Ephemeral Architecture: A Catalyst for Urban Renewal

by

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ABSTRACT

This thesis considers ephemeral architecture as a tool to integrate former industrial structures with their surrounding urban context. Buildings and infrastructure are subject to fluctuations in use and occasionally of abandonment. Temporary urban design and ephemeral architecture introduce new spatial and programmatic ideas to places, and have the potential to infuse abandoned structures with new life.

Spanning the Ottawa River between the cities of Ottawa and Gatineau is an abandoned railway bridge. Since the time of its construction the infrastructure lost much of its original significance and has remained vacant for over 20 years.

The proposed design consists of a series of tensile structures within the Prince of Wales Bridge. The tensile structures compress and expand the existing geometry, creating areas for different activities. The site-specific intervention integrates the former industrial structure with the surrounding urban fabric and establishes a universal design methodology for the repurposing of former industrial structures.

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CHAPTER 1: INTRODUCTION

With the advancement of technology and the growth of cities, structures related to specific industrial activities experience fluctuations in use; their initial purpose much less significant in the face of newer technologies. These fluctuations include moments of transition, of uncertainty, of standstill and in extreme cases, the loss of relevance associated with industrial activities leads to a structure's eventual abandonment (Haydn & Temel 2006). This is not a regionally or culturally specific phenomenon, rather, it is a global one. As a result, many industrial structures that were once active have been abandoned and are slowly turning into ruin.



Battersea Power Station, decomissioned in 1983, London, UK, photograph by Annie and Steve Graham (Graham 2015)

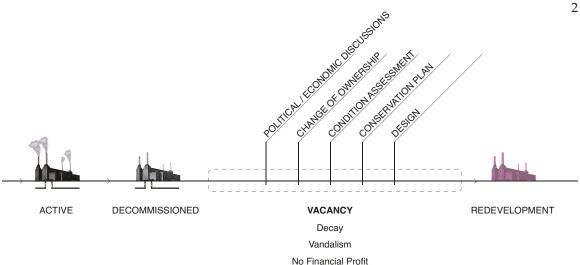


Car manufacturing factory, decomissioned in 1958, Detroit, Michigan, photograph by Matthew Christopher (Abandoned America 2009)



Abandoned train station, decomissioned in 1989, Bulgaria, photograph by Darmon Ritcher (The Bohemian Blog 2012)

Due to their inherent specificity, power stations, factories, and transportation hubs in particular are subject to fluctuations in use. Changes in the economy, politics, industry, technology and society often lead to the decommissioning of these structures and open up new possibilities for adaptive re-use. Adaptive re-use, however, comes with its own set of complications. At its most basic level, a typical adaptive re-use timeline for an industrial structure includes a period of time when the structure is being used for it's initial purpose, the end of that initial purpose, followed by the redevelopment of the structure. The length of time between the end of the initial use and the redevelopment of the structure is highly variable, ranging from a few months to several years. This means that for a period of time these structures are vacant and are subject to issues related to vacancy. Reduced financial profit, vandalism, decay and an increase in crime are among some of the most common issues when structures are vacant (Haydn & Temel 2016).

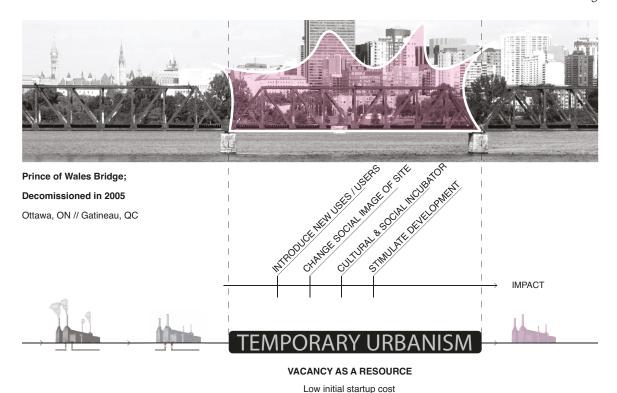


A typical adaptive reuse timeline

This thesis positions itself in the interim period between the end of the initial use and the redevelopment of industrial structures. Vacancy is considered a resource to be exploited, as opposed to an undesirable by-product of adaptive re-use. As a whole, the body of work demonstrates how temporary urbanism and ephemeral works of architecture can have a positive impact on a place that outlasts the lifespan of the architecture.

The modern movement in architecture and the rise of advanced capitalism have limited our ability to re-imagine new uses for obsolete structures. From the 1920s onwards, modern architecture emphasized functionality and rationalism over expressionism (Sadler, 1998). At the same time, advanced capitalist societies continued to increase the efficiency of production systems, leading to an increase in the consumption of manufactured goods. The Situationist International (1957 – 1972) and Gordon Matta-Clark (1943 – 1978) were highly critical of the social impacts associated with modernism, which often treats buildings and urban environments as machines to be lived in, such as Le Corbusier's Ville Radieuse. I propose temporary urbanism as a humanistic approach to adaptive re-use, focused on experiential and user-defined space.

In the process of creating a temporary urban environment, I have investigated the potential of textiles as deployable, ephemeral constructions. Ephemeral constructions have been used throughout history as lightweight, transportable shelters (Huntington, 2013), or as spaces designed to persuade and convince a public, such as festival architecture (Bonnemaison & Macy 2008). Due to the temporary nature of the architecture, where



Temporary urbanism

portability and the speed of construction are of importance, textiles have often been employed in these types of constructions. Additionally, textiles are inherently sculptural and their application within an abandoned structure allows for the creation of new spatial environments with respect to the existing geometry of the old structure.

Minimal rent payments

Maintenance

The Prince of Wales Bridge, a train crossing over the Ottawa River, was built primarily to support the timber industry in the late nineteenth and early twentieth centuries. Similar to many other industrial structures, its original function has been outdated by the emergence of new technologies and the structure has been abandoned. This location has been selected to test the proposed approach to urban renewal for several reasons. Like many other abandoned industrial structures, the Prince of Wales Bridge is experiencing issues related to vacancy, including decay, vandalism, and maintenance costs with no financial profit. The bridge is located in an urban environment, making it especially well suited for adaptive re-use and temporary urbanism. Lastly, the Prince of Wales Bridge has imbedded historical and cultural significance, therefore the structure should not be left abandoned in a state of decay. As a whole, the Prince of Wales Bridge is a local testing ground for a universal approach.

CHAPTER 2: THE PRINCE OF WALES BRIDGE

2.1 Historical and Cultural Significance

The Prince of Wales Bridge is a multi-span pratt truss bridge, spanning the Ottawa River between Ottawa, Ontario and Gatineau, Québec. The structure was built in 1880 and expanded the existing railway system between Québec City, Montréal and Ottawa. This was an important contribution to the evolution of the timber industry in Canada, as the infrastructure provided direct and reliable access to ports on the Saint-Lawrence River from the rich timber stands in the Ottawa Valley. Prior to the construction of the Prince of Wales Bridge, timber harvested from Upper Canada was boomed and sent down the



Site plan - The Prince of Wales Bridge (aerial photograph from NCC 2018)

Ottawa River for export; both a seasonal and a dangerous activity. With the advent of the railway system, the transportation of people and goods in Canada became more frequent and reliable (Histoire Forestière 2018).

Less than a kilometer downstream and visible from the Prince of Wales Bridge, are the Chaudière waterfalls, a name coined by Samuel de Champlain during his expedition in 1613. Prior to European discovery, the waterfalls were, and continue to be, sacred Algonquin meeting grounds (Histoire Forestière 2018). Despite the significance of the land-scape to the local indigenous population, by the mid 19th century hydraulic sawmills



Tri des Billes de Bois Acheminées à l'Usine de Pâte Chimique de la Compagnie E.B. Eddy sur la Rivière des Outaouais, Gatineau, QC, 1946 (Histoire Forestière 2018)



Chargement de Planches et de Madriers sur une Barge Aux Chutes des Chaudières, Gatineau, QC, 1873, Archives Photographiques Notman, Musée McCord (Histoire Forestière 2018)



Empilements de Planches, Aux Chutes Chaudières, sur la Rive Québécoise de la Rivière des Outaouais, Gatineau, QC, 1880, Photograph by W. Topley. (Library and Archives Canada 2018)



Chaudiere Falls (Showing Prince of Wales Bridge), ca. 1901, photograph by W. J. Topley (Library and Archives Canada 2018)

were built above the Chaudière Falls to process timber arriving from the Ottawa Valley (Histoire Forestière 2018).

The Québec, Montreal, Ottawa & Occidental Railway Company (Q.M.O. & O.), a subsidiary of the Province of Québec, was responsible for the construction of the Prince of Wales Bridge. The river crossing can be broken down into three main components. The span from Ottawa to Lemieux Island, roughly 289 meters, consists of 6 truss assemblies. On Lemieux Island, the tracks continue for another 335 meters before a second span links Lemieux Island to the Quebec shoreline, which consists of 7 truss assemblies and covers a distance of roughly 367 meters. In total, the three components make up nearly a kilometer of linear track and include 13 truss segments. In 1882, shortly after the bridge's completion, the infrastructure was sold to Canadian Pacific Railway (CP), linking it to a much larger railway system. As rail transportation evolved in Canada, so did the Prince of Wales Bridge. In 1927, the steel superstructure was replaced to accommodate newer, heavier trains. In order to accommodate the larger structural members, the stone piers were lowered, reducing the clearance height below the bridge (Churcher 2018). In the latter years of the 20th century, however, the decline of rail transport rendered the bridge less useful, eventually leading to its abandonment.

The Standards and Guidelines for the Conservation of Historic Places in Canada provides guidance on establishing and intervening on historic sites in Canada. Although the Prince of

Wales Bridge has not officially been designated as a historic place, based on the definitions outlined in the *Standards and Guidelines*, the structure is of historical significance for a number of reasons. At the time of its construction, the Prince of Wales Bridge was a significant engineering feat, and today stands as a representation of 19th century building technology – the multi-span double-intersection pratt truss. Alterations made to the structure in the early 20th century, including lowering the piers to accommodate larger structural members, demonstrate the evolution of rail technologies in Canada. Based on these physical features, related to the developing timber industry in Canada, the Prince of Wales Bridge is a historically significant engineering project related to transportation. The *Standards and Guidelines* define these types structures as "*Major engineering works* [*Ithat*] *have stimulated and facilitated development across Canada – significant innovations made in resource extraction, industry, transportation and communications have contributed towards developing new, or adapting existing technologies to suit Canada's climate and geography"* (Parc Canada 2010, 201). One such example is the Québec Bridge, a National Historic Site which spans the Saint-Lawrence River near Québec City.



Quebec Bridge, Quebec, P.Q., photograph (Library and Archives Canada 2018)

The designation process and treatment of cultural landscapes are also elaborated in the Standards and Guidelines: "[...] a cultural landscape is defined as any geographical area that has been modified, influenced or given special cultural meaning by people [...] Cultural landscapes are often dynamic, living entities that continually change because of natural and human-influenced social, economic and cultural processes" (Parc Canada 2010, 49). Many of the islands in the Ottawa River, especially those surrounding the Chaudière Falls have been identified as sacred by the Algonquin First Nations. Prior to the industrialization and subsequent damming of the area, powerful currents of water flowed over the limestone shelf in the riverbed at Chaudière Falls, dropping down into what resembled a giant cauldron, and sending plumes of spray up into the air as water crashed downwards (Outaouais Web Magazine 2018). Despite damming the Ottawa River, which rendered the waterfalls much less remarkable, the dynamic landscape continues to be of spiritual significance for the Algonquin First Nations (Histoire Forestière 2018).

Throughout their evolving history, the landscape and structure have been of economic and cultural significance for the Algonquin First Nations, English Canadians and French Canadians. The landscape surrounding the Prince of Wales Bridge and the historic structure itself should therefore be infused with new life, instead of falling into ruin.

2.2 Current Condition

In the light of more efficient modes of transportation, rail transport in Canada lost much of its original popularity. The last passenger train crossed the Prince of Wales Bridge in 1981 (Moose Consortium 2016, 4). From 1981 onwards, with the exception of a freight train that carried construction materials to Ottawa in 2001, the bridge has remained unused.





Current condition, The Prince of Wales Bridge, August 2018

At the turn of 21st century, the Prince of Wales Bridge might have found new life as a light rail bridge for urban transit between the cities of Ottawa and Gatineau. At the time, the City of Ottawa was funding the construction of the O-Train, a light rail transit system built in the existing train corridor extending south from the Prince of Wales Bridge. In the hopes of expanding the transit corridor over the Ottawa River, the City of Ottawa purchased the Prince of Wales Bridge in 2005. Shortly after this, during a re-vitalization project nearby, the feeder tracks leading up to the bridge on the Ontario side were permanently removed. Despite discussions about future use, there are currently no plans to develop or make use of the infrastructure. The bridge is currently the source of much political debate; the infrastructure is owned by the City of Ottawa yet part of the structure falls within the jurisdiction of the City of Gatineau. Funding, service and maintenance are therefore complex to manage. This complexity is not unique to the Prince of Wales Bridge however; many bridges span provincial borders and require cooperative management. The National Capital Comission (NCC), is an example of a committee that facilitates the management and planning of federal land and infrastructure in both Québec and Ontario. A similar approach to the management and planning of the Prince of Wales Bridge would facilitate future use.

The Prince of Wales Bridge is in an advantageous location. The bridge abutment in Ontario at Lebreton Flats leads to the downtown core of Ottawa. The LeBreton Flats are undergoing a substantial redevelopment project, managed by the NCC, that will see a significant increase in population density, as well as a multitude of civic buildings, such as an event center, cultural and social meeting places, hockey rinks and a multi—use sports facility (NCC 2018). The redevelopment of LeBreton Flats will turn the existing land into a highly frequented urban location, making the Prince of Wales Bridge even more desirable. On the Québec side, the bridge abutment is near the entrance to the Gatineau Park, a major recreational area for residents of Ottawa and Gatineau. Bike paths flank both sides of the Ottawa River and serve as transportation corridors linking the downtown cores of Gatineau and Ottawa. The Prince of Wales Bridge is one of the many landmarks along the Ottawa and Gatineau waterfronts. The Chaudière Falls, the National War Museum, and the Parliament buildings are all visible from the bridge, making a visual (and acoustic, in the case of the Chaudière Falls) connection to the cities. Despite it's promi-

nent location, the construction of Ottawa's water purification plant on Lemieux Island in 1932 segregated the island from the evolving urban spaces surrounding it. Today, the industrial complex on the island is contrasted by urban residential neighborhoods to the north and south, as well as the downtown cores of Ottawa and Gatineau.

Due to its location, the bridge and island are of interest to urban hikers, dog walkers and teenagers, who often gather here despite 'no trespassing' signs and fencing installed by the City of Ottawa. In September 2016, the city of Ottawa spent \$46,000 installing chain link fencing in the hopes of prohibiting pedestrian access. Since then, the city spent an additional \$15,000 making repairs to the fence as people cut holes in it to access the bridge (Nease 2018). Ultimately, prohibiting pedestrian access has proved unsuccess-



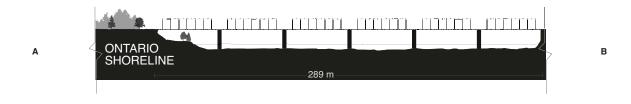
Major circulation arteries and monuments (aerial photograph from NCC 2018)

ful. Crime has also increased in the area. Since the City of Ottawa purchased the bridge in 2005 and subsequently decommissioned the structure, the police have been called to the bridge over 51 times, in some cases for theft and assault with weapons (CTV News 2018).

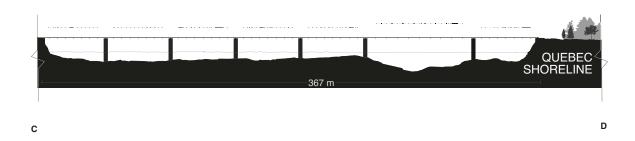
Vacancy is problematic for the Prince of Wales Bridge. The property requires maintenance and surveillance, which is an economic burden for the city. Vandalism to both the fence and the bridge is common and vegetation growing between the planks supporting the train tracks is undoubtedly contributing to the decay of the wood members. The increase in crime has contributed to a negative social image of the site. The historical and cultural significance of the infrastructure, combined with the current problematic situation, calls attention to the Prince of Wales Bridge; a perfect example of an industrial structure in search of a new life.



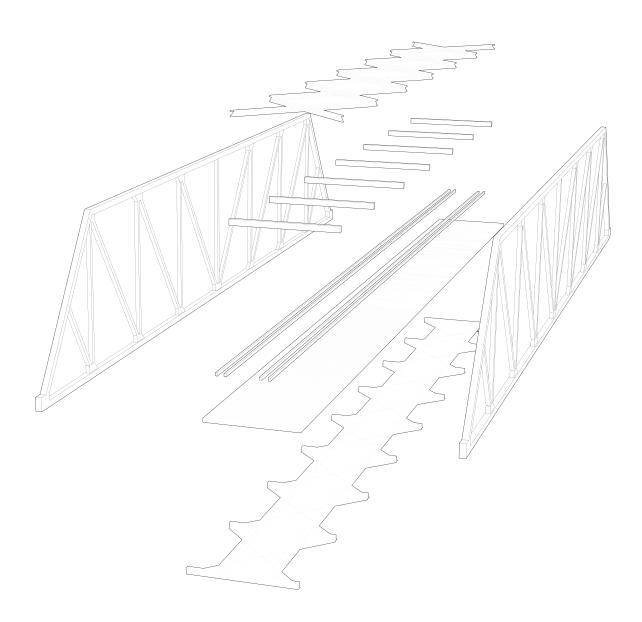
Vandalism & decay, The Prince of Wales Bridge, August 2018



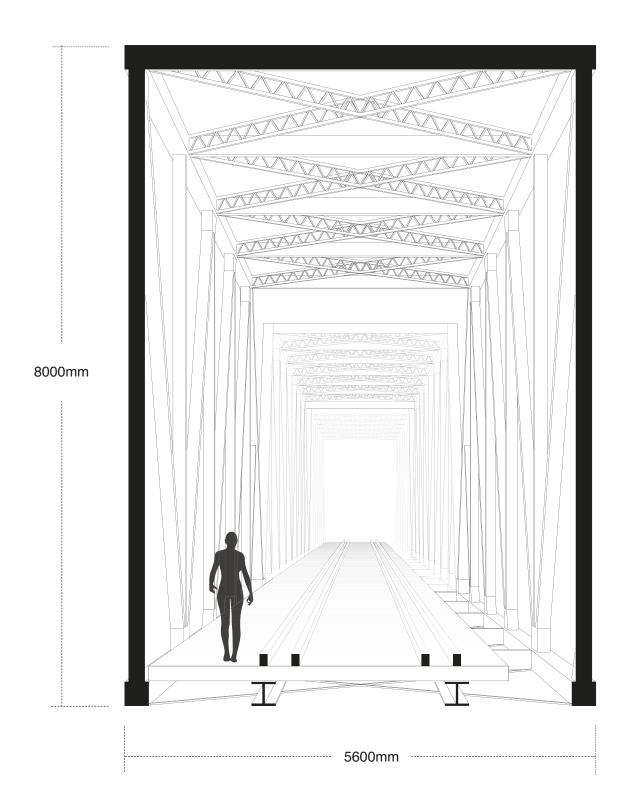




Site section - existing



Exploded axonometric of a single truss segment - existing

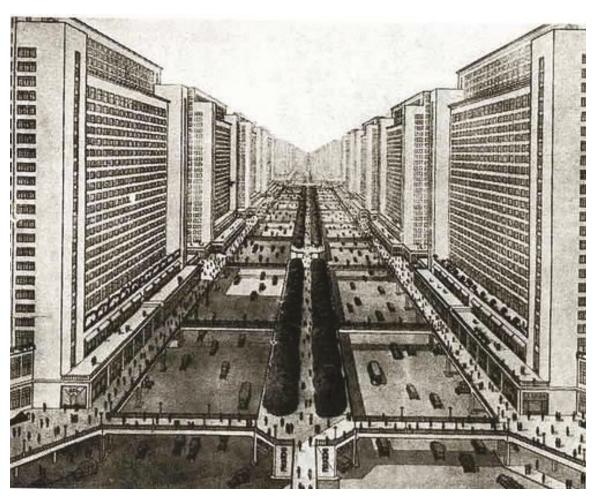


Section perspective - existing

CHAPTER 3: TEMPORARY URBANISM

3.1 Theoretical Framework

The modern movement in architecture, marked by the prioritization of functionalism and rationalism over expressionism, arose around 1920 (Sadler 1998). At the same time, industrial processes were becoming more efficient, lowering the cost of manufactured goods. As a result, this gave rise to an increase in the consumption of goods in the western world (Ingersoll & Kostof 2013, 782). As technological advancements become more frequent, so does the renunciation of older technologies. The modern movement in architecture and the rise of advanced capitalism produced buildings and urban environments that prioritized efficiency over human experience. Le Corbusier's *Ville Radieuse*, in which the urban environment is designed to function as a machine, is an example of this phenomenon.



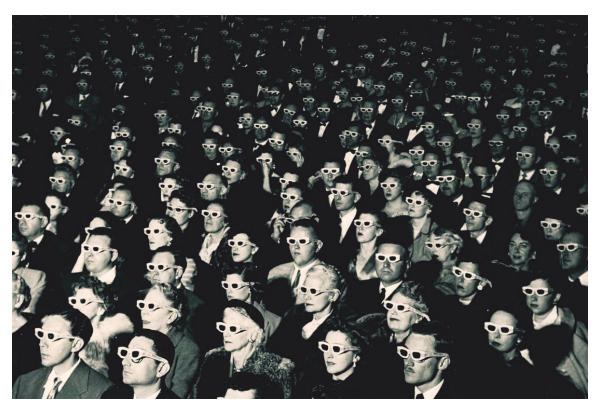
Le Corbusier, Ville Radieuse, 1930 (The Charnel-House 2017)

The work of the Situationist International, a group of artists and theorists prominent in Europe between 1957-1972, demonstrates how advanced capitalism and modernism have created a more passive and less creative society. Building on Situationist theory, the works of Gordon Matta-Clark (1943-1978) provoked an engagement between people and the surrounding physical environment as a way to overcome the passiveness associated with modernism and stimulate new ideas. In this section, I discuss some of the key theories established by the Situationist International and Matta-Clark and propose temporary urbanism as an alternative approach to urban renewal.

Guy Debord founded Situationist International, a group of artists, intellectuals and theorists, in 1957. Throughout its 15 years of existence, the group criticized advanced capitalist societies and highlighted the problematic situation in which commodities take precedence over lived experiences, thereby creating a "society of the spectacle". The name 'Situationist' refers to one of the groups central theories, derived from the writings of Jean-Paul Sartre (1905-1980), which is that life is made up of a series of situations of which citizens of capitalist societies have little control. Situationist theory maintains that these situations can be manipulated in order to create revolutionary opportunities (Attlee & Le Feuvre 2003, 26).

Our central idea is the construction of situations, that is to say, the concrete construction of momentary ambiances of life and their transformation into a superior passional quality. [...] The role to be played by a passive or merely bit-playing 'public' must constantly diminish, while that played by those who cannot be called actors, but rather, in a new sense of the term, 'livers', must steadily increase (Debord, 1957, 12).

Defined as both goods (TVs, cars, refrigerators) and roles (citizen, parent, sexual partner), the Situationists suggest that commodities are intimately linked with images (Eagles 2012, 185), which remind us of our true passions or desires. By replacing human desires and passions with manufactured goods, the society of the spectacle generates false desires, influenced by the consumption of commodities (image-objects), leading the consumer to become a spectator in his or her own life. Similar to the accelerated production of objects, the production of architecture has been greatly expedited in capitalist societies. The modernist movement in particular prioritizes visual aesthetics and functionality, further distancing design methodologies from lived experiences (RIBA 2017).



La Société du Spectacle, 1974, still image from film by Guy Debord (Rapporto Confidenziale 2018)

I propose to remedy this through temporary urbanism, in which short-lived encounters with the urban environment focus on lived experiences. Temporary urbanism and ephemeral works of architecture provoke an engagement with the spatial environment. To use Debord's terminology, this spatial engagement encourages people to be 'livers' instead of being a passive or bit-playing 'public'.

While creativity and play have been blighted by prohibitions and by every sort of distortion, love, without escaping from repression, still remains relatively the freest and most easily accessible experience (Vaneigem, 1965, 23).

Vaneigem, a key member of the Situationist International, suggests creativity and play in particular are most affected by consumerism. In an architectural context, an individual's ability to imagine a new innovative use of space is constrained by past experiences and limited knowledge of alternatives. Temporary urbanism has the potential to insert itself within the design process, with a focus on human experience, desires and passions, before suggesting a final urban form.

'Détournement' - 'misappropriation' in English - an art movement first developed by Letterist International, and latter adopted by the Situationist International, involves taking everyday images and graphics and rearranging them to challenge their traditional meaning (Eagles 2012, 190). Early examples of this art form consisted of modifying 2-dimensional graphics and advertisements; however, the approach has also been translated into the architectural realm to question the future use of buildings and infrastructure. Projections, for example, are used to superimpose new images onto old buildings, leading those who pass by to question their future. This is also reffered to as retrofuturism, where potential futures are projected onto what is existing. Quartier Éphémère, a group of artists based in Montréal, successfully used the technique to bring attention to abandoned factories (Plohman 2000).



In situ, projections onto grain silo no. 5, in the context of the event Panique au Faubourg organized by Quartier Éphémère, Montreal, 1997; photograph by Guy L'Heureux, from Fondation Daniel Langlois Pour l'Art, la Science et la Technologie (Plohman 2000)

The works of Gordon Matta-Clark (1943-1978), the artist most well known for making cuts in buildings, was highly critical of the state of western society in which "our individual perceptions are being subverted by industrially controlled media markets and corporate interests" (Interview with Gordon Matta-Clark, Exhib. Cat., International Cultureel



Richard Meier & Partners Architects, Twin Parks Northeast Housing, The Bronx, New York, 1969-1974; photograph by Ezra Stoller (Richard Meier & Partners Architects 2018)

Centrum, Antwerp 1977). The artist often attacked modernist architecture, which had created vertical slums and what the artist refers to as lifeless 'surface formalism'. His contemporaries, including Peter Eisenman, Richard Meier and Michael Graves, were producing the very work that Matta-Clark was opposed to. The artist's disgust with modernism was particularly pronounced with respect to the many social housing projects being built in New York at the time, designed by architects who seldom visited the neighborhoods. Matta-Clark identified the problematic situation created by a modernist approach to urban renewal: "The availability of empty and neglected structures [is] a textual remider of the ongoing fallacy of renewal through modernization" (circa 1974, Estate of Gordon Matta-Clark). This statement holds true for the Prince of Wales Bridge; as new modern development projects are being built in the area surrounding the bridge, the old structure has been abandoned in a state of decay.

Matta-Clark's artistic work often involved physically manipulating buildings to reveal new spatial experiences and unexpected views (Stephen Walker 2009, 33). Debord had



Gordon Matta-Clark, Circus or the Caribbean Orange, Chicago, 1978 (Museum of Contemporary Art Chicago 2018)



Gordon Matta-Clark, Interior View of Conical Intersect, Paris, 1975, photograph by Marc Petitjean (Canadian Centre for Architecture 2018)

previously established in Situationist theory that situations can be manipulated in order to create revolutionary opportunities. As Matta-Clark made dramatic cuts in buildings and people gathered to watch the artist work, the artist was creating a public spectacle, breaking down the distinction between a passive audience and engaged 'livers'. This distinction was further eroded in Matta-Clark's work, which often required multiple vantage points to understand (Attlee & LeFeuvre 2003, 29), encouraging participants to move through and engage with the artwork. This technique is perhaps most obvious in Conical Intersect, where the geometric cuts can best be understood by moving through the structure. Ephemeral works of architecture have the potential to provoke a similar engagement with the built environment.

The Situationists and Gordon Matta-Clark were interested in overlooked infrastructure in urban environments. They were critical of modernism's blank-slate approach to redevelopment and sought to provoke an engagement between people and their surroundings. The Situationists developed 'la dérive' (the drift), in which members of the group would wander the streets the Paris, avoiding the main thoroughfares in order to discover overlooked buildings, parks and in some cases entire neighborhoods. La dérive and psychogeography were a means to move beyond the domination of urban designers and politicians, fostering an appreciation for less definable architectural qualities – inhabitants, light, sound, color (Attlee & Le Feuvre 2003, 31). Gordon Matta-Clark had a similar fascination with 'left-over' New York real estate and actively engaged in the real estate market, buying undesirable and often legally inaccessible lots, left over from the subdivision of adjacent properties (Attlee & Le Feuvre 2003, 60).

As a whole, the theoretical references discussed above highlight the problematic approach to redevelopment in which the users of new developments are passive participants in the design process. Contextualized in the 21st century, temporary urbanism is a means of bridging the gap between an accelerated capitalist economy and the immobility of real estate (Haydn & Temel 2006, 56). To this regard, the projects discussed in the following section demonstrate the long term political and social impacts associated with temporary urbanism in which users are actively engaged.

3.2 Political and Social Impacts

Monumentality and permanence are often the focus of great works of architecture and urban design; however, temporary urbanism and ephemeral works of architecture have often played an important role the shaping of more permanent urban endeavors. Throughout the Age of Enlightenment, royalty organized festivals which often involved reconfiguring urban squares and adding architectural elements to beautify pre-existing urban spaces, rendering them more interesting and agreeable for festival activities (Bonnemaison & Macy 2008, 161). Although these festivals were a display of wealth and exuberance, the temporary modifications and additions played a role in more permanent urban renewal projects. Contextualized in the 21st Century, temporary urbanism is a means to test the viability of program uses and spatial configurations in underused urban environments prior to making a permanent commitment (Fernandez 2006, 71). In response to the Situationists' and Matta-Clark's critisism of modern architecture and urban planning, the adaptive re-use projects discussed below demonstrate how temporary use can inform the design of new urban and architectural spaces. The New York City community gardens and the guardhouses program in Leipzig were both created as temporary urban projects, yet they both had lasting social and politial impacts that influenced the long term use of the areas.

Haushalten e.V. is an ongoing program established in Leipzig, Germany in 2004. In the wake of German Democratic Republic (GDR), which dissolved in 1989, several Eastern German cities experienced suburbanization, reduced birthrates, and emigration as a result of high unemployment rates (Oswalt, Overmeyer & Misselwitz 2013). Many of the historic houses in Leipzig were in poor condition and being boarded up, leading to a massive rate of vacancy (roughly 16 percent of the housing stock in the city) (Oswalt, Overmeyer & Misselwitz 2013, 242). Haushalten e.V. led to the creation of a number of Wächterhäuser - guardhouses - whose goal was to protect and maintain historic houses that were vacant and vandalised, as well as providing inexpensive space to the residents of Leipzig who could not afford more traditional apartment rentals. New tenants of these buildings were required to pay for utilities and low rental payments. In return, the new tenants are responsible for maintenance and small renovations. In addition to the provision of affordable housing, many of the buildings are used for cultural events, such as art galleries, exhibitions and performances.





Haushalten E.V. (guard houses), Leipzig, Germany, 2014, photographs by Frank Schwärzel (Schwärzel 2014)

The Guardhouse program is an example of temporary urbanism that is mutually beneficial to landowners and temporary users. By introducing new users and uses to the vacant buildings, the physical and social images of the sites are improved. The new users are generally pragmatic about the existing spatial conditions, making improvements where necessary and using the spaces as they see fit, which often become social and cultural incubators. As a result, new development and investment opportunities arise. Starting in 2007, the initial rental agreements transitioned into more traditional rental agreements. In some cases, the houses were sold and renovated, maintaining the historic and cultural significance of the buildings while improving the quality of life of the residents (Schwarzel 2014).

In the wake of the race riots in New York City in the 1960s and the fiscal crisis in the 1970s, vacancy was high in parts of the city. City-owned properties, often acquired through foreclosure, were left unoccupied and experienced an increase in crime. The Lower East Side, Hell's Kitchen and East Harlem were among the neighborhoods most effected. The Green Guerillas, a group founded by Liz Christy in 1973, began cleaning up vacant city lots in the Lower East Side and converting them into gardens, a trend which soon perpetuated all five boroughs. By 1978, the city officially began leasing the converted lots for one dollar a year and by the $21^{\rm st}$ century, there were roughly 750 community gardens in New York City (Green Guerillas 2018). Similar to the Guardhouses in Leipzig, the community gardens were established on the basis that they were temporary, the city reserving the right to terminate the lease and develop the land at any time.



Liz Christy in one of her Lower East Side Gardens, New York, 1975, photograph by Donald Loggins (NYC Parks 2018)



Community Gardeners at the Bowery Houston Community Farm and Garden, New York, 1974; photograph by Donald Loggins (Liz Christy Community Garden 2018)

Despite pressure to develop the lots once the economic depression had receded, the gardens remained important civic features and were often spared from developer-driven projects (NYC Parks 2018).

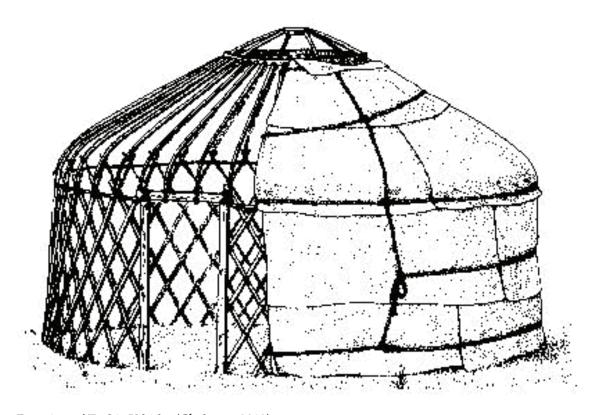
The creation of community gardens in New York City turned neglected urban lots into areas for rest and relaxation, as well as for growing food and connecting with the natural world. The new users and use introduced to the previously abandoned sites changed the social image of the lots, reducing crime and fostering cultural and social activities. Ultimately, community gardens in New York City benefited the users of the community gardens, the city and the surrounding neighborhoods. As a result, the quality of life for residents was improved and land values increased (Haydn & Temel 2006).

The guardhouses in Leipzig and the community gardens in New York City exemplify the political and social impacts generated by temporary use. In both cases, temporary urbanism is allowed to take place due to the fact that the activity and the appropriation of space are not permanent. Once established, the temporary use can play an important role in determining permanent redevelopment. Like the guardhouses and community gardens, temporary urbanism on the Prince of Wales Bridge is intended, in part, to test the compatibility of new programmatic and spatial characteristics within the existing structure.

CHAPTER 4: EPHEMERAL ARCHITECTURE

4.1 Deployable Environments

Extreme examples of temporary urbanism have seen the creation of entire cities for the duration of several hours or days. In these instances, the choice of material and design becomes critical with respect to efficiency. Portability, the speed of erection, and the economy of materials are of great importance. Chapter 3 established the theory surrounding temporary urbanism and tackled the question: why create temporary urbanism? In this chapter, I focus on ephemeral works of architecture pose the question: how to create temporary urbanism?



Drawing of Turkic Kibitka (Chebucto 2018)

Since the Ice Age, temporary constructions have played an important role in the provision of shelter for humans (Huntington 2013, 1). Nomadic peoples in particular made use of these types of structures. Among some of the earliest examples of ephemeral architecture are the Kibitka, Black Tent and Tipi. Oftentimes, multiple structures were arranged to provide maximum protection from undesirable natural elements (wind,



Black Tent, 2011, photograph by Joseph Hoyt (Images of Afghanistan 2011)



A young Oglala girl sitting in front of a tipi, with a puppy beside her, probably on or near pine ridge resevation, 1891, photograph by John C. Graybill (Library of Congress 1975)

sunlight, etc.), as well as to create protected spaces between them for communal activities, thereby creating a temporary urban environment. Early examples of ephemeral architecture were built out of organic materials, with two main structural components: rigid members, often tree branches and the trunks of saplings, and a skin or velum, often animal hides and in some cases birch bark pieces or latticed leaf fronds (Huntington 2013, 1). This type of architecture enabled the inhabitants to move from one location to the next, deploying the shelters where they saw fit. These historic examples are the foundation for my investigation in ephemeral architecture. Although they are situated in different geographic and cultural environments, from the Middle Eastern desert to the North American tundra, the use of textiles has been universally employed as building material in deployable constructions. To broaden my research, I have considered 3 recent instances in which textiles have been used in the creation of ephemeral architecture, demonstrating that the cross-cultural choice of textiles as building material is related to functionality. Textiles are lightweight, economic, and quick to erect. Together, these characteristics make the material ideal for ephemeral architecture.

Arafat is a holy site along the Hajj pilgrimage to Mecca, in Saudi Arabia. The pilgrimage is usually a 10-day endeavor during which pilgrims walk over 10 km, making stops for prayer and rest at Arafat, Muzdalifah and Mina along the way. At each of the main



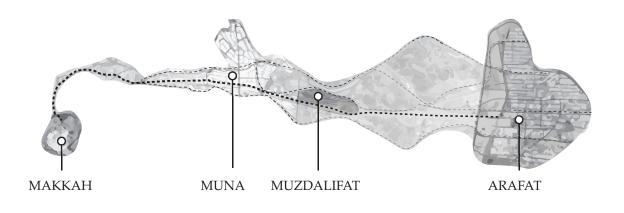




Arafat (during Hajj), Saudi Arabia



Textiles & temporary urbanism, Arafat, Saudi Arabia



Hajj Pilgrimage, Saudi Arabia (top left & centre: Google Earth 2018, top right: Priyadi 2014, bottom: Google Earth 2018)

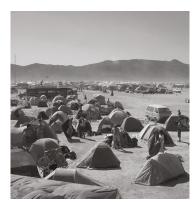
stopping points, sheltered areas are provided for pilgrims. In the context of temporary urbanism, Arafat is of particular interest. In contrast to Muzdalifah and Mina, pilgrims generally only spend 14 hours in Arafat, in order to hike Mount Arafat and rest for a night (Rasch 1980). Here, an ephemeral city is created to host the pilgrims during their short stay. In order to accomplish such a feat, thousands of tents are erected each year. The square tents used in Arafat are composed of wood members and double-layered cotton fabric to provide protection from the hot climate. The total weight of the entire structure, including fabric and wood members, is a mere 30kg, able to fold into a bundle 2m long and 40cm in diameter. The lightweight materials allow the shelters to be easily stored and transported. Each little structure provides 16 square meters of sheltered space; can be erected in 5 – 10 minutes, and costs between \$100-200 USD to produce (Rasch 1980, 63). In 2018, almost 2.4 million pilgrims participated in the Hajj pilgrimage,



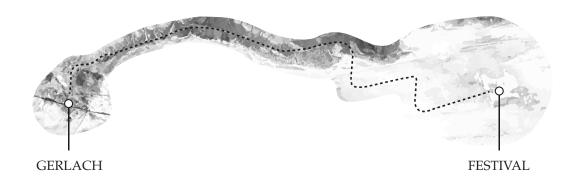




Black Rock City (during festival), USA



Textiles & temporary urbanism, Black Rock City, USA



Burning Man, Nevada, USA (top left & centre: Google Earth 2018, top right: Pinterest 2015, bottom: Google Earth 2018)

many arriving from abroad (Kingdom of Saudi Arabia 2018). Due to the sheer number of pilgrims and the amount of space required to house them, the speed of construction and cost of materials play a key role in the selection of materials.

Burning Man, an annual festival that takes place in the Black Rock Desert of Northwest Nevada, embraces a similar approach to temporary urbanism. Here, thousands of personal tent structures are assembled according to a grid street structure, creating a temporary urban environment lasting a week (Holson 2018). Due to the festival's remote location, portability is key. The ability to assemble an inhabitable structure quickly and efficiently is also of importance, seeing as it will only be erected for a few days. Fabric structures are the most common choice when selecting a temporary shelter. Carefully



Voie Georges Pompidou, France

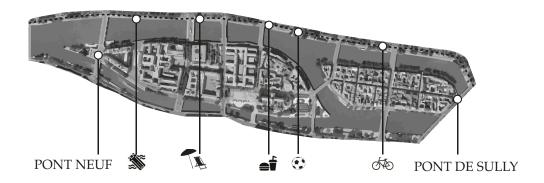
300 meters



Voie Georges Pompidou (during Paris Plage), France



Textiles & temporary urbanism, Voie Georges Pompidou, France



Paris Plage, Paris, France (top left & centre: Google Earth 2018, top right: CN traveller 2012, bottom: Google Earth 2018)

designed tents provide not only an acceptable living environment with protection from wind, dust and rain, but can also be assembled and disassembled in a matter of minutes. Although the festival takes place in a completely different cultural context than the Hajj pilgrimage, in both cases textiles are used in the creation of deployable ephemeral structures.

Paris Plage exemplifies how textiles play an equally important role in creating temporary urbanism within pre-existing urban environments. Beginning in 2002, the Voie Georges-Pompidou, a major roadway beside the Seine River, was appropriated for several months over the course of the summer, during which it was temporarily converted into a beach. In creating a beach-like atmosphere, fabric umbrellas and beach chairs were

deployed along the appropriated section of road. The feasability of the project relied on the portability and economy of the material, as well as the speed at which the umbrellas and chairs could be assembled and disassembled. In the early years of Paris Plage, the use of the street as a beach took place within a limited timeframe, before returning to its previous function as a motorway. The temporary event had a significant impact on the long-term redevelopment of the roadway, in that it was eventually permanently converted into a recreational area. The temporary nature of the event in the early years of its conception allowed the users to engage and test spatial and programmatic configurations before committing to a long-term solution.

The ephemeral structures erected during the Hajj Pilgrimage, Burning Man and Paris Plage collectively demonstrate the deployable nature of textiles. From the early tent structures used by nomadic peoples to the modern tents of the 21st century, textiles have been the material of choice because they are lightweight, economic and quick to erect. In creating a temporary urbanism on the Prince of Wales Bridge, textiles are used, in part, for these functional characteristics.

4.2 Sculptural Environments

In addition to the functional characteristics of textiles, the material's pliability allows for complex curvature that would be difficult to achieve with other building materials such as wood or stone. This section looks beyond the functional aspects of textiles that were discussed in the previous section and addresses the material's inherent sculptural qualities. In creating temporary urbanism on the Prince of Wales Bridge, the sculptural characteristics of textiles are used to transform the pre-existing space with respect to the existing geometry. In addition to transforming the physical environment, textiles manipulate metaphysical characteristics such as light and sound. As Robert Kronenburg puts it, "the feeling of being within a tensile structure is one that affects the sense deeply – a unique sensuous impression of a gentle encapsulating light and natural enclosing space" (Kronenburg 1997, 18). The ephemeral structure proposed for the Prince of Wales Bridge aims to transform the physical and metaphysical characteristics of the space.

Dreamspace V, designed by Maurice Agis (1931-2009), was an interactive exhibition that

travelled around Europe and attracted over half a million visitors. The giant inflatable polyester structure combined color, light and sound to create an immersive walkthrough environment. The chambers, linked by a series of tunnels, varied in shape and size (Topham 2002, 91). The PVC textile used by the designer allowed for complex curvature. As people moved through the structure they wore colorful capes and became part of the installation. An article in the UK-based newspaper The Telegraph, noted "the space pulls you into and around the work. You stand, sit walk and lay, as you become part of the space. Your sense of time is challenged" (The Telegraph 2009). This sense of engagement with the space is desirable in temporary urbanism. Maurice Agis' Dreamspace V, however, existed as a standalone exhibit. Due to the imbedded historical and cultural significance in the Prince of Wales Bridge, the ephemeral architecture deployed in the old structure should relate to the existing geometry, transforming the space while respecting the historic structure.





Dreamspace Liverpool, designed by Maurice Agis, 2006, photographs by Andy Miah (Flikr 2006)

The site-specific installation *Untitled* (*Crypt*), designed by Nicolas Feldmeyer, exemplifies how textiles can be deployed in a pre-existing architectural environment in order to be suggestive of new spatial and programmatic potential, while also respecting the existing geometry of the structure. The sculptural qualities in Maurice Agis' *Dreamspace V* combined with Nicolas Fielmeyer's sensitivity to existing geometry in *Untitled* (*Crypt*) would be ideal in the context of the Prince of Wales Bridge.

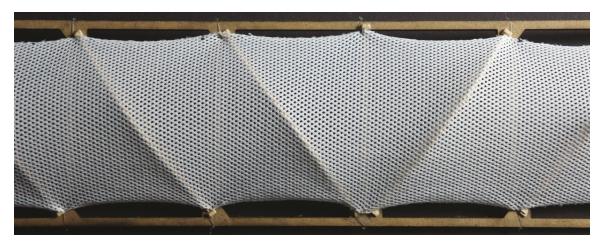


Nicholas K. Feldmeyer, Untitled (Crypt), Site Specific Installation (Christ Church Spitalgields, London), 2011, photograph by Nicolas K Feldmeyer (Feldmeyer 2011)

CHAPTER 5: **DESIGN STRATEGY**

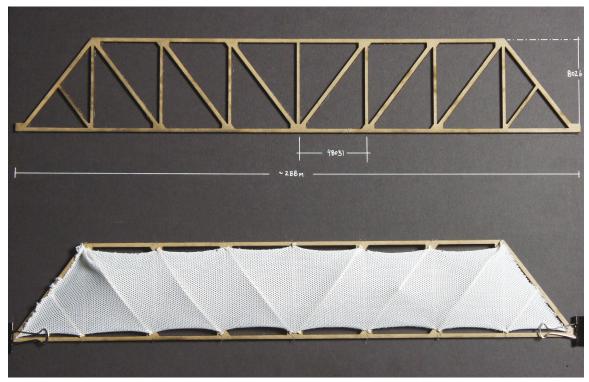
5.1 Finding Form // Finding Program

In response to the problematic situation regarding the Prince of Wales Bridge, I propose temporary urbanism and ephemeral architecture as a means to move forward with the redevelopment of the structure and its integration into the city. In this context 'temporary' has variable timeframes, a result of economic, political and social forces. In the creation of the New York City community gardens, temporary use allowed for a new activity (gardening) to be tested in previously abandoned areas. Similarly, on the Prince of Wales Bridge, temporary use allows for the seeding of new program in order to create an active social and recreational hub, infusing the bridge with new life. The ephemeral nature of the architecture enables the activities proposed on the bridge to expand and grow depending on their success. Introducing temporary uses and structures to the abandoned site allows the owner, the City of Ottawa, to invest in a more permanent version of the ephemeral structure in the future, while also providing the option to disassemble the temporary structure and return the existing structure to its previous state (Fernandez 2006, 71).

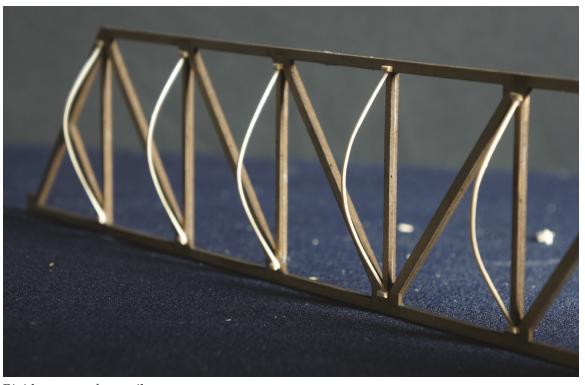


Using the existing geometry of the bridge to generate new spaces

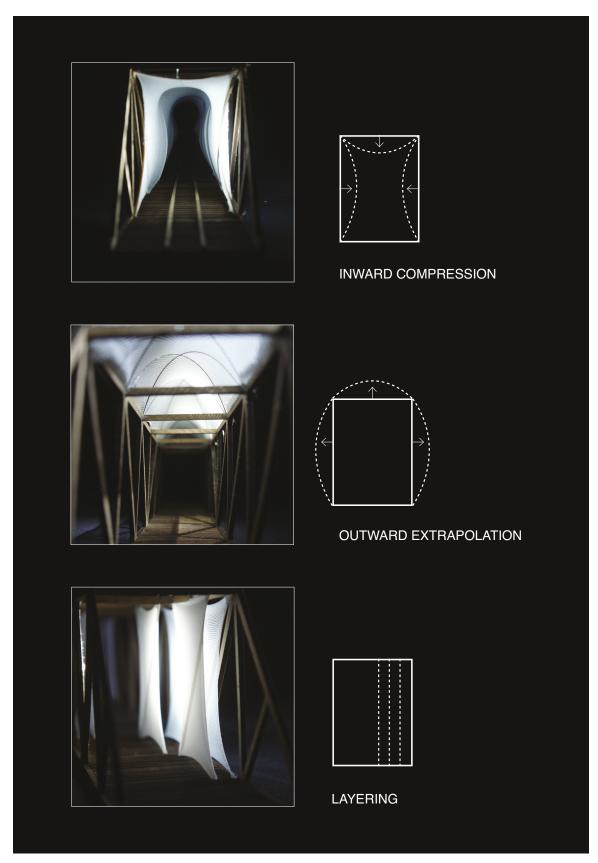
The design of the new textile structures on the Prince of Wales Bridge is rooted in existing structure. In the search for new compatible form, I compress and expand the geometry of the bridge to create smaller and larger spaces. By making use of the sculptural characteristics of textiles, the new curvilinear spatial environment relates to the existing rectilinear bridge design.



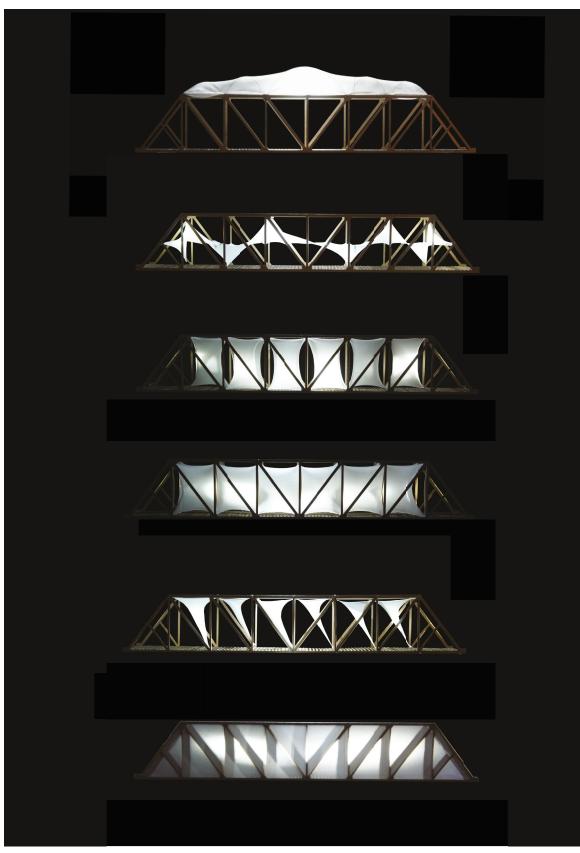
Using textile to extrapolate geometry outwards



Rigid supports for textile



Form finding approach to create entirely different spaces within the same frame



 $\boldsymbol{6}$ spatial variations for different programmatic functions and weather conditions

In tandem with these form-finding experiments is the search for new program. Moving beyond the pure functionality of the structure, I consider other environmental factors that might contribute to a heightened sensual experience. The sound of the rushing water below, the repetitive structural elements – steel girders, wood beams, piers – which together contribute to the feeling of passage, views of the city and the surrounding landscape. As a result, the form finding models also become program finding models. A series of preliminary conceptual rendering suggest new potential for activity within the bridge.

Lastly, the seasonality of Ottawa is considered in establishing new public spaces that can be used year-round. The Rideau Canal is an existing example of seasonal urbanism in Ottawa, each year transforming from parkland to skating rink.

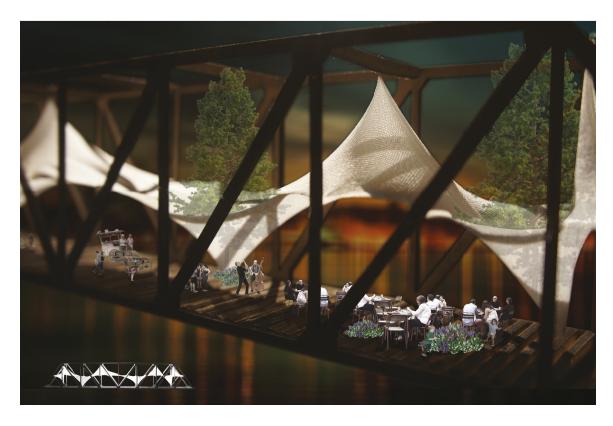




Different ways to experience the Rideau Canal in Ottawa, 2018 (Ottawa Tourism 2018)



Conceptual rendering: temporary art exhibit



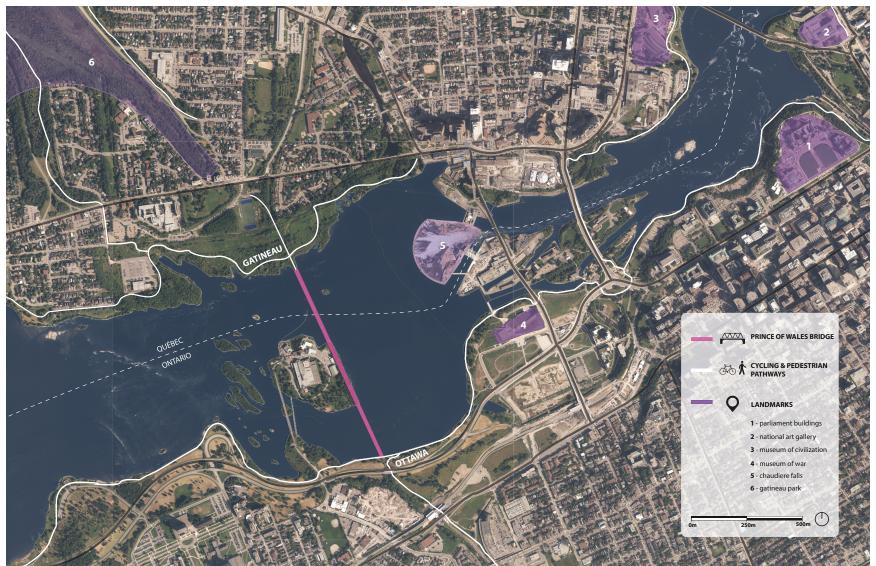
Conceptual rendering: restaurant & music venue

5.2 Site Strategy

The Prince of Wales Bridge, including the segment over Lemieux Island, is nearly a kilometer long; therefore an overarching site strategy is established to address the provision of services (electricity, plumbing & sewage), as well as the dispersion of program. Due to the industrial nature of Lemieux Island, the area is already connected to Ottawa's plumbing, sewer and electrical systems. In the proposed design, two anchor buildings are located on Lemieux Island to service activities near the bridge, one near the entrance on the Ontario shoreline and one on the Quebec shoreline. The anchor buildings provide storage space for the various activities along the bridge, washrooms, as well as a small administrative office. The truss segments of the bridge that are directly adjacent to Lemieux Island are equipped with sewage and plumbing services and house a cafe & bar. In order to mitigate excessive servicing costs, the areas of the bridge extending outwards beyond the cafe & bar areas are serviced with electricity only. Larger public activities, such as the market and event spaces, are intermingled with smaller more intimate activities, such as the viewing nooks and art exhibits. Where the bridge touches the Ontario and the Quebec shores, rental outposts promote biking and skiing along the recreational pathways that flank both riverbanks by providing access to bikes, skis and snowshoes. On the Quebec side, the rental outpost is within proximity to the Gatineau Park, facilitating access to the major recreational hub for city dwellers.



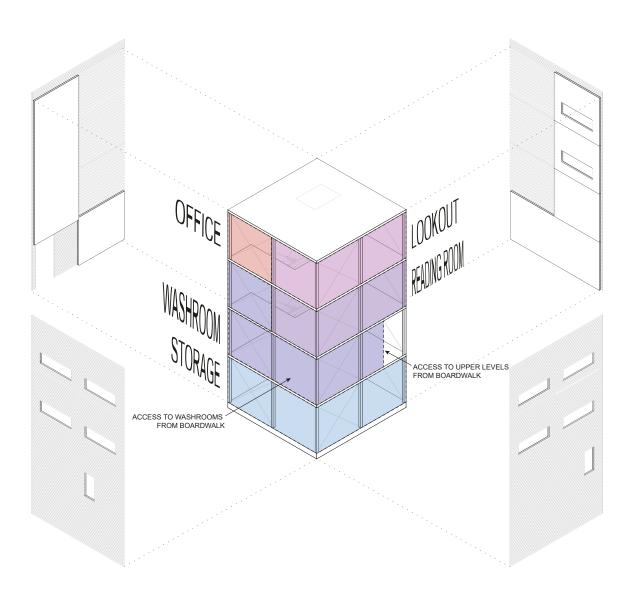
Existing bike and ski pathways intersecting the bridge



Site plan

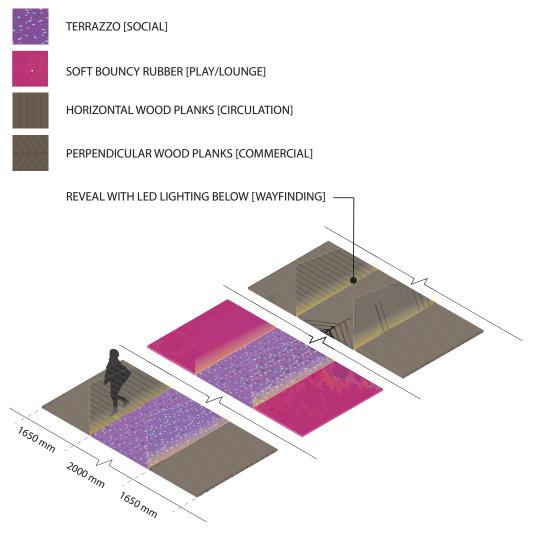


Zoning & program adjacencies



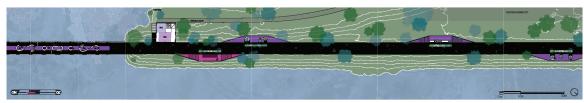
Anchor building

Throughout the project, the treatment of the ground surface plays a key role in subdividing and indicating the different types of activities. Parallel wood planks running down the perimeter of the bridge are indicative of circulation. Alongside these wood planks LEDs are mounted onto the existing train tracks below. A small reveal in the ground surface illuminates the walkway and acts as a wayfinding device. The wood planks grow in size and extend across Lemieux Island. In the bar & cafe and seating areas on Lemieux Island, colorful terrazzo indicates that these are social areas. A soft and bouncy rubber surface indicates lounge and play areas in the viewing nooks, exhibit spaces and splash pads on Lemieux Island. Lastly, perpendicular wood planks are located in the market and event spaces indicating that these areas are for commercial use. The perpendicular wood planks are able to withstand heavy use from market activities.



Treatment of ground surface



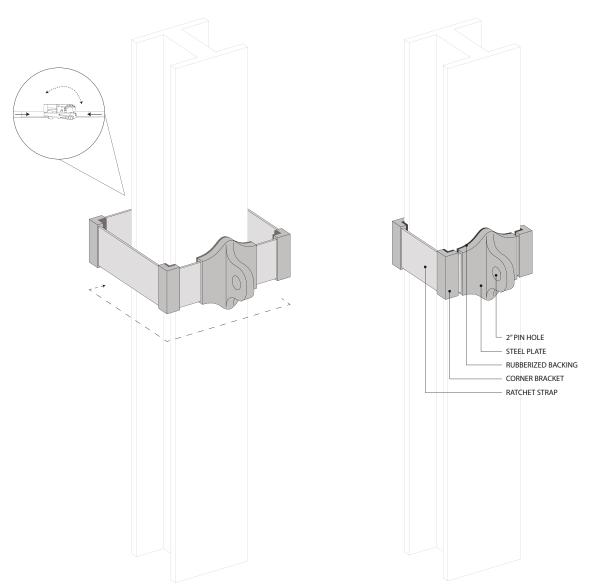




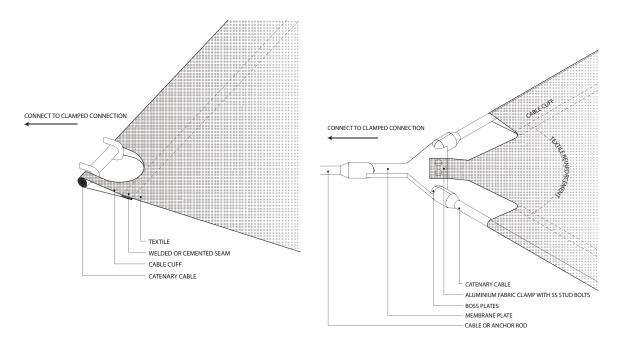


Site plan: connection to Ottawa (1), connection to Lemieux Island south (2), connection to Lemieux Island north (3), connection to Gatineau (4)

Primary connections between the existing structure and the anchor points for the textile membrane are designed as a type of ratchet system. A steel plate and 4 corner brackets slide along a high-strength fabric membrane. The fabric membrane has a ratcheting mechanism that tightens the assembly into place. Once the assembly is in the desired location, the ratchet mechanism is hidden behind the existing structure. Each steel plate and corner bracket has a rubberized surface backing which further reduces the impact on the existing structure and, when combined with the strength of the ratchet strap, prevents the connections from moving up or down. The use of textiles in combination with clamped connections between the existing structure and the new textile structures creates a design that is reversible, adaptable and expandable.

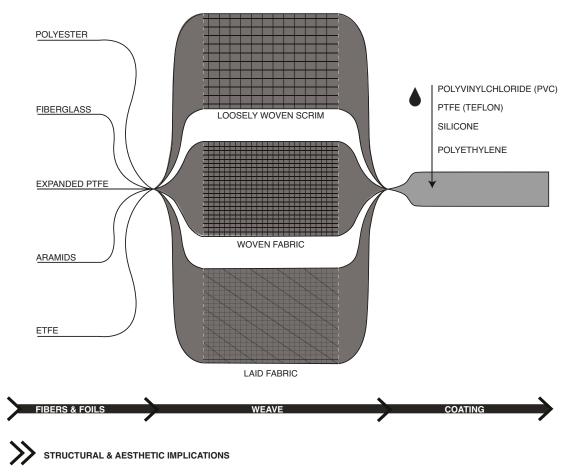


Reversible connection between existing structure and anchor points for textile membrane



Textile details: cable cuff (left) and corner detail (right)

Two types of textiles are used throughout the project: an impermeable textile is used to deflect rain and snow and a perforated textile is used to create smaller pockets of enclosure with increased protection from wind. The perforated textile is also used in the art exhibit areas. Three characteristics have been considered in the selection of the material: the fiber, the weave and the coating. Together these three characteristics influence the structural performance and the aesthetic qualities of the material (Huntington 2013). As a result, PVC coated polyester is used for the impermeable membrane, which is inexpensive, recyclable (through the texyloop system by Ferrari) and has a lifespan of about 15 years. The perforated membrane is also PVC coated polyester, however, seeing as this membrane is not subject to the same tensile forces as the impermeable membrane, it is loosely woven and perforated. The choice of materials allow the project to grow in scope, with the potential of expanding onto the island and outwards along the riverbanks. In keeping with the temporary nature of the project, the tensile structures are confined within the existing structure, eliminating the need for rigid members, simplifying the connections and further reducing construction costs.



TRANSLUCENCY

FIRE RESISTANCE

WORKABILITY

TENSILE STRENGTH

LIFESPAN

STRETCH & DIMENSIONAL STABILITY

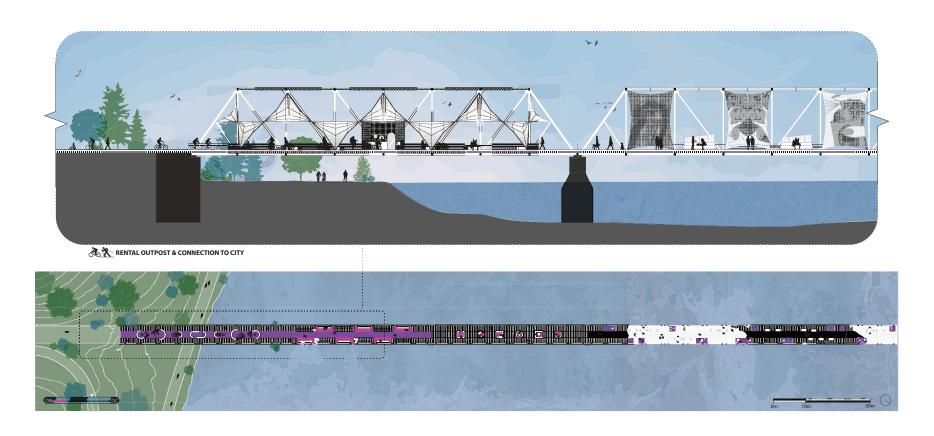
Diagram showing textile morphology

5.3 Program

The bridge abutments on the Ontario and Quebec shorelines intersect a series of active cycling and skiing pathways that run alongside the Ottawa River. In this first segment of bridge, bike and ski racks allow people arriving to lock up equipment before continuing onwards. These entrance pavilions also act as rental outposts by providing affordable bike and ski rentals. Seating and a small administrative booth relate to the high and low points of the textile membrane. In colder weather a perforated membrane drops down around the administrative booth to provide an added layer of protection from wind and snow.

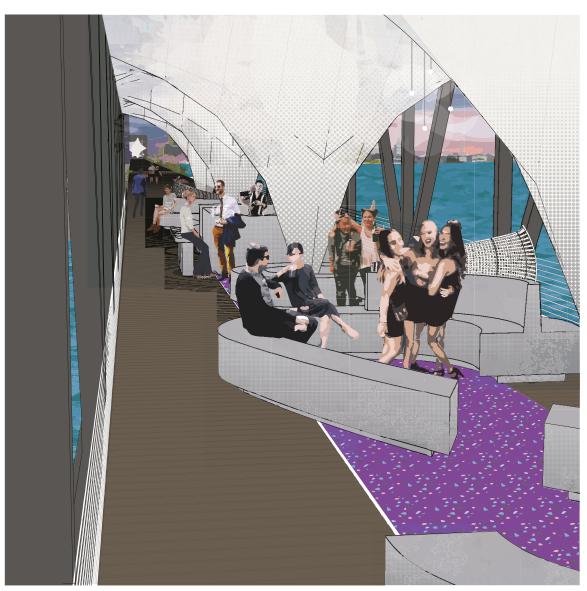


Winter rental outpost on the bridge



Summer rental outpost and connection to the city - detailed section (top) and plan (bottom)

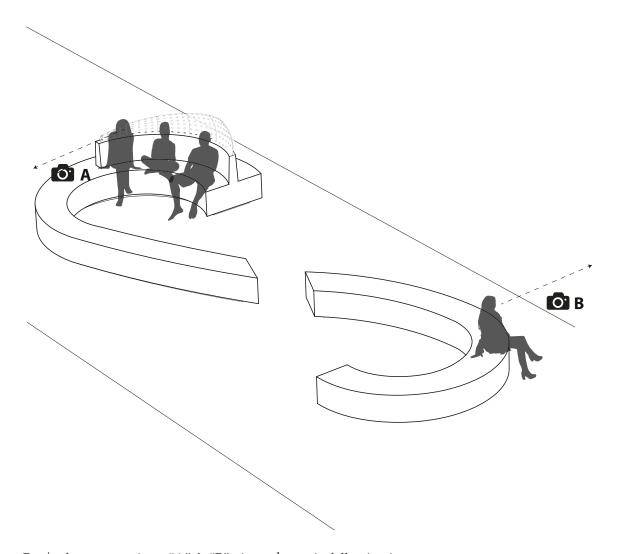
Cafe and bar areas are located in the segments of bridge directly adjacent to Lemieux Island. Being the closest to the anchor buildings, these areas tap in to the water and sewage systems. Similar to the rental outposts, the furniture layout relates to the tensile membrane above; the bar and larger gathering areas are positioned below the high points of the membrane, whereas smaller circular benches are nested around the low points of the membrane. The different seating arrangements are suitable for different social situations. The curved benches allow for groups of people to get together (facing inwards), as well as for individuals and smaller groups to be seated along the perimeter (facing outwards). The arrangement of the bar furniture also takes advantage of the views of the urban landscape to the east and the more natural landscape to the west.



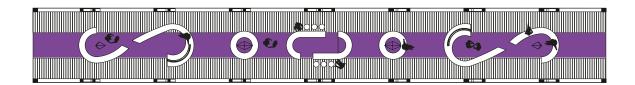
Bar / cafe in the evening



Bar/cafe and connection to services on Lemieux Island - detailed section (top) & plan (bottom)



Bar/cafe curve seating - "A" & "B" views shown in following images



Bar/cafe layout



A - VIEW OF THE CITY



B - VIEW OF THE OTTAWA RIVER

Views from bar/cafe

Parallel wood boards flank the perimeter of the bar and cafe areas and a strip of colorful terrazzo is positioned between the parallel wood boards, differentiating the circulation areas from the social area encompassing the bar and gathering spaces. The new anchor buildings, located at the northern and southern extremities of Lemieux island, are within a short walking distance to the bar and cafe areas and provide access to washroom facilities and rest areas for employees.

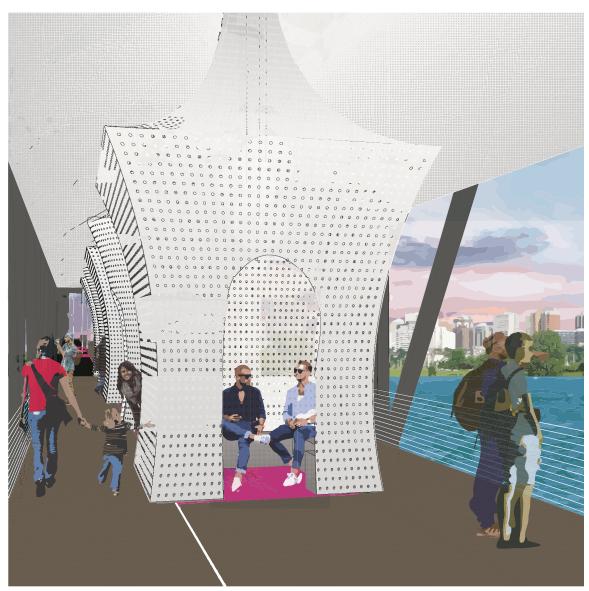


Sketch model - relationship between tensile membrane and furniture



Sketch model - larger social spaces under peaks of tensile membrane

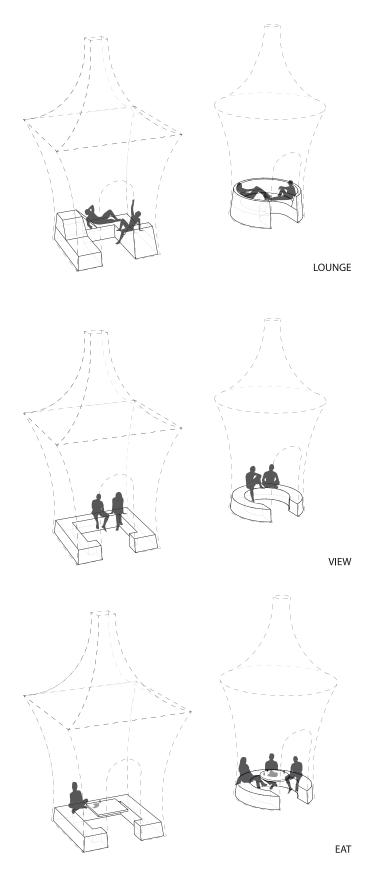
In the central areas of the bridge spans, the furthest away from land, a series of small enclosures create areas for resting and viewing the surrounding landscape. Interspersed between the small resting nooks are areas dedicated to changing art exhibits. The art exhibit spaces are slightly larger in scale, with more exposed seating along the perimeter. The nooks are the smallest and most intimate spaces. In these areas an overarching impermeable membrane creates a series of high points, which deflect rain and snow. Below the high points in the impermeable membrane, perforated enclosures drop down to provide an added layer of protection from the wind while also maintaining a certain degree of connectivity to the exterior. The furniture within the 2.5 meter wide circular and rectangular floor areas is designed to encourage lounging, viewing and eating.



Lounging and viewing nooks

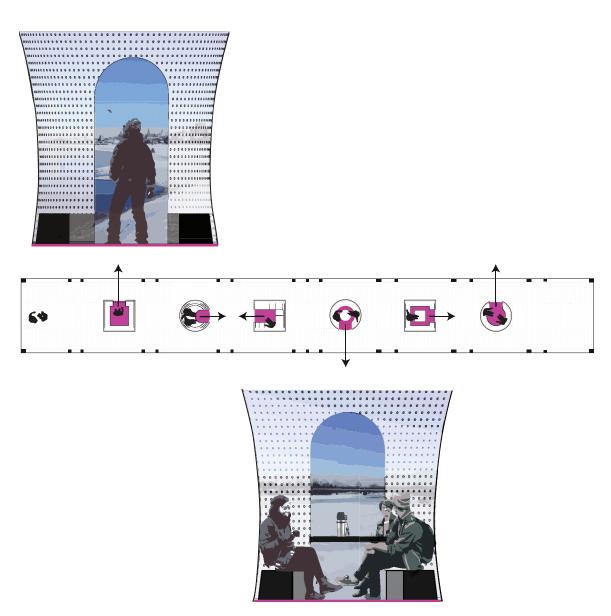


Art exhibit and nooks - detailed section (top) and plan (bottom)

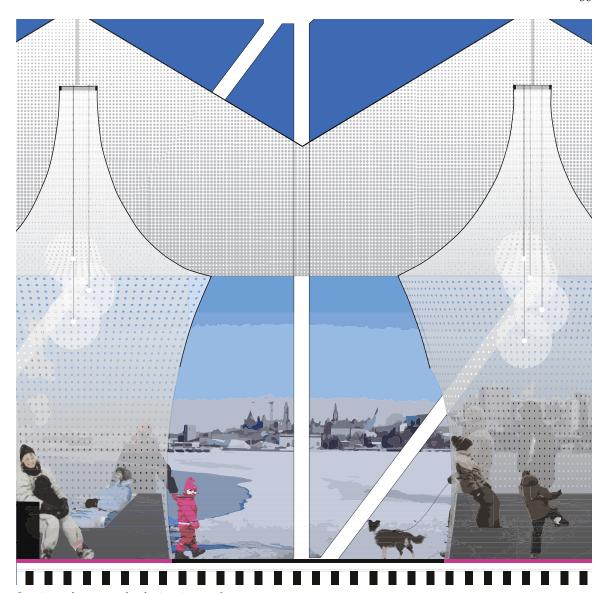


Furniture variations in nooks for lounging, viewing and eating

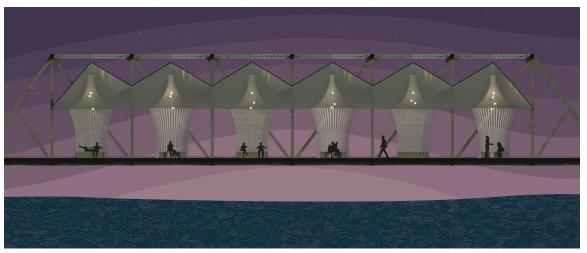
In contrast to the purple terrazzo used to indicate the social spaces in the adjacent art exhibits, a pink rubber is used to treat the ground surface within the nook enclosures. The soft and bouncy rubberized surface is used in these areas, as it is more suitable to playing and lounging. In addition to the various furniture configurations, the orientation of the nooks further differentiates the small spaces. Some are oriented towards the city to the east, whereas others are oriented towards the more natural landscape to the west. A few of the nooks face inwards towards each other, providing the most protection from wind and creating a larger social space out of two of the enclosures. At night, the nooks are illuminated from within and appear as lanterns.



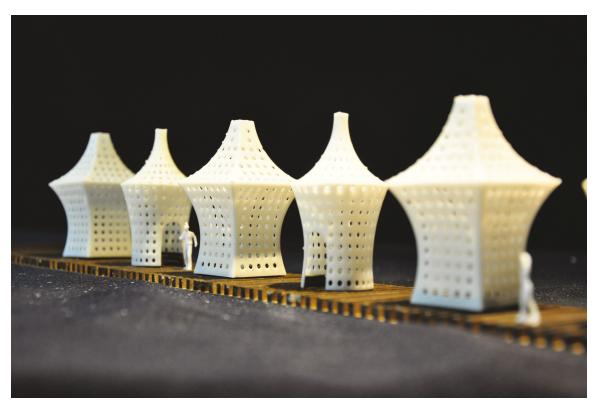
Nooks layout & configurations



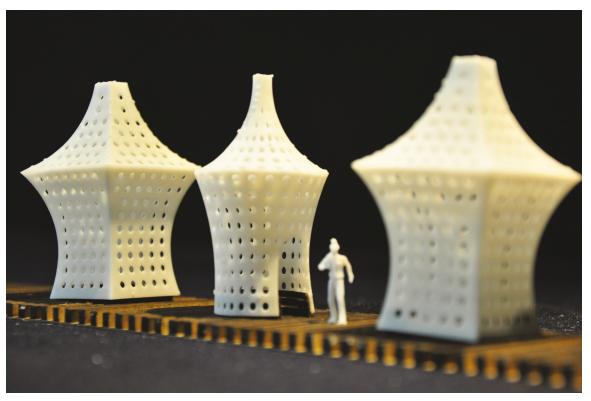
Section of two nooks facing inwards



Section of nooks at night



Sketch model - nooks configuration (not showing bridge structure)

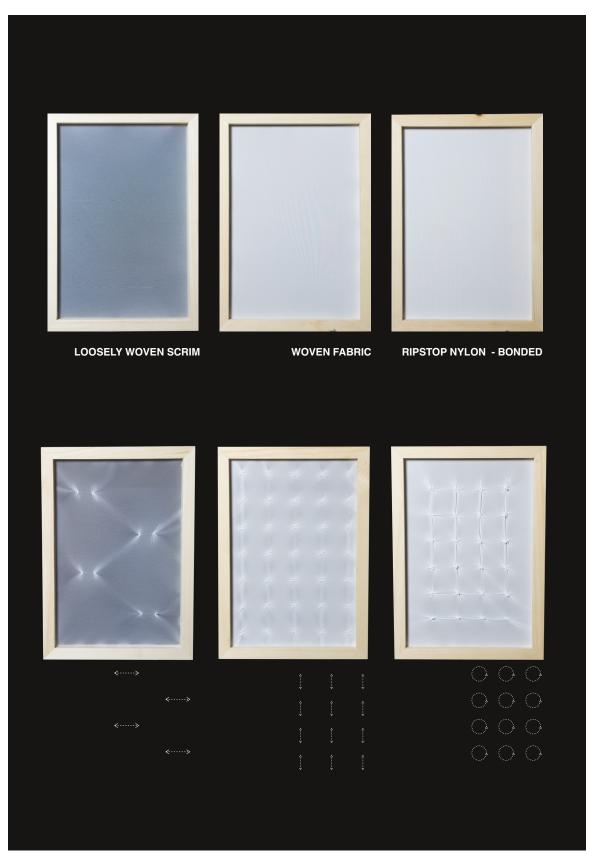


Sketch model - lounging nook (not showing bridge structure)

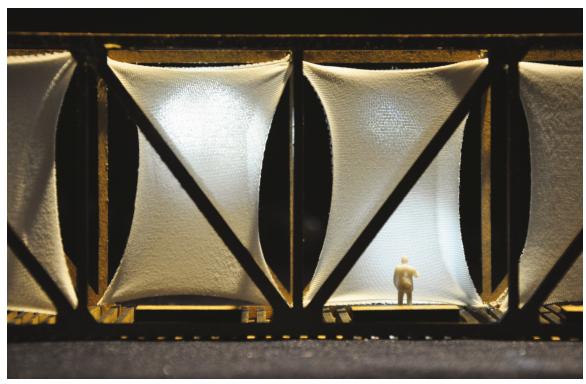
In the areas adjacent to the nooks, a series of perforated screens are layered together to create projection surfaces for rotating art installations. When projecting onto layered perforated screens, each screen acts as a projection surface while also allowing some of the projection to pass through onto the following screen. The viewer's ability to read depth becomes skewed and creates an optical illusion. The number of screens impacts the optical illusion differently and can be altered by the artist. Other types of art, such as prints and woven artwork can also be displayed here. Terrazzo is used in the more central and social areas of the exhibits, whereas the pink rubberized surface is used in the seating areas along the perimeter.



Projections onto layered screens



Weave morphology and physical manipulations of the fabric surface



Sketch model of art exhibit - elevation showing relationship between scale of a human and projection screens

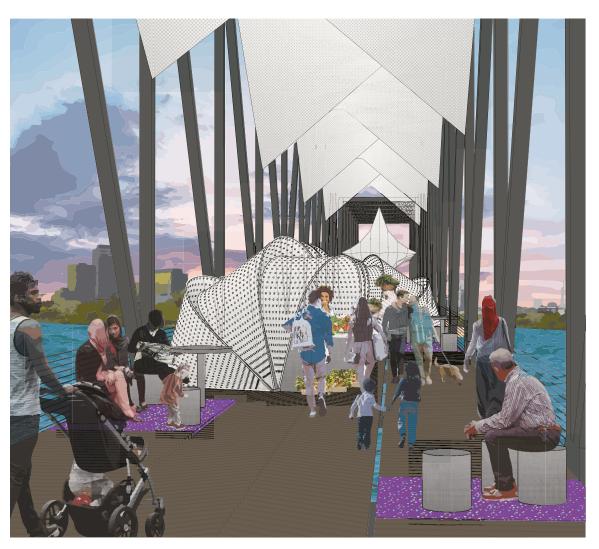


Sketch model of art exhibit - elevation

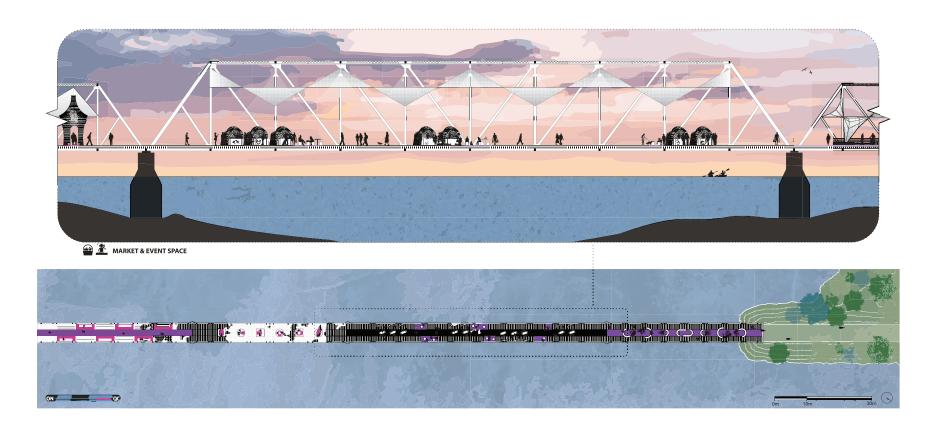


Sketch model art exhibit - interior

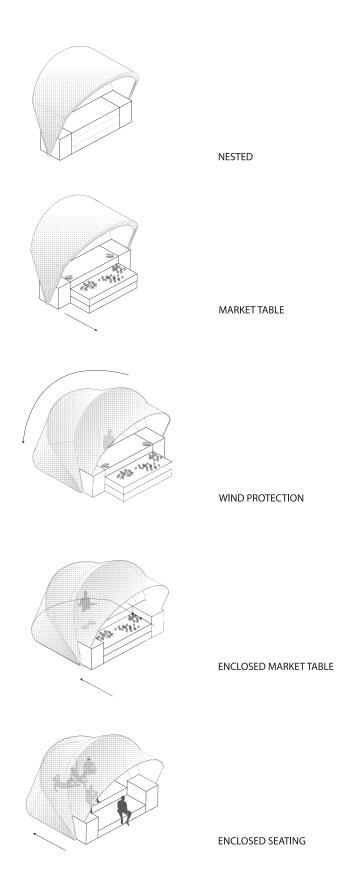
Markets are the largest spaces created. These areas are designed to have an open floor plan with movable furniture and windbreaks. The open floor plan in combination with movable, adaptable furniture allows the spaces to be used for different types of gatherings, such as festival and fairs, as well as in different weather conditions. An undulating impermeable membrane above the marker and event spaces protects from rain and snow. The movable furniture is designed as a type of nested structure. In their most compact from, the furniture consist of three layers of textiles that act as a shading device. In colder weather and heavy wind conditions, the layered textiles pivot and expand to create pockets of shelter. Perpendicular floorboards indicate the commercial natural of these spaces and parallel boards along the perimeter are indicative of circulation. A series of small pixelated social areas intersect the circulation areas and are treated with terrazzo.



Market with overhead shading device and deployable enclosures



Market and connection to Gatineau shoreline - detailed section (top) and plan (bottom)



Market furniture configurations

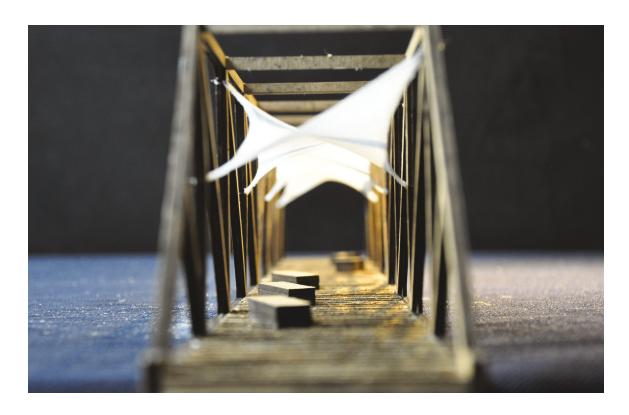


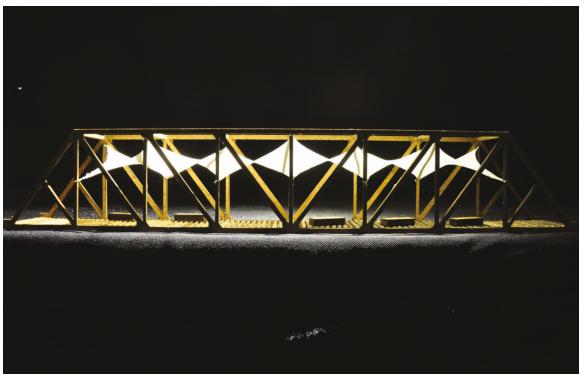
Seasonal variations of market furniture





Sketch model of market furniture in nested configuration (top) and open configuration (bottom)





Sketch model of undulating tensile membrane over market area - perspective view (top) and elevation (bottom)

CHAPTER 6: CONCLUSION

As a whole, the design proposal presented here connects a growing urban population in Ottawa to a major recreational area in Gatineau. With the surrounding urban area expecting an influx of over 20 000 new residents, the former industrial hub in the Ottawa River is now a significant piece of the urban landscape. The need to integrate the abandoned infrastructure within the city has never been greater. As a response to this, the design project creates a hub of activity in what is otherwise an urban 'no- man's land', thereby relinking the abandoned infrastructure to the surrounding urban area. By framing the project as temporary, the political and economic impacts associated with more permanent forms of development, discussed in chapter 1, are alleviated.

This thesis has focused on a particular piece of abandoned infrastructure within a specific urban context, however it has also established a design methodology in the redevelopment of abandoned structures. Drawing on historical precedents, it employs textiles as a deployable, sculptural material, able to transform and re-imagine pre-existing industrial structures. Furthermore, the universal clamped connections developed in this project can also be used in other industrial structures, where the primary structural elements are often left exposed. Lastly, extrapolating, compressing and layering the existing geometry is a universal methodology that, when combined with the sculptural qualities of textiles, relate the new geometry of the ephemeral structures to the old one.



Night view of The Prince of Wales Bridge from Lebreton Flats

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