Goaltenders to Gardeners
Integrating Urban Agriculture with Existing Infrastructure to Create Stronger Communities

by

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CONTENTS

ABSTRACT

Set in Saint John, New Brunswick, this thesis examines the way we can combine architecture and urban agriculture to refocus existing conditions and infrastructure to act as a catalyst for communal change in a post-industrial urban landscape.

Looking at the aging infrastructure of community centers, in particular the hockey arena as a cultural hub, I look to examine how they can better facilitate their role within a community to provide greater potential for generating a holistic lifestyle among multiple generations of users.

Using agricultural means as a primary design method for intervention I am looking to enable change within a community. I am examining how the relationship between agriculture and ecological thinking can be paired with recreational architecture to open avenues for a greater understanding of these methodologies and how they can be applied through a holistic approach.

ACKNOWLEDGEMENTS

I wish to extend thanks to Susan Fitzgerald and Brian Lilley for their exceptional guidance and support. Your encouragement and input has allowed me to develop this project in a clear direction, inspiring a greater understanding which I will carry for years to come.

To my friends and classmates for their inspiration and feedback that has always encouraged mutual success.

To my Parents, Anna and Allan Marshall, my two brothers Scott, Mark and their families Laura, Eric, Ryder and Harlow for their continued support and belief in me, I am forever grateful.

CHAPTER 1: INTRODUCTION

Title collage examining how there is always a life after hockey. Farmer by Grant Wood in 'American Gothic' Licensed from VAGA, New York.

Thesis Question

How can architecture and urban agriculture be combined to enhance existing recreational infrastructure to act as a catalyst for communal change in a post-industrial urban landscape?

> Many more look to nature and activity in the outdoors as the road to restoration and health. The best symbol of peace might better be the garden then the dove.1

The significance of civic infrastructure to an urban environment is as vital and influential to a neighborhood as a healthy heart and veins are to the function of one's body. Looking at how architectural methods can influence neighborhood infrastructure I am endeavoring to establish techniques to improve public space in order to enhance the health and vitality of the cities inhabitants. Analyzing the relationship's neighborhoods have with their infrastructure I wish to investigate a variety of programs that can be paired with existing conditions to enhance the impact these areas can have on the citizens' overall health while simultaneously increasing community connectivity.

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1 Ian L. McHarg, *Design with Nature,* (Garden City, NY: Published for the American Museum of Natural History, the National History Press, 1969), 5.

I believe municipalities have a responsibility to foster proper health and nutritional education within their communities and look after the less fortunate. Generating an opposition to the current North American food system, I wish to position my thesis as an operating arm of the City of Saint John Works department. My goal is to perform an architectural intervention that can operate as a self contained system that doesn't create any additional economic burden on the city and can work independently with its own board of directors to provide an at arms length food facility that improves the overall health and well being of the city.

Using parks and recreational infrastructure as an initial point of departure to generate a new perspective on how to best integrate concepts of a productive landscape for the purpose of food production and physical activities this thesis will generate spaces that facilitate an improved life style. Looking at tactics of cross programing or 'trans-programming'[2] my belief is that pairing of somewhat opposing programs can generate new urban conditions that will spark a dialogue between sub-culturs, resulting in an exchange that will benefit all parties involved. Bernard Tschumi states, "for a city to be a virbrant entity, it needs to include many ideas because it is the tension between them that makes the city such a fertile place."[3] I believe that combining urban agriculture, which is already a modern term of opposites; with recreation facilities that it's possible to generate a community space that can compliment the city through this tension by bringing cultural entities together.

The history of agricultural and recreation and their relationship dates back to ancient civilizations and their cultural festivals.[4] Culturally, recreational events and food have always gone hand and hand, however in the modern urban context this is typically in a corporate setting, which can be viewed under the current model of professional sports. These contemporary events often generate a class divide, affordable only to the middle and upper class, segregating people rather than bringing residents together through the community event in which they are intended. However at the non professional level these activities have the opportunity to work in tandem, providing a cultural event that can facilitate both food and sporting together offering exposure to all inhabitants of a city or neighborhood without creating a social divide between the have and have not's.

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2 Bernard Tschumi, and Enrique Walker, *Tschumi on Architecture: Conversations with Enrique Walker* (New York, NY: Monacelli Press, 2006), 91.

3 Ibid., 12.

4 Carolyn Steel, *Hungry City: How Food Shapes Our Lives* (London: Chatto & Windus, 2008), 15.

In Saint John, New Brunswick there was a social shift as a result of the cities industrial landscape, combined with the new Provincial highway project of the late 1960's which combined created an outmigration of families to outlying suburban neighborhoods. This outmigration resulted in a growth of the poverty rate, lager than the city had previously known[5] and this is a condition that has held constant until recently, as we now see a subtle shift back into the city as industries start to reduce their environmental impact through the use of modern technologies. However in the city we still see one of the lowest median household incomes in Canada, one of the highest rates of child poverty. Combine that with a city population that has a diabetes level double the national average, and with demand on the city food banks doubling in the past two years,[6] we can see a social health epidemic that needs attention at a city scale.

Reacting to the changes of the Portland neighborhood that were a result of the 1960's 'Urban Renwal' project, which saw an entire neighborhood bulldozed and the area divided by the Provincial highway system. In this situation I see an opportunity to use the existing condition to move the city in an alternative direction that can improve the public spaces and city connectivity, while also making forgotten spaces more productive for the city at large. As we start to see people moving back into the city as a result of the improved industrial landscape, I believe there is a chance to provide options to the cities' inhabitants and shift their lifestyles towards a more holistic approach of community health and involvement. Establishing a common public space that is centrally located, is shared by new and old residence, accessible to multiple user groups and provides a variety of healthy activities for multiple generations of users.

Starting with one of the only buildings in the Portland area to survive the 'Urban Renwal' project the Lord Beaver Brook Arena (LBR) is ideally located to provide the city with new community infrastructure improvements that can directly increase the productivity of the urban landscape. A gift to the city of Saint John the LBR was deeded as a community venue, for non-professional sport. "The wishes of Lord Beaverbrook were to primarily establish a rink for the school children of Saint John."[7] Looking to extend the function of this building to further support the health and education of the school children as well as the community at large. Ideally situated between two of the most historically significant

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5 Paulette Hicks, *Living SJ Social Renewal Strategy*: *2014* (City of Saint John, NB, Canada. 2014).

6 Andrew Hall, *A Snapshot of Foodbanks in Saint John: 2016* (Saint John Human Development Council. 2016).

7 Loyalist City Web design, http://lbrsj.ca/history/, 2014.

sites and on the site of the cities first permanent settlement this building provides a great opportunity for the start of a new era in the cities history. This building has the opportunity to serve as pivot point to push the city in a new direction as we move towards a post industrial landscape, creating a community center that can work for the cities inhabitants in new ways.

In the contemporary city, rather than being reliant on the hinterland that surrounds the urban township, we are completely dependent on corporate conglomerates, which control the distribution of food. [8] As a result many of us have lost the knowledge and understanding of where our food comes from as well as the connection to the producer that grew it. This modern dependence on Super Markets as the food provider has established a one-sided relationship that has abolished the relationship of producer and purchaser. In the current process food has become a faceless commodity that has lost its intrinsic value as an embodied relationship with those that produced it and has become a generalized fuel that we consume to survive, rather than a sustenance we use to thrive.

Bernard Tshumi stated that “The intellectual in the twenty-first century would be an athlete, and the athlete an intellectual.” [9] Working under that notion and using the LBR to facilitate a new type of community center by pairing the arena with a new set of community greenhouses and a community kitchens, I believe this building can serve as a catalyst for urban agriculture in the city. Initially providing support for the six established community gardens, this facility will also provide a platform for education on the production, processing and consumption of healthy food in the community.

This site has an opportunity to apply both an ecological model that remediates past industrial sites while also establishing social conditions that can reconnect a fragmented urban environment and generate stronger social connections. Through different strategies of community engagement applied to the production and consumption of food, we can generate life style options that are better for both the city and its occupants. The social, physical, and economic benefits are powerful catalysts for communities that grow and consume food together, by establishing socially beneficial connections that other activities do not.[10]

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8 Steel, *Hungry City*, 99.

9 Tschumi and Walker, *Tschumi on Architecture*, 90.

10 Steel, *Hungry City*, 114.

Allowing the buildings to act as both an ecological system and an economic system that encourages the exchange of food on every level, from the harvested produce to the sharing of recipe ideas, this building will act to enhance and inform the food network and social fabric of the city.

Working under the infrastructural design principals defined by Dana Cuff and City Lab I look to generate a community space of leisure and physical activity that supports the health and vibrancy of the community. It is my design intention to fulfill the criteria of the following 5 principles:[11]

1) Hybridity - working off of the existing infrastructural typology of the hockey arena, it is my desire to integrate a working greenhouse, building a hybrid composed of traditional recreational and industrial agricultural forms for the purpose of supporting urban agriculture.

2) Be Public - operating as a municipal community center and acting as the corner stone of a city commons and urban agricultural system, this building will exist entirely in a public capacity.

3) Be Localized – established in the city center, this facility will be a direct reaction to the local site conditions, being integrated into the current urban environment as well as be establishing an extension to the local ecological environment.

4) Be Catalytic- forming a system that is designed to disseminate growth and change within the surrounding neighborhood and the city at large. This system is derived basic principles that can be applied throughout Canadian arena's, fostering food growth and food security under a variety of conditions.

5) Be prototypical – The system of the greenhouse working in relation to the arena ice plant, combined with a solar mass collection system are prototypes that are derived on basic principles that can be applied to different conditions fostering many iterations to work towards an ideal form and system for particular regions.

'With the development of leisure society, the use of one's free time has become a crucial

11 University of Michagan Taubman College, *Dana Cuff:Univeristy of Michigan Taubman College Future of Urbanism*, (Apr 2010) Youtube, 13:35. Posted April 15,2010.

issue.' [12] Combining the concept of the above 5 principals of public infrastructure and applying them at a civic scale I believe can provide a new typology of community center that can better serve the inhabitants of the city of Saint John. Merging the programs of leisure sports with urban agriculture can introduce the model for food awareness and food security to a larger variety of the city inhabitants in order to provide a better understanding and connection with the food production process.

12 Walker and Tschumi, *Tschumi on Architecture*, 99.

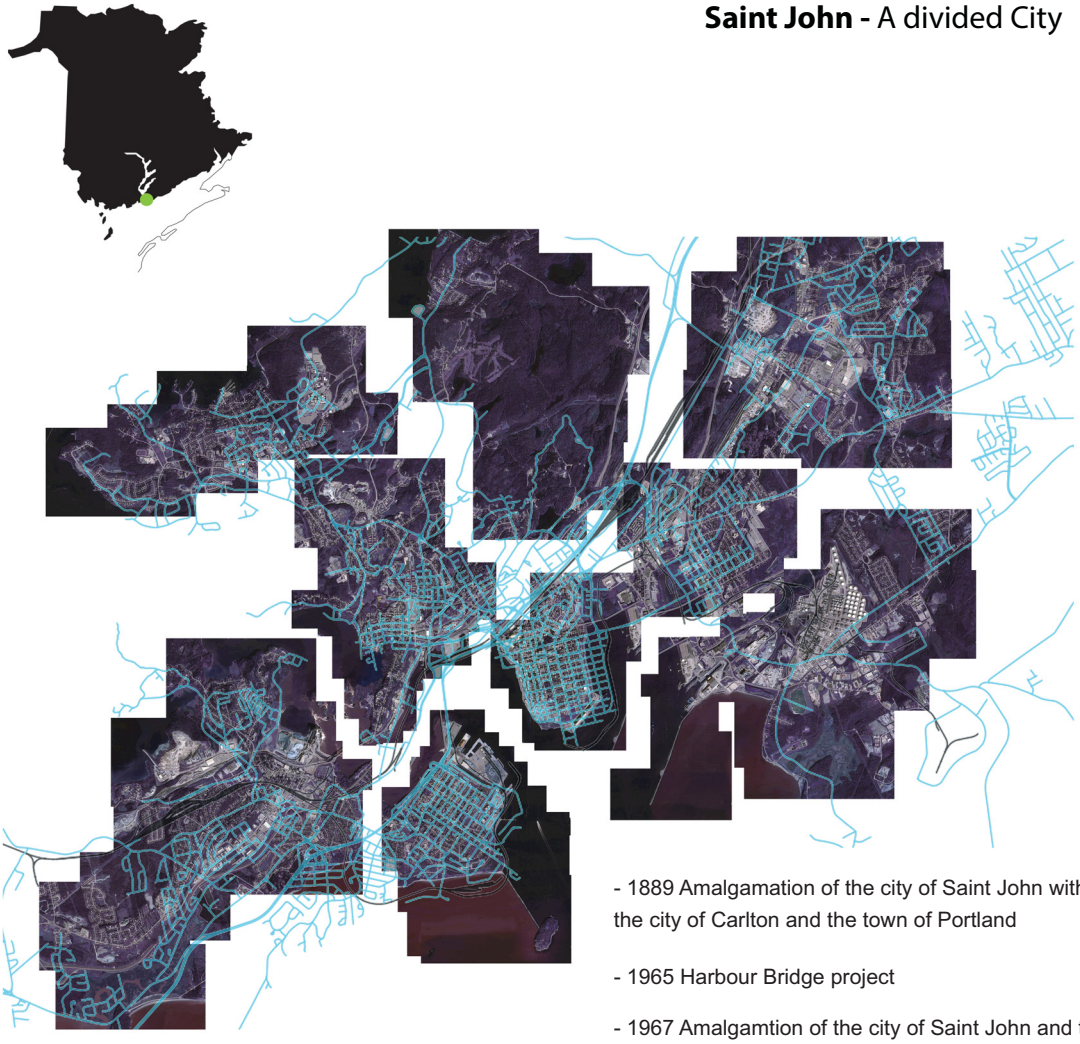
A collage examining how a building with an ecological approach can spread like seeds across the land.

CHAPTER 2: SITE

Site History

Canada's first incorporated city, Saint John has a checkered and treasured past that dates back to the Saint John Harbour's first European discovery in 1604 by Samuel de Champlain and centuries prior by the indigenous societies of North America.
Located at the center of the Port of Saint John, the largest Harbour in the bay of Fundy, is the site where I have chosen to investigate for an recommended architectural intervention. The site is located adjacent to the site of the first permanent settlement of the city, (originally the town of Portland, later to become known as the North End of the city) situated between the sites of the first two first European established forts/trading posts. This site has a past that extends back over 385 years of continual development and redevelopment that has lead to its current condition.

Saint John - A divided City



- 1889 Amalgamation of the city of Saint John with the city of Carlton and the town of Portland

- 1965 Harbour Bridge project

- 1967 Amalgamtion of the city of Saint John and the Parish's of Lancaster, Millidgeville and Simonds

Map data from City of Saint John Open data catalogue.

Examining the 1960's Urban Renewal project as the last period of major redevelopment of this site we see two major infrastructural projects that have had a dramatic impact on the city of Saint John. The first was in 1962 when the Saint John Harbor Bridge Authority was established to create a second bridge to span the Saint John Harbour. (a concept that had been in development since 1857 when the first bridge was successfully built up river at the Reversing Falls Gorge). After many years of study and with the amalgamations in 1889 of the town of Portland and the City of Saint John, the "steel superstructure" was finally completed in 1965 with a 550 foot center span joining the cities of Carlton to the City of Saint John by way of the harbor. Two years later in 1967 this sparked the further amalgamation of the city of Carlton with the parishes of Lancaster, Simonds, and Loch Lomond all combining into what is know today as the City of Saint John.

In conjunction with the 1962 Harbour Bridge project was the start of the "Urban Renewal" project of the North End in 1963, which continued until completion in 1970. This project saw the redevelopment of 23 acres of land that was formally the Town of Portland. Murray Zides, the city planner and traffic engineer, was the head of Urban Renewal Saint John, stated "The objective is to remove blighted conditions and encourage the regeneration of the area as well as coordinating a revised traffic pattern with the construction of the Saint John Harbour Bridge Throughway complex".[13] This project saw the relocation of approximately 615 families as well as the removal of over 182 buildings along Main Street and throughout the north end adjacent to the Harbour Bridge interchange. As a major component of this phase of the project Main Street was widened from a two lane commercial street to a six lane artery. As one local resident sentimentally reflected the serious forth coming changes:

> My House is, you know, my house. I have fond memories: our family growing up (6 other brothers and sisters) the privacy of our back yard that made it seem more like living in the country than in the city, seeing my father panel walls and tile floors and continually work at the inside to make our house a home, and that spectacular view of the harbour, I'll miss that for sure, oh, so many things.[14]

Having a dramatic impact on the fabric of the city, this project was viewed by people of the time as a major step forward. Zides exclaimed "this story will become even more impressive because the first chapter is only now being written in the modern history of the … New Saint John!"[15] Zides, who had completed his postgraduate in traffic engineering

13 Brenda Peters-McDermott, *Urban Renewal Saint John: A City Transformed. Saint John, N.B.:* (B. McDermott, 2008), 202.

14 Ibid., 227.

15 Ibid., 271.

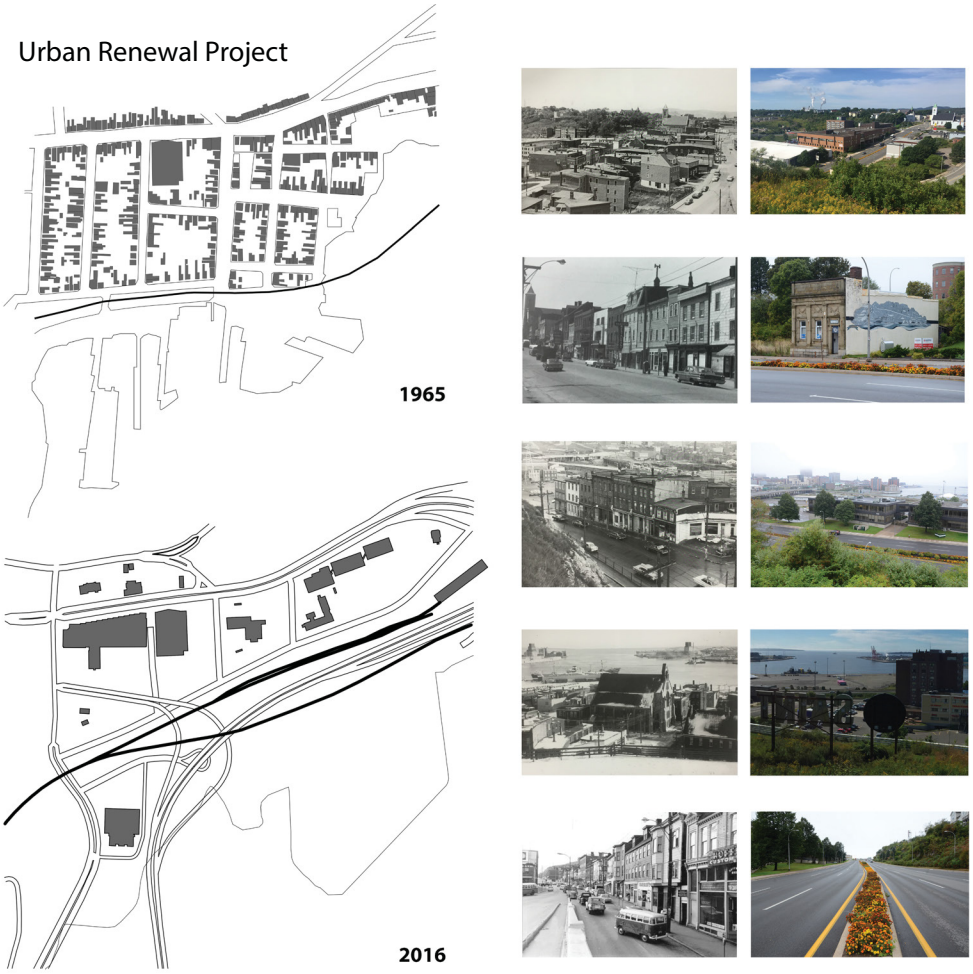
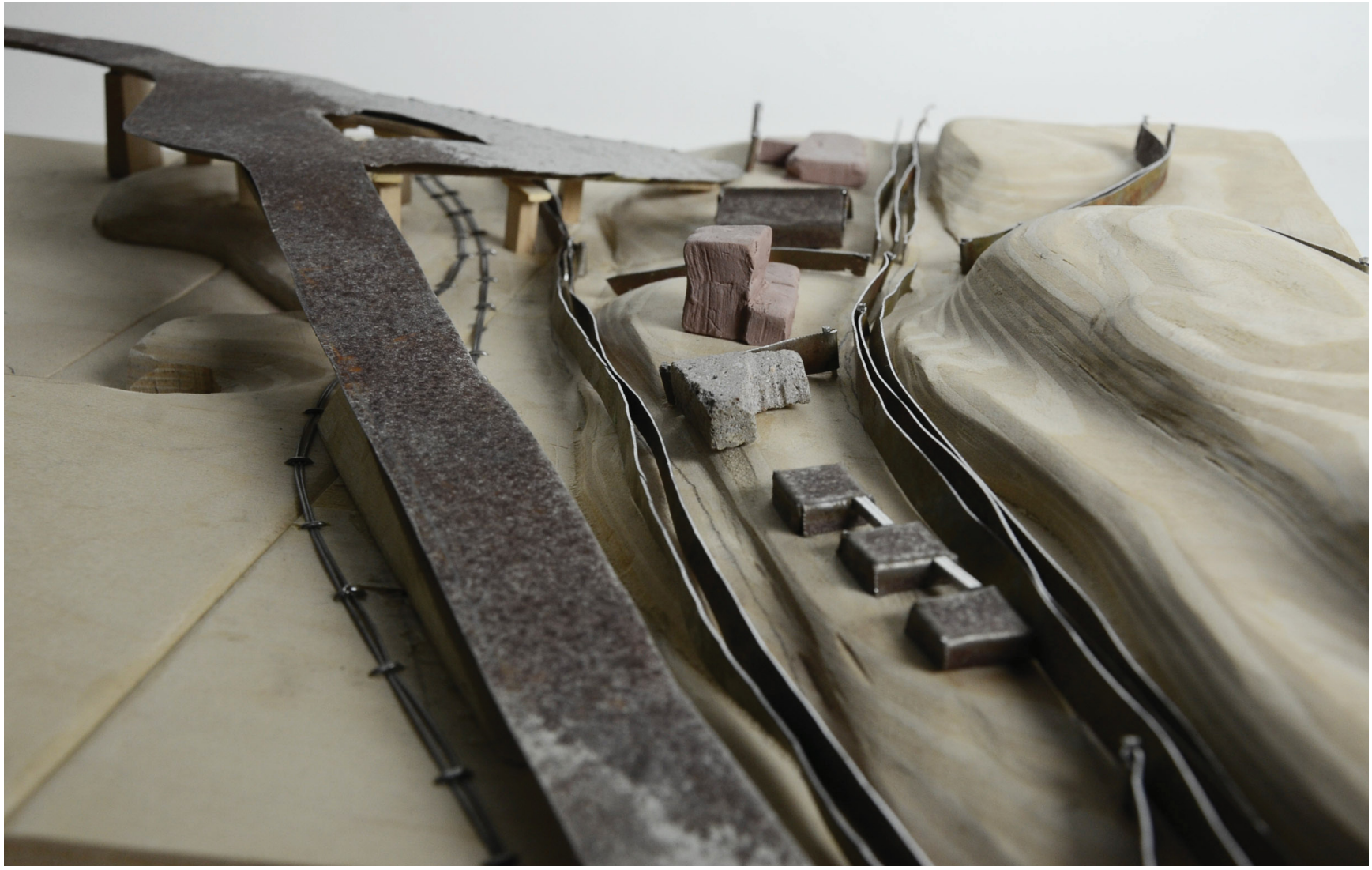


Diagram looking at the changes of the city grid as a result of the 'Urban Renewal Project' Data from the City of Saint John Open data catalogue. Historic images from Museum of New Brunswick.

and planning at Yale, described the project as "the apparent miracle of revitalization".[16] It was the common conception of the time that the automobile was the primary element of consideration in city planning and that the new highway interchange and six lane artery would accommodate a city population expected to grow by approximately a third over the next twenty years between 1966 and 1986.[17] However, the new ease of travel that was created by the modernized highway system had the exact opposite effect on the city's population; which peaked in 1971 after the completion of the renewal project with many people relocating to the outlying suburbs. The 1967 amalgamation also saw the city increase by almost 10 times in area to a total municipal land base of 316 square kilometers creating even further dependence on the personal automobile. Marshall

16 Peters-McDermott, *Urban Renewal Saint John*, 352.

17 PlanSJ, CAC Members, *City of Saint John Municipal Plan: 2011*. City of Saint John, NB, Canada. 2011.



An abstract site model showing the roadways as metal barricades, exhibiting how the road system has divided the city along the inner harbour.

Mcluhan says, “Radical changes of identity happening in very sudden, brief intervals of time have proved more deadly and destructive to human values that were wars fought with hardware weapons.”[18]

As a result of the “Urban Renewal” project the city saw the removal of a complete neighborhood and a major de-densification in the heart of the city, moving the area towards a larger building scale along the north end of the Saint John harbour. I believe this was done in an effort of generate a larger buildings type and more capital investment to try and grow the commercial center of the city along the inner harbour. Resulting in only two buildings of more than four stories and this project further fragmented the city by the addition of such extensive road infrastructure, which resulted in the removal of the major commercial spine that was Main Street, which connected the South and North Ends of the City. Main Street had contained numerous small neighborhood stores that were locally owned and operated, only to be replaced with a commercial center that is largely spread out to the pacing of the automobile. Even with two hotels the area is primarily only occupied by cars passing through. With the removal of the people from the neighborhood we see very little nighttime activity, with the exception of the odd sporting event at the Lord Beaverbrook Arena (LBR) or teenagers hanging out at the local Macdonald’s.

Social Condition

While reviewing the social condition of the City of Saint John, I found the reoccurring themes of poverty, poor food options, and lack of access to physical activities, especially in the winter time. Reviewing the Healthy Community Needs Assessment, the Food Security Report, and the Living SJ Social Renewal Strategy, I found that these conditions are well documented. Many are also directly linked to other health and social issues that need to be address within this community at large. In most part due to these reports, Saint John was recently selected as the first of six cities to be a test city in a new national program on reducing poverty.

Saint John has one of the largest rates of child poverty in Canada due to a high rate of single parent family homes and one of the lowest median incomes of lone-parent families at only $35,330.[19] As a result Saint John has a high rate of children who are unable

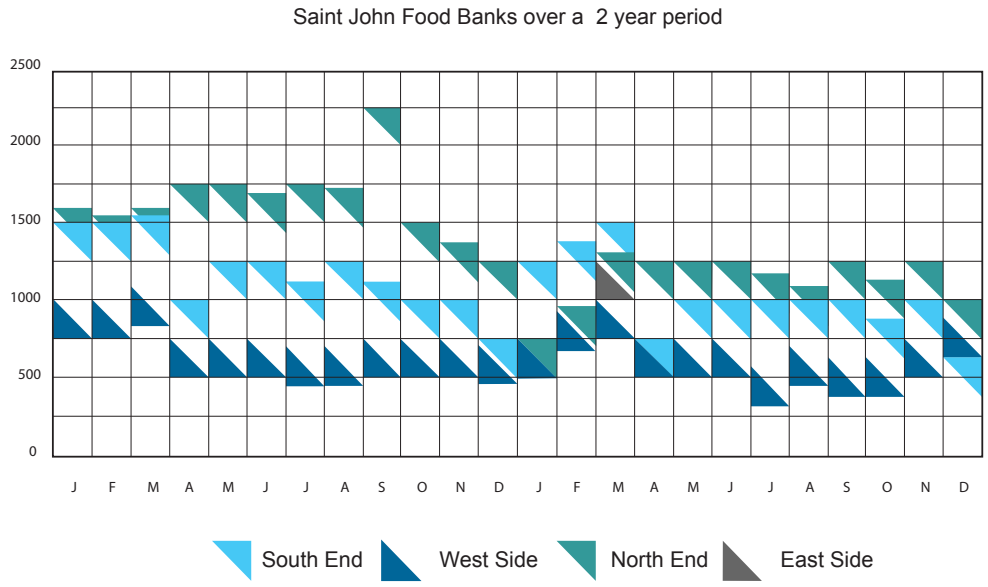
18 Marshall Mcluhan, Stephanie McLuhan, and David Staines, *Understanding Me: Lectures and Interviews*, (Cambridge, MA: MIT Press, 2003), 286.

19 Government of Canada, Statistics Canada, http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/famil107c-eng.htm. 2017.

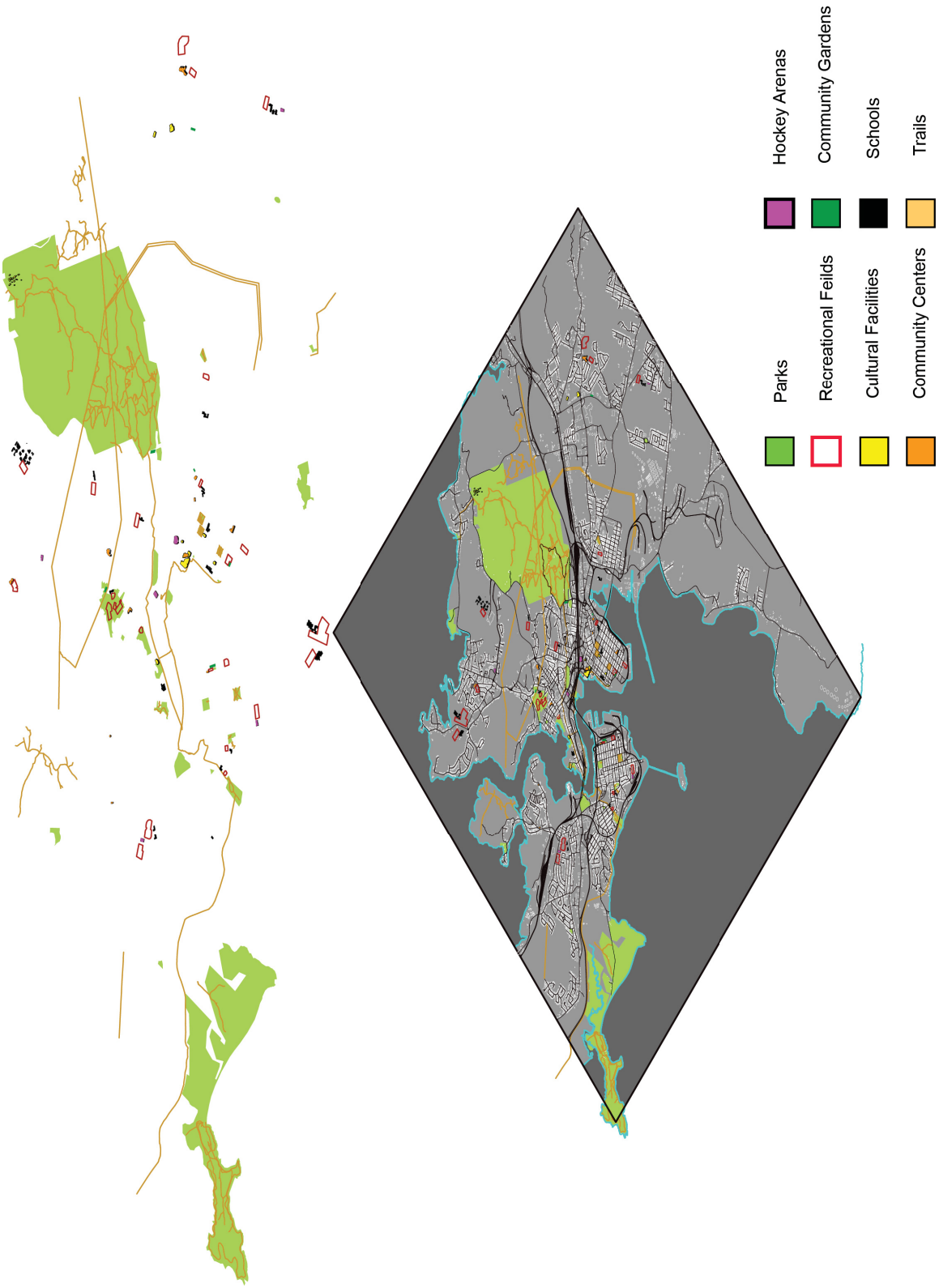
to receive the recommended levels of nutrition based on the Canada Food Guide and we also see a high dependency of people relying on the food bank system. In the past year we have seen an increase of 27.8% of children requiring food bank assistance.[20] Health issues that are related to these nutritional conditions are also known to be well above the national average in the city. According to the Healthy Community Report, 60% of the community within the city is reported to have chronic health conditions. Directly related to nutrition is the problem of diabetes, which in Saint John is double the National average at 12.3% versus 6.1% nationally, a condition that is statistically paralleled with rates of high blood pressure. Lack of availability and affordability of nutritious food has been continuously noted as being a primary problem for families who are struggling to make ends meet or who are constantly on the go, making cheaper, non-nutritious food an easier, quicker option.

These reports point out several overlapping conditions, as well as several notable solutions that need to be addressed. Starting with better access to healthier food and healthy activity, a common thread is also the need for improved walkability within the city, as well as providing alternatives to the vehicle transportation. Outlining these issues of need, we can see a series of responses that are required to be acted upon at the community level in an effort to benefit the youngest and the most in need in the city of Saint John.

20 Andrew Hall. *A Snapshot of Foodbanks in Saint John: 2016,* (Saint John Human Development Council. 2016), 10.



Saint John Food Bank use over the past two years; data from the Saint John Food Security Report



A map looking at the relationship of the cities parks, recreation, arena's and cultural facilities. data from the Saint John City open data catalogue.

CHAPTER 3: RESEARCH FRAMEWORK

Ecological Approach

Establishing a community greenhouse as an ecological system it is my intent to design a system that will disseminate seeds of healthy food consumption around the city of Saint John. Teaching the buildings users about the social and physical benefits of eating well I believe this piece of civic infrastructure will culminate in a healthier future for the city's inhabitants. Saint John is in great position to move a building of this nature forward as it has already been establishing a system of neighborhood community gardens, which can easily apply this facility at the city scale. Saint John is a city that has not completely forgotten its connection with nature; it is "a city clean enough to be healthy and dirty enough to be happy."[21]

Creating a building that can act as a self-contained system within the urban environment and serve has a city hub of food production and food knowledge will reconnect the city's people back to their local environment. Applying systematic and ecological thinking as a

21 Randolph T. Hester. *Design for Ecological Democracy,* (Cambridge, MA: MIT Press, 2006), 77.

A collage exploring the use of urban agriculture to shape park space.

holistic method of urban design in an effort to create a new building typology which can act as a catalyst to generate change within the region by fostering a place of cultural exchange. Hester defines 'Ecological think' as not only being about natural ecology, but also "considering the consequences of urbanization actions and the inter relationships that create vibrant, self-sustaining habitats."[22] This is where systematic thinking fits in as a method of linking the buildings internal components and using them as a series of interactions, forming a closed loop building system that acts as an artificial environment system. As Randolph Hester notes, "Neither applied ecology nor direct democracy alone can overcome these problems, but when combined they offer hope."[23]

Industrial Remediation

Examining nature for inherent knowledge in the world's operation will assist in providing solutions to the basic problems of survival and how we can best resolve environmental issues with simple and healthy propositions.[24] Using techniques of phytoremediation, we can use select plant species to remove contaminants from the soil left over from past industrial uses within the neighborhood. In the case of the Saint John waterfront there have been many centuries of past industrial use, from boat building to large rail yards, these industries may have left contaminants in the soil that need to be cleaned prior to applying agricultural practices. Using nature as a healer as well as a method of ecological design, we can use it to provide a elements for cleansing the site and a means of providing healthy food to a general population. Nature then becomes a tool for education, as well as a model for city and regional planning.[25]

Looking at the past uses of the site, we can note the previous rail terminal that was based along the inner harbor and the former residencies that used to be the Portland neighborhood. In both cases coal was a primary source of either heat for the houses or power for the trains, leaving deposits of coal ash, which contains high levels of mercury and copper. In this case we can look at using either water hyssop or water hyacinths both plants that are know to remove these contaminants form the soil.[26] Other notable

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22 Hester, *Design for Ecological Democracy*, 59.

23 Ibid., 4.

24 McHarg, *Design with Nature*, 7.

25 Charles Walheim, Landscape Urbanism: A General Theory. (Princeton Univeristy Press, 2016), 50.

26 Brian Kaller, Using plants to clean contaminated Soil, Restoring Mayberry, 2014-08-11 http://www.resilience.org/stories/2014-08-11/using-plants-to-clean-contaminated-soil,

contaminates that may be present are lead and possibly uranium in the soil. Mustard Green, Water Fern and cabbage all have the potential to remove lead from the soil, while Sunflowers[27] have the ability to remove uranium from the site and provide pleasant atmosphere with their large scale and bright color.

Reconnecting people with nature through landscape design, urban agriculture, and physical recreation will also help people reconnect with their community. Viewing life as the perpetual growth of one living thing upon another, people are able to see the physical links inherent in the world around them, helping them to establish a view of their own place within it.[28] Using native plant species as a means of exhibiting the interconnected relationship between one organism to another we can demonstrate the basic ways plants and animals are interconnected supporting one another in self-perpetuating growth both mentally and physically at multiple levels.

Economic Regeneration

Generating an urban oasis by the means of an ecological process is similar to that of operating a farm. Using the farmer as a primary example, we can see how one might choose to manage the landscape in order to produce a bounty of food that they can

27 Kaller, *Using plants to clean contaminated Soil,* www.resilience.org.

28 McHarg, *Design with Nature*, 29.

A collage exploring the idea of using the industrial infrastructure to facilitate urban agriculture.

share with friends and neighbors. While also developing an economic condition that can further enhance the natural ecology and one's place within it. Urban agriculture has the opportunity to provide this type of understanding within a city environment, while also working within the confines of the local ecology to provide a base knowledge of understanding on the operations of the native environment and the natural beauty the lies in the aesthetics of its order.

Operating within nature we can see how basic principles of economics and society have been derived over time to form the urban systems that we find ourselves in today. Robert T Forman defines landscape by the same three characteristics of an economic system in his book, Landscape Ecology: Structure, Function and Change. He also notes that landscape is determined "by its recognizable and spatially repetitive clusters of interacting ecosystems, geomorphology and disturbance regimes".[29] Referring to the basic transfer of energy within an eco-system as being parallel to the exchange of money or goods in an economic exchange. Through this perspective we can clearly view the improvements of a landscape as being directly relative to the improvement of its local economic exchange and see how both can be used to compliment the other.

29 Richard T. T. Forman and Michel Gordon, *Landscape Ecology*, (New York: Wiley. 1986), 11.

A collage exploring how a building typology such as the historic covered bridges of New Brunswick could be used to facilitate an economic exchange.

Using the principles of natural resource management we can further apply ecological concepts to strengthen these systems, developing a more sustainable and reliable operation with the potential to exemplify the best of both the city and the country in parallel. These improved systems in turn will help to generate new forms of community exchange in the post industrial economy.[30] Urban agriculture embodies the best of both the urban and rural situations, developing a new form of ecological thinking that provides numerous social, environmental and economical benefits that can be applied at multiple scales. From the health benefits of gardening and being out in nature, to the economic benefit of selling your products at the local farmers markets we can see the potential for a variety of social exchanges in both circumstances.

Food has always had a strong influence in generating of urban form through its distribution networks,[31] however in this context we can see how food directly reflects the urban form and vice versa, resulting in a more cohesive relationship that benefits both sides equally. In ancient times the Temples not only served as a place of worship but also as a food storage center that could please the gods and the people at the same time.[32] The Roman Forum and the Agora of Athena, were both originally food markets, before they made the transformation from commercial center to political arena as their cities matured in size[33]. As Carolyn Steel has describe how the food distribution network of London has shape the city, viewed directly in the naming of several streets like, Bread Street, Corn Hill and Fish Street.[34]

We can also see how plants can generate form in a park or greenhouse plan as certain plants need certain conditions to thrive and can be paired with other plants to create symbiotic relationships that help each other generate favorable conditions, such as one acting as a pest deterrent for the other. Viewed in this manner we can also see how various microclimates produce certain plants as a result of preferred conditions and how a form can be used to dictate the need to serve certain plants. In this way landscape design as a medium has the unique ability to shape ecological, economical, and social

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30 Walheim, *Landscape Urbanism*,133.

31 Geoff Tansey, *How to Feed a City – and Change the World by Carolyn Steel*. Filmed (Mar, 2016) Youtube video, 00:12:15. Posted Mar 31,2016 http://www.youtube.com/watch?v=i2iIQuXjWRY

32 Steel, *Hungry City*, 76.

33 Ibid.,122.

34 Tansey, "*How to Feed a City – by Carolyn Steel*". www.youtube.com/watch?v=i2iIQuXjWRY

conditions while simultaneously generating new urban form.[35]

Using urban agriculture as an economic generator we can see how ecological practices can influence a neighborhood by generating opportunities of food sales for the community, in turn allowing the community to support itself by establishing an internal systems that can used to benefit the less fortunate. By providing a facility of this nature, I believe the community can position itself in such a way as to provide economic opportunities for the entire city while also supporting much needed production of healthy food for the city's schools and food banks. This in turn will empower individuals in the community to support one another, while also forming an economically stable environment that benefits everyone involved. In Cuba, we see the Organaponico's, small neighborhood farms, which first grow food to meet the demand of the government ration system to feed the cities' people, with any surplus being sold locally by the farmers to help support the farm operation and their families. Making farmers in Cuba a vital piece of the social fabric, which the government covet as highly as professionals in the medical industry for their contribution to the community.

35 Walheim, *Landscape Urbanism,* 179.

CHAPTER 4: URBAN AGRICULTURE

Food Crisis

In the contemporary city, rather than being reliant on the hinterland that surrounds the urban township, we are completely dependent on corporate conglomerates, which control the distribution of food. [36] As a result many of us have lost the knowledge and understanding of where our food comes from as well as the connection to the producer that grew it. This dependence on Super Markets as the food provider has established a one-sided relationship that has diminished the relationship of producer and purchaser. In the process food has become a faceless commodity that has lost its intrinsic value as an embodied relationship with those that produced it and become a generalized fuel that we consume to survive, rather than a sustenance we use to thrive. Michael Pollan notes that studies across several cultures have shown, "the more time a nation devotes to food preparation at home, lower its rate of obesity."[37]

The current food system has become one-sided where markets and food shopping has become a reviled experience under bright lights, instead of a social gathering of friends and neighbors exchanging ideas. Modern supermarkets have become conflicting places that are commercialized and homogenized into a characterless space; they don't embody the variety of life that food supports or even reflect the variety of forms food itself has the potential to take. Rather than the community hubs that reflected the vibrancy of a neighborhood like we had with mom and pop shops of the early twentieth century,[38] we have developed a generalized bland box store that doesn't encourage social exchange but rather a get in get out mentality of moving on to more importing things to do.

Historically food has always played a role in generating space, spaces to sell, spaces to process, and spaces to process and space consume. Food provides a power over the health of the people that consume it, but also a power over forming the space in which it is grown, distributed and consumed, "Control of food gives control over space and people."[39] This is also viewed at the scale of the city, as we see how neighborhoods

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36 Steel, *Hungry City,* 99.

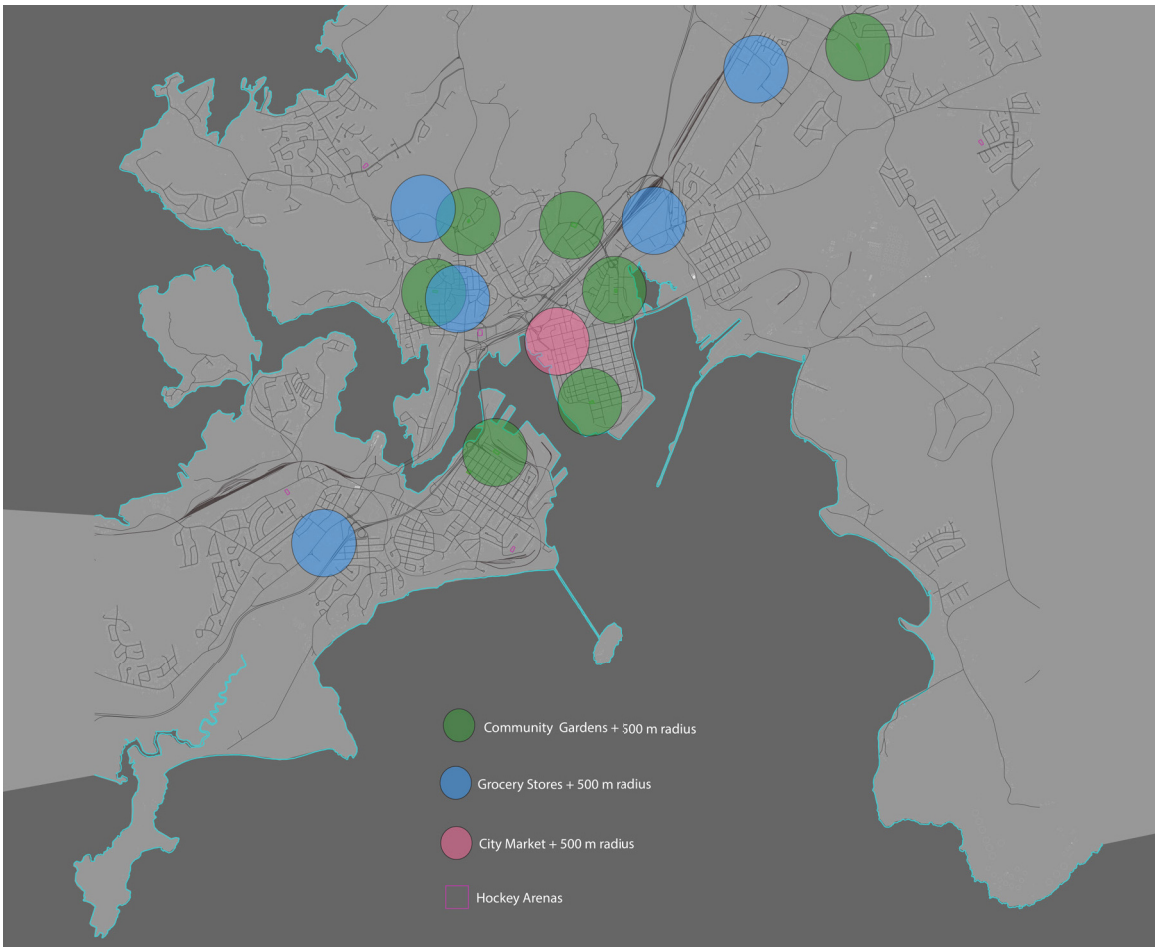
37 Micheal Pollan, Cooked: A Natural History of Transformation, (New York: Penguin Books, 2014), 192.

38 Steel, *Hungry City*, 136.

39 Ibid., 145.

are formed around their local super market giving even more power to the entities that control food of the shaping of space. In Saint John, we can see how the placement of grocery stores has had the opposite effect, as they have been located in with a stronger relationship to highway system than the neighborhoods they are intended to serve, which has resulted in further reinforcing the cities dependence on the automobile. This in turn has created several food deserts within various neighborhoods of the city and has played a major role in the social and health conditions of the cities population that we see today. In this case we can see how the lack of access to food without a car and the highway has played a greater role on shaping the space of the city. The below map shows the grocery stores in blue and community gardens in green, each exhibiting a 500 meter radius around their location, "500 m is considered the distance a fit person can walk in ten to fifteen minutes, someone with children and shopping bags would take longer."[40]

40 Andre Vilijoen, *Continuous Productive Urban Landscape: designing urban agriculture for*



A map showing all the community gardens, arena's and grocery stores and their relationship to the highway system. Map data provided by City of Saint John open data catalogue.

Food Security

Developing a food system similar to the one we find in Cuba after the fall of the Soviet Union could provide a more reliable and secure food system for an urban area. Fostering food security in the form of civic production while generating jobs in a sector of skilled labor, providing training to people who may need it the most. A municipal urban agricultural system can reconnect an urban population to its food source through transparent forms of production that can be clearly seen throughout the cities public spaces. In our modern system, we see that most of the money we spend on food goes outside the farming system, “80 percent of the cost of food eaten in the home goes to someone other than a farmer, which is to say, to industrial cooking and packaging and marketing.”[41] Looking at the Brooklyn Grange gardens in New York we can see a community that has developed a sustainable rooftop farm system, which is combined with a consulting service, where they offer advice to community businesses, schools and individuals who wish to install roof gardens, green walls or a back yard farm to grow their own food.

Fostering these skill sets in a local neighborhood will strengthen both environmental and social relationships, while also creating less reliance on current methods of corporate food production and distribution. A secure system will provide an urban population with a better understanding of their food sources and empower the community by generating a greater level of self-reliance. Looking at the systems established by Lufa farms in Montreal, we see an elaborate technical system that is highly visible in its community also offering a market place that directly connects the producers to the consumers. A series of rooftop hydroponic gardens Lufa farms produce a year round supply of fresh vegetables that they sell through a produce pack distribution system. This highly visible greenhouse network and physical distribution helps generate strong community connections and a reassurance of quality control on the food being consuming.

The farm to table model is a method that could be applied within an urban environment like Saint John, to eliminate the gap between producer and consumer. In contrast to our current food system is positioned as an urban and rural situation considered food separate from the city. I believe that urban agriculture should be inserted into the urban fabric to generate food security for the less fortunate and foster connections among different social groups while creating opportunities through perceived opposites. Knowing who your food provider creates a security within the system and places a greater appreciation

sustainable cities, (Amsterdam: Elsevier, 2009),50.

41 Pollan, *Cooked*, 188.

on the product, as you have a direct or indirect connection to how it was produced. Having control over the food system in an urban context gives the public a greater appreciation of the municipal resources being used, establishing a direct connection between the neighborhood and the food on your plate.

Community Builder

Establishing a new form of food generation through urban agriculture similar to that of Cuba (or even Detroit after the collapse of the auto sector) would help foster a reconnection to society and their food source. Reconnecting people with their food through landscape design and social events can support public places that foster community relationships over multiple generations. Food markets, combined with recreational facilities, create an environment that crosses a large cultural spectrum. Nothing is more universally common than the factors of community gathering for sport or cultural festival. Creating a space that can support both activities simultaneously will establish a cultural venue that appeals to a wide spectrum of users and bring them all together under one roof to share stories about their community and their lives. Prior to the out migration to the suburbs of the city cooking was very much a communal activity shared between households and families, Michael Pollan notes “historically, cooking has been a much more sociable activity then it became after WWII, when so many people moved to the suburbs and the nuclear family with a wife who didn’t go off to work became the norm.”[42]

Public space is the true common connector within the urban environment, fostering a place to express any opposing views that are formed within society. The most fundamentally basic connecting medium beyond occupied space is the medium of food, which could be produced as a direct result of the environment in which we live. This commonality generates a base point at which all society can meet and disseminate ideas, making food one of the strongest community builders we can generate. Fostering spaces where food can be grown, sold, and eaten can only work to establish stronger connections between cross sections of modern society. Sharing food in a community hall or at a communal event is the most complex social experience that we know of and is a point at which we express ourselves as a social creature.[43] Supporting a culture where food is understood and valued for its social empowerment will only generate value up and down the ladder, from the farmer that produced it, to the environment that sustained it. Generating a public space that allows people to spend as much time as they want in one place

42 Pollan. *Cooked*, 182.

43 Steel. Hungry City, 246.

gives people opportunities to cross paths with multiple social groups and enables people to make social connections without the demand of spending money or being associated with a specific user group.[44] Bernard Tschumi states “it is architects who make passing time in space more or less acceptable.“[45] And food is one of the most powerful motivators we have in our society to bring people together in a physical space, “forging bonds that other media can’t reach.”[46]

44 Hester, *Design for Ecological Democray*, 18.

45 Tschumi and Walker, *Tschumi on Architecture*, P99.

46 Steel, *Hungry City*, 114.

Social exchange

An abstract diagram showing the social exchanges of gardening (top), recreation (bottom left)and food preparation and consumption (bottom right) and how the three can be used together to form a new space.

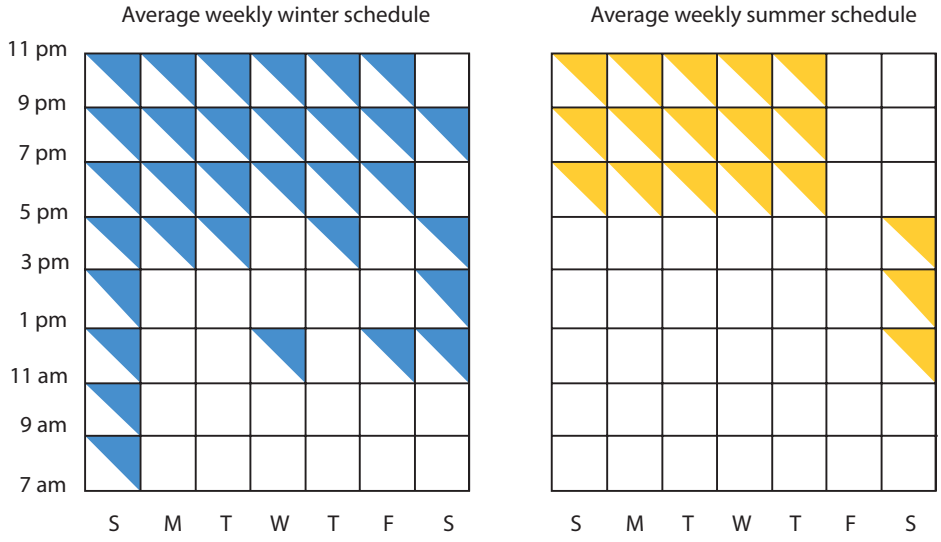
CHAPTER 5: DESIGN

Phase 1 - Greenhouse

Using elements of ecological thinking, landscape architecture, and urban agriculture I am looking to create a space that fosters connections among many aspects of society. From goaltenders to gardeners, my design intention is to create a community center that is accepting of all walks of life, opening the doors for the cross pollination of ideas and concepts that are typically associated with one cultural group or another and blending them together through the shared medium of food. Working off the existing infrastructure of a community hockey arena allows me to open the doors to a deeply rooted element in Canadian society and bring in an outside component that can compliment and contrast that cultural activity to foster new connections that can develop over a lifetime.

Creating an extension to the arena which allows the building to act as an ecological system itself, one that can be used to mix cultural successes within the urban conditions in order to seed the proper levels of diversity needed to sustain a healthy community around it. Establishing diversity is a way of fostering creativity through the introduction of varied behaviors to from a system of exchange.[47] Working with this in mind, the community center can develop a knowledge base and program to dispense an understanding of the city at large. Generating involvement and empowering the community with

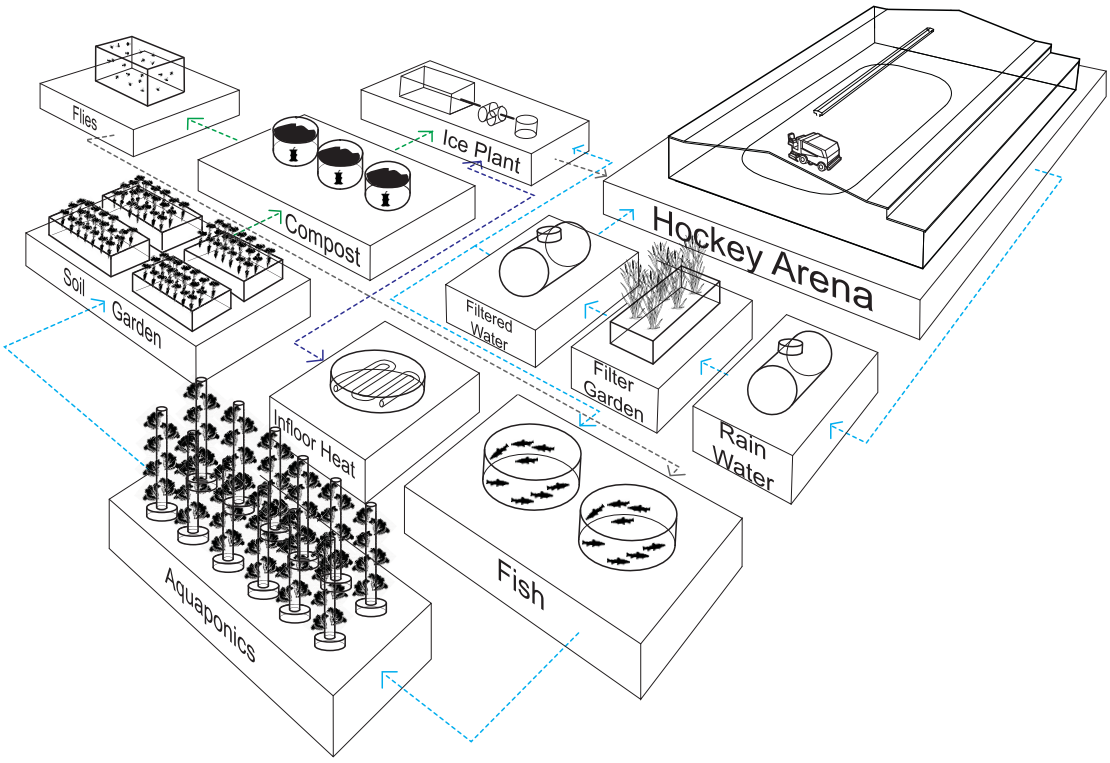
47 Hester. *Design for Ecological Democracy*,196.



Looking at the average weekly schedule for both the winter and the summer you can see plenty of open time during the week days which could facilitate additional programming.

the knowledge to make it more self-reliant and more interconnected only acts upon the principals of ecological methods to create deeper support systems where one aspect of the system can pick up the slack when another has been weakened.

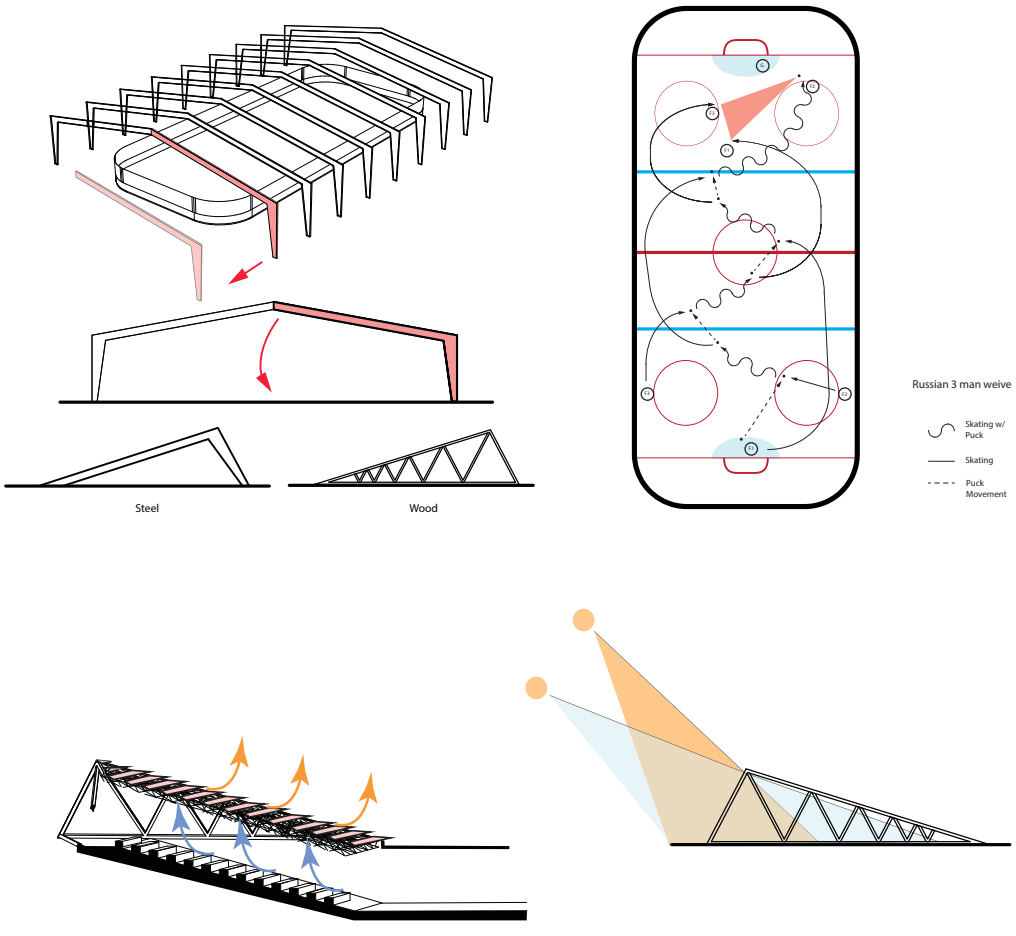
Community hockey arenas of this scale tend to have small lobbies, which act to serve as a ticket booth or small vestibule to help regulate heat exchange between the arena and the outside. It is my intent to have the greenhouse serve as a community threshold to allow people to linger and spend large amounts of time that doesn't involve the primary programs of agriculture or hockey. This space will be used to foster community connections by allowing people to meet and socialize before, after and during events at the facility. By creating a space where people can linger and socialize I hope to reinforce the added health and social benefits that are felt by being in nature as people are surrounded by plants in these areas. During slower times throughout a usual day when there isn't a community event this space can serve as an extension of the plaza and parks that



A systems diagram showing how the hockey arena can be integrated into an agricultural system.

surround the building, establishing a quite place people can relax and enjoy a slower moment among the plants.

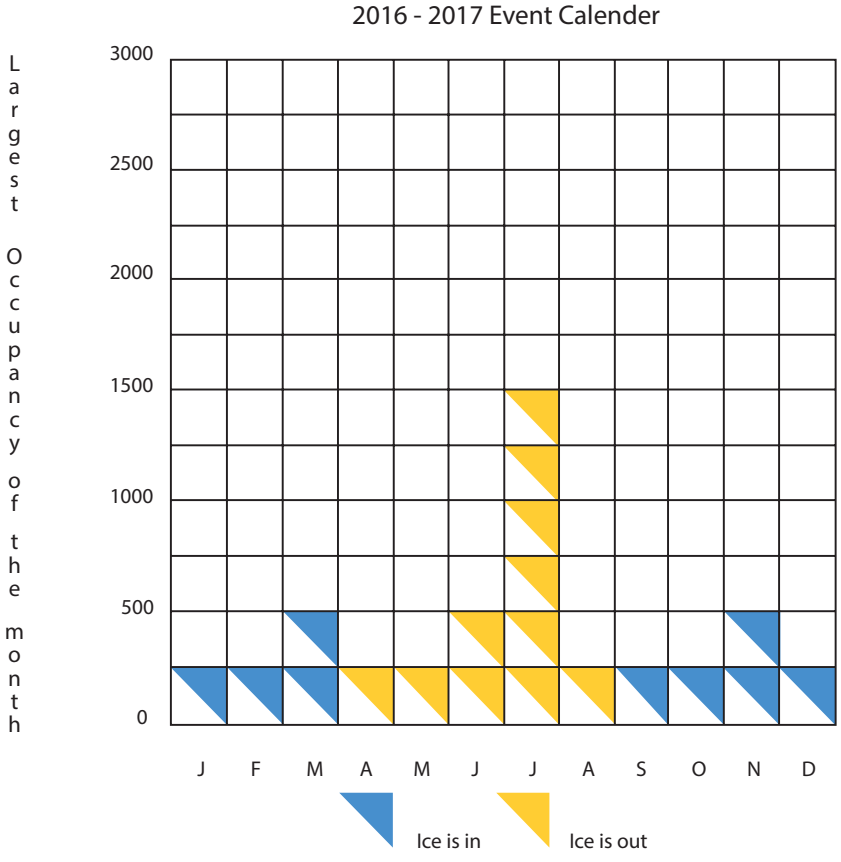
At the scale of a smaller community arena of this type, the place where people tend to congregate the most is the canteen area where they can enjoy a warm beverage and something to eat. This is an area in the arena I wish to strengthen through its connection to the greenhouse both physically and through the shared program of food by providing healthy options that are grown and produced in house, grown in the greenhouse, cooked in the community kitchen and served at the canteen. The greenhouse area will also serve as a warm counter point to the arena where people can choose to enjoy a break between periods and act as a truly social gather space for the building, introducing the people to the pleasantries of urban agriculture as they come, go and linger during before or after public events.



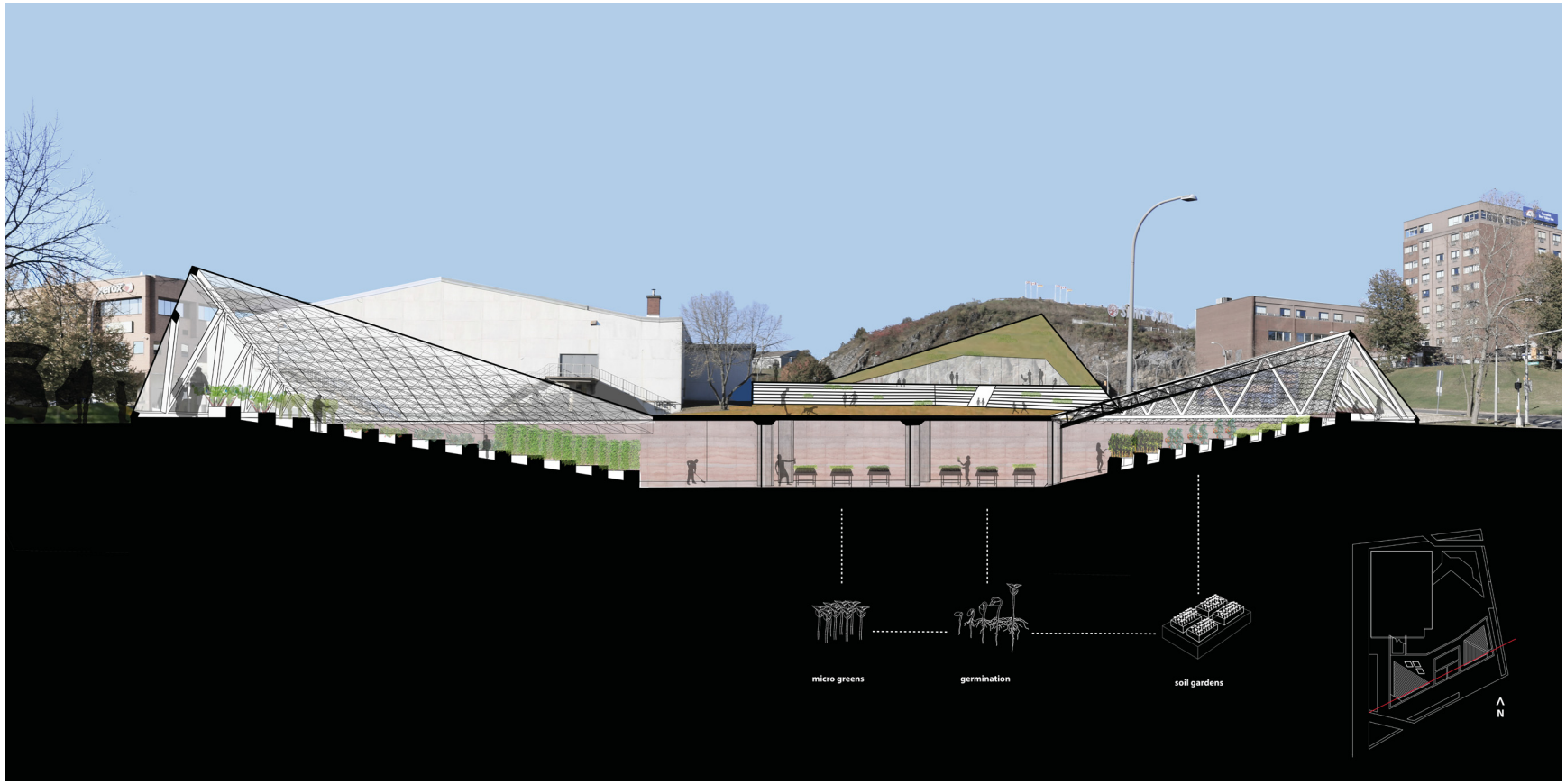
A series of diagrams showing how the existing LBR building, its program and the site conditions all influence the greenhouse form and orientation.

By having the canteen act as an extension of not only the greenhouse but also a community kitchen located in the facility will create a further interconnection of the program of the building. Through non-profit community groups which run a shared kitchen between the canteen and the community cooking workshops you can establish a menu of local food options that expose people to a variety of food that they may have otherwise never been unaware and now see the possibility of trying to make on their own. This will further encourage them to enroll in cooking classes and gardening workshops that will be offered through the facility as they are introduced directly to the benefits these programs offer and the opportunities they can generate in an improved lifestyle.

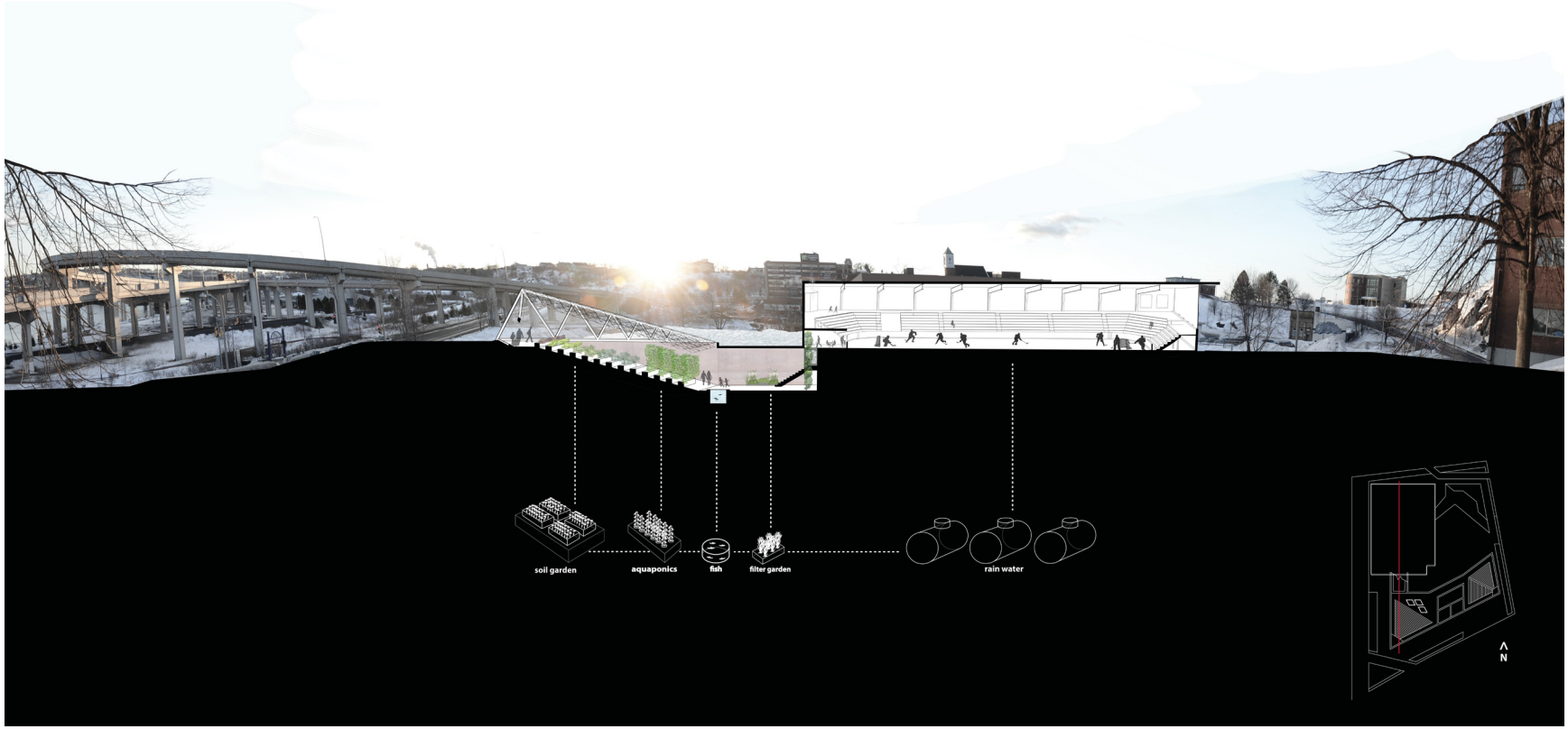
Working from the established form of the hockey arena allows me to make a perceived dichotomy work as a system. Just as the notion that making ice creates heat seems counterintuitive, it is precisely this reaction that can allow you to pair a greenhouse with an ice plant creating a symbiotic relationship that brings people together through seemingly opposite aspects of nature.



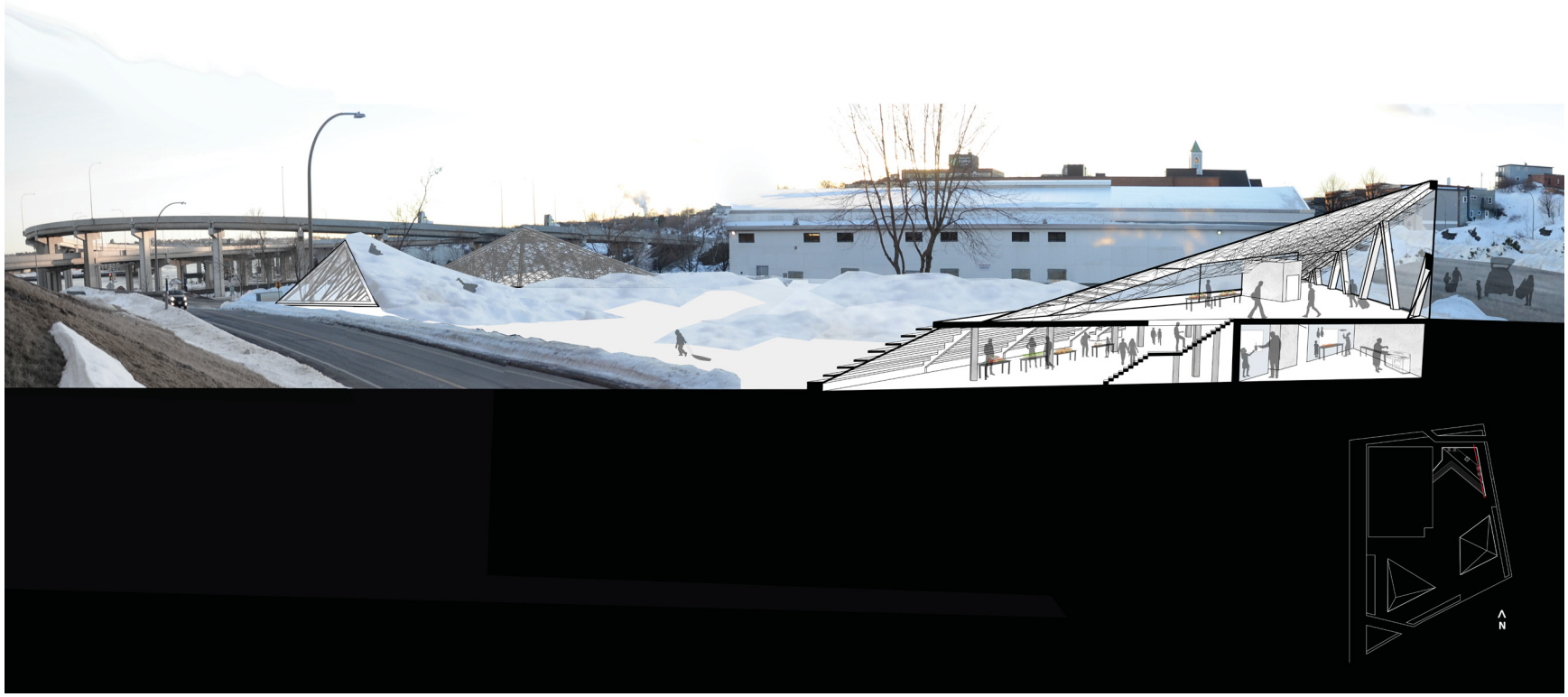
An annual calender showing peak attendances for the month. Indicating that the building currently reaches its highest attendance numbers during special events such as gymnastics shows, boxing or mixed martial arts events held in the summer months.



A sectional perspective showing activation of the main greenhouse and its relationship to greenhouse #2 and the combined relationship they have with the LBR, the community kitchen building and Fort Howe in the background. You can also clearly see the courtyard that is formed by these buildings and role that can play in connecting the Fort Howe and Fort Latour sites.



A sectional perspective showing the activation of the main greenhouse in relation to the LBR along with a systems diagram to exhibit how the systems inform the space of the greenhouse area.

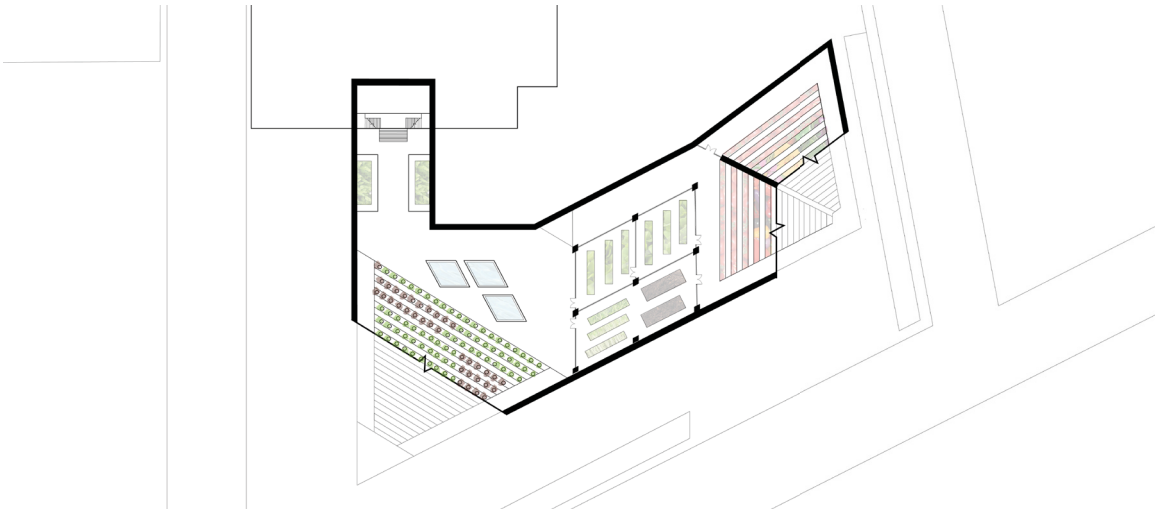


A sectional perspective showing the activation of the community kitchen building with a weekend winter market as kids play outside sliding down the green roof of greenhouse #2.

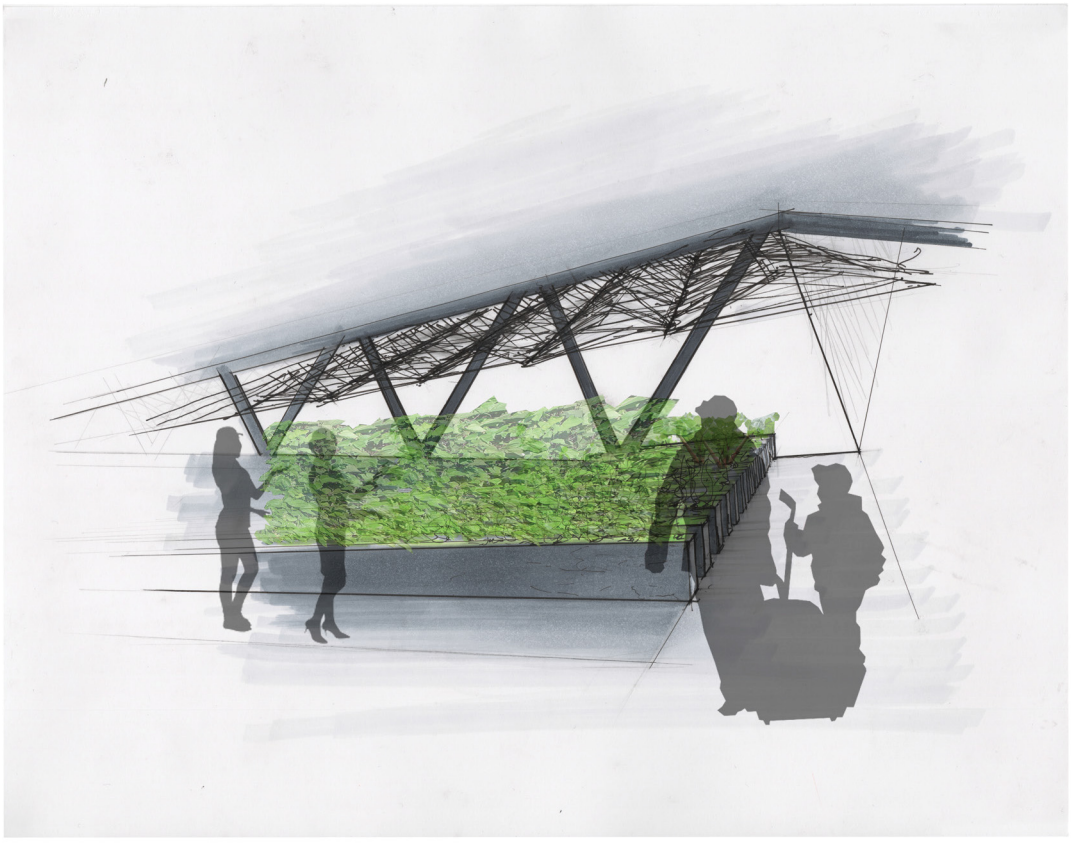
Phase 2 & 3 - Gardens & Parks

Using the greenhouse as a metaphorical seed of change in the Portland neighborhood, it is my intention to have the intervention grow out from there. Planting seedlings throughout the neighborhood, germinating a growth of urban agriculture and physical recreation in tandem, I wish to establish a linear park along the cities inner harbour that grows out of the existing 'Harbour Passage trailway', and creates a stronger connection between the National historic sites of Fort Latour and Fort Howe. Tapping into the existing trail system I am looking to generate a garden that extends along the inner harbour and can reach out to connect the Portland neighborhood to other parks and eventually spreading into all neighborhoods of the city, connecting them back to the LBR and directly to the cities rich history.

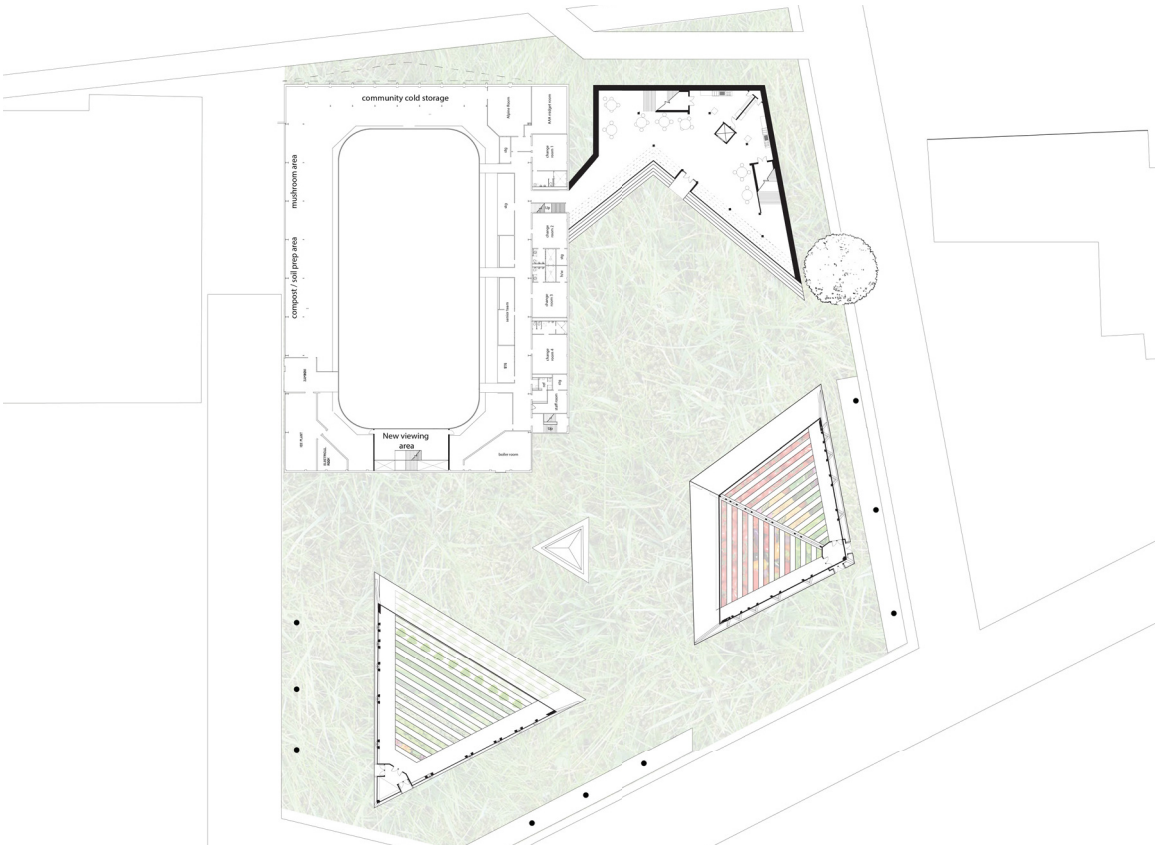
A diagram showing the site and its proximity to two National historic sites and two overgrown areas and the influence it could have to connect all four of these areas. Map data from City of Saint John Open data catalogue.



Basement floor plan showing the two greenhouses with the seedling and micro green rooms in the center. The larger greenhouse on the left is a perennial garden that contains the aquaponics ponds and the rain water filter gardens. The smaller greenhouse on the right is an annual garden production to support the established community gardens of the city.

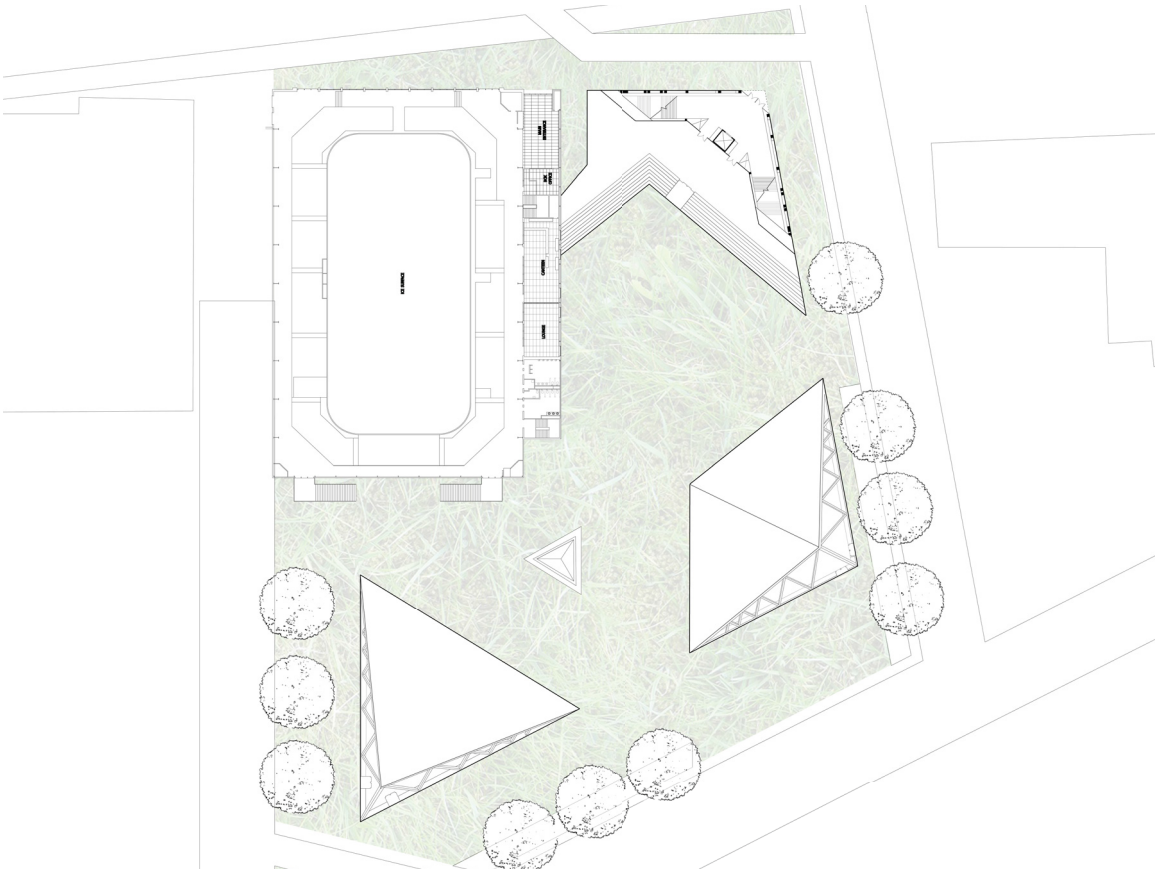


An experiential sketch showing interaction between hockey players and gardeners in the larger greenhouse as a dad takes his son to hockey practice.

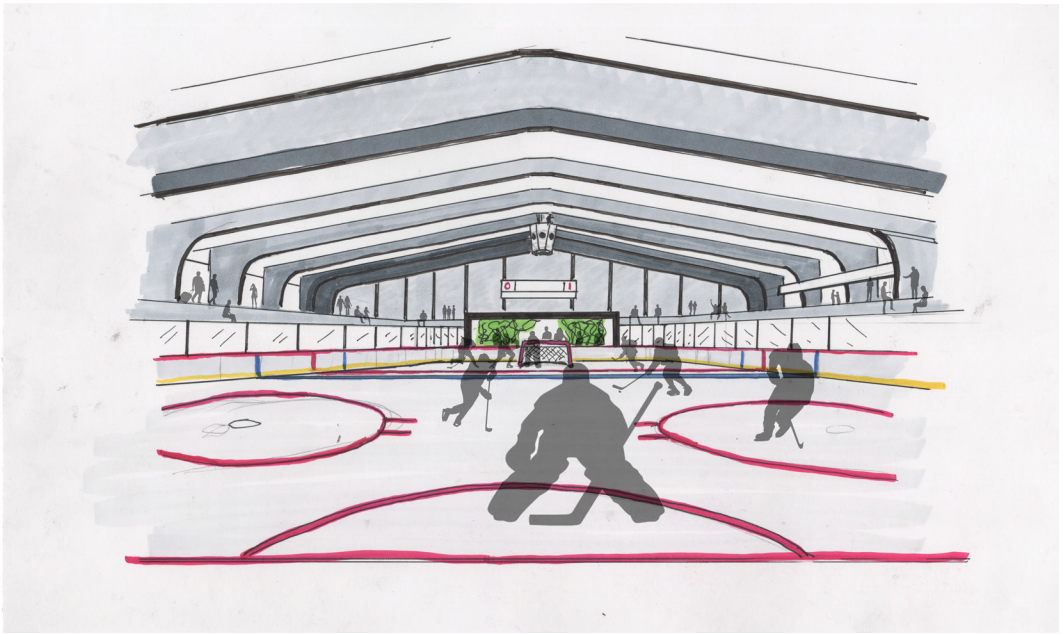


Ground floor plan showing the two greenhouses and their relation to the rink and market and community kitchen building and the outdoor square they form.

An experiential sketch showing the ground floor market and event area in the community kitchen building.



Main street level floor plan showing a new entrance point allowing arena attendance pass through the kitchen and market area where they are exposed to smells of cooking classes on their way to the rink.



An experiential sketch showing how the greenhouse integrates with the arena creating a heated viewing area filled with vegetation, intriguing people to explore the greenhouses.

Creating a linear park that travels along the path of an abandoned rail line, parallel to the highway and an operating rail line, I am looking to create a series of interventions that are complimented by the greenhouses and community center of the LBR, which help spread the program of urban agriculture out into the city. Using the courtyards formed by the greenhouses and local topography of the site to support a series of small microclimates that will be interconnected through urban agricultural and recreational programs. Developing a series of community gardens, these areas will also facilitate a number of different food related programs from outdoor barbeques and wood fired ovens to the main courtyard between the LBR and the greenhouse to host outdoor vendor markets, serving as a series of connectors to help bring people back to the neighborhood in a space where they can socialize and interact with one another.

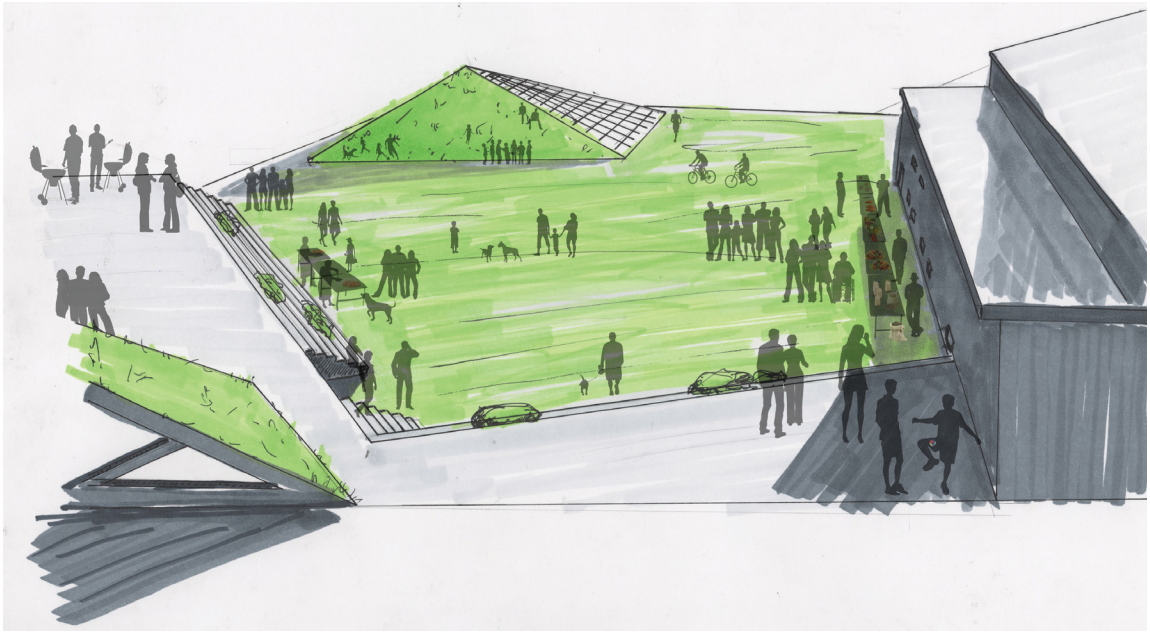
Reacting to the linear elements of the highway, rail lines, and pathways of the neighborhood I am looking to develop a set of zones that can function with both summer and winter programs. In the summer the courtyards of the greenhouses can serve as areas to facilitate an outdoor market like the Queen square market and in the winter months be it could be flooded to create small outdoor skating areas and the occupiable roofs of the green house can serve as and extensions of the ground plane providing a place to relax in the sun in the summer or a small sliding hill in the winter. In the transition seasons or during off market days in the summer these areas can be used for recreation activities such as, soccer or even skateboarding on some paved areas.

Looking at the victory gardens of WWII in Chicago and DeWitt Clinton Park in New York from the turn of the century we can see an example of how you can implement food production into a local park system that is supported by the general public. Showing people how to grow their own fresh food in city operated gardens can give people the confidence to replicate these conditions on their own terms as people are more often inspired to improve upon or duplicate something they can already see in their daily lives. Therefore, by fostering an atmosphere of interconnectedness, people will be supported to bring these aspects of healthy living back into their own dwellings to further enhance a shared sense of community with their own neighborhoods. Passing on their experiences and working together people can positively influence change within the city. Interconnecting these agricultural areas with recreation and leisure spaces makes them much more accessible and inviting to people allowing people to personally see and experience the benefits these spaces can generate.

Examining the function of a leisure space within the city, I believe it is vital to engage people with nature at multiple levels and at multiple speeds so they are able to find an area that appeals to them.[48] It is important to achieve a place where all people can feel welcome and comfortable. As the development of a leisure society increases we see the importance to engage people with nature and physical activity as they have been proven to improve people's states of mind, producing endorphins and relieve stress. Looking to apply Randolph Hester's theories of naturopathy, naturism, and naturalization within the design features of the community center/ city parks, I believe it is vital to create a space that is accessible to every aspect of society. Connecting the urban environment through systematic thinking requires what Hester calls "Ecological Think"[49] and Ian McCarg refers to as "applied ecology", which is not just about the ecology of plant systems, but also the effect these systems will generate within an urban context. Therefore, it is my intension to integrate a systematic approach for parks and recreation to link highly visible systems of food production, making these systems visible to the public so they can be clearly viewed with activities such as biking, basketball, tennis as well as more leisurely activities like playing chess or just reading in the park. Looking to examples like the High line, Fens Park in Boston and the Brooklyn Bridge Park in New York I am able to see how we can generate productive urban landscapes that can have a tremendous social affect on the cities inhabitants, improving the quality of life.

48 Hester, *Design for Ecological Democracy*, 77.

49 Ibid., 60.



An experiential sketch showing the courtyard area occupied during a weekend summer market.

CHAPTER 6: CONCLUSION

Allowing the buildings to act as both an ecological system and an economic system which encourages the exchange of food on many levels, from recipes, to the cooking and harvesting of plants can act to enhance, inform and support the social network of the city. Once the community center is fully established it will still take a couple of years before it can operate at full capacity in order to spread out into a linear park, germinating positive change within the neighborhood before spreading to the entire city for the benefit of generations to come.

Working under the infrastructural design principals defined by Dana Cuff and City Lab establish a space of collective interest for many user groups. I believe my design has managed to fulfill the criteria of all 5 principles:

1) Hybridity - working off of the existing infrastructural typology of the hockey arena, to integrate a working greenhouse that operates with no additional energy and can use the waste heat of the ice plant to facilitate a set of productive year round greenhouses. This will generate a hybrid form composed of a traditional recreational building and a industrial agricultural form for the purpose of supporting urban agriculture within all neighborhoods of Saint John.

2) Be Public - operating as a municipal community center and acting as the corner stone for the development of a park and urban agricultural system, this building will exist entirely within a public capacity. Run by an arms length board of directors this facility will be controlled by and for the people of Saint John in order to establish a space that is open to the public every season of the year.

3) Be Localized - establishing a city center, this facility is a direct reaction to the local site conditions and be integrated into the current context of the urban environment. Serving the North End neighborhood and the entire city, this facility will look to serve the local character of the city through its material selection and form. With an effort to be a good neighbor the building will work in harmony with the surrounding urban and ecological environment, acting as both a park and a community center simultaniously.

4) Be Catalytic- forming a system that is designed to disseminate growth and change within the surrounding neighborhood and the city at large. This system is derived on basic principles that can be applied throughout North American culture, with the potential to foster growth and change at a variety of scales for centers large and small. As a combination of the two primary programs of agriculture and recreation, this facility will serve as a reaction to the social forces that are generated by each of those components resulting in a new re-action which will establish a new space for cultural exchange.

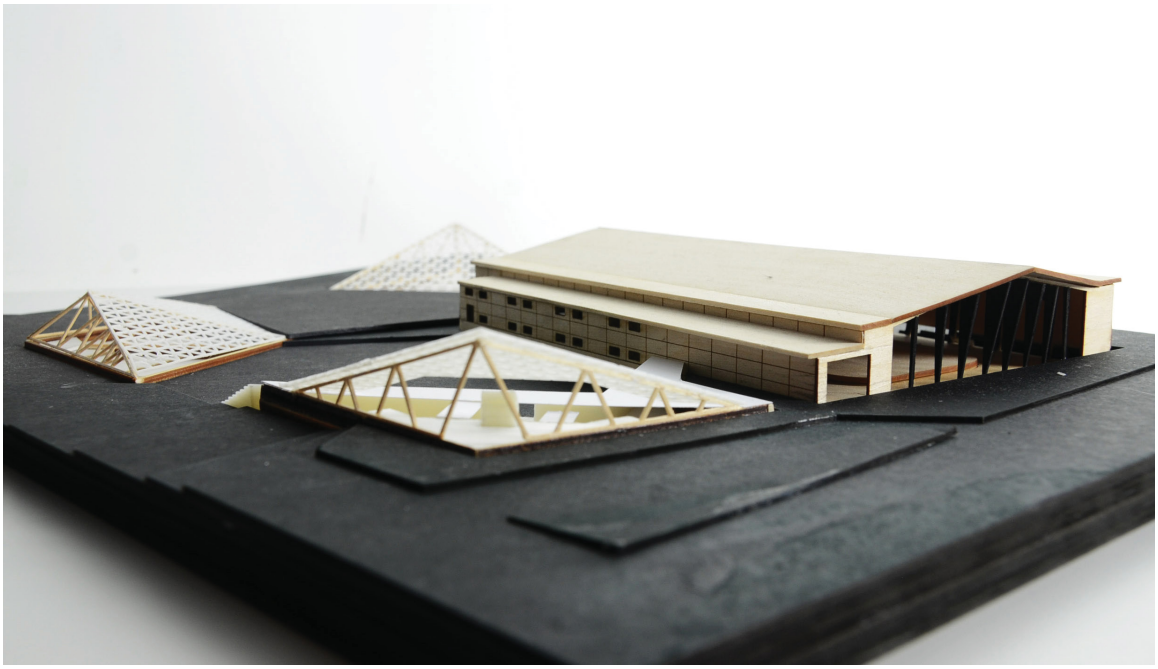
5) Be prototypical – The system of this greenhouse is a direct reaction to the heat that is generated by the ice plant of the hockey arena, forming a new way to use waste heat for the purpose of facilitating urban agriculture. Combining these elements with a solar mass collection system in an effort to establish a new prototype that is derived of a series of very basic principles, which can be applied throughout Canadian communities. By combining these basic components to establish a new system, this can serve as a base point to test further adaptations or variations in an effort to work towards an idealized system and possilby form.

Working with these 5 principals of public infrastructure, combined with Ian McHarg's approach to ecological systems, Charles Walheim's understanding of Landscape Architecture, and ulitmately applying these through Carolyn Steel's lens of food production and urban agriculture, I believe we can adapt existing recreational facilities to improve the overall well-being of cities. As a result, this will generate a new typological form for community infrastructure that has the benefit of all these applied principles.

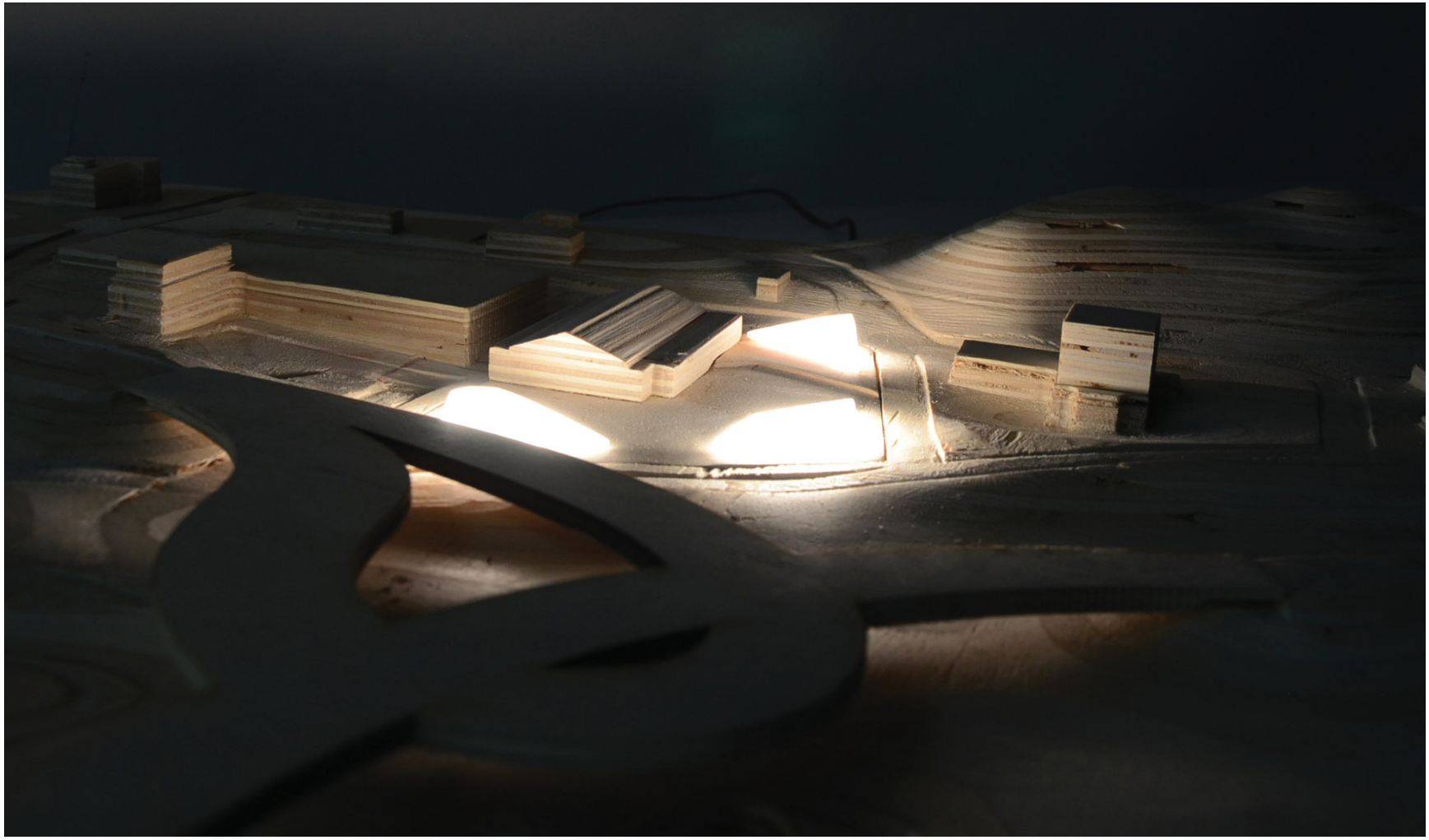
Reconnecting moments of the city fabric that have been fragmented as a result of the 1960's urban renewal project, which left the city divided and compartmentalized along the inner harbour. The growth of Main Street from a busy two-lane commercial street to a six-lane viaduct, combined with the Harbour Bridge Project has left the former Portland neighborhood as a drive-through section of the city that is unfriendly to anyone outside of an automobile. Activating the city through the combination of recreation and agriculture in connection with the exising trail and park system has the potential to reconnect this urban fabric and connect the cities inhabitants through aspects of leisure, food and sport. Using the site of LBR wich is idealy located on the site of the first permanent settlement of the area and between the two national historic sites of Fort Latour and Fort Howe, the site has the potential reconnect the the urban fabric as well as reconnecting the city to its treasured past.

The LBR, one of the only a few buildings to survive the wrecking ball of ‘Urban Renewal’, this facility has the potential to act as a starting point to spread the seeds of health across areas of the inner harbour, growing out into a park and activity zone that can reconnect the entire city through food and recreation. Generating an area that functions for the entire city, people can gather in this shared space base around common activities enjoying the health benefits of good food and physical activity. I believe recreation and agriculture have the potential to reconnect the city through the key aspects of North American culture of food and sport and can help Saint John create stronger connections between the cities various neighborhoods improving the health and well being of the city as a whole.

By establishing a new integrated typology of a year-round greenhouse with a community hockey arena, I believe we can create a more holistic approach to the community center, improving the health of the city and in return reducing some of the demand on local health authorities. In the process also establishing a better food system for our food banks, providing more nutritious food options while creating greater generational awareness towards an improved lifestyle within the city of Saint John. By combining the ancient cultural traditions of sharing food and friendly sporting competition I belive we can generate stronger, healthier communities through imporved public buildings which foster social growth.



A structural model is used to show how the three new buildings relate to the existing LBR arena and how the structural elements of the buildings influence their presence.



A site model exhibits how the green houses and the community kitchen building lite up at night serving as a lantern in the community, acting as a modern day light house providing a beacon of hope in the central Portland neighborhood.

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