (2019)

[Fig.31] View of typical corridor at Beck Hall

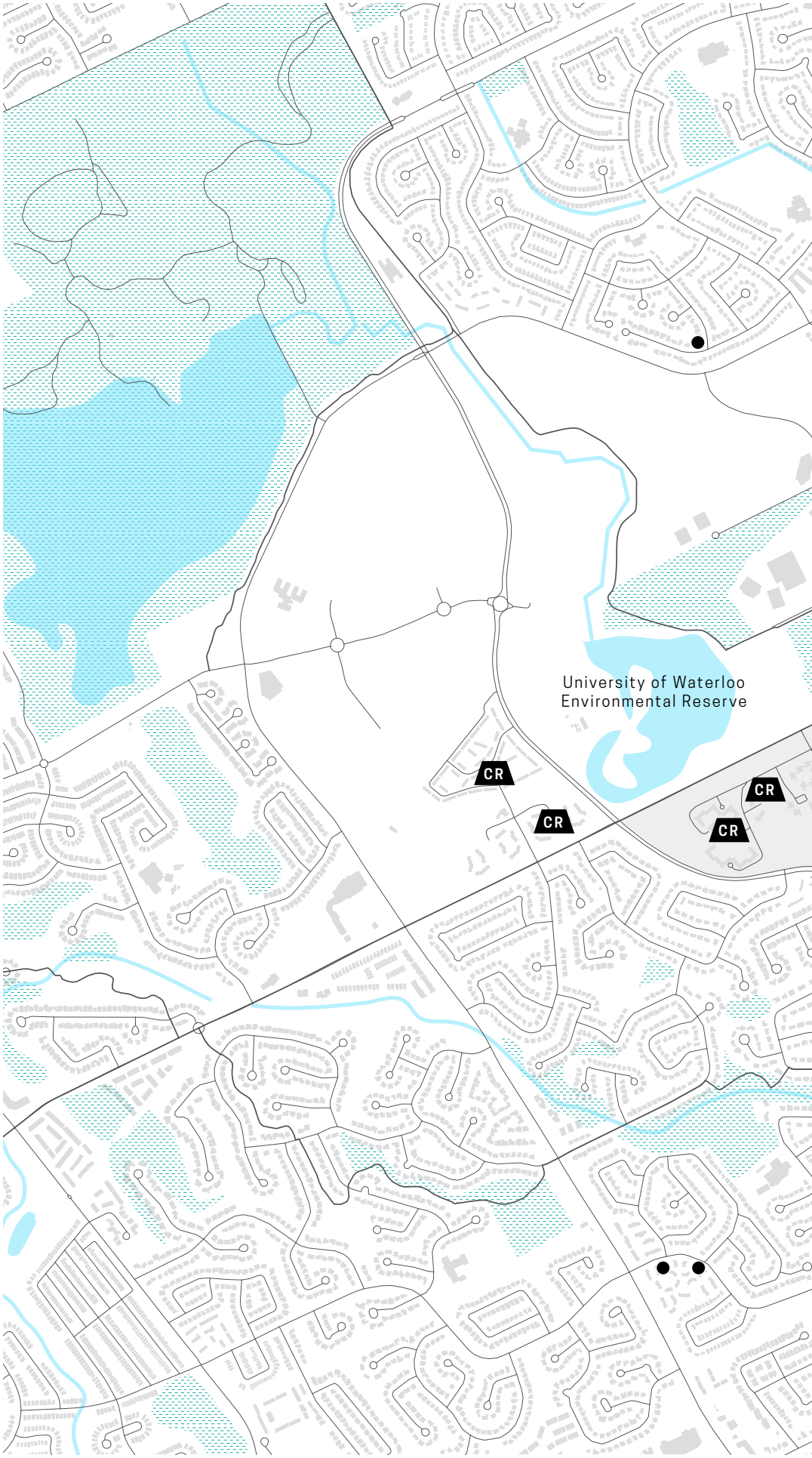


[Fig.32] View of typical corridor at Eby Hall

[Fig.33] Suite-style units at Beck and Eby Hall include fully functional kitchens

[Fig.34] Lounge space at Beck Hall - underutilized and dark

UNIVERSITY OF WATERLOO - STUDENT HOUSING AUDIT MAP



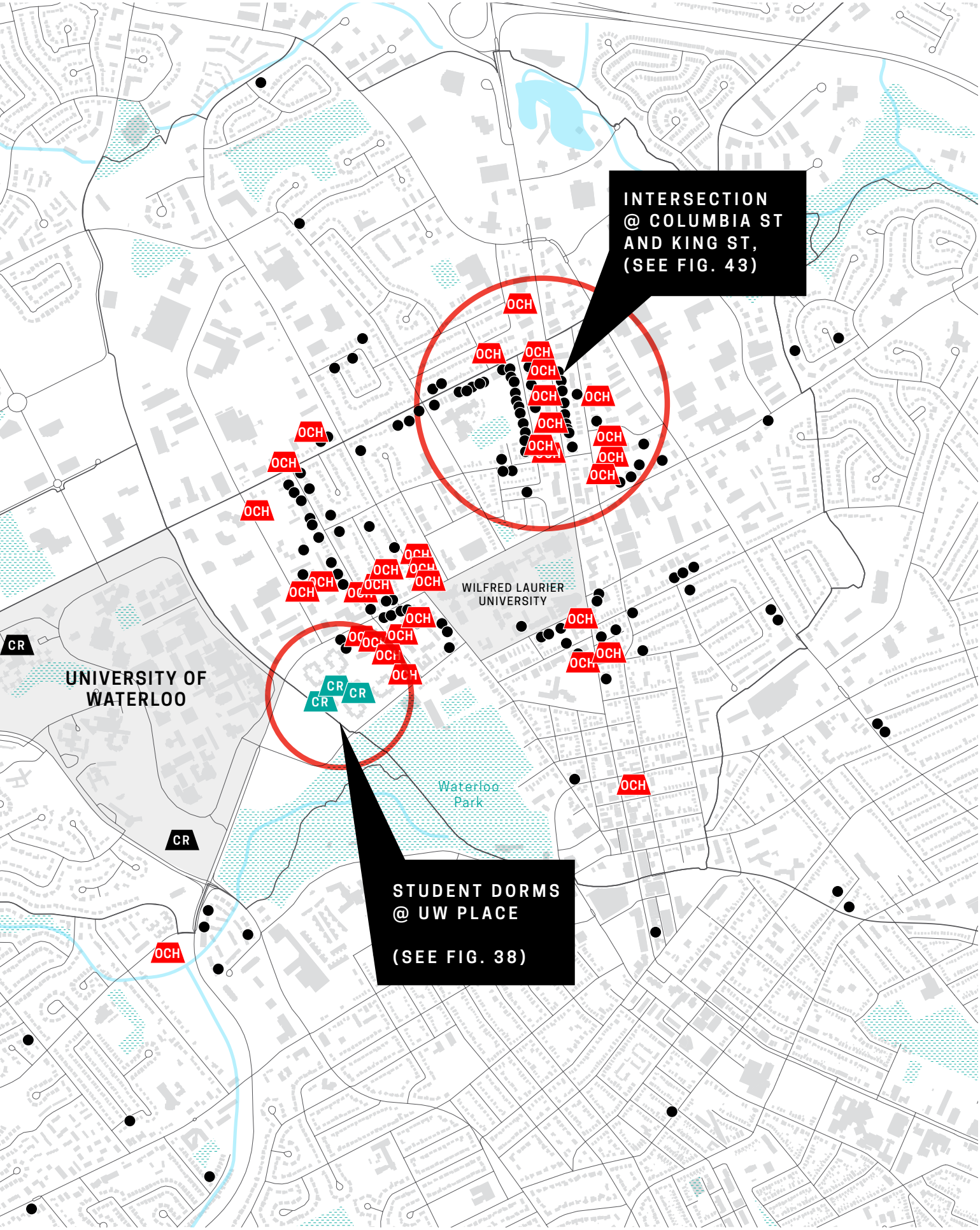
CR Campus Residences (<12 Stories)

CR Campus Residences (12+ Stories)

OCH Off Campus Housing (12+ Stories)

Off Campus Housing (<12 Stories)

[Fig.35] Map of student residence locations


INTERSECTION @ COLUMBIA ST AND KING ST, (SEE FIG. 43)
STUDENT DORMS @ UW PLACE
(SEE FIG. 38)
WILFRED LAURIER UNIVERSITY
UNIVERSITY OF WATERLOO
Waterloo Park
OCH
CR

INSTITUTION

UNIVERSITY OF WATERLOO

CLAUDETTE MILLAR HALL

BECK HALL

EBY HALL

RO REZ-ONE

BRIDGE PORT

PRESTON HOUSE

BLAIR HOUSE

FERGUS HOUSE

ACCOMMOD8U

228 ALBERT STREET

255 SUNVIEW STREET

258 SUNVIEW ST

THE HUB

250 LESTER STREET

222 ALBERT STREET

246 ALBERT STREET

DOMUS® INC.

8 HICKORY STREET W

ALIGNVEST STUDENT HOUSIN

339 KING STREET N

333 KING SREET N

INSTITUTION OWNED HIGH-RISE STUDENT HOUSING VS. PRIVATELY-OWNED STUDENT HOUSING

[Fig.36] Chart of high-rise student residence buildings around the University of Waterloo's campus.

PRROPERTY MANAGER/ DEVELOPER

Schembri Property Management

1 COLUMBIA STREET W

KW4RENT

201 LESTER STREET

202 LESTER STREET

203 LESTER STREET

208 SUNVIEW STREET

OTHER

375 KING STREET N

345 KING STREET N

318 SPRUCE STREET

300 REGINA STREET N

260 REGINA STREET N

70 KING ST N - PROPOSAL

158 KING STREET N

181 LESTER STRET

255 KEATS WAY

131 UNIVERSITY AVE

200 OLD CARRIAGE DR

RISE
A REAL ESTATE COMPANY

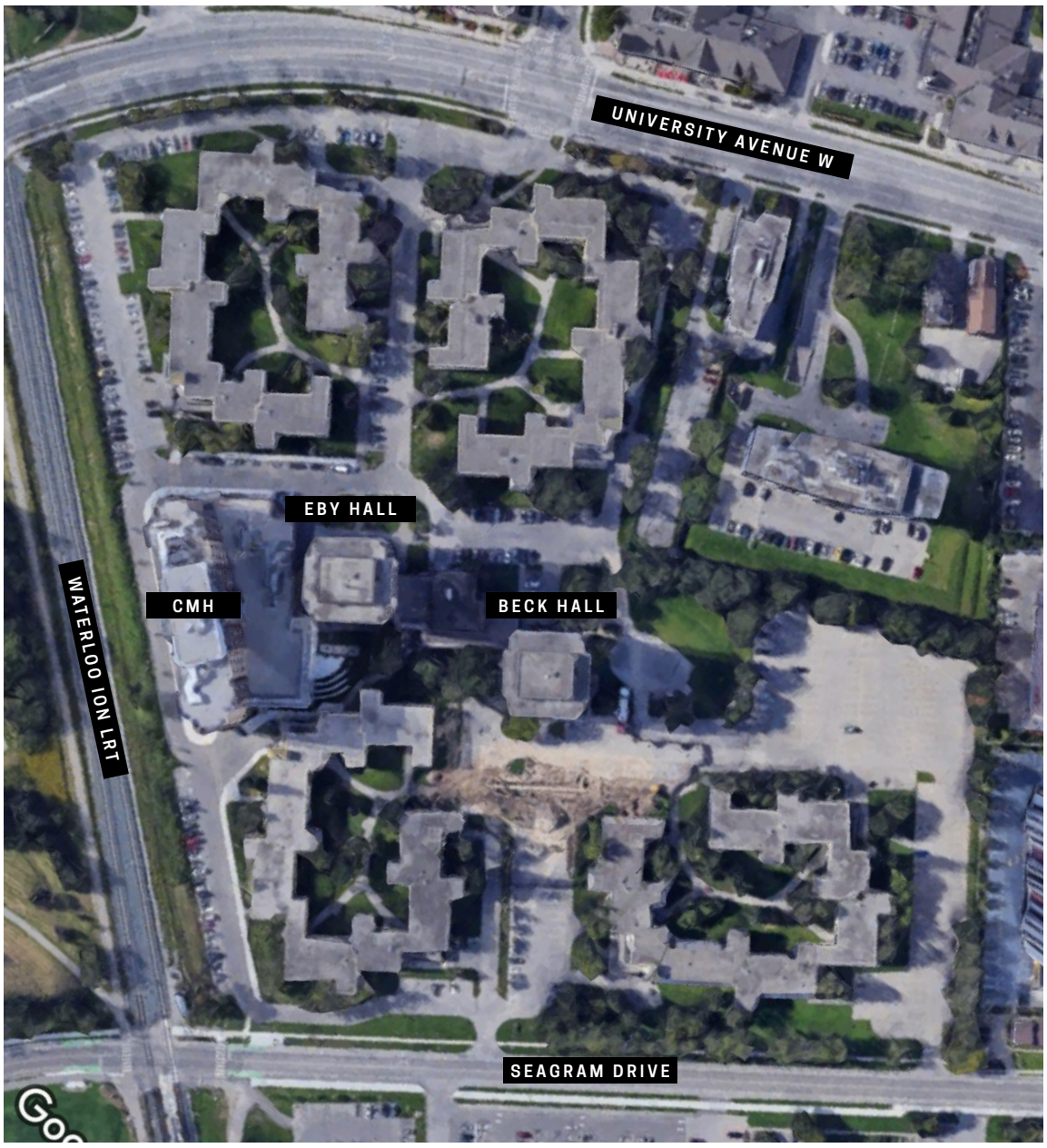
330 PHILLIP STREET

Atlas

100 VICTORIA STREET S

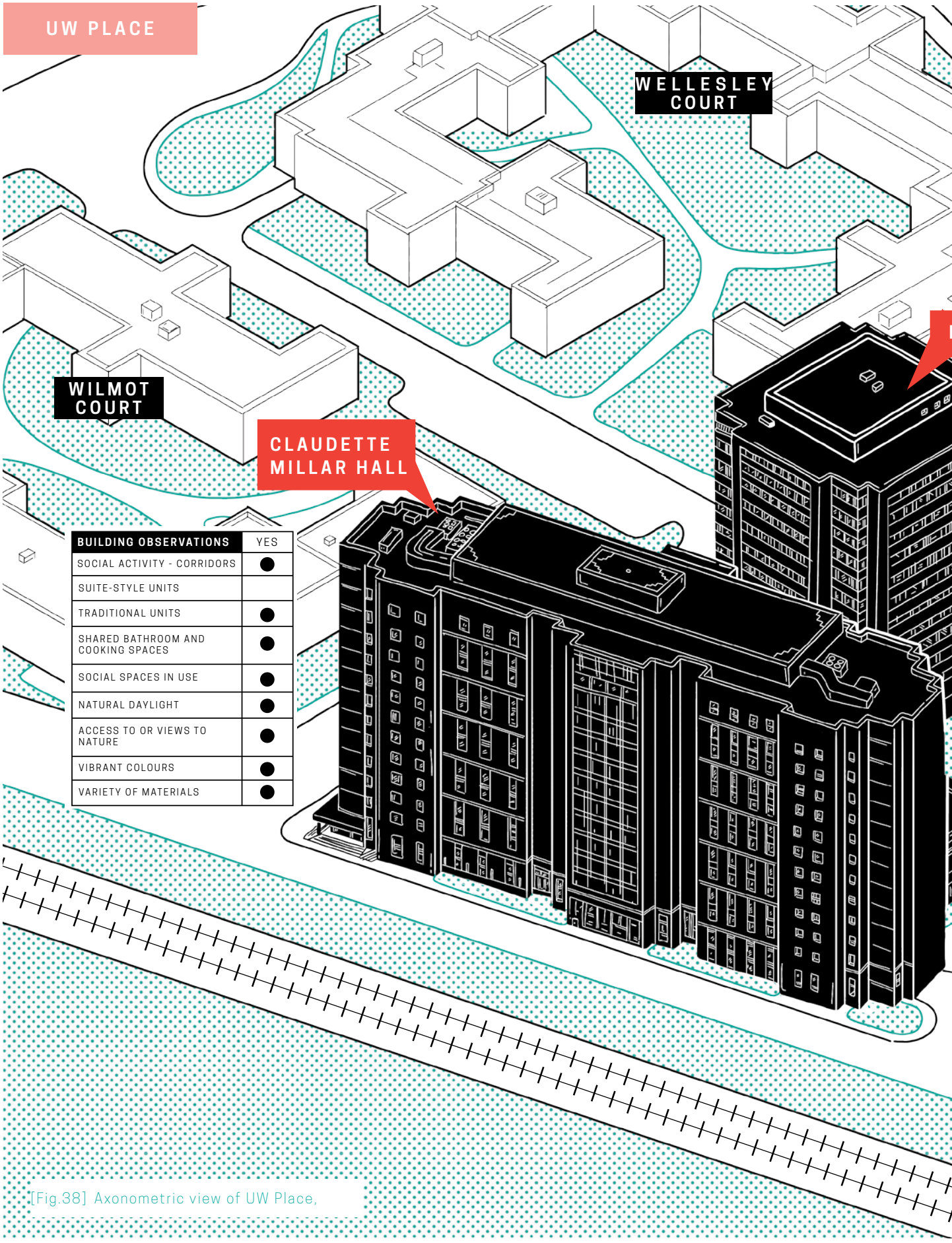
promoting socialization among students through a variety of building strategies that will be identified later. The success of Claudette Millar Hall (CMH) is evident in the liveliness and amount of activity that takes place in the building. It offers a variety of amenity spaces for students to gather and hang out and the floor plan is described to be "very interconnected". In online discussion groups, many students have also commented they would undoubtedly choose CMH over Beck and Eby Hall. Instead of suite style units, CMH offers traditional dorm style units to 539 residents with the choice between single room accommodation or semi-private double rooms.[87] The ground floor of the building is activated through programming and spatial configuration offering amenities such as a cafeteria, study spaces, meditation rooms, music practice rooms, a gym, laundry and many other spaces which promote social gathering but also provide various levels of privacy. Plenty of exterior glazing fills the ground floor with natural light and also provides a visual connection between the interior and exterior. Seating throughout the building is for the most part, flexible, allowing for students to gather in smaller or larger groups as they see fit. As residents proceed to the upper floors, the walls of each level are painted in a different colour scheme which makes each floor more visually identifiable and avoids the monotonous hallways as seen in the Beck and Eby Hall. The elevators on each floor open onto a communal kitchen and lounge space where students can be seen studying or socializing. Hallways, which typically do not provide any other function other than horizontal circulation within a building, also act as social spaces inside Claudette Millar Hall. The corridors push and pull, becoming wider in certain areas to provide spaces for group studying, potlucks, card games and other casual social encounters. (see Fig. 38)

87 University of Waterloo. "Claudette Millar Hall". (Waterloo Residences, 2019) https://uwaterloo.ca/housing/residences/claudette-millar-hall



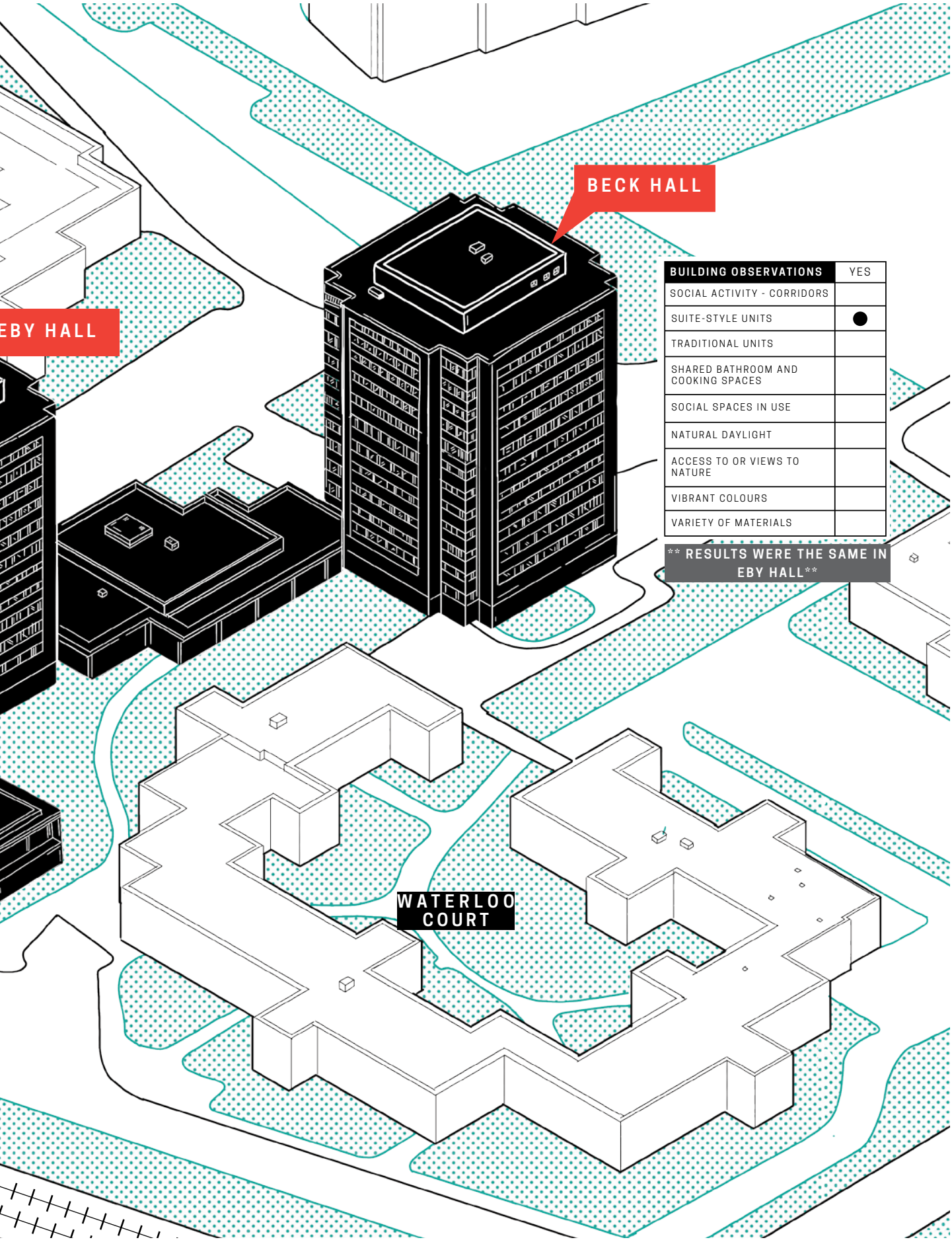
[Fig.37] Map of UW Place, University of Waterloo

UW PLACE



BUILDING OBSERVATIONS	YES
SOCIAL ACTIVITY - CORRIDORS	●
SUITE-STYLE UNITS	
TRADITIONAL UNITS	●
SHARED BATHROOM AND COOKING SPACES	●
SOCIAL SPACES IN USE	●
NATURAL DAYLIGHT	●
ACCESS TO OR VIEWS TO NATURE	●
VIBRANT COLOURS	●
VARIETY OF MATERIALS	●

[Fig.38] Axonometric view of UW Place,



BUILDING OBSERVATIONS	YES
SOCIAL ACTIVITY - CORRIDORS	
SUITE-STYLE UNITS	●
TRADITIONAL UNITS	
SHARED BATHROOM AND COOKING SPACES	
SOCIAL SPACES IN USE	
NATURAL DAYLIGHT	
ACCESS TO OR VIEWS TO NATURE	
VIBRANT COLOURS	
VARIETY OF MATERIALS	

** RESULTS WERE THE SAME IN EBY HALL**

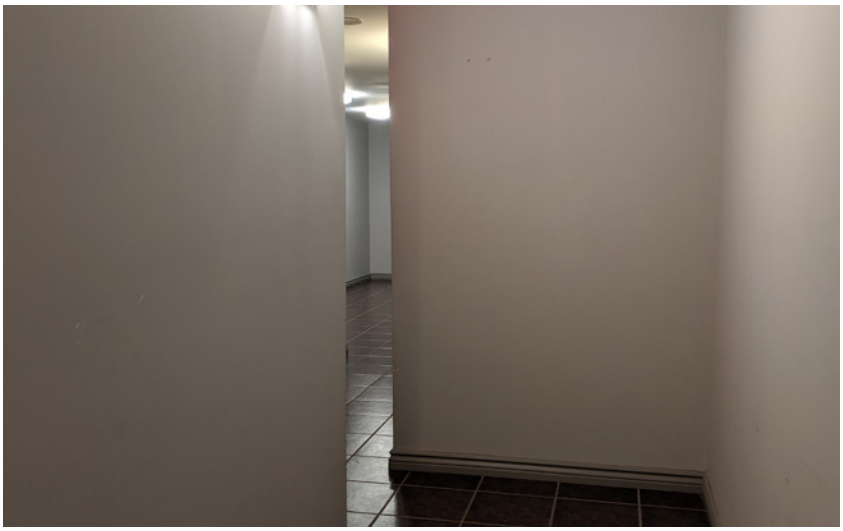
HIGH-RISES AT COLUMBIA AND KING

Looking north on King Street towards the intersection that meets with Columbia Street, one would see a monotonous wall of facades shadowing over a sea of much smaller low-rise buildings. This area in has been referenced as a particular eyesore with one high-rise building after another, all owned by private property developers constructed over a fairly short period of time. Several of these buildings were documented in order to compare the quality of spaces between the developer-owned residence buildings and the residence buildings built by the University of Waterloo.

Each building visited was documented via floor plans, statistics on occupancy, rental fees, and photographs. By highlighting shared amenity spaces, horizontal and vertical circulation in plan, this made it clearly indicated the size of spaces dedicated to shared amenities as well as where these spaces are located and how they are accessed by users. Claudette Millar Hall had the greatest amount of area dedicated to social and amenity spaces at both the ground and upper levels even when compared to buildings with a similar occupancy number (i.e. Beck/Eby Hall and 333 King Street N). CMH was also the only building that had a ground floor accessible to the public that provided services that non-residents could access such as the food hall, flexible seating and study spaces, and other indoor recreational activities. Other buildings required a security fob or access card in order to enter the lobby.

The upper level corridors in all of the developer-owned residence buildings were similar; they were narrow, some were dimly lit, colours were monotonous with no visual interest, and there were no visible places to stop and socialize. Any amenity spaces that did exist were empty and underutilized.

[Fig.39] View looking north on King Street in Waterloo, Canada

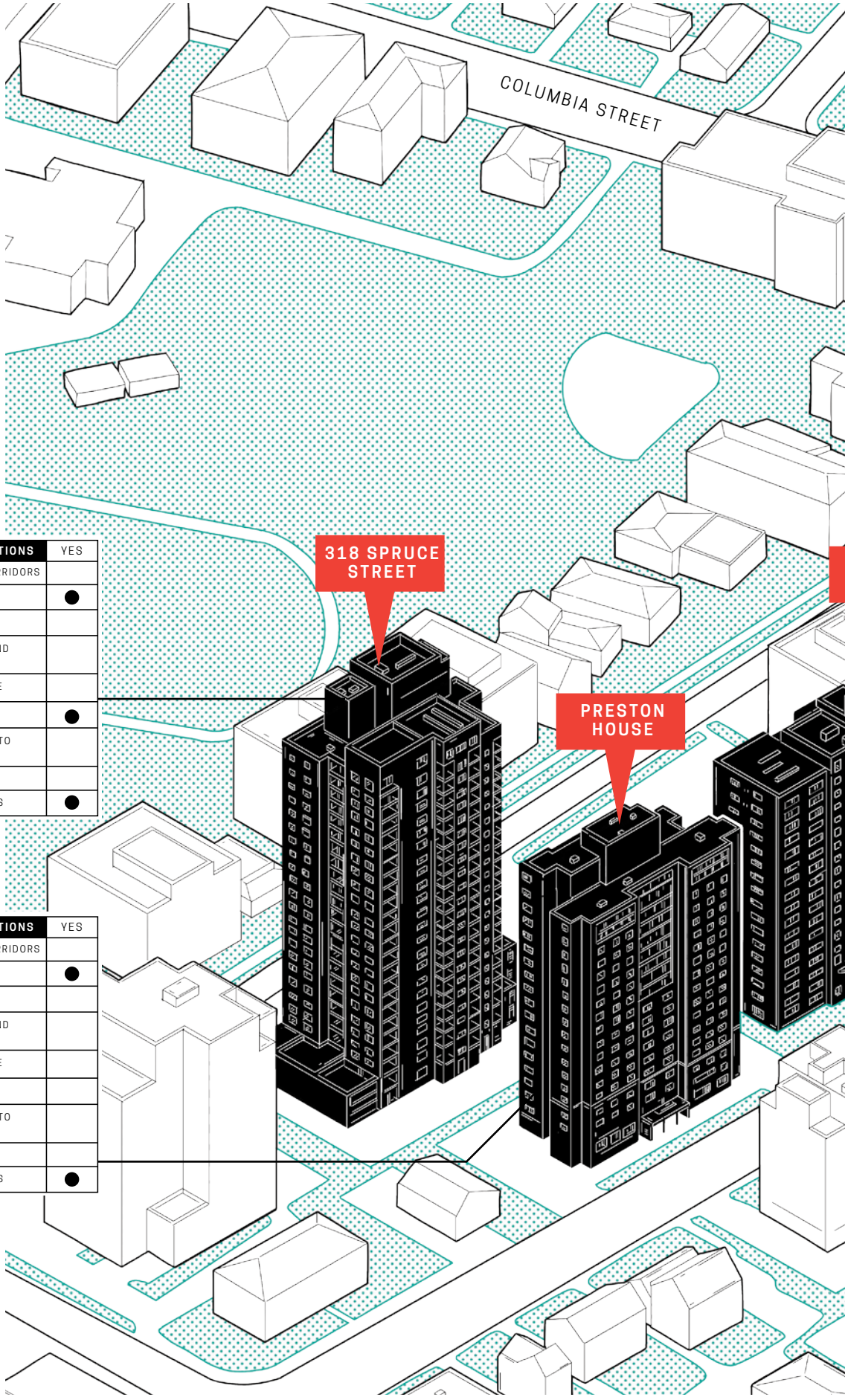


[Fig.40] Upper floor corridor at 1 Columbia Street West

[Fig.41] Underutilized and inaccessible spaces at 1 Columbia Street West

[Fig.42] View of corridor at 318 Spruce Street

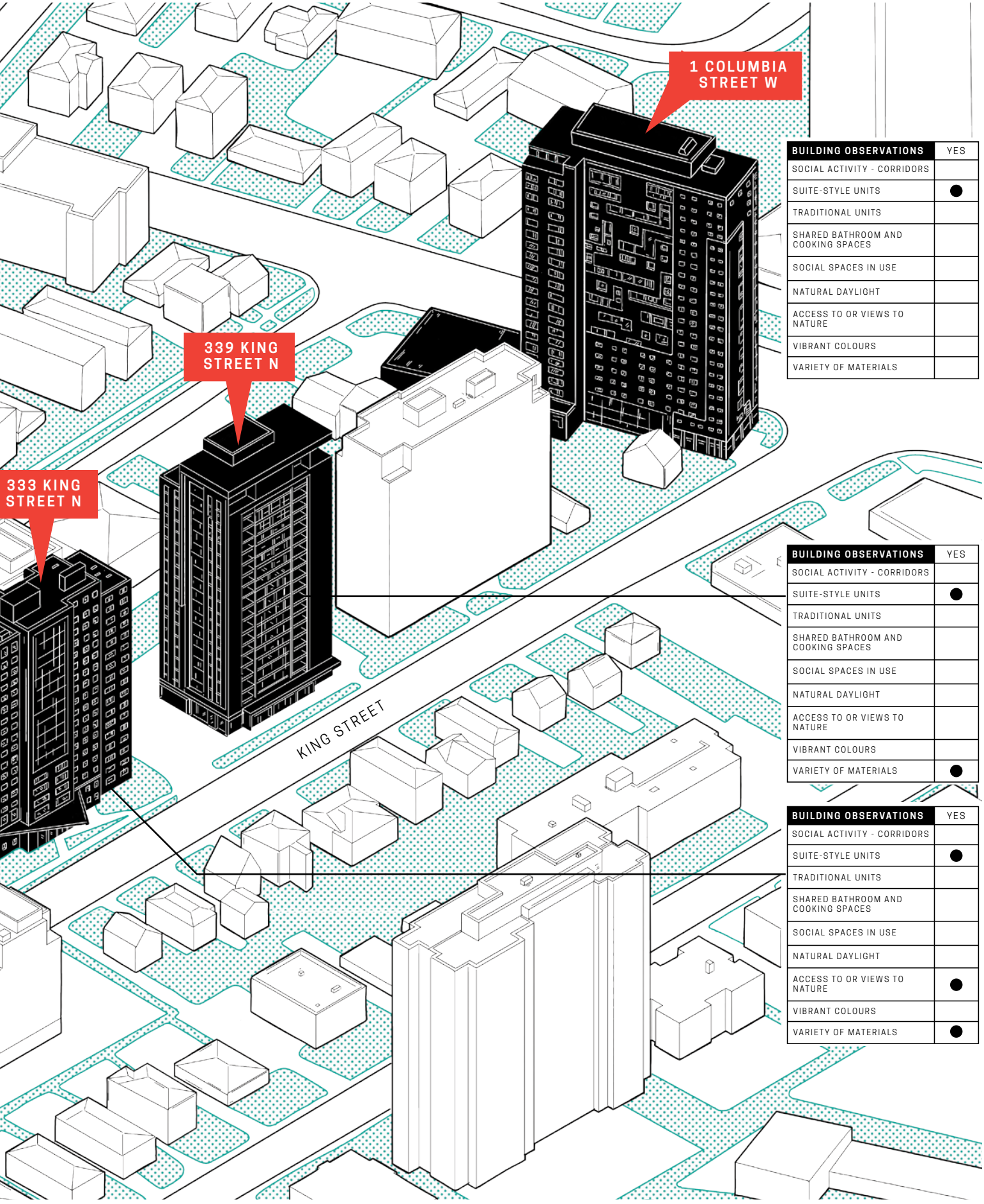
COLUMBIA STREET AND KING STREET



BUILDING OBSERVATIONS	YES
SOCIAL ACTIVITY - CORRIDORS	
SUITE-STYLE UNITS	●
TRADITIONAL UNITS	
SHARED BATHROOM AND COOKING SPACES	
SOCIAL SPACES IN USE	
NATURAL DAYLIGHT	●
ACCESS TO OR VIEWS TO NATURE	
VIBRANT COLOURS	
VARIETY OF MATERIALS	●

BUILDING OBSERVATIONS	YES
SOCIAL ACTIVITY - CORRIDORS	
SUITE-STYLE UNITS	●
TRADITIONAL UNITS	
SHARED BATHROOM AND COOKING SPACES	
SOCIAL SPACES IN USE	
NATURAL DAYLIGHT	
ACCESS TO OR VIEWS TO NATURE	
VIBRANT COLOURS	
VARIETY OF MATERIALS	●

[Fig.43] Axonometric view of Columbia and King Street



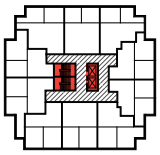
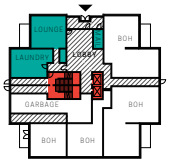
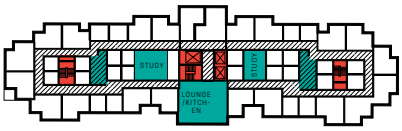
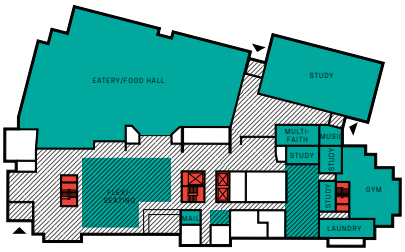
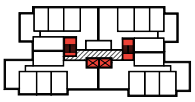
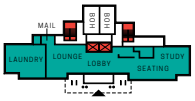
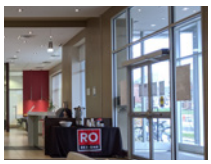
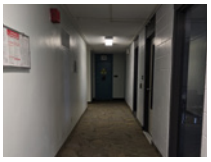
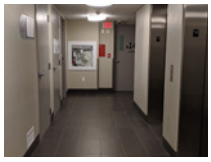
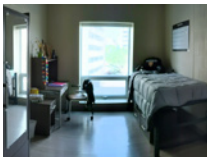
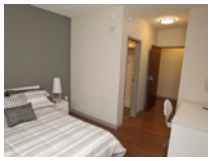
BUILDING OBSERVATIONS	YES
SOCIAL ACTIVITY - CORRIDORS	
SUITE-STYLE UNITS	●
TRADITIONAL UNITS	
SHARED BATHROOM AND COOKING SPACES	
SOCIAL SPACES IN USE	
NATURAL DAYLIGHT	
ACCESS TO OR VIEWS TO NATURE	
VIBRANT COLOURS	
VARIETY OF MATERIALS	

BUILDING OBSERVATIONS	YES
SOCIAL ACTIVITY - CORRIDORS	
SUITE-STYLE UNITS	●
TRADITIONAL UNITS	
SHARED BATHROOM AND COOKING SPACES	
SOCIAL SPACES IN USE	
NATURAL DAYLIGHT	
ACCESS TO OR VIEWS TO NATURE	
VIBRANT COLOURS	
VARIETY OF MATERIALS	●

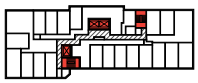
BUILDING OBSERVATIONS	YES
SOCIAL ACTIVITY - CORRIDORS	
SUITE-STYLE UNITS	●
TRADITIONAL UNITS	
SHARED BATHROOM AND COOKING SPACES	
SOCIAL SPACES IN USE	
NATURAL DAYLIGHT	
ACCESS TO OR VIEWS TO NATURE	●
VIBRANT COLOURS	
VARIETY OF MATERIALS	●

SPATIAL ANALYSIS OF HIGH-RISE STUDENT RESIDENCE BUILDINGS

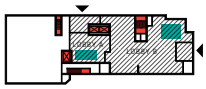
[Fig.44] Spatial comparison of high-rise student residences at UW Place and privately-owned buildings at the intersection of Columbia and King Street.

	BECK HALL + EBY HALL	CLAUDETTE MILLAR HALL	PRESTON HOUSE
FLOOR PLANS	 2FL - 13 FL LAYOUT  GF LAYOUT	 2FL - 12 FL LAYOUT  GF LAYOUT	 UPPER LEVEL LAYOUT  GF LAYOUT
OVERVIEW			
OCCUPANCY	555	539	360
RENTAL FEE	$2800-$4000	$2500 - $4200	$3000
ENTRY			
CORRIDORS			
LOUNGE/ AMENITY			
UNIT			

1 COLUMBIA STREET W



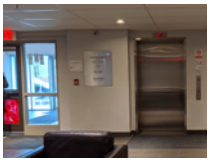
UPPER LEVEL LAYOUT

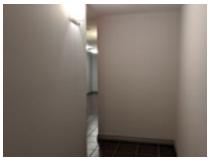


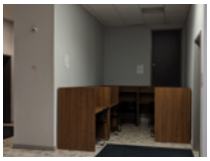
GF LAYOUT

360

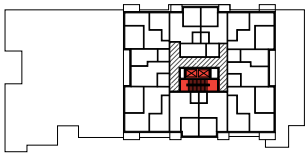
$2680-$3060







318 SPRUCE STREET

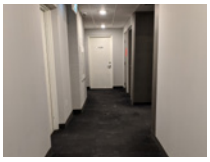


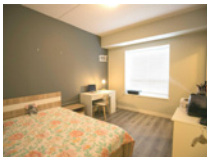
UPPER LEVEL LAYOUT

GF LAYOUT

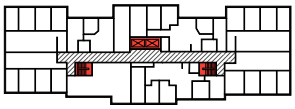
310

$4400 - $9200

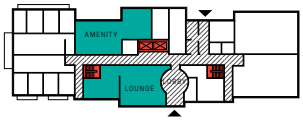




333 KING STREET N



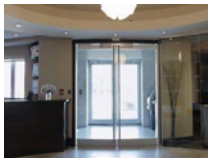
UPPER LEVEL LAYOUT

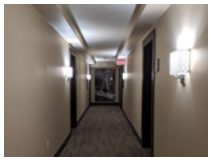


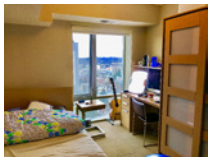
GF LAYOUT

536

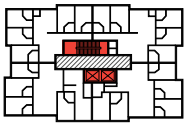
$4400 - $9200







339 KING STREET N

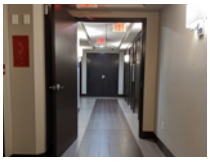


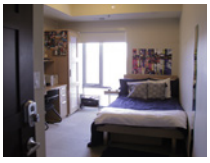
UPPER LEVEL LAYOUT

Horizontal Circulation
Vertical Circulation
Amenity/Social Space

419

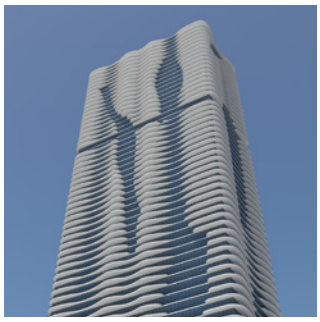
$2220





PRECEDENT PROJECTS

The following is a list of precedents, concepts, and existing architectural projects from around the world which were referenced in developing the guidelines for tackling loneliness. Many of these projects were mentioned in the readings and articles used to conduct the literature review for this thesis. There are some projects which were designed specifically to address issues surrounding loneliness, while the others still possess design features mentioned in readings and research materials but relate to loneliness less directly. The projects listed in the following pages contain a brief overview of their location, primary architect or designer, description of key features, as well as a graphic icon to indicate which design guideline(s) the project is most relevant to. This is intended to provide the reader with some context for each project and allows the reader to isolate projects that may be more focussed on a specific guideline of interest (and to prompt further investigation outside of this thesis, if the reader is so inclined). Typically, a design guideline will consolidate evidence from both literature as well as more concrete, real-world scenarios into a list of precedents that demonstrate the implementation of the design principles.

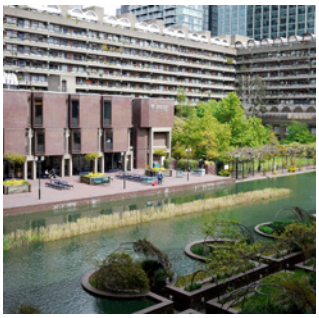


AQUA TOWER

Studio Gang
Location: Chicago

Key architectural features:
Balconies, Facade

Guideline Relevance:

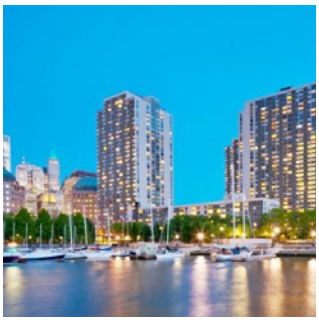


THE BARBICAN

Chamberlin, Powell and Bon
Location: London, UK

Key architectural features:
Community spaces, gardens, playgrounds, high-rise residences, “podium-block” typology, exercise spaces

Guideline Relevance:



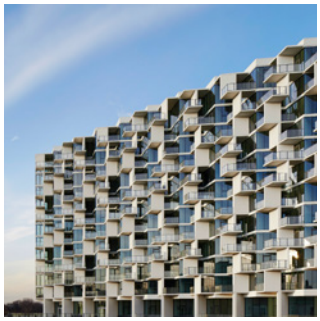
BATTERY PARK CITY

Wallace Harrison
Location: New York City

Key architectural features:
Access to nature, visual connection to green space

Guideline Relevance:

[Fig.45] List of precedent projects referenced to generate design guidelines



CITY HYDE PARK

Studio Gang
Location: Chicago

Key features:
Undulating balconies, student and faculty housing, shared amenities, outdoor gardens and fitness

Guideline Relevance:

CO-HOUSING

Often referenced as a living arrangement/typology that has the potential for reducing loneliness however, generally the scale of co-housing projects is much smaller compared the the occupancy in high-rise buildings.

Guideline Relevance:

CORRIDOR SOCIETY

Seray Ozdemir
Location: London, UK

Key features:
Corridor furniture, social spaces, materiality

Guideline Relevance:

TABLE SHARING

Key feature: Cultural practice of seating multiple separate parties at a single dining/ resturant table.

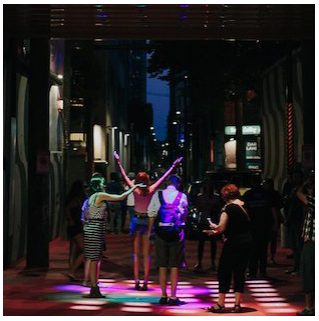
Guideline Relevance:

ALLEY OOP

HCMA Architecture
Location: Vancouver

Key features: Outdoor fitness and recreation, mood altering colours

Guideline Relevance:



ACKERY'S ALLEY

HCMA Architecture + Design
Location: Vancouver

Key features:
Laneway activation,lighting and sound to influence mood, public social space

Guideline Relevance:

THE MIRADOR

MVRDV
Location: Madrid, Spain

Key features:
Unique facade, micro-neighbourhoods, circulation that encourages socializing, community garden, amenities distributed on upper levels

Guideline Relevance:

LINKED HYBRID

Stephen Holl
Location: Beijing

Key features:
Skycourts, skygardens, skybridges, distributed amenity space

Guideline Relevance:

[Fig.46] List of precedent projects referenced to generate design guidelines

TRESTYKKER

NTNU Students
Location: Trondheim

Key architectural features: Moveable sleeping unit boxes

Guideline Relevance:

ROBIN HOOD GARDENS

Alison and Peter Smithson
Location: London, UK

Key architectural features: External scissors corridor

Guideline Relevance:

PARK MEWS APARTMENTS

Roger Walker
Location: New Zealand

Key architectural features: Facade, materiality

Guideline Relevance:

SKY HABITAT

Safdie Architects
Location: Singapore

Key architectural features: Skycourts, visually unique massing, terracing balconies, skybridges

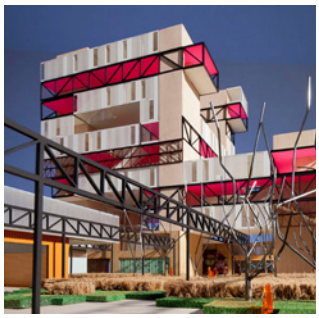
Guideline Relevance:

THE COLLECTIVE STRATFORD

PLP Architectures
Location: London, UK

Key features:Co-living typology geared towards younger generation, glazing reveals interior activities/ amenities

Guideline Relevance:



THE GARDEN IN THE MACHINE

Studio Gang
Location: Cicero, USA

Key features: Lattice steel trusses create network of community spaces and gardens, flexible live-work spaces

Guideline Relevance:

THE INTERLACE

OMA
Location: Singapore

Key features:Break in massing, micro-neighbourhoods, access to nature

Guideline Relevance:

TIETGEN DORMITORY

Lungaard & Tranberg Architects
Location: Copenhagen

Key features:Cylindrical floor plate orients units towards each other, visually interesting facade, natural materials, courtyard, shared amenities

Guideline Relevance:

CAT CAFE TRYST

Parallect Design
Location: Shanghai

Key features:
Use of natural materials, interaction with animals

Guideline Relevance:

STOOPS

"Stoop culture" is commonly part of a residential urban neighbourhood and the presence of stoops traditionally encouraged social interaction and building community within the same neighbourhood block. Stoops are the transition from the home to the city.
Guideline Relevance:

SOLAR CARVE TOWER

Studio Gang
Location: New York City

Key features:
Roof garden, distributed amenities, strategic massing, direct access to sunglight

Guideline Relevance:

SKY TERRACE

SCDA
Location: Shanghai

Key features: Multi-generational living, housing situated in a park. Roof gardens, and green sky terraces. Residential units can be connected to offer a variety of configurations like double storey units or a studio apartment

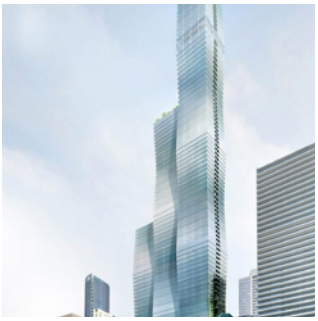
Guideline Relevance:

UNITE D'HABITATION

Le Corbusier
Location:Marseille, France

Key features: Uses colour to individualize entrances, walls and etc. Buliding provided communal services for all 4,000 occupants

Guideline Relevance:

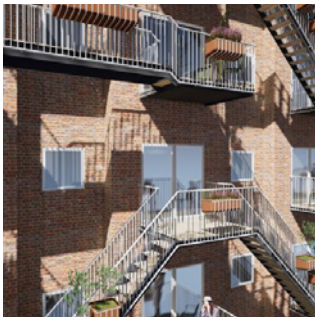


WANDA VISTA TOWER

Studio Gang
Location: Chicago

Key features: Facade creates the illusion of breaks in the massing of the tower, building based is integrated with public transit, parks, pedestrian connections

Guideline Relevance:



CONNECTED BALCONIES

Edwing van Capelleveen

Key features: Proposal to connect balconies from upper to lower levels of a building via stairs and bridges to encourage social interaction and reduce loneliness

Guideline Relevance:

KRESGE COLLEGE

Studio Gang
Location: California

Key features: Atypical crooked shapes, vibrant primary coloured stucco, L-shaped buildings integrated with landscape, designed to be used by students

Guideline Relevance:

PART C : DESIGN PRINCIPLES

GUIDELINE RATIONALE

CORE VALUES:

- SOCIAL INTERACTION
- PRIVACY/SOLITUDE
- IDENTITY + PERSONALIZATION
- MANAGING NEGATIVE FEELINGS
- HOME, NOT INSTITUTION
- COMMUNITY
- NATURE
- GROUP SIZE/OVERCROWDING

ILLUSTRATIONS OF APPLIED GUIDELINES

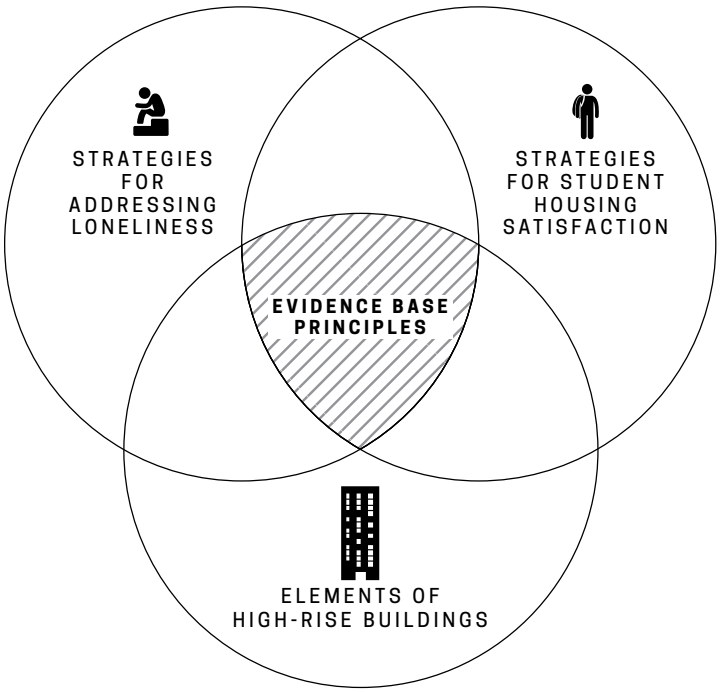
PHYSICAL GUIDELINE BOOK

GUIDELINE RATIONALE

The methodology for developing the following series of design suggestions uses evidence-based research, distilling information from various sources and presenting those ideas as a series of graphic diagrams. Through readings, studying existing architectural projects, and in-person site visits, the key findings are summarized into 8 core values that represent methods of reducing loneliness and strategies for student housing satisfaction:

- Social Interaction
- Privacy and Solitude
- Identity and Personalization
- Managing Negative Thoughts and Feelings
- Home not Institution
- Community
- Nature
- Group size and Overcrowding

A coding system further categorizes each design guideline based on 4 different criteria; the Dimensions of Loneliness, the Domains of Architectural Design, the Scale of Intervention, and the Evidence Key. These categories are represented using graphic symbols so that the user will be able to easily identify the nature of the design suggestion at



[Fig.47] Design Guideline Rationale Diagram

a glance. The coding system is a critical part of the design guidelines because it creates hierarchies within the presented information.

THE DIMENSIONS OF LONELINESS (see Fig. 48)

The Dimensions of Loneliness, as explained in the *Introduction* section of this thesis, are divided into *Personal Space, Relational Space and Collective Space*.[88] These dimensions take an abstract concept such as loneliness and correlates them with various scales of physical spaces. At the most intimate scale, *Personal Space* typically refers to private spaces, spaces shared only by confidants, spouses, and partners, or places where one is alone (usually within the dwelling unit). *Relational Space* refers to the scale that allows for interaction between friends and acquaintances (social gatherings, and impromptu encounters) and this scale of space is commonly found in semi-public spaces (corridors, meeting rooms, amenity spaces, and etc.). Finally, at the largest scale, *Collective Space* refers to how an individual is situated within the larger community, or the collective. This scale is most commonly used when thinking about public spaces, and strategies that involve building community.

THE DOMAINS OF ARCHITECTURAL DESIGN (see Fig. 48)

The Domains of Architectural Design are broken down into the following categories; *Aesthetic*, *Proximetric*, and *Programmatic*. *Aesthetic* qualities in design refer to the visual impact of spaces and are usually related to the use of colour, light, and shape/form. *Proximetric* qualities refer to the arrangement of spaces, the layout, and configuration of rooms in proximity to one another. When designing floor plans, the spatial planning and distance between various spaces can greatly impact the way spaces are occupied and how users will circulate through the building. *Programmatic* elements are focused on the types of activities that would take place in a space or how that space is intended to be used.

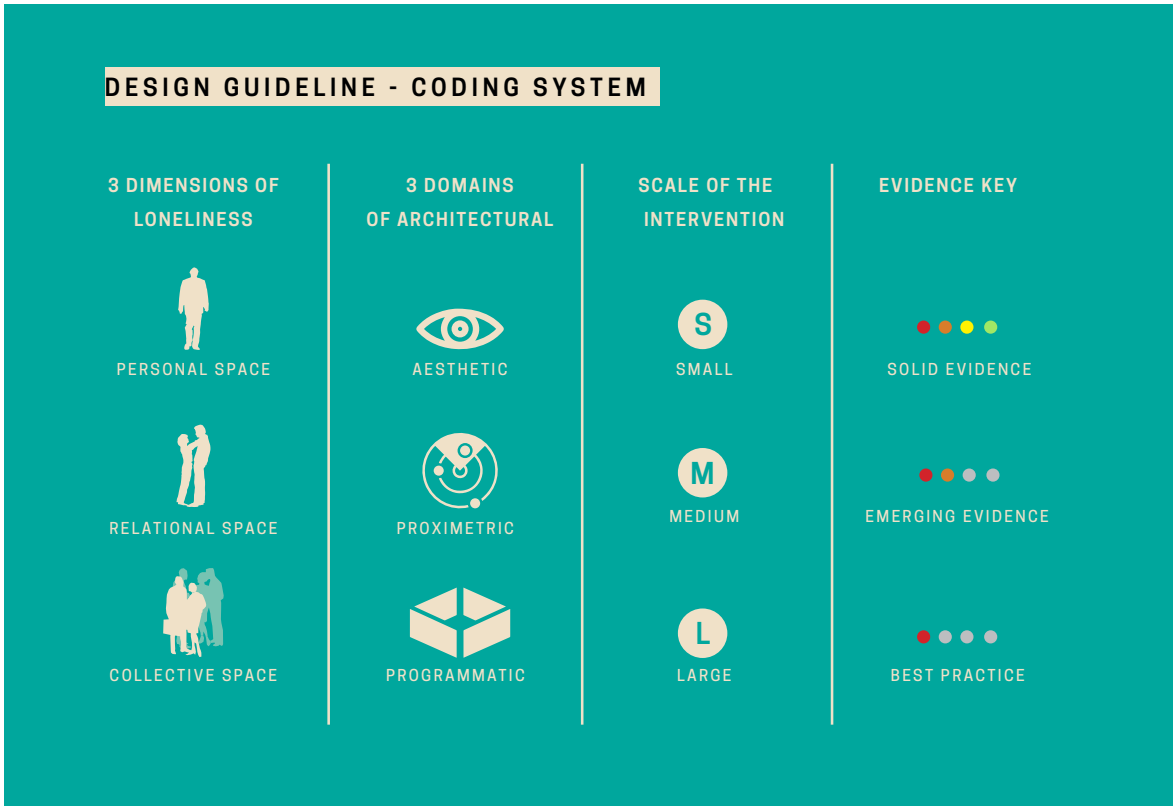
THE SCALE OF THE INTERVENTION (see Fig. 48)

Small elements do not impact the overall structure of the building and pertain to things like lighting, colour, furniture, and materiality. *Medium* suggestions have a moderate impact on the structure of the building and are related to the spatial configuration and strategic ordering of various programs and interior/exterior spaces. Finally, *Large* elements have a major impact on the structure of the building. Design principles identified at this scale should be considered at the early stages of the design process.

88 Cacioppo, Stephanie, Angela J. Grippo, Sarah London, Luc Goos- sens, and John T. Cacioppo. “Loneliness: Clinical Import and Interventions.” Perspectives on Psychological Science 10 (2) (2015), 239

EVIDENCE KEY (see Fig. 48)

The evidence key sorts design suggestions based on the amount of research that exists to back-up each principle. *Solid Evidence* means that there are either studies, books, or journals containing definitive proof to correlate the design principle with having an effect on reducing loneliness. *Emerging Evidence* means that there is emerging research which indicates that the design principle could lead to reducing loneliness, but it is not definitive. *Best Practices* are design suggestions that do not have a form evidence base such as extensive studies or research but are based on a general understanding of loneliness and student housing design.



[Fig.48] Coding system for design guidelines

Symbol emphasizes specific statements as a key spatial reccomendation

[Fig.49] Sample Layout of Design suggestion

CORE VALUES

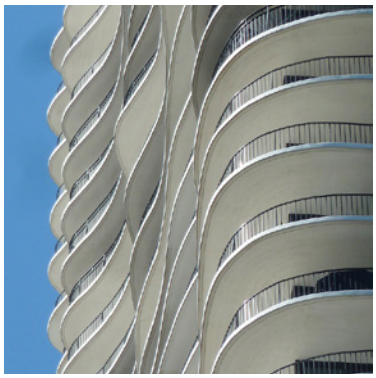
SOCIAL INTERACTION

Social interaction is a key component to reducing loneliness. One of the key components that contribute to loneliness is a lack of social connectivity and meaningful relationships. There are a number of ways that architecture can promote sociability in high-rise buildings whether it's the design of circulation spaces, balconies, amenity spaces and etc. The suggestions for improving social interaction in high-rise student residence buildings will be illustrated in the following diagrams.

BALCONIES

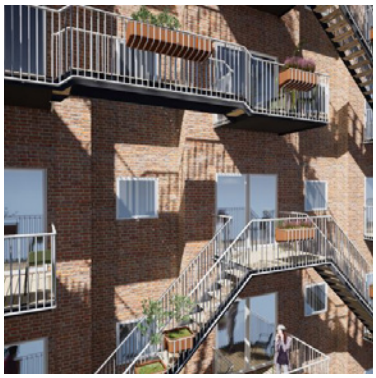
Balconies are not necessarily a required feature in student residence buildings, but they can be desirable for some building projects. The shape of balconies can be used to create opportunities for social interaction between residents living above or below each other in a high-rise tower. ***Exo-spatial design refers to the creation of socially vibrant spaces by extending the threshold of the interior to the outdoors.***[89] In other words, it is the urban interpretation of having a front porch or a backyard. As previously mentioned, those living on the 5th floor of a building or higher lose touch with the ground plane. The extension of floor plates and balconies to different depths can create the illusion of a vertical relationship.

89 Gang, Jeanne. "Three Points of the Residential High-Rise: Designing for Social Connectivity." Global Interchanges: Resurgence of the Skyscraper City. (2015), 79



Project Reference:
Aqua Tower,
Studio Gang Architects (Chicago)

Project Reference:
City Hyde Park,
Studio Gang Architects (Chicago)



Project Reference:
Social Balconies,
Edwing van Capelleveen (Proposal)

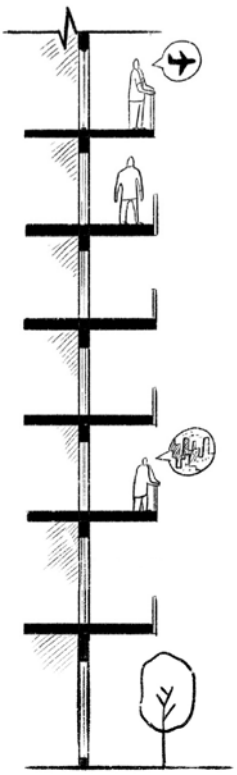
[Fig.50] Architectural projects utilizing balconies as social spaces

SOCIAL INTERACTION - BALCONIES

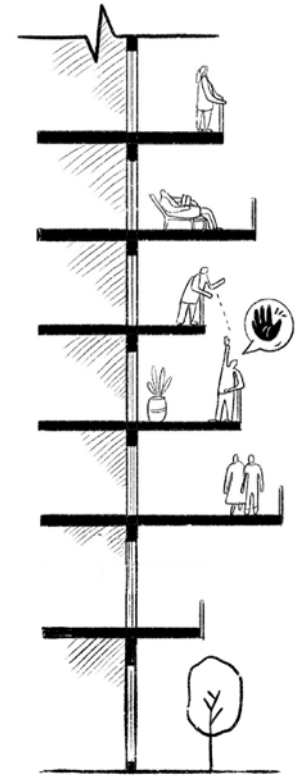
SECTION DIAGRAM

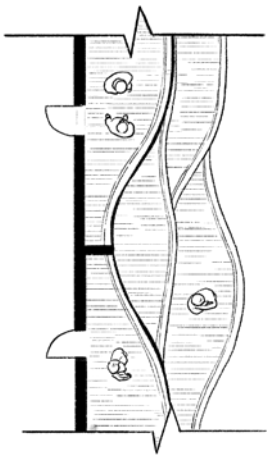
PLAN DIAGRAM

Generic Balcony
(Neufert, 155)

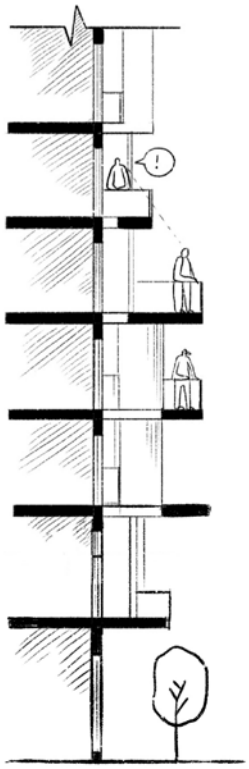


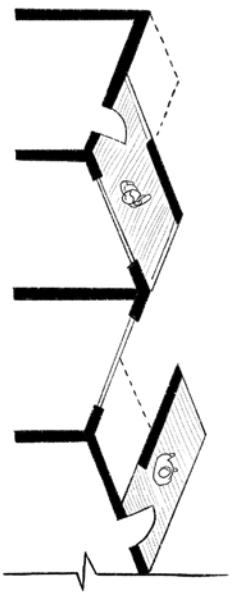
1 Undulating Balconies



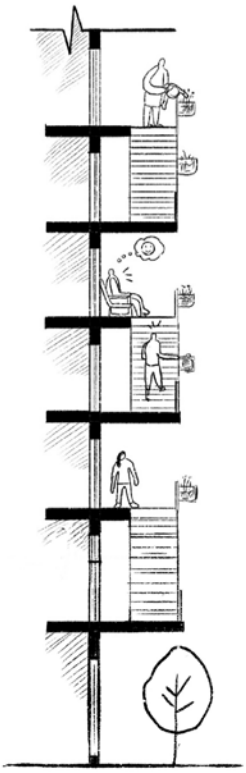


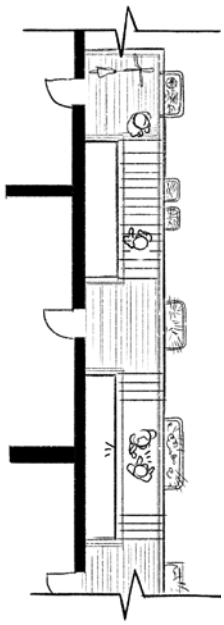
2 Slab Balconies





3 Connected Balconies





[Fig.51] Social Interaction - Balconies

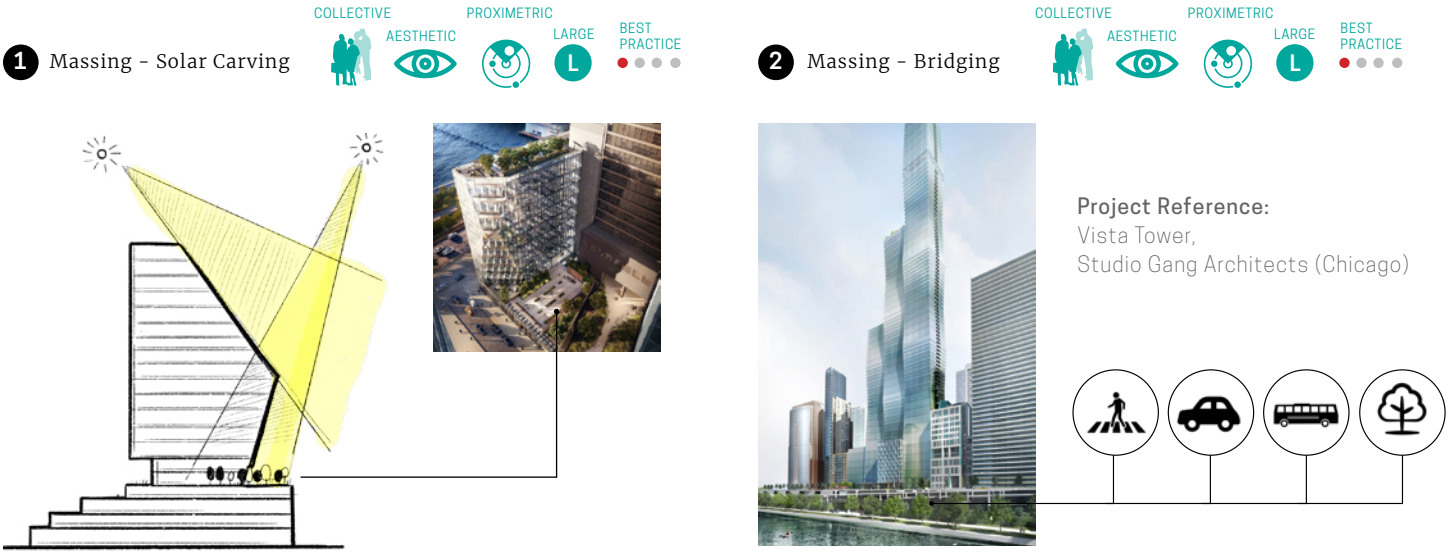
SOLAR CARVING AND BRIDGING

Light and shadow have an incredible influence on architectural spaces. Sunlight is already a key consideration in tall building design and policies have been set in place to minimize proposed developments shadowing on other existing buildings (i.e. typically in urban design guidelines). The following are two high-level massing strategies that can be used to facilitate social space.

- (1) Solar carving shapes buildings using angles created by the sun to maximize solar access and creates more socially vibrant spaces.[90] This technique activates gathering spaces, self-shading, and creates social spaces around the building while bringing in more light, air and views. The results of solar carving will vary by climate and site so it is important to get accurate sun diagrams when implementing this technique.

- (2) Bridging is used to create social connectivity through human scaled movement like walking and biking.[91] This usually involves a multi-level base which can connect to multiple street levels. For example, the Wanda Vista Tower in Chicago uses bridging to improve vehicular and pedestrian access and connects to nearby parks and community spaces.

90 Ibid, 81-82
91 Ibid, 83



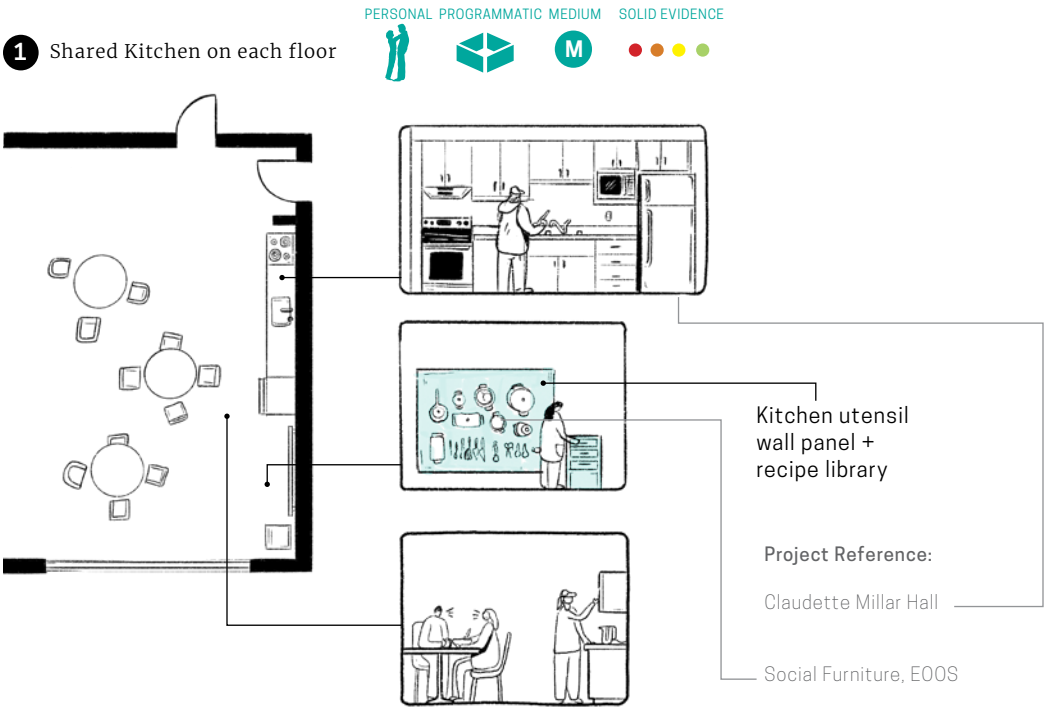
[Fig.52] Social Interaction - Solar Carving and Bridging

SHARED AMENITIES

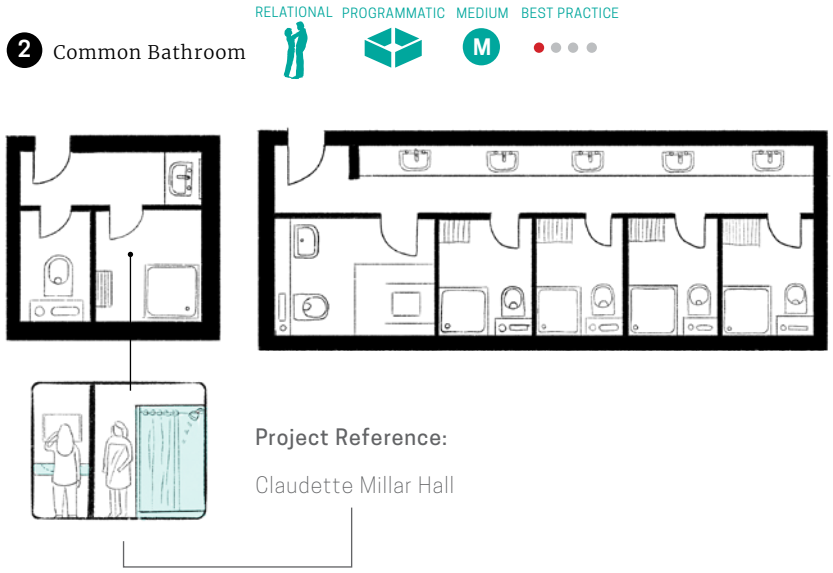
Another method of promoting social interaction within high-rise buildings is to increase the number of shared amenities. These are spaces that would typically be found in suite-style units like kitchens, and bathrooms. Claudette Millar Hall, which was analyzed in Part B of this thesis, is an example of a dorm style apartment which provides communal kitchens and bathrooms on each floor. This creates an environment where students can get to know one another by sharing common spaces outside of their private units. This is also a strategy used in co-housing projects where the dining spaces function as opportunities to share a meal with other residents.

- (1) There should be a shared kitchen on each floor of the residence building, or approximately 1 large communal kitchen per 50 students. The size and number of kitchens can vary depending on the size of the building floor plate

- (2) Common bathrooms on each floor are also recommended for dorm-style apartments and easily accessed off of main corridors. There should be 1 bathroom (which includes, sink, toilet, and shower) for every 3 students. The size and number of bathrooms can vary depending on size of the building floor plate



[Fig.53] Social Interaction - Shared Kitchen



[Fig.54] Social Interaction - Common Bathroom

CIRCULATION SPACES

Circulation spaces are not typically used for gathering or social interaction, but they have a high potential for encouraging sociability.[92] Circulation spaces are the key connectors between the ground and the residential unit and it is through circulation spaces (such as corridors, stairwells, and elevators), where one is most likely to come across other people living in the same building or even on the same floor.

(1) Provide wider corridors that allow for a few people to stop and converse without blocking the flow of traffic. Corridors can also be much wider in specific areas to create flexible gathering spaces. The corridors in Claudette Millar Hall are expanded in multiple areas on every floor to create pockets of spaces for gatherings and casual conversation. The expanded width and additional space make it more attractive for a passer-by to stop and spend time in a hallway on the way to their unit.

(2) Sky courts provide access to apartments via courtyards in the sky instead of narrow corridors. They can double as an amenity spaces for social interactions and provide landscaping elements. Sky courts have proven to minimize circulation space and maximize the saleable area of each apartment.[93]

92 Rios, Paty et al. "Designed to Engage". Happy City (2018), 27

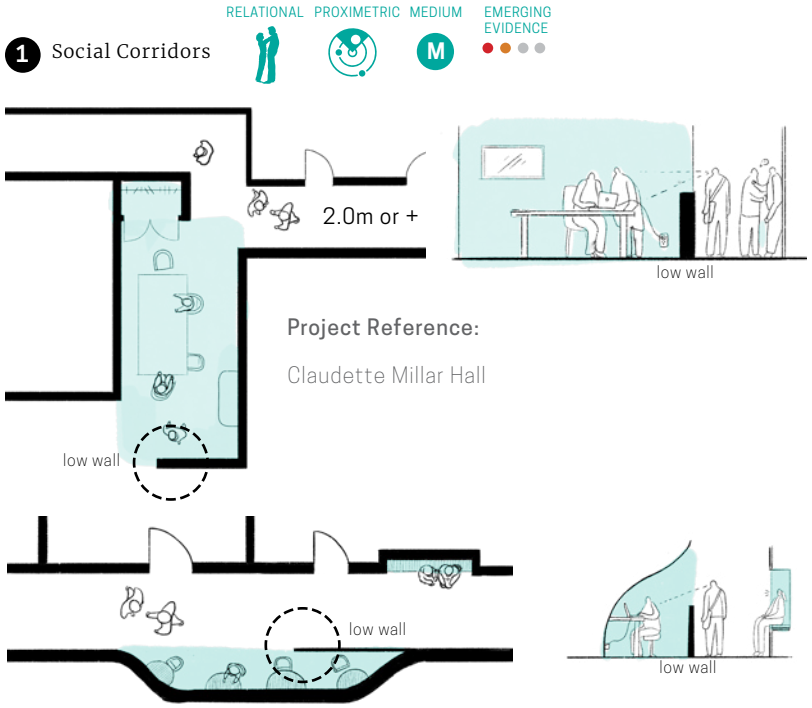
93 Ghazali et al."The Sky Neighbourhood Layout". (CTBUH Journal), 2014: 43, 44, 46

(3) Built-in corridor furniture can promote more people to hangout in hallways by providing more useable spaces. Corridor Society, is a series of four furniture pieces designed by Seray Ozdemir. The project was created with the intention of "claiming the archaic corridor as the pivotal social space of the shared domestic realm".[94] Ozdemir creates forms that occupy the walls, corners and tight spaces of corridors to create seating and usable spaces.

(4) "2 Door Syndrome" refers to instances where there are 2 or more doors separating a student from the shared amenities in the building. This is described by residence coordinators as something to be avoided and is most commonly found in suite-style apartments, where everything is contained within the unit.[95] This further strengthens the argument for shared amenities such as kitchens in student housing because it would reduce the number of barriers (or "doors") between the student's dorm room and the facilities within the building.

94 Ozdemir, Seray. "About the Project". Corridor Society. (2018) https://www.corridorsociety.com/the-project

95 Interview with University of Waterloo residence coordinator (2019)



[Fig.55] Suggestions for Social Corridors, illustrated diagrams

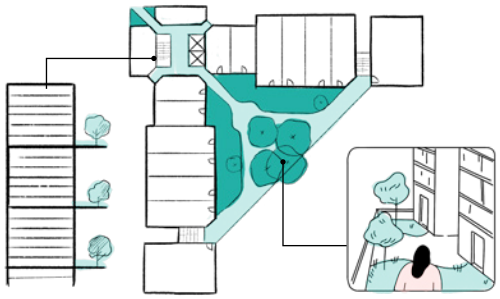
RELATIONAL PROXIMETRIC LARGE BEST PRACTICE

2 Sky Courts can Replace Corridors

Project Reference:

Woodlands Drive 4 (Singapore)

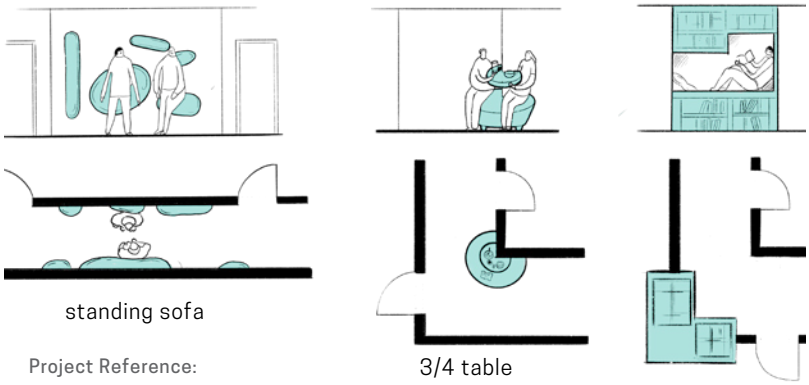
Robin Hoods Gardens (London)



[Fig.56] Social Interaction - Sky courts

RELATIONAL PROXIMETRIC MEDIUM EMERGING EVIDENCE

3 Corridor Furniture



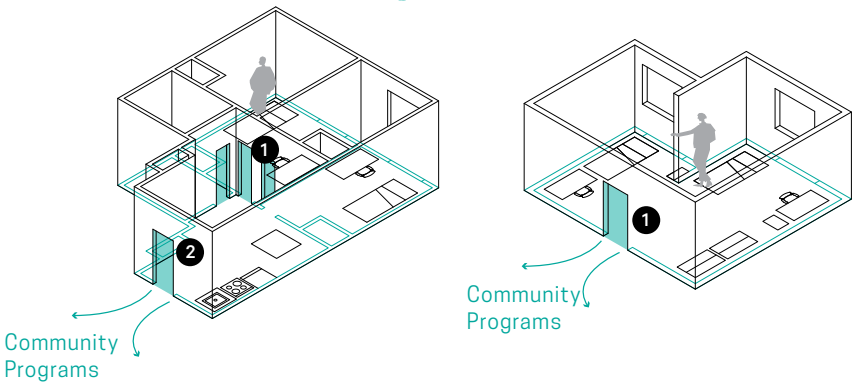
[Fig.57] Social Interaction - Corridor Furniture

Project Reference:

Corridor Society, Seray Ozdemir

RELATIONAL PROXIMETRIC MEDIUM BEST PRACTICE

4 Avoid 2-Door Syndrome



[Fig.58] Social Interaction - 2-Door Syndrome

PRIVACY + SOLITUDE

Not only is designing for social interaction important, but it is also crucial to provide a range in levels of privacy. Lonely individuals may not always be eager to interact with other people constantly so the lack of private spaces may cause one to become more reclusive. As we have learned from the first parts of this book, being in the presence of others does not necessarily mean they are not lonely, and one can feel content when they are alone as well. Therefore, providing spaces for quiet contemplation and reflection is just as important as designing opportunities for social interaction. In general, privacy and the ability for a resident to control their interaction with their neighbours are important factors that influence a residents' perception of liveability.[96] Privacy also provides individuals with the feeling of safety. Focusing solely on sociability may force those who are more introverted to feel overwhelmed and isolate themselves further.

(1) A combination of suite-style and traditional style rooms should be provided to accommodate those who don't mind sharing their living space with a roommate. Partitions and configuration within dorm-style rooms can also provide a sense of privacy. The traditional style dorm rooms at Claudette Millar Hall have an L-shaped configuration that provide each student with a degree of privacy by removing sightlines.

(2) Material selection should can also create a sense of privacy and solitude depending on the transparency of the material. Sound absorbing materials can also be utilized in spaces for meditation, prayer, music, and meetings, and productivity.

(3) Private meeting rooms and workspaces provide quiet places for students to be productive while also creating opportunities for collaboration.

(4) Floor material and colour can be used to differentiate between public and private spaces and visually communicates the way a space is meant to be occupied.[97]

(5) When laying out floor plans, provide private spaces with direct access to outdoor spaces through second entrances and loggias for activities like meditation and private contemplation.[98]

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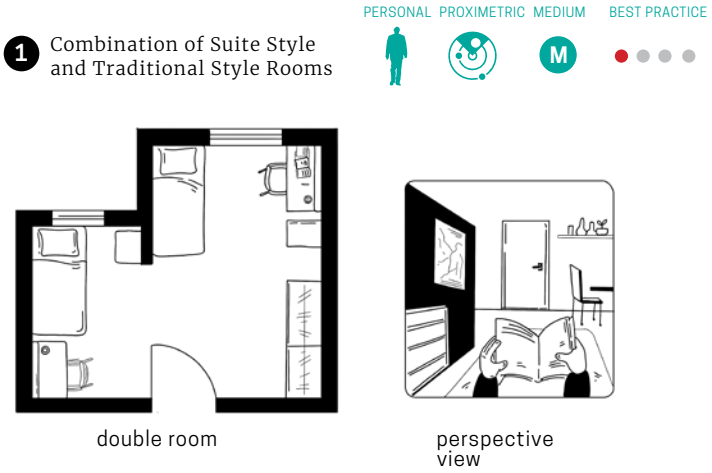
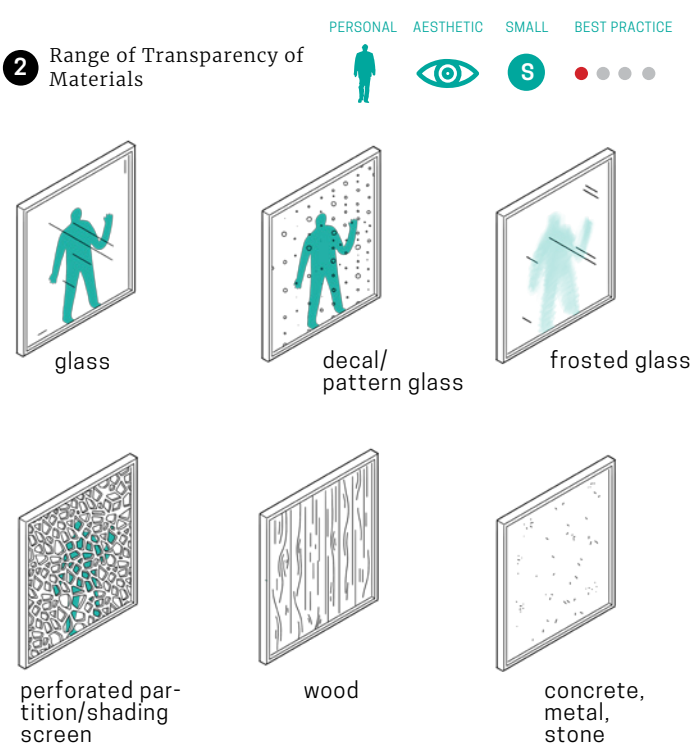
96 Kennedy, Rosemary, Laurie Buys, and Evonne Miller. "Residents' Experiences of Privacy and Comfort in Multi-Storey Apartment Dwellings in Subtropical Brisbane." Sustainability 7 (6). (2015), 7742

97 Sevinc, Kurt. "The Effects of Color on the moods of College Students" (2014), 11

98 City of Toronto. "Growing Up: Planning for Children in New Vertical Communities" (2017), 47



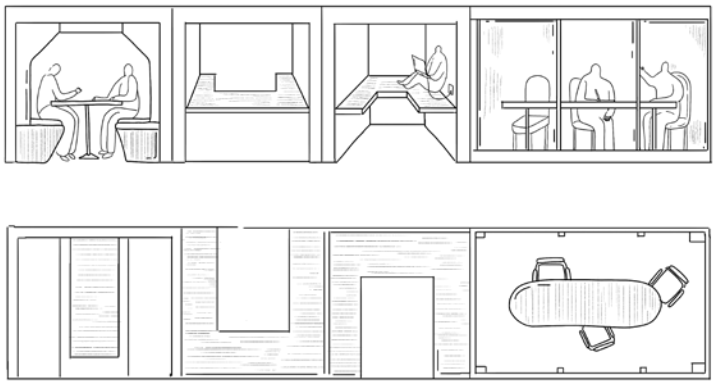
[Fig.59] Privacy + Solitude - Room Types



[Fig.60] Privacy + Solitude - Material Transparency

PERSONAL PROGRAMMATIC MEDIUM BEST PRACTICE

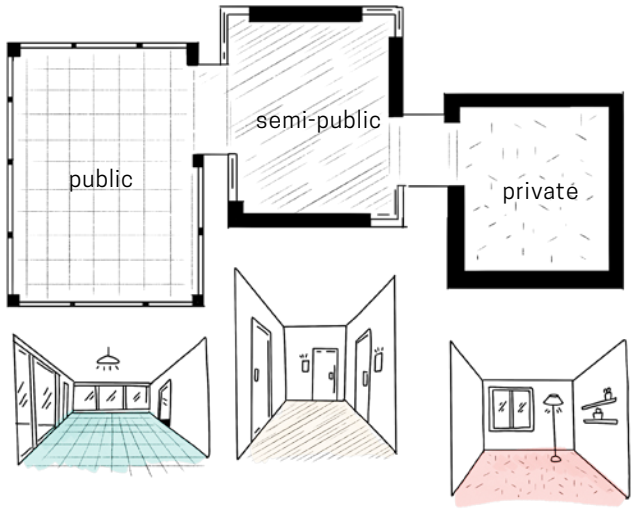
3 Enclosed Meeting Rooms and Productivity Spaces



[Fig.61] Privacy + Solitude - Meeting rooms and productivity spaces

PERSONAL AESTHETIC SMALL SOLID EVIDENCE

4 Floor Materials



[Fig.62] Privacy + Solitude - Floor materials

PERSONAL AESTHETIC SMALL BEST PRACTICE

5 Private Spaces Direct access to outdoor Spaces

block out city noises

thermal barrier

[Fig.63] Privacy + Solitude - Private Spaces

IDENTITY + PERSONALIZATION

Students entering university come from different cultures, parts of the world and socio-economic backgrounds. As a result, an architectural aspect that students found to be important in housing satisfaction is the possibility of identity building through personalization of spaces. In existing residence halls, students were observed adding small decorative elements to their doorways as well as inside their unit. This section expands on other ideas about customization of spaces and how design can allow for flexibility based on the users' needs and desires.

(1) Providing a flexible furniture layout will allow for students to manipulate spaces as they see fit. As previously discussed, hostile design using tactics like fixed furniture or uncomfortable seating generates a sense of permanence and non-negotiability that prevents people from engaging in social activities. Modular systems can be applied to furniture design that can be easily reconfigured. At Ryerson University's student Life Centre, an array of flexible furniture and seating options are available for students to sit closer together when co-working or placed further away to encourage individual working. Design firm, EOOS, created "Open Design Manual: Social Furniture", which is a catalog of furniture elements aimed at enhancing an environment for social interaction.[99]

(2) It is possible to rethink the format of a traditional dorm through personalize-able rooms and thresholds. The project known as TreStykker, is an architectural experiment conducted by a group of NTNU (Norwegian University of Science and Technology) students in 2005. The students created and lived in moveable sleeping boxes that could be customized into many configurations within an apartment unit. Based on the students' living experiences, they concluded that there are 3 major themes that are important to student housing satisfaction: the flexibility and changeability of the dwelling, the importance of social life and privacy, and that meaning is ascribed to a dwelling by its inhabitants.[100] The ability to personalize the dwelling is important design element because it matches the momentary independence and exploratory lifestyle of students.[101] Based on this principle, it could be desirable to imagine spaces such as the unit threshold, for example, as personalize-able or unique elements. Doorway frames could be constructed in various shapes so that students can distinguish their unit from one another.

99 EOOS. "Open Design Manual: Social Furniture". Koenig Books. London (2016), 2

100 Thomsen, Judith and Aksel Tjora. "Changeable Space as Temporary Home: A Qualitative Exploration of Life in an Experimental Student House". Nordic Journal of Architectural Research, Vol. 19 No.3 (2006), 13

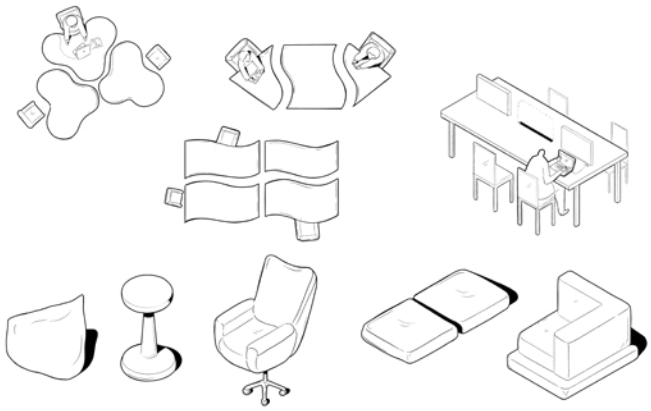
101 Ibid, 21

A less costly intervention could be using lighting systems to activate a student's doorway. Evidence of the desirability of personalize-able thresholds was observed on-site at the University of Waterloo campus housing buildings. Many of the doorways are decorated with a variety of different unique stickers, name tags, and artwork.

(3) Providing opportunities to exhibit personal belongings within the building also plays a role in allowing students to create a sense of place and a feeling of home. Illustrated in (3) are a few examples of such personal belongings.

PERSONAL PROXIMETRIC SMALL BEST PRACTICE

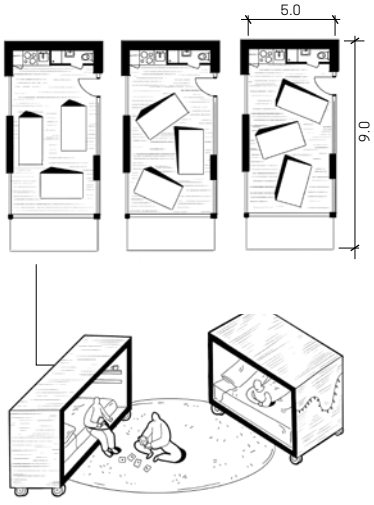
1 Flexible Furniture Layout



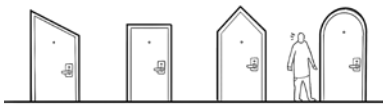
[Fig.64] Identity + Personalization - Flexible furniture

PERSONAL PROXIMETRIC SMALL BEST PRACTICE

2 Personalizable Room + Threshold



Project Reference: TreStykker Sleeping boxes



unique thresholds

personalization of threshold (light + colour)

[Fig.65] Identity + Personalization - Room and threshold

[Fig.66] Identity + Personalization - Spaces to exhibit personal belongings

[Fig.67] Ryerson University Student Life Centre

MANAGE NEGATIVE FEELINGS

In relation to being content when one is alone, the design of a physical environment can help reduce or manage negative feelings. While loneliness is difficult to eliminate completely, there are certain measures that can be taken to help manage emotions that weight us down. The suggestions in this section range from aesthetic principles like lighting and the psychological impacts of colour to more programmatic elements such as interacting with animals and promoting physical activity as a way to destress.

(1) The psychological properties and the effects of colour on the moods of individuals have been studied throughout the years. Specifically pertaining to college students, it was concluded that colours indeed have an effect on whether people feel "warm, cool, invited, relaxed or uninvited".[102] The study also emphasizes the importance of colour for architects and that the appropriate use of colour can significantly increase the functionality of spaces.[103]

An example of colour being used to activate physical spaces is Alley Oop in Vancouver. This was a laneway activation project which utilized yellow (which signals hunger and happiness), purple (which is calming and signals creativity) and pink (which feels nostalgic and reminds individuals of childhood).

The Claudette Millar Hall residence at the University of Waterloo uses different colour schemes for each level of the building. This design strategy breaks up the monotony of traditional residence buildings by creating a sense of uniqueness on each floor as well as a simple wayfinding tool.

(2) Lighting also has an impact on emotional and environmental cognition according to psychologists at the University of Michigan. The brightness, hue, saturation as well as the direction of lighting can impact the way people behave and feel in a space.[104]

(3) Interactions with animals have proven to positively impact mental health. Buildings can have spaces to facilitate real animal interaction (i.e. partnerships with local shelters and animal organizations to host student focused events) or simply providing views of natural landscapes, animals support

102 Sevinc, Kurt. "The Effects of Color on the moods of College Students" (2014), 11

103 Ibid.

104 TCP. "The Psychological Impacts of Light and Colour" (2017), 1-3

fascination and enhance recovery from mental fatigue.[105, 106, 107]

(4) Providing exercise programs or spaces for physical activity have been included the UK's strategic plan for tackling loneliness.[108] A study has also correlated shyness and loneliness amongst university students to lack or little exercise.[109] Therefore, providing spaces for either group or solo physical activity would be an effective way to combat loneliness amongst students. The concept of physical activity spaces is embodied in projects such as the 10 Cal Tower designed by Supermachine

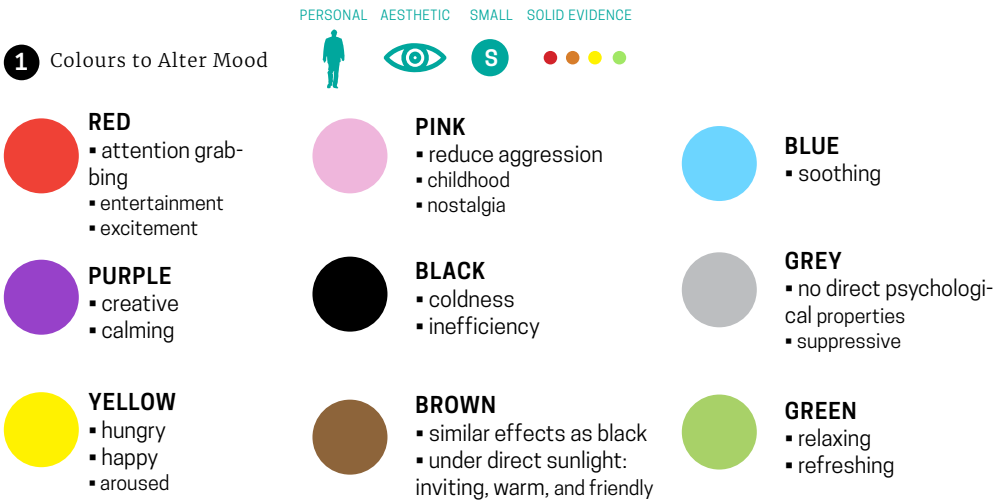
105 Evans, Gary W. "The Built Environment and Mental Health", (2003), 546

106 British Red Cross. "Isolation and Loneliness: An overview of the literature", (2016), 27

107 HM Government. "A Connected Society: A Strategy for Tackling Loneliness", (2018), 40

108 Ibid, 25

109 Page, R. M., & Hammermeister, J. "Shyness and Loneliness: Relationship to the Exercise Frequency of College Students". (1995) Psychological Reports, 76(2), 395–398.



Alley Oop, Vancouver

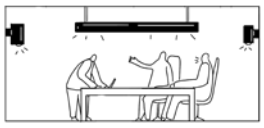
Claudette Millar Hall

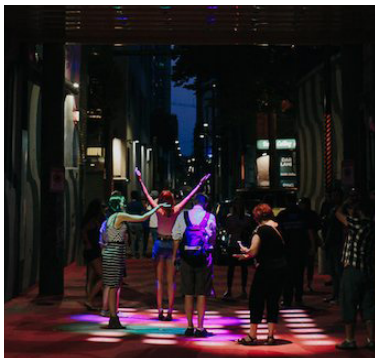
[Fig.68] Mood altering colours

2 Lighting to impact mood

PERSONAL AESTHETIC SMALL EMERGING EVIDENCE

LIGHTING TONE

RELAXED		WARM	relaxed : low overhead lighting awith some ligthing with some ligthing at room perimeter, warm colour tones
WORK/ VISUAL CLARITY		COOL	work/visual clarity: bright light on work plane, less light at permiter, wall lighting and cooler colour tones
SPACIOUS-NESS		WARM OR COOL	spaciousness: bright light with lighting on walls and ppossibly ceiling
PRIVACY/ INTIMACY		WARM	privacy/intimacy: low light at activity level with a little per-miter lighting and dark areas in rest of space



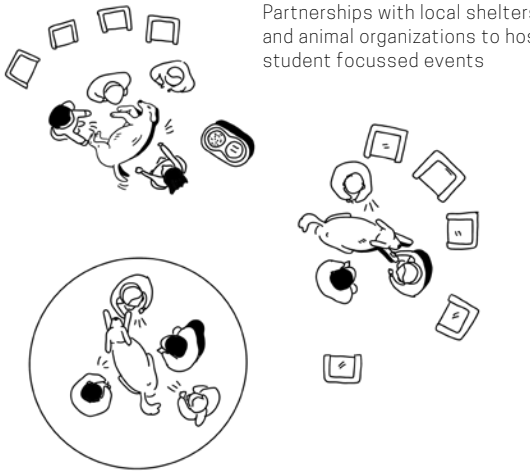
Project Reference:
Ackery's Alley, Vancouver

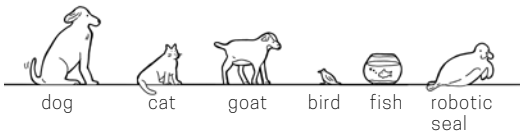
[Fig.69] Mood altering lighting

3 Animal Therapy

PERSONAL PROXIMETRIC SMALL SOLID EVIDENCE

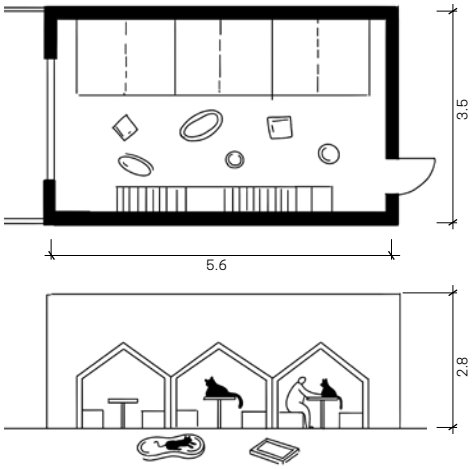
Partnerships with local shelters and animal organizations to host student focussed events





Animals studied for therapeutic benefits through interaction

Cat Cafe TRYST, Parallect Design



[Fig.70] Animal therapy spaces

4 Exercises spaces to destress

PERSONAL PROGRAMMATIC MEDIUM EMERGING EVIDENCE

[Fig.71] Spaces for exercise and fitness

Studio. The project is a series of meandering staircases which offers various routes for a user to explore, providing a series of lookout points. The project was also designed to burn about 10 calories from bottom to top, encouraging users to climb it for exercise purposes as well.

HOME, NOT INSTITUTION

It is important to create the sense of home in student residence halls as opposed to the feeling of living in an institution. Student have expressed an affinity for architectural elements that are not linked to an institutional character (which can be associated with being cold and unfamiliar). Instead architectural elements should evoke a home-like character as this is more emotionally comforting for students and increases their sense of belonging.

(1) Architects should avoid monolithic blocks and the extensive use of the same material and shapes repeated on the building's façade as this can have a symbolic and emotional impact on the observer.[110,111] While this is a common characteristic seen not only in student residence buildings, but high-rise buildings in general, the lack of visual interest and repetitiveness can negatively impact tenants.[112]

(2) Along the same lines as the recommendation previously mentioned, the additional of atypical elements on the façade can be used to evoke interest. The Park Mews multi-unit development designed by Roger Walker in 1973 was designed to go against the "uniformity and anonymity" of typical multi-unit housing projects.[113] The building is easily recognizable by the unexpected forms such as the "glass pyramid roofs, porthole windows, finials, criss-cross bracing and cantilevered, glazed nooks".[114]

(3) The thoughtful design of a façade at the ground floor can create an active frontage that encourages social interaction. An observational study conducted in Copenhagen found that pedestrian traffic was slower along interesting

110 Gifford, Robert. "Environmental Psychology: Principles and Practice, 3rd edition". Optimal Books. Victoria, Canada (2002)

111 Nasar, J.L. "Symbolic meanings of house styles". Environment and Behavior, Vol. 21, No. 3 (1989), 235-257

112 Jacobs, Jane. "The Death and Life of Great American Cities" (1961), 244

113 Hawkes, Colleen. "Architect, Roger Walker's controversial 1973 Mews Project Wins NZIA Award". (2018) https://www.stuff.co.nz/life-style/homed/latest/103582083/architect-roger-walkers-controversial-1973-mews-project-wins-nzia-award

114 El-Shorbagy, Abdel-moniem. "Roger Walker: A Disneyland Architect". (2010) https://knoji.com/article/roger-walker-a-disneyland-architect/

sections of a façade and that more people stopped to turn their heads towards this type of active façade.[115] A façade with visible internal uses was also found to be effective [116] therefore, strategies such as integrating more glazing at the ground floor can be implemented. This was observed when documenting and comparing Eby/Beck Hall to the Claudette Millar Hall at the University of Waterloo. Eby and Beck Hall had a few punched windows at the ground level whereas CMH had more glazed surfaces to create a visual connection with the social spaces on the interior.

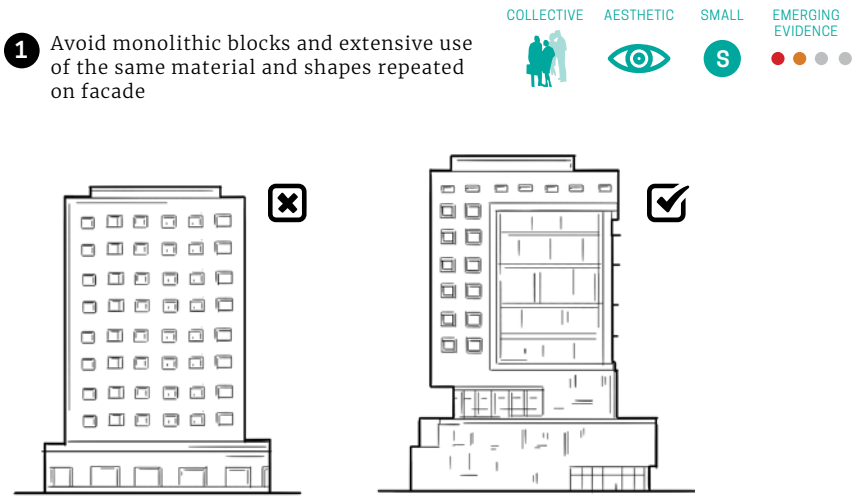
(4) University and college students live relatively transient lifestyles and do not necessarily live in the same place throughout their entirety of their studies. Tis leads to students often moving to various apartments or residence halls and living amongst new people frequently. When considering the type of tenancy in a building, the designer could propose to allow for a certain percentage of permanent tenants. Repeated encounters with neighbours boost the likelihood of creating relationships with your neighbours in the same building. The simple act of seeing a familiar face can also cause one to feel more embedded within their community and provides and sense of stability and consistency.

(5) While this will vary based on the taste and cultural background of an individual, generally, the use of natural looking materials such as wood for example is associated with a more home-like character.[117] The interior spaces at Claudette Millar Hall used wood in various locations for both decorative elements as well as wall finishes and furniture.

115 Heffernan, E., Heffernan, T. & Pan, W. "The relationship between quality of active frontages and public perception of public spaces". Urban Design International, 19 (1). (2014), 92-102.

116 Ibid

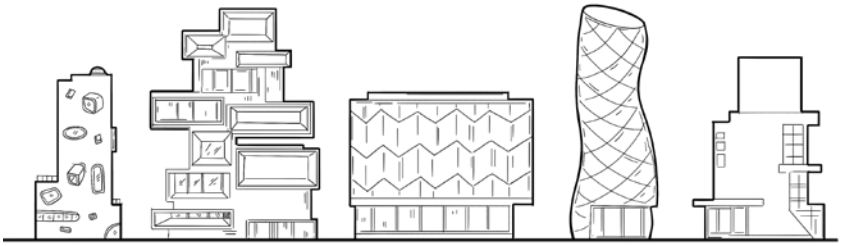
117 Richter, P.G. "Architekturpsychologie. Eine Einfuhrung". Pabst Science Publishers, Lengerich (2004)



[Fig.72] Monolithic facade diagram

2 Adding atypical elements on facade to evoke interest

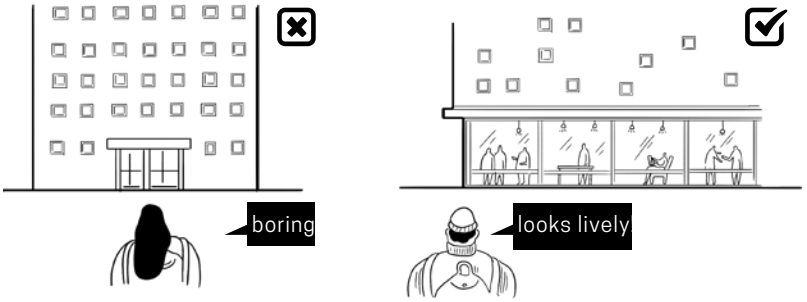
COLLECTIVE AESTHETIC SMALL EMERGING EVIDENCE



[Fig.73] Atypical facade elements

3 Large amounts of glass reveal inhabitants activites and not associated with residence building

COLLECTIVE AESTHETIC SMALL EMERGING EVIDENCE



[Fig.74] Glazing to reveal interior activities

4 Permanent Tenancy

COLLECTIVE PROGRAMMATIC SMALL EMERGING EVIDENCE

5 Use natural materials

COLLECTIVE AESTHETIC SMALL EMERGING EVIDENCE

[Fig.75] Examples of natural materials in buildings

COMMUNITY

Building community is usually referenced in the context of a neighbourhood setting but enhancing the sense of community within a high-rise building can be crucial for decreasing loneliness amongst residents. Establishing trust and reciprocity between neighbours living in the same residence hall contributes to increased social capital and living satisfaction. Students living in high-rises experience "lower involvement, support, order and organization" but higher levels of independence.[118] The suggestions included for this design principle are primarily programmatic and feature activities that cater to university students. Creating environments that promote collaboration between individuals refers back to the social nature of human beings as a species that works collectively to ensure survival.

(1) A method of enhancing the sense of community within in a building could involve implementing technological solutions with architectural spaces to bring people together. For example, providing a furniture recycling space where students can display and trade furniture they no longer need or have space for.

(2) Residents living in housing with access to gardens have a significantly greater sense of community and a greater sense of belonging.[119] Gardening is considered to be a spiritual activity that is particularly beneficial for those who feel isolated, lonely and depressed.[120] A study found that community gardens "play an important role for enhancing community and social life", and provided a place for "friendship and generosity, cultural connection, and understanding".[121] A common problem that densely populated communities face is the lack or spare land and finding places to add garden plots. For future building projects, it is important to keep the space requirements for a community garden in mind and to ensure that the space meets the required criteria for the particular city (i.e. adequate hours of sunlight, proper water resources, no disruption of underground pipes, and etc.).

(3) Based on interviews with student residence coordinators at the University of Waterloo, a list of the most engaging types of activities students tend to participate in was generated. This could help to inform the types of programmed spaces that an architect can choose to design for. The corresponding diagrams show each program in plan view and the space it occupies in a consistent room size.

118 Gifford, Robert. "The Consequences of Living in High-Rise Buildings." Architectural Science Review 50 (2007), p. 10

119 Gifford, Robert. "The Consequences of Living in High-Rise Buildings." Architectural Science Review 50 (2007), 10

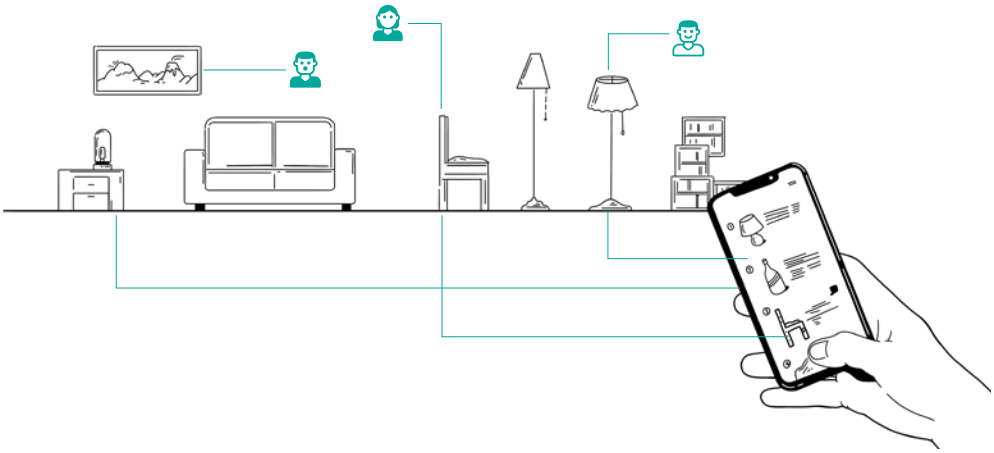
120 Bartolomei, L., Corkery, L., Judd, B. and Thompson, S. "A bountiful harvest: Community gardens and neighbourhood renewal in Waterloo". UNSW and NSW Department of Housing. Sydney (2003), 56

121 Ibid.

1 Furniture Recycling Program

COLLECTIVE PROGRAMMATIC MEDIUM BEST PRACTICE

M

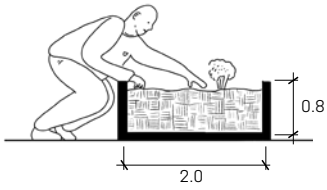


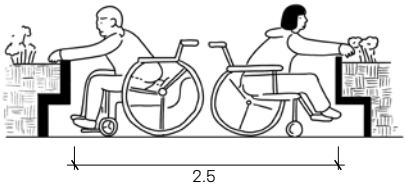
[Fig.77] Using technology to facilitate collaboration

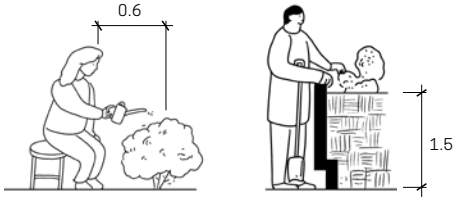
2 Community Gardens

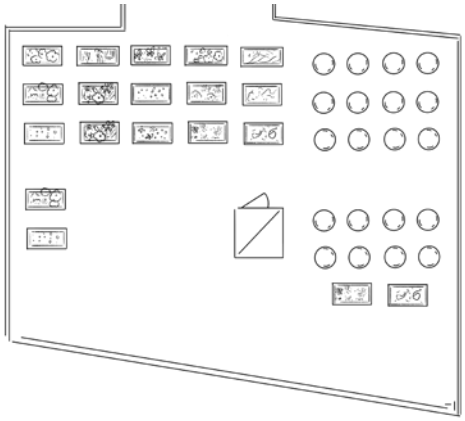
COLLECTIVE PROGRAMMATIC MEDIUM BEST PRACTICE

M









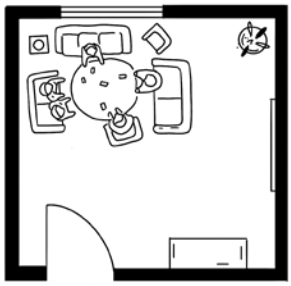
Project Reference: Mohawk College Community Garden)

[Fig.76] Community garden diagrams

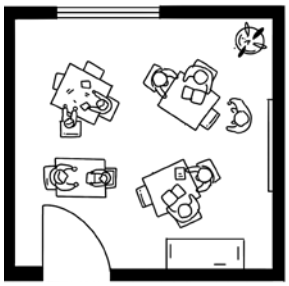
3 Other typical activities

COLLECTIVE PROGRAMMATIC MEDIUM BEST PRACTICE

Tutoring/Mentorship Program

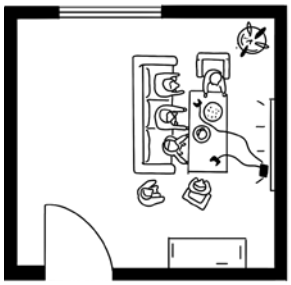


Tutoring/Mentorship Program



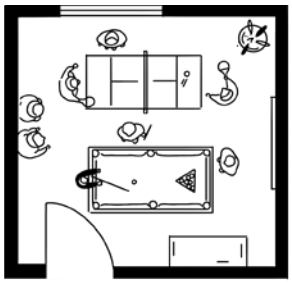
Art Therapy

Netflix + Video Games



Potlucks

Pool and Ping Pong



[Fig.78] Popular activities for university students, in plan

NATURE

The crippling effects of modern life not only cause mental and emotional fatigue but also contribute to the increase in loneliness. However, configuring the built environment to provide access to nature and natural settings has restorative benefits.[122] The use of landscaping and green spaces (both real and artificial) is an important part of building design because it contributes to happier and healthier people.

(1) Provide outdoor spaces with greenspace such as roof terraces, on balconies, or landscaped areas at grade. Other suggestions in previous sections of this thesis included community gardens and sky courts.

(2) For interior spaces, strategies that involve access to both real and artificial nature can be implemented. For example, green walls, interior plants, or even just images of natural settings in the form of photographs or artwork.

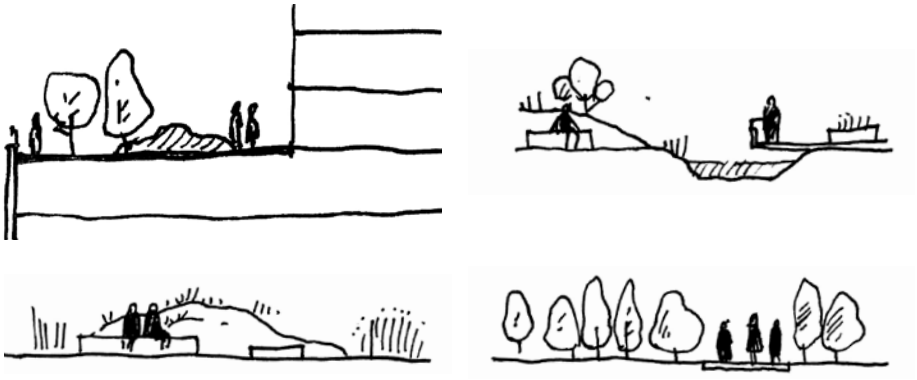
(3) Locate windows to prioritize views to nature and greenspace while also maximizing natural daylight. The primary social spaces on each floor at Claudette Millar Hall have large windows across the length the exterior wall which looks directly onto the fields of trees and open spaces on campus.

122 Sullivan & Chang, "Mental Health and the Built Environment" in Making Healthy Places (Island Press, 2011), 110

1 Outdoor spaces with green space

COLLECTIVE PROGRAMMATIC MEDIUM BEST PRACTICE

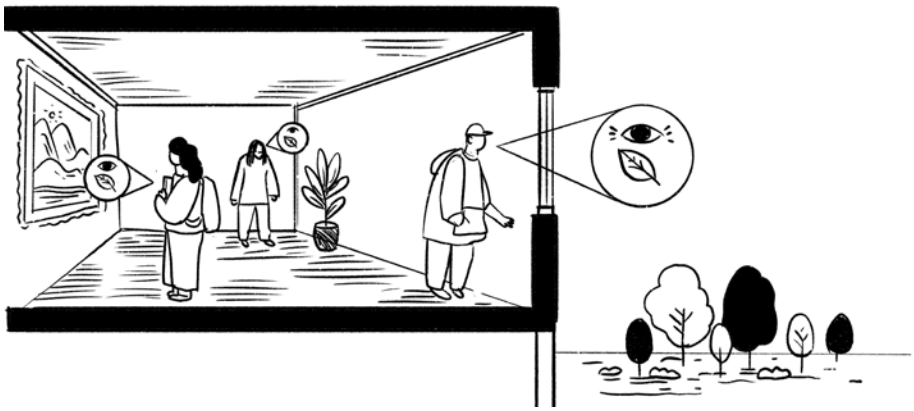
(For more see: Community Gardens)



[Fig.79] Outdoor spaces and green spaces

2 Direct Views to Nature/green space

COLLECTIVE PROXIMETRIC SMALL BEST PRACTICE

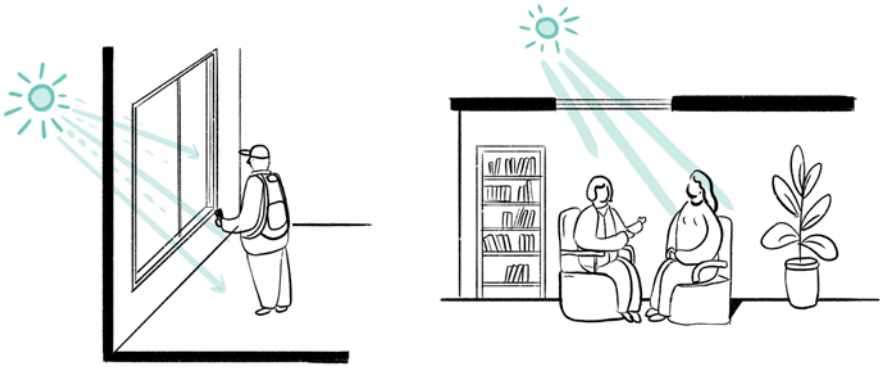


[Fig.80] Views to nature and green space diagram

3 Maximize Natural Daylight

COLLECTIVE AESTHETIC SMALL BEST PRACTICE

(For more see: Solar Carving)



[Fig.81] Natural daylight strategies diagram

GROUP SIZE + OVERCROWDING

Overcrowding can create a sense of anonymity which may lead one to feel insignificant and alone. Studies have also shown that crowding is associated with psychological distress amongst college students.[123] Therefore, it is important to be conscious of group sizes and to avoid overcrowding when designing spaces.

(1) Create a break in the building massing every five floors. For people living above the 5th floor of a building, the visual connection with the ground is lost and the likelihood of interacting with other residents in the building is further diminished.[124, 125] By creating breaks in massing through shifting and staggering floor plates, this creates opportunities for terracing and creating the illusion of a "ground plane".

(2) The concept of creating a series of micro-neighbourhoods within a high-rise building would provide a sense of scale similar to more traditional housing typologies (i.e. low-rise and mid-rise buildings). An optimal grouping of housing units is about a 12 to 15-unit grouping[126, 127] with a shared space for each micro-neighbourhood. This is an important consideration to keep in mind as this could impact the floor plan of a building if, for example, one was to limit each floor of the building to 12-15 units and so on.

(3) Shared spaces of some kind should be distributed on each floor of the building as opposed to clustered only on the ground level. Reducing the distance between a residential unit to a shared amenity space allows for easy accessibility to students. This was observed at Claudette Millar Hall where there was a centrally located kitchen and lounge space as well as smaller study rooms and even gathering spaces within the corridors on each floor. This hierarchy and distribution of shared spaces was not present at Beck and Eby Hall, where the only communal space was located on the ground floor and none on the upper levels.

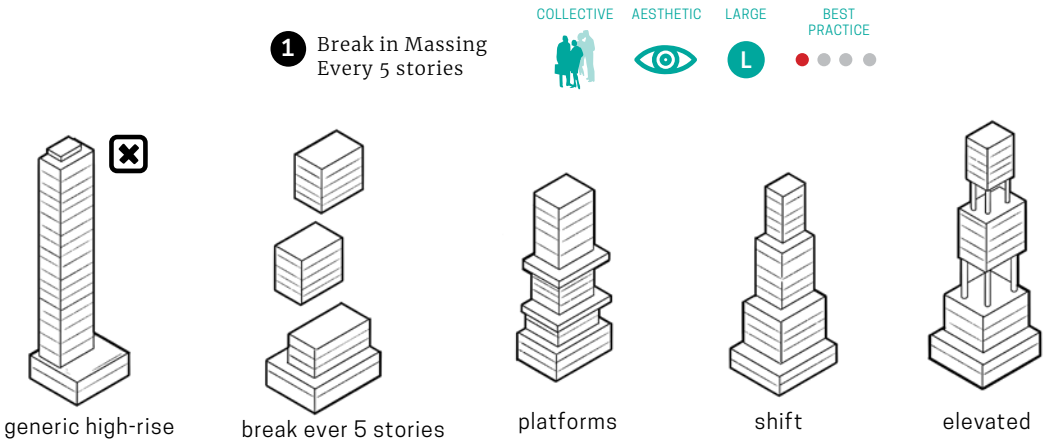
123 Evans, Gary W. "The Built Environment and Mental Health", (2003), 540

124 Verhaeghe, P., Coenen, A. & Van de Putte, B. "Is Living in a High-Rise Building Bad for Your Self-Rated Health?". Journal of Urban Health Vol. 93, No. 5 (2016), 885

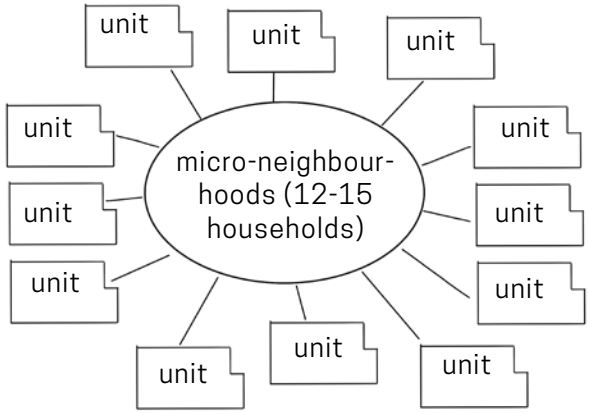
125 Gehl, Jan. "Life Between Buildings: Using Public Space". Island Press, Washington, D.C, (1996)

126 Birch, David L., Eric S. Brown, Richard P. Coleman, Dolores W. DaLomba, William L. Parsons, Linda C. Sharpe, and Sheryll A. Weber. The Behavioral Foundations of Neighborhood Change. Washington, DC: U.S. Government Printing Office. Vol. 363, 1979.

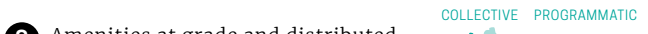
127 Lee, Xu. Analysis of Neighborhood Relationships in High-rise Living Environment. New Architecture. 1987

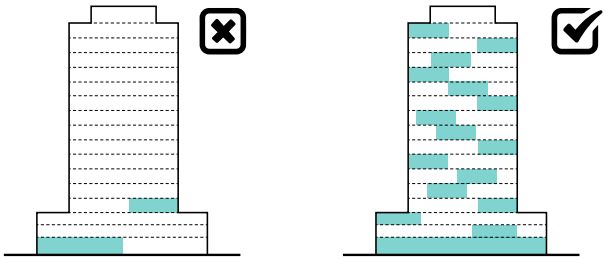


[Fig.82] Massing strategies diagram



[Fig.83] Micro-neighbourhood diagram





[Fig.84] Amenity distribution

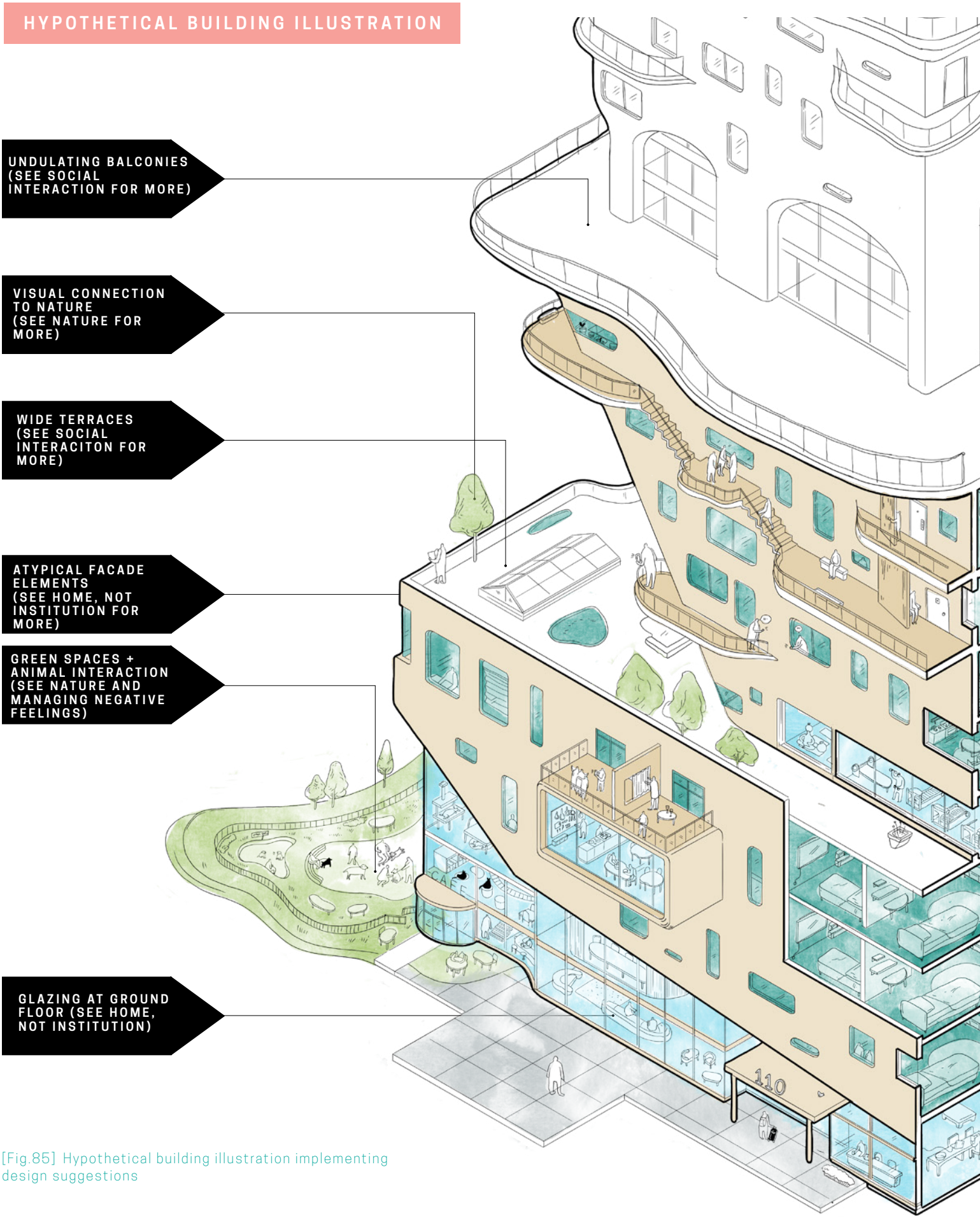
ILLUSTRATION OF APPLIED GUIDELINES

In order to further visualize the concepts presented in the previous sections, an illustration of a hypothetical high-rise building was created. While each design recommendation was initially presented in isolation, the following illustration is a consolidates and summarizes the guidelines in a single image. As there is no proposed site or fully realized building design included in this thesis, the visualization of the building is still conceptual and open to many interpretations. Similar to other design guideline documents that were referenced in researching this thesis, design guidelines are intended to inspire and propose a series of ideas as opposed to offering optimal solutions for site-specific design.

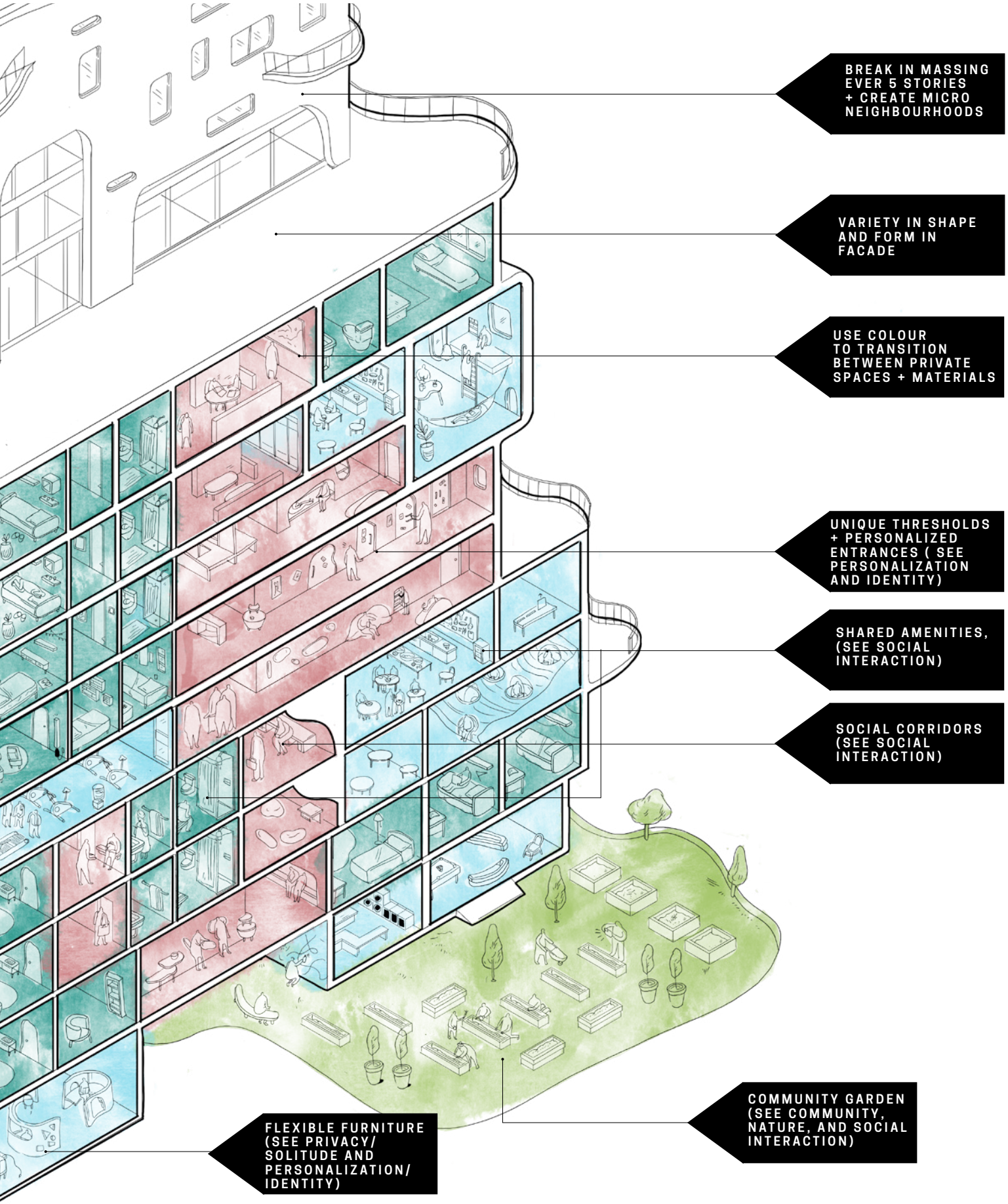
PHYSICAL GUIDELINE BOOK

The primary objective of this thesis was to write, design, and format a physical book on methods to tackle urban loneliness using the research that has been presented thus far. The use of graphics and illustrations were used to communicate architectural analysis and these specific design choices contributed to the usability of the book as a realistic tool for design. The formatting of a physical book is an exercise in design itself because it takes into account the usability of this document and how the user would navigate through it.

HYPOTHETICAL BUILDING ILLUSTRATION



[Fig.85] Hypothetical building illustration implementing design suggestions


BREAK IN MASSING EVER 5 STORIES + CREATE MICRO NEIGHBOURHOODS
VARIETY IN SHAPE AND FORM IN FACADE
USE COLOUR TO TRANSITION BETWEEN PRIVATE SPACES + MATERIALS
UNIQUE THRESHOLDS + PERSONALIZED ENTRANCES (SEE PERSONALIZATION AND IDENTITY)
SHARED AMENITIES, (SEE SOCIAL INTERACTION)
SOCIAL CORRIDORS (SEE SOCIAL INTERACTION)
COMMUNITY GARDEN (SEE COMMUNITY, NATURE, AND SOCIAL INTERACTION)
FLEXIBLE FURNITURE (SEE PRIVACY/ SOLITUDE AND PERSONALIZATION/ IDENTITY)

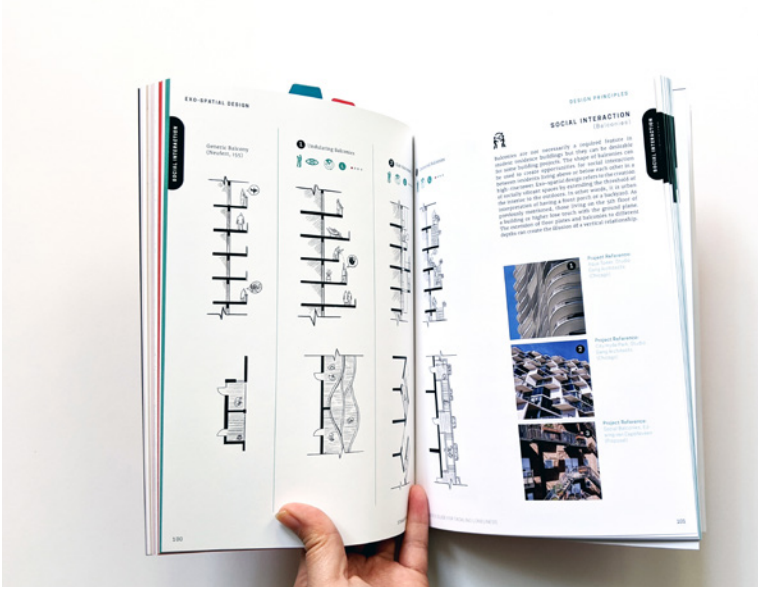
[Fig.86] Images of design recommendation book

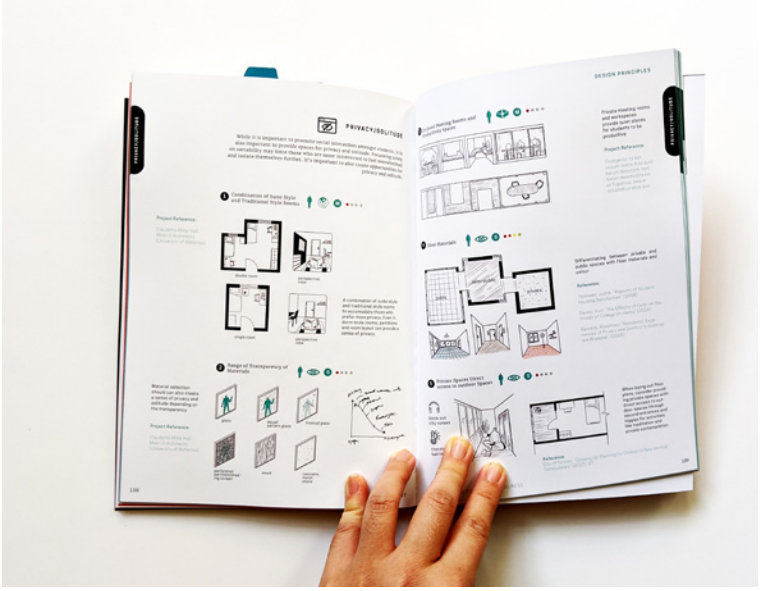

DIMENSIONS OF LONELINESS
3 DIMENSIONS OF LONELINESS
DIFFERENT COMPARTMENTS OF


THE SOLO DWELLER


BUILDING AUDIT
INTERSECTION @ COLUMBIA ST AND KING ST (GO TO PAGE 74)
STUDENT DORMS @ UW PLACE (GO TO PAGE 73)


SPATIAL ANALYSIS
CLAUDETTE MILLAR HALL
FLOOR PLANS
CORRIDOR
AMENITY SPACES


SOCIAL INTERACTION


PRIVACY/SOLITUDE

CONCLUSION

FEEDBACK AND NEXT STEPS

CONCLUSION

It is important to mention that while a number of these design concepts and recommendations already exist in the field of architecture, the consolidation of strategies to design for urban loneliness has a high potential for impact in addressing a population level problem. This research and format of the design guideline as a physical product aims to create tools for future architectural projects to emerge that can help mitigate the effects of urban loneliness amongst university students. This type of research can benefit institutions such as the University of Waterloo in developing better and more thoughtful architecture in the years to come that would enhance the liveability of spaces and could improve the mental health of occupants. Overall, the creation of illustrative and informative graphics using evidence-based research has been successful at communicating interventions can be applied to building projects at various stages of designs and scales.

Another important component of this thesis was the development of data that did not already exist. The University of Waterloo did not previously have a dataset that looked specifically at mapping high-rise buildings around campus that offered student accommodations. The case studies presented in previous sections looking at the quality of spaces at UW Place, how they perform, and how they are occupied also generated architectural analysis that did not exist previously.

This body of work acts as both a tool for design as well as a data resource for policy makers, institutions, land developers, and designers to better improve the health of our cities and urban communities.

FEEDBACK AND NEXT STEPS

The initial draft of the design guideline book was presented to a residence director that the University of Waterloo to gauge the effectiveness and desirability of this project as a tool for design. Overall, the feedback provided was positive and it was expressed that this research would be incredibly valuable in the future as a new masterplan will be developed for the University of Waterloo in the coming years. The subject matter is hugely relevant to problems currently being faced by the student population. It was also expressed that this project could be presented to the university and used to educate faculty as well as consultants when new housing projects are proposed. The overall comments on the design book was that it is comprehensive and should be included in an ongoing conversation

with the school on how to develop and create new spaces for students and the community.

With that said, there are a number of next steps and improvements that can be made to push the boundaries of this thesis further. The first one could be to consider the use of technology in each of these design suggestions and how technology could be integrated with the architecture of high-rise buildings. Secondly, the university is looking towards the retrofit of existing residence buildings as it is a more cost-effective approach to addressing buildings that are underperforming as opposed to new builds. The development of a set of design strategies that looks specifically at working within the limitations of retrofitting would be impactful. As discussed in the research, buildings such as Eby Hall and Beck Hall are considered by many students to be undesirable and were originally constructed for married students which does not necessarily reflect the needs of its current occupants. Another consideration is to expand on the illustrated applications of the design guidelines. As opposed to the single image which shows a single snapshot a hypothetical building, a next step would be to create additional vignettes and more detailed visualizations of what these spaces might look like. Based on the feedback provided, the final guideline book will be delivered to residence coordinators at the University of Waterloo for future discussion and to present some of the key findings from this thesis. Given the growing demand for student housing in Waterloo in the years to come, the quality of residence building design should be focussed on how it promotes sociability. Finally, additional testing could include presenting the design guidelines to students and to get their feedback on which of the guidelines would be the most impactful and desirable from their perspective. Testing these guidelines with students through some sort of co-design session or interactive activity would further identify which interventions would be the most impactful for future investigations and research.

As the number of high-rises in densely populated cities increases, so do issues surrounding urban loneliness making it more difficult to create meaningful social connections. Urban loneliness is recognized as a concern to public health affecting not only university students but people in all stages of life. Policy makers and designers can work towards solutions or strategies for mitigating its effects. The value in designing for sociability in high-rises has the potential to impact the happiness and well-being of its users. The guidelines presented in this thesis serve this purpose by providing basic principles from which many possible architectural projects can emerge.

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