

**Inhabiting the Threshold: Housing and Public-Private Interface
at Halifax's St. Patrick's-Alexandra School**

by

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ABSTRACT

A public-private interface is a dynamic threshold between the private residence and the public city. It can be critically examined in terms of social scales, defensibility and ownership of space.

As cities densify, they face the challenge of providing dwelling space while intensifying community integration. Current approaches to housing often rarify cultural and social richness in the resultant communities. A new framework is needed for residential development, including an awareness of social dynamics, and building respectfully on positive patterns in existing contexts.

This thesis proposes a densifying mixed-used residential scheme on the vacant site of Halifax's St. Patrick's-Alexandra School, governed by a framework of social scales and responding to typological and physical conditions in the community. It seeks to integrate public services into existing structures, and to articulate the threshold between public and private programs, making a case for a socially vibrant model of urban housing.

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GLOSSARY OF TERMS

Conceptual Framework: A system of thinking that forms the logical basis for an approach towards an analysis or design process.

Defensibility: The quality inherent to a space that makes its user feel secure, not only in the sense of personal safety, but also in one's ability to feel ownership over space. This is important in terms of providing a place to dwell, but also in developing tenure in a community.

District: Based on Kevin Lynch's *Image of the City*, this is a large scale, usually two-dimensional region defined by a specific program of use.

Field: A continuum comprised of conditions, which in their aggregation embody a specific place or thing. The dynamics of fields are governed locally, at the level of their constituent parts, and are do not conform to overriding geometries.

Field Condition: The definition of a specific part of a field, which interacts locally with other parts of the field to define the whole of which it is a part. These may be magnitudes, vectors, or any number of describable or quantifiable criteria.

Moiré: A pattern of interference generated by the combination of multiple fields. This can be used to compare and contrast fields and derive emergent trends from their mutual interference.

Ownership: Related to defensibility, and among other things, originating in involvement in and responsibility for a given space, this is the feeling that a space belongs to its user.

Parameter: A specific criteria or rule that defines part of a whole, based on input values similar to a field condition.

Parametrics: A practice of collecting and analysing information, with the goal of synthesizing new forms or information derived specifically from the original data, and the rules by which it is interpreted.

Perforated Perimeter Block: A model of housing based on the perimeter block, but with multiple access points in the perimeter, such that the internal shared space is somewhat accessible to the broader public.

Perimeter Block: A model of affordable housing which encloses the central space of a city block with a wall of housing, seeking to create a space that is shared by the residents, and secure from the broader public.

Positive Space: Space that is formalized by objects, (bounded and distinct). This is one possible characterization of “ground” in the theory of figure-ground.

Public-Private Interface: A dynamic threshold that exists between the public and the private realm. This can occur on any scale, and can be examined in terms of its form and functionality for its performance

and sense of place.

Row Housing: A model of housing, based on the adjacency of multiple dwellings that share parti-walls, and to a certain extent, a common orientation. The dwellings may be oriented as double aspect, single aspect, front to back, or back to back.

Twin-Row Housing: Similar to row housing, this typology implements two rows of housing, with an enclosed space between them, used for social interaction and circulatory access.

Social Metric: A system of correlation between physical distances and their inherent social properties. These are defined by the capacities of the human senses to observe over distance.

Tenancy: A single unit of dwelling, as defined by the particular model of ownership, such as renting or owning.

Tenure: The long term occupation or use of a thing or place, related to permanence of settlement. Tenure can be instrumental in the development of a stable community dynamic (though it should be noted that this dynamic is inherently neither positive or negative).

Transience: A characterization of the model of living in which people do not stay rooted to a single place for a significant length of time, resulting in either sporadic patterns of habitation, or ones where communal relationships do not have a chance to de-

velop.

Tower Block: A model of high density housing which consolidates the dwellings into a single built structure, with common means of circulation, and generally a degree of open, publicly shared space surrounding it.

Urban Space: The area in which the life of the city (or other human settlement) occurs. Sometimes characterized as a “fabric”, which implies a continuum of use and interaction between elements of both public and private natures.

CHAPTER 1: INTRODUCTION

Area of Study: The Public-Private Interface

The public-private interface is composed of many thresholds in the urban fabric and can be examined at many scales, taking different forms in each. In its various manifestations, the nature of the interface defines the relationships between people and their environment, creating the physical and social conditions of habitation by which designs are judged to be successful or flawed. People move through this interface, work in it, use it for recreation and to simply linger (Gehl 2005, 20). It is the bridge that facilitates the integration of individuals from space that is their own into the communal space of the city, enabling the functioning of society.

For all of this to happen successfully, these thresholds need to be able to integrate and juxtapose programs of public and private, and must do so in a defensible way. The defensibility of space refers not merely to one's personal safety, but also to the sense of ownership one feels for any space they inhabit, be it the private of home or the public space of a street or park. This condition of ownership is essential in empowering people: to making them feel responsible for the communities in which they live (Newman 1972, 9).

The scale of space and its relationship to social behaviour is a major determining factor in an ability to strike a balance between public and private. It de-

defines the potential use of a space, and must correlate with its intended program if designs are to be considered successful (Gehl 2005, 34).

At the scale of the city, one might consider the districts of which it is composed. These are, for the most part: two-dimensional regions dedicated to public or private uses of varying types (including public institutions, commercial cores, and private residential areas). The interface at this level would be defined in terms of the boundaries of these regions (defined differently depending on the city) as well the paths that move between them, granting access (Lynch 1960, 47). The perceptions of this interface occur in one's conceptual understanding of the city, but may also become physically apparent at instances where the transition is sudden, or distinct. An example of this manifestation might take the form of a residential building positioned immediately adjacent to a public park. Here the transition is clear from the private to the public realm, and how the design of the threshold between them is articulated defines the nature of their relationship.

The interface may also occur between scales, or at least where one concentric scale, such as the neighbourhood (or, if it is large enough, the city block), touches the broader scale in which it sits. This case is often where the interface is heralded as an exemplary planning strategy, integrating the varied programs of the city, or criticized for creating conditions conducive to ghettoization, excluding the public and isolating the residents.

At the scale of the building or the development, the interface fluctuates dynamically, articulating itself in order to respond to the many conditions required by the (in urban centres) close proximity of the public and private realms. This is where the final demarcation of a person's truly private space in the city exists, and as such here is where defensibility must be strongest. In some cases, the transition may be a solid boundary, defining exclusive access to the private realm by shielding one space from another. In others, it may take the form of a portal between the two; as an entryway or, less literally, in the form of fenestration, which creates a visual rather than traversable connection). Within the house there are also dynamics of public and private space, defined by the configuration of the dwelling and its relationship across the interface to the space outside it.

Then there is the space between realms - where the interface takes on a dimension of depth. Here the transition may expand beyond the relatively two-dimensional depth of a door or a wall, becoming a space in its own right, and can be inhabited. When this happens, there is the potential to integrate public and private more dynamically than simply abutting one to the other across these boundaries. This third space may take the form of (among others) doorsteps, patios, front lawns, and courtyards, through which access may be achieved.

Thesis Question

How can the articulation of a public-private interface, comprised of public space, private space, and the

thresholds between them facilitate defensible dwelling and meaningful integration of the two spheres in mixed-used development?

Site Description

The site is that of the currently vacant St. Patrick's Alexandra School, which closed in 2011. It sits in a central Haligonian neighbourhood bounded to the southwest by the Halifax Common, to the southeast by Cogswell St. (and downtown) and by the Barrington Street expressway to the northeast. The area, particularly Gottingen Street, acts as one of the main gateways between downtown and central Halifax, and the North End.



Figure 1.1 Isometric view of Brunswick Street, Halifax (Bing 2014).

During the nineteenth century, prior to the site's use as a school, the block was occupied largely by town houses, forming a perforated perimeter (figure 1.2). Currently there are two school buildings on the site. The older was designed By Andrew R. Cobb as a boys' high school, and was built at the beginning of the 20th century, using concrete construction (column and slab, including the roof) (Cobb, 1919),

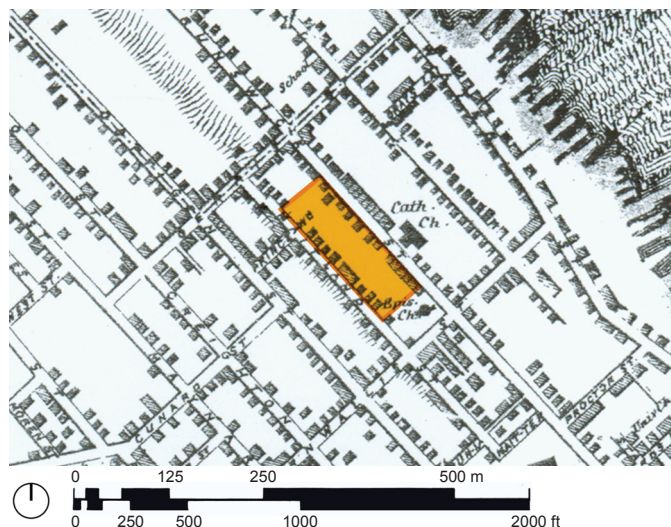


Figure 1.2 Map showing early patterns of settlement on the site with the historical configuration of the site as a solid block. The current parcel area is shown in orange. City of Halifax 1865 (Dalhousie Resource Centre 2013)

which was at the time quite innovative. The solidity and flexibility of the design is evident in the many years during which the building was in operation. The facade of the building is brickwork and the elevations have undergone several changes during its life, mostly in the updating and replacement of windows. The school was eventually converted into a boys and girls school, which based on the thinking of the time, required the removal of the original central front entrance (figure 1.3), using instead the two side entrances in order to keep genders separate.

The current configuration of the school was opened in 1971, which marks the completion of the Alexandra addition (see figure 1.3), the long building occupying most of the southwest side of the site (Kipling, 2013). At this time, the school was one of the largest high schools in the downtown core, but would lose its catchment population over time to Queen Elizabeth High School and (the other) St. Patrick's High



Figure 1.3 The St. Patrick's Boys School, as originally designed by architect Andrew Cobb. (Nova Scotia Public Archives 1931)



Figure 1.4 Maitland Street entrance to the 1971 addition. School (both located nearby, respectively on Robie Street and Quinpool Road).

(For original drawings of the Andrew Cobb Building, see Appendix H)

The neighbourhood currently possesses rich cultural diversity (including the heritages of several prominent Haligonian churches: the Cornwallis Street Baptist Church, Saint George's "Round" Church, the Little Dutch Church and the Saint Patrick's Basilica directly across from the school site). The community



Figure 1.5 View of Uniacke Square, showing parking areas and jarring transitions from road space to the houses' front doors.

is in many places, close knit and welcoming, with a history of social activism.

However, the area also contains some of the peninsula's most impoverished communities, many of which have been isolated and ghettoized over time. The most famous of these would have to be the Uniacke Square development (figure 1.5), which served as the housing for many African Canadians who were relocated from "Africville" in the 1960s (Kimber 2007). This development, once considered a socially innovative solution to the problem of rehousing the evicted population of the bulldozed North-End slum, was quickly realized to be socially stagnant, offering little or no means of ascension for the impoverished residents (Kimber 2007). The site is also across the street from the massive Harbour View Apartments complex (figure 1.6), previously known as "Ocean Towers," which is a series of run-down apartment buildings over a partially commercial podium. This structure constitutes some of the



Figure 1.6 View of Harbour View Apartments, looking northeast across Brunswick Street from the site of the school.

city's highest density housing.

Because of their impoverishment, the residents of these communities are specifically vulnerable to the destructive outcomes of gentrification, which could occur in the development of the site. This is a specifically sensitive subject because following the closure of the school, the site was nearly sold to a developer, while local community groups made a case for its adaptation for use as a community facility (Fairclough 2012). The future of the site's development remains in limbo but proposals for communal use are being considered.

Description of Program

The intended design outcome of this thesis is a complex mixed-use residential scheme on an urban site, with the primary aims of densifying and improving the accessibility and functionality of the site. On the scale of the building, the major end is to develop a framework for the integration of public and private

programs, without causing excessive exposure of the private space in which people dwell or creating prohibitive exclusivity in the public spaces and facilities. This implies an analysis of the specific social conditions of the neighbourhood as well as secondary precedents, in order to comprehend and respond to the relationships between social activity and the built forms that support (or indeed hinder) habitation.

Another end is to identify how the site is acting in its context, on the scales of the city and the neighbourhood requiring a method for understanding the demographic distribution of the city of Halifax. The thesis proposes a logical system of siting such public-private settlements within an urban fabric in order that they may help to regenerate areas in need of support.

Specifically, the program of the project involves a variety of affordable residential typologies, as well as “live-work” residences, which support a commercial presence on the site. The public element is comprised of community facilities, housing such uses as shelter housing and outreach programs, as well as rentable multi-purpose spaces, and areas for community congregation. Part of this is achieved by imagining the involvement of the Mi’Kmaq Native Friendship Centre, an institution of community support, which has publicly indicated their interest in adopting some of the existing school facilities for their own programs (Halifax Regional Municipality, *Former St. Patrick’s Alexandra School Property Public Engagement Session Minutes*, 2013).

Relevant Aspects of Architecture

The thesis focuses on the formation and integration of effective public and private space in a densifying urban core, and the articulation of the threshold between the two. The consideration of the many thresholds leads to an investigation of social space and how it relates to the typologies, topologies and morphologies of built form.

The investigation of these ideas is based in a design process that considers the figure-ground relationship between objects and the space they inhabit. It does not look at the two as separate design questions, but rather parts of a continuum, characterized by a series of dynamic thresholds. These thresholds constitute meaningful boundaries and passages within this continuum, and their articulations define the effectiveness of each space relative to the intended programs.

This design process draws on and synthesizes the works of (among others) Jan Gehl and Gordon Cullen, in order to develop a framework for iterative design of social space.

Further, this process involves a parametric consideration of defensibility, in order to evaluate and further iterate design configurations for the site. This is based conceptually on Oscar Newman's book, *Defensible Space; Crime Prevention Through Urban Design*. The representational application of this concept is inspired by the writings of Stan Allen on the topic of fields.

CHAPTER 2: THEORETICAL FRAMEWORK

Typological Spaces for Habitation

Throughout the twentieth century, many changes have occurred in the patterns with which people occupy space. Settlements have been challenged by the growing need to provide housing for increasing populations, as well as finding ways to reorganize the social conditions under which people live. More recently, issues of environmental sustainability have been raised, along with calls for reversions to previous modes of living, which only decades ago were much maligned. This all continues a process of iteration on the topic of the ideal mode of habitation, based on the definition and priorities of our values as a society.

Typologies and Their Interfaces

The nature of the interface between public and private depends greatly on the typology of housing in question.

Towards the end of the nineteenth century, the Garden City Movement emerged in England, and was championed particularly by Sir Ebenezer Howard. This movement was a rejection of the functional and social problems of the industrialized city, in favour of a model of living that was seen to be more in tune with nature and based on a framework that was meant to guarantee social justice (Ward 1992, 163). This drove the (largely theoretical) development of

a series of “Garden Cities” in the form of relatively rural communities, organized into groups of six around a seventh, central community. These were to be limited on the large scale by encircling green belts, and developed on land that was owned by the residents, in their best interest (Ward 1992, 28). These were tightly controlled in plan, and designed to provide an environment that was comprised of units of house and garden, combined in the English ideal of the time (Colquhoun 2008, 4). The design mandated semi-detached housing and densities of 30 dwellings per hectare in towns, and 17 dwellings per hectare in the countryside (Colquhoun 2008, 5).

There were fairly few realizations of this model, as they were not quite as self-sustaining and spontaneously propagating as Howard had hoped they would be (Ward 1992, 163). However, they did inspire subsequent movements in North America, such as Frank Lloyd Wright’s “Usonian” ideal, as well as a basis for the suburban system, which would spread rapidly across the country. A key example of this is the prototypical suburb known as Radburn in Fairlawn, New Jersey. Designed by planners Clarence Stein and Henry Wright in 1929, this community was based on the idea of a “super block” of housing, formed by perimeter circulation roads, which connected areas of settlement via the highway system. Internally, the streets were organized into cul-de-sacs, alternating between the rows of houses with pedestrian walkways (figure 2.1). The idea was to create a communal environment.



Figure 2.1 Radburn, New Jersey, circa 1929. Shown here is the superblock layout, with a nested system of cul-de-sacs, and pedestrian access paths (*Stein 1951*)

In the suburban model of habitation, in that it is removed from the densities and the resultant social structures of the city (Frederick 2007, 6), the nature of the public-private interface is inherently different from that of the city. This model facilitates the transition largely via landscaping, as well as the orientation of the dwellings on lots. One of the major differences between the urban and suburban models of interface is the question of density: the suburban requires much more space, and that space can be characterized as negative as it is interstitial to the objects arranged within it (Frederick 2007, 7). In an attempt to refocus development efforts on city centres, it is important to provide some suitable alternative to the supposed luxury of space that makes the suburban approach attractive to so many (Levitt 2010, 71). The suburban system is less sustainable than metropolitan living, as the sheer area covered requires greater investment in infrastructure, and a heavy dependence on motorized transit. While sub-

urban housing may appear to be more affordable in the short term, in terms of property cost and taxes, longer term expenses, such as car ownership, and isolation from the utility of the city, represent major drawbacks to this model.

Another of the theorists to revolutionize conceptions of the city was Le Corbusier. His conceptual urban plans in *La Plan Voisin pour Paris* (figure 2.2) and *Ville Radieuse* (based on his idea of *La Ville Contemporaine*), treated the city as a machine, to be categorized, mechanized and optimized. These designs rejected the existing form of a city wholesale, and proposed a regularized plan based on segregated zones of use. In order to maximize green space, housing was organized into enormous towers, lifted off of the landscape on pilotes (figure 2.2). This model, while never successfully implemented at full scale by Le Corbusier, would go on to inform the mega-structures which have become major and



Figure 2.2 Plan Voisin pour Paris, Le Corbusier's vision of la Ville Contemporaine if applied to Paris (Le Corbusier 2011)

often problematic parts of the modern city.

These locally high density models physically and psychologically remove the dwelling from the ground (Levitt 2010, 69). This means that some form of communal access is required, moving the access space inside of the structure. The result of this necessity is an exercise in design that has to do with space planning, and is often pragmatically concerned with adherence with standardized building codes that dictate functional requirements such as emergency exit distances and maximum walk-up heights (Levitt 2010, 72).

One must also consider the nature of the space created by this exercise, requiring problem-solving to make the basic functional requirements work alongside ideas about community space, and the nature of its use. Often, this means grouping residences around cores that provide vertical access, and depending on the number of tenancies serviced by a specific core, there may need to be some form of corridor (Levitt 2010, 72). These elevated models tend towards excluding the broader public, and creating an isolated space for the residents of the building to share. This does provide a degree of privacy and security, but generally limits the social integration of the space into the broader community.

An example of this model that attempts to combat the inherent isolation of tall buildings is the Byker Wall, a serpentine walk-up housing structure in the Byker Redevelopment in Newcastle, England. De-

signed by Erskine Tovatt Arkitekter AB, the project, including the wall and a large mixed-use neighbourhood to its south, was completed in 1982 (Collymore 1985). the housing is accessed via communal south-facing galleries, which act as elevated social space with views over the rest of the community (figure 2.3). This achieves a visual connection for the residents to the broader community, but still fails to provide much meaningful integration of the social space at that scale.



Figure 2.3 Byker Redevelopment, view from communal access balconies on the Byker Wall, 1989, photograph by Grant Wanzel

This approach falls in line with the notion of “streets in the air,” which treats each building as a microcosm of the city, by creating a network of dedicated access space with an intent to foster good social conditions. This has proved to be a problematic typology, due to the inability of the “streets” to perform as actual public spaces, given their lack of flexibility in accommodating the amenities that make vibrant street activity possible. Additionally, they segregate the community of the building from the world around it, which combined with the lack of program leads to a rarefied social condition in the space. (Heckmann, and Scheider 2011, 37). Council Housing Estates throughout the United Kingdom have suffered from issues related to these walkways, which tend to create anonymity for each resident due to the sheer number of tenancies sharing access, and the sameness of that access.

This problem is one that is common to mega-structure housing schemes, which seek to recreate the entire functionality of the city within a single closed building. Another example of this is Scotia Square, just a few blocks south of the site in Halifax’s downtown core. One particular similarity it bears to Le Corbusier’s theory is the “urban renewal” strategy by which it was developed, which involves the total demolition of the existing communal structure to make way for the new, supposedly superior configurations.

Scotia Square is a massive structure, including apartments, office space, a mall, and parking. It is

an entirely closed system, such that one could live their entire life without ever setting foot outside. The building faces the problem of there being no clear transition between the private space of the dwelling, and the rest of the city. The thresholds that make up the public-private interface have become convoluted in an effort to recreate the public realm artificially, and the simulation simply does not adequately provide for people's need for flexibility and broader integration.

Another housing model is found in the immediate vicinity of the site, which is that of town and row houses, oriented onto streets to create continuous and textured streetscapes. Here, the interface takes the form of front doors and porches, letting out onto sidewalks and streetscapes. This provides a formal point of entry, often being raised above the public space of the street, in order to achieve a degree of privacy for the dwelling (see figure 2.). The Creighton Street area of Halifax, to which the St. Patrick's-Alexandra site is adjacent, is a key example of this configuration, and has a rich history of communal



Figure 2.4 Town houses on Creighton Street (Bollinger 1953)

relationships based on the use of these thresholds as social space.

Inhabiting Space

Ethnography and Urban Form

In designing interfaces between spaces, it is important to comprehend the ways in which people relate to their environment: and what elements of a space people are attracted to, for instance, as well as its functional uses.

One approach to this question is through ethnographic study. William H. Whyte's observations on public space in the 1980s were pioneering in this regard. In *The Social Life of Small Urban Spaces*, Whyte identifies a number of elements of public spaces that make them attractive to people, and allow them to function well. Whyte's elements include environmental conditions, such as access to daylight and physical comfort, as well as more complex social characteristics, such as the defensibility of a secluded position with a view, or the excitement of being in the middle of the action: where everyone is moving (Whyte 1989). Among Whyte's major claims about the physical framework that supports these environmental attractions is that "People tend to sit where there are places to sit." (Whyte 1988) This implies that the provision of seating acts as a fundamental driver in the attraction of people to a space.

In order to analyze the ways in which the physical properties of a space affect its use, a study was con-

ducted on Victoria Park, in Halifax, Nova Scotia. This entailed the observation of people and their inhabitation of the space, recorded in terms of head counts of people sitting, passing through, and lingering temporarily. The goal was to understand what aspects of a public space attract people initially, what encourages them to remain.

Figure 2.5 shows a plan of the square at the northern end of the park, noting the paths people move along, as well as sites of sitting and pausing. The trends that emerge in this analysis show that the predom-

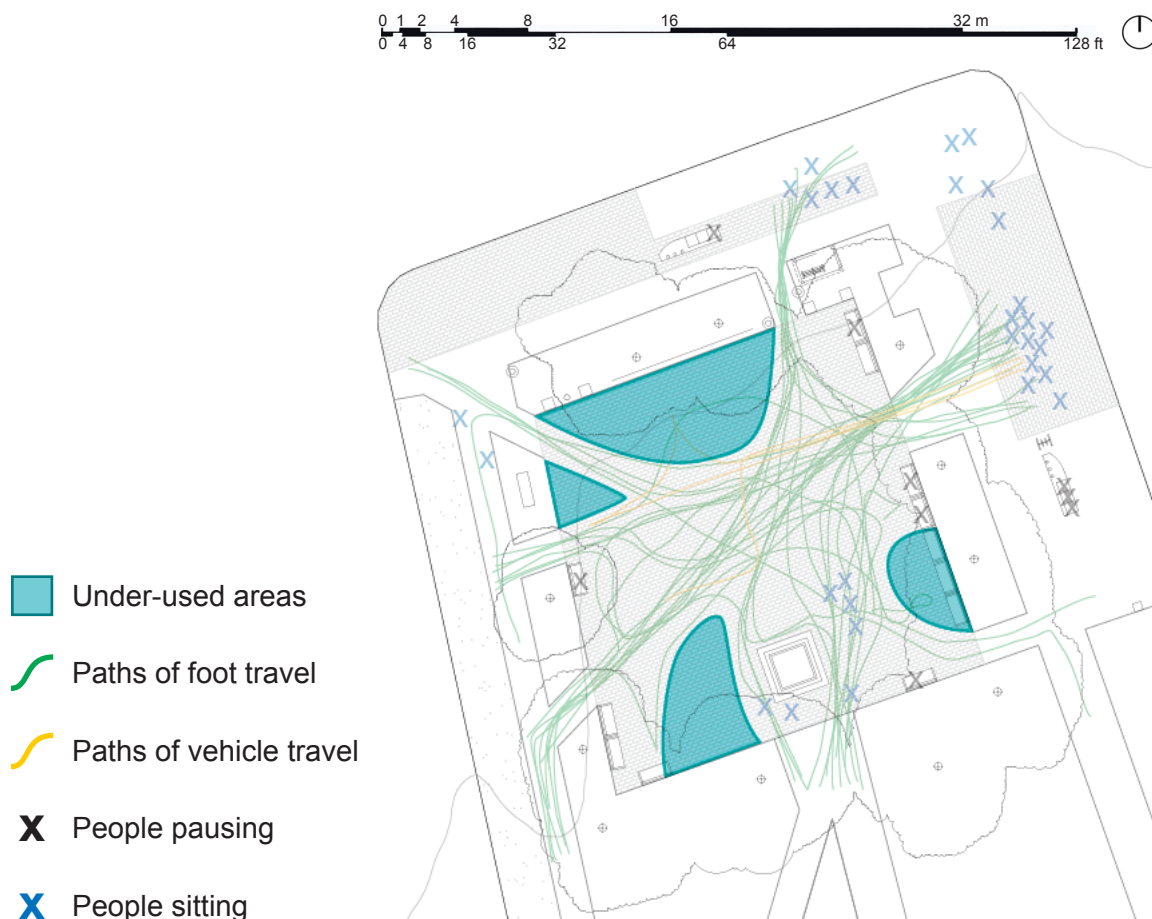


Figure 2.5 Ethnographic analysis of people using the Victoria Park square, mapping movement and lingering (both temporary and longer term). This data is obtained via subjective (human) observation, and analysed for “dead” or under-used areas in the space

ant use of the square appears to be transitory, allowing people to use it as a shortcut while moving in the southwest to northeast direction. It is possible that this occurs because of the nature of the context around it, following Lynch's notion of districts of the city (Lynch 1960, 47). To the south and west of the park, the city is composed of a combination of residential neighbourhoods, and university campuses. To the north and east is the downtown core, largely occupied by retail elements such as shops and restaurants, as well as commercial space. It could be that this site acts as a conduit between the two, forming a city scale threshold between the realm of the relatively private, and the more public in the city.

Another important observation from the Victoria Park case study is the general disuse of the ample seating provided in the space. Based on Whyte's foregrounding of the importance of seating, the park benches should be encouraging people to linger within the space, but it does not seem to be working. Additionally, people do not tend to pause much in the space, only doing so when a small farmer's market was set up. This trend was supported during the observation of design interventions made to the space as part of the study, the first of which took the form of a series of chairs, temporarily added to the site (figure 2.6). These were almost completely ignored, not once attracting people to sit in them while they were on the site.

In a subsequent intervention, a programmatic destination in the form of a free coffee stand, was in-



Figure 2.6 An intervention at Victoria Park, involving extra, more flexible seating than that which is already provided. Nobody is making use of it

stalled on the site (figure 2.2). While it still did not generate a throng of lingerers, it did manage to attract some attention to the park, temporarily increasing its traffic, and the time people spent within it.

Contrary to Whyte's claim that seating alone can attract use, the Victoria Park case study indicates that the real draw is program. The site must have a purpose, one that speaks to the interests or needs of the potential users. Going beyond the scope of this experiment, one could postulate that the presence



Figure 2.7 A second intervention at Victoria Park, this time involving the programmatic element of a free commodity to attract people (coffee)

of programmatic destinations could attract enough people to create a critical mass, which might then support the installation of subsequent programmatic destinations (figure 2.8).

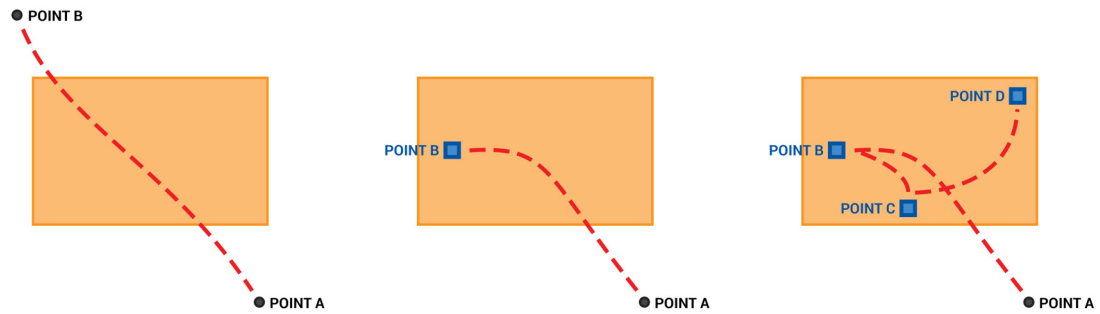


Figure 2.8 Diagram demonstrating the phenomenon lingering at programmatic destinations, and how critical mass can create support for other programs

It should be noted that these destinations are most effective when they are designed to correlate with the various ways in which people are likely to use a space. These may take the form of necessary uses, which are directly tied into the activities which people must do on a daily basis, such as commuting to work or school, or making deliveries. They may also take the form of optional uses, which are generally centered around recreation, and leisure. With good design, both necessary and optional use can constitute positive and enjoyable experiences of space.

Often programmatic destinations will be installed in the spirit of what is known as the “festival marketplace”, an element of superficial downtown revitalization, which many North American cities, including Halifax, with the Seaport Farmers Market, have adopted (Greenberg, 1998). In a context that does

not support it, a programmatic destination is not sustainable, and does little to improve the space. These strategies seek to pre-empt the natural development of the city, to put it on a fast-track towards improvement, but often it is difficult to respond to a city's exact needs in such generic forms, without deep consideration of the context (Greenberg 1998).

The Social Metric

The ethnographic mode of observation and analysis can be helpful in determining basic relationships, and relatively broad ideas about what makes space useable. The information it generates, however, is inherently empirical, looking at the effects of spatial design, rather than the logic at its source. Because of this, it does not easily lend itself to the pursuit of iterative design, in which configurations must usually be fine-tuned without being able to realize them at full scale.

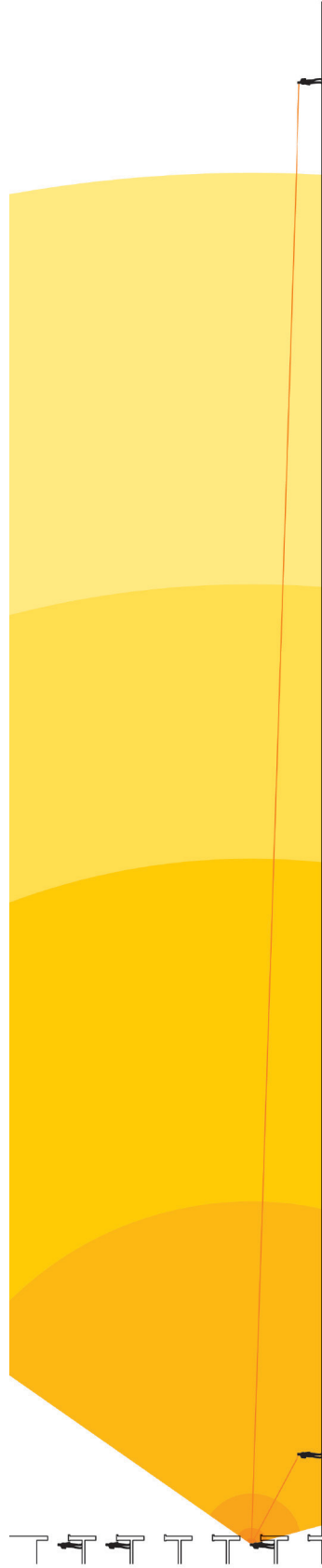
Indeed, the method of framing designs as temporary experiments is one that has shown promise in the planning and redevelopment of infrastructure in the public realm. This is because it not only allows the performance of the design to be judged in the real world but it also better introduces users to the potential utility of a change than an abstract drawing or model is capable of conveying. However, usually, too much must be invested in a development at the scale this thesis deals with, making real world iteration impossible.

It is the position of this thesis that the properties of

the space we inhabit must be understood in different terms, in terms of human perception.

Jan Gehl's book, *Cities for People*, articulates a compelling framework for doing just this. Gehl outlines a social metric which defines space in terms of social experience and the distance at which individuals observe one another. This metric establishes a series of social scales, based on the inherent capacity of the human senses to resolve detail about other people across distance (figure 2.9, figure 2.10). The specific scales are determined by which aspects of others it is possible to recognize visually and audibly, and what each of these aspects, such as general body language, identity, and emotion correspond to in social terms (Gehl 2010, 34). (See Appendices A through E for case studies investigating the mapping of the social metric onto existing spaces, in order to evaluate its validity).

This understanding of the human perception of space takes into consideration the natural orientation of our senses, which is predominantly forward, aimed approximately ten degrees below the horizontal. Our field of vision focuses more on the ground (extending below the horizontal by seventy to eighty degrees) than that which is above us (extending above the horizontal to only fifty to fifty-five degrees) (figure 2.11). This visual focus can be attributed to the shape of the human skull, and to the evolutionary process by which the human form has developed to suit our physical and social needs.



3.7 m : Social space

25 m : Recognize facial expression and emotions

50-70 m : Recognize gender and identity

100 m : Recognize general body language

300-500 m : Recognize basic human forms

Figure 2.9 This diagram shows the relationship between the scale of space and people's ability to visually recognize other people, their behaviour and emotions, based on Gehl's writing. At the maximum distance of 300 to 500 metres (dependant on conditional variations) we are only able to distinguish the basic human form from other objects. At 100 metres, we can recognize general body language; at 50 to 70 metres we can distinguish gender and identity; at 25 metres, it is possible to recognize facial expressions, and emotional states. Below 3.7 metres is the scale of social space, beyond which everything is public space (data from Gehl 2010, 34)

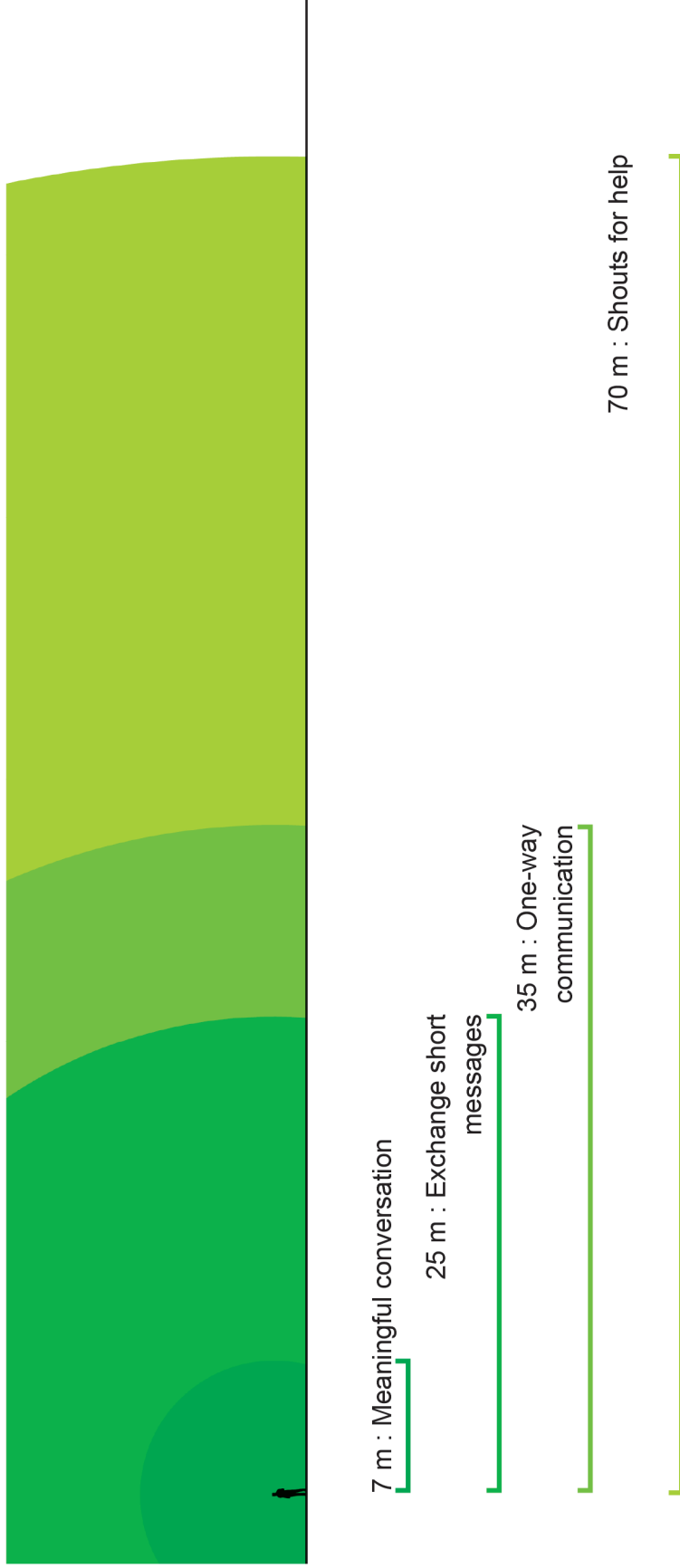


Figure 2.10 Gehl's metric for space, based on the capacity of the human sense of hearing and the viability of spoken communication over distance. At 70 metres, we can communicate only in shouts for help, while as we move closer, one-way communication of basic messages becomes possible at 35 metres, short two-way exchanges at 25 metres, and all meaningful social conversation occurs below 7 metres (data from Gehl 2010, 34)

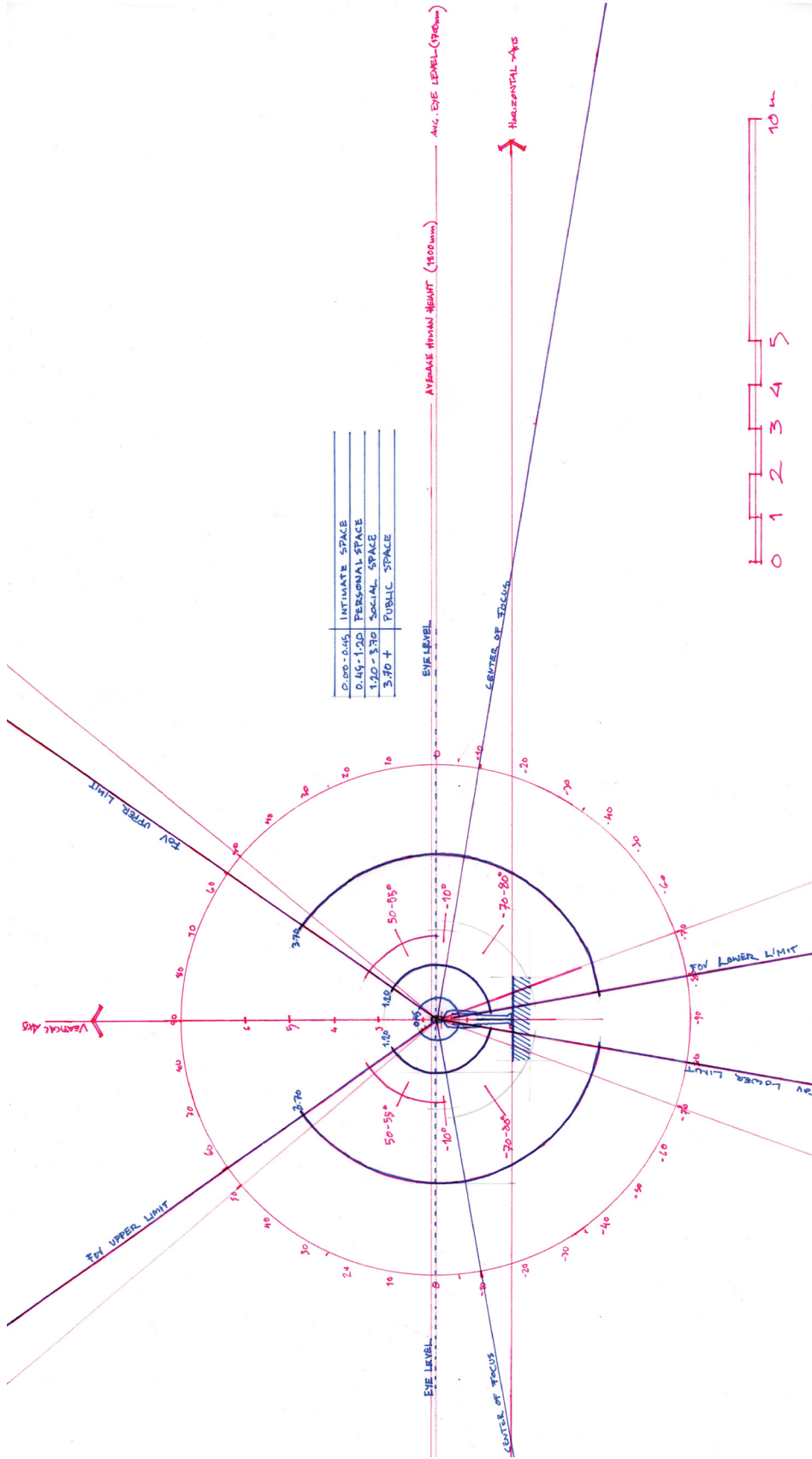


Figure 2.11 A diagram depicting the vertical field of view as seen by the average human. Facing 10° downwards, the upper limit ranges between 50° and 55°, while the lower limit ranges between 70° and 80°. This is due to our evolution, which is more concerned with recognizing ground-level dangers, than ones from above (data from Gehl 2010, 41)

Design Through Experiential Visualization

Gehl's metric defining the social scale of space can be readily applied to design analysis using orthogonal drawings. It is simple enough to look at a plan, elevation or section, and measure a linear distance, or to generate any of these drawings using modules that relate back to the metric. This approach can be likened to the act of space planning, which organizes program areas within a project based on a series of predetermined functional requirements for to their intended use, including area, adjacencies and accessibility (Frederick 2007, 13).

There are, however, a number of problems with the application of this metric, if it is applied in isolation. For instance, a plan may consider the width and length of a space, and a section may tell us about its height. Applying the metric, they may even take into account the viewing height of a person inhabiting the space. The problem is that human perception of space is not limited to these Cartesian directions, but instead includes an entire field of view, much of which can only be measured as a hypotenuse of the plan and section dimensions.

Additionally, there are invariably a number of conditions in the three-dimensional environment that cannot be clearly represented in a basic set of plans and sections, such as spaces under cantilevers, behind walls, or variations in depth. This is not to say that they cannot be represented in orthographic form, but that in a basic set of drawings (which often

constitutes the primary mode of design drawing in the early stages of a project, when such spaces are being roughed out), they may be ambiguous. This means that for these drawings to approximate an accurate representation of a space, they must become increasingly complex, with every space defined by a myriad of hypotenuses, and represented in many rotated sections such that all the possible viewing angles are shown. Later in the project, during construction drawing production, this work makes sense, and is in fact the mode of practice for most architectural firms. However, if the design is to initially emerge out of an understanding of this metric, this process (while academically possible) is prohibitively cumbersome.

Such problems are intrinsic to attempts to represent the human experience of a three-dimensional environment in reduced, two-dimensional media. While it is among the architect's most unique skills to be able to interpret these sorts of drawings in meaningful terms, they seem better suited to giving instructions on the final construction of a built work, rather than being the sole mode of design, if phenomenal and social experience is important to the design process.

This reality problematizes the project of visualization in design. Fortunately, there is an architectural tool that already exists, which may be employed in improving our understanding of a space: the perspectival render. An exemplary proponent of this media is Steven Holl, whose watercolour renderings

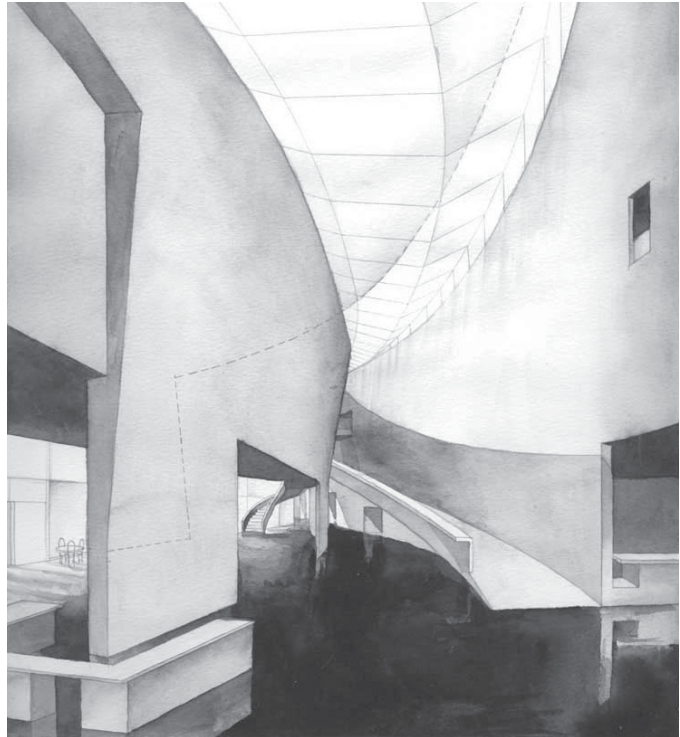


Figure 2.12 Phenomenal perspectival render of circulation space in wash. (Holl 1998)

of architectural ideas often form the basis for his designs (figure 2.11). Another, is Gordon Cullen who, in his book *Townscape*, demonstrates his ideas about the perceptual relationships between people and the space they inhabit, using sketches. Cullen's images (figure 2.12) are particularly relevant to this discourse, given the presence of the human form in



Figure 2.13 Phenomenal drawings, showing people inhabiting spaces. (Cullen 1961)

his drawings. There is an implied attention to social connections between people, which can be built upon using Gehl's metric.

Perspectival representation can be built upon with the strategic positioning of human figures at distances from the station point that correlate to the social scales Gehl describes. In this way, a space can be relatively easily evaluated for its performance in terms of the human experience, and whether it succeeds at producing the social environment it was designed for. It is also useful in that people may be positioned at viewing distances at the middles of the various social scales, as well as at their limits, to continually test the validity of Gehl's claims about how each scale actually performs.

In terms of architectural representation, an interesting parallel may be drawn between the perspectival visualization and the orthographic plan: where one uses a geometric scale, measuring basic distance and giving meaning to a two-dimensional layout of objects in space, the other uses a perceptual scale to convey an understanding of a space as a certain type of social environment. Both act as graphic scales, but the key difference is that in the orthogonal drawing, the scale is a supplemental element, whereas in the perspectival, it becomes part of the drawing itself, creating a more intuitive way of understanding architectural space.

Responding to the Context

Having developed a framework by which to under-

stand and iterate spatial designs, we must next consider how those designs interact with the conditions of their context. The arrangement of public and private spaces within a design must be made to mean something in relation to the broader city. This may influence the orientation of spaces or dwellings to provide specific significant vistas. One may also consider responses to terrain and topography, which take into account ideas of accessibility throughout a community, defining systems of access to the spaces and dwellings themselves. Attention may also be given to the ways in which the site interfaces with the city, how it accepts the movement of people, or the organization of program, allowing new development to integrate with existing patterns and structures.

One example of this kind of contextual consideration is the analysis of the previously mentioned Victoria Park, which examines how the movement of people through districts in the city can define activity

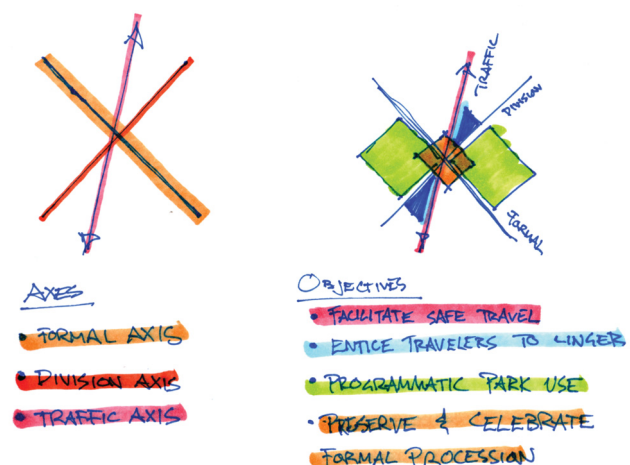


Figure 2.14 Urban axis conditions of Victoria Park pertaining to the formal arrangement of the park, the programmatic arrangement, and dominant foot traffic patterns. The second image shows a possible design intervention, based on these fields

on a single threshold site. Figure 2.13 defines the axis that represent these movements, in relation to the formal axis of the park. This analysis leads to a synthesis (see Appendix F) in the form of a modular redesign of the park, to improve its response to the movement across it, as well as to make it better suited to the social scales it inhabits.

Another example of response to context can be seen in *Housing in Kobe*, a mixed-use development in Kobe, Japan, designed by Moore Rudell Yuble Architects & Planners. In this hillside development, the formal axis of the artificial built environment crosses with the free-flowing gardens with a stream running through them, which descend with the natural topography of the site. The result is that at the intersection of the two paths, there exists a public space, immersing the development in nature, and tying it back to the topographical conditions of the context.

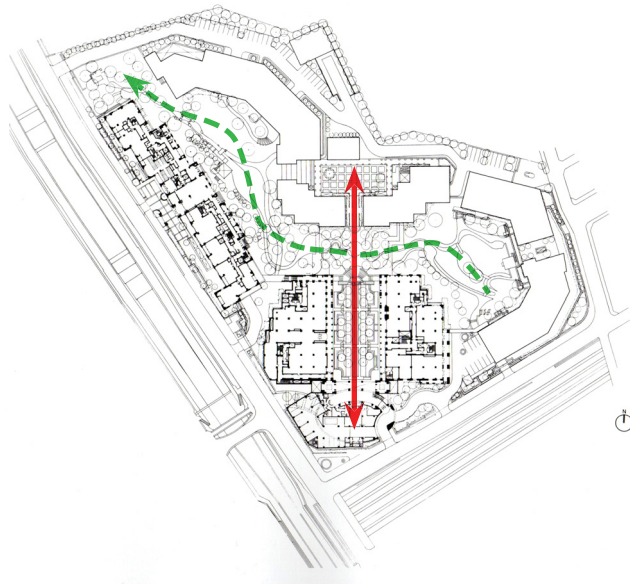


Figure 2.15 Moore Rudell Yuble Architects & Planner, plan of Housing in Kobe, 1996 (Zhou 2005, 117)

CHAPTER 3: DESIGN

Extracting Data from the Context: Siting in the City Centre

The program of this thesis as a mixed-use development incorporates an element that is a public institution. Along with what the design of a site of this size can do to affect change in a neighbourhood, this public element has the greatest potential to reach out and give back to the community in which it is sited. As such, when thinking about regenerative efforts on the scale of the city, one must consider where such a project is appropriate. This consideration connects back to the notion of the festival marketplace, which when installed without careful reading of the context, can not only fail in the performance of its intended functions, but can damage the city in other ways, through the misguided expenditure of capital, and land space (Greenberg 2011).

Developing a Parametric Tool

In the act of locating an appropriate site for a this public design intervention, a process of information gathering and analysis of the existing context takes the form of demographic analysis.

There are any number of approaches to gathering and understanding data about the city. The goal here is to develop a tool-based process which can be used in order to simplify the process of correlating this information, and produce results that can be compared objectively first, then refined through the application of further knowledge about the city.

The approach this thesis takes is to view each relevant criteria as a map, creating a series of images of the city, which show it only in terms of the specific criteria. The images are represented as scalar patterns of tonal values, and may be understood as fields, showing magnitude (through darkness, or intensity) and position. In his book, *Field Conditions*, Stan Allen writes on the application of field conditions as a way of understanding the urban fabric of the city:

What these field combinations seem to promise in this context is a thickening and intensification of experience at specified moments within the extended field of the city... The new institutions of the city will perhaps occur at moments of intensity, linked to the wider network of the urban field, and marked not by demarcating lines, but by thickened surfaces. (Allen 1996, 98)

In of siting this project, Allen's postulation is taken literally, such that the new institutions of public support within the city of Halifax may be located based on a bottom-up parametric analysis, allowing them to respond more effectively and appropriately to the conditions of their context.

The criteria that are mapped for the purpose of this exercise are: population density, average household income, the intensity of public infrastructure along traffic routes (defined by the cumulative overlaying of bus routes) and where public institutions, such as community centres and places of public service, already exist (figure 3.1).

The goal is to show the data in terms of density and degree of impoverishment, in order to examine



Average Household Income

Population Density

Access to Transit Infrastructure

Public Institutions

Figure 3.1 A series of demographic maps on the city scale, showing peninsular Halifax and Dartmouth as grey-scales to graphically quantify their criteria. Map of Average Income per Household in Halifax Regional Municipality, NS (Statcan 2001); Map of Residential Density in Halifax Regional Municipality, NS (Statcan 2011)

where ghettoization occurs, with the notion being that public service interventions could help to alleviate these problems. The access to public infrastructure helps to filter the results by placing increased emphasis on areas that enabled easy access to the

broader city through public transit (countering the isolation that feeds ghettoization). The presence of existing public institutions is treated as a mathematically negative value, in order to filter out areas that already have a degree of public intervention.

Using a parametric image sampler, these grey-scale fields are evaluated over a grid of points, and those values mapped geographically at the scale of the city, creating a virtual three-dimensional geometry that numerically represents the relative values of the fields. These surfaces are then mathematically combined, in order to show the trends that emerge as peaks in the resultant surface (figure 3.2) (Amidror 2005, 15). (For the program structure used to perform these calculations, see Appendix G)

There are three notable peaks on the Halifax Peninsula, one near the centre of city, at the intersection of Robie Street and North Street, one on the east end of Englis Street, and one on the neighbourhood of the site. Because the data from this experiment

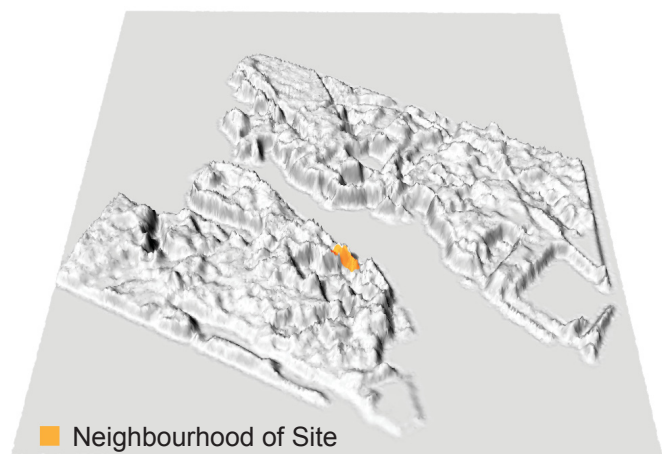


Figure 3.2 Three-dimensional geometry representing the moiré interference pattern from the combination of the four field conditions of the city

is fairly reductive, each of these peaks must be assessed in order to understand whether it is the most suitable site for the intended program.

The North Street and Robie Area appears to be populated by relatively low income (but generally not impoverished) families at middling densities. The reason this area produces a peak in the model is likely due to its lack of much in the way of public institutions. However, the area appears not to be fairing as poorly as others, and there also isn't a space large enough to incorporate such a scheme without replacing existing residential frameworks. The Englis Street area turns out to be something of a false positive, which is due to the presence of a considerable number of student residents, who would not have sizeable incomes. This phenomenon is not surprising, as the neighbourhood is very near to a number of the city's universities, and while it does imply a degree of transience in the population, the social environment of the area does not appear to be malignant.

Looking at the Brunswick Street area, including the St. Patrick's-Alexandra site, one finds a combination of some of Halifax's most intense poverty, as well as some of the highest residential densities in the city. This implies that the area is ghettoized, which can be seen to be accurate in the communities of Uniacke Square, and the Harbour View Apartments towers. The ghettoization of this area goes hand-in-hand with the problematic public-private interfaces that exist there. Additionally, the site once housed

a major public institution for the North End of Halifax, in the form of the school. With the building now vacant, the area has become something of a social vacuum, with people rarely choosing to linger on the site (at least, not for legitimate reasons). Through this deeper understanding of the site, it can be identified as a place in the city in need of intervention.

Design on the Neighbourhood Scale

One of the first design moves made on the site was to create a means of access across it, bridging Maitland Street and Brunswick Street. The idea here is to create a continuation of Prince William Street, in order to link the traffic of Brunswick and Gottingen, such that people might be compelled to move through and use the space once again. In the final synthesis, this “shortcut” takes the form of a pedestrian street, as there is no need for car access through here. Further, given the disturbance of increased vehicular traffic and the extra space required to accommodate it, the restriction of the passage’s use to the pedestrian is desirable. The challenge then is to define the relationship between public space and the private dwelling such that one would not view the area as private, while still permitting a degree of privacy to the dwellings.

Privacy and Defensibility at the Site Scale

Defensibility

One of the reasons the site was compelling was the myriad of social space typologies that surround it, and their respective demonstrations of both prob-

lematic and successful relationships between form and social program. The key criteria by which these typologies are to be examined is defensibility. This refers not only to the security of a space (speaking in terms of personal safety), but the capacity of the dweller to appropriate and feel responsible for the space around their dwelling. Figure 3.3 shows an intuitive evaluation of relative defensibility across interstitial spaces in the surroundings of the site. In this image, high densities of stippling represent more defensible spaces. This exercise indicates much about the dynamics of the neighbourhood, providing an understanding of the problems with the various habitation types.

In the case of the Harbour View Apartments complex, the surrounding level of defensibility is quite low, and uniform right up the building's perimeter. This indicates that the residents have very little ownership of the space around them, due to the remoteness of their dwellings from the ground. This is the problem of towers in the park, which renders the supposedly communal green space around a building ownerless. In the case of Uniacke Square, the level of defensibility throughout is just high enough to exclude access for outsiders, but each dwelling has little ownership of the space around it beyond the depth of its doorstep. It should be noted that the porous "courtyards" around the long uniform houses are composed of effectively negative space, and at a scale that prohibits easy communication with one's opposite neighbours (exceeding the 25 metre range).



Figure 3.3 Plan of the immediate neighbourhood surrounding the St. Patrick's-Alexandra School site using an intuitive gradient system to quantify the level of relative defensibility, or ownership, across the space outside of buildings. This is defined by the degree to which one would sense that they are intruding, if they did not have legitimate cause to be in the space

More successful typologies in the area were seen in the townhouses fronting onto streets. While creating a relatively continuous wall of housing, the facades of these buildings are anything but uniform, undulating with bay windows and stoops that create slightly positive spaces, claiming some of the streetscape as their own and creating a distinguishable threshold between public and private.

This thesis concludes that positive space is more easily defensible than negative space. Positive space can be recognized as a specific, formalized thing and promotes lingering and dedication of use, whereas negative space is merely interstitial to objects, and lends itself to circulation and movement (Frederick 2007, 6). There is a balance to be struck here, between permitting access to the development, and making it secure and private for the residents. This is not a scalar relationship, dealing with degree of porosity. It must consider morphologies and hierarchies of access, such that dynamic programming of the site can be made possible. (For a series of case studies of different housing typologies and their defensibility on the site, see Appendix I)

Typological Analysis of Defensibility

Figure 3.4 examines a series of housing typologies through their possible implementations on the site. Tower blocks remove the dwelling from the ground and make the resident anonymous via the internalization of the public-private interface. Perimeter blocks and perforated perimeter blocks suffer from the problem of entirely excluding the public, while

creating spaces within that are not suitable in scale for such a private program. The row house model creates relatively high defensibility, but the terminus of each row needs to do something more compelling than simply continue the “carpet-bombing” treatment of installing the same module all throughout the site. It does not adequately address the change in social conditions that is constituted by the move from the

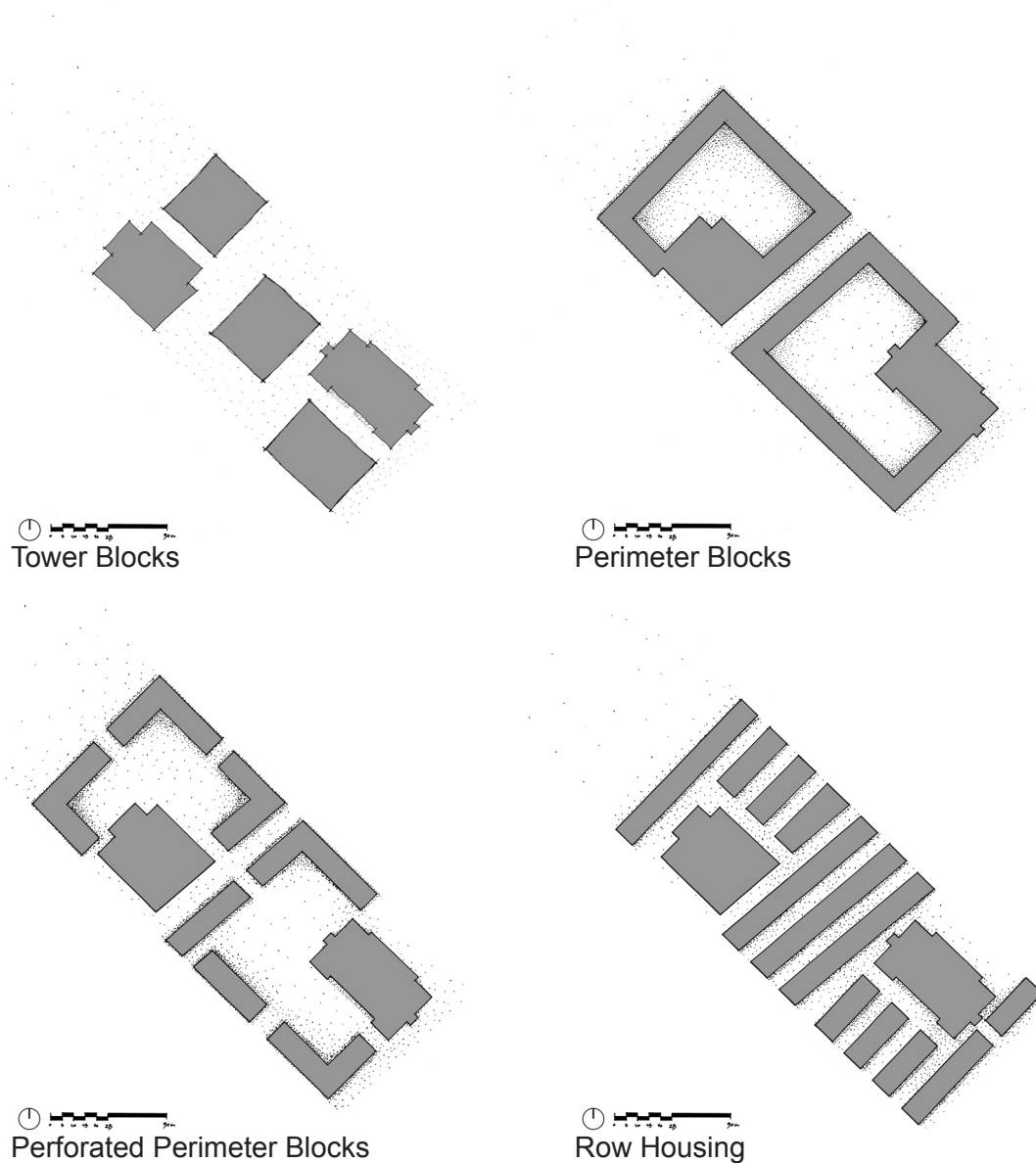


Figure 3.4 Defensibility gradients examining potential implementations of different affordable housing typologies on the site

pedestrian path to the public street. These problems can be dealt with by adjusting the typology to that of the twin-row, which alternates public access and private courtyards (Pfeifer and Brauneck 2008c, 24).

Dwelling Design

Orientation and Site Layout.

The orientation of the dwellings on the site is driven first by an interest in creating space of good environmental quality, meaning that it is comfortable and efficient. Without these characteristics, even the strictest adherence to appropriate social scale would have trouble making a space desirable. This is among the most fundamental applications of the exercise of drawing designs from the context.

Figure 3.5 details the orientation of the site in rela-

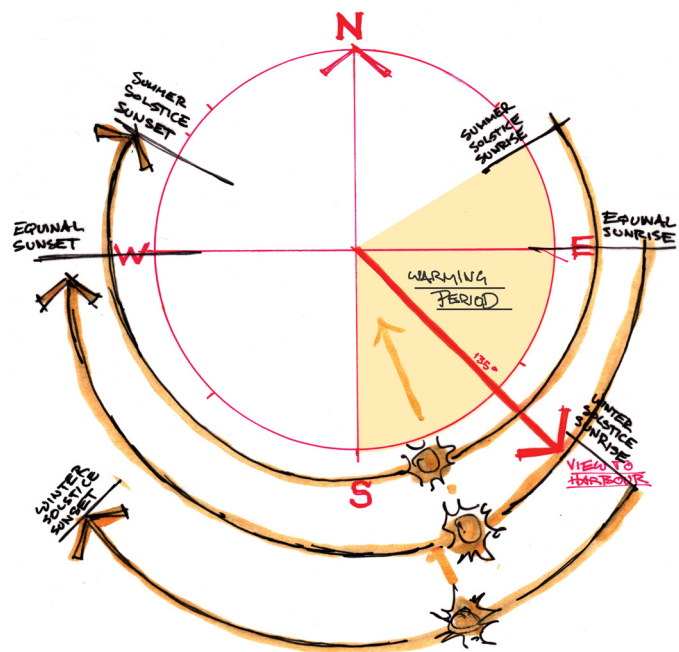


Figure 3.5 A diagram demonstrating the solar orientation of the site, posing possible responses involving creating quality social spaces, and using passive heating

relationship to daylight and views, with an emphasis on facilitating passive solar heating of the residences. In order to warm up as quickly as possible during the morning, and shield against excess heat through the latter part of the day, this requires an orientation of the fenestrated front of the house to the southeast. This fits with the site's orientation in its geographic context, as this orientation would also enable views of the Halifax Harbour.

Another element of the context at play in defining suitable patterns of habitation on the site is the topography, which slopes most steeply across the width of the site. Because of this, the housing can be very close together in this direction, stepping down with the topography to permit each unit a vista towards the harbour. The site also descends to the southeast along its length, but much more gradually (fig-

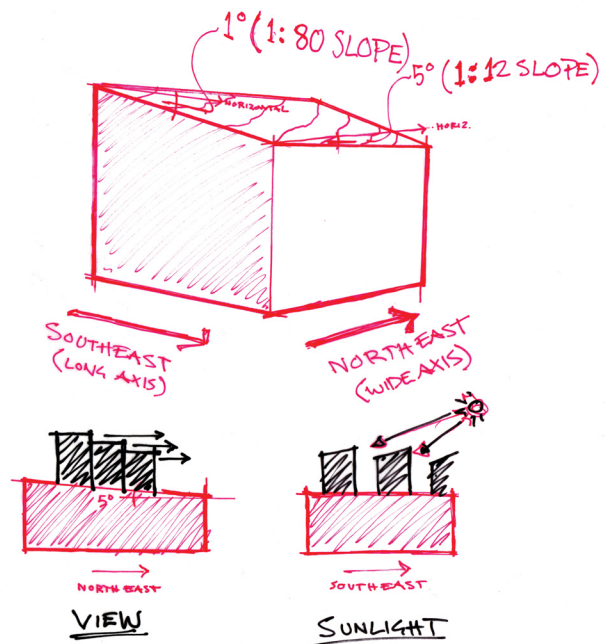


Figure 3.6 A diagram demonstrating the basic siting and orientation of dwellings, in response to topography and its correlation to light and views

ure 3.6). This implies that to get light into the dwelling spaces, the housing should be relatively low rise, incorporating a setback. This would allow the maximum number of tenancies to take advantage of solar exposure.

The typology this logic leads to is row housing, which in this configuration could permit through-site access, linking Gottingen Street to Brunswick Street. However, in order to deal with the terminus of the row, the final house must “turn the corner” such that it still benefits from the southeastern exposure, but orients its front towards to street. This solves the problem of creating a barren streetscape, in which the threshold between the public street and the private dwelling takes the form of wall. Such a treatment would not allow the dwelling a presence on the street, making the defensibility of that public space quite poor.

In order to create a clear hierarchy of access on the site, and to dedicate private space to the dwellings, the typology of the twin row house is adopted. This strategy is facilitated via the inclusion of secure communal facilities, bridging the end of each row, and bounding in the courtyard spaces. These would house mailboxes, as well as shared laundry facilities servicing the local dwellings. There is specific value in the provision of such facilities, as they create gathering places of specific and necessary program, ensuring social interaction and a communal atmosphere amongst the residents of the site.

The interior layouts of the row house units are defined by the degrees of privacy inherent to their configuration in the site. Figures 3.7 and 3.8 demonstrate the analysis of the privacy of each space within the dwellings, based on their social exposure to the adjacent outdoor space. This helps to define areas of the plan as either public or private, and determines the double or single characterization of the dwelling's aspect.

The two to three bedroom houses are split levels, in order to raise the south end of the building enough to collect substantial daylight, even with the obstruction from the other row of houses to the southeast. Their configuration places the bedrooms on the more private courtyard side of the building, with public spaces such as the kitchen and living room facing the public space of the pedestrian walkway. The threshold between these dwellings and the adjacent public space takes the form of a recessed stoop, which leads out onto a path that runs parallel to the main pedestrian street. This entryway leads into a hallway that gives access to the kitchen, the transverse split-level staircase, and the room half a storey below that lets out onto the private patio space. The bottom floor is designed as flexible space, with a bathroom to provide for the possibility of its use as a "granny suite."

While the split-levels are accessed at grade, the one and two-bedroom houses are accessed via a system of terraces, which interface between the house and the network of pedestrian paths. These terraces act as a deep threshold between the public pathways

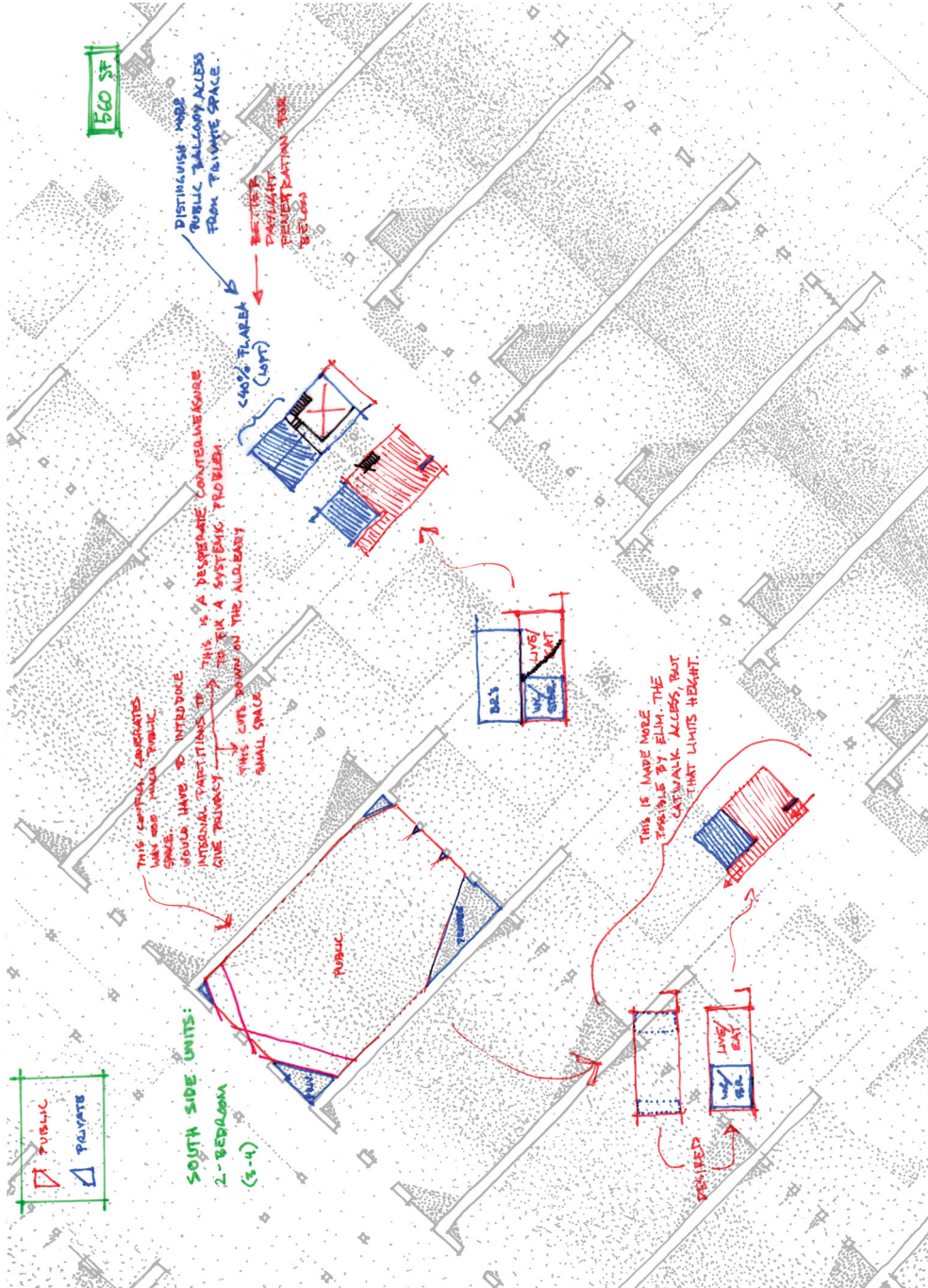


Figure 3.7 Identifying areas of privacy and exposure in the dwellings on the north side of the access path, demonstrating that the original configuration leads to too much public space within the dwelling, with unusable private space. This makes a case for the shared space inside the twin row to be less condensed, as the bedrooms of the subject units are overlapped by the social space of those using the communal strip



Figure 3.8 Plan examining the private and public parts of the split-level dwelling on the south side of the access path, demonstrating that there is actually a balanced dichotomy between public and private within the building. This means that based on the inherent conditions generated by this configuration, one can program the dwelling based on the need for a specific level of privacy for a given room

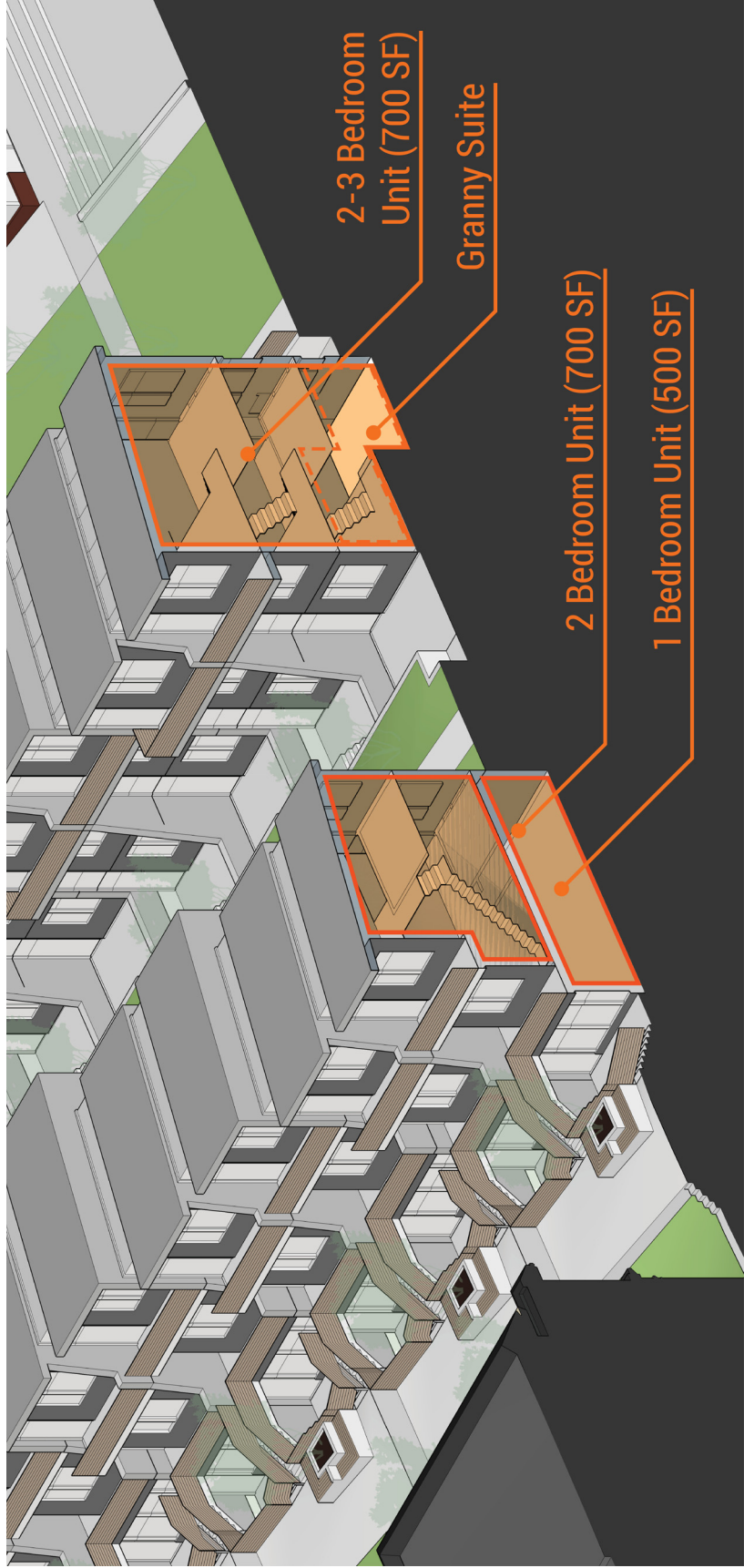


Figure 3.9 Axonometric view showing the arrangement of dwellings, in the twin row typology



Figure 3.10 Plans of split-level 2-3 bedroom dwellings

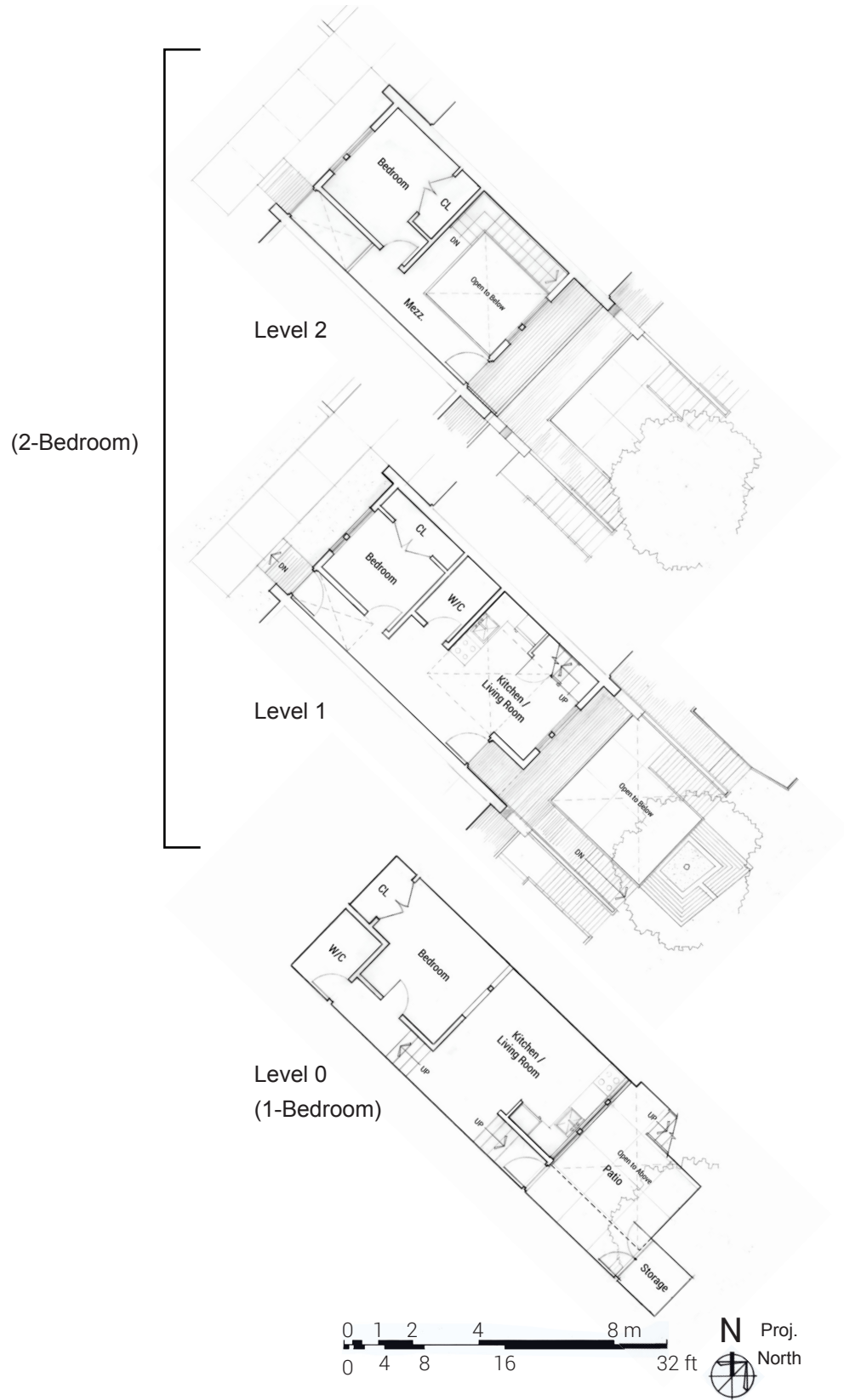


Figure 3.11 Plans of 2 bedroom and 1 bedroom dwellings

and the private homes, creating semi-private space that integrates the resident into the community, while affording them the appropriate degree of privacy.

The single bedroom dwellings are accessed via sunken patios, which are sized to fit with the maximum dimension considered by Gehl's metric to be "social distance" (Gehl 2010, 47). In the two-storey units above, this same level of privacy is facilitated by a second floor balcony, which is exactly 7 metres distant from the nearest point on the path (figure 3.28). This means that conversation can still be held, and the resident has a good view of their neighbourhood, but passersby are not automatically intruding on one's social space.

On the perimeter of the block, a ground floor of live/work commercial space, and walk-up flats face the street. The direct interface of commercial space with the street, creates programmatic destinations, without which the street would remain merely transitory, giving people no reason to inhabit the space, save to move through it.

In the final synthesis (figures 3.23, 3.25, 3.26), it is recognized that residences adjacent to public spaces within the site must orient in some way towards those spaces, in order for an elegant threshold to be defined between them. This follows similar logic to that which drives the streetscape design, by making the plaza space have specific program of access.

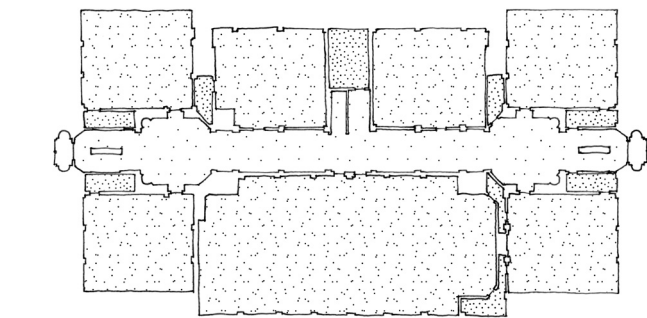
Public Facilities

Programming for Integration of Public Services

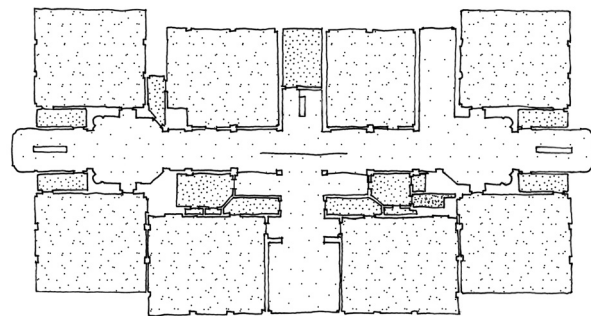
Repurposing of the existing school building can be approached based on an analysis of the existing spaces it contains, dedicating appropriate levels of defensibility to the various programs. The basic programmatic categories can be grouped as follows: permanent program (unmoveable activities that happen on a regular basis), temporary program (in the form of rentable rooms and spaces with interchangeable use), and access as well as communal gathering spaces (figure 3.12).

The Mi'Kmaq Native Friendship Centre would make use of the old school building for a series of services. These include: daycare, college courses, job placement services, and ex-convict rehabilitation & support (Mi'Kmaq Native Friendship Centre 2013). While most of these would be suitably accommodated in any of the school's classrooms, the daycare would be most effectively housed in the basement of the school. The reason this space makes sense is because it is the most defensible area of the building, facilitating the permanent program of the daycare, and also affording it the privacy and ground level accessibility (on Brunswick Street) that it would require.

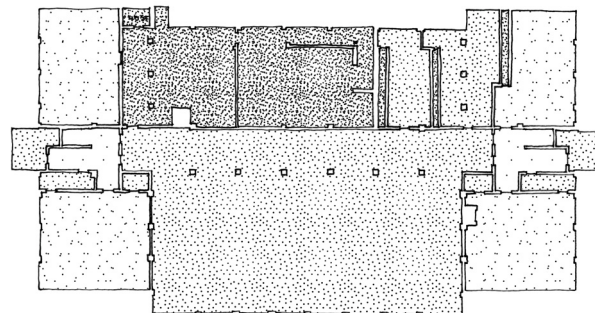
The newer portion of the school would mostly be removed in order to enable better access to the site, and to introduce a more sensitive threshold on Mait-



Level 2



Level 1



Level 0

Figure 3.12 Privacy gradient diagrams depicting the inherent levels of defensibility of the rooms in the Cobb building, helping in programming for new use with minimal internal alteration (data from Cobb 1919)

land Street (which in the school's current configuration, is nearly impenetrable; it is even has a moat). However, the portion housing the gym would remain, with the addition of a social assistance shelter, rising up to five stories above the Maitland Street level. The gym building would host community functions

and provide rentable space, and on its roof would be a garden which members of the community could contribute to. This builds on the Hope Blooms Community Garden, sited in the park to the north of the school, just off of Brunswick Street.

Design Synthesis: Alterations to School Building

Because the original centralized entryway to the old school was removed, and the means of access shifted to points on either side of the building, the interface of the building appears confused. The problem is that the building is forced to act as a duality, while its central line of symmetry, and odd number of windows demands that it have a centralized entrance (Cusato, Pentreath, Sammons, and Krier 2007, 24). Because it is acting as a duality, and the entrance points do not even face a street, it would be difficult to recognize the means of public access to this supposedly public building.

In order to remedy this situation, a design intervention opens up the southwest-facing side of the school, creating a two-storey atrium space within. This restores the sense of unity to the building, defining a clear entrance that is programmatically differentiated from the residential access around it (figure 3.13). This would also effect better daylight penetration into the building, celebrating the circulation space as one of gathering and communal use, which is already a prominent theme in the hallways of Cobb's design.

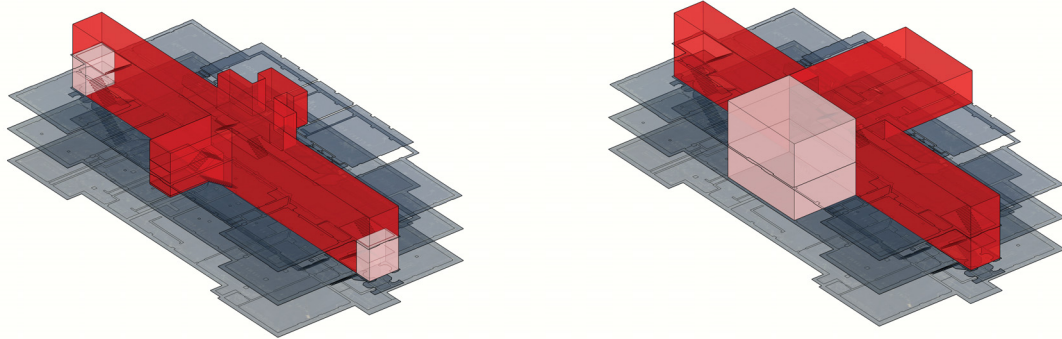


Figure 3.13 Analysis of circulation and access in existing school building, identifying the dual access points, which do not present a public face for the building. The design intervention shows the atrium space create by centralizing the access (data from Cobb 1919)

An Iterative Process: Refining the Design

Perspectival Rendering for Social Simulation

Haptic visualizations, showing the different viewing distances relevant to Gehl's social metric, are used to evaluate each of the key areas of interface on the site, at the stage of the design shown in figure 3.14. Figure 3.15 shows the Brunswick Street environment, with easy access to the commercial units, and just enough distance so that the residences above have a degree of privacy, without losing their presence on the street. Similarly, most of the perspectival drawings show the effectiveness of the transition spaces at mediating the public and the private realms, or proving the effectiveness of each social scale.

However, figure 3.18 demonstrates a fundamental problem with the design of the courtyard space. While the area is intended to be private, in this design iteration it is not appropriately defensible, due to



Figure 3.14 Site plan and elevation with a twin row house typology, oriented to the southeast for passive solar warming. The rows stagger to respond to patterns of access in the community, and end units face the street, in order to create an engaged streetscape

the access path which runs through it from one side of the site to the other. This path over-exposes the dwellings on either side of the courtyard, and creates a social scale which is incongruous to the pursuit of privacy. Criticism of problems such as this disconnect between program and actual privacy feed into further iteration of the design, moving it towards a more refined synthesis.

Evaluation

Figure 3 shows a defensibility gradient analysis of the design synthesis, overlaid on top of a diagram showing the intended program of each space. This overlay allows for the evaluation of the defensibility of each of the types of space in the project, to determine whether they are appropriate and effective at facilitating their program. Annotations show which elements of the synthesis are successful and which ones fail, with indications of why this happens in each (Figure 3.).

Public Plaza

The public plaza is formed of negative space, which makes it difficult to recognize as its own entity. This characterization defines it less as a space for lingering, and more as a transitory space (Frederick, 2007, 6). The public social scale is made successful not only by size, but by the presence of a program destination, The public plaza in this scheme does not really achieve this. The programming of this space can be achieved through developing a clearer transitional relationship be-



Figure 3.15 View of public streetscape on Brunswick Street



Figure 3.16 View of main public thoroughfare, linking Brunswick St. to Gottingen St., via Prince William St

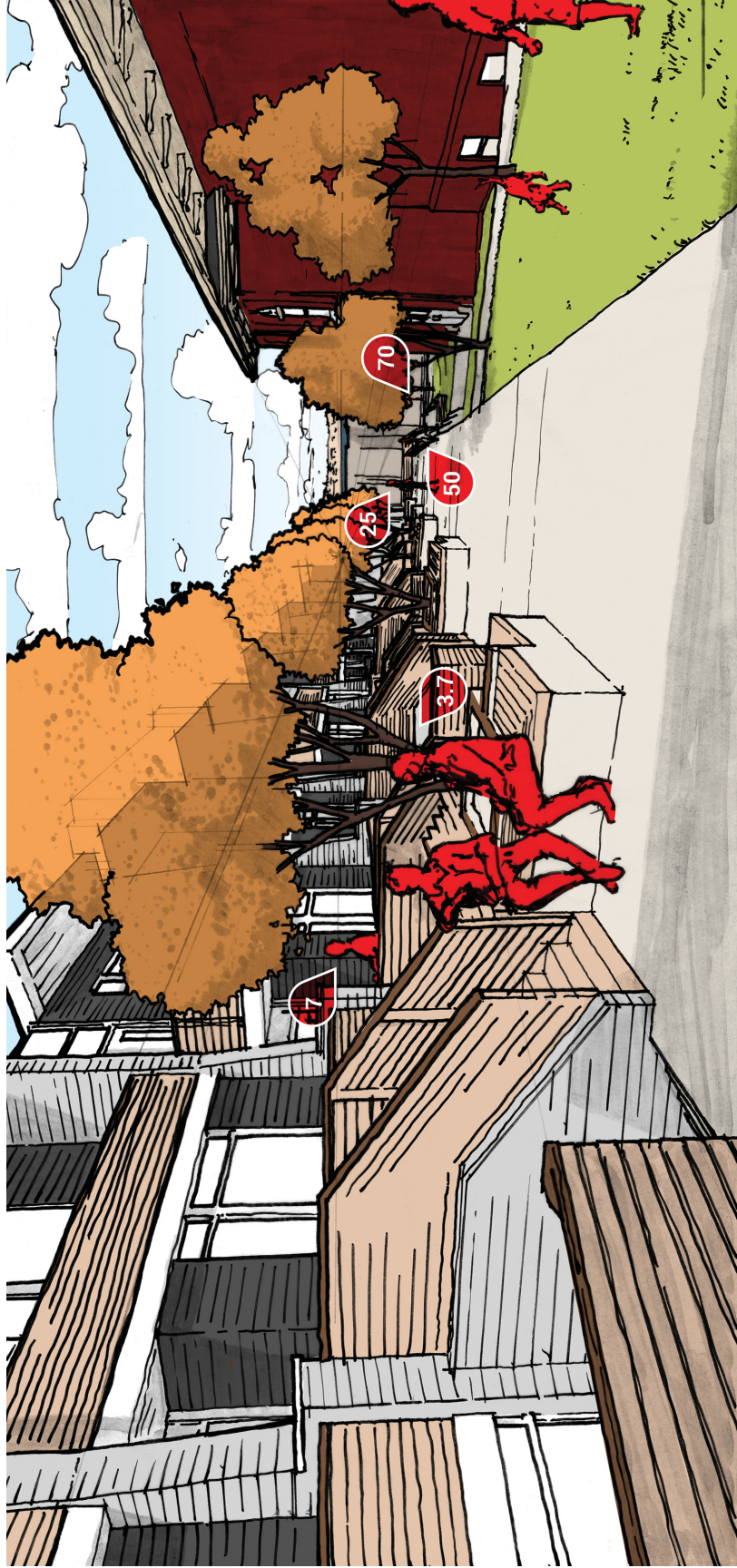


Figure 3.17 View of semi-public thoroughfare, providing access to residences and peripherally to the public building



Figure 3.18 View of the semi-private courtyard, from the Brunswick Street side of the block. In the current scheme, this space provides back-door access to the two-Bedroom units, and patio access at grade to the split level units. The presence of the path is problematic, compromising the private program of the space



- Private courtyard
- Walking paths/public-private thresholds
- Public pedestrian street/plazas

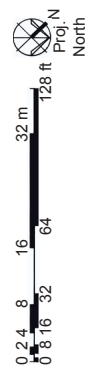


Figure 3.19 Defining the intended program areas in the design, and overlaying defensibility gradient to test effectiveness

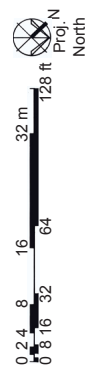
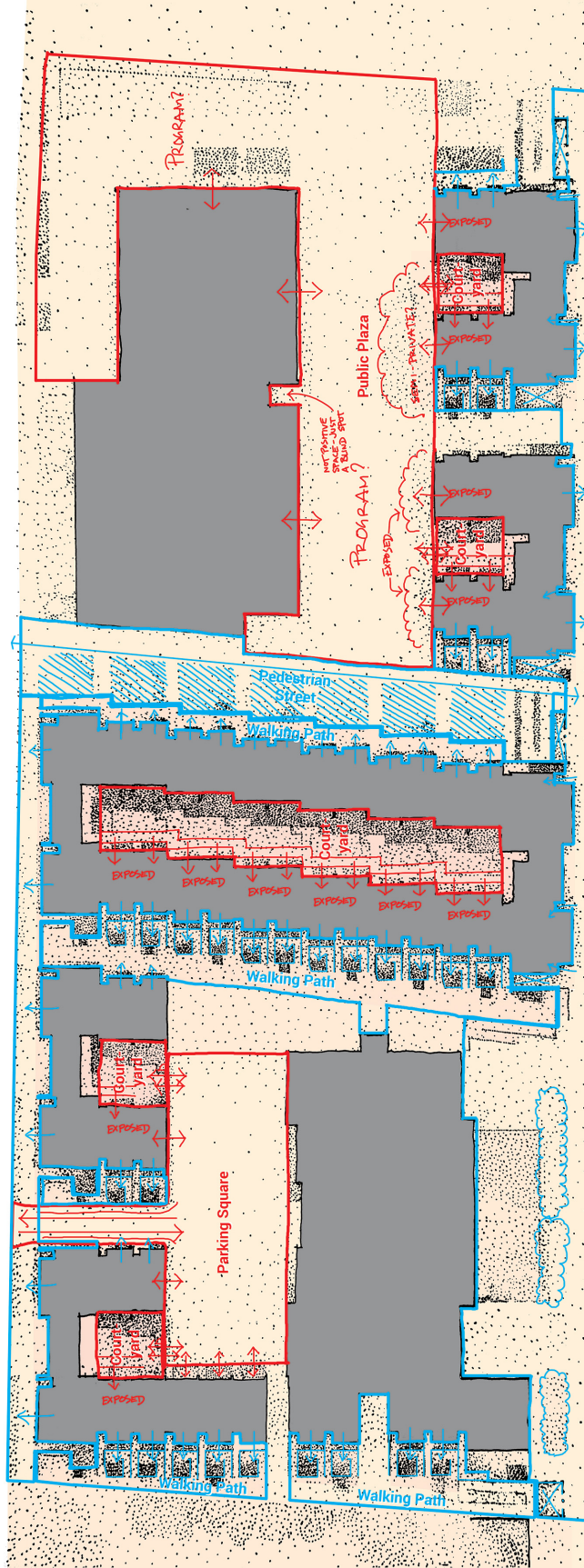


Figure 3.20 Critical analysis of configuration, evaluating each space for the correlation between program and the defensibility of the space. Red annotations identify problems, while blue annotations identify strengths. In this way, a design can be evaluated for the performance of its constituent elements, which may then be used in an iterative process of continuation, elimination, and adjustment to refine the idea

tween public space and the adjacent programs of the community centre and housing. Currently, the gradient between public and private is sporadic, only operating in terms of visibility, not overlapping of use.

Parking Square

The parking square adjacent to the Cobb building is somewhat bottle-necked as a public space, because it must be accessed via paths that cut through a wall of housing. This means that it will be less accessible to the public. Also, it suffers from the same problem of threshold with adjacent programs that the Public Plaza does - the row-house typology terminates in a way that does not address the relationship with this space. For it to function as a square as well as a parking area, adjacent dwellings must be oriented towards it.

Private Courtyards

The privacy of the courtyards is compromised by the access path leading through them. The scale is too small to have private patios and a path, specifically due to the proximity to adjacent dwellings on the south side. The gradient jumps from relatively public access to the privacy of bedrooms, which creates too much exposure. The gated access to end patios is not bad.

Pedestrian Street

The new thoroughfare between Brunswick Street and Gottingen Street is essential in improving ac-

cessibility, both within the site and for the broader community. Continuing the line set by Prince William Street, it acts as a primary public area that defines the space, and can be recognized by the setback of the residential area to the south from the public path. The goal is not to create more car traffic but foot traffic, so a pedestrian-only street makes sense here. The use of a green space in between the public and private access, creates a gradient of privacy adjacent to the dwellings. It acts as a threshold, serving both public use, and private, without making the space seem exclusive to either party.

Walking Paths and Semi-Private Terraces

The walking paths provide semi-private access to the dwellings, but move right across the site so that they do not create convoluted routes of access, (to avoid becoming convoluted and tiresome for residents and confusing for visitors). The walking path is commonly adjacent to a system of terraced balconies, which work to extend a dwelling's ownership of space out into the public realm. This creates a threshold that precedes entry into the house, but also provides defensible space that is arranged to permit light and views. The articulation of such a space is the core idea of the project, and here it is seen in its most literal incarnation.

Reframing and Redesigning

One of the most apparent problems with the first synthesis is the application of essentially a single housing typology across the entire site. What must

be recognized is the fact that due to the presence of the existing buildings, different scales of buildable space exist on the site. This results in three zones, each calling for a different treatment of the interface between public and private space (figures 3.24, 3.25, 3.26).

In redesigning for a three-zone approach to the site, *esquisse* studies serve to further explore other configurations and housing typologies that might be implemented. Figure 3.21 shows a version of the site which uses a back-to-back housing strategy on the two peripheral zones, while adjusting the twin-row block in the centre for better privacy, and treatment of the through-site circulation spaces on either side.

The second *esquisse* (figure 3.22) takes the same approach with the central zone, while implementing tower blocks with central courtyards on the peripheral zones. Where the first *esquisse* did not formalize the public plaza as positive space, this study links the tower blocks to the community centre on Maitland Street. One issue with this scheme is that the internalization of the public-private interface in the tower blocks has the effect of isolating those dwellings from the public space of the community, which could be a recipe for the ghettoization of the residents.

Figure 3.23 shows the final synthesis, which seeks to create positive space in the public plaza, reorienting the housing towards it in order to better

integrate the space with a program of communal use and accessibility. The processional line from the adjacent park is continued through a glazed extension of the community centre on Maitland street, which formalizes the space on either side.

In the southeast zone, the public space to the south of the Cobb-designed building is made more accessible to the street by removing the wall of housing that made it feel like a private parking lot. This also allows the main community centre to have a grand promenade, more suited to the goal of it being clearly accessible and public. A single row of double-aspect split-level housing is installed along the southeastern edge of the site. The housing turns the corner, creating more street frontage on Maitland street, which is in need of more eyes on the street and tenure, in order to become a more secure place to inhabit (Hertzberger 1991).

This design also reverses the staggering of the central zone twin row-house strip, in order to provide better views of the harbour, and to achieve better passive heating by moving out of the shadow of the Cobb-designed school building. This also has the effect of creating breathing room in the form of public scale space in between the private dwellings and the public school. The setback is determined by the shadow the school casts when the sun is in the southeast position, in order that passive solar heating will be possible throughout the morning. The depth of the setback

is not constant, because the shadow extends further along the site as the topography descends towards Brunswick Street, determining the angle of the central zone's twin-row-housing.

Such a move creates less exclusive scales of space, both between the school and the housing, and on the Maitland Street side of the site, at the end of the pedestrian street. This expanded space allows these areas to accept public traffic more easily, while the scale always remains within a communication distance with the adjacent private dwellings. This allows the residents to have a presence in the space, much as the townhouse has a presence, even when viewed from across a city street.

The courtyard space in the twin row block is made more effectively private by removing the access pathway that previously ran through it, and separating the patios of the dwellings across from one another via a level change, as well as a small storage shed, servicing the dwelling to the northwest (figure 3.27). The result of this is an environment that remains communal, and intimate, encouraging a sense of closeness with one's neighbours, but more secure in the sense of one's definitive ownership over their private space. The patios are sized to fit the maximum social distance of 3.7 metres, which makes the space appropriate to social use by the residents of the dwelling (figure 3.28).

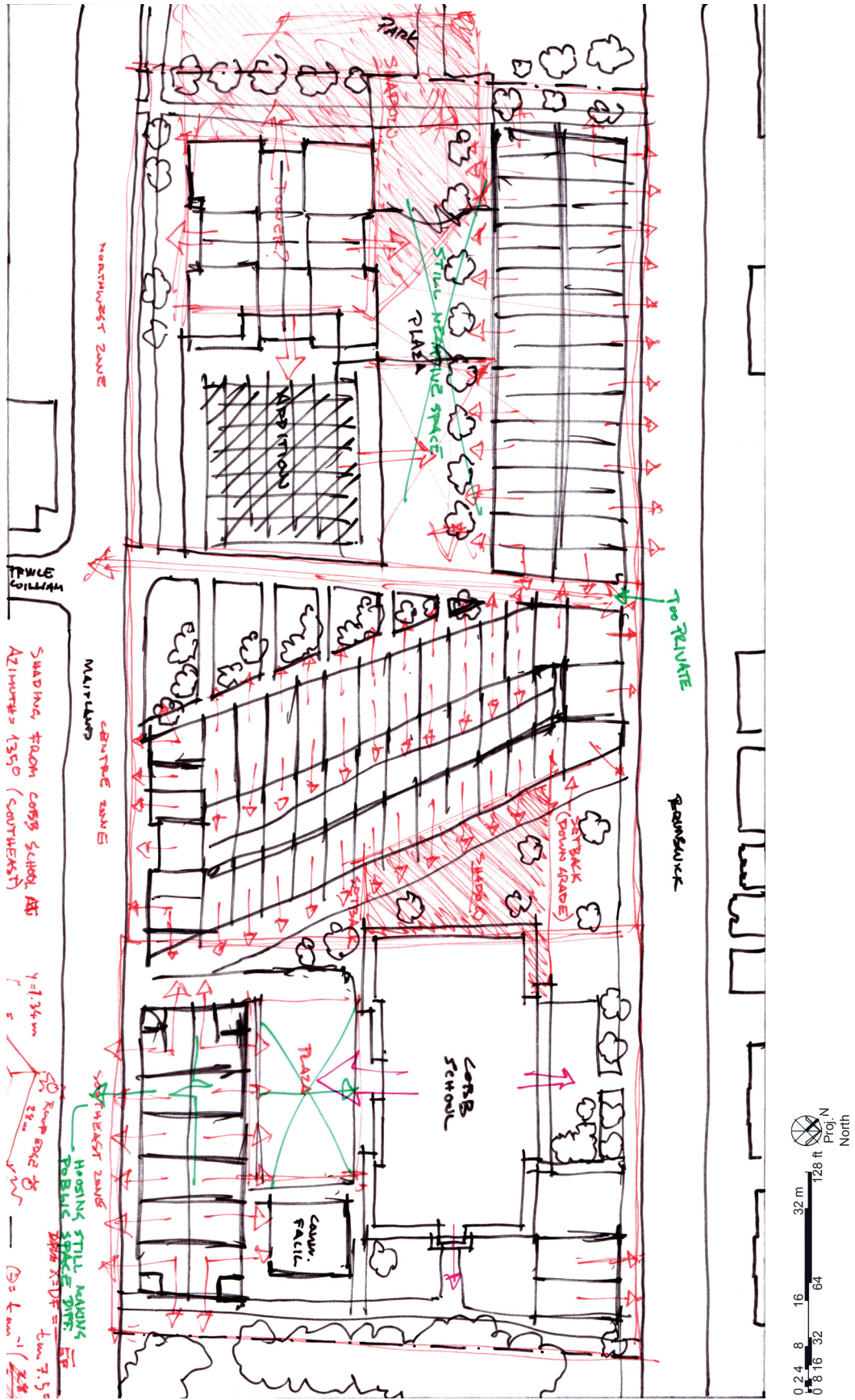


Figure 3.21 Esquisse site study, produced as part of the iterative refinement of the design configuration. This study treats the site as three distinct zones, two half-block and one through-block area. This results in the use of different housing typologies. This study focuses on back-to-back row houses



Figure 3.22 Esquisse site study, produced as part of the iterative refinement of the design configuration. This study treats the site as three distinct zones, exploring the use of tower blocks

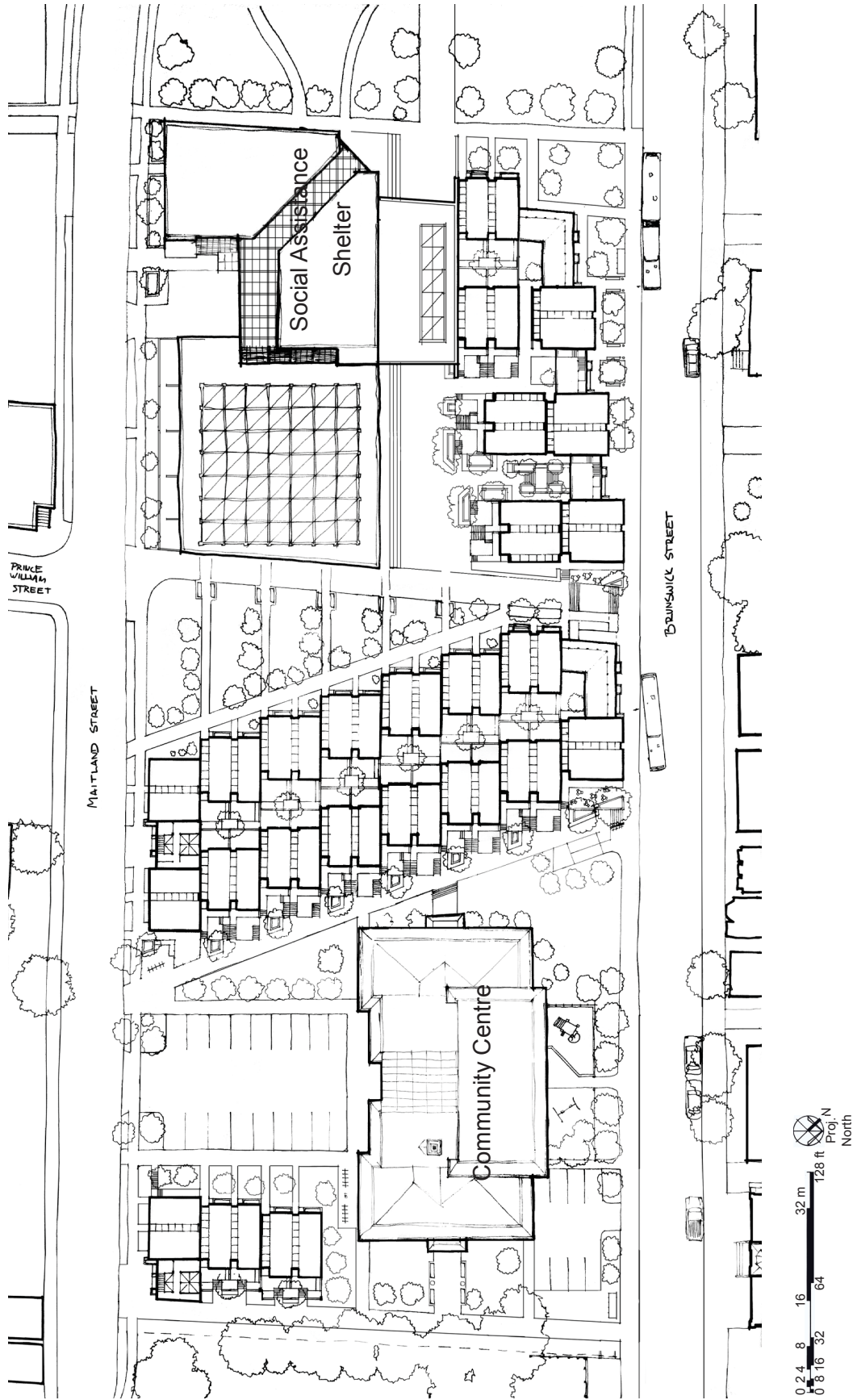


Figure 3.23 Final synthesis site plan, developed through design iteration. This configuration approaches the site as three distinct zones, designing as single row housing, front-to-back twin-row housing and back-to-back row housing, depending on the spatial limitations and social programming of the respective zones

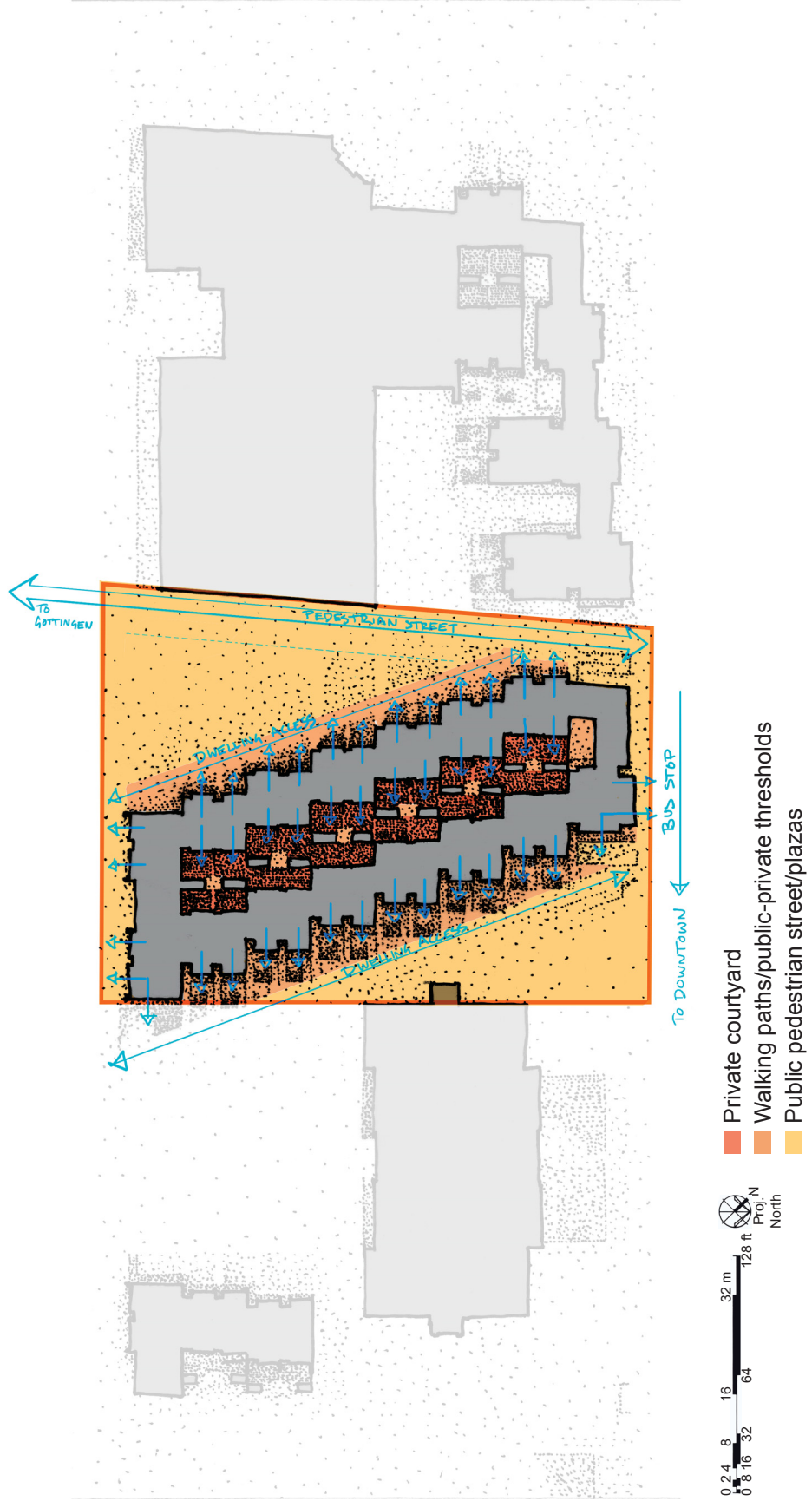


Figure 3.24 Programmatic evaluation of Centre zone

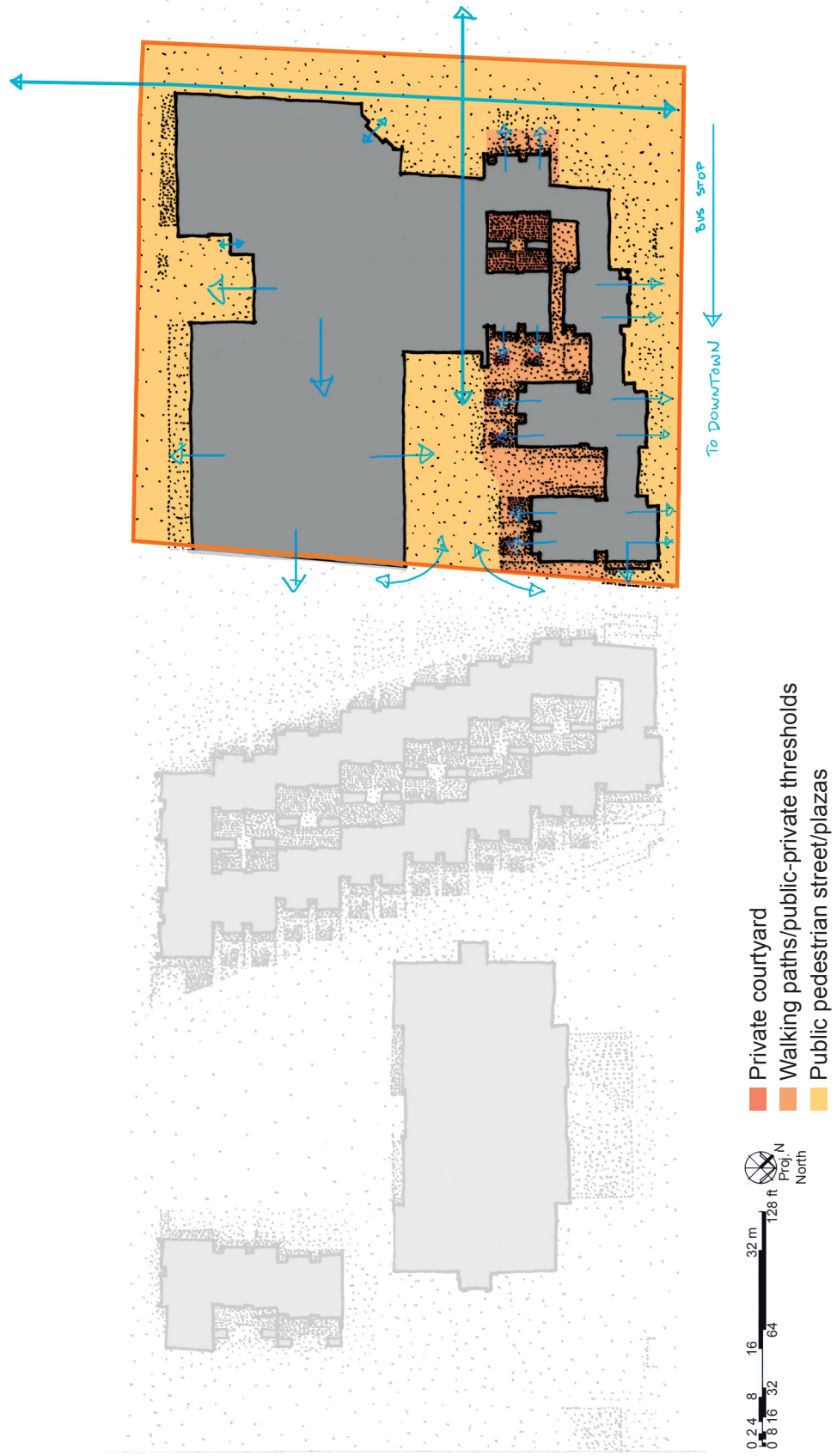


Figure 3.25 Programmatic evaluation of northwest zone



Figure 3.26 Programmatic evaluation of southeast zone



Figure 3.27 Section through centre zone showing front-to-back courtyard configuration. The private patios are elevated to different levels, and are separated by a small shed (servicing the lower patio), creating privacy for each of them, but still permitting some social interaction between them



Figure 3.28 Social distances mapped onto iterated courtyard design

CHAPTER 4: CONCLUSION

This thesis explores the nature of the public-private interface, through a series of urbanist studies and the proposition of a scheme of mixed-use intervention on the site of St. Patrick's-Alexandra School. The culmination of this research is the synthesis of a hybrid housing typology for the site, arrived at through a process of experimentation and iteration of ideas about social scale and the defensibility of space.

The design centers on the development of a housing scheme, as well as an exploration of the nature of access throughout the site. The ultimate goal of this dual-purpose project is to interrogate the possibility and feasibility of new, defensible modes of living in densifying city centres. Additionally, a case is made for the reuse of an existing public infrastructure, in the form of a school, as a programmatic intervention focused on empowering the residents of an impoverished, ghettoized community. This goal is achieved through community intervention as well as architectural design: the programmatic offerings of the renovated community centre will be complemented by the development of the site that, in its current state of vacancy, actually exacerbates existing social ills. The context-sensitive design scheme is informed by the surrounding environmental, geographic and programmatic conditions of the site. These conditional elements are interpreted in order to create a complex settlement, resolved at the level of detail design.

Considerations of the humane, the experience of inhabiting the space have had a major to play in the new consideration of the site. Indeed, this thesis makes a case for a design process which seeks to comprehend, above all, the human experience of space, and how this architectural goal can be better served by new ways of thinking about architecture and the city. Novel conceptions of urban architecture centered on human experience of necessity prompt an evolution in thinking on the nature of design, which can be realized through expanding the field of experiential rendering and visualization. In combining the perspectival illustration style of Gordon Cullen with Gehl's metric of social experience, one can gain a better understanding of the social implications of architecture and its performance of both public and private programs.

This experientially-oriented mode of experimentation could be developed further by architects with this design goal in mind. Rather than superimposing numerical information about specific distances as a way of visualizing social space, perhaps there are more graphic and perceptually intuitive devices. Virtual-reality technologies, for example, such as the three-dimensional simulation system of the Data Cave, operated by ACEnet at Saint Mary's University may be useful in this regard (Saint Mary's University 2014). Additionally, an interesting counterpoint to the static images utilized in this thesis and the majority of architectural design could be the introduction of motion capture media. The incorporation of video into the visualization process may help designers better

understand the motive dynamics of social spaces as they evolve in real time.

Ultimately, this thesis insists upon the importance of an phenomenological design process. The human experience of space defines not only the identity of a site as either public or private, but also the identity of the individuals inhabiting it.

APPENDIX A - CASE STUDY: VICTORIA PARK

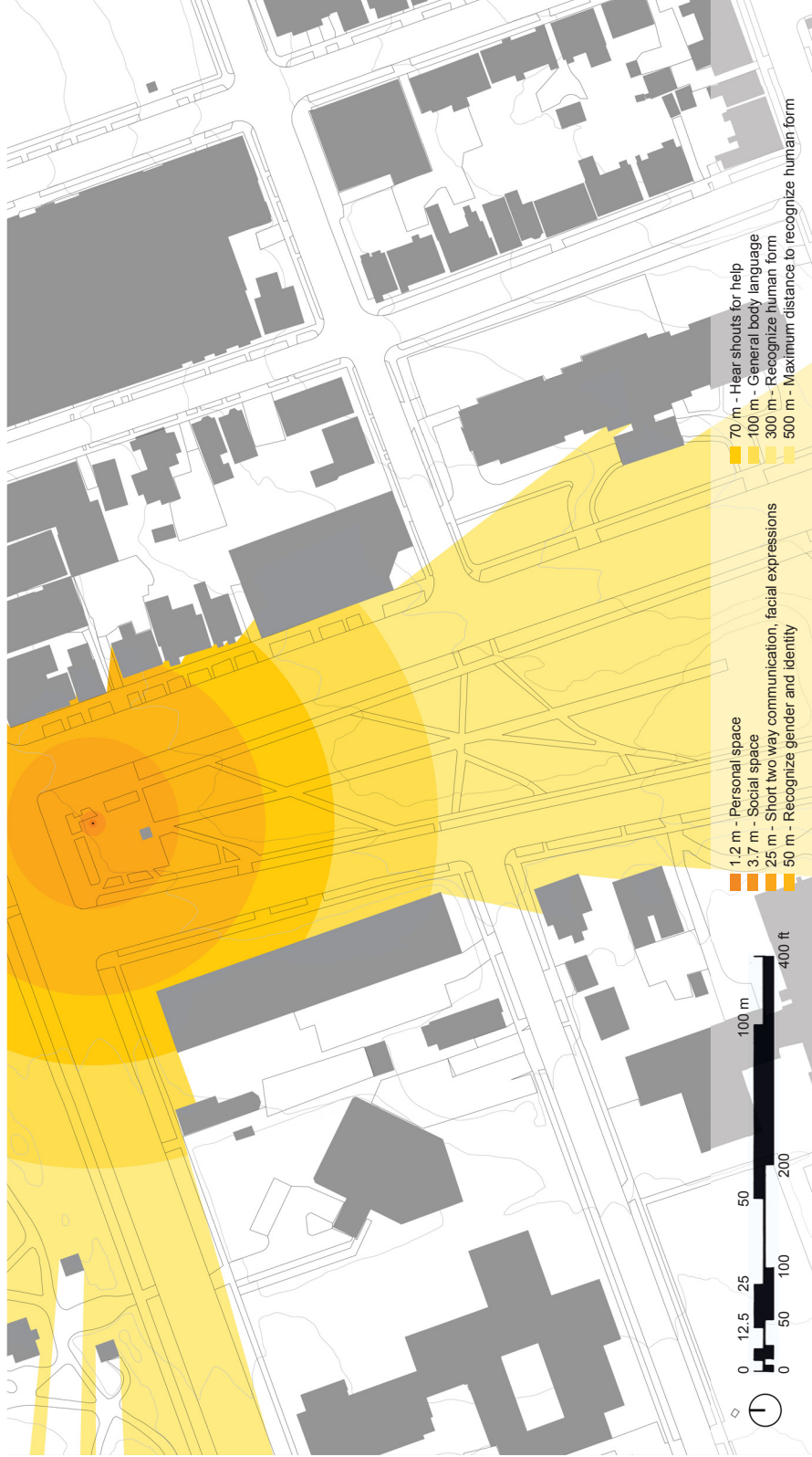


Figure A.1: Case study of Victoria Park: showing the park and surrounding neighbourhoods. This case study measures the space using the social distance scale developed from Gehl's writings. What is evident is that transversely, the park inhabits a much closer social distance than it does longitudinally, resulting in its inability to perform as a unified social space

APPENDIX B - CASE STUDY: HALIFAX COMMON

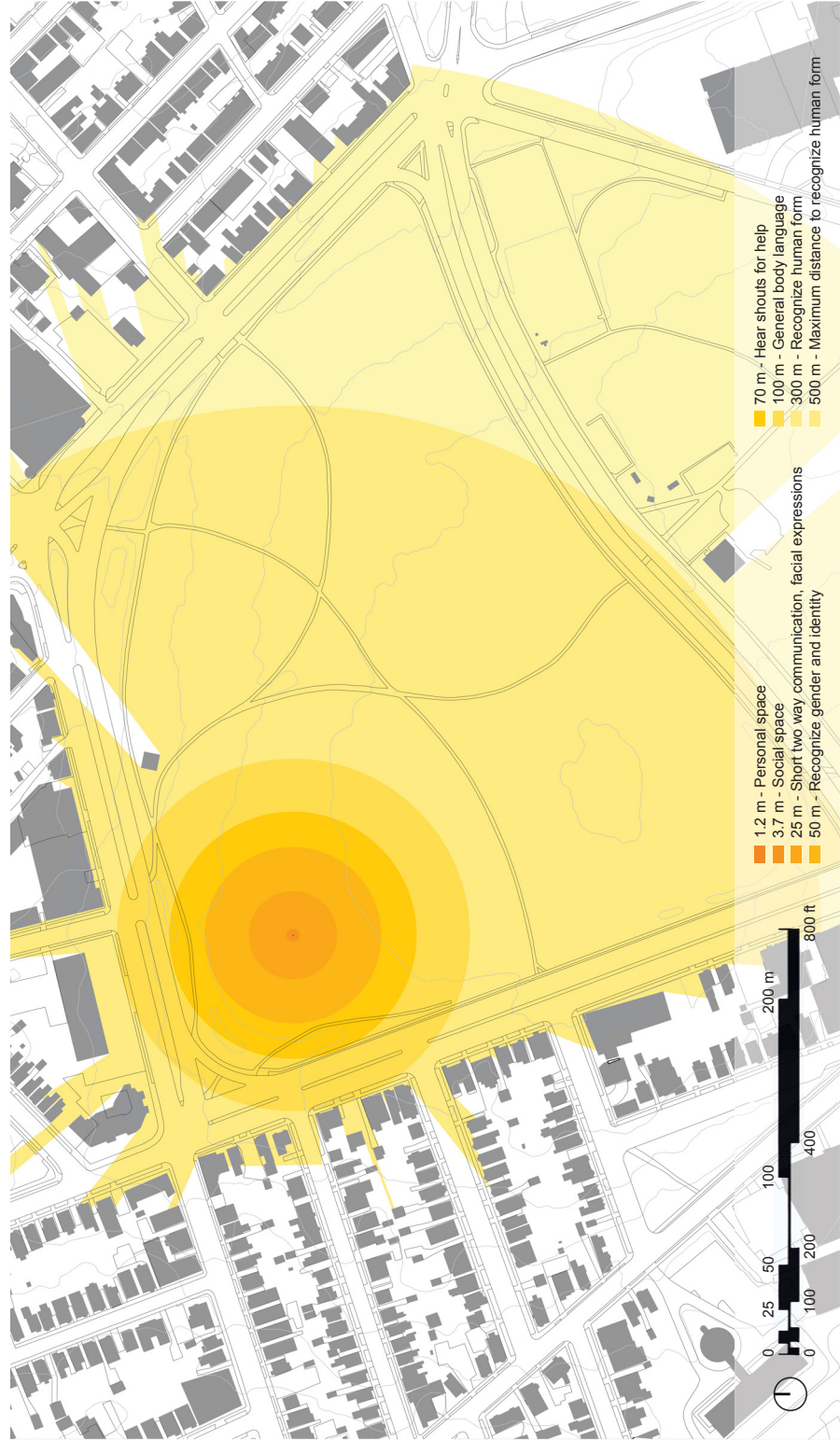


Figure B.1 Case study of the Halifax Common: showing that it fits into the 300 to 500 metre scale. This means that human forms can be distinguished, but at those distances, nothing more. This generally fits with common perceptions of the park, which generally relate to the fact that it is an insecure place to be at night because while people can be seen from far away, their intentions and emotional states are often impossible to determine

APPENDIX C - CASE STUDY: PALEY PARK

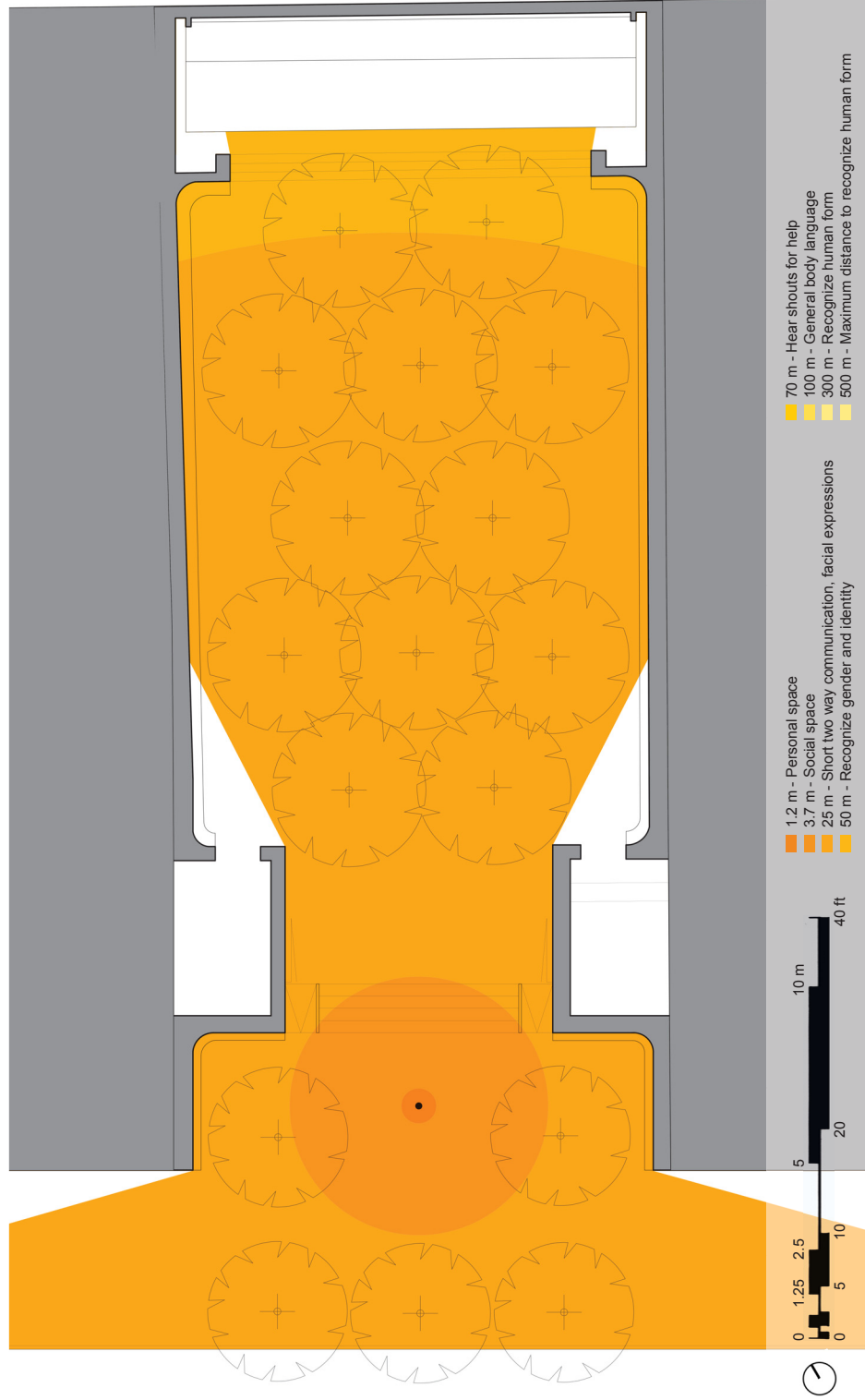


Figure C.1 Case study of Paley Park: showing the scales of space experienced by someone standing inside the small park. None of the park exceeds the range for communicating short messages and reading facial expressions, making it an intimate space. (data from plan of Paley Park, 1964, (Studyblue.com 2012))

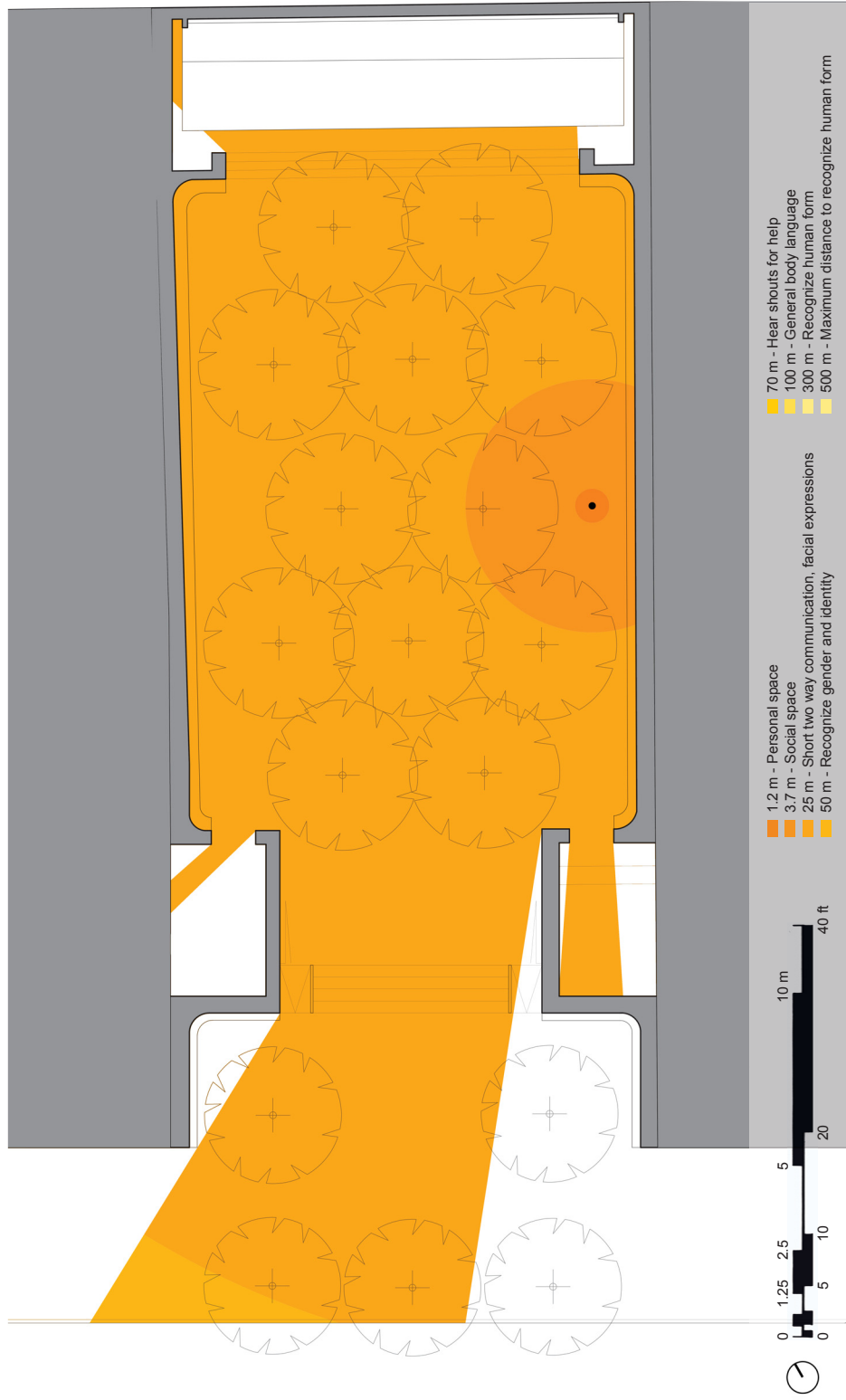


Figure C.2 shows the scales experienced by someone standing at Paley Park's entrance. Little of the park exceeds the range for communicating short messages and reading facial expressions, making it an intimate space. The entire width of the entrance is covered in the social scale, so entrance to this park is never achieved entirely anonymously. (data from plan of Paley Park, 1964, (Studyblue.com 2012))

APPENDIX D - CASE STUDY: SEAGRAM PLAZA

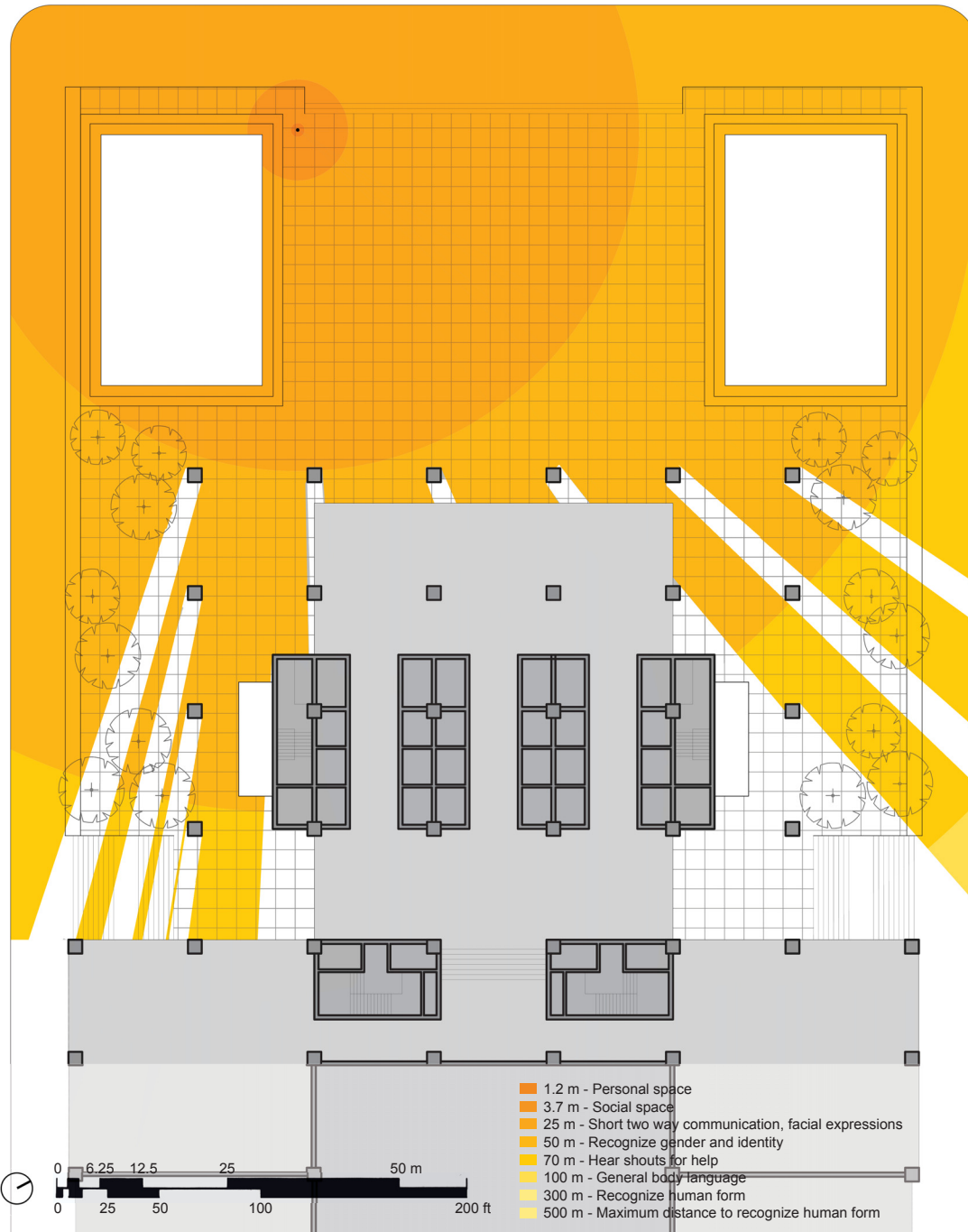


Figure D.1 Case study of Seagram Plaza: showing a mapping of Gehl's social metric from the perspective of someone standing in the open, near the entrance. This demonstrates the viewer's ability to survey more or less the entire space, and to do so at distances where some degree of communication (be it conversation, or shouts of distress) are always possible. Ground Floor of Seagram Building, 1958 (followthecreativepath.blogspot.ca 2011)

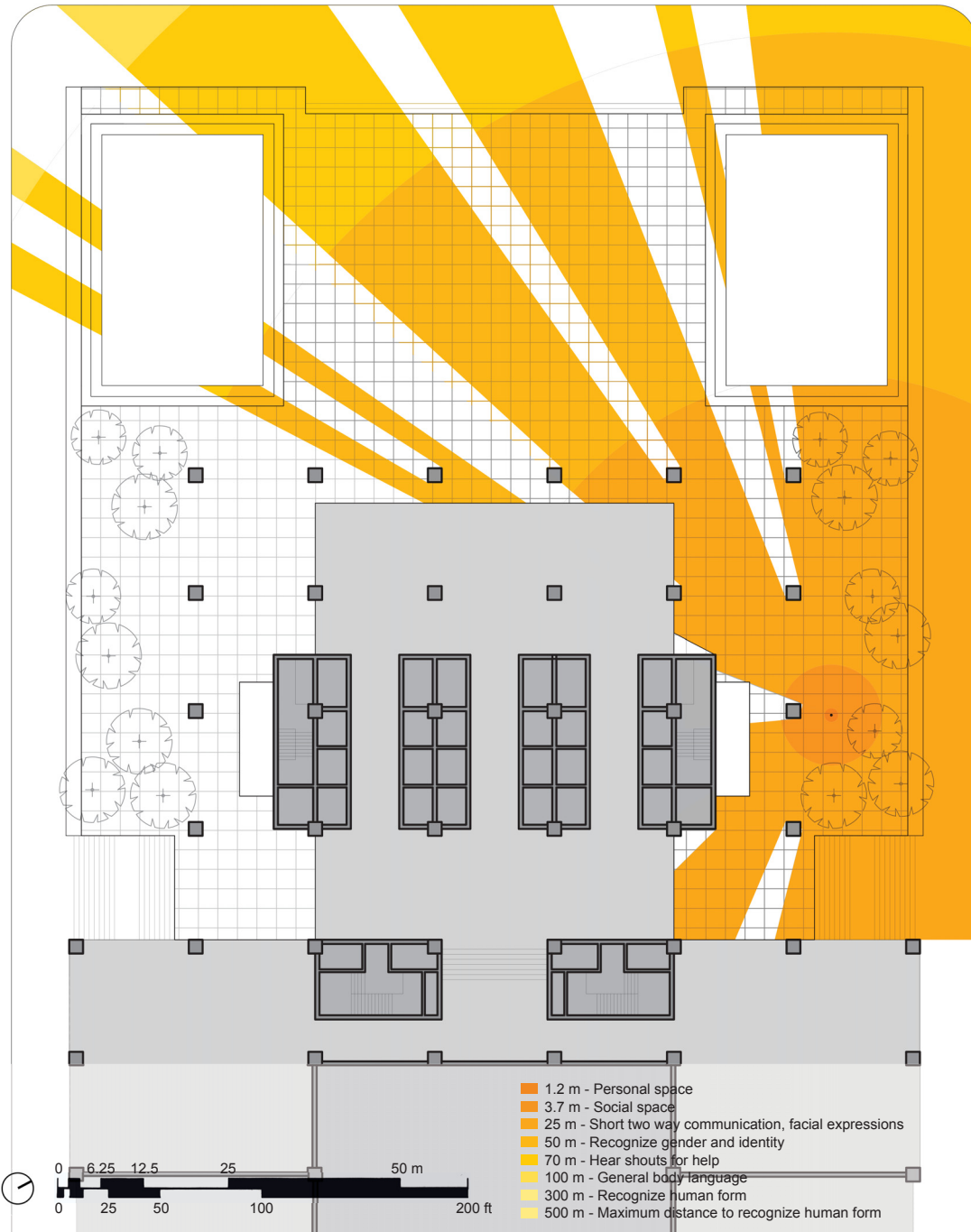


Figure D.2. Case Study of Seagram Plaza. In this case, the station point is located in a relatively secluded area, allowing a perspective that is protected and socially intimate, while permitting a fair view of the broader social space. William H. Whyte claimed that the presence of a defensible, secluded space adds much to the park's programmatic flexibility and popularity. Ground Floor of Seagram Building, 1958 (followthecreativepath.blogspot.ca 2011)

APPENDIX E - CASE STUDY: FUNEN BLOK

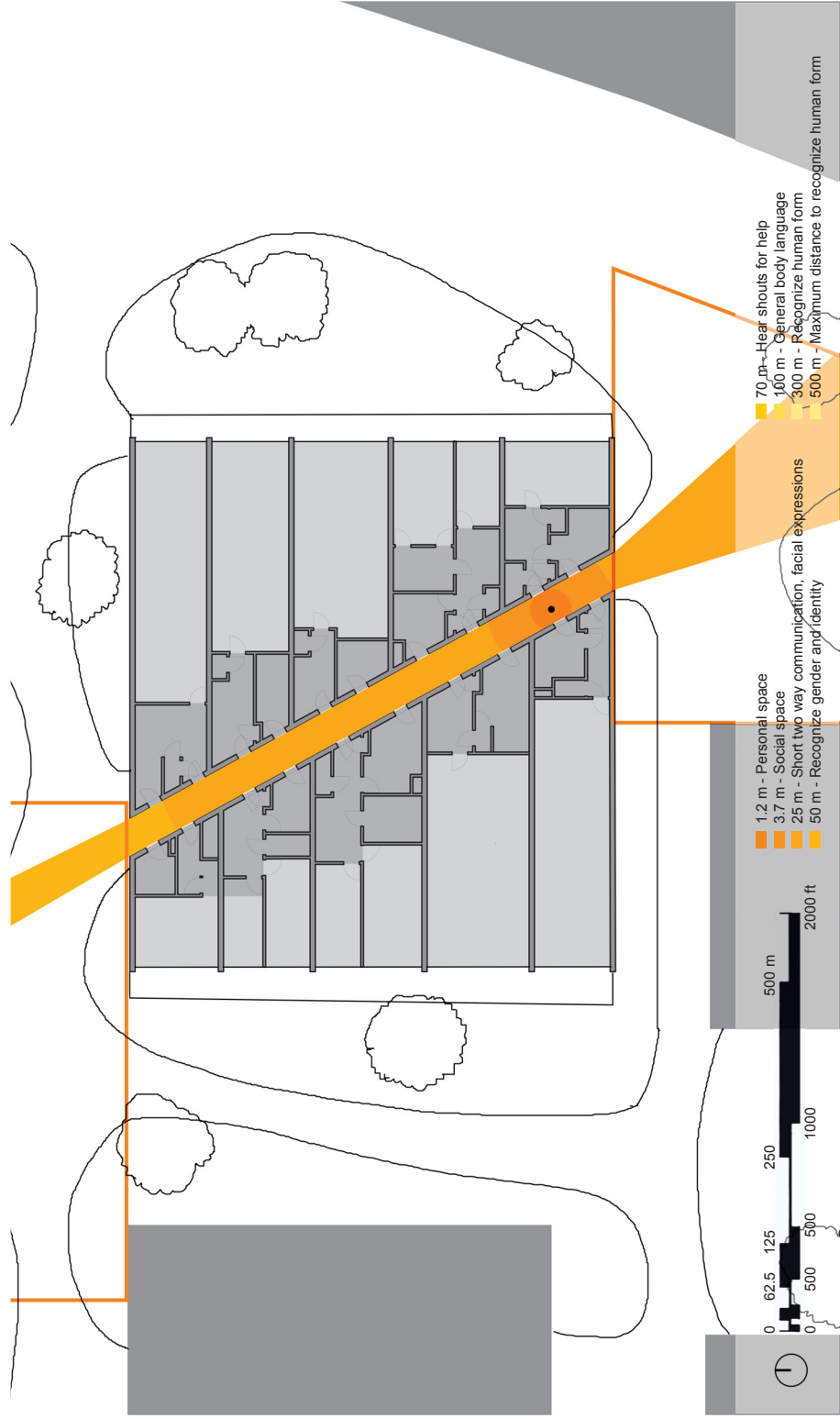


Figure E.1 Case study of Funen Blok K: Examining the social scale conditions from the perspective of someone standing inside the access alleyway. The entire length of the alleyway is encompassed by the 25 metre two-way communication distance, but the space is very uniform, generally not creating much in the way of defensible conditions. Also, the perception of the surrounding public space is truncated, resulting in problems of visual security. Funen Blok K, 2009 (Ferré and Salij 2010, 53, 57)

APPENDIX F - DESIGN INTERVENTION AT VICTORIA PARK



Figure F.1: This designed intervention for Halifax's Victoria Park involves a series of hard-scaped spaces and wooden partitions, which act to divide the space into areas with the same social scale longitudinally as transversely, allowing the park to behave less as a vacant street and more as a series of distinct and defensible spaces.

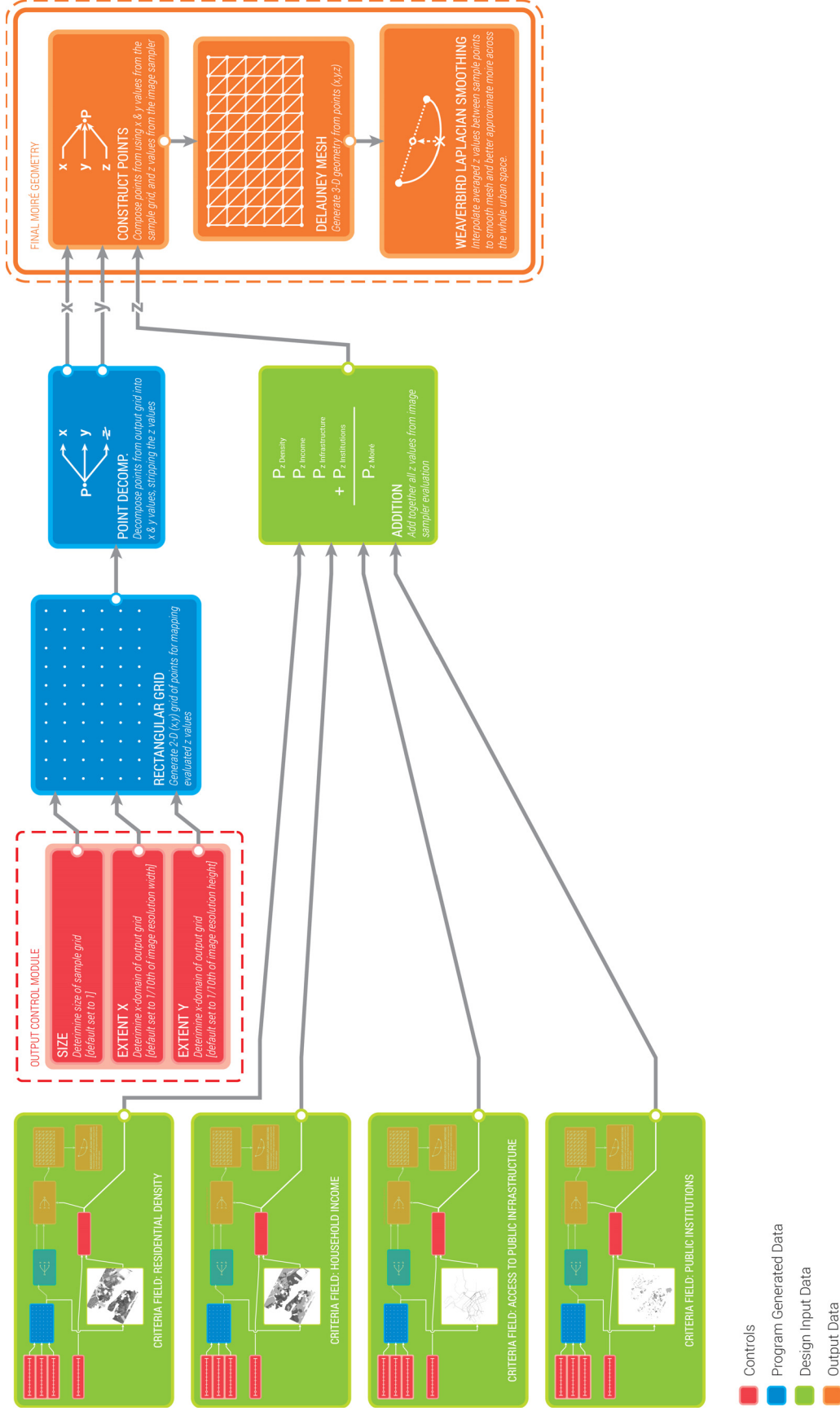


Figure G.2 Like Figure 8, this diagram shows the tool developed in Grasshopper to constructively combine the parametric profiles of each field condition, generating a further 3-dimensional geometry that represents a moiré interference pattern. Based on the interaction of the field conditions to create this moiré, emergent trends in the urban space may be observed and analysed. Scaling factors may be applied to each field condition, weighting their respective influences on the final pattern. This allows one to determine the importance of each criteria in the comparison

APPENDIX H - EXISTING DRAWINGS

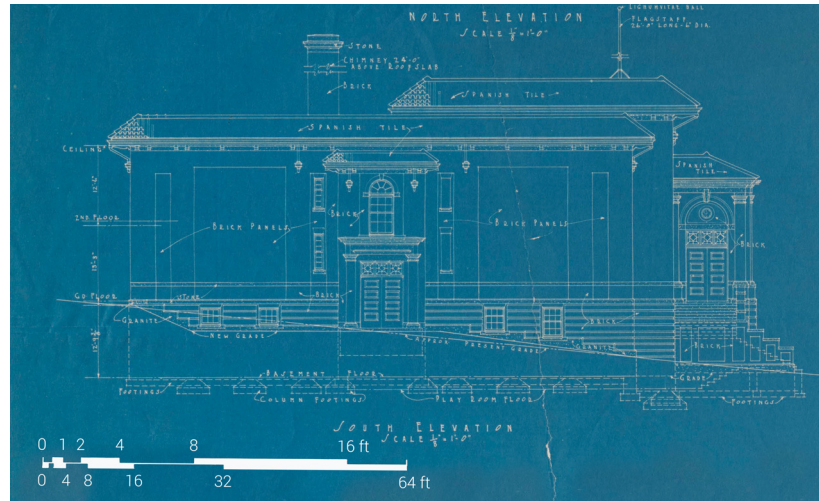


Figure H.1 Blueprint of St. Patrick's Boys School Southeast Elevation. Andrew R. Cobb, St. Patrick's Boys School South Elevation, 1919 (Nova Scotia Public Archives, 6)

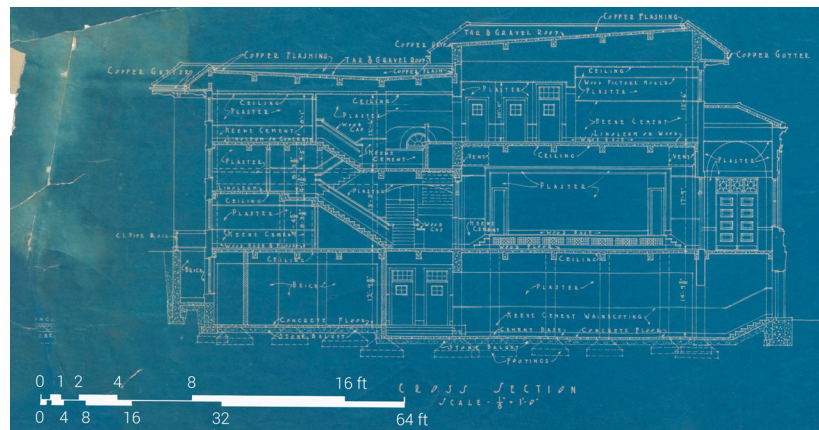


Figure H.2 Blueprint of St. Patrick's Boys School Transverse Section. Andrew R. Cobb, St. Patrick's Boys School Cross Section, 1919 (Nova Scotia Public Archives, 7)

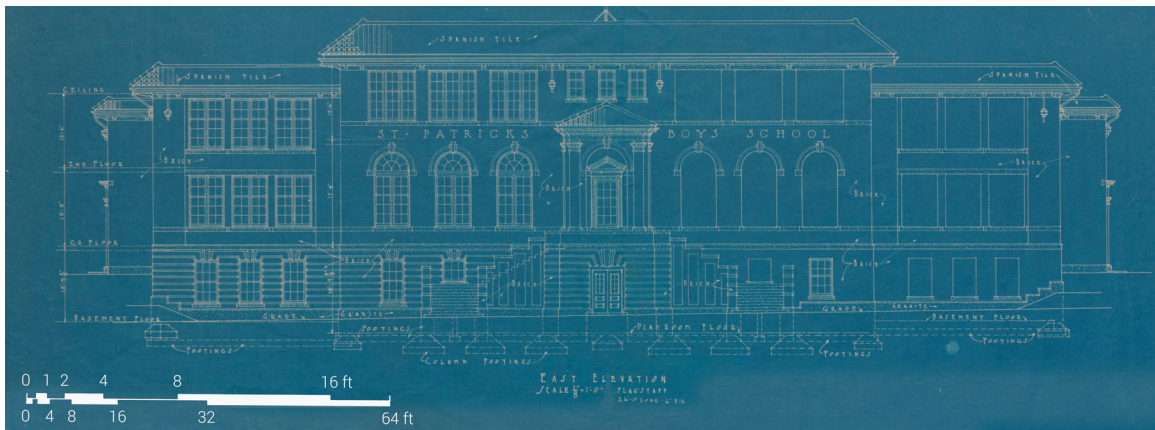


Figure H.3 Blueprint of St. Patrick's Boys School Northeast (Front) Elevation. Andrew R. Cobb, St. Patrick's Boys School East Elevation, 1919 (Nova Scotia Public Archives, 5)

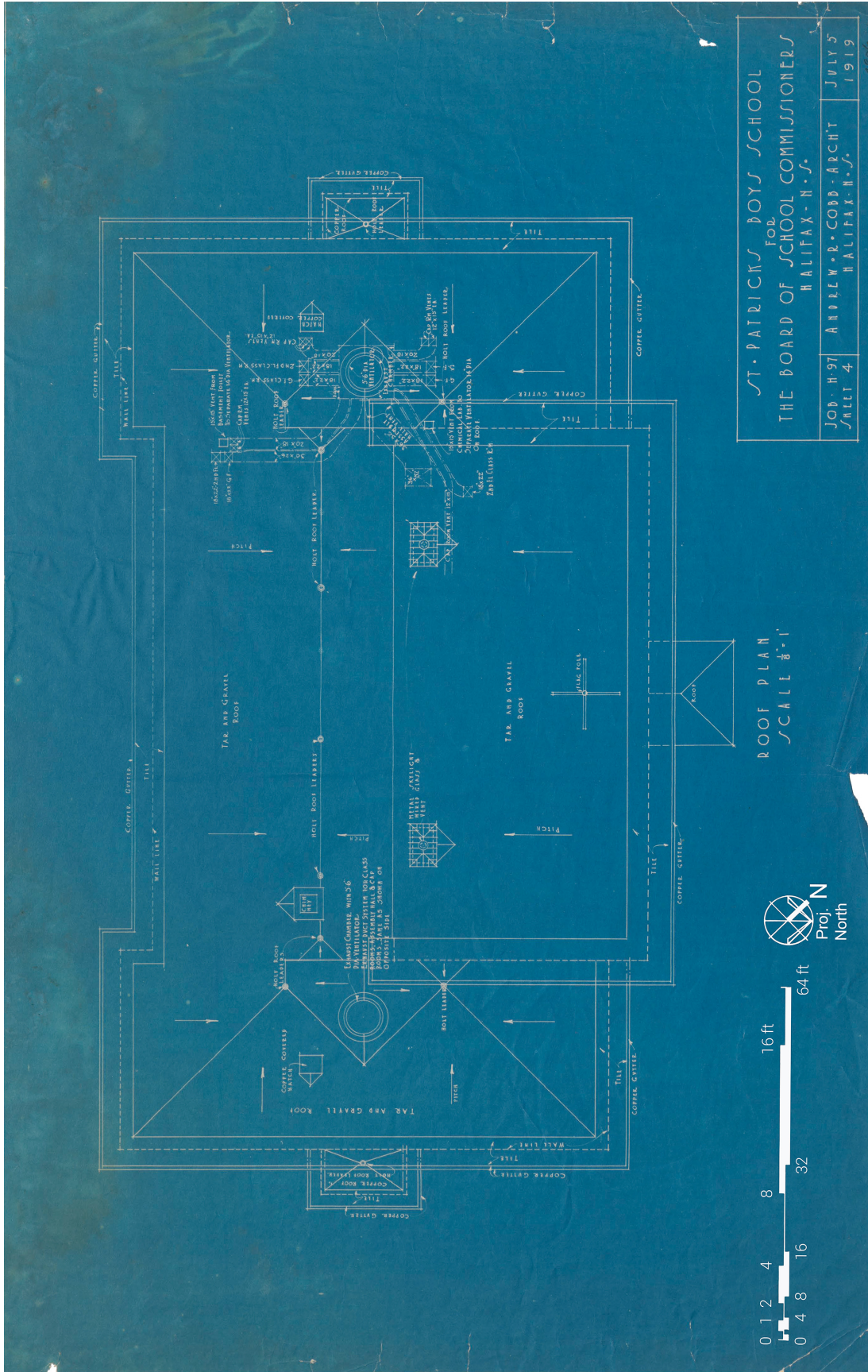


Figure H.4 Blueprint of St. Patrick's Boys School Roof Plan. Andrew R. Cobb, St. Patrick's Boys School Roof Plan, 1919 (Nova Scotia Public Archives, 4)

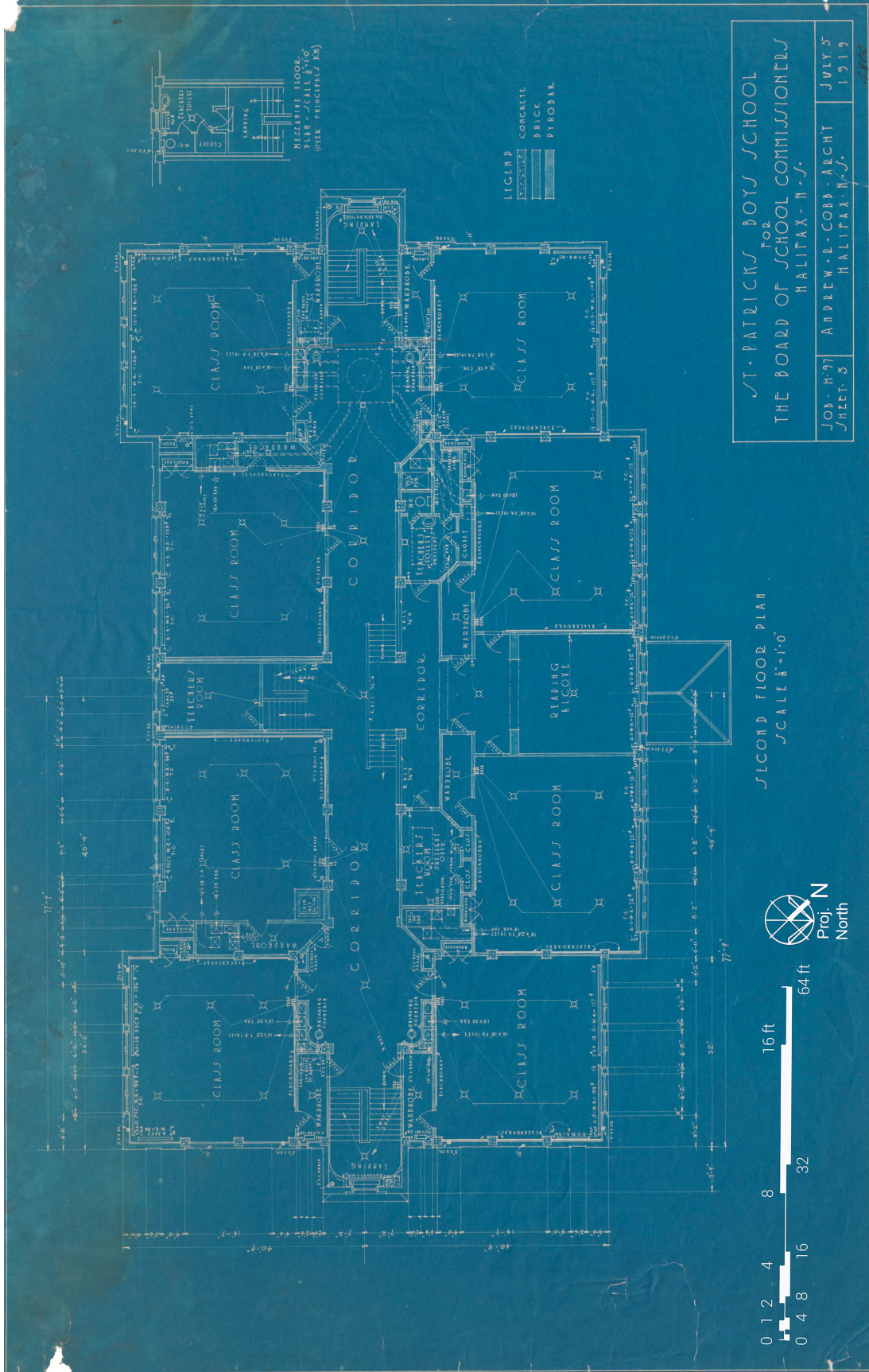


Figure H.5 Blueprint of St. Patrick's Boys School Level 2 Plan. Andrew R. Cobb, St. Patrick's Boys School Second Floor Plan, 1919 (Nova Scotia Public Archives, 3)

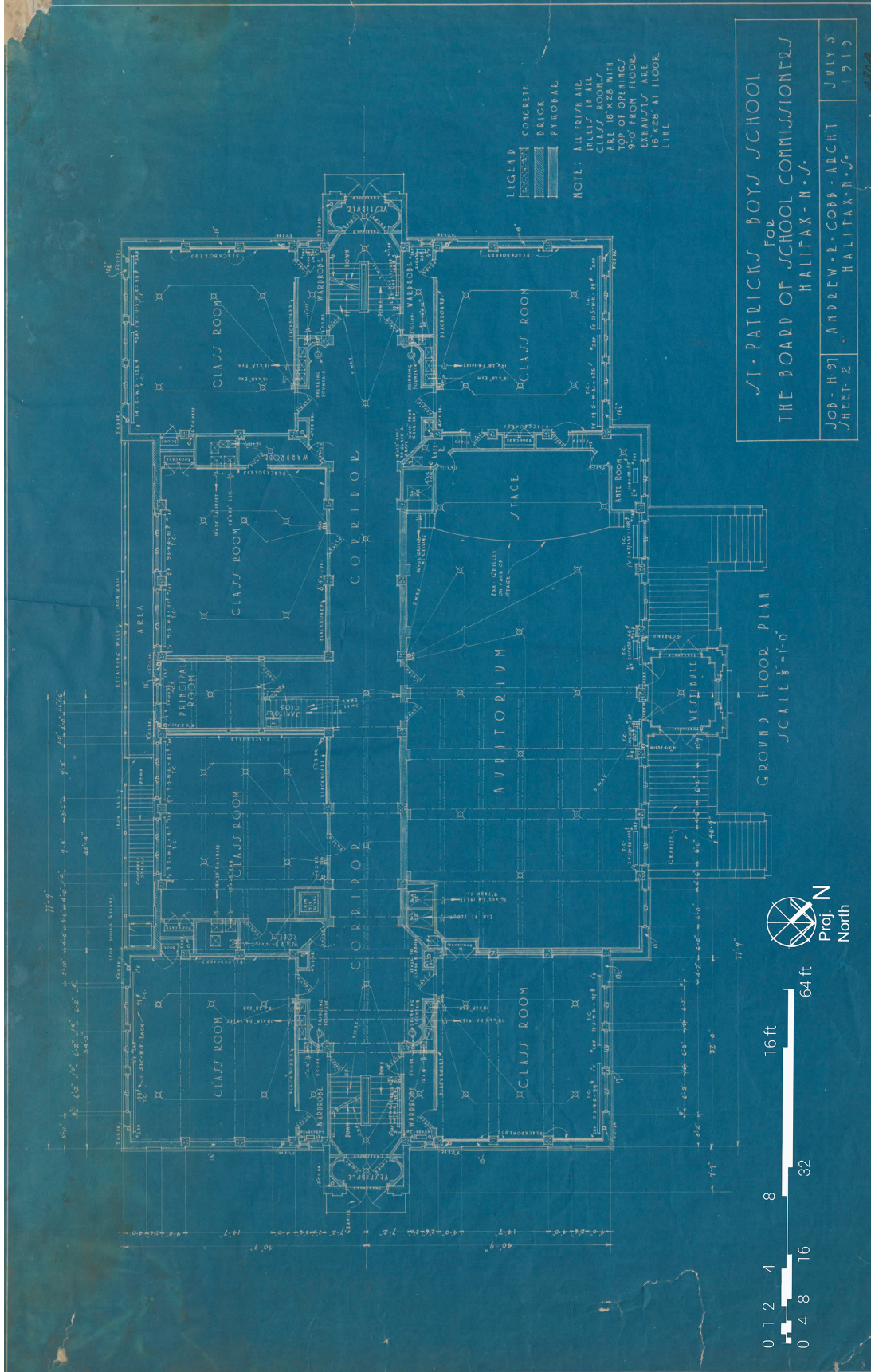


Figure H.6 Blueprint of St. Patrick's Boys School Level 1 Plan. Andrew R. Cobb, St. Patrick's Boys School First Floor Plan, 1919 (Nova Scotia Public Archives, 2)

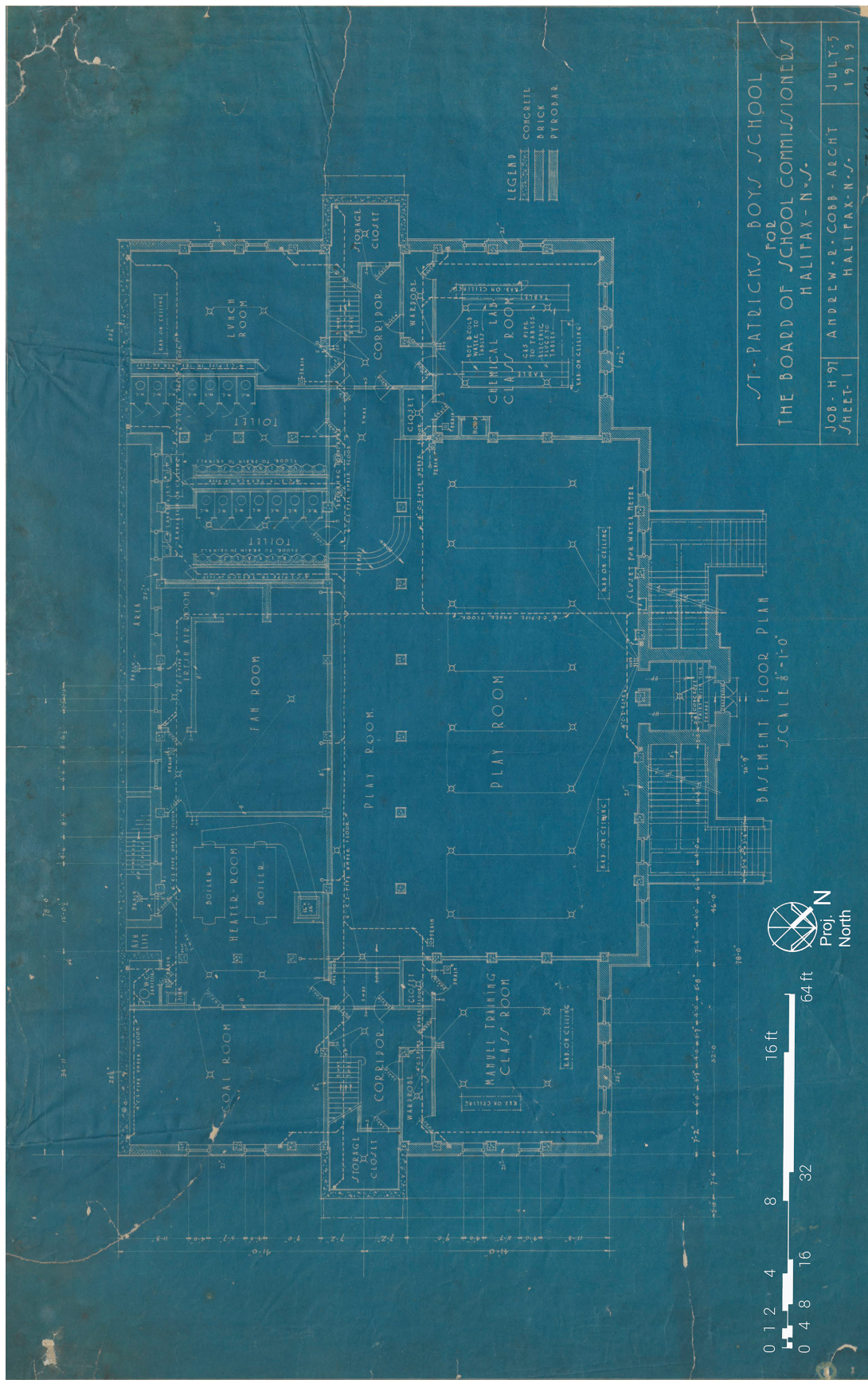


Figure H.7 Blueprint of St. Patrick's Boys School Level 0 Plan. Andrew R. Cobb, St. Patrick's Boys Basement Floor Plan, 1919 (Nova Scotia Public Archives, 1)

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