Nourished by Design: Public Architecture as Social Infrastructure

by

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Abstract

This thesis reimagines the role of public buildings in urban society arguing that their contemporary value comes not only from providing public services but also from being accessible places for socialization in the public realm. Drawing on the work of sociologist Eric Klinenberg, the thesis proposes a framework for designing public buildings as ‘Social Infrastructure’ using the principles of flexible programming, diversity in social spaces and porous thresholds. The illustrative design proposal is the Food Stop, a community food centre in downtown Vancouver that brings together and nourishes diverse social groups. The large adaptive reuse project articulates the principles of social infrastructure using seven design strategies to bring daylight into the building, organize complex adaptable programmes and connect people and food throughout the building. These strategies are: extending the street, bringing in light, zoning programmes, clustering programmes, ‘growing circulation,’ nesting spaces and inhabiting the fifth facade.

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Chapter 1: Introduction

My interest in the role of public buildings in urban life developed from growing up as a homeschooled child and then teenager who used the public library as a classroom, place of recreation and space of emotional retreat. The local library provided accessible, programmatically supportive and socially connected public space. At the library, I had the experience of collectively doing something individual and thus feeling part of a community. I have since recognized that public libraries are unique in the quality and accessibility of public space they provide, and North American urban society is otherwise lacking in this type of space. By relating these experiences and observations to the concepts of sociologist Eric Klinenberg, this thesis proposes that, when designed following principles of social infrastructure, public buildings can provide the spaces and amenities foundational to building inclusive, connected and resilient urban communities (Klinenberg 2018).

Contextualizing Social Infrastructure Deficiencies

This work begins by relating Klinenberg's theory of 'Social Infrastructure' (SI) to urban public spaces in the case study city of Vancouver, British Columbia. In doing so, it develops a framework for evaluating urban social infrastructure networks. The resulting analysis shows that while definitions of publicness and public space are becoming more inclusive, public social spaces often lack inclusive and accessible design in cities like Vancouver.

Public Buildings as Social Infrastructure

Next, the thesis relates qualities of public libraries, identified by Klinenberg as embodying the concept of social infrastructure, to the architectural features of inclusive contemporary public building design such as visual transparency, physical accessibility and democratic programming. This analysis suggests that contemporary public buildings designed to operate as social infrastructure can have a larger urban impact by extending the public realm and creating links to one another through common design principles and programme, thus, creating amplified networks of social spaces and programmes.

Design Principles of Social Infrastructure

The work expands on the design observations made in the previous section by cross-referencing Klinenberg's theory behind social infrastructure with a set of case studies of contemporary public buildings that operate as SI. The result is a set of design principles - flexible programming, diversity in social spaces and porous thresholds - to generate public architecture as social infrastructure.

Project Foundations: Programme, Siting and Context

The focus of the thesis shifts in chapter five to lay the foundations for the project. It describes the social, health and equity impact opportunities of a public building that uses food as a social infrastructure programme in downtown Vancouver. The chapter then turns to site analysis, considering factors such as access, inclusivity and social impact to select a location for the social infrastructure proposal.

Project Design

The design proposal is the Food Stop, a community food centre in the south-east end of downtown Vancouver. This large adaptive reuse project is described using a series of design strategies that bring daylight into the building, articulate complex adaptable programmes and nourish people and plants throughout the building. These strategies are: extending the street, bringing in light, zoning programmes, clustering programmes, ‘growing circulation,’ nesting spaces and inhabiting the fifth facade.

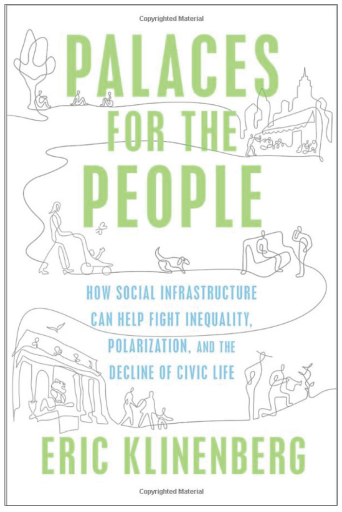
Conclusion

The thesis concludes in three parts. First, it emphasizes the value and opportunities of measuring and evaluating social infrastructure networks in other cities. Then it recognizes contemporary architecture firms such as Adjaye and Associates, OMA and Diller, Scofidio and Renfro that are currently designing public buildings within the same value-system as Klinenberg’s work on social infrastructure. Finally, it invites citizens, cities and architects to recognize the essential role of public building design in expressing and shaping contemporary social values.

Chapter 2: Urban Social Infrastructure

This chapter defines the concept of social infrastructure, describes its forms in the urban context in terms of their inclusivity and evaluates the networks of social infrastructure in the case study city of downtown Vancouver. It becomes clear from this investigation that while downtown Vancouver has abundant social infrastructure, it is not widely accessible due to economic and seasonal barriers. These issues make Vancouver a useful context for analysis, because they highlight the opportunity of public space and public buildings to provide needed accessible social infrastructure.

Defining Social Infrastructure



Palaces for the People: How Social Infrastructure Can Help Fight Inequality, Polarization, and the Decline of Civic Life by Eric Klinenberg, 2018 (Russel 2019)

"Social Infrastructure" (SI) is a concept developed by sociologist Eric Klinenberg (2018) in his recent book *Palaces for the People: How Social Infrastructure Can Help Fight Inequality, Polarization, and the Decline of Civic Life* to describe the phenomenon that makes certain urban places, such as public libraries, effective catalysts for social cohesion and community uplift. Klinenberg's conception of social infrastructure refers to the social opportunity afforded by certain spatial networks and differs from other theoretical applications, used by authors such as AbdouMaliq Simone, that refer solely to inter-personal relationship networks (Simone 2004). Indeed, Klinenberg precisely defines social infrastructure as "the physical places and organizations that shape the way people interact" (5). SI provides the spaces, programmes and facilities for people to "engage in sustained recurrent interaction, particularly while doing things they enjoy," which, for Klinenberg, is the formula for

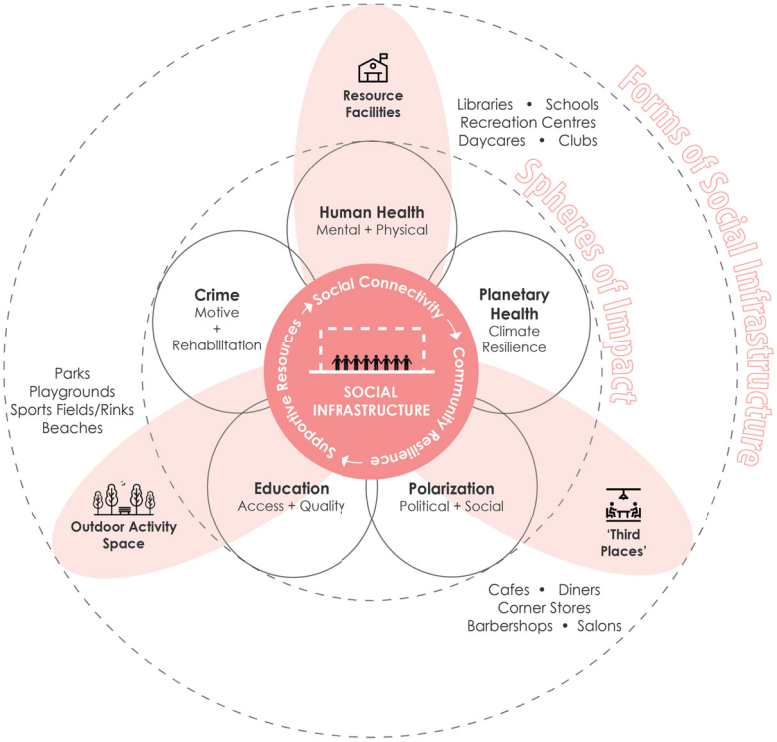


Diagram summarizing the definition, common types and spheres of impact of social infrastructure.

building both personal and community social capital (5). The kinds of places that Klinenberg identifies as having the potential to operate as social infrastructure vary widely. They include public buildings and institutions with social programmes such as libraries, recreation centres and schools; public spaces where people can gather such as sidewalks plazas and parks; and ‘third spaces,’ which are defined by Ray Oldenburg (1996) in his book *The Great Good Place: Cafés, Coffee Shops, Bookstores, Bars, Hair Salons, and Other Hangouts at the Heart of a Community* and consist of the types of places listed in the book’s title (Klinenberg 2018, 16).

The abundance or lack of SI in communities has significant multifaceted implications for their members. Klinenberg explains that a lack of SI weakens social capital causing

communities to suffer from “social disconnection,” which is linked to increased rates of crime, social isolation and substance abuse (6). These community illnesses in turn lead to the rise of a range of physical and mental health issues as people suffer abuse and feel unsafe participating in public life (Klinenberg 2018, 6). Klinenberg demonstrates this phenomenon through detailed case studies of SI interventions in at-risk communities throughout his book. An example that illustrates the interconnectivity of social illnesses is the case of an empty lot remediation study in Philadelphia that ran from 1999 to 2008. The project used modest interventions to convert empty lots into recreational green space in high-crime neighbourhoods. The small parks drew people outside and into public spaces they otherwise avoided, creating an ‘eyes-on-the-street’ effect like that described by Jane Jacobs (Klinenberg 2018, 75). The result was that community crime went down significantly - between 5 and 40% depending on the type of crime - and both mental and physical health improved as neighbours felt safer, spent more time outside their houses and formed relationships with one another at the parks (Klinenberg 2018, 69). This example highlights the holistic impact of social infrastructure interventions which may be designed to address one social illness but can indirectly create a social network that contributes to healing other related issues.

Social Infrastructure Inequity

While the concept of social infrastructure is broad, encompassing everything from private clubs to school playgrounds and public libraries, both Klinenberg and this thesis focus on the importance of widely accessible public social infrastructure. It is this type of SI that serves the social groups that are often unwelcome in, or lack the means to

access, privately owned SI and are therefore more likely to suffer from the negative health and safety impacts of social disconnection. Evaluating access to social infrastructure depends on determining whether it is privately accessed, as through paid memberships and community boundaries, or open to use by the full spectrum of the public. Distinguishing between public and private social infrastructure requires brief consideration of the complex distinction between these two social spheres.

Public and Private Space

There is no single definition of public or private space. John Parkinson (2009) attempts to survey many existing definitions in his article “Holistic Democracy and Physical Public Space” published in the compilation *Rites of Way: The Politics and Poetics of Public Space*. Parkinson suggests that definitions of public and private both deal with a few key interrelated concepts. The first of these is freely accessible places, or, spaces that don’t have ‘controllers’ limiting their access or use (73). This would include many parks, plazas, streets and sidewalks which can be accessed and used freely and, in theory, are only controlled as needed for basic safety and maintenance purposes. The second concept relates to collective (versus individual) resources, which are those that benefit everyone such as public transit, roads, electricity and other public services (73). Parkinson further suggests that the concept of publicness relates to monetary ownership and therefore things that are paid for by governments via taxes, thus, being property of the taxpaying public (73). Parkinson applies these ideas to public space explaining that there are “three major ways in which physical space can be “public”: openly accessible space; space of common concert (by common resources or having common

effects); and space used for the performance of public roles" (75). Following this logic around public spaces, private spaces can be defined as those having limited access; are reserved for interaction within closed groups; and support the performance of roles of the individual or group.

Exclusion in Public Space

Complicating the distinction between public and private space is the fact that the group of people defined as 'the public' has been defined differently throughout history. Therefore, services provided by governments or leaders for 'public' use cannot historically be assumed to have served all or even most members of society. Indeed, the word 'public' is derived from the Roman 'publicus' which referred to the state and the community associated with it (typically the 'citizen class'), which often consisted of a select group of land-owning men with the right to vote (Hipp 2010, 3). In contemporary Canada, the definition of who is a part of the public and should receive access to public services is continually growing. Throughout the 20th and into the 21st centuries, historically marginalized social groups have fought to participate fully in public life - such as women, people of colour and Indigenous Peoples and LGBTQ+ people.

In public space and public building design, some contemporary architects use the term 'democratic architecture' to describe an architecture of inclusivity that serves the broadest possible definition of publicness. This is a relatively new development as many places and spaces we think of as public today were historically privatized. Indeed, prior to the 19th century most institutional buildings such as hospitals, town halls, courthouses, schools etc. were considered private property of the monarch, church,

township or other governing entity (Ottenheym 2010, VII, X). It is only since the 19th century that architectural historians, inspired by Nikolaus Pevsner's categorization of 'The Public Buildings' in his 1976 book *A History of Building Types*, have referred to these institutions as 'public' allowing architects and society to interrogate issues of exclusion in the definition publicness (Ottenheym 2010, X).

Given the complexities of distinguishing public space from private space and defining who is included in each of these designations, it is not surprising that not all public social infrastructure serves all members of society. These limitations can be better understood by mapping and evaluating urban social infrastructure in cities.

A Social Infrastructure Case Study: Vancouver

Vancouver, specifically its downtown peninsula, is an ideal site for the analysis and design of public social infrastructure because it combines intense and highly visible economic inequality, a reputation for social disconnection and progressive urban planning policies that have prioritized outdoor public leisure space (Punter 2003, xxv; Kassam 2017; Keillor 2019). All of these features pose challenges and opportunities for conceiving accessible and inclusive social infrastructure networks.

Vancouver Seawall, 2016; photograph by Stirl and Rae (*Canadian Running* 2016)

Dunsmuir Street Bike Route (Krueger 2010)

Mapping Social Infrastructure

Measuring and evaluating urban social infrastructure is a daunting task because, as we have seen, it is a broad concept that encompasses social spaces from coffee shops to soccer fields. This thesis, however, is most concerned with social infrastructure that is accessible and inclusive to those most in need of it. Therefore, this study excludes

Jim Deva Plaza on Davie Street, 2018; photograph by Alison Boulier (Reardon 2019)

French Quarter Parklet, E 21st Ave at Main Street (Corey 2014)

Creekside Park Downtown (Earthscape Play 2017)

English Bay Beach Amenities (Shutterstock 2020)

private businesses and commercial spaces. This leaves public space and public buildings/facilities as the primary components of Vancouver's *public* social infrastructure network.

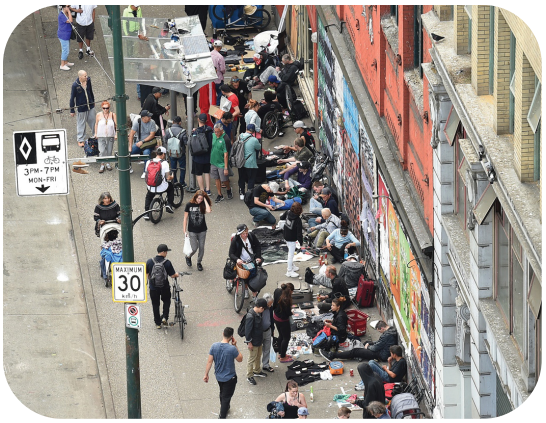
Gehl Studio, founded by influential Danish urban planner Jan Gehl, completed a comprehensive study called "Public Space & Public Life" for the City of Vancouver in 2018. This study is an excellent basis for analyzing social infrastructure on the city's downtown peninsula. The group mapped and evaluated many kinds of public space from parks to pedestrian streets using direct observation and public consultation. The resulting maps, analyzed alongside maps of publicly accessible institutional buildings, provide a framework to evaluate the quantity and quality of downtown Vancouver's public social infrastructure.

Evaluating Social Infrastructure

The maps show that most public social infrastructure in the downtown area is outdoors, reflecting Vancouver's outdoor recreation culture. The urban seawall, bike paths, parks and gardens are well-used on dry days but underused on rainy ones. This is a significant issue when one considers that it rains in Vancouver around 160 days per year (Vancouver Weather Stats 2020). Unsurprisingly, Gehl Studio identified seasonally robust sheltered public space as a significant deficit in the city's social infrastructure (Gehl Studio and City of Vancouver 2018, 8).

Gehl Studio also observed that many of Downtown Vancouver's plazas and urban parks are "privately-operated public spaces" (POPS), usually related to commercial and office buildings (Gehl Studio and City of Vancouver 2018, 26). Marginalized social groups are not welcome in these

Map showing average household income level and homeless shelters in downtown Vancouver (data from Statistics Canada 2016).



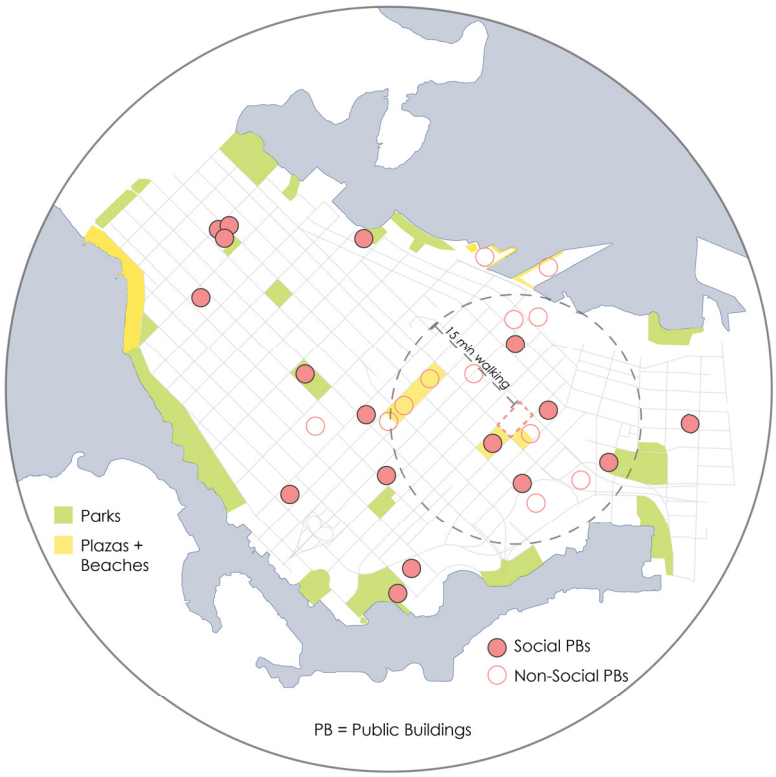
Hastings Street Life, 2019; photograph by Dan Toulgoet (Kurucz 2019)

Tent City in Oppenheimer Park, 2019; photograph by Lauren Boothby (Steacy and Boothby 2019)

Map showing the range of public space types in downtown Vancouver (Gehl Studio and City of Vancouver 2018, 22).

Map highlighting sheltered public spaces in downtown Vancouver (Gehl Studio and City of Vancouver 2018, 22). Edited by author.

Map highlighting privately operated public spaces (POPS) in downtown Vancouver (Gehl Studio and City of Vancouver 2018, 22). Edited by author.



Map showing distribution of public buildings and major public spaces in downtown Vancouver. Public buildings are differentiated as social and non-social based on their programme, level of public access and abundance of social spaces.

Defensively designed fountain ledge deters skateboarding and sleeping. Photo taken downtown Vancouver outside an office building.

A security guard strolls the perimeter of this office building in downtown Vancouver throughout the day.

spaces, made evident by the presence of a security guard and/or features of hostile architecture (Gehl Studio and City of Vancouver 2018, 26). “Hostile architecture” is design that deters unwanted activities such as skateboarding, sleeping and loitering (Chellew 2019). It defies the public interest of social inclusivity, rejects vulnerable populations and even inconveniences less-stigmatized users through decreased accessibility, reduced amenities and physical discomfort (Chellew 2019).

Lastly, Gehl Studio found that Vancouver suffers from “loneliness and weak social networks,” which they highlighted as one of the major challenges the city should address with improved public spaces (Gehl Studio and City

of Vancouver 2018, 26). Indeed, the study found that nearly 50% of residents in the city's downtown are between the ages of 20 and 40, the demographic that suffers most from loneliness in Vancouver (Gehl Studio and City of Vancouver 2018, 26; Kassam 2017). This thesis argues that public social infrastructure is an important part of the solution to Vancouver's social disconnection problems.

Conclusion

As the definition of publicness broadens, it is important to ensure the public spaces and buildings that support public social life are inclusive and accessible to everyone. Social infrastructure is a valuable lens through which to view this issue because it recognizes the correlation between access to public social spaces and resilience to urban illnesses stemming from inequality and social disconnection. The "Public Space and Public Life" study by Gehl Studio reveals that while downtown Vancouver has abundant public space, it needs more inclusive, seasonally robust spaces that promote social interaction among diverse populations. The next chapter of the thesis will explain how public buildings designed to operate as social infrastructure are ideally suited to meeting these needs.

Chapter 3: The New Institution

The following chapter draws on Klinenberg's discussion of public libraries to identify the architectural and programmatic qualities that enable public buildings to operate as inclusive social infrastructure. It then proposes some broader urban benefits these buildings can provide such as extending the public realm and creating architectural and programmatic linkages between one another to form networks. The discussion concludes that designed strategically, public buildings are an effective way to fill the void of inclusive and accessible public social infrastructure in cities such as Vancouver.

Public Buildings as SI: The Public Library

Klinenberg's book on social infrastructure is entitled *Palaces for the People* after the phrase Andrew Carnegie used to describe the roughly twenty-eight hundred public libraries he funded around the world (Klinenberg 2018, 24). A core part of Klinenberg's argument for the value of social infrastructure comes from his observations on the effectiveness of public libraries as places of social connectivity and uplift. He defines this success in three ways. First, he recognizes it in terms of the diversity of library users, who typically represent a cross-section of all the economic, ethnic and age demographics of a community (36). Second, he notes that libraries have increased their lending and patronage rates despite trends towards digitization of information which suggests their value is as strongly social as it is functional (33). Finally, Klinenberg commends the diversity of public libraries' supplementary programming which reflects the institution's ability to adapt its function to suit the needs of individual communities (33). Klinenberg's choice of the public library as

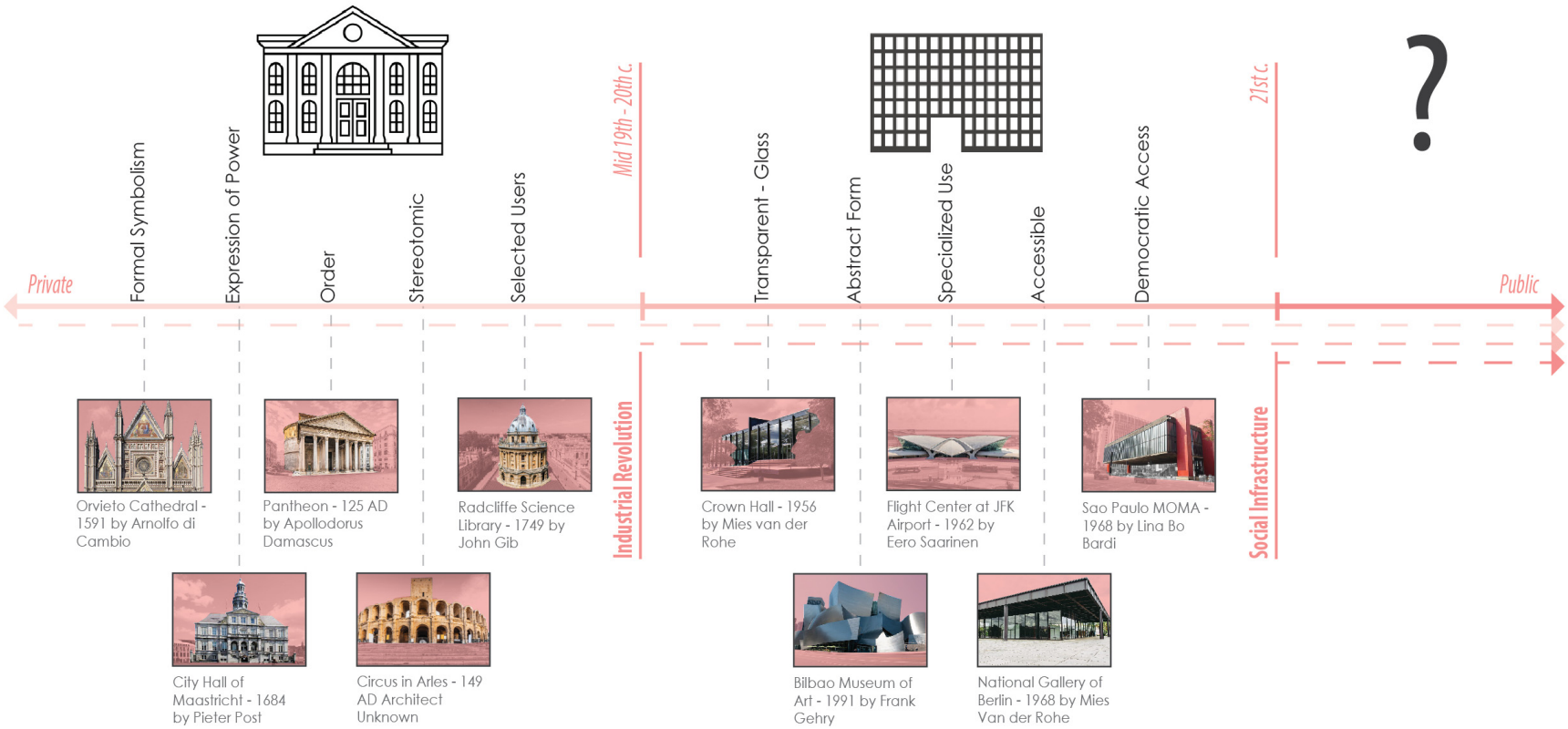
the architectural essence of social infrastructure rather than parks, plazas or coffee shops is significant as it suggests libraries have programmatic and spatial characteristics that make them particularly effective as inclusive social spaces. This raises the question of whether these characteristics can be translated into design principles that other public building types can implement to achieve the same social efficacy. The following discussion shows that some public buildings are already starting to do this.

Inclusive Institutions

Just as the previous chapter described the complexity of defining publicness and noted that the definition of who comprises the public is continually expanding, so to is the scope of who public buildings serve. Architects and architecture of the public realm have begun to respond to this new challenge and opportunity by using design to make public buildings formally and programmatically more inclusive.

Architecturally, public buildings convey inclusivity through physical accessibility, visual transparency and welcoming entry conditions. These features have become more common with the material and technological developments of the 20th century. As the need for larger spans of greater height and lightness and improved building safety have increased, public buildings have utilized new technologies such as slender structural systems, large expanses of glass and generous cantilevers. These developments allow for larger spaces with more natural light; safer buildings that can be navigated more easily by people of varying abilities; and visual transparency that can render large institutional

A Brief History of 'Public' Buildings



Conceptual timeline conveying the progression of 'public' buildings from private to public and the defining features of these buildings before and after the twentieth century.

buildings more welcoming and connected to the outside world.

As the example of the public library has shown, another way public building design has become more inclusive is by accommodating programmes that reflect the growing diversity of public users. This can be achieved through the addition of more public amenities and/or the adaptation of existing programme. Public buildings that are primarily resource-oriented and provide amenities form a group that has been categorized as ‘public service institutions’ (Lundby 2015; Tallerås et al. 2020). This term describes buildings such as libraries, community centres and resource learning centers (RLCs) (Lundby 2015; Tallerås et al. 2020). Public buildings not defined as public service institutions can provide smaller public amenities such as washrooms, drinking fountains, shower facilities, seating and benching for resting, play space for children and free wifi and charging ports.

Idea Store on Chrisp Street, London, UK; designed by Adjaye and Associates (Adjaye and Associates 2020)

London-based architect David Adjaye advocates for the importance of public amenities in contemporary public building design. Architectural theorist Okwai Enwezor expresses Adjaye’s sentiment saying:

> It is the silent but obvious amenities (recognized by everyday users as symbols of the publicness of space) that [Adjaye] as an architect must constantly make visible for any aspect of his architecture to acquire the quality of public space (Enwezor 2006, 9).

In response to this value, Adjaye and Associates designed a new public building type that centres on providing accessible public amenities. Idea Stores, as they are called, are community resource centres that provide free access to digital resources, educational facilities and social spaces to help recent immigrants in the urban UK gain the knowledge,

skills and social networks they need to navigate their new home society (Bullivant 2005, 33). The Idea Store model pairs public amenities with the provision of comfortable, welcoming and informal social space to operate as inclusive social infrastructure.

Alternatively to focusing on amenities, some public building types have expanded the definition of their programme to include and appeal to more diverse users. For example, cultural buildings such as theatres, museums and art galleries, which historically catered to the educated elite, have become more democratic throughout the 20th century to reach wider audiences. This has meant broadening programmes to include comfortable spaces for children and families; creating more interactive and mixed-media content that is diverse and accessible to a range of patrons; and providing social spaces in the form of commercial programmes such as cafes, restaurants and gift shops (Hoving 1993, 369-70). While this expansion of programme has allowed these public institutions to appeal to a wider audience, it has in some cases led to the commercialization, and therefore exclusivity, of these institutions for those that can’t afford the experiences (Hoving 1993, 275-76). This suggests that some programmes, particularly those that are resource rather than experience oriented, are more effective at serving the full spectrum of public users.

Urban Opportunities of Public Buildings as Social Infrastructure

Public buildings operating as social infrastructure can strengthen urban public space by extending the public realm. Further, they can link historically disparate public building types through common value-based design principles and

programmes to form networks of social infrastructure that share resources and spaces to amplify the impact of each link.

Extending the Public Realm

It is open for debate whether public buildings can operate as a form of public space. Enclosed, conditioned and controlled buildings are physically separated from the outdoor public realm. But as we have seen, contemporary public buildings that aim to be democratic and inclusive have also begun to soften the thresholds between public buildings and the surrounding public realm.

There is significant value to considering public buildings as extensions of public space. In his essay “Architecture and Public Space”, Alberto Perez-Gomez (2009) explains that public space in cities is gradually being reduced by private development, commercialization and urban efficiency (such as transportation infrastructure) (47). Perez argues that as many urban societies lose their public space, they lose an essential component of their ability to function in a healthy and democratic way (48). Considering this, designing inclusive public social infrastructure could have the added benefit of providing sheltered semi-public spaces that help to fill the void left by receding outdoor public space.

Social Infrastructure Networks

Furthermore, the concept and values underlying social infrastructure could link historically disparate public buildings formally and programmatically under the shared values of inclusivity and socially supportive design. In this way, social infrastructure could become a framework for categorizing public buildings and both theoretically and

practically relating them to one another through their social programmes, public interface and social space design, thus, creating networks of social infrastructure in which each link amplifies the others.

Currently, public buildings are difficult to categorize and relate to one another because they are so diverse in their form, appearance and function. Prior to the 20th century, public buildings have been categorized and analyzed following two architectural frameworks: building typology and functional programme. Building typology categorizes public buildings in terms of their underlying formal similarity. The earliest and a widely accepted definition of building type was provided by Quatremere de Quincy during the French Enlightenment in the late 18th century. Following de Quincy, type at its simplest is an underlying formal structure that is expressed in numerous instances of architecture unifying them (Moneo 1978, 23). Applying the idea of formal type to public buildings is problematic, however, since public buildings often change their use over time such that their formal structure does not usefully describe their functional role in society. Further, as technological change makes structural systems more durable and flexible, the form of public buildings has varied radically to a point where contemporary public buildings are seen as ‘object buildings’, unique and visually striking structures intended to be singularly defined rather than part of a typology.

The other common way public buildings have been categorized is by programme. This type of categorization has become the norm as contemporary public buildings become more programmatically specialized breaking down the perception that public buildings might have a unified experiential quality or public interface across programmatic

variation. Some examples of public buildings that have developed or changed dramatically in the 20th century as a result of social and technological change are hospitals, which are now often a complex of specialized buildings for emergency response, treatment and research; transit stations, which vary drastically depending on the mode of transportation they support; and recreation centres, which often contain a range of sports facilities from swimming pools to squash courts under one roof. Emphasizing the social role of public buildings bridges this programmatic and formal specialization and creates an opportunity for public buildings to relate architecturally to one another through their socially-oriented experiential qualities and welcoming public interface.

Conclusion

While the public library type is a starting point for considering how public buildings can operate as social infrastructure, this chapter suggests that other types of public buildings can and are being designed to the same standards of inclusivity bringing more transparency, flexibility and diversity to the design and function of public buildings. Drawing from these observations suggests that when public buildings operate as inclusive social infrastructure, they can provide larger urban benefits such as extending and preserve the public realm and creating architectural and programmatic linkages between one another to form networks that amplify their social impact.

Chapter 4: Design Principles

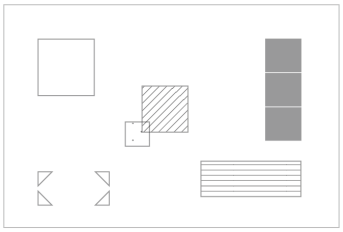
This chapter outlines three core design principles of social infrastructure. Each principle is introduced in relation to Klinenberg's theory and then explored through case studies of contemporary public buildings, identifying design strategies through which it can be realized. These design principles are: flexible programmes, diversity of social spaces and porous thresholds. Together, they make up a framework for designing and evaluating public buildings as social infrastructure.

Principle 1: Flexible Programmes

Klinenberg emphasizes the value of flexible programmes in his discussion of public libraries when he suggests it is their ability to tailor programme to the specific needs of their community that makes them particularly effective at serving under-served user groups (Klinenberg 2018, 32-33).

The work of New York based architecture and design firm Diller, Scofidio and Renfro (DS+R) provides insight into the challenges and opportunities of designing for flexible programming. In a recent proposal for a new Art Gallery of Nova Scotia, designed in collaboration with Nova Scotia firm Architecture49, Elizabeth Diller of DS+R explained that their design is intended to be "an anti-institution: an open and democratic place…for all to convene" (Architecture49 and DS+R 2020, 2). The proposal included a set of diagrammatic principles to achieve these goals including the idea of flexibility through diversity. As Diller explains, programme spaces can achieve flexibility by being generic or diverse. Programme spaces that are large, uniform and relatively neutral in character provide a blank slate that can be rearranged and

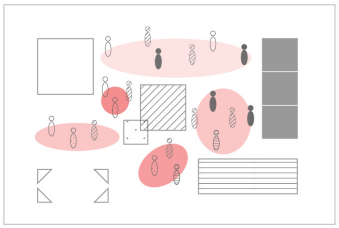
Design principles collage: an abstract hybrid drawing iterated throughout the thesis process that conveys the social infrastructure design principles of flexible programme, diversity in social spaces and porous thresholds.



Diverse programme spaces provide a range of spatial templates with different features that support different types of programmes.

altered in many ways to accommodate different uses (Diller 2020). While efficient, Diller suggests that this method of achieving flexibility can result in ambiguous, homogenous spaces that adapt to many activities poorly but none very well (Diller 2020). In contrast, achieving flexibility through diversity involves designing programme spaces that are multiple and distinct with different spatial and experiential qualities (Architecture49 and DS+R 2020, 11). In this way, they can be selected for their unique qualities based on which ones are most conducive to the programme requirements at hand. DS+R's proposal for the Art Gallery of Nova Scotia demonstrates the strategy of flexibility through diversity in the context of an art gallery by composing a network of gallery rooms and interstitial spaces at different scales and with varying lighting and material qualities.

Principle 2: Diversity in Social Spaces

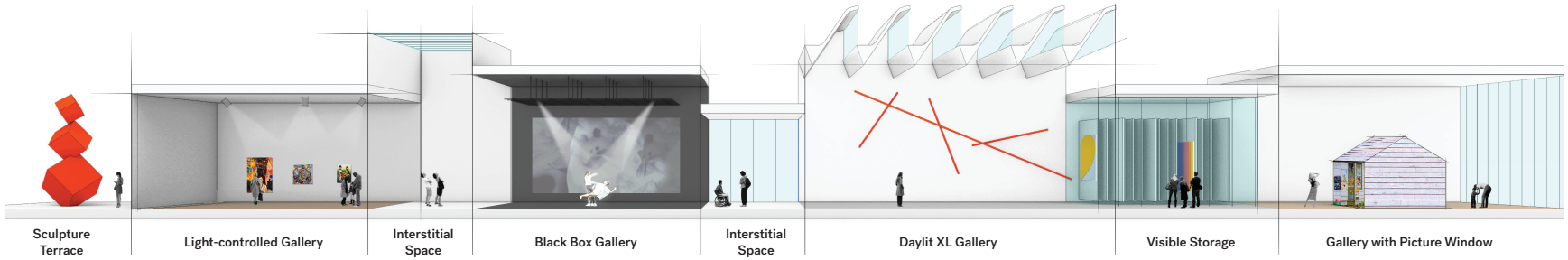


The complimentary inverse of diverse programme spaces is the diverse interstitial spaces that support gathering and socialization at different scales by different user groups.

The first chapter of Klinenberg's book *Palaces for the People* is called "A Place to Gather" and focuses on public libraries as inclusive social infrastructure. As the chapter title suggests, a range of accessible, inclusive and comfortable social spaces, or, 'places to gather', is a core feature of public buildings that operates as social infrastructure. However, not all public building types contain spaces for social interaction and of those that do, not all of these spaces are designed to promote social interaction. The following case studies show how some architects have created experiential richness in the design of inclusive and accessible social spaces within public buildings.

Experiential Richness

One way architects achieve diversity and encourage social interaction in spaces is through experientially rich design.



Diagrammatic section of the diverse programme spaces in DS+R's proposal for the Art Gallery of Nova Scotia (Architecture49 and DS+R 2020, 11).

Multi-sensory engagement is important for connecting people and their bodies with their surroundings and even has psychological implications for a person's perceived sense of isolation or inclusion (Pallasmaa 2012, 22). As described by architect and theorist Juhani Pallasmaa:

> The dominance of the eye and the suppression of the other senses tend to push us into detachment, isolation and exteriority...The inhumanity of contemporary architecture and cities can be understood as the consequence of the neglect of the body and senses, and an imbalance in our sensory system. (Pallasmaa 2012, 21-22)

The implications of this, are that spaces with rich multi-sensory qualities may help people feel more relaxed and provide them with a sense of belonging; therefore, becoming more likely to interact socially.

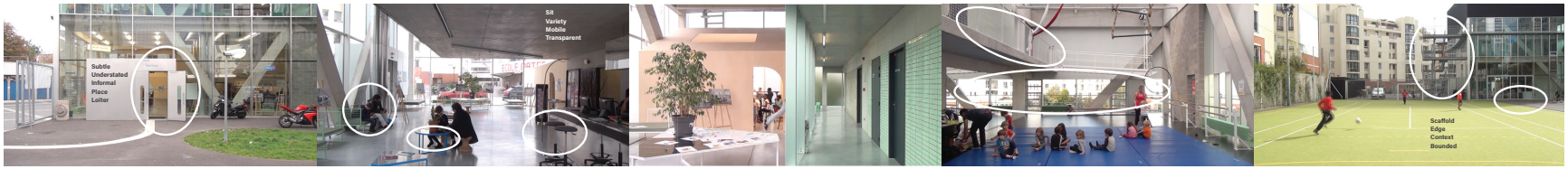
To study the multi-sensory aspects of architecture, ideally one must experience them first hand; however, in instances where visiting significant works of architecture in different parts of the world is not feasible, video walk-throughs can provide more information than still images. Indeed, other than smell, which can be speculated at from the size, porosity and materiality of a space, non-visual sensory qualities, such as sound, movement and the quality of activities taking place, can be gathered from film footage. Conducting film-based experiential analysis of a few diverse socially-oriented public buildings such as the SESC Pompeia in Sao Paulo designed by Lina Bo Bardi; a sports and cultural centre in Paris designed by Bruther Architects; and the Hanamidori Cultural Centre in Tokyo designed by Atelier Bow Wow shows how these architects create experiential richness in social spaces. As the analytical image studies reveal, the primary ways these architects do so is through strong expression and variation in materials, spatial configuration and lighting.

Rough | Textured | Durable | Heavy | Natural | Functional | Exposed | Cool | Patterned | Colours (primary) | Active | Relaxed | Open

Breezy | Reading | Talking | Eating | Playing | Working | Observing | Gathering | Lounging | Shuffle | Murmur

SESC Pompeia | Sao Paulo, Brazil by Lina Bo Bardi

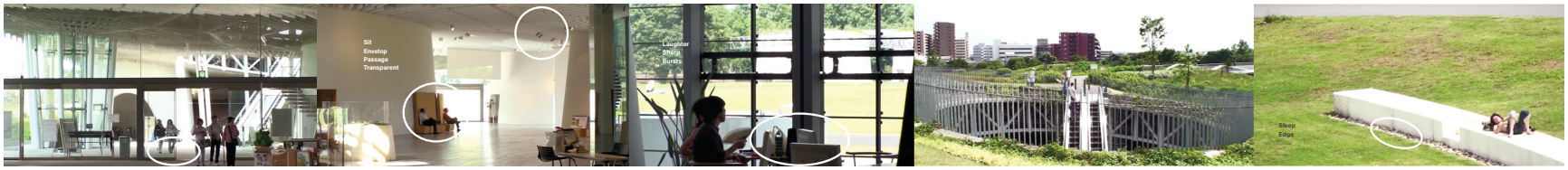
Narrow | Informal | Hard | Smooth | Play | Sit | Mobile | Pastel | Cheer | Children | Swing | Hang | Run | Hard/Soft(together)



Enter | Walk | Light | Understated | Active | Open | Soft | Transparent | Bright | Spectate | Bounce | Context | Bounded | Edge

Cultural + Sports Center | Paris, France by Bruther

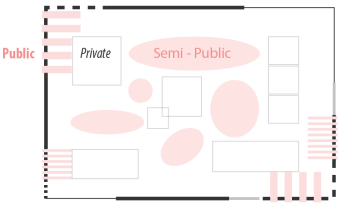
Continuous | Hard | Smooth | Peaceful | Sit | Curve | Connection(visual) | Web | Permeable | Landscape | Social(optional) | Exposed | Tiered



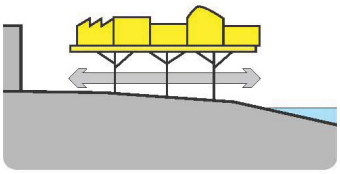
Enter | Pattern | Light | Structure | Bright | Soft | Resource | Nature | Ventilation | Bounded | Burried | Traverse | Static | Sit

Hanamidori Cultural Center | Tokyo, Japan by Atelier Bow Wow

Analytical photo series identifying multi-sensory experiential features of social spaces in some inclusive and socially-oriented public buildings. Images taken from video walkthroughs in the OnArchitecture film database (De Ferrari and Grass 2008, 2013 and 2016) .



Diverse programme and social spaces can be enclosed by a varied and porous threshold that creates a gradient of connections between the public and private realms and interior and exterior space.



Diagrams from the Art Gallery of Nova Scotia proposal showing how the project continues the public realm (Architecture49 and DS+R 2020, 2)

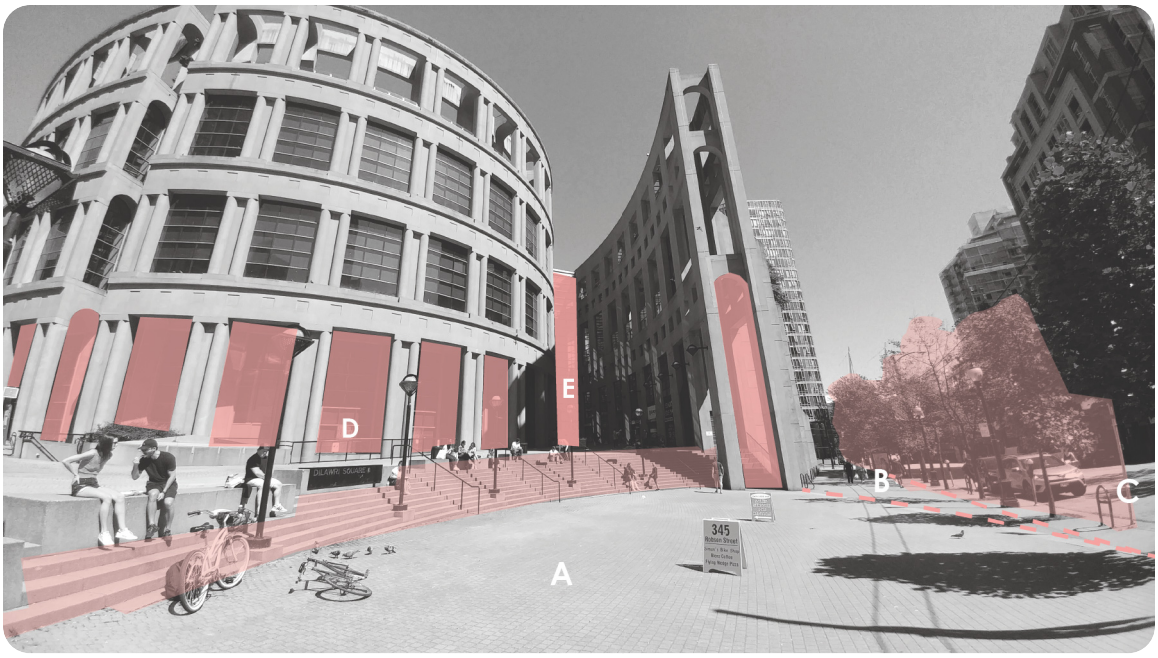
Seattle Public Library - Seattle, WA by OMA; photograph by Philippe Ruault (*ArchDaily* 2009)

Principle 3: Porous Thresholds

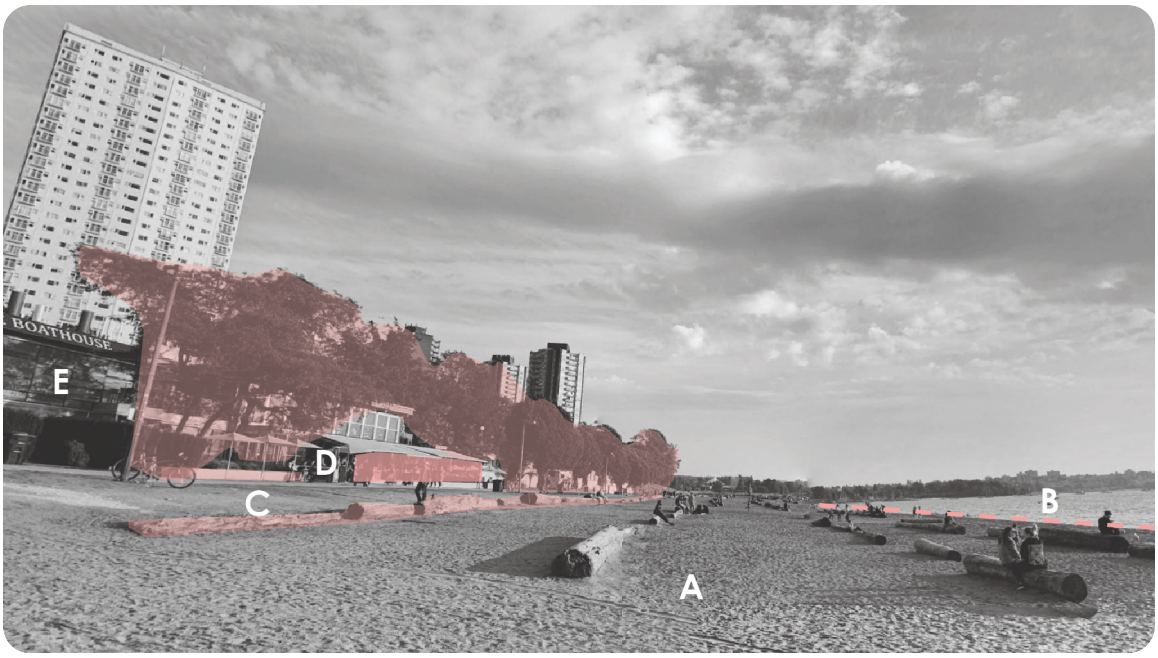
Thresholds are the markers, boundaries and conditions that create transitions from one space to another. The primary thresholds of most buildings are the transitions from the exterior public space into the interior - usually private - bounded space of the building. These thresholds are particularly complex in public buildings since some public buildings, including those operating as social infrastructure, blur the threshold between inside and outside in an attempt to create the perception of extending the public realm into the building. This unique relationship between public buildings and public space is compatible with the concept of 'porous' thresholds. Porous thresholds, can create visual and physical connections between a building's interior and the public realm while maintaining zones of privacy and separation.

An example of porous threshold design can be seen by turning again to Diller Scofidio and Renfro's proposal for the new Art Gallery of Nova Scotia. The architects explained that their proposal aims to continue the public realm through the building using a porous threshold (Architecture49 and DS+R 2020, 2). By lifting the majority of the building programme off the ground, they allow uninterrupted pedestrian flow beneath the building and into its public courtyards. The relationship of this porous threshold strategy is mutually beneficial as the art gallery benefits from spilling its programmes into the surrounding public space while the public gallery courtyards provide sheltered public space that is otherwise lacking in the surrounding urban context.

The Seattle Public Library is an example of very different formal approach to designing a porous threshold. Rem



Threshold study of the public/private interface of a significant public building in Downtown Vancouver: the central public library by Moshe Safdie. The analytical image highlights a range of threshold conditions that delineate zones labeled A through E between plaza and building. These zones correspond to different levels of porosity in the building's interface with the public realm.



Threshold study of the public/private interface of a significant public space in Downtown Vancouver: the beach at English Bay. The analytical image highlights a range of threshold conditions that delineate spatial zones labeled A through E between city and ocean.

Koolhaas has been interviewed extensively about his design intentions for the Seattle Public Library designed by OMA with him at the helm. This project has been an overwhelming success in terms of increasing visitors and having the highest lending rates of any public library in the North America (Klinenberg 2018, 32). It is also noteworthy for its inclusive design as it is regularly used by marginalized social groups including homeless people (Murphy 2006, 3). One of the Seattle Public Library central design principles was to achieve both autonomy as an urban object and a complex dialogue with the urban fabric (Murphy 2006, 4). For Koolhaas, the library is both an identifiable place - a discrete object - and an open space (Murphy 2006, 4). This description suggests the project's nuanced relationship to public space. Indeed, the library's facade and porous thresholds create the perception of both a distinct place that is formally expressive and site-specific, while simultaneously, it appears to extend the public realm through its seamless transparent entrances and continuous reflective glass facade that reflects the sky and the surrounding buildings.

Conclusion

Extracting architectural implications from Klinenberg's theory of social infrastructure and relating these to case studies of socially-oriented contemporary public buildings informs a set of design principles for public buildings that operate as social infrastructure. Synthesizing the design intentions and methods of architects such as Koolhaas at OMA and DS+R in the case studies reveals strategies that can be used to realize the design principles of flexible programme, diversity in social spaces and porous thresholds. These strategies help to inform the design of the social infrastructure proposal in downtown Vancouver that illustrates this thesis.

Chapter 5: Project Foundations

This chapter lays the programmatic and contextual foundations for the project. It first describes the social, health and equity impact opportunities of a public building that uses food as a social infrastructure programme in downtown Vancouver. The chapter then turns to siting considerations for the project, considering factors such as access, inclusivity and social impact at the city, neighbourhood and site scales.

Programme

The programme selected to develop the design principles of social infrastructure is a community food centre in the south end of Downtown Vancouver. Food is the primary programme element for numerous reasons. First, eating and sharing food is both physically and socially strengthening for individuals and communities. Second, Vancouver's robust food culture reflects its cultural diversity, mild climate and rich variety of food-producing regions. Third, many Vancouverites are very aware of food sustainability and security concerns, which include food supply, quality, availability and access issues, especially for Vancouver's less affluent citizens.

Food as Social and Physical Nourishment

Nourishment: Root Cellar Long Table Dining, 2018; photograph by Simon Desrochers (Chavich 2018)

While most of us understand that what we eat affects our physical health, we are perhaps less likely to think about how our social well-being impacts our physical health. But the quality of our social relationships has both direct and indirect impacts on physical health. Indeed the World Health Organization has created a diagram of the Social Determinants of Health that include access to nutritious food but also community social capital. In recognition that both physical and social factors contribute to community

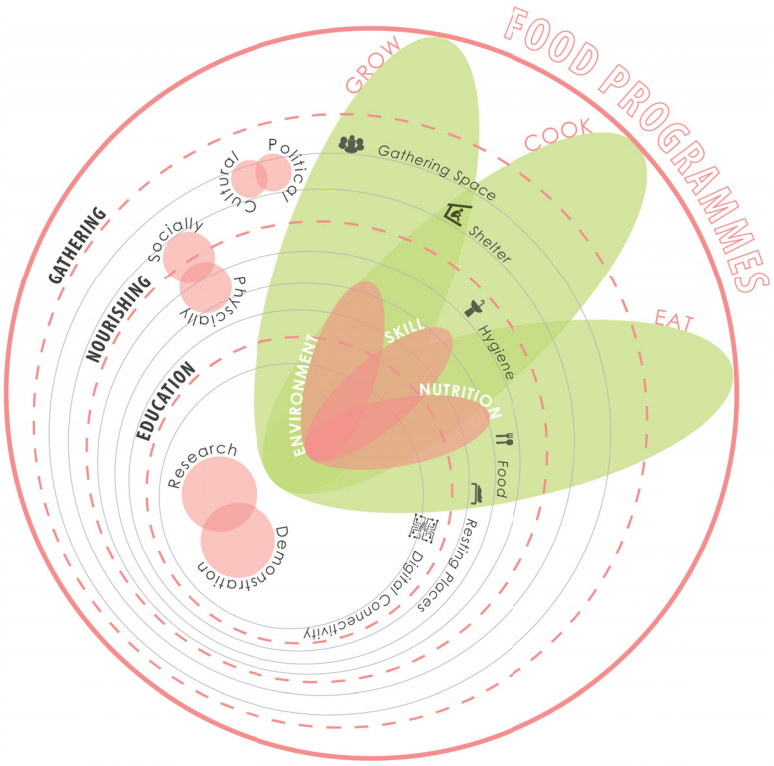


Diagram showing proposed programme structure: a series of nested food education and resource services that support gathering and socialization, address food insecurity and act as a framework within which to nest a range of essential public amenities.

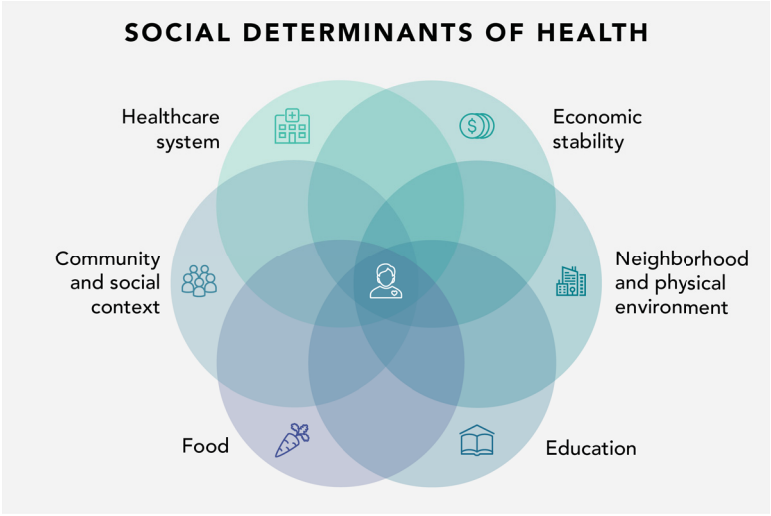
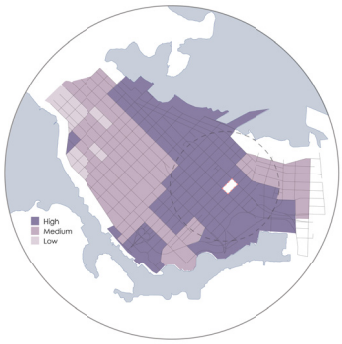


Diagram of the Social Determinants of Health as described by the World Health Organization. These include “Community and social context” (i.e. social capital) and access to healthy food (Paruk 2020).

Abundance: Typical BC Farmers Market, 2018; photograph by Sherri King (*RightSizingMedia* 2018)



Ethnic diversity levels in downtown Vancouver based on percent chance of encountering two people of different ethnicity in an area - dark purple is high while pale purple is low (data from Statistics Canada 2016).

Conscious Consumers: Sole Food Urban Farm, 2017; photograph by Darryl Dyck (Abraham 2017)

health, food is an ideal programme to argue that social infrastructure can provide physical and social nourishment.

Vancouver as a Food City

Vancouver has a robust food culture for a few reasons. Downtown Vancouver is culturally diverse and known for its ethnic food scene with exceptional Japanese, Korean, Chinese, Thai and East Indian food. Further, BC's temperate climate and many food-producing regions provide fresh local produce in three seasons. As a result, in Vancouver there are an abundance of farmers markets, farm to table restaurants and even a Slow Food tourism movement that encourages tourists to visit sites of food cultivation and production around the city.

Food Security

Many Vancouverites are very aware of food sustainability and security concerns. It is not uncommon for Vancouverites to shop local, participate in community gardens or grow some of their own food in their yards. Indeed, this movement is reflected in some of the existing food programmes in Vancouver such as City Beets, a farm-your-yard neighbourhood food programme; Fresh Roots, an urban farming programme for youth; or Young Chefs, a school programme to teach kids about healthy eating. Finally, many Vancouverites are concerned about food availability and access issues. People are concerned about climate resilience and the sustainability of urban food systems, and they support organizations that address food insecurity. For example, Sole Food Street Farms is an urban farming initiative that exemplifies these overlapping concerns as it employs homeless people to cultivate organic local produce at its multiple urban farm locations.

Programme Model: Community Food Centres

‘Community Food Centres,’ or CFCs, are a new type of resource-oriented community facility that aim to address food insecurity and strengthen social networks through the production, preparation and serving of affordable and sometimes free meals. The CFC programme model was developed in Toronto in 2012, and today there are thirteen CFCs across Canada with the closest one to Vancouver in Kamloops, BC (CFCC 2018). Programming at CFCs is flexible and location-specific though it often includes a soup kitchen, community dining space, educationally oriented productive urban farms and financial and economic justice services.

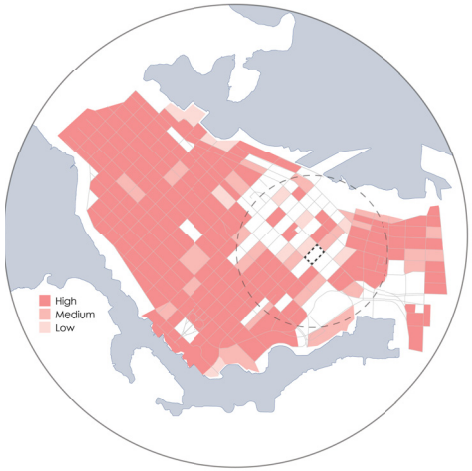
Siting

City Scale

The site for this project was selected through a mapping analysis of downtown Vancouver showing where people live, where densification is occurring and where there is the greatest diversity and access to transit. The chosen site is in the south-east end of downtown Vancouver where there was found to be the greatest potential to serve the largest and most diverse set of users including Vancouver’s most vulnerable populations.

Neighbourhood Scale

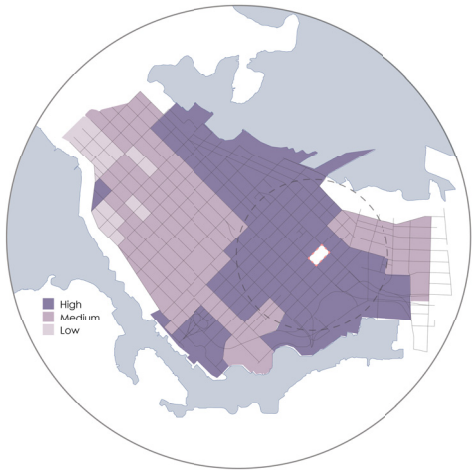
The project site faces onto Georgia Street, Vancouver’s main downtown thoroughfare. It is surrounded with civic and commercial buildings and is mid-way between two polarized neighbourhoods: Yaletown and Gastown. Both neighbourhoods are rapidly developing and have diverse populations but the former is very affluent while the latter



Density of Living

Average Household Income

Access via Transit

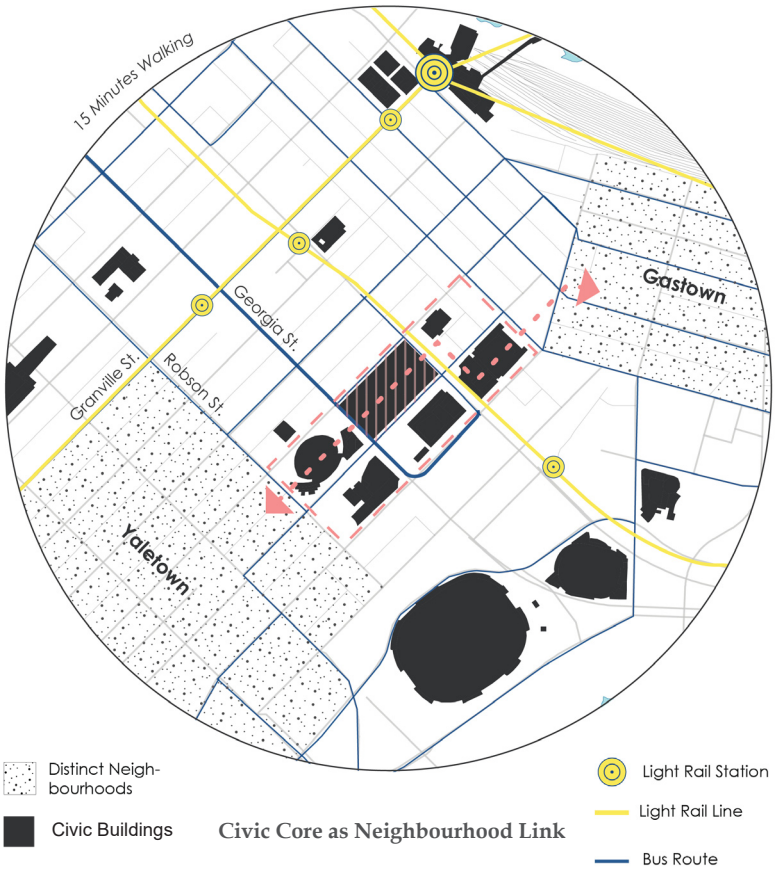


Ethnic Diversity

Population Growth and Development

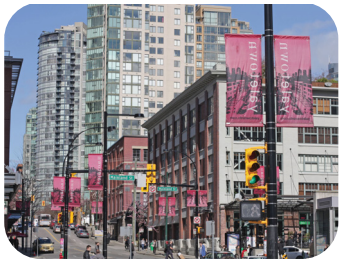
Social Infrastructure

Map series of Downtown Vancouver showing factors related to social infrastructure informing site selection (data from Statistics Canada 2016; Translink 2021).



Civic Core as Neighbourhood Link

Map showing the project site's potential to anchor the surrounding civic buildings linking the two polarized neighbourhoods of Yaletown and Gastown. Ample public transit access to the site, which is also shown on the map, supports the viability of this neighbourhood link.



Yaletown (Hatashita Lee 2012)

borders on the epicenter of Vancouver's opioid and homelessness crises.

Adaptive Reuse of Old Post Office Site

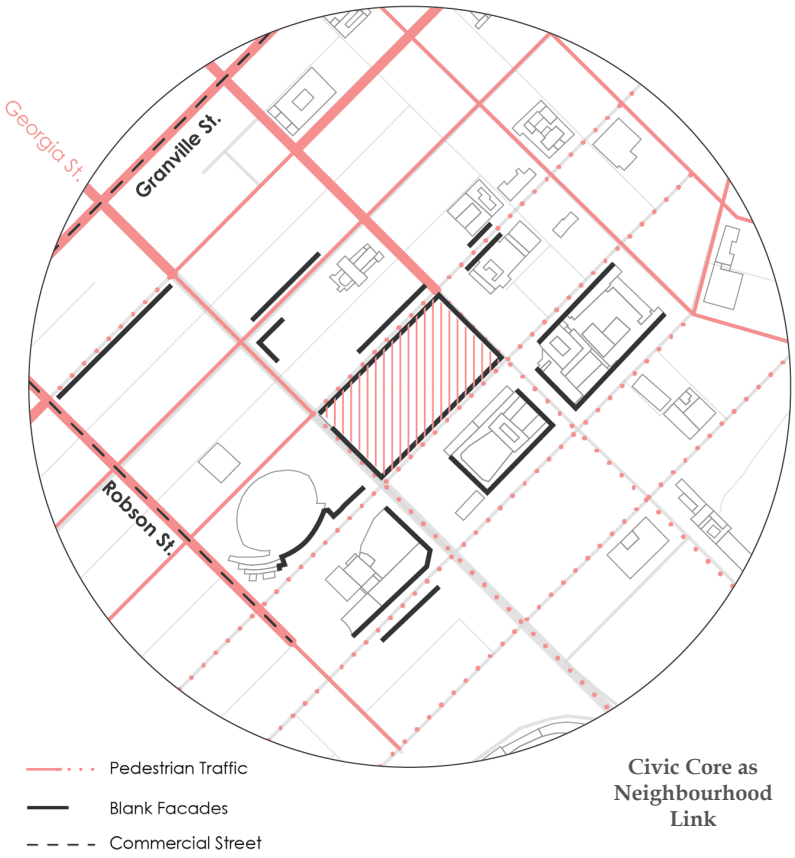
The chosen site is occupied by a former Canada Post Headquarters which was recently approved for redevelopment into office space for Amazon. The façade is a designated heritage feature and is retained in the thesis proposal along with much of the existing concrete and steel structure.

Gastown (Colombo n.d.)

Vancouver Main Post Office as constructed in 1953 (Landauer 1960)

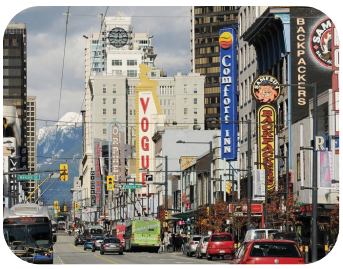
Vancouver Main Post Office - current condition under partial deconstruction - viewed from Georgia St. looking north-west

The Canada Post site is adjacent to and in dialogue with a number of significant public buildings in downtown Vancouver including the Vancouver Public Library, the Queen Elizabeth Theatre and Vancouver Community College. This proximity creates opportunities for engagement with and critique of these buildings through the proposals siting strategy, programme and facade design.



Map showing the correlation between the long blank facades of the existing civic buildings on and around the site and low pedestrian traffic on the corresponding sidewalks.

Robson Shopping Street (Robson Street Business Association n.d.)



Granville Strip and Shops, 2018; photograph by Dan Toulgoet (Howell 2018)

Site Scale

Analysis of the surrounding site context shows that the principles of social infrastructure design are sorely lacking in the nearby civic buildings. While the project site is only five minutes from two of downtown's most active commercial streets, Robson and Granville, pedestrian circulation dissipates rapidly approaching the site. This correlates with the long featureless façades of the civic buildings in the area that create what I refer to as "blank façade syndrome."

Furthermore, the public social spaces around the site are neither inclusive nor generous in their design. Many nearby plazas are privately-operated public spaces (POPS) and

Georgia St. looking north-west.

South-east facade of CBC Headquarters

North-west facade of Vancouver Community College

South-east facade of the Central Public Library

North-east facade of Queen Elizabeth Theatre

North-east and north-west facades of the Canada Post building

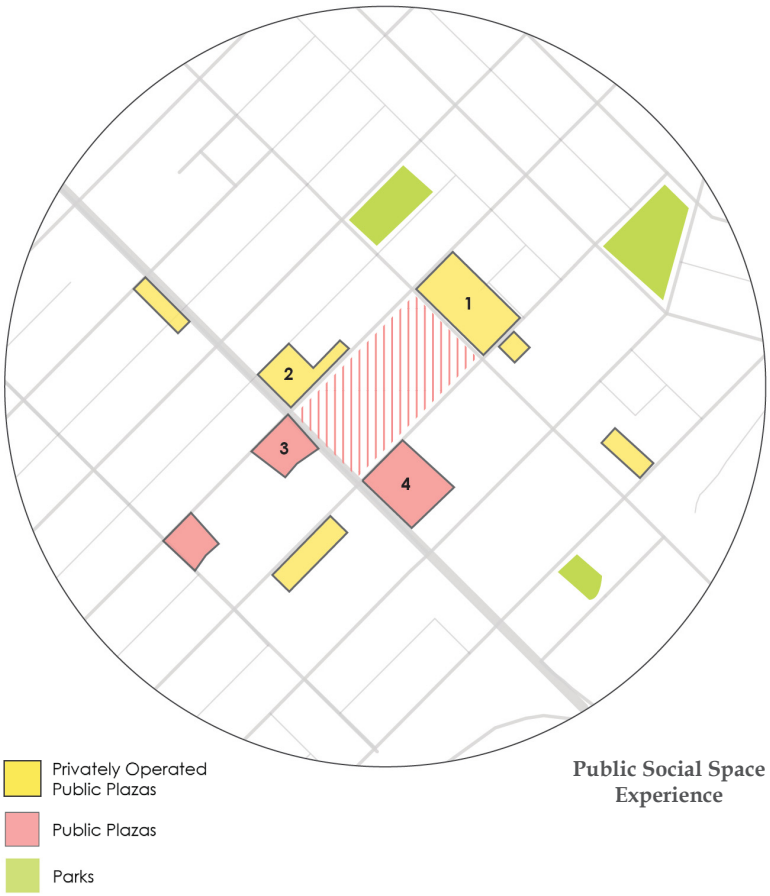
Photo study of the ‘blank facade syndrome’ that plagues the civic buildings on and around the project site (base images from Google Maps 2020).

1. BC Hydro Plaza

2. BMO Pavilion Plaza, 2019; rendering from Oxford Properties (Chan 2019)

3. Library Plaza

4. Queen Elizabeth Theatre Plaza



Map and corresponding images illustrating the contrasting experiential qualities of existing privately and publicly operated public spaces near the project site.

while they provide a pleasant street experience, they feature elements of 'hostile design' to deter loitering, skateboarding, sleeping and sheltering from the elements. The publicly operated plazas nearby are even less inviting, lacking street furniture, shelter or any elements that would encourage gathering and socialization.

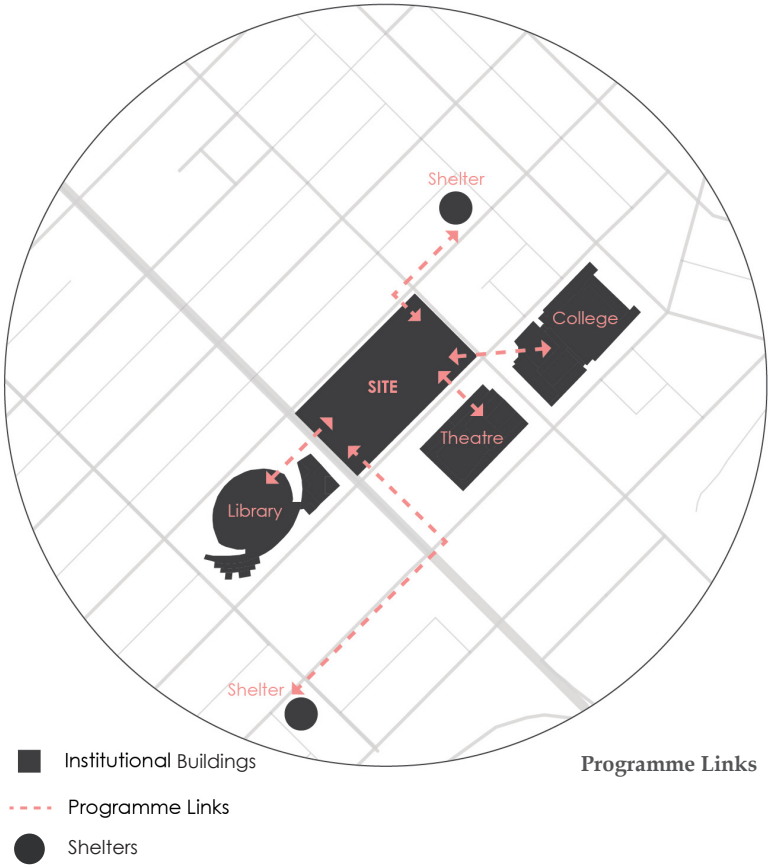
Finally, the surrounding institutional buildings of theatre, library and college could contribute to a more robust social infrastructure network through program linkages; however these buildings have been designed to support their own social activities, and were not conceived as part of a larger social system. This project aims to remedy that by providing

Shelter: Salvation Army Homeless Shelter

College: Vancouver Community College

Theatre: Queen Elizabeth Theatre

Library: Vancouver Public Library; photograph by Arlen Redekop (Brown 2020)



Map of public social programmes around site and potential linkages with proposed project.

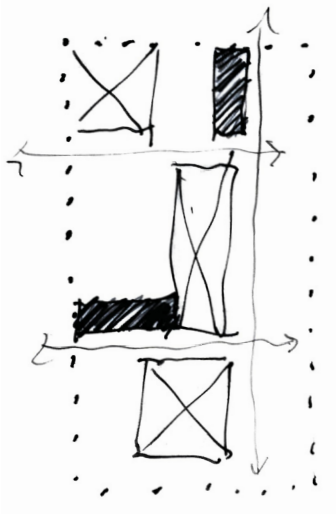
such a system, anchoring and amplifying the social life of these surrounding civic buildings.

Conclusion

Vancouver's robust food culture supports the feasibility of introducing the community food centre model as a basis for the thesis proposal's social infrastructure programme. These food programmes will bring downtown's diverse populations together to cultivate, prepare and share food in the adapted Canada Post building. Furthermore, the project's design will address the need for high quality accessible public space and a welcoming street interface, which were found to be lacking through analysis of the site's context.

Chapter 6: Project Design

The thesis now turns to the design strategies the proposed project - the Food Stop Community Food Centre - uses to express the principles of social infrastructure.



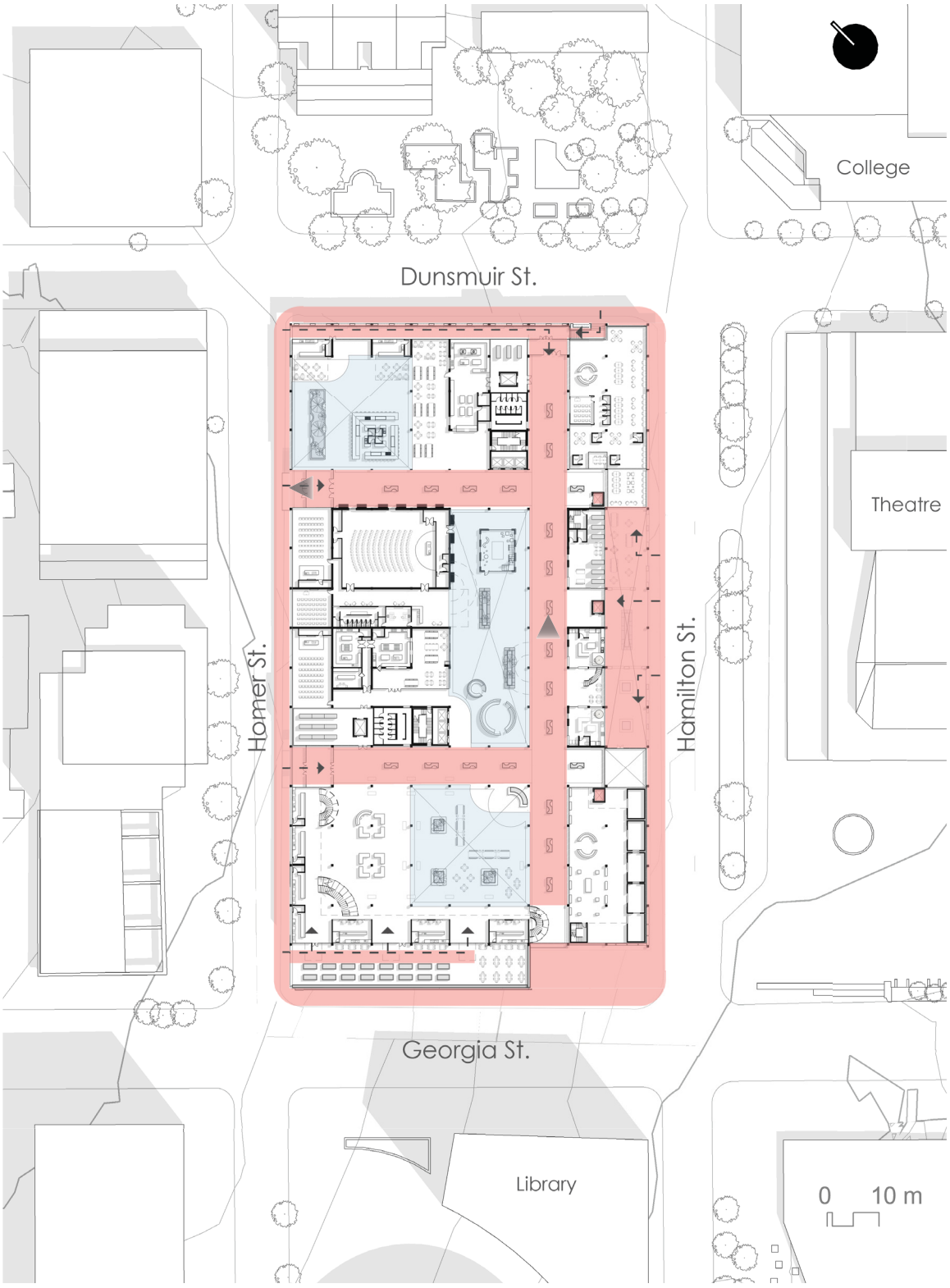
Parti sketch of the building plan showing the porous perimeter column structure, three atria, two anchoring vertical circulation cores (shaded) and the primary indoor circulation “streets”.

Strategy 1: Extending the Street

The design extends the public realm through the building by creating indoor “streets” that are materially consistent with the pedestrian-friendly historic streets in Yaletown and Gastown. The indoor streets flow seamlessly from the sidewalk and are paved in brick to strengthen the urban connection to the site’s adjacent neighbourhoods.

Porous Threshold

The building also provides a “porous” interface between the exterior public and interior semi-public realms. In their book *Re-public: Towards a New Spatial Politics,* a group of Dutch designers argue that “architecture is essentially about creating relationships in a physical form...[and] the deliberate design of transitions, buffer zones and gradients” (Boxel and Koreman 2007, 42). They describe the gradient from public to private space as an “intimacy index” (40). In a house for example, the bathroom is at the top of the intimacy index while the front garden is at the bottom (40). The design of public building thresholds requires a nuanced interplay of public and private space and inside and outside. Indeed, composing the level of porosity at the building’s interface can achieve a perceptual extension of the public realm while maintaining the levels of privacy and spatial separation that public buildings need to operate. The Food Stop achieves this level of porosity by organizing programmes needing privacy and enclosure away from the



Ground floor plan within site context overlaid by the indoor streets (in pink) that extend the sidewalk. In response to a two-meter grade change across the site, the building entrance on Hamilton St. is through elevators accessible from a lower-level outdoor terrace that addresses the theatre next door. Grey view cones on the plan mark rendered vignette locations (see next page).

View of indoor pedestrian street at Homer St. entry featuring multiple types of street furniture where people can sit, take a nap or socialize.

View of indoor pedestrian street walking past the building's central atrium.

building edge and leaving all four building facades entirely glazed. Non-private programme spaces activate the building edges, creating visual interest from the sidewalk. Finally, despite a challenging two-meter drop between Homer and Hamilton Streets, the building has accessible pedestrian entrances on every side.

Strategy 2: Bringing in Light

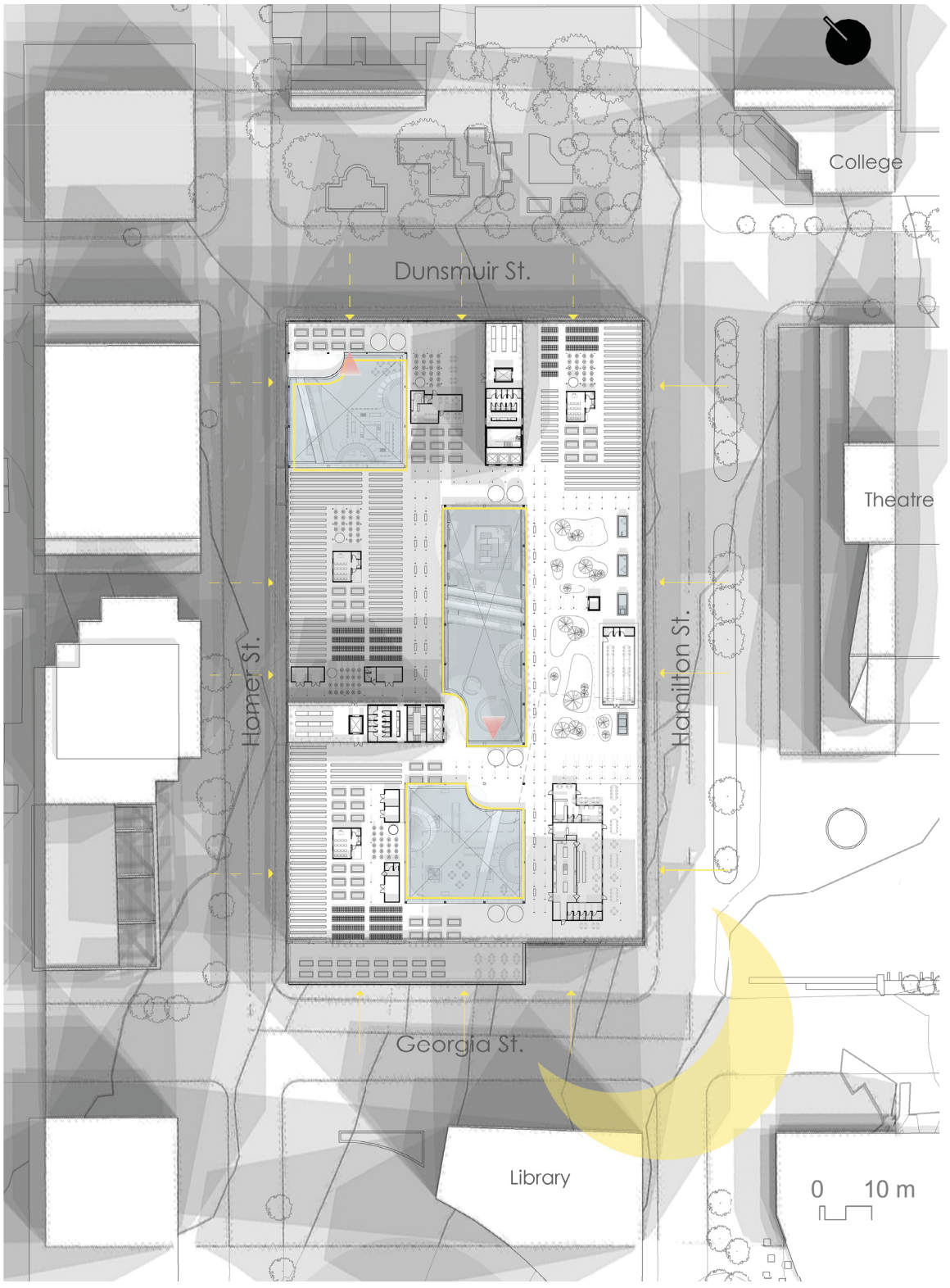
The second design strategy introduces natural light into the block-deep building by inserting three atria. In a rainy climate like Vancouver's, year-round exposure to natural light is important for combatting seasonal depression, vitamin D deficiency and the stress of artificial light exposure. The sun path and shadow studies confirm that all three atria have been placed to obtain maximum sun exposure. Inside the building, the light of the atria form the social "hearts" of the project. The atria are designed to feel like outdoor public rooms through their large scale, relationship to the circulation streets and minimalist roof structure.

The Atrium Type

Atria are particularly well suited to social infrastructure design because they have historically operated as public gathering spaces like a sheltered plaza or covered street. In addition to being able to support inclusive social spaces, atria are appropriate for rainy climates like Vancouver because they are sheltered and conditioned while still bringing lots of daylight into interior spaces that can be dark on grey days.

Atria in Vancouver

Downtown Vancouver is full of atria. First popularized in their contemporary post-industrial form by American shopping malls in the 1950s, by the 1970s atria were a common



Sun path and shadow extents overlaid on the project's rooftop in the site context show that all three atria have been placed for maximum sun exposure. In the building, the light of the atria draw people together and form the social "hearts" of the project. View cones on the plan reflect the locations of vignettes on the following page.

View of the long central atrium in the building looking to the north-east.

View of the square atrium at the corner of Dunsmuir and Homer St.

feature in hotels and office buildings (Saxon 1983, 12). In downtown Vancouver, they are common in these programme types where they are enjoyed by patrons rather than the general public. Yet, as entrance lobbies in hotels and office buildings, atria are often used only for passing through or waiting and can feel like inactive places designed to “be too tasteful” such that they end up feeling sterile (Saxon 1983, 1).

Reimagining Vancouver Atria

The Food Stop atria, by contrast, are designed to be experientially rich, visually stimulating and programmatically engaging public spaces. They provide multi-sensory experiences that connect people with natural daylight; introduce nature in the form of vertical growing walls and planters; and put people in contact with natural materials such as wood and brick. The atria are also visually activated by ‘social circulation’ in the form of curved staircases and public walkways that cross through the space, creating opportunities for views and people watching. Finally, the atria are surrounded by a diversity of socially-oriented programmes that spill into them on the ground floor - particularly those for preparing and sharing food. In the Food Stop, atria are places to sit, relax and experience social life without necessarily having to take part in programmed activities.

Strategy 3: Programme Zones

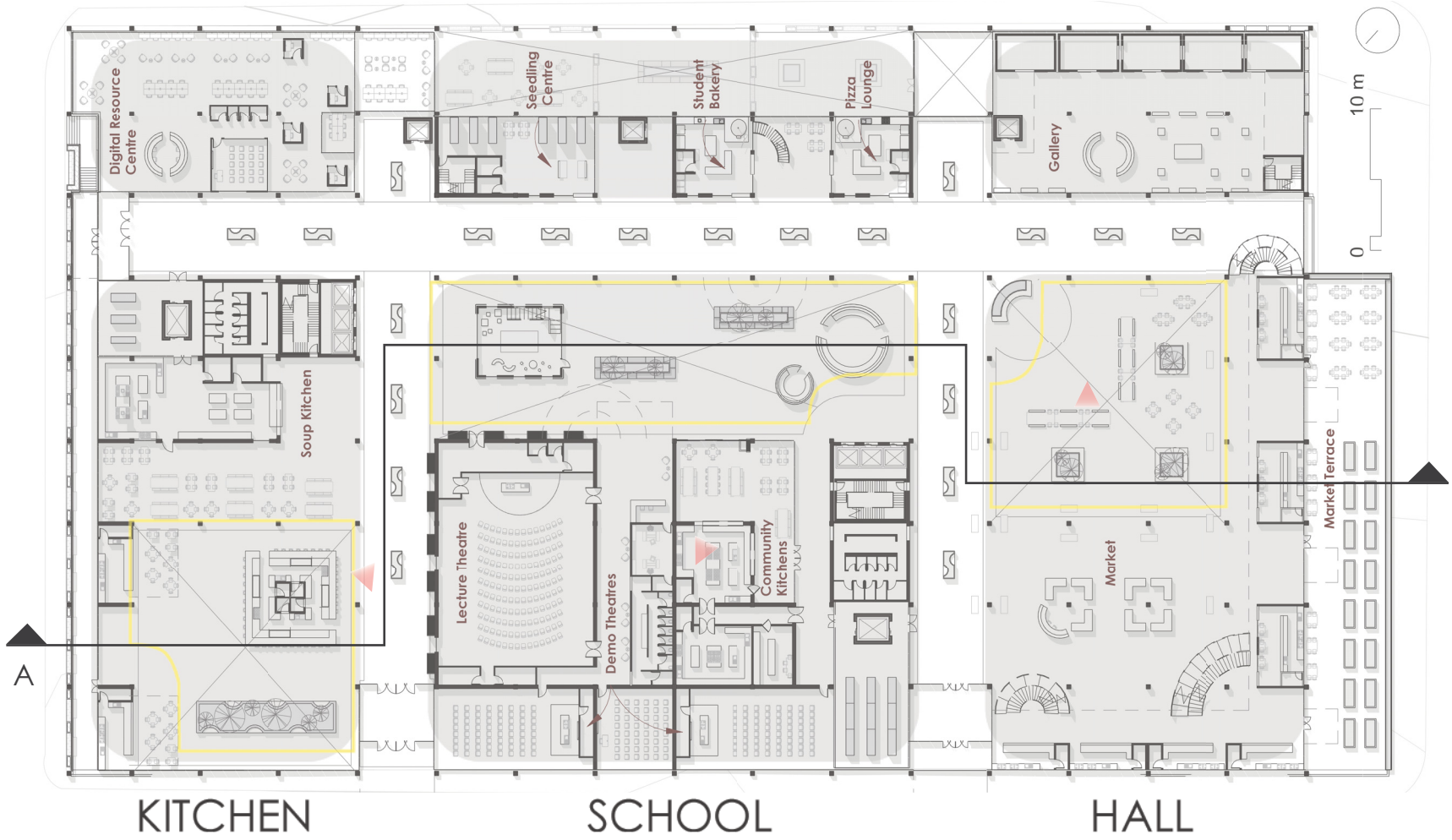
The Food Stop’s social infrastructure programmes are organized into three zones delineated by the indoor “streets”. Each zone contains an atrium and centres on a core activity surrounded by connected programme elements.

The Kitchen

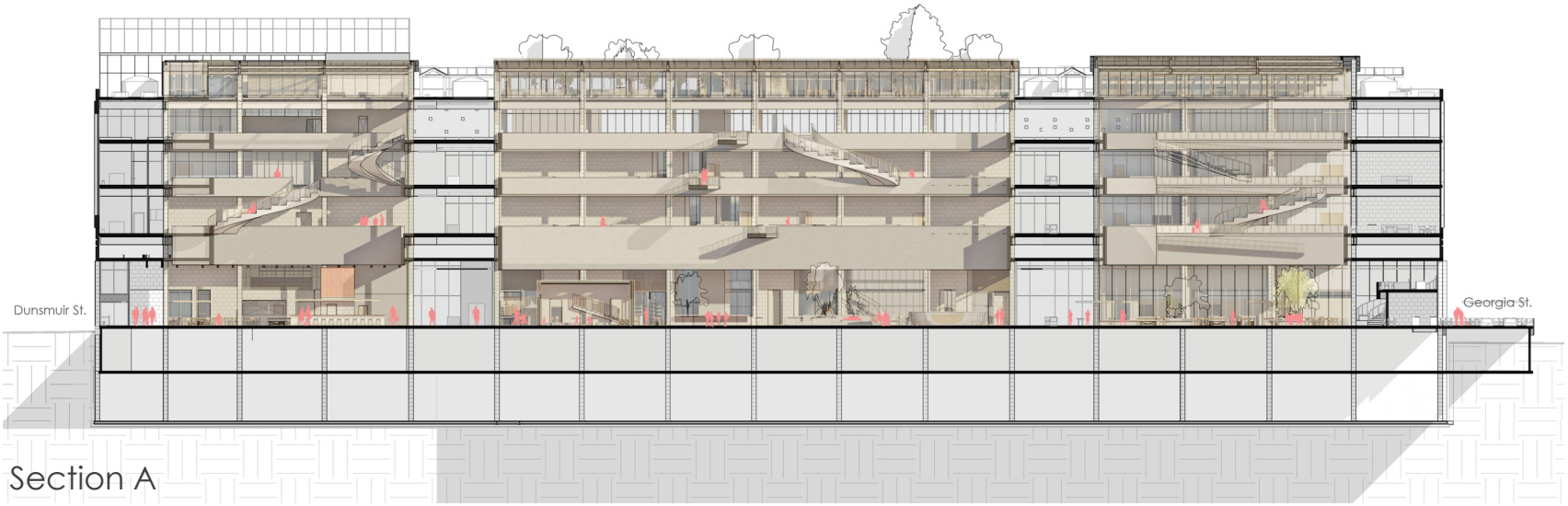
The Kitchen is located off Dunsmuir Street facing Gastown and the Downtown Eastside. It's main element is a soup kitchen that serves free and subsidized meals. Like many other Canadian community food centres, it relies on a combination of volunteer support, government subsidy and private donation. Its produce would be largely grown on site, significantly decreasing operational costs. Secondary programmes in this zone complement the soup kitchen. These programmes include a digital resource centre on the ground floor; on the second floor, public showers and food lockers for people experiencing housing insecurity, as well as financial and employment services; and finally, on the third floor, a mental health and addiction resource centre which would focus on providing adult education, resource recommendations and safe spaces rather than in-facility treatment.

The School

The School is at the centre of the Food Stop, representing the central importance of education - between the poorer demographic of Gastown (served by the Kitchen) and the wealthier one of Yaletown (served by the Market Hall) - to the social infrastructure programme. Everyone can come together in the School to participate in cultivating, cooking and sharing food in the core community kitchen programmes. This zone also accommodates a culinary school, operated as a satellite programme to the nearby Vancouver Community College. The culinary school is equipped with professional teaching kitchens, equally suitable for advanced culinary training as well as shorter programmes for those with unstable employment looking

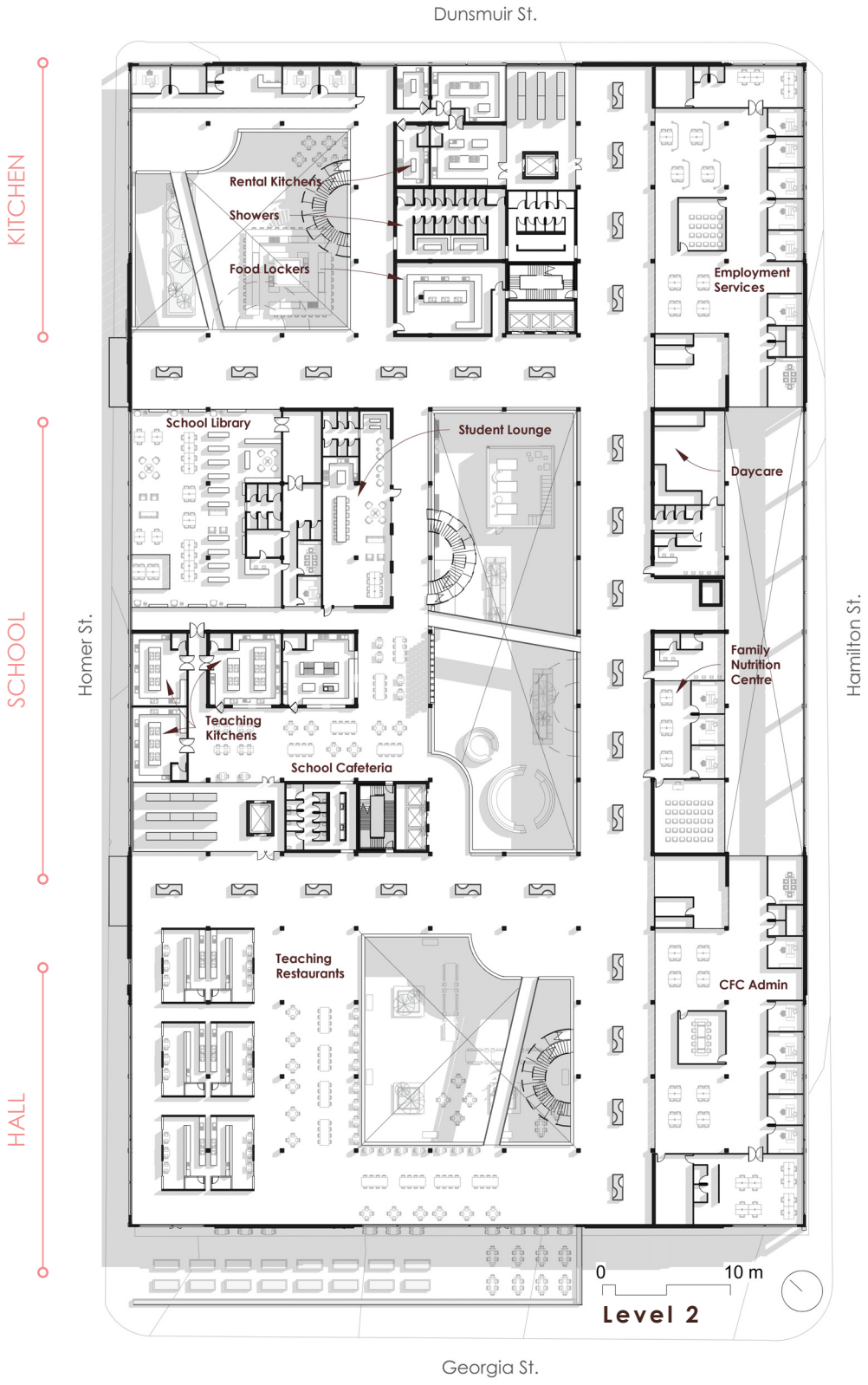


The social infrastructure program is organized into three distinct zones. Note how these zones are articulated and related in both the plan above and the section on the following page. The core programmes in each zone are a soup kitchen in the Kitchen zone, a culinary school and community teaching kitchens in the School zone and a public market and gallery space in the Market Hall.

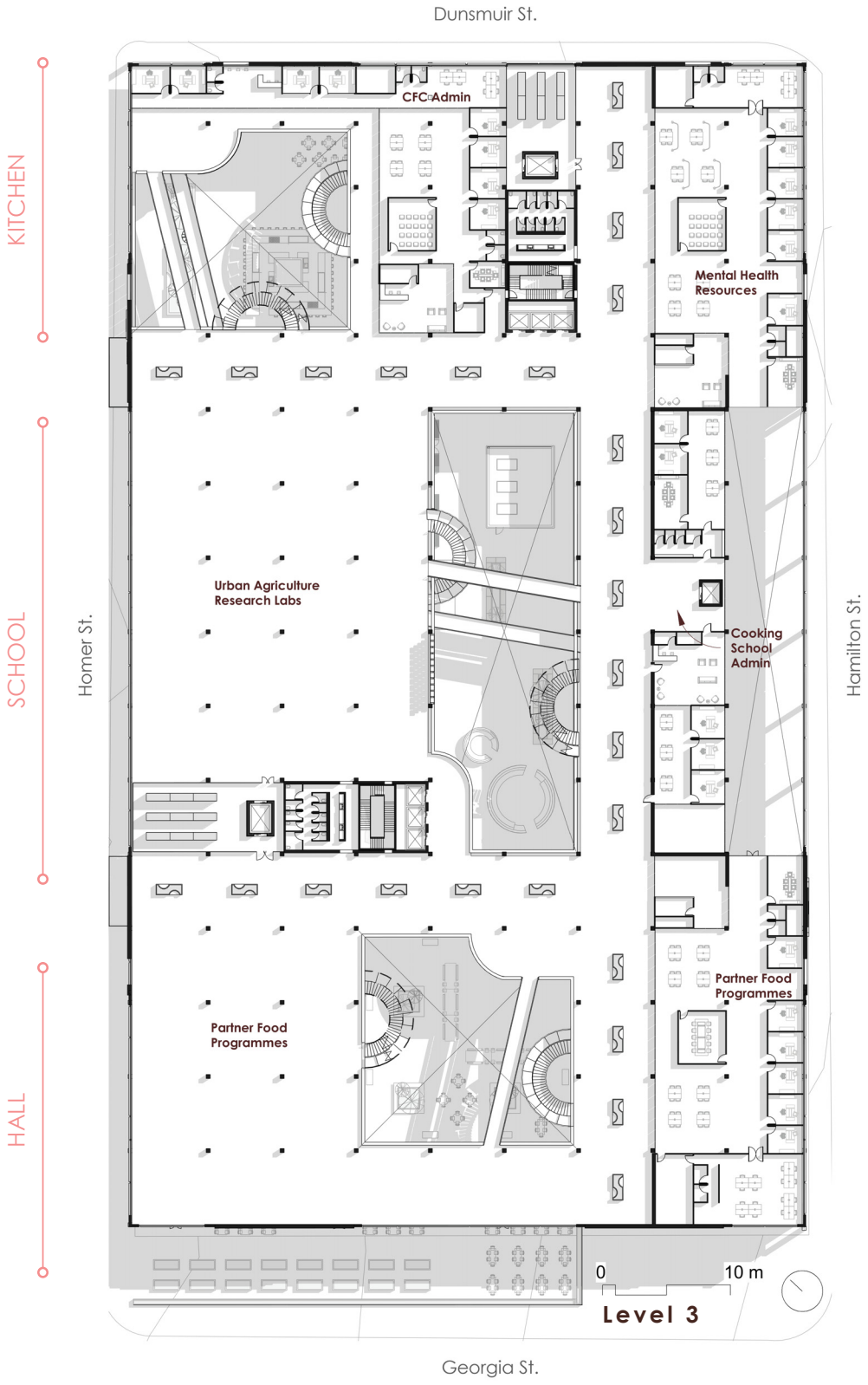


Section A

The jogged long section through the building (marked on the ground floor plan) cuts through the atria in each zone. It shows how the circulation streets clearly delineate each zone and suggests the variety of experiences that characterize the ground floor of the building in each atrium.



Level two of the Food Stop houses resource programmes in the Kitchen zone such as employment services, public showers and rentable commercial kitchen space. The School zone on this level is dedicated to a professional cooking school, imagined as a satellite programme of the Vancouver Community College nearby, while the Market Hall features student-run dining.

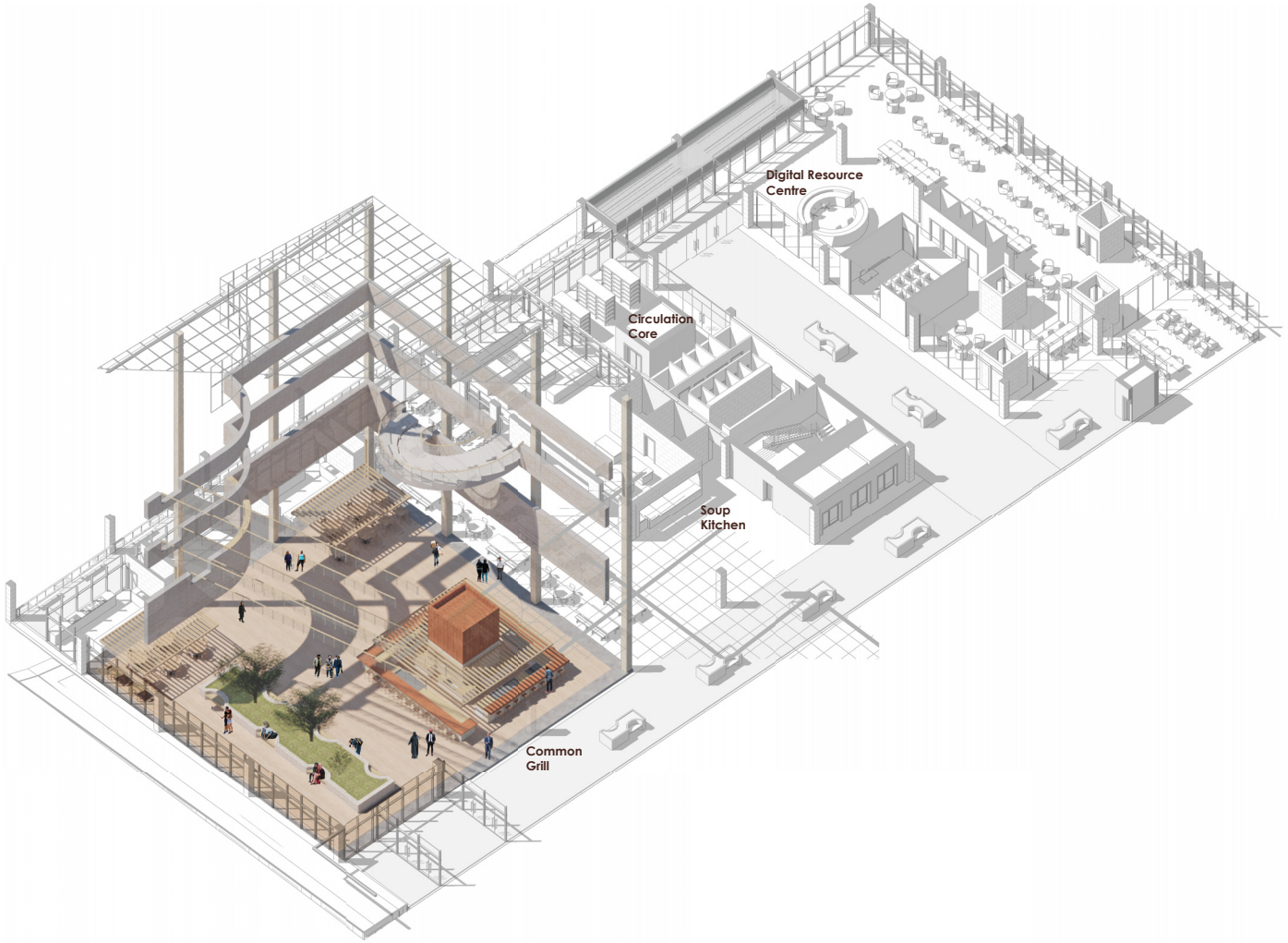


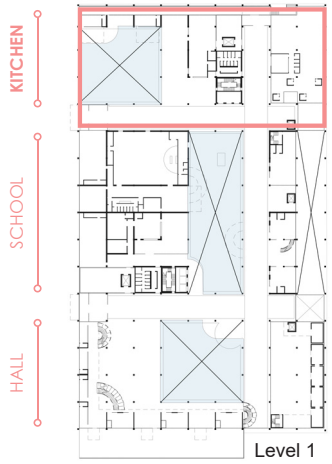
The third floor of the building houses a centre for mental health resources and rentable office and programme space for partner organizations such as urban farming and agricultural education organizations. The School zone provides space for an urban agriculture research facility envisioned as a partnership with local universities.

View of soup kitchen in the Kitchen zone with the common grill in the foreground.

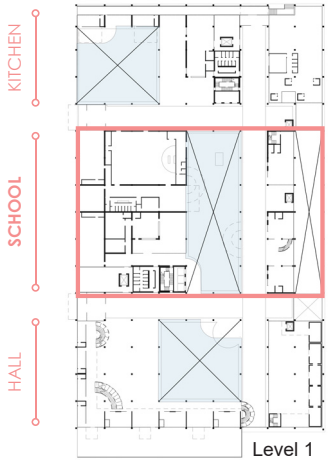
View of community kitchens with School atrium in the background.

View from the Market Hall atrium into the public market with harvest tables in the foreground.

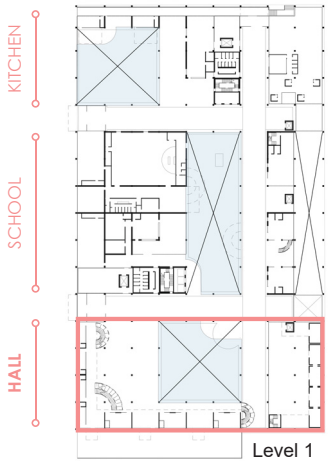




Axonometric view zooming into the Kitchen zone highlighting the spatial relationship of the atria within that portion of the building. Each atrium features a key element that characterizes its zone. In the Kitchen, this is the Hearth, a common grill which removes the separation between cooking and eating and allows people to visually or even actively participate in the cooking process while eating.



The School atrium emphasizes learning and connecting socially through play. The space is punctuated by dynamic furniture and the core element is a wooden playroom pavilion for kids.



The Hall atrium celebrates the act of sharing food as a community. The defining element of the Hall are the two large harvest tables that frame an open space for performances.

for job opportunities. Demonstration cooking theatres and a large lecture theatre are located on the ground floor for shared use by community groups. Other School-related programmes on the ground floor are a student-run pastry shop, a seedling centre that starts plants for the building's other growing spaces and a bakery lounge for BYOD ('bring-your-own-dough') baking and pizza parties. The second floor of the School zone hosts the primary programmes for the culinary school such as the teaching kitchens, student facilities and library as well as a daycare and family nutrition centre across the atrium. On the third floor of this zone, urban agriculture research labs affiliated with post-secondary institutions can conduct studies utilizing the different types of urban farming infrastructure at the Food Stop such as the vertical farm towers.

The Market Hall

The third major zone - the Market Hall - fronts on Georgia Street, Vancouver's primary downtown thoroughfare, facing the Vancouver Public Library and Yaletown. The Market Hall's programmes are more commercially oriented: a large farmer's market on the ground floor that is open daily and space for musical performances and patio dining. A nearby art gallery is equipped to display mixed-media artwork that might focus on the environment, nature and sustainability.

The second floor of this zone supports start-up or student-run restaurants featuring different cooking methods reflective of Vancouver's culturally diverse cuisine. Here, patrons can taste the foods of the world at reasonable prices and students can develop their skills in cooking and serving in a restaurant setting. The third floor of the Hall is occupied by partner programme offices. Here, other urban farming, food

education and food security organizations in Vancouver (of which there are many) could operate satellite programmes and easily collaborate with other Food Stop programmes.

Strategy 4: Programme Clusters

Each major zone in the Food Stop is further articulated into programme clusters of Grow, Cook and Eat. The thesis argues that social spaces need to include a range of activities for people to feel able and welcome to interact with each other. By providing each major zone with growing, food preparation and food sharing, the project can achieve that goal. Further, this clustering allows the building to express the socio-spatial qualities of food in multiple places in multiple ways.

Socio-Spatial Qualities of Food

Food has spatial implications. Susan Parham's book *Food and Urbanism: The Convivial City and a Sustainable Future* studies the history of food spaces and describes the implications of their design on social dynamics and, importantly for this thesis, the public realm. Parham argues:

> Food...is central to urbanism, because it is so critical to creating and maintaining vitality, complexity and intimacy; because it can help make and support walkable, mixed, human-scaled and diverse places and because it can increase the focus of urban space on the public realm (Parham 2015).

Parham's book is structured around the spatial units of food and begins to set up a hierarchy for socialization and cross-programming of food spaces. The chapters in the book each examine the social dynamics related to a different scale of food space beginning with the intimacy of the table, moving to the kitchen and dining spaces, then to the public market as an outdoor room and finally to the garden and the spaces of urban food production (Parham 2015). Clustering these

The program is further organized into clusters of Grow, Cook and Eat within each zone so that social spaces include a range of activities allowing people to interact in a variety of ways.

Grow: View of the seedling centre across the interior street from the School atrium.

Cook and Eat: View of the bakery lounge and pizza oven also near the School atrium.

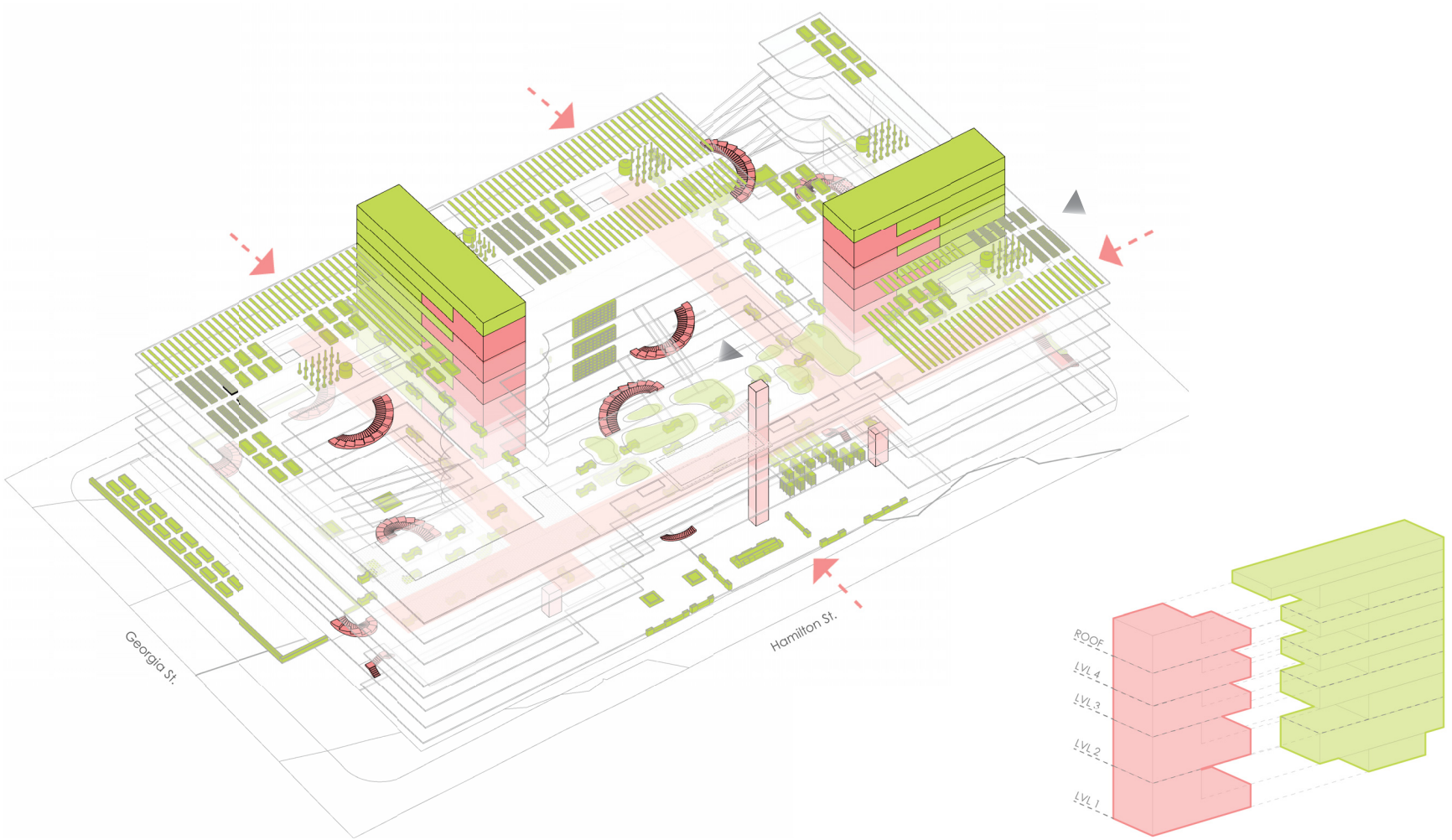
spatial units of food at different scales can allow these hierarchies to be reinforced or re-defined in unexpected ways. In the thesis project, the spaces for food production, preparation and sharing are tailored to each programme zone with a focus on serving (the Kitchen), teaching (the School) and celebrating (the Hall) food respectively. The result is that the qualities of each programme cluster are unique giving building users a wide variety of socio-spatial food experiences.

Strategy 5: Circulation Strategy

The street-level circulation through the building forms the base for vertical circulation to its upper floors. Vertical circulation towers are located at two of the building's main entrances. These visible and strong structuring elements do more than just move people. They also provide a framework for indoor vertical farms, and they act as wayfinding devices. Secondary circulation is supported at each atrium and the building mezzanine level with curved staircases and suspended walkways designed for socializing and people-watching.

Strategy 6: Nesting

The former post office is a massive concrete post-and-beam structure with concrete slabs. Notwithstanding the three large atria that are punctured through this volume, a great variety of programmed activities need to be supported on each floor. This thesis recognizes that these activities and uses may change over time. Therefore, the thesis "nests" programmed activities within this larger framework to achieve programme flexibility.



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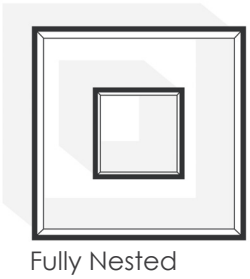
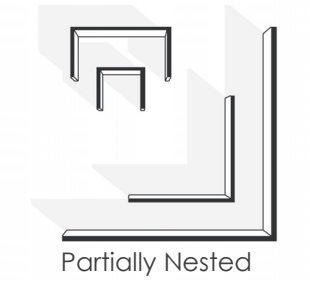
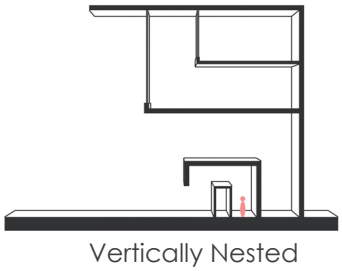
Growing Circulation: View of vertical farm tower at Dunsmuir Street entrance.

Social Circulation: Curving stairs in School atrium connecting levels two and three.



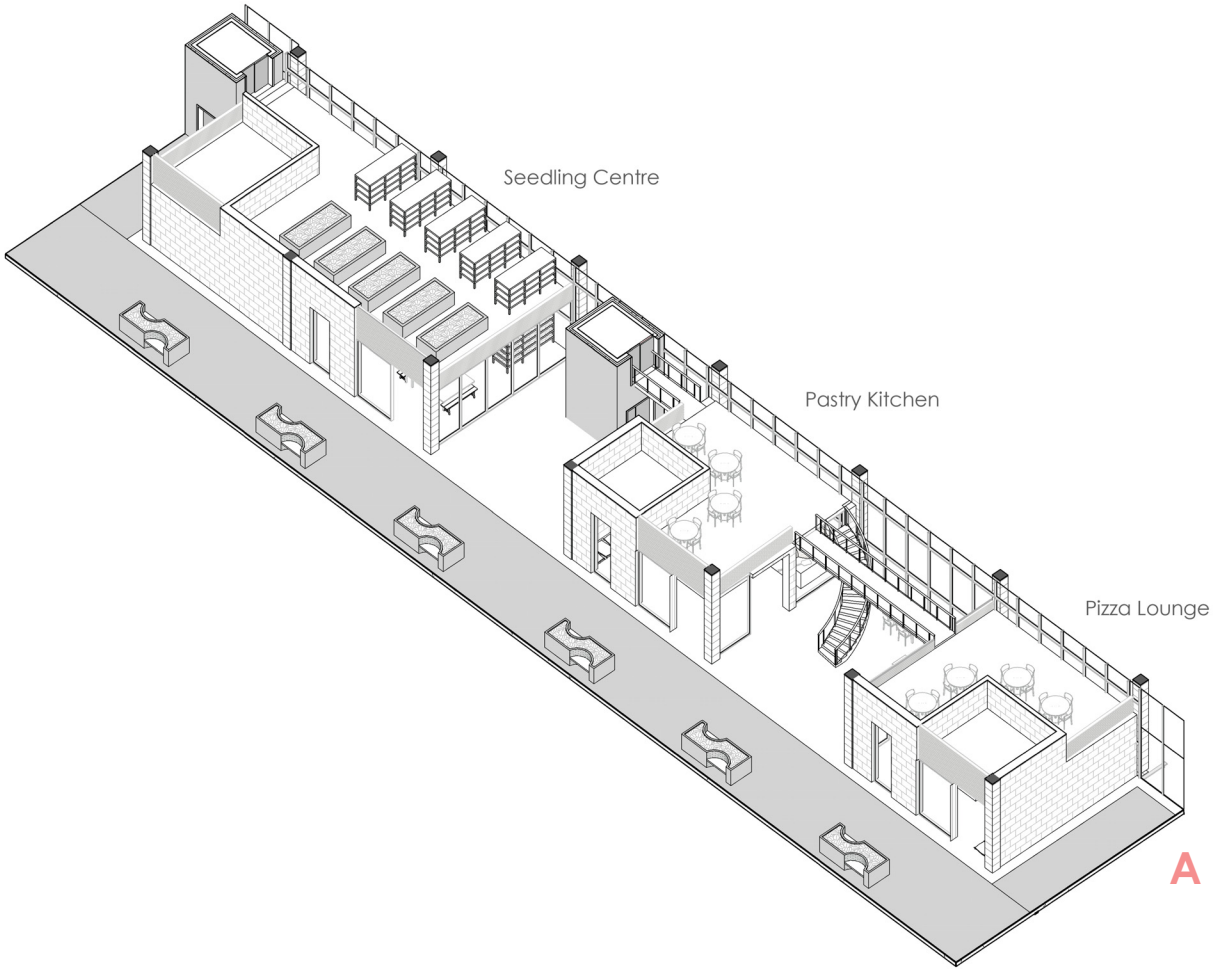


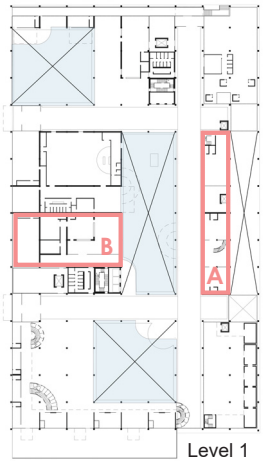


Diagrams showing multiple possible forms of spatial nesting.

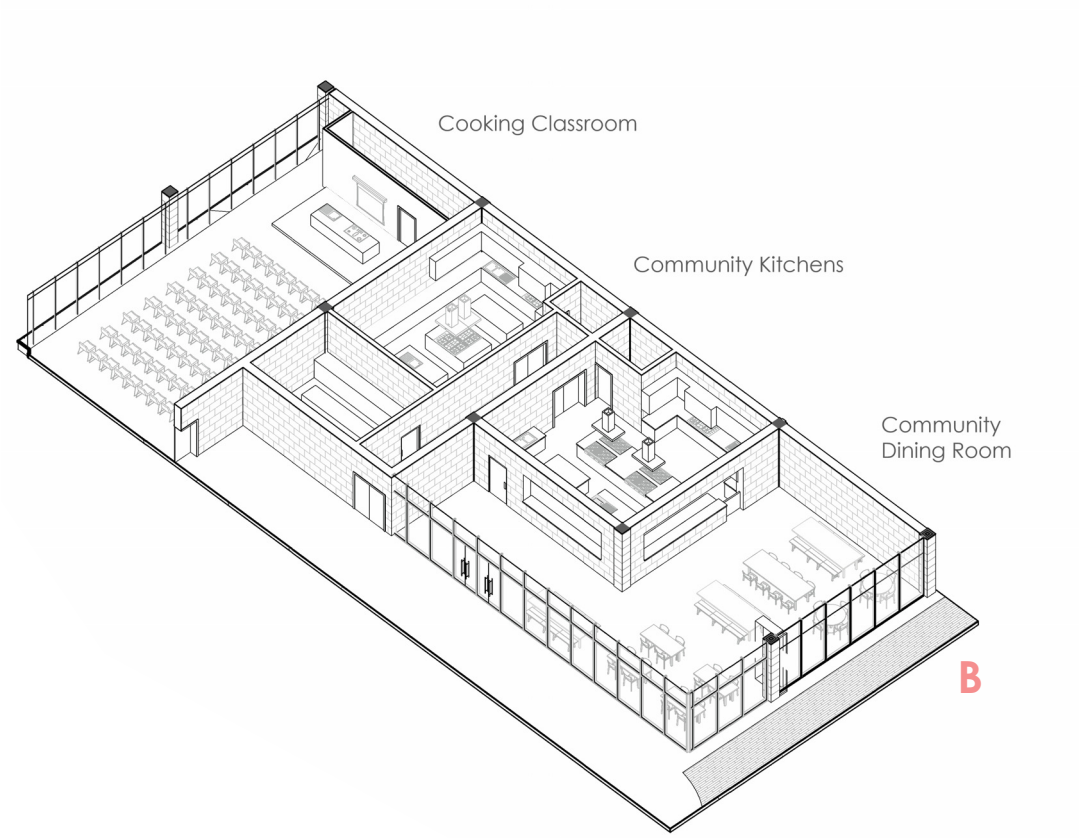
The concept of spatial nesting is not only practical for its flexibility. It also supports experientially rich design because it can be applied to programme spaces to achieve a diverse range of spatial configurations and adjacencies and accommodate social interaction at different scales. Architect, author and theorist Robert McCarter discusses spatial nesting in his book *The Space Within: Interior Experience as the Origin of Architecture.* McCarter (2016) explains that a crucial part of designing good interior space is the "nesting of spaces... at once intimate and immense, connecting us to the cosmos at the same moment as [they] ground us in the tactile touch" (9). McCarter proposes that spaces can be fully nested as in Louis Kahn's Fort Wayne Arts United Center (1966-73) in which the auditorium is a second distinct building nested entirely within the larger building (101). Or, spaces can be partially nested as in Frank Lloyd Wright's Prairie houses which nest small spaces within larger rooms to create a design language based on the repetition of a standard spatial unit at different scales (McCarter 2016, 100).

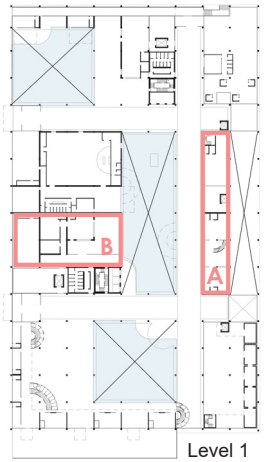
The former post office is a massive concrete post-and-beam structure with concrete slabs. Notwithstanding the three large atria that are punctured through this volume, a great variety of programmed activities need to be supported on each floor. This thesis recognizes that these activities and uses may change over time. Therefore, to achieve the principle of flexible programme as well as an experiential richness, the thesis "nests" programmed activities within this larger framework. In some instances nesting is articulated as small buildings along the internal circulation streets providing material and textural variety and an urban complexity as people move through the Food





To achieve the principle of flexible programme, the thesis “nests” programmed activities within the building’s existing structural framework. This and the following drawing show two examples of nesting which are not intended to be exhaustive. In example A the nested program elements are articulated as small buildings along the internal circulation streets providing material and textural variety and an urban complexity as people move through the building.





Example B shows a larger nested complex of multiple related programmes. Effectively, these nested sub-program elements will form their own interstitial space networks. By doing so, they also create a security strategy for the building in which programmes can be closed off individually as needed while the public streets and atrium spaces remain accessible.

Row Farming (Brooklyn Grange 2019)

Milk Crate Farming (Boston Medical Center 2017)

Plot Farming (Reichel 2015)

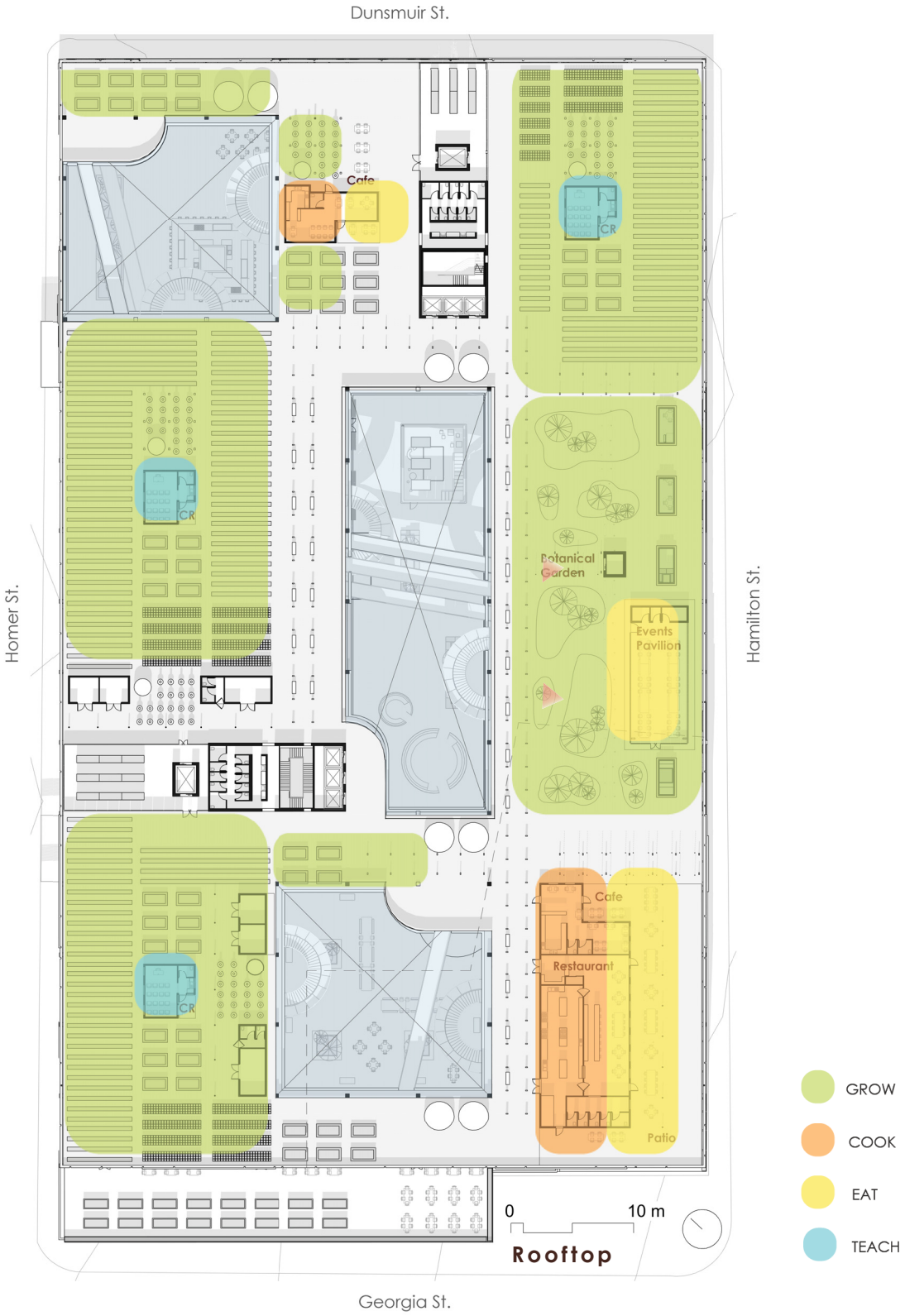
Hydroponic Tower Farming (Moulin Events 2021)

Stop. In other parts of the building, nesting takes the form of a larger complex of multiple related programmes nested within one another. Effectively, these expressions of nested sub-program elements form their own interstitial space networks. By doing so, they also create a security strategy for the building in which programmes can be closed off individually as needed while the public streets and atrium spaces remain accessible.

Strategy 7: Inhabiting the Fifth Facade

This building ‘grows’ up from the ground. People move up through the building past vertical farms, and the rooftop represents a peak experience for visitors. This expansive surface of over 10,000 square meters is largely sunlit and offers views across downtown. Between the atria, the growing roof is divided into blocks of urban farming, featuring four growing methods: rows of plants, crates of plants, growing towers and garden plots. The rooftop also layers eating and education programmes into the rooftop farm. It accommodates a floral botanical garden and adjacent pavilion for events; two cafes and a restaurant - all with covered patio space and views of the city and gardens; and small education pavilions at the centre of each major growing zone.

Furthermore, the rooftop design celebrates the Vancouver rain. A timber and glass canopy wraps from the circulation cores around the atria allowing visitors to traverse the rooftop while staying dry on rainy days. These canopies feature benches for resting and rain chains, a common design feature in Vancouver, that, acting as a down-spout, direct rainwater to the ground in a playful and dynamic display while sounding like a small stream. Rainwater is



Between the atria, the 10,600 sqm sunlit growing roof is divided into blocks of urban farming, featuring four growing methods: rows of plants, crates of plants, growing towers and garden plots. The rooftop also accommodates a floral botanical garden for events, two cafes and a restaurant and classrooms layering eating and educational programmes.

View of rooftop farm showing different growing methods - crates, plots and towers - in front of a vertical farm/circulation core.

View of rooftop botanical garden showing event pavilion and circulation canopy.

also collected on the rooftop at the south-eastern corners of the atria roofs in large tanks which can be used to supply water to the hydroponic growing towers and vertical farms.

Conclusion

The individual and linear articulation of the seven design strategies in the Food Stop proposal show how the building expresses the principles of social infrastructure. While the impacts of each strategy enforce multiple principles, in general, we see how the zoning and nesting strategies allow for flexible programming while the strategies to bring in light, cluster programme and inhabit the rooftop generate diverse and inclusive social spaces. Further, extending the public realm and the design of the circulation through, and into, the building contribute to the project's activated and porous public threshold. These seven strategies also demonstrate how the Food Stop addresses and anchors the surrounding civic buildings through programmatic linkages, its organizational response to the urban context and its transparent facade design, thus, connecting a network of public social infrastructure buildings in downtown Vancouver.

Aerial axonometric view showing the project in its entirety within the urban context.

Chapter 7: Conclusion

This thesis concludes in three parts. First, it emphasizes the value and opportunities of measuring and evaluating urban networks of social infrastructure. Then, it recognizes contemporary architects that are designing public buildings within the social infrastructure value-system. Finally, it invites citizens, cities and architects to recognize how social infrastructure can be viewed as a tool in public building design to express and promote contemporary social values.

Studying Social Infrastructure

As of writing this thesis Eric Klinenberg's work on social infrastructure is very recent, (2018) and there are no case studies at the urban scale that explicitly evaluate public social infrastructure networks besides this one. To gather the necessary information for doing such a study, this thesis drew on Gehl Studio's Public Space and Public Life study of downtown Vancouver, which effectively mapped and evaluated opportunities for social networks to form in public space. However, Gehl Studio's urban study did not include public buildings which, as this thesis has argued, are an essential part of public SI networks. Based on the limitation of the resources available for measuring and thus evaluating SI networks, more studies are needed to comprehensively map them. These could be done effectively as collaborations between urban planners (like Gehl Studio), sociologists and architects. Conducted over many cities in different countries and climates, these studies could reveal what types of public social infrastructure are the most inclusive and impactful in different climates and social contexts. They could also consider factors such as whether people rely more on public or private social infrastructure in different

sized cities; whether urban regions with varying levels of ethnic diversity have more or less SI; and whether income inequality consistently correlates to the privatization of SI. This sort of study would give urban planners, sociologists and architects more information about what public spaces and programmes are needed to support strong social networks in urban centres.

Architects on the Front Line

As the case studies in this thesis show, there are contemporary architecture firms designing and advocating for inclusivity and social programming in public space and building design. Firms like Adjaye and Associates, OMA and DS+R are setting an example for socially conscious public building design while speaking out about the need for architecture and design in the public realm to address social issues such as exclusion and deficient public amenities. These architecture firms and the discourse coming from them in the form of lectures, publications, interviews etc. should be recognized as a resource for designers striving to be social change-makers in the field of architecture.

Social Infrastructure as Social Justice

Public buildings are a reflection of society's values, and as these values change, architects are given the opportunity to use design to express and reinforce or contradict them. Public architecture, and particularly public building design, provides an opportunity for architecture to participate in current discourse around issues of social inclusion and exclusion as well as discussions around what resources and social support networks should be provided publicly - issues at the core of all public building design. These issues relate to fundamental questions about personal

freedoms, public versus private interest and human rights. By engaging with public architecture and interrogating its social function, architects actively insert their experience and design expertise into these dynamic and pressing cultural, philosophical and ethical conversations. Concepts like social infrastructure, when supported by a set of clear and pragmatic design principles like those developed in this thesis, can provide architects of the public realm with the tools to evaluate, design and advocate for the social spaces and programmes that support inclusive, nourishing and resilient social networks in urban centres.

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