AIDING WITH ARCHITECTURE:
EXPLORING THE ROLE OF COLLABORATIVE DESIGN IN HEALING AND
EMPOWERING NORTHERN SASKATCHEWAN COMMUNITIES

by

Kyle Smith-Windsor

Submitted in partial fulfilment of the requirements
for the degree of Master of Architecture

at

Dalhousie University
Halifax, Nova Scotia
March 2018

This thesis is dedicated to my parents and in memory of my grandparents. Thanks for urging me to follow my passions, funding my endeavours, and providing exceptional role models.

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ABSTRACT

In northern Saskatchewan, colonialism has caused a disruption between people's cultures and land, resulting in many social woes. This thesis aims to use architecture to aid in healing and empowering communities along the Desnethé/ Missinippi/ Churchill River. It starts by contextualizing the issues to understand the land, waterways, and people, and then proposes an architectural design that uses the resources at hand to enhance connections through co-operative action.

The project is situated in the village of La Loche, near the historic voyageur highway transition between the Churchill and Athabasca Watersheds. A new story is written through design, and a healing centre is proposed to act as a catalyst for positive change in the region. The building orients habitants in a restorative way by connecting back to its specific place in the world. The work concludes by paying homage to history, while looking forward to a bright future.

ACKNOWLEDGEMENTS

CHAPTER 1: INTRODUCTION

I was recently told the old story of stone soup, which has many variations in different cultures. In this version, a stranger comes to a community with just a pot for cooking - perhaps it could be a watape (spruce root) basket. They have no ingredients, yet the stranger fills the container with water, and then starts a fire to heat stones which will be placed in the water to warm it. When community members ask about it, the stranger tells them it is stone soup, but needs something more added to it before it is ready to share. The community begins to bring what they have to offer, and eventually there is a full container of delicious soup for everyone.
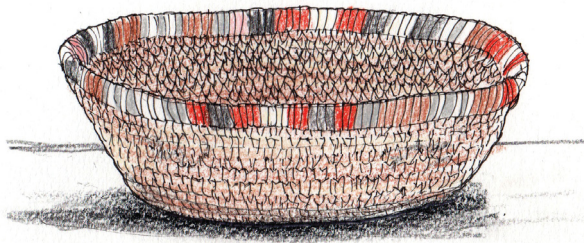
Watape basket.
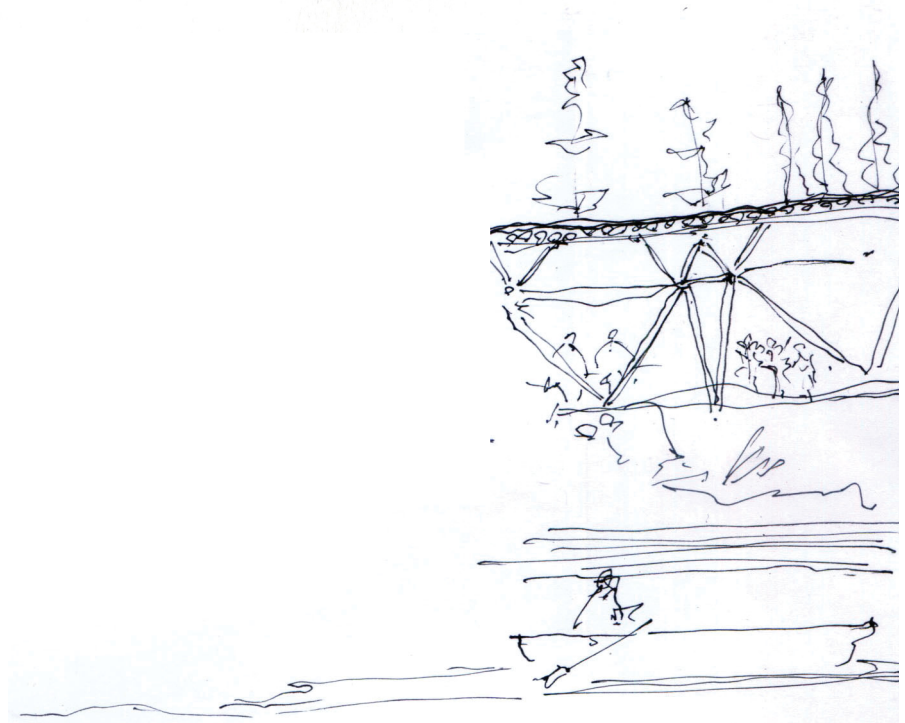
Initial sketch, upon returning from travels to northern Saskatchewan communities.

My Story

Firstly, I would like to state that I am not aboriginal, nor should this work be seen as "First Nations, or Métis architecture". When you see the world relationally, as Indigenous healing practices do, there are no bystanders, and everyone has a part to play. We are all in this together.

"Who Am I to Speak?" is a chapter title from the book *Firewater: How Alcohol is Killing My People (and Yours)* by Harold R. Johnson. In the book, Johnson, a member of the Montreal Lake Cree Nation and senior crown prosecutor in La Ronge, suggests it is up to the inhabitants themselves to resolve the issues in northern Saskatchewan. He also touches on the importance of artists, who create alternate stories that may show the way forward. This echoes the renowned aboriginal architect Douglas Cardinal, who in a 2013 presentation at the University of Saskatchewan promoted an openness to criticism of design work from all people of northern Saskatchewan when he asked the question "what do you know about their way of living?"[1] This work falls into the role of telling a story open to modification, with the aim to reveal latent possibilities and inspire action. It should not be taken as a set of directions, as this is just my interpretation, and requires the input of the inhabitants of northern Saskatchewan to move out of the realm of a theoretical work.

Before continuing I have to disclose who I am, as I have learnt in the book *Indigenous Healing: Exploring Traditional Paths* by Rupert Ross, that it is important for everyone involved to trust each other and heal together. For example, the therapists at the Building A Nation healing program in Saskatoon begin their work by explaining who they are.[2] Therefore, I will tell the story of my family and community.

My mother's side came to Saskatchewan as farmers to a small village on the prairie that has now all but vanished. My father is a biologist turned family doctor of rural medicine; someone I continually learn from and admire. His father was a dentist, who I only know through stories as I have no personal memories of him. Both my grandfather and father received honours from the Saskatchewan communities they faithfully served. However, we have to go back several generations to understand the Smith-Windsor story and to the origin of the surname on July 17th 1866. The hyphen is a result of being in a profitable

business in England during the colonization of North America, where my family benefited from the exploitation of others. For this I am sorry, as the past is always present; I hope to make amends by following the example of my father and grandfather.

As for my relation to the land, I am from Prince Albert, Saskatchewan; Kistahpinanihk is the Cree name for this "meeting place" on the banks of the North Saskatchewan River. The stark contrast between the province's north and south (where it shifts both physically and culturally) has Prince Albert being the threshold, earning it the title "Gateway to the North." Despite the excellent location, the city has a negative reputation and in 2015 a study based on Stats Canada data found Prince Albert to be the worst health region in the country.[3] The authors of the study note "Endemic poverty, disadvantaged First Nations communities, an aging population and a lack of doctors all bedevil this community, and serve as a stark warning sign for the rest of Canada."[4] More recently, using a Stats Canada Crime Severity Index, Maclean's magazine's "Canada's Most Dangerous Places 2018" places it in the third spot (behind North Battleford, SK and Thompson, MB), and labels Saskatchewan as being "the most crime-plagued province".[5]

On Treaty 6 Territory, Prince Albert is described as a multicultural city with indigenous roots, and has been noted to have the highest proportion (41%) of aboriginal people in a Canadian city (although this stat overlooked Iqaluit).[6] But stats and studies do not tell the whole story. They provide glimpses of a selected situation. While there is largely an "us vs. them" attitude in the area, Prince Albert is known this way due to people focusing on stories of extreme events instead of daily life. One of my stories is that I was jumped and beaten by a gang just outside my best friend's house at the age of 16, leaving me scarred.

After personally experiencing the undesirable situation in Prince Albert, I became more aware of the realities of my community. As I learn more over time, opening myself to other views, my own opinions have changed. These are continually evolving in the same way that the healing process is never ending. But in order to have a greater understanding, we have to be aware that we all have biases (subconsciously or not), and therefore acknowledge them.[7] I have tried to keep mine in check throughout this work, but nevertheless, it should be critically read.

Stating the Issue

Looking at data there are drastic disparities and health inequalities between Saskatchewan's north and south. Additionally, the north is systematically ranked as one of Canada's most underprivileged regions.[8] The vast majority of northern Saskatchewan's population is aboriginal identifying, leading to the conclusion that the underlying issue is colonization. This conclusion is supported by the fact that racialized and socially oppressed groups are found to be systematically disadvantaged, contributing to First Nations and Métis having a life expectancy three to six years shorter than the average Canadian.[9]

Aboriginal Population
by Health Region

< 20%
20 - 40%
40 - 60%
60 - 80%
80% <

N
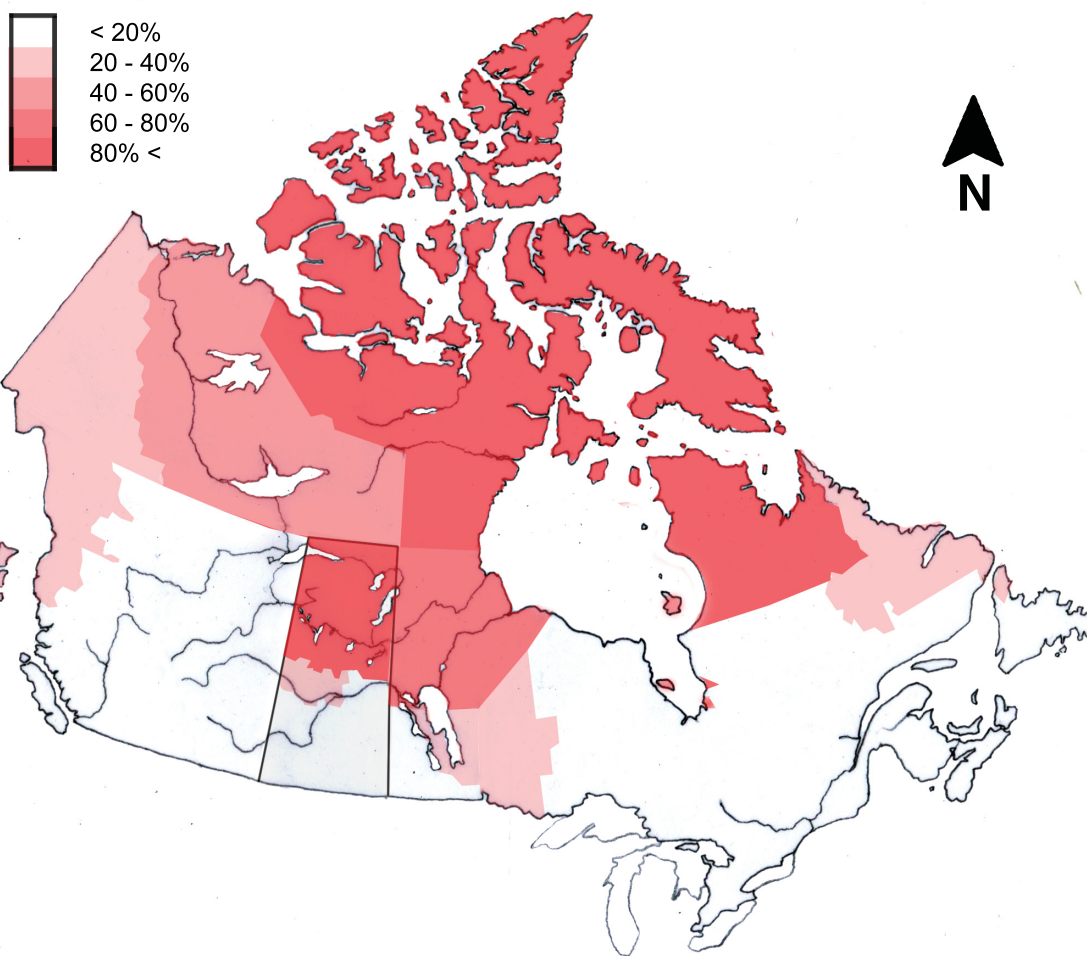
Saskatchewan's population divide; base map from "Community Characteristics: Population Profile. Northern Saskatchewan Health Indicators. Aug 2016. Using 2011 Stats Canada Data

After studying First Nations health in Saskatchewan, Health Canada stated, "As culture is a critical component of one's identity, the loss of culture can adversely affect physical and mental well-being resulting in depression, substance abuse and suicide."[10]

Deaths in Northern Saskatchewan

23.4% of deaths were result of "injury" in North Sask. Population

5.9% of deaths in North Sask. due to **SUICIDE**
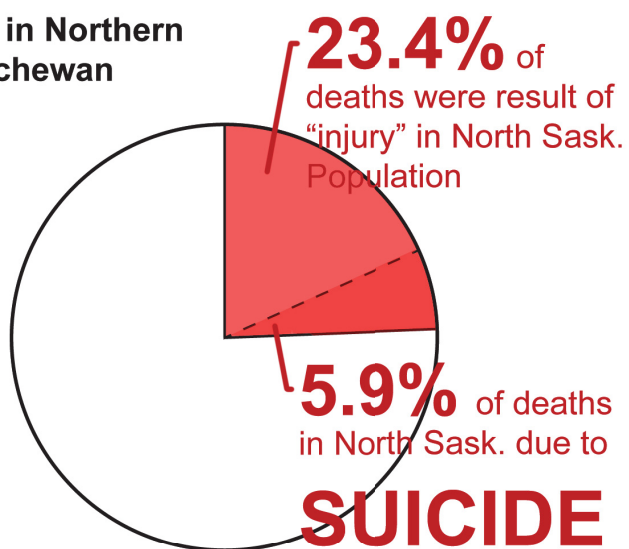
Deaths in the Province of Saskatchewan

6.4% of deaths were result of "injury" in Total Sask. Population
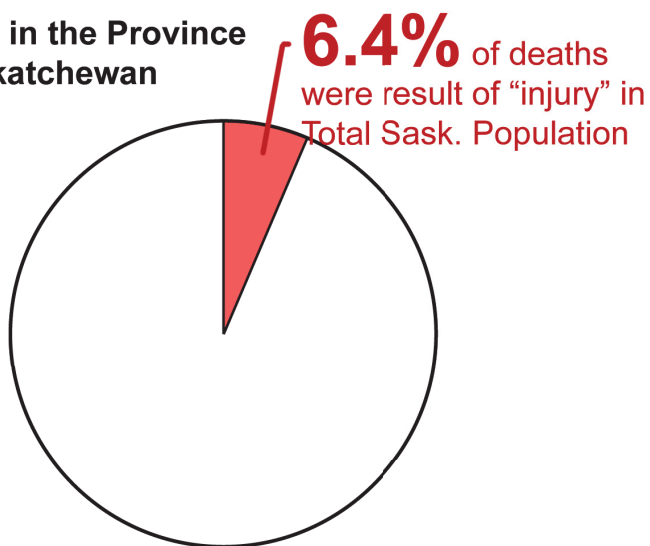
Causes of death in Saskatchewan; data from Johnson, *Firewater: How Alcohol is Killing My People (And Yours)*

In her lecture "Health Equity, Race and Medicine", Dr. Onye Nnorom used an analogy of a healthy forest and sick forest (many trees still do well) when describing using a population health lens.[11] This is something that is very relatable to northern Saskatchewan, as Johnson notes in *Firewater*, that really the substance abuse problem applies to only a portion of the population, but it is affecting whole communities. However, he also declares, "We cannot heal the individual without healing the community."[12]

Saskatchewan Provincial Health Council notes that determinants of health are not in isolation from one another, yet their diagram still comes off as being individual factors. The Web of Being diagram used for Indigenous Peoples by Canadian UNICEF is perhaps more appropriate, as it sees all factors in relation to one another, and places children, families, and communities at the centre. Nevertheless, both include the built environment (which is a result of the social environment) as a determining factor of health. Therefore, a holistic view is required to return the population's well-being, and I believe that architecture can be used to help in healing these communities.
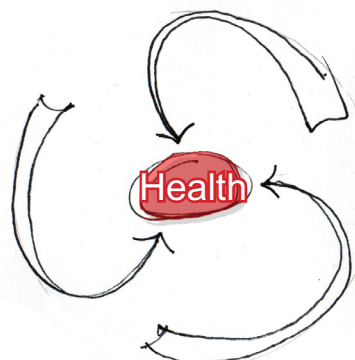
First Nations-specific determinants of health, proposed by National Aboriginal Health Organization:

- Colonization
- Globalization
- Migration
- Cultural Continuity
- Access
- Territory
- Poverty
- Self-determination

Determinants of health and web of being diagrams. Adapted from: Northern Saskatchewan Health Indicators Report 2011 (Population Health Unit 2011).

In an essay subtitled "Architecture as War", the architect Anthony Ward defines social architecture as being the practice of using architecture as an instrument for progressive social change, a way to increase dignity, reduce suffering, and bring equality to the built environment.[13] He continues by saying that historically, architecture has supported those in power at the expense of the disadvantaged others, and therefore, social architecture seeks to remove these forces of oppression and domination.[14] Additionally, in *Design with Nature,* Ian McHarg notes, "Medicine must be more concerned with creating the environment of health than with therapy alone."[15] The current built environment in northern Saskatchewan is sick. The architecture has, and is, playing a role in colonizing and in controlling indigenous populations. So how can architecture become focused on rebuilding trust, empowering communities, and healing the effects of colonization?

To begin, we cannot treat everyone equally and resolve the issues, as in order for it to be truly fair, everyone needs to be on level ground. This is not the case as society has dug holes for certain groups of people. Therefore, equity is required, in that it provides everyone what they need to succeed. Looking at the First Nations-specific determinants of health, architecture can be used as a tool to address these issues, but it will require good governance and action by the inhabitants to resolve them.

Historical Context

History is just stories we tell of the past, and their content is selectively chosen. Often they focus too heavily on famous men and events.[16] However, the point of telling these stories of historical context is to say this place has had a significant value for thousands of years. Once Europeans arrived in North America and began to establish themselves, this area of the country had a profound impact on the shaping of what is called Canada. Harold R. Johnson makes a point that stories can change, and are continually written, such as the story of our country.[17] This is important to note, because an understanding of the processes that caused these inequalities and the current situation is required as a foundation for the work, before beginning the design and writing a new story.

Water and Land

Thomas King emphasizes the significance of the water to First Nations stories in his fictional work *Green Grass, Running Water.* The book both begins and ends with water. The land that is now Saskatchewan had been under a shallow sea for millions of years; and the water only retreated some 65 million years ago as the dinosaurs became extinct.[18] By the time humans came to this North American land, Saskatchewan, and much of Canada, was under glaciers. As the climate warmed, these glaciers left fertile soils in the south, and scraped the Precambrian rock in the north to create the roughly 100,000 lakes in the province. The receding of the glaciers formed the land and waterways seen today.
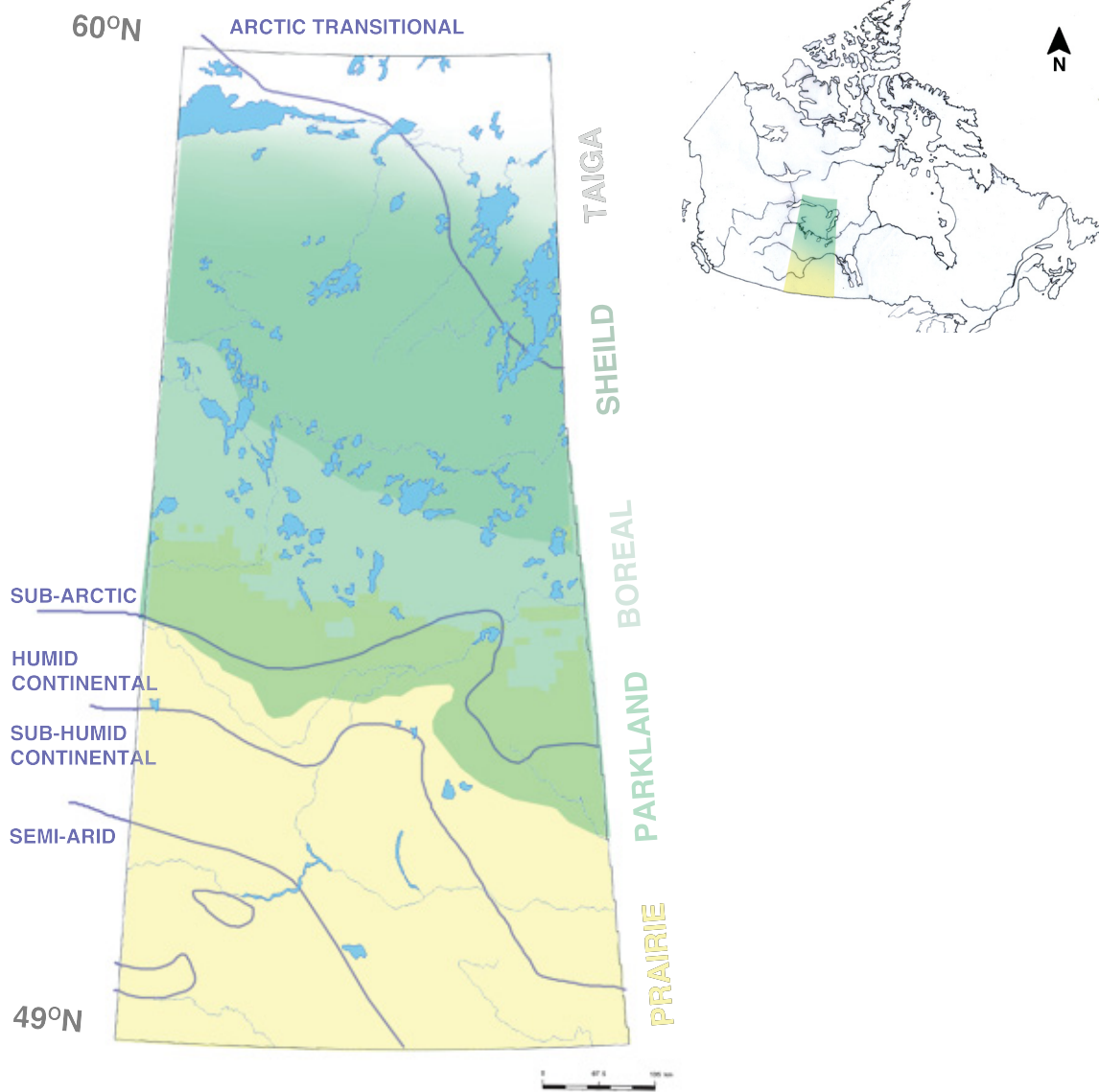
The land and water of Saskatchewan with latitude and climate.

To truly experience the land, one must understand it. The landscape architect Gunther Vogt states it is "unbelievably impressive when you can see this passage of time [ice ages] and become aware of the enormous scale on which the world has changed" and that having a deeper understanding of landscape is when the true beauty can be seen.[19] While tracing the lakes of northern Saskatchewan, the directionality of the retreating glaciers is revealed. The biomes that make up the province also show the results, shifting from the prairie parkland to the boreal forest and Canadian Shield. The subarctic climate of the north fluctuates between hot summers and cold winters. The vegetation in each region differentiates what soil conditions lie beneath. The trees of the boreal forest help to tell the high ground from the low ground, the muskegs, the rocks, the sandy soil.

The inhabitants of the land are never far from the water. Their gathering locations are in the valleys and banks of the rivers or along the shores of lakes. Those in the more arid prairies knew the beaver and their dams were a way to safeguard against drought.[20] The lakes and rivers carved out of the land also served to aid the movement of the first peoples. The name Saskatchewan is of Cree origin, meaning "swiftly flowing river". The waterways were the lifeblood of the continent, serving as transportation and trade networks.
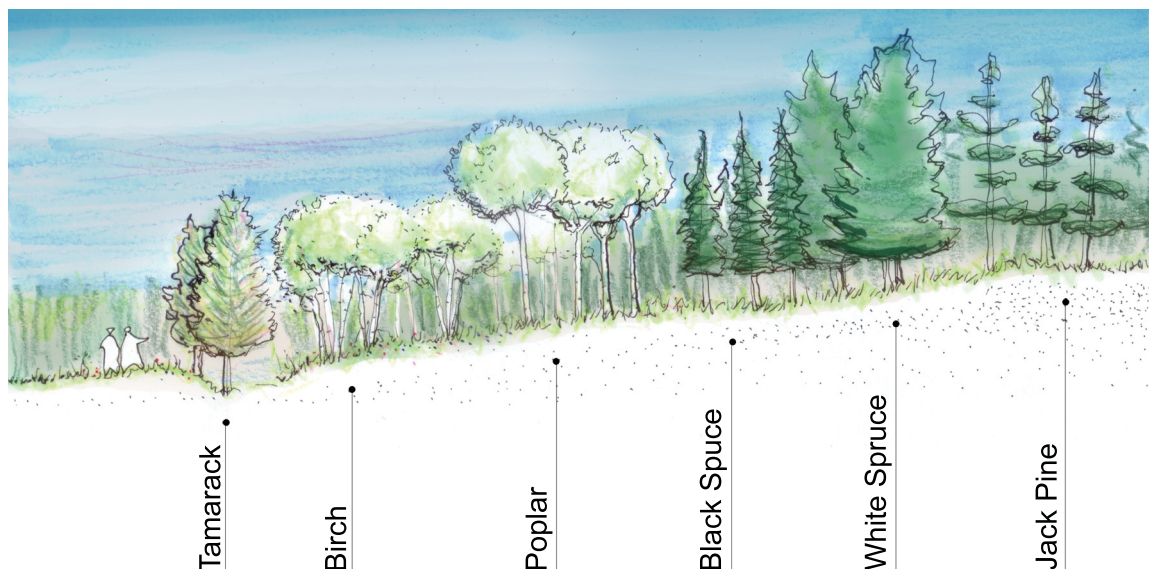
Tree types commonly found in the boreal forest of Saskatchewan.

Indigenous Peoples

In northern Saskatchewan, the two main indigenous groups are the Cree and Dene. Their ancestors have lived along the river systems for thousands of years. The inhabitants followed the last glacier 'Wisconsin' north some 10,000 years ago, and their artefacts, dated to about 8,000 years ago, can be found as far north as Buffalo Narrows.[21] Ancient red ochre pictographs can be seen along the eastern portion of the waterway called Missinippi by the Cree, now referred to in English as the Churchill River. The northwest portion of this river was territory disputed between the Cree and Dene peoples who came from the northern Athabasca region. The territory of the semi-nomadic Dene was most of the sub-Arctic northwest as they would follow the caribou populations. These two Aboriginal cultures came into contact with one another in northwest Saskatchewan because their river networks met in this region: one waterway leading to the Hudson Bay, the other to the Arctic Ocean.

The Aboriginal way of life was intrinsically linked to nature. Both Missinippi and Desnethe', the Dene name for the river, roughly mean "big river". Their descriptive names provide insight to the waterway's importance. In the book *The Inconvenient Indian,* King states: "Land has always been a defining element of Aboriginal culture. Land contains the languages, the stories, and the histories of a people. It provides water, air, shelter, and food. Land participates in the ceremonies and the songs. And land is home." [22] He then goes on to say that today, most of the people who came to North America just see land as a commodity, something to be exploited.[23]

Many people are coming to terms with the need to live more sustainably on this earth. Since the term "sustainable" and variations of the word are often misused, it is important to define it for this work. Sustainable development is defined in the 1987 Brundtland Report "Our Common Future" as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." [24] There is much to learn from the Indigenous Peoples of Canada, as people attempt to live more sustainably on this land.
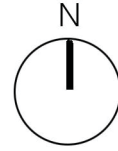
Indigenous rock paintings near Stanley Mission, along the Desnethe/ Missinippi/Churchill River.
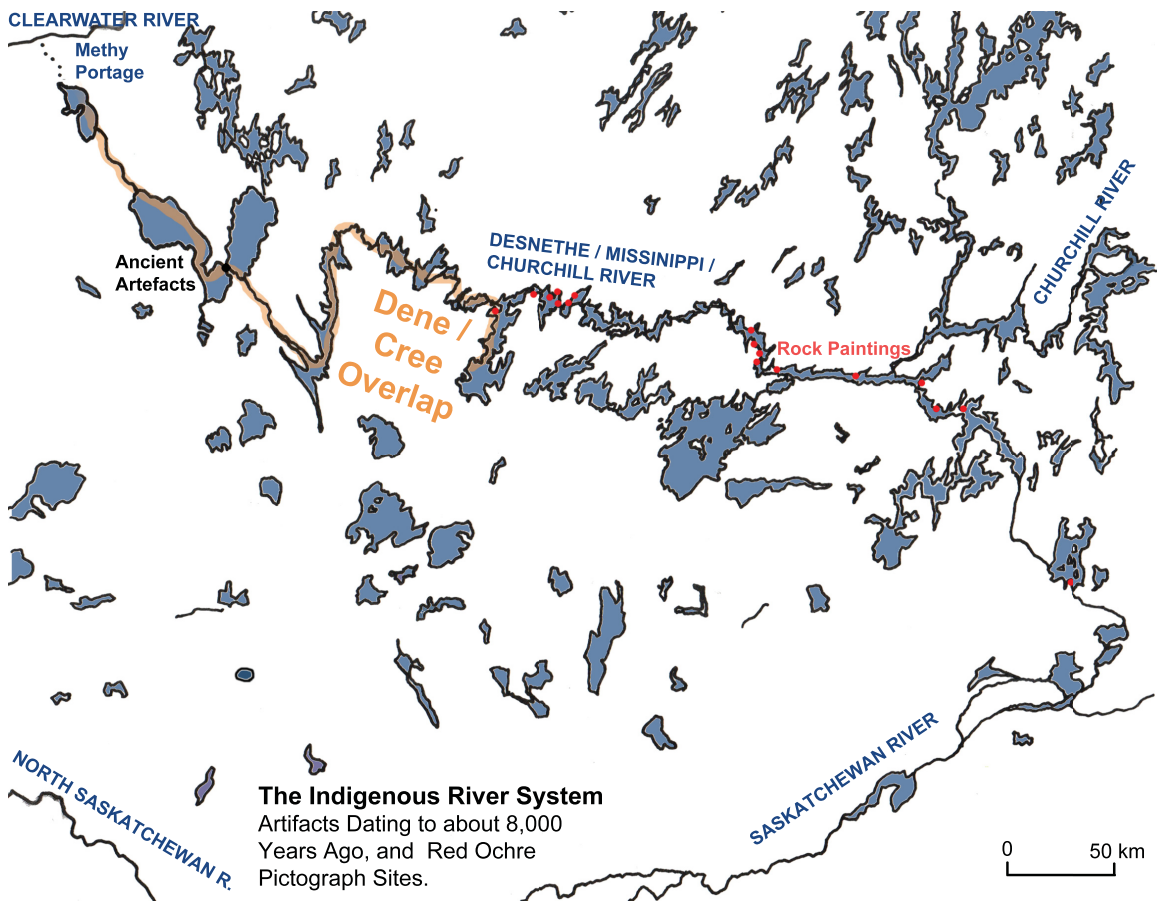
The sites of Indigenous Peoples' artefacts along the Desnethe/ Missinippi/ Churchill River System.

Fur Trade

It did not take long for the Europeans who came to North America to begin extracting resources from the land. In particular, beaver pelts from the northwest were highly sought after, and by the mid-1700s the Europeans were in Saskatchewan. By using the waterways, Canadiens from Montreal began to penetrate into the north, making it all the way to Fort Chipewyan on the western edge of Lake Athabasca. This transportation network came up past Cumberland House (Saskatchewan's first European settlement and the first HBC inland post from 1774) and traveled along the Churchill River and past the fur trade hub, Île-à-la-Crosse, where a post was established in 1776, making it the province's second oldest continuous European settlement. The journeys of many of these voyageurs were aided by the native inhabitants; many of the Canadiens would winter with their hosts, join their communities, and by "mixing", start Métis settlements.

These Canadiens, who mostly worked for the North West Company (NWC), had largely cut off the trade from the competition. Therefore, the Hudson Bay Company (HBC), which had laid claim to what was known as Rupert's Land (the Hudson Bay watershed) and had been waiting at their posts at the mouth of the rivers, began to send men inland. These HBC employees were largely made up of men from the Orkney Isles in the north of Scotland; they too began to be integrated into these Saskatchewan communities born of the fur trade. The two major companies competed with one another along the Churchill River and into Athabasca, placing posts along the waterway. These trading posts drew the aboriginal inhabitants to them, altering their life styles. The Dene began to travel down the Churchill River to compete with the Cree for trade.

Eventually, the HBC had a monopoly on the fur trade because it had a geographical advantage over the NWC, who had to travel the vast distance back to Montreal. However, in the end, the HBC decided to step away from their origin and liquidated their fur trade assets. The authors of the book *Canoeing the Churchill* sum up the abrupt end of the HBC's role: "The decision to abandon the fur trade was, one can reasonably guess, made by people who had never looked forward to freeze-up, graded a pelt, or heard a word of Cree. In the modern HBC, a company focused on department store retailing, the fur trade had become a quaint anachronism."[25] However, the HBC's Northern Stores are still seen in these communities, and furs are still traded.

About 250 years ago

60ºN

ATHABASCA

Fort Chipewyan

Methy Portage
La Loche

CLEARWATER

DESNETHE/ MISSINIPPI/ CHURCHILL

Ile-a-la-Crosse

Cumberland House

SASKATCHEWAN

49ºN

Waterways as highways across the country.

The waterways used by the Aboriginal peoples and fur traders to obtain the furs in the northwest were the original highways across the country. Settlements were formed along them, with the Methy Portage, just north of La Loche, being the threshold between the Hudson Bay watershed and waterways to the Arctic and Pacific. Upon crossing, a network that reached from sea to sea to sea was created.

HBC Post, Portage La Loche, 1937; photograph by Sydney Augustus Keignley, from Keignley, Fossett Jones, and Riddle, *Trader, Tripper, Trapper: The Life of a Bay Man.*
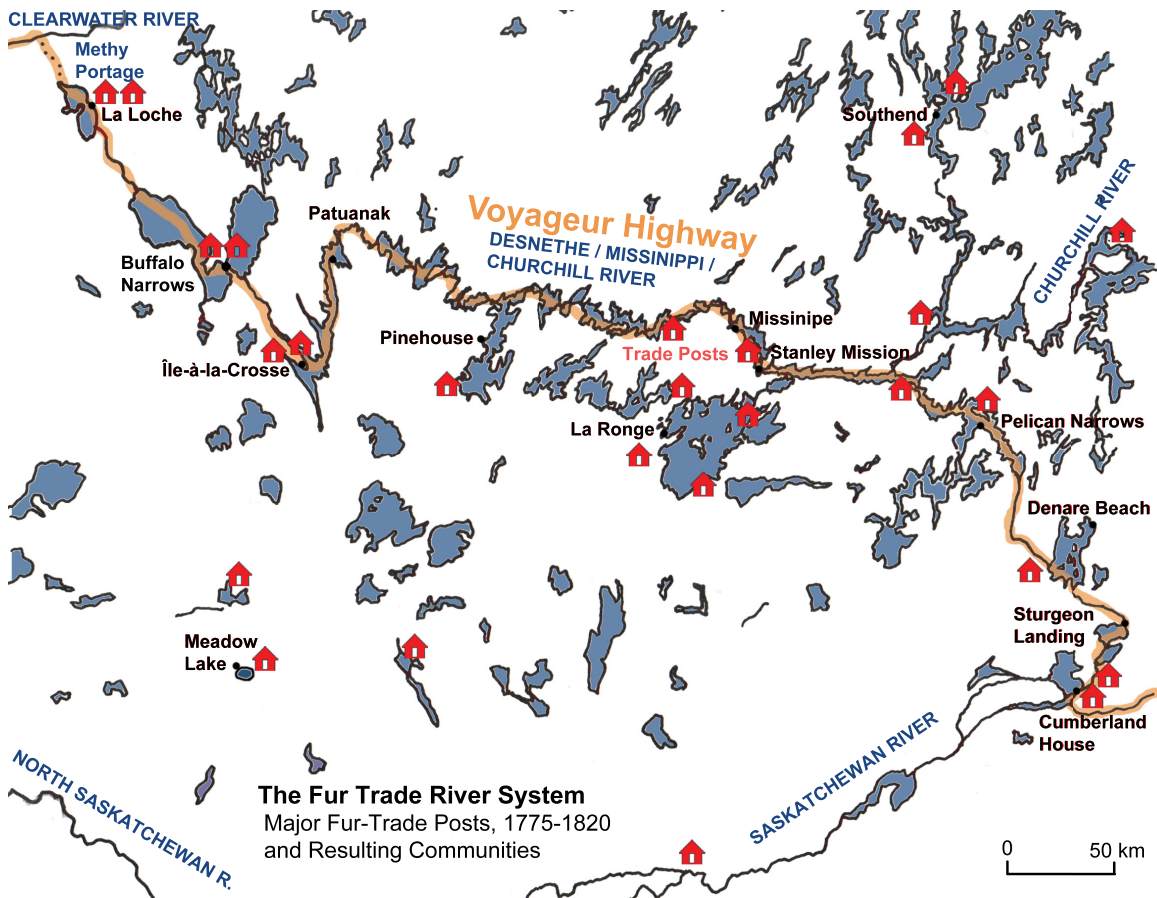
The sites of the fur trade along the Desnethe/ Missinippi/ Churchill River System.

Explorers

During the fur trade there were also European explorers who made their way west, learning about and mapping North America. They were discovering the continent for Europeans, and the Churchill River was instrumental in this endeavour. While the infamous trader Peter Pond became the first European to cross the Methy Portage just north of La Loche, it was Alexander Mackenzie who made his way to both the Arctic and Pacific Oceans from here. Another explorer to use the route was the British Captain John Franklin, known for his famously fatal attempt to find the Northwest Passage by sea, whose first two expeditions to the Arctic traversed the Churchill River in Saskatchewan. While these men used the waterways for travel, trade, and exploration, the next wave of Europeans to come to this land planned to put down roots in the southern prairies.

Voyageur Highway from Montreal to Fort Chipewyan

Mackenzie's Two Travels to the Arctic (1789) and Pacific (1793)

Franklin's First Two Expeditions to Arctic Ocean were from York Factory
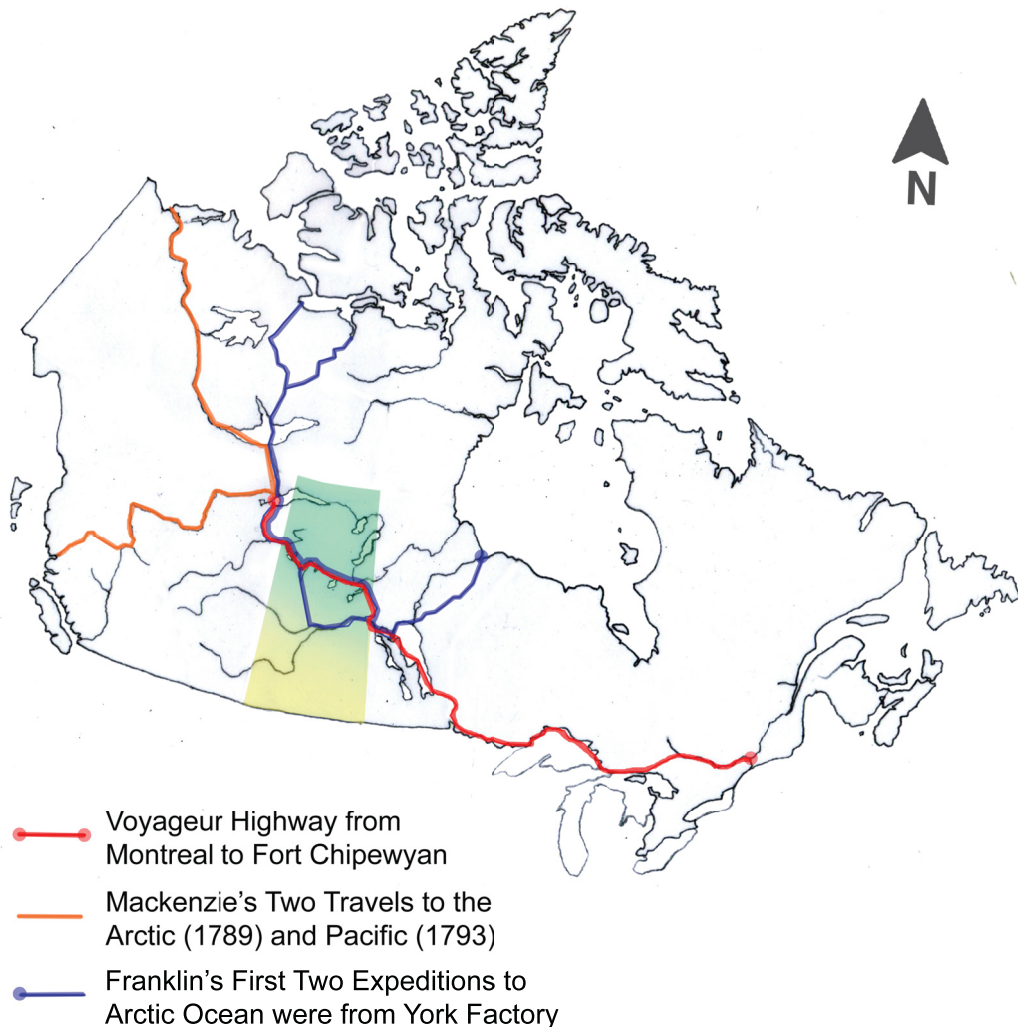
The voyageur highway and famous exploration on the Desnethe/ Missinippi/ Churchill River.
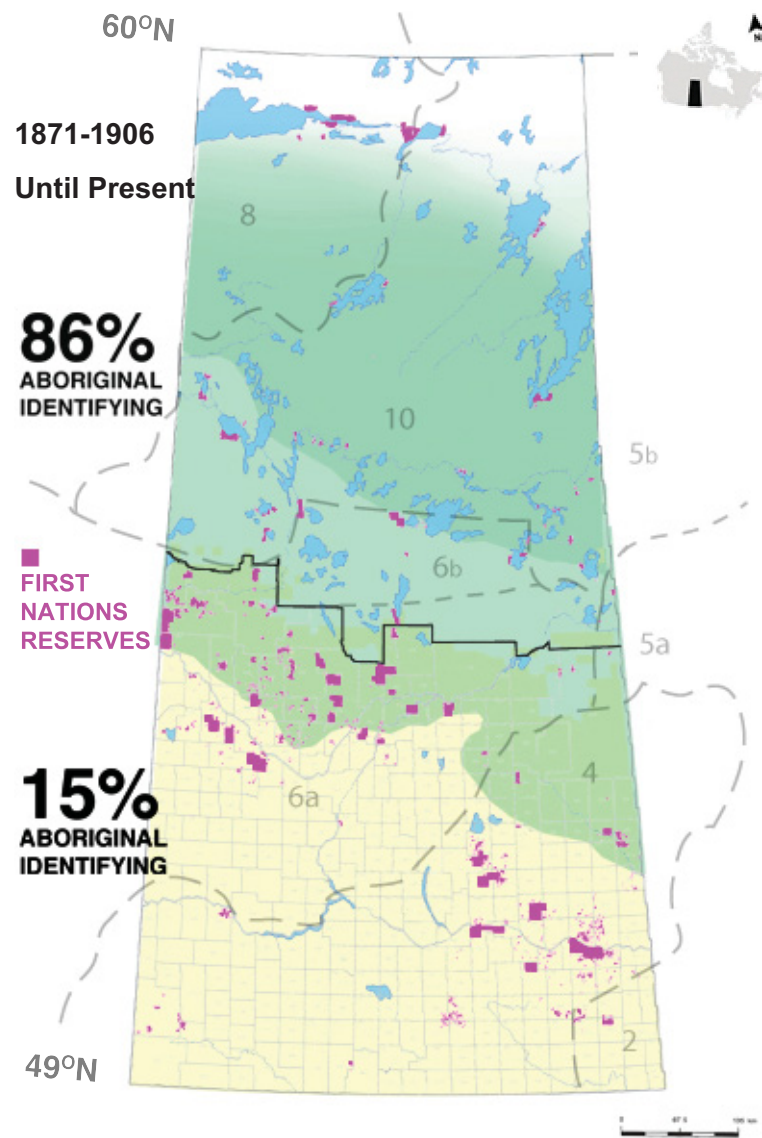
Treaties, reserves, and population shift.

The land was divided up in the Numbered Treaties to allow the Canadian government to extract resources, first from the south and then from the north. The reserve land allocated for the First Nations peoples was miniscule compared to their traditional range. The demographic shift occurred with the vast amount of colonists settling in the south, while leaving the north as mostly aboriginal.

60°N

1877-1920

Until Present

CPR

49°N
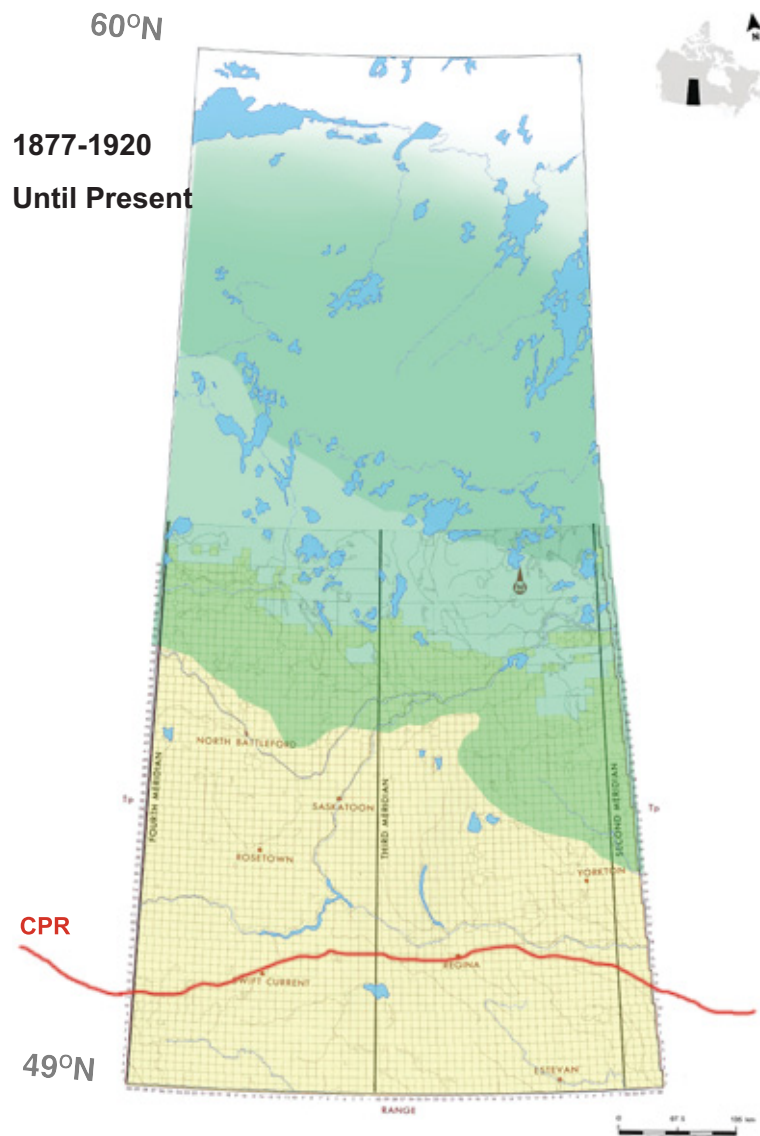
Superimposed Dominion Land Survey; Grid Image from: Robert B. McKercher and Bertram Wolfe, *Understanding Western Canada's Dominion Land Survey System*. Saskatoon, UofS, 1992.

The Dominion of Canada applied a grid to the prairies in order to divide and conquer, and thereby settle them. With the implementation of the Canadian Pacific Railway, Europeans arrived in the prairies at a rapid rate. The northern half of the province was ignored as its forest, rocks, and lakes were of little value to the agricultural vision of the Canadian government.

Settlers

With the implementation of the railway, settlers were shipped west and given land for the country of Canada to gain control of the area and grow. Establishment of centres to ship produce from farms was done without much thought of place, naming towns on the rail line alphabetically. This is because the settlement was so rapid that traditional naming of places, which tends to be descriptive of the land or of an event that occurred there, were ignored. This is in stark contrast to the native relationship with the land, where experiences and meaning have been built up for generations. As Yi-Fu Tuan states of Native Americans in *Space and Place: The Perspective of Experience,* "Landscape is personal and tribal history made visible"[26], and "The whole countryside is his family tree."[27] It should be noted that the majority of places within Canada have native names that were largely removed by the settlement of its lands.

With the opening of the west to European settlement, the Dominion of Canada's policy was to starve natives onto reserve land and use food to control the populations. The inhumane actions of John A. Macdonald are explained in James William Daschuk's 2013 book *Clearing the Plains: Disease, Politics of Starvation, and the Loss of Aboriginal Life.* From his writings, we learn that the horrible conditions and lack of food caused disease such as tuberculosis to be a prominent killer in First Nations communities. Starvation led to some women turning to prostitution as a means to feed their families, while others were sexually abused by the Dominion agents.

Eventually First Nations and Métis people's resistance built up to become one of those historical events that are told in mainstream Canadian society, known as the North-West Rebellion. In 1885, the Métis, led by Louis Riel and Gabriel Dumont, took a stand at Duck Lake and Batoche. Near Frog Lake, nine men who were personally implicated in the abuse and cruelty of natives were killed in an uprising which caused the Dominion to retaliate severely: "a Cree fighter attempting to surrender was blown to pieces while waving a white flag."[28] Children were brought out of school to see the hanging of eight of their leaders in "a public spectacle."[29] Even a man on his deathbed from tuberculosis, who eluded authorities, was arrested, carried up to the noose, and placed on a chair for his execution.[30] Riel was also hanged, and the bullet holes left in the church at Batoche as a reminder for future generations.

While the conflict occurred predominantly south of the communities along the Churchill River, we learn from an Elder in La Loche, Jonas Clarke, that many people fled north to escape the fighting.[31] Clarke also referred to the 1885 Rebellion as a war, while many Métis refer to it as a resistance. The first Prime Minister's indifference to the health and well-being of the inhabitants of Manitoba and Saskatchewan led to a major population shift and one of Canada's historic low points.

Prime Ministers
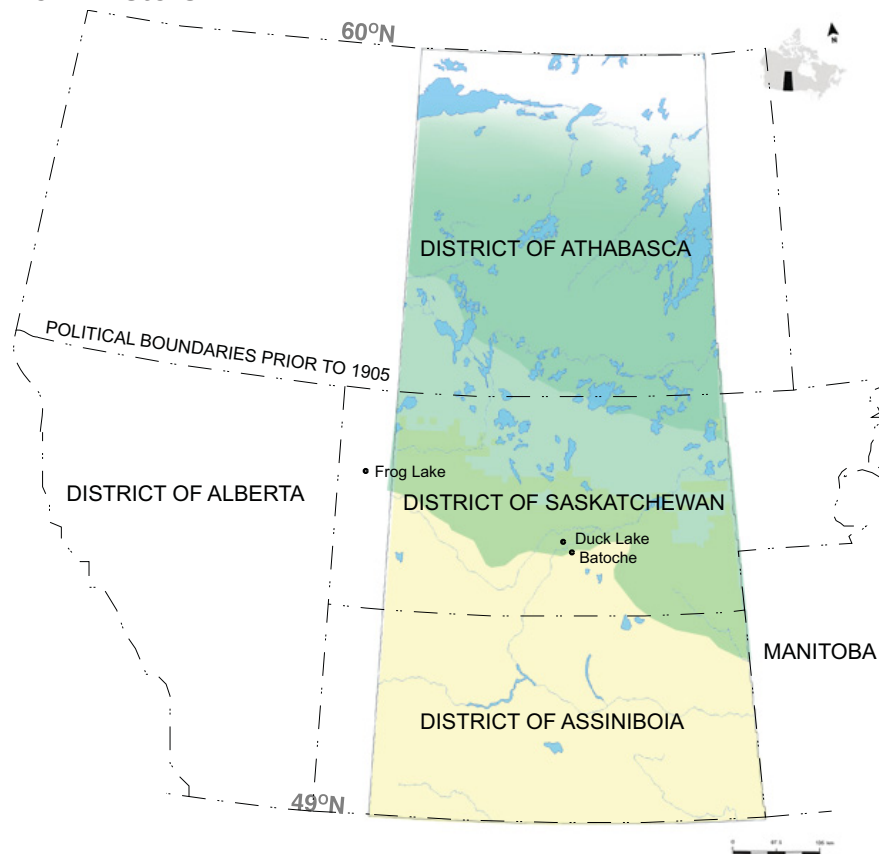
Noted North-West Rebellion sites and the political boundaries prior to 1905.

This region of the country has had three prime ministers represent it. While Wilfrid Laurier and Mackenzie King did not live there and their representation was fleeting, John Diefenbaker was a resident and champion for the area. 'Dief the Chief,' as he was nicknamed, worked to improve relations between the Canadian government and Aboriginal peoples. Under Diefenbaker, First Nations received the right to vote federally (without giving up their status) in 1960, making them the last people to have political franchise in Canada.

Mid-Canada Corridor

Another one of Diefenbaker's talking points was northern development as national development, calling it the New Frontier Policy. The government was to aid in the construction of airstrips and roads in the north; however, the underlying condition was the opening of mines and resource development. About ten years later, a man named Richard Rohmer put together a proposal for the development of what he called the Mid-Canada Corridor, the area that was north of the general Canadian population, yet not far enough north to be seen as a part of the Canadian identity. The Mid-Canada Corridor was the overlooked middle zone that roughly follows the boreal forest. In 2002 the northern Saskatchewan Liberal MP Rick Laliberte put the revived concept in front of Prime Minister Jean Chrétien, "with the aim of weaving the country's forgotten midland into the larger national fabric."[32] However, it was not pursued and development has since been what the architect John Van Nostrand called "ad-hoc", noting Saskatchewan's potash and uranium extractions, while many people in northern communities live in third world conditions and constantly struggle despite the vast opportunities around them.[33] Still, the proposal is alive, currently being spearheaded (with Rohmer's blessing) by Van Nostrand. However, the proposal was, and is, largely Eurocentric and does not look to the indigenous ways of life. Furthermore, it still has the underlying goal of being mainly about resource extraction, something that goes against the inhabitants' traditional way of life.
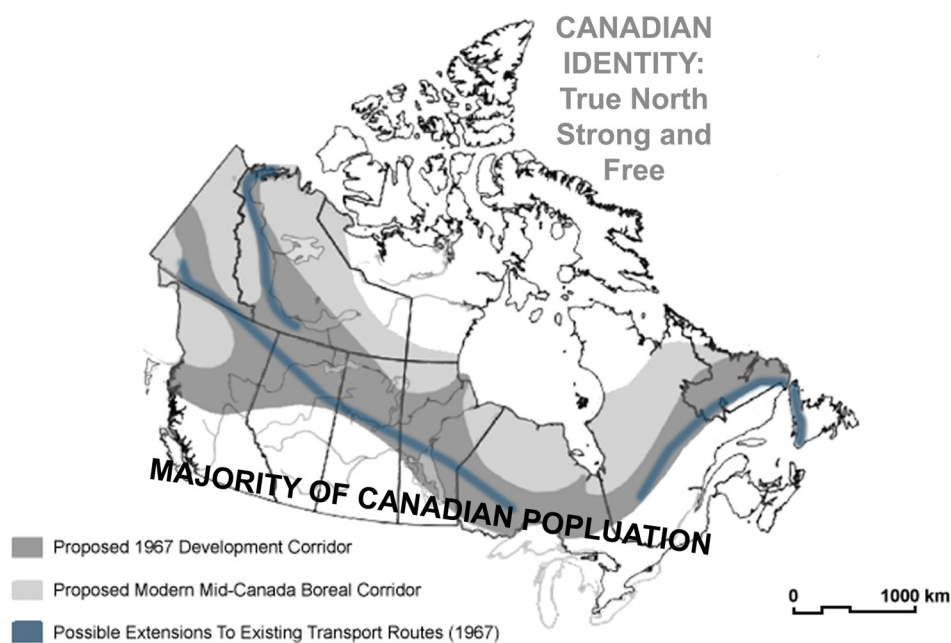
Mid-Canada Corridor; base map from McCartney, "Re-Thinking Housing".

60°N

2017-
Present

Cold Lake
Military Base

Frog Lake

Prince Albert

Batoche /
Duck Lake

49°N
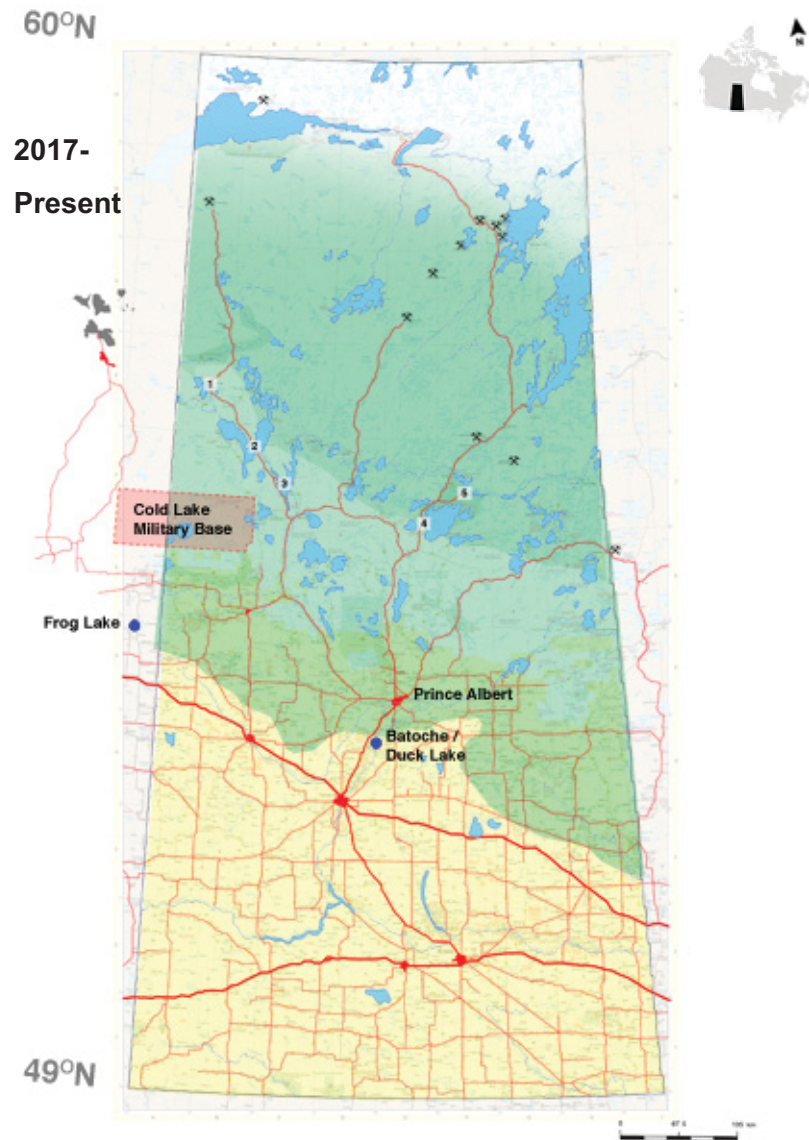
Resource extraction from the north to support the infrastructure in the south.

Economically, resources are extracted from the north to support the infrastructure in the south. The high proportion of roads in the south have to be maintained, while the northern roads extend past the communities and end at mines. Systems of control are placed at the transition between the north and south in the forms of a large military base, the federal penitentiary, and multiple jails in Prince Albert. Perhaps without coincidence, their locations are near the major sites of the 1885 Northwest Rebellion.

Vernacular vs. Political Landscapes

The way people move today among the Desnethé/ Missinippi/ Churchill River system communities is very different, yet the water is still important to many people's daily lives. Being in the Mid-Canada Corridor, it is disturbing that the water is somewhat ignored in the proposed transport routes, despite water being noted as the most efficient means of movement.[34] This brings to mind J.B. Jackson's 1984 book *Discovering the Vernacular Landscape*, where he talks of the difference between the political and vernacular landscapes. The former would be the roads reaching north to assert the larger centres in the south as dominant, while the latter being the network of communities connected along the river.

Many of these vernacular ways are being lost due to the effects of colonization, reducing the world's diversity and resilience. The author of *In Praise of Shadows*, Jun'ichirō Tanizaki, lamented about the loss of culture due to globalization; suggesting that if western culture had not forced itself on the world, that each culture would have developed and created "tools of [their] own culture, suited to [them]."[35] British architect and historian Allan Colquhoun suggested that all societies have a core essence linked to their location that needs to be preserved.[36]

However, since these historic events occurred, the question is how to best mitigate the damages. Gavin Renwick, from the University of Alberta and the Canada Research Chair in Design Studies, has worked with Dene in the Northwest Territories as a cultural intermediary to facilitate a better built environment for the First Nations.[37] "Renwick believes truly effective and sustainable design must be generated from the specific needs and values of local communities."[38] Dene Elders suggest it is important to merge traditions with contemporary ways, and local with global, "strong like two people", and "modern in your own language."[39] These sayings can be applied to Saskatchewan and this thesis should not only look to local materials and ways of building, but also to other technologies and techniques that could be introduced to enhance local identities. Therefore, in addition to the river and forest, the community assets along the Saskatchewan voyageur highway are diagrammed as a way to understand the network and to find opportunities.

Tamarack

Found in low lying areas that are swampy/ muskegs.

A type of Larch that loses its needles in winter after they turn yellow-orange.

Possible medicinal use of needles.

Has anti-rot properties, useful for exterior applications.

Used for snowshoes.

White Birch

Found in low land that is occasionally flooded.

Grows in bunches, with several trees sprouting from the same spot.

A popular hardwood for furniture, veneers, and finishes.
Bark is used for making canoes, ornamentaion, and starting fires.

Saskatchewan's tree.

Poplar

Found in moist soils and therefore close to water due to shallow roots.

Single, fast growing, straight trunk.

Possible medicinal uses of bark and leaf.

Leaves used for insulation.

Black Spruce

Found between moist and shallow soils.

Smaller, skinnier spruce tree, often with a cluster of branches at the top.

Wood has a high strength to weight ratio.

Used for ribs and planking in canoes.

Commonly turned into the standardized SPF lumber or pulp.

White Spruce

Found on well draining fertile soil.

Larger spruce trees with branches that stretch out.

Spruce root can be harvested for lacing to tie birch bark canoes, or weaved together to make baskets, pots, and kettles. Spruce gum is used as a waterproofing sealer.
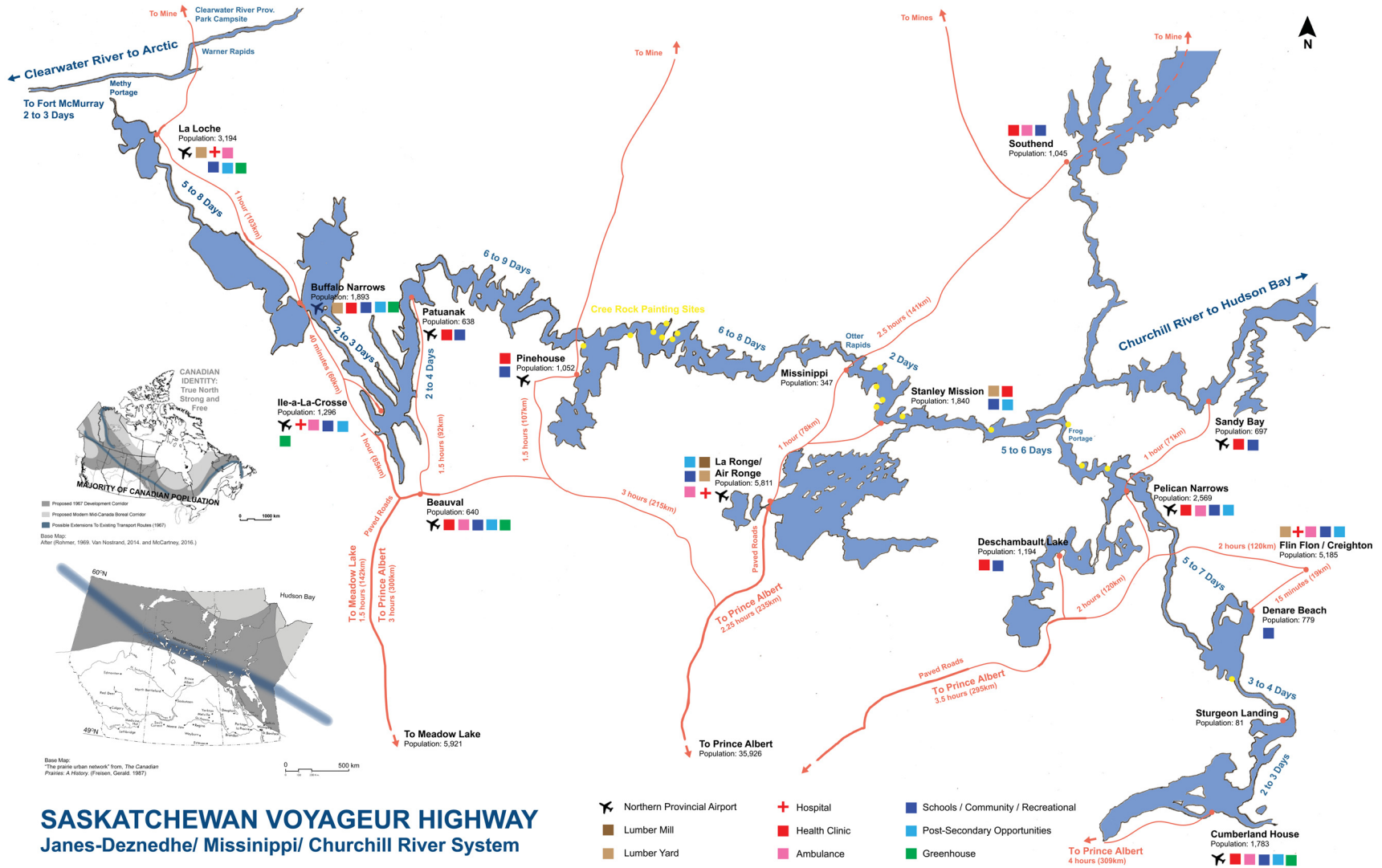
Jack Pine

Found on high ground, sandy soils.

Branches extend in clusters around the tree.

While the wood does not have great compressive strength, it is relatively strong in bending.

Commonly turned into the standardized SPF lumber or pulp.

Predominant tree types found in northern Saskatchewan, and their possible uses.

SASKATCHEWAN VOYAGEUR HIGHWAY
Janes-Deznedhe/ Missinippi/ Churchill River System

Northern Saskatchewan community network diagram.

Legend:
- ✈ Northern Provincial Airport
- ◼ Lumber Mill
- ◼ Lumber Yard
- ✚ Hospital
- ◼ Health Clinic
- ◼ Ambulance
- ◼ Schools / Community / Recreational
- ◼ Post-Secondary Opportunities
- ◼ Greenhouse

Communities / Labels:

Clearwater River to Arctic
To Mine
Clearwater River Prov. Park Campsite
Warner Rapids
Methy Portage
To Fort McMurray 2 to 3 Days

La Loche
Population: 3,194

5 to 8 Days
1 hour (103km)

Buffalo Narrows
Population: 1,893

Patuanak
Population: 638

6 to 9 Days

2 to 3 Days
40 minutes (68km)

Pinehouse
Population: 1,052

Ile-a-La-Crosse
Population: 1,296

2 to 4 Days
1.5 hours (92km)

1.5 hours (107km)

1 hour (58km)

Cree Rock Painting Sites

Missinippi
Population: 347

Otter Rapids

6 to 8 Days

2.5 hours (141km)

2 Days

Stanley Mission
Population: 1,840

Churchill River to Hudson Bay

Southend
Population: 1,045

To Mines
To Mine
To Mine

Sandy Bay
Population: 697

Frog Portage

1 hour (71km)

Beauval
Population: 640

Paved Roads

To Meadow Lake
1.5 hours (142km)

To Prince Albert
3 hours (300km)

La Ronge/
Air Ronge
Population: 5,811

1 hour (78km)

3 hours (215km)

5 to 6 Days

Pelican Narrows
Population: 2,569

Deschambault Lake
Population: 1,194

Paved Roads

To Prince Albert
2.25 hours (235km)

2 hours (120km)

Flin Flon / Creighton
Population: 5,185

2 hours (120km)

5 to 7 Days

15 minutes (19km)

Denare Beach
Population: 779

3 to 4 Days

Paved Roads
To Prince Albert
3.5 hours (295km)

To Meadow Lake
Population: 5,921

To Prince Albert
Population: 35,926

Sturgeon Landing
Population: 81

2 to 3 Days

To Prince Albert
4 hours (309km)

Cumberland House
Population: 1,783

CANADIAN IDENTITY:
True North Strong and Free

MAJORITY OF CANADIAN POPULATION

- Proposed 1967 Development Corridor
- Proposed Modern Mid-Canada Boreal Corridor
- Possible Extensions To Existing Transport Routes (1967)

Base Map:
After (Rohmer, 1969, Van Nostrand, 2014. and McCartney, 2016.)

0   1000 km

60°N
49°N
Hudson Bay

Base Map:
"The prairie urban network" from, The Canadian
Prairies: A History. (Freisen, Gerald. 1987)

0   500 km

N

24

The Current State of Affairs

Luke Ryalls wanted to address the sense of placelessness in Saskatchewan's built environment in his 2014 master's thesis titled "Pieces of the Prairie: Informing New Architecture for a Saskatchewan Cultural Landscape." He is not alone. Colin Ripley, the architect spearheading the initiative for a school of architecture at the University of Saskatchewan, notes a lack of architects in the province and the cultural shift to focusing on the role of design: "This is not a great situation for the province either economically - with fees going to those firms in Toronto and Calgary - or in terms of identity, as it means that the province is literally being designed by people who don't live here."[40] This is exactly what has been happening to the aboriginal populations in the north for many years. People from the south design and for the most part construct the built environment in the north. They leave with the money when the jobs are done, and the northern communities are left with buildings that do not address their local and cultural needs.

There are some architects arguing for a local approach. Shelagh McCartney and a team from Ryerson University have been working with Nibinamik First Nation in Ontario to design their own homes. McCartney believes that by improving our everyday built environment, design will heal communities, and she tells her important story in a lecture, "Design of Everyday Places and Homes Can Heal Wounds."[41] At Dalhousie, Richard Kroeker has worked with Mi'kmaq Elders Albert and Murdena Marshall directly to collaborate on several projects and mentor architecture students. Frank Palermo has also been working with First Nations in Cape Breton and original community master planning for Wagmatcook in 2002 has now led to designing new homes that they will construct, reducing their dependence on others to maintain and renew their built environment.[42]

This movement towards independence has slowly been growing for many years, as a young aboriginal population are finding their voices. An article from June 28th 2017 was titled "Towards an Architecture of Métis Resistance" and looked to find a Métis vernacular.[43] Northern Saskatchewan communities are working hard at a grass roots level, building upon their long history of co-operatives. They are looking to revitalize cultural traditions, engage youth, reconnect the generations, contribute to environmental sustainability, and promote socio-cultural development within indigenous and non-indigenous economies, operating in rural, urban and remote communities throughout the province.[44]

Thesis Question

How can an architectural process enhance a connection between nature, cultures, and peoples in northern Saskatchewan by working with the resources at hand to help heal and empower?

Instead of building to be super durable, the architecture in northern Saskatchewan can be robust through a means of constructability. If built by community members, it would strengthen a sense of pride and identity, while allowing for the buildings to be maintained and repaired. An architecture that engages the people of a community by using local materials in a simple and expressive way will outlast that of another culture imported to be indestructible.

The ubiquitous round wood of the forests can be used to create structure; a column could be replaced by simply cutting a new tree. Plywood could be used in the vernacular ways, bent into place similar to the way one builds a skiff (the boats common to the area). Through a cyclical process of maintenance and renewal, the buildings can be renewed in the same way as a forest after a fire, and become more resilient over time.

Found building materials near Ile-a-la-Crosse.

Skiff on the shore of La Loche.

Black spruce trees after a forest fire.

The previous thoughts have precedent: the Ise Shrine in Japan is a Shinto temple that is disassembled and rebuilt every 20 years, allowing it to last for over a thousand. Haystack Mountain School of Arts and Crafts in the United States of America was built extremely cheaply, but because those who attended loved the school, it is continuously repaired, renewed, and redesigned. The complex of small buildings has lasted and thrived on the edge of the Atlantic Ocean for over 50 years.

In Saskatchewan, one of its most celebrated architects, Clifford Wiens, has had one of his significant works lost due to lack of maintenance. Silton Chapel was built in 1969, received the highest honours in Canada a year later, and has had plenty of praise since for its elemental design. A large roof floating over a depression at the edge of the valley of Last Mountain Lake, it provided shelter while enhancing its congregation's connection with place. The architect, when coming to terms with its demolition, described his work as being performance pieces enjoyed only for a short time.[45] Therefore, it is important to acknowledge that buildings are temporary, and question what happens to them, and the materials, after use.

If building becomes a cultural activity in the daily lives of people, with a holistic approach from planting and gathering materials to making connections, it would be sustainable, with knowledge and techniques passed down to the next generation. Through this process, architecture can be used to aid in healing communities affected by colonialism.
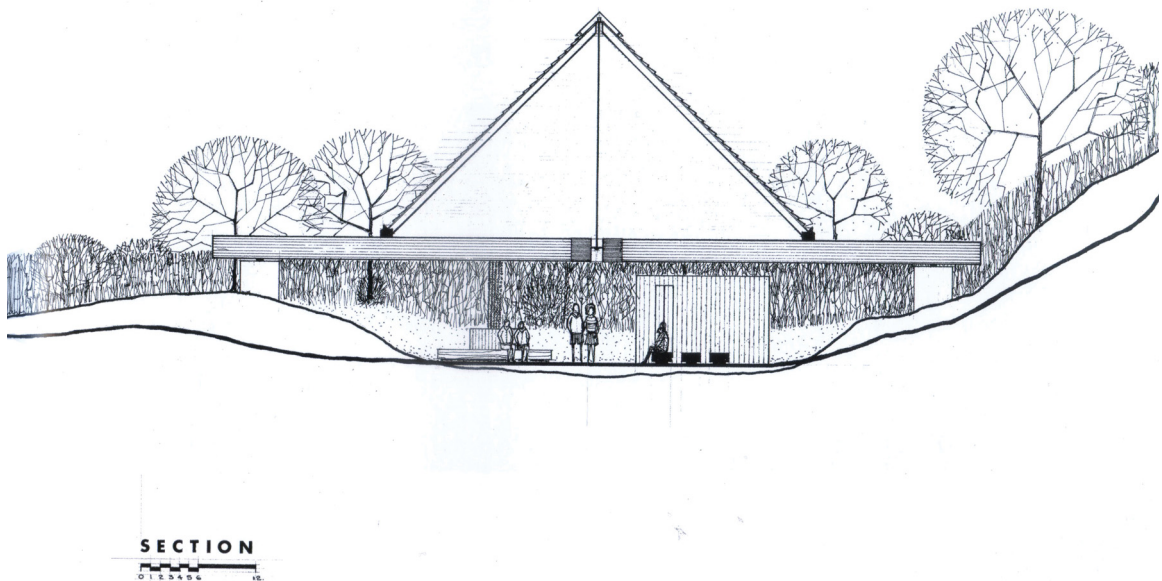
SECTION

Clifford Wiens, Silton Chapel Section; from Wiens, *Project by Project: Architectural Memoirs*.

Framing the Project

At the northwest end of the Churchill River system, the community of La Loche can be seen as a catalyst for the entire network's development because of the recent spread of greenhouses throughout the region and northern Saskatchewan's history of co-operatives such as the commercial fishing industry. These existing systems of economic constraints, environmental factors, program requirements, and cultural needs will shape the work presented in this document.

La Loche's geographic location, at the transition between watersheds to the Hudson Bay and the Arctic Ocean, has it closely linked to Fort McMurray, Alberta. The oil sands development there exploded the population of Fort McMurray, created jobs that generated enormous capital, and drew widespread recognition; however, it also brought detrimental health and environmental effects. La Loche is on the verge of similar development, but has a divide in the community as many people hunt, fish, and trap for a living. Furthermore, the community has a particularly wild reputation and tragic past due to colonization. In addition to the high suicide rate found throughout the region, La Loche suffered a school shooting in 2016. Residents have reached out and asked for help. This includes Mayor Robert St. Pierre, who was quoted in a news article: "Maybe we have the resources here, but we need to identify that resource. We need to be able to provide that employment, provide that structure, and with a lot of the services that we've acquired, pull them together. Have a framework. Have a plan." [46]

There is certainly a role for an architect to play in helping identify the resources at hand, as well as in formulating a plan of action for La Loche. To reduce the dependence on outsiders from the south, buildings in northern Saskatchewan need to shift from being imported objects to ones that are made by community members themselves. They have the raw resources on their lands, and the labour force to construct the works. Providing this much needed employment within communities would not only have socio-economic benefits but also increase people's pride.[47] Furthermore, active participation would create greater connectedness between community identity and built environment.[48] These relationships could be further strengthened through creating flexible spaces for programming such as community based youth organizations or healing lodge activities, both of which are called upon in the "Truth and Reconciliation Commission of Canada: Calls to Action" document.[49]

The building described in this thesis, called a "Healing Centre", is designed to be a community run structure open to everyone to find their role in the world to incorporate aboriginal values and traditions into their lives. Despite there being no medical facilities within, Healing Centre is an apt term as healing occurs in many different ways. The building takes a holistic approach, and looks to use cultural activities, education, and entrepreneurship to help improve the quality of life in the community through a co-operative movement. This type of centre should be distinguished from healing lodges, which use Aboriginal values and traditions to reincorporate offenders into society but are associated with Correctional Services Canada (CSC). Nine healing lodges, which have varying forms and programs, are run by CSC and located across the country, including three in Saskatchewan. The Healing Centre in La Loche is to have a unique form and program suited to its specific place.

The architect Thomas Fisher suggests that it is more ethical and environmentally responsible to build with what is on site, adapting designs to the location, rather than designing from afar and bringing the construction materials to the site.[50] In *Experiencing Architecture*, Rasmussen notes: "In older days the entire community took part in forming the dwellings and implements they used."[51] What an idyllic scene this paints. It brings to mind the medicine wheel in indigenous cultures, where everyone in the community has a role to play.

These societal roles will play out through time. As Juhani Pallasmaa notes, construction has a cyclical nature, with the maintenance and renewal of buildings being just as important as the initial construction.[52] The work is never done, just as healing is a long-term lifelong journey which has no particular beginning or end.[53] The building process is a cultural act that future generations can build upon, telling their own stories in their own way.

Focusing on La Loche

The northern village of La Loche has Dene origins and became a Métis settlement during the fur trade with the establishment of trading posts and a mission on the edge of the lake. In December 2017, the community declared its vision, stating: "The Northern Village of La Loche is a Dene-Métis community focused on assisting its people to become healthy productive community members through economic development and culture while protecting its natural resources."[54] With 62% of the population under the age of 29,[55] the community could become a driving force for change by promoting their unique culture. However, despite currently having a strong Dene identity, a study found that the use of the Denesuline language is on the decline among youth. This is extremely worrisome, as language is culture, and the La Loche area has the largest concentration of Athabaskan speaking people in Canada.

● Athabaskan Languages
(including Dene) 19,715 speakers
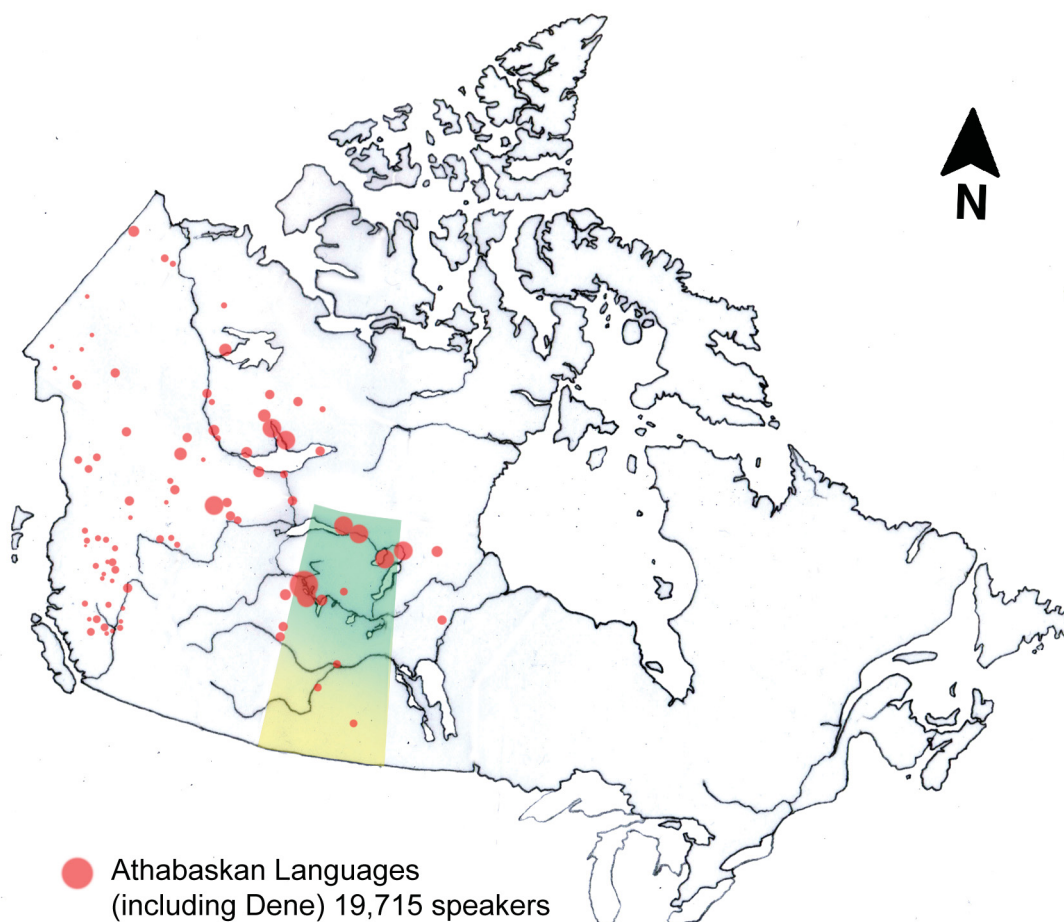
Map showing location and intensity of Athabaskan Languages in Canada;
data from Canadian Geographic, *Indigenous Languages of Canada.*
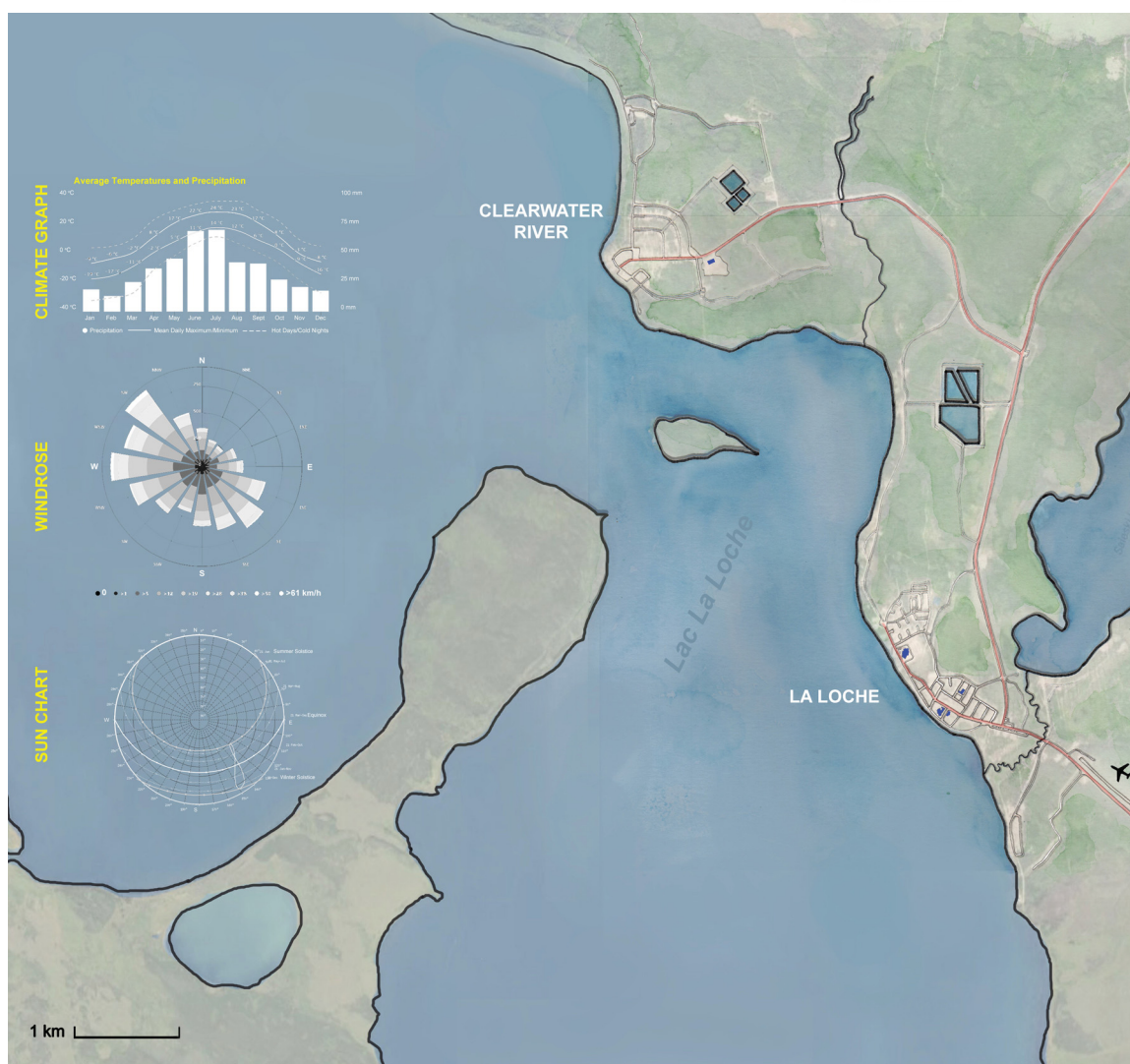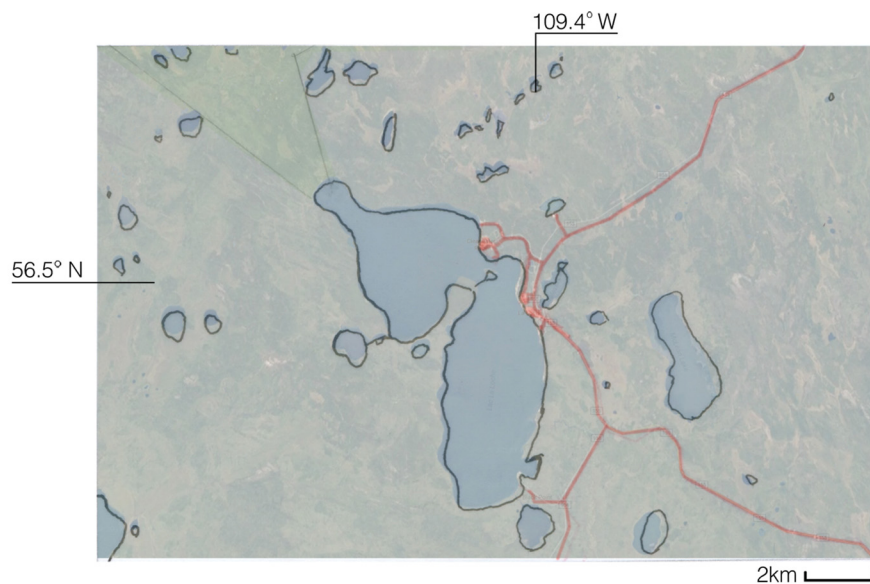
Map of Lac La Loche, showing Clearwater River Dene Nation and the Village of La Loche; base data from Bing Maps.

Northern Provincial Airport

Lumber Yard

Hospital

Ambulance

Schools / Community / Recreation

Post-Secondary Opportunities

Greenhouse / Friendship Centre

N

0   500m

Map of the Village of La Loche; base data from Bing Maps.

When looking at La Loche's built form, it is one of economic and cultural suppression. Today, the community still has a strong outdoor culture; however, the construction practice throughout the village is that of the imported dominant culture. For example, the newly built Friendship Centre is a metal clad gable building with only clerestory windows in the main gathering space. The schools are also interior focused. The most severe illustration of this is that the Dene language room in the elementary school has no direct access to the outdoors. These buildings are disconnected from the water and land, which are the essence of the place and culture. Such spaces may even be detrimental to the occupants' health, as some of the fundamental needs for healthy living within buildings laid out in *Daylighting: Architecture and Lighting Design* are not met, such as to provide contact with the outside world and the requirement for a view.[56] The authors of *Mechanical and Electrical Equipment for Buildings* further argue that daylighting not only fulfills human biological needs, increasing productivity and satisfaction, but also results in energy savings due to reduced dependence on electrical illumination.

La Loche Friendship Centre, photograph by Landon Bueckert.

N

COMMUNITY / RECREATIONAL

HIGHLIGHTED EDUCATIONAL

FOOD SERVICES

OUTDOOR EQUIPMENT ex. X-COUNTRY SKIS

GYM

MUSIC

COMPUTERS
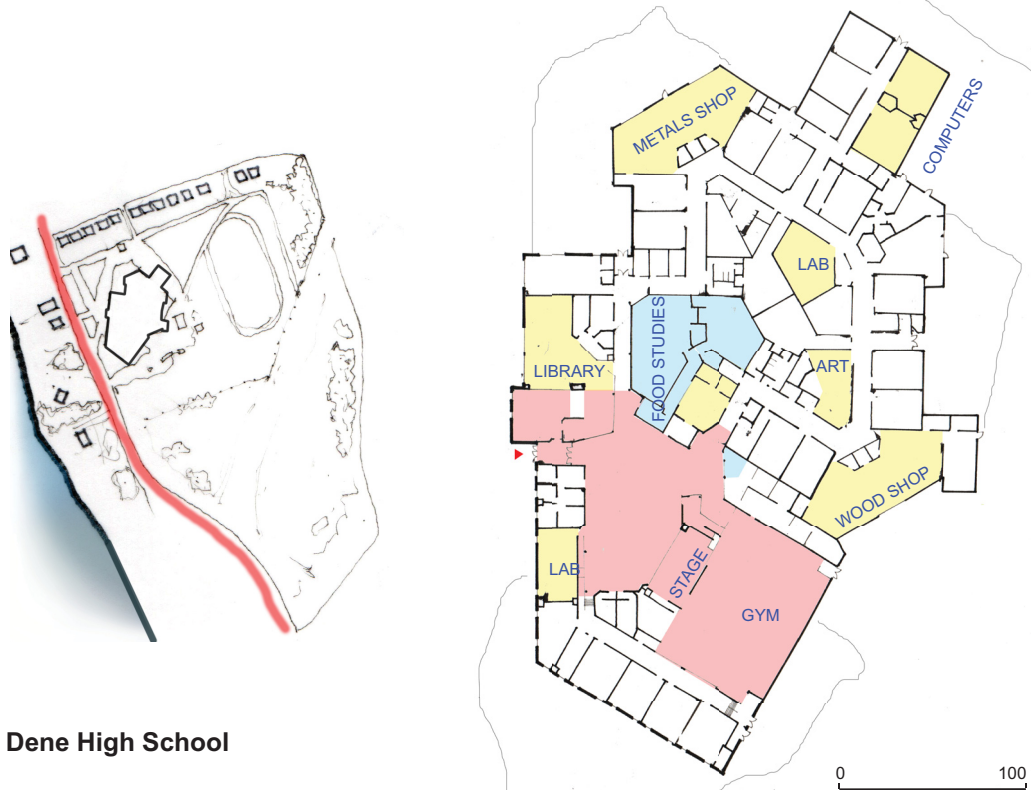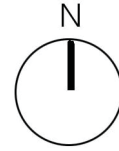
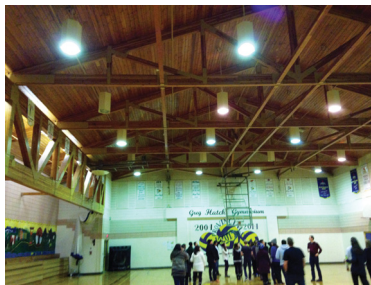DENE LANGUAGE

LIBRARY
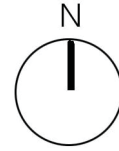
Ducharme Elementary School

0   100 ft.

La Loche Ducharme Elementary School.

COMMUNITY / RECREATIONAL

HIGHLIGHTED EDUCATIONAL

FOOD SERVICES

N

Dene High School

METALS SHOP

COMPUTERS

LAB

FOOD STUDIES

LIBRARY

ART

LAB

WOOD SHOP

STAGE

GYM

0   100 ft.

La Loche Dene High School, interior photographs by Tom Smith-Windsor.

With these concepts in mind, the Healing Centre described in this thesis will enhance connections to the outside world with a biophilic design[57] that is more sustainable than currently found in northern Saskatchewan's typical built environment. Design should heighten the sense of nature and connectedness, so that occupants may orient themselves to their relations. This goes beyond the many benefits of biophilia that all people enjoy. In the book *Indigenous Healing: Exploring Traditional Paths*, the author Rupert Ross makes certain the point is understood:

> As I've said many times before, regaining a sense of connection is indeed an essential element of the aboriginal healing process. And when that connection is to something greater and grander than oneself, the sensation of being a part of it helps bring people out of their sense of futility and worthlessness, and rejoins them to their better instincts and their more positive sense of self. The land is its own cathedral, full of life, promise, openness and blessedness.[58]

The land itself is a way forward, so an architectural design that aids in healing and empowering northern Saskatchewan communities will need to be connected to that feeling of wholeness.

Landscape on approach to La Loche, photograph by Tom Smith-Windsor.

Wish image: individuals hunting.

Wish image: families fishing.

Wish image: communities gathering.

CHAPTER 2: DESIGN

Having an understanding of the current situation and its context, design can imagine new possibilities. As previous knowledge and experience is embedded in the subconscious, information gathered can be let go of and one can intuitively design by leading with the heart. This design started by writing a poem as encouragement to take the next steps.

For a story,
cast the stone far,
as far as you can imagine.

Watch the ripples spread.
On the water, the effect
is only surface deep.

The ripples fade
and the stone sinks
to the bottom.

Someone else
throws a stone
they are carrying.

Their stone
also causes ripples
that spread across the lake.

Each stone cast,
no matter how small,
has an effect.

Eventually,
after enough stones have been cast,
an island emerges.

"Ripples" watercolour.

On the Land

An attempt to keep the design close to the essence of the land, skies, and waterways of northern Saskatchewan was then made through intuitively painting with watercolours as a way to visualize memories of being on the land.

"On the Land" watercolours.

The Community

The community of La Loche is located between the lake and the boreal forest. Its northern latitude and sub-arctic climate cause lighting conditions and temperatures to change drastically with the seasons. The existing buildings within the village provide many useful services, but they are of an imported culture, resulting in spaces that are disconnected from the place. Therefore, a new cultural space and market are to be built as a co-operative movement, employing many of the community's young population. The new building design connects back to the land and waters, and is referred to as a Healing Centre. It is a place where the hunting, trapping, fishing culture can be paired with goods prepared or grown in the community. Therefore, the building's site should be one that merges the village with the land and water.

Photo of community model, showing the building's site merging the village with the land and water.
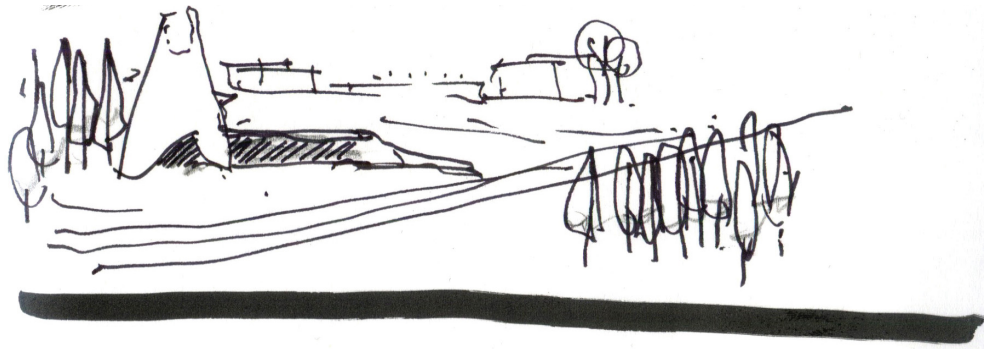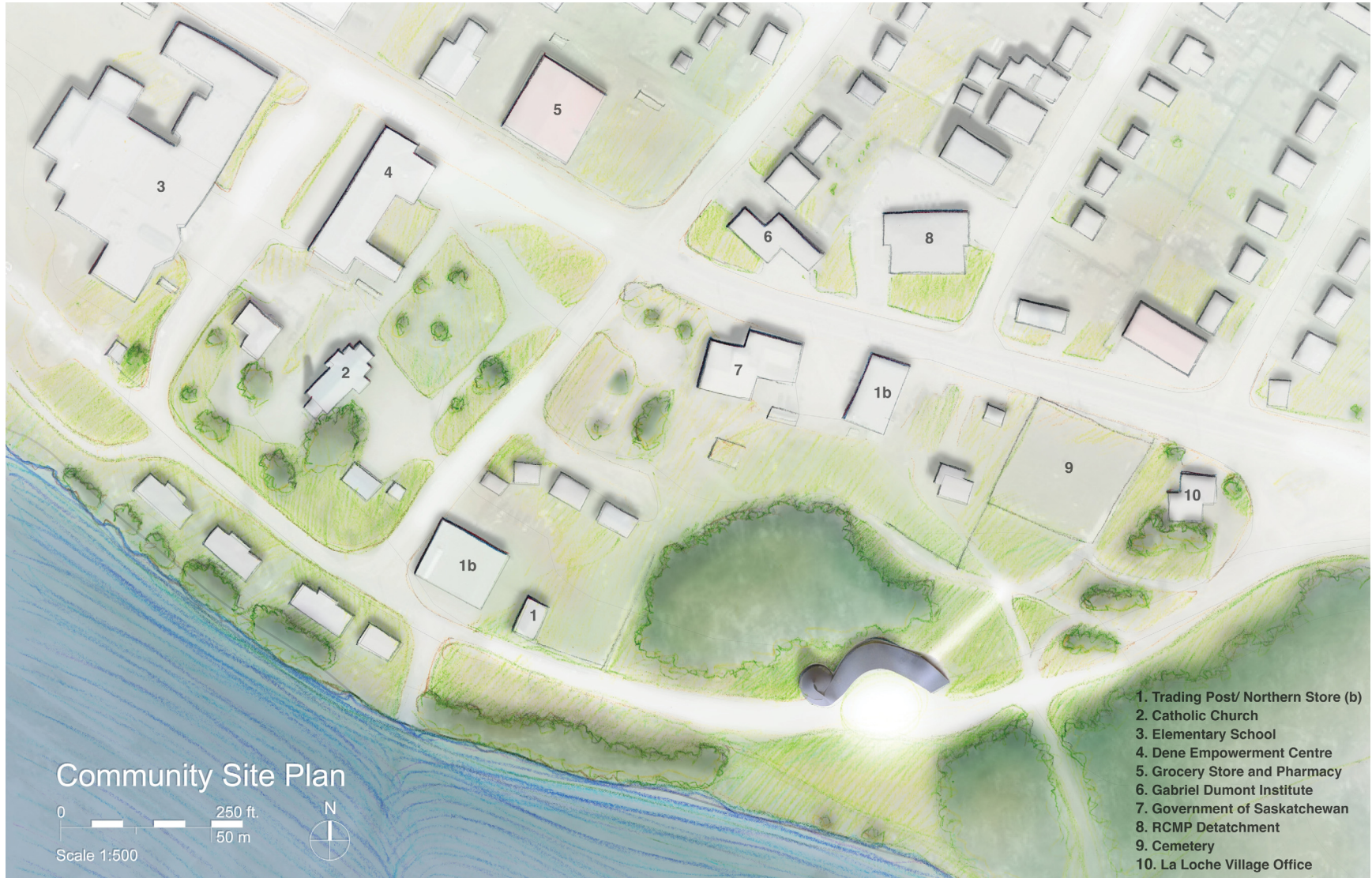
Early sketch of building, from sketchbook.

Siting

The first consideration when siting the Healing Centre was to place it within the community's core, so that it is part of people's everyday lives. The building design is located near the trading post and church, the initial permanent structures of the village. Today, there are many amenities within walking distance, such as the elementary school, grocery store, empowerment centre, post-secondary institute, and government offices. This location is significant, being between the main road through the community that brings modern travelers and the historic waterways. Secondly, the Healing Centre is to have direct access to the lake and the main spaces are to have visual connections that accentuate the views. With these two criteria met, the spot chosen is sheltered from the strong northwest winds and has a great southern exposure to feel the warmth of the sun. The slope allows for digging in on the building's north side to pair the solar gains from the sun with the earth's thermal mass. This means the sun heats the building in a way that avoids the extreme weather fluctuations of the outdoor temperatures. Situating the building is a reaction to the environmental conditions and how they relate to the program of the Healing Centre.

1:1000 community model.

Community Site Plan

0   250 ft.

50 m

Scale 1:500

N

3

4

5

6

8

7

1b

2

9

10

1b

1

1. Trading Post/ Northern Store (b)
2. Catholic Church
3. Elementary School
4. Dene Empowerment Centre
5. Grocery Store and Pharmacy
6. Gabriel Dumont Institute
7. Government of Saskatchewan
8. RCMP Detatchment
9. Cemetery
10. La Loche Village Office

1:500 community core site plan.

Program

The Healing Centre is designed to provide spaces for activities that are currently not accommodated within the community. The goal is to promote the Dene language and traditions, while creating connections resulting in employment opportunities and healing. To do this, the building is to provide flexible community gathering and festival spaces with substantial connections to nature and culture. Additionally, the interior will allow for medicinal plants to be grown, as gardening provides many proven benefits. As the architect Dolores Hayden notes: "Building and gardening activities develop a sense of citizen accountability for the youth, the middle-aged, and the old."[59]

The activities within the building will generate income for the community. During the weekday, the living/working areas will provide space for healing/talking circles, arts, crafts, and language classes taught by Elders that involve experiential learning for students throughout the year. On weekends, the building will accommodate a market during the day, where local goods can be displayed, bought, and sold. In the evenings, local performing artists and musicians can display their talents in the larger room, or visiting performers can be brought in for events. The kitchen that serves the spaces is run as a co-operative, bringing together the fruits and vegetables from the community's new greenhouses and meat provided by hunters, fishers, and trappers. When other activities are not on, the kitchen remains open as a sit-down restaurant and local hangout. In addition to providing new services, the building can also attract tourists on their way to the Clearwater River Provincial Park and Canadian Heritage River System.

Diagram of building's programmatic flexibility: a sit-down restaurant with community space for talking circles, teaching, and experiential learning at working spaces/yard.
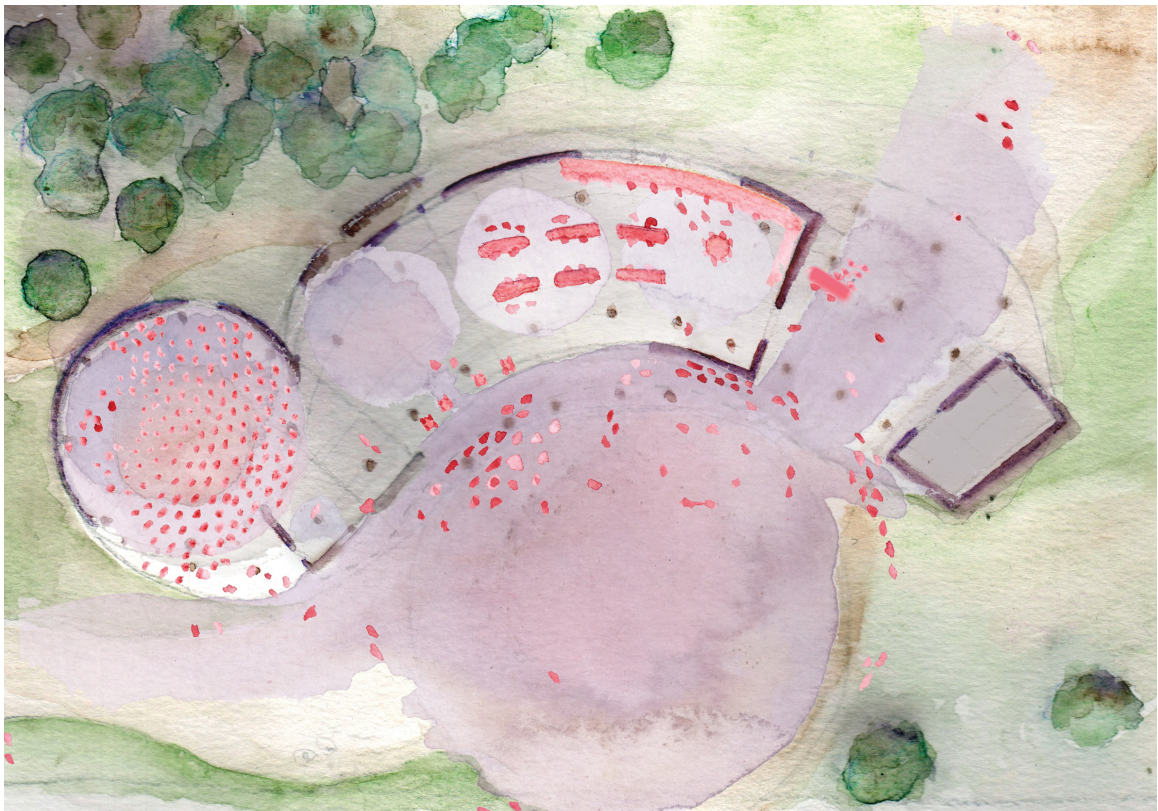

Diagram of building's programmatic flexibility: an outdoor event, indoor concert, and market.

The programmatic size requirements for the Healing Centre were based on pairing the historical dimensions used in the region, with modern studies of the human dimension from international sources. The average tepee in the region's diameter was approximately 18ft. (5.5m), while 25ft. (7.6m) tents were used for special occasions. One of the largest tent rings found in northern Canada is approximately 45ft. (13.7m) in diameter.[60] This is the size chosen for the main indoor event space and should accommodate up to 200 people to see a concert. The outdoor event space has a rough dimension that will allow attendees to experience emotions, read facial expression, and hear speech and song; a distance of 115 feet (35m).[61] These size requirements were the basis for a floor plan, but they still had to be shaped in relation to each other and their context. Instead of laying out the program of the building solely in plan, it was done in three dimensions, resulting in a form for the Healing Centre.
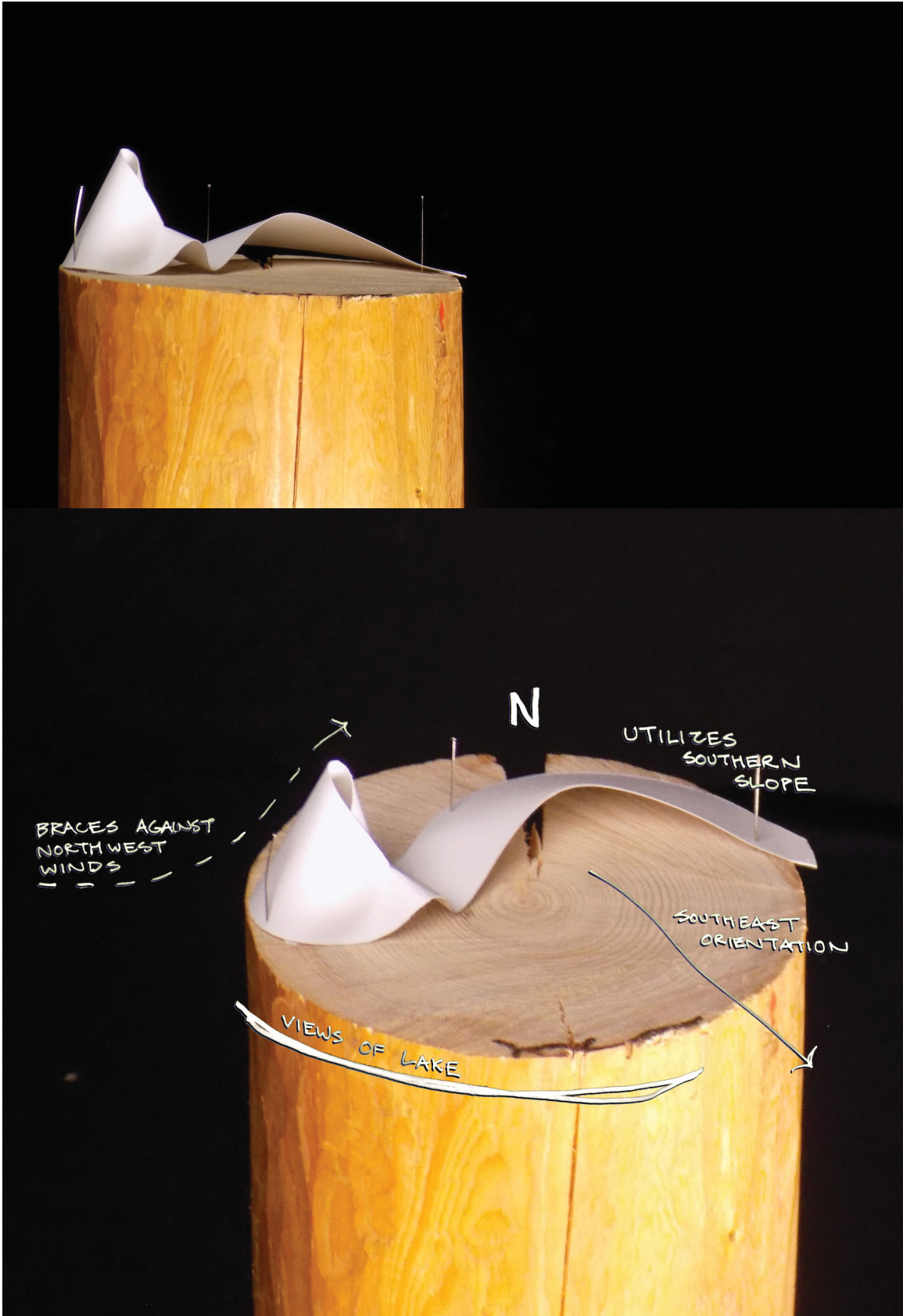

Watercolour plan showing programmatic size requirements with fluidity of spaces.
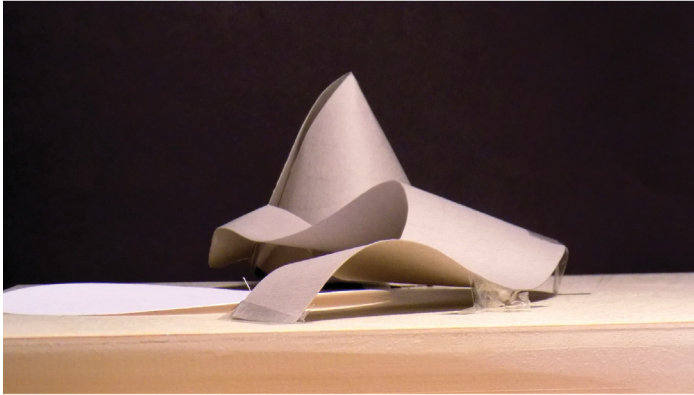
Form

The Healing Centre was situated and shaped base on the site and community's programmatic needs, climatic conditions, and material constraints. The form also required a cultural response due to the community being mostly Aboriginal identifying. As noted when designing for Aboriginal communities: "Building to promote cultural identity and wellness would create a radically different built form."[62] With this in mind, the design process that was used to develop the Healing Centre was unconventional. The current built environment of northern Saskatchewan is designed with computers using two-dimensional software; this design method removes the project from the physical world and places it into a limitless void. Physically drawing with pen and pencil lines also causes the representation of the work to have sharp edges and corners. To avoid this, watercolours and physical modeling were used to design the Healing Centre in volume and space. The building's form was developed as a result of creating iterations of paper models. Physical modeling involves experiential learning that results in material efficiency because the material directs the form. The design attempted to make effective use of black spruce poles with a maximum length of 35 feet. The end result was found when it was felt that the material, environmental, and programmatic requirements all came together. The plans, sections, and elevations were then generated from the selected model.

1:200 paper model iteration.

BRACES AGAINST
NORTH WEST
WINDS

N

UTILIZES
SOUTHERN
SLOPE

SOUTH EAST
ORIENTATION

VIEWS OF LAKE

Parti model and annotative diagram about how the form relates to the site.

East face
The entrance canopy opens up to the community while sloping down towards the western winds.
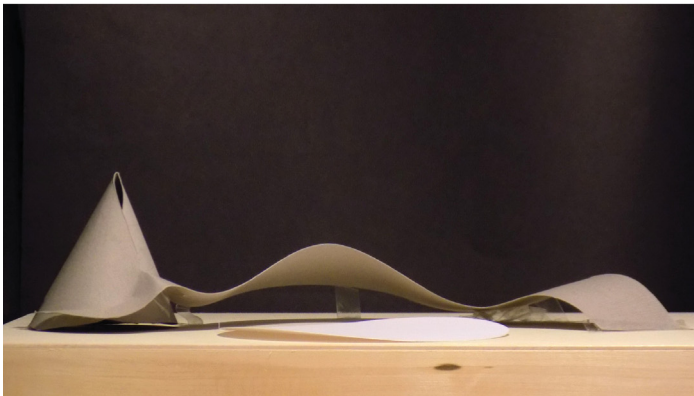
South face
Building opens up and accepts the low angled winter sun.
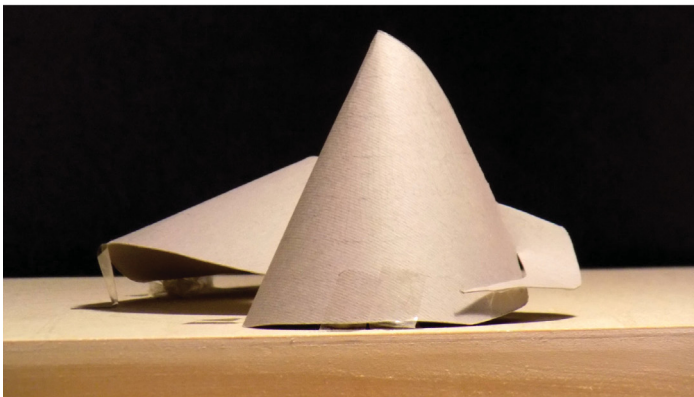
West face
Cone form braces against strong winter winds and avoids glare from the setting sun.
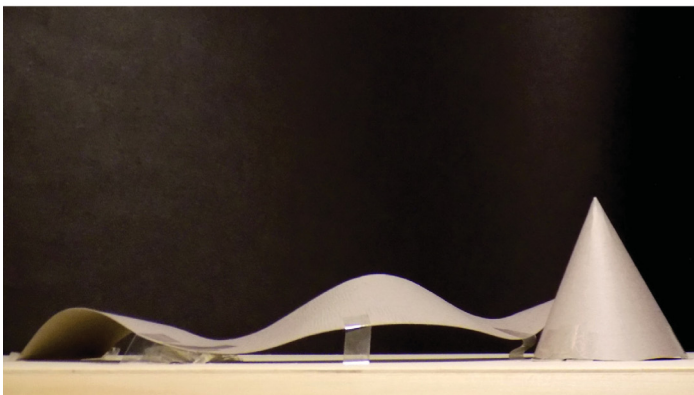
North face
The roof slope deflects northern winds and reduces surface area causing heat loss.

1:200 paper model chosen for design development.

Paper model placed in site context to illustrate how the building would relate to its surroundings; site photographs by Landon Bueckert.

Structure

After a form was chosen for design development, a structural grid showing the location of the black spruce poles was applied to the inside of the 1:200 paper model to translate the flat plane into the three-dimensional object. A large-scale model was essential to the project since models capture imagination and can be easily read by community members. Collaboratively developing the design further through similar models with community members would enable them to construct the resulting design. An example of this would be Seabird Island School in British Columbia where the architects provided the community with a framing model for construction (see Appendix). The 1:100 model of the Healing Centre's structure and skin was then made to complement the paper model that effectively shows the roof.
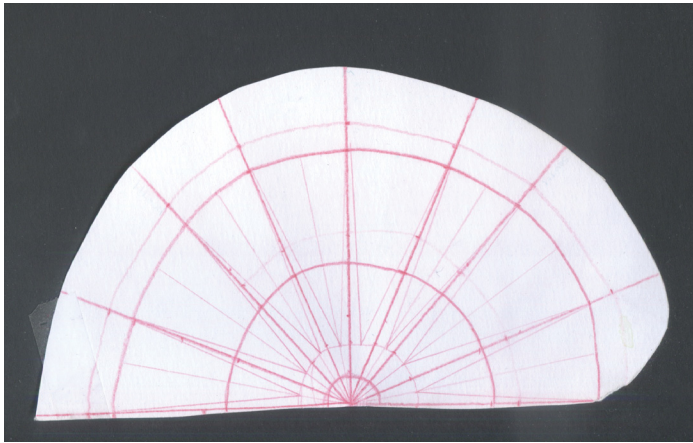
1:200 paper model with structural development applied.
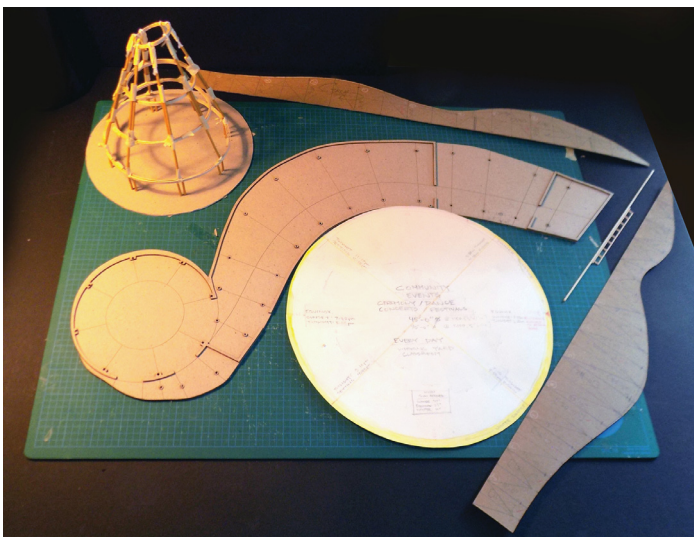
Process models: first cone structure model, building footprint, outdoor space with climatic information, facade templates, and a roof truss to span the width of the market.
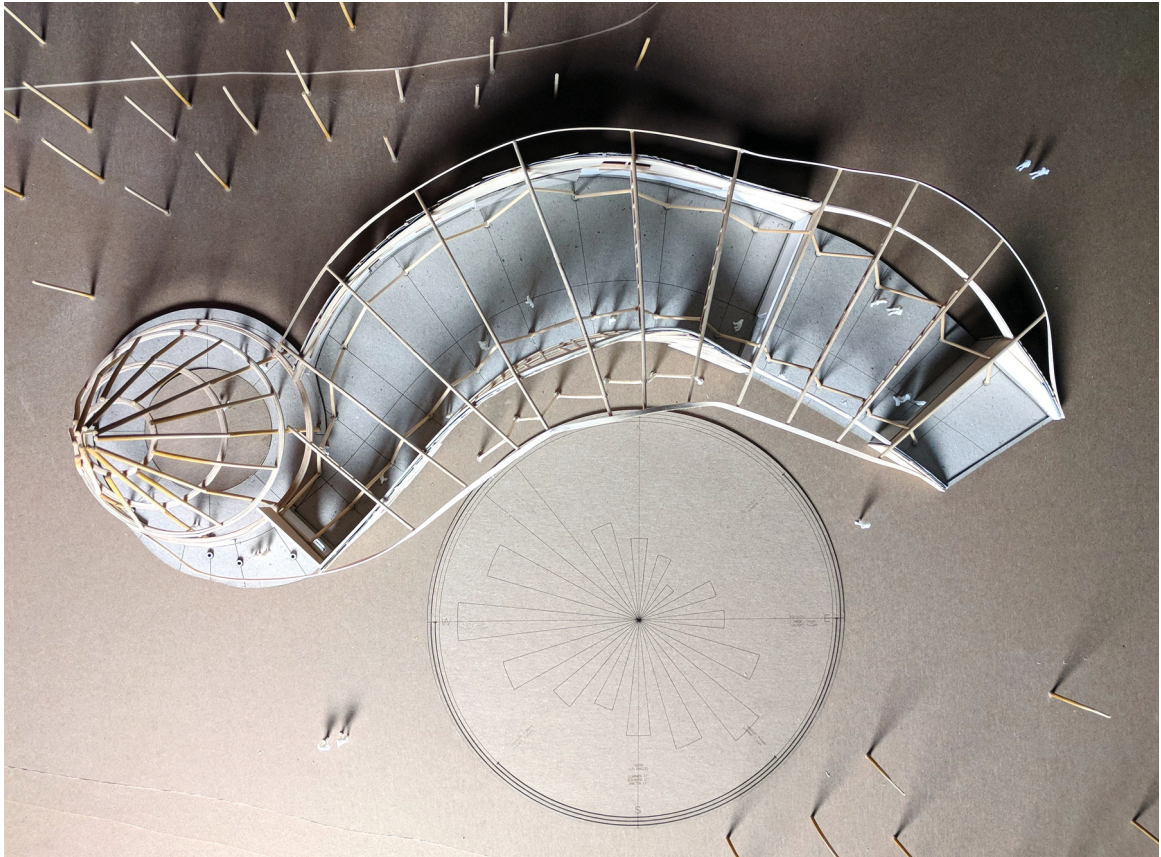
1:100 structure and skin model; overhead view showing extent of roof overhang and how the sun and wind affect the outdoor space.
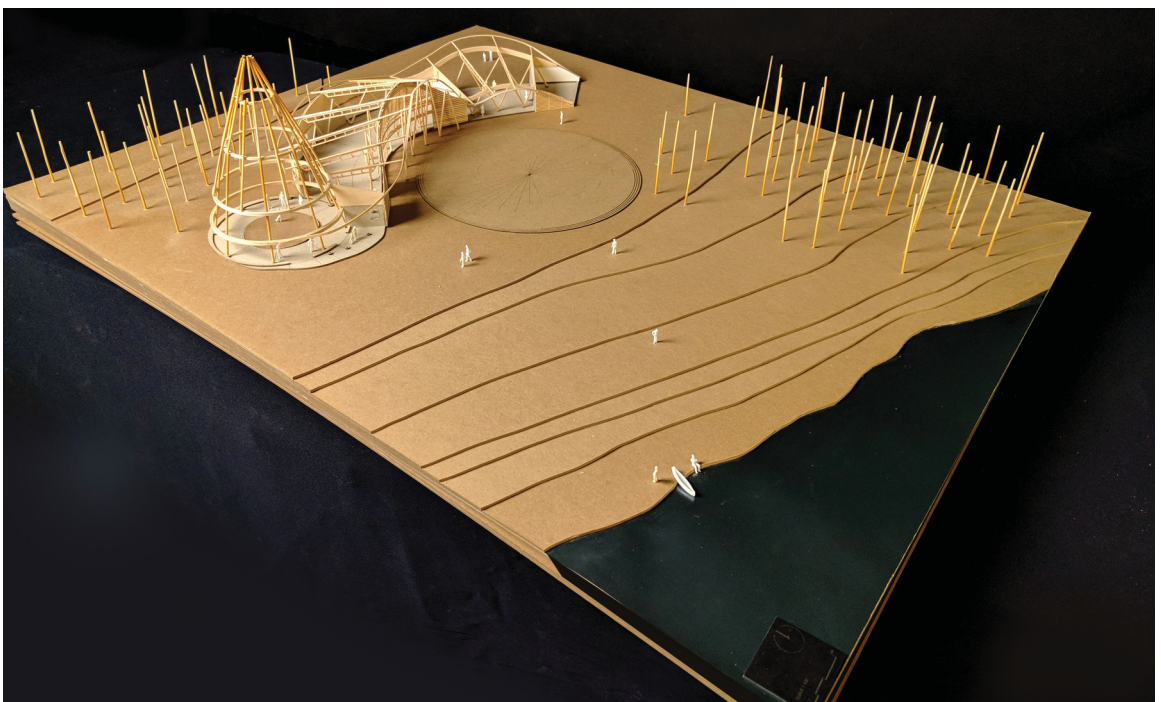
1:100 structure and skin model.
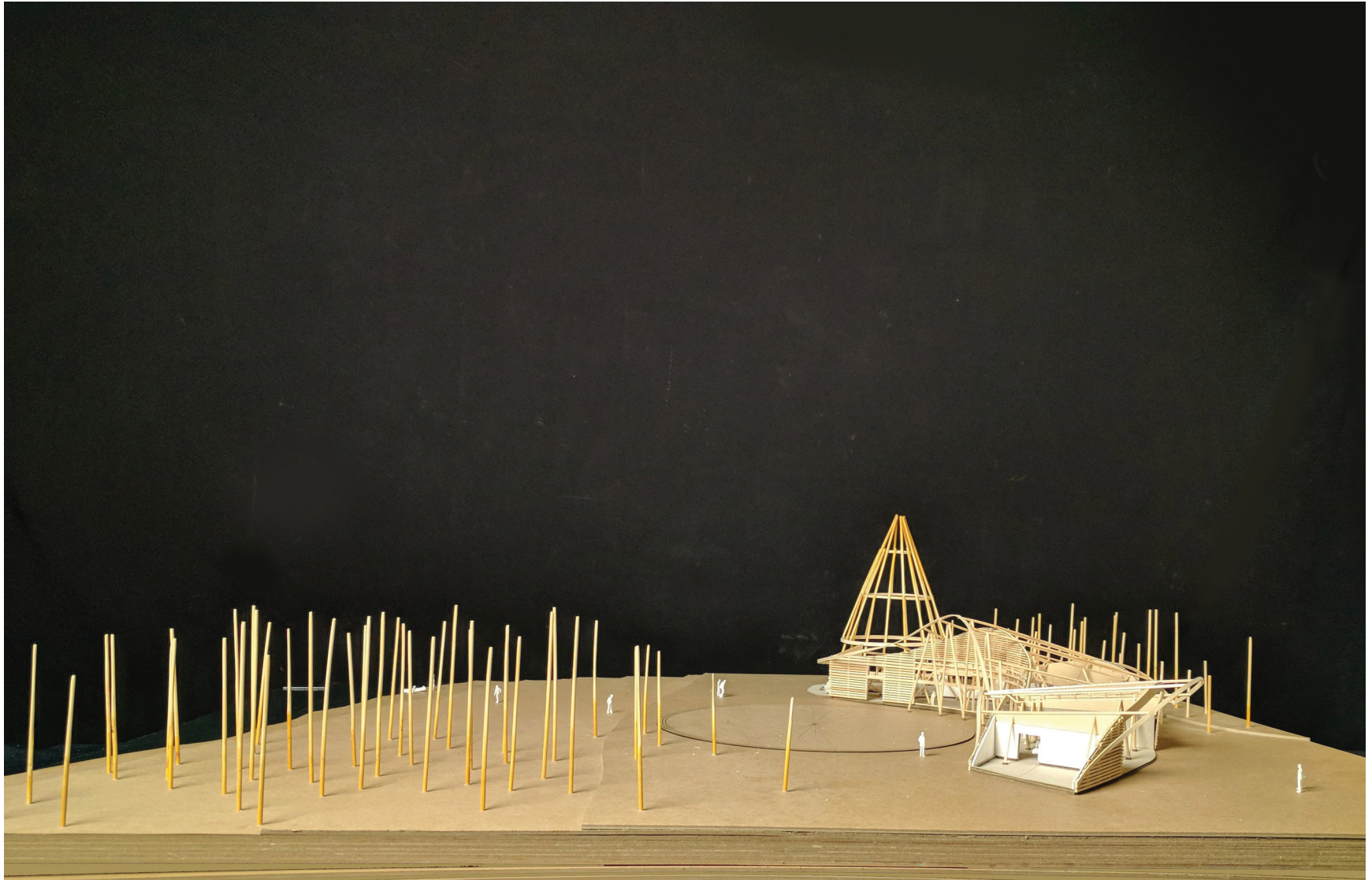
Structure and skin model; view from the east showing the entrance to the cultural space off the outdoor event area.

Structure and skin model; view from the south showing the considerable amount of glazing to welcome the sun's energy.

Structure and skin model; view from the west showing how the cone structure shelters the rest of the building from strong winter winds.

Structure and skin model; view from the north showing the tamarack board rainscreen facade, which can be repaired and replaced as needed.

Structure and skin model; view approaching the eastern entrance, the open-air entrance space focusing on the outdoor event area and lake beyond.

Structure and skin model; view of outdoor event space and multiple layers in the building.

Structure and skin model; view from the water showing the relation to the building's spaces.

Structure and skin model; view to the service entrance, showing it sheltered by the building and trees.

Structure and skin model; view inside the market space and main circulation path.

Structure and skin model; view inside the cultural space.

In the Building

The structure and skin model effectively illustrates how the parts come together to make up the organization and facades of the building. It also allows for the visualization of the interior spaces of the Healing Centre more clearly. A series of "In the Building" watercolours were made in an attempt to further describe the architectural experience of an occupant and how the building connects them to nature. The paintings were done in the same quick and intuitive way as the "On the Land" series, and each tried to relate back to those first paintings. Some may not be actual spaces, but the spirit of how the spatial qualities interact with the light, air, and outdoors should be evident. Additionally, the resulting paintings were a way to check decisions as the design developed. Because the average human spends most of their life indoors, it is important that these spaces add to the occupants' well-being through connecting them to the outside world.

"In the Building" watercolours.

In the building: cross-ventilation breathes air into the market space under the round wood structure.

In the building: the workspaces have diffuse north lighting on the desks.

In the building: the market space has an expansive view of the lake to the southeast.

In the building: the kitchen is at the heart of the building and has views of each gathering space.

In the building: the southwest facade frames a view of the setting sun.

In the building: the lake is in view from the cultural space.

In the building: a large skylight in the cultural space floods the room with daylight.

In the building: the hearth has a large thermal mass, built-in seating, and wood storage.

In the building: a vertical slit window on the north side of the cultural space points to the North Star.

Comfort

As illustrated in the "In the Building" paintings, the Healing Centre is closely tied to the nature of the place and the seasons. It also provides a comfortable and healthy setting for occupants by using both passive design strategies and modern technologies, that are designed to mediate the environment, not obliterate it to attain the uniform 21 degrees Celsius. The building is oriented southeast for favourable solar gains and absorbs the sun's energy with a thermal mass. Additional geothermal energy is used to warm and cool the building. The warm air at the top of the cultural space can be reused by bringing it down through the building again, and the rooms can be opened up to cross-ventilation. Comfortable exterior spaces will also be created through the building's form, such as wrapping an area with southwest sun exposure or a covered eastern entrance on the leeward side.
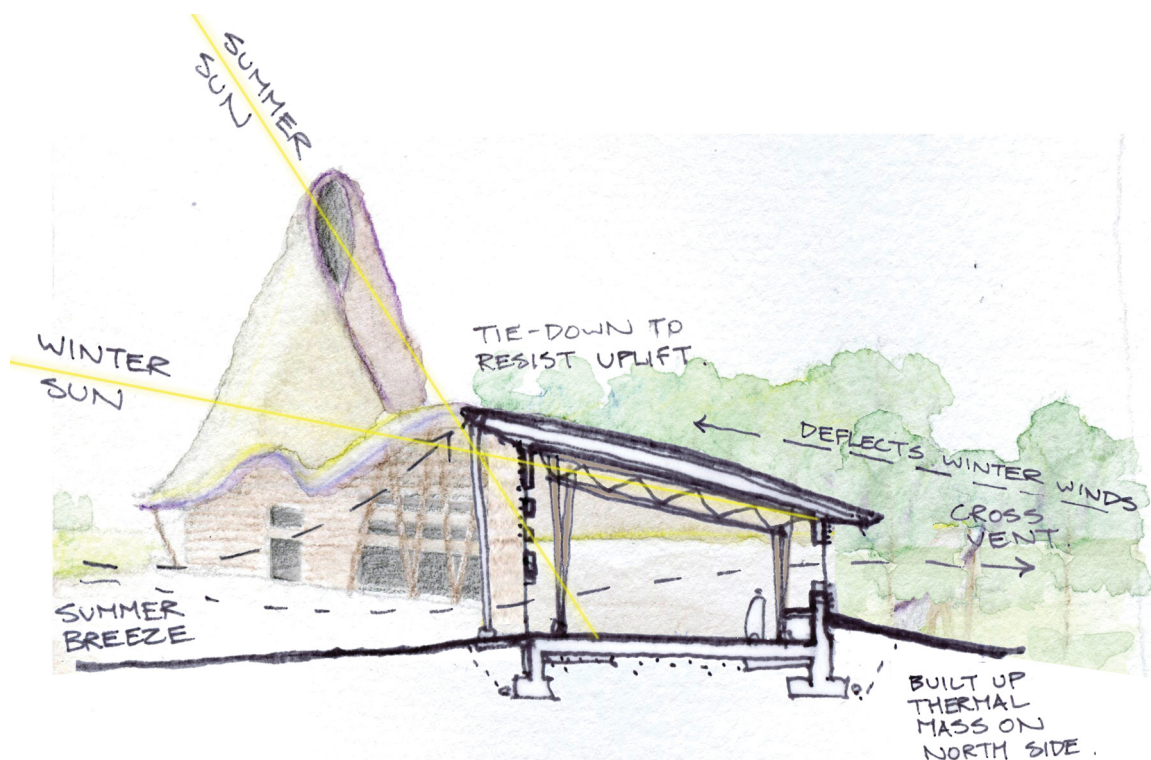
Diagram of building design principles: market hall utilizes the sun and wind to create a comfortable environment for occupants, with the round wood trusses, triangulated columns, and pin connection system, didactic and on display.
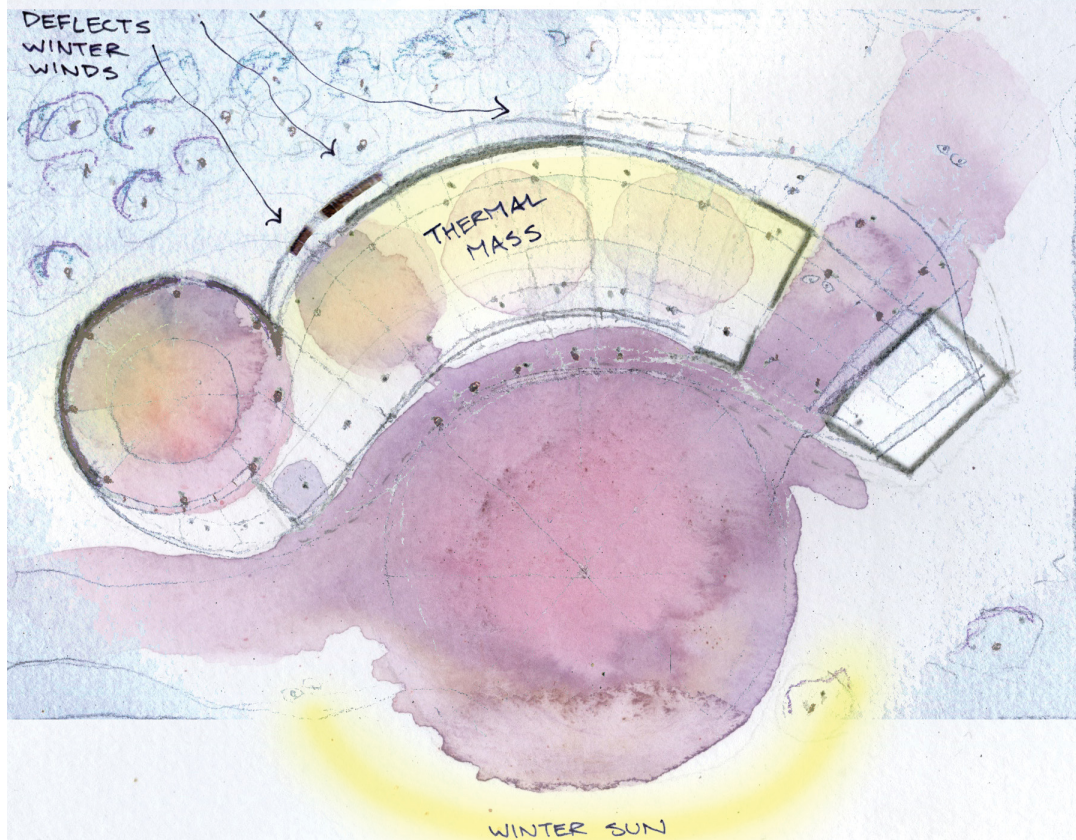
Diagram of building's yearly cycle: all spaces are usable in winter due to the sun warming the interior thermal mass and the outdoor space being sheltered from the cold northwest winds.
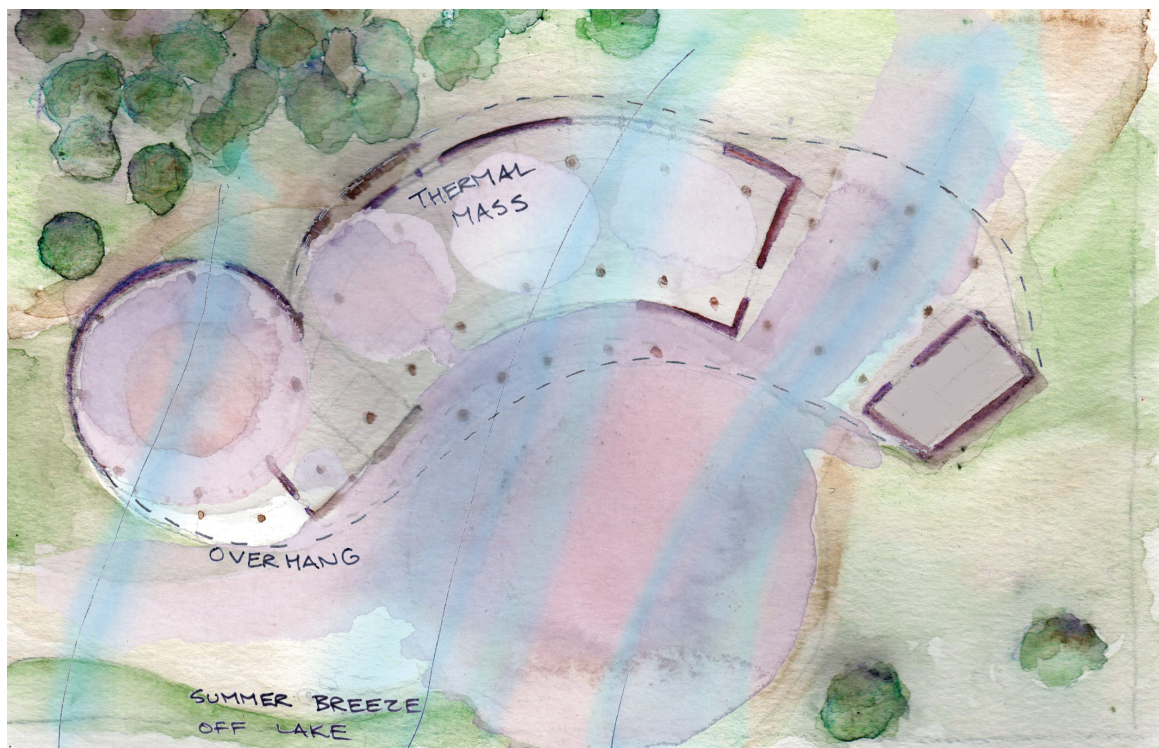
Diagram of building's yearly cycle: all spaces are usable on hot summer days due to the shading of the large roof overhanging and cool breezes from the lake cross-ventilating the building.
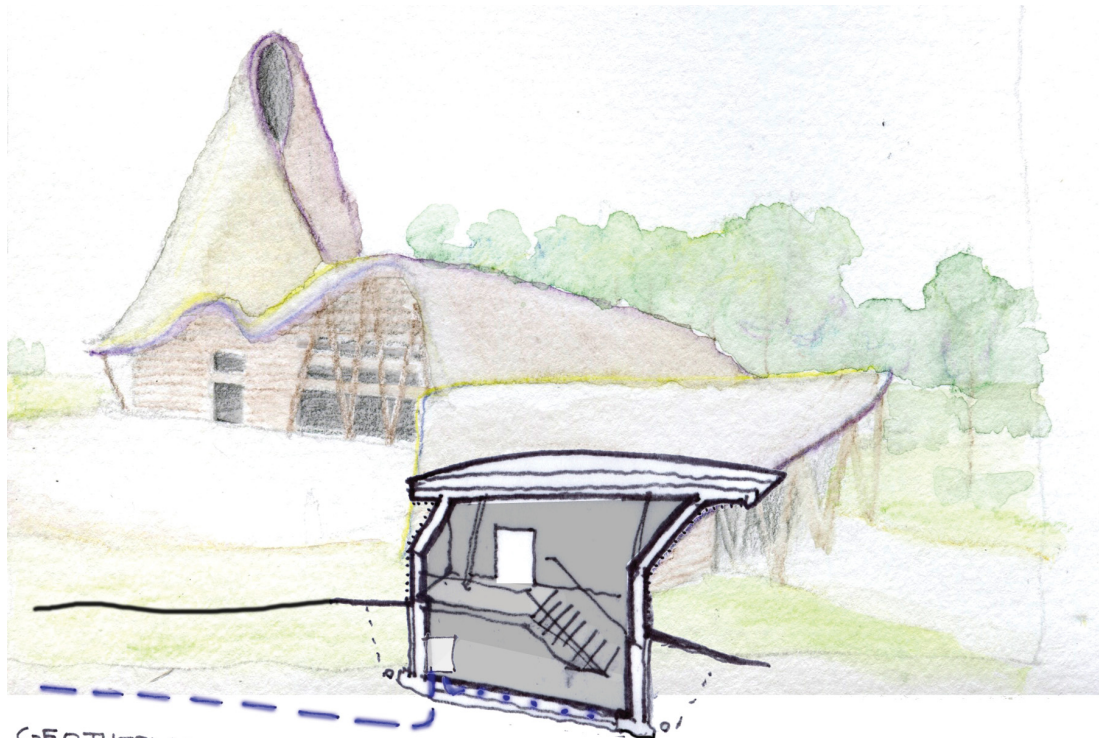
GEOTHERMAL HEATING FROM LAKE
COOLS IN SUMMER/ HEATS IN WINTER

Diagram of building's systems: the earth's constant temperature is used to mitigate the extreme outdoor air temperature change between seasons, cooling in summer, and warming in winter.

HRV
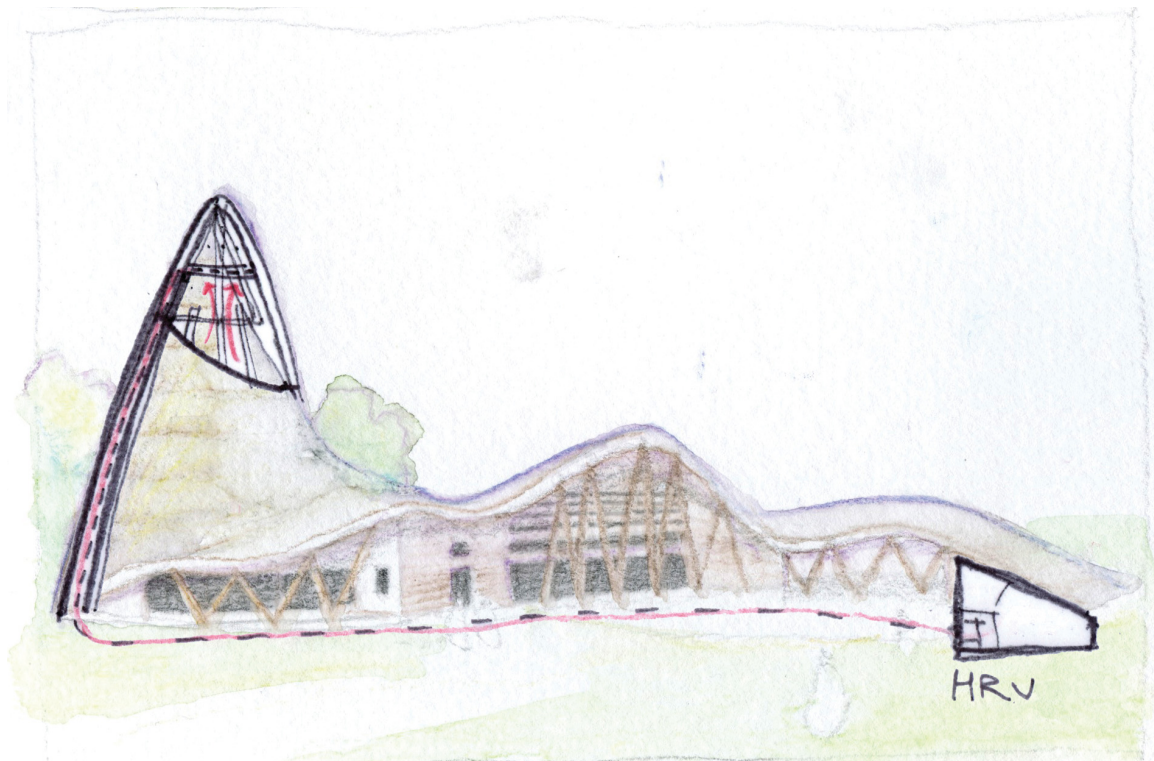
Diagram of building's systems: the hot air that rises to the top of the cultural space is reused by bringing it down to a heat recovery ventilation system at the low end of the building.
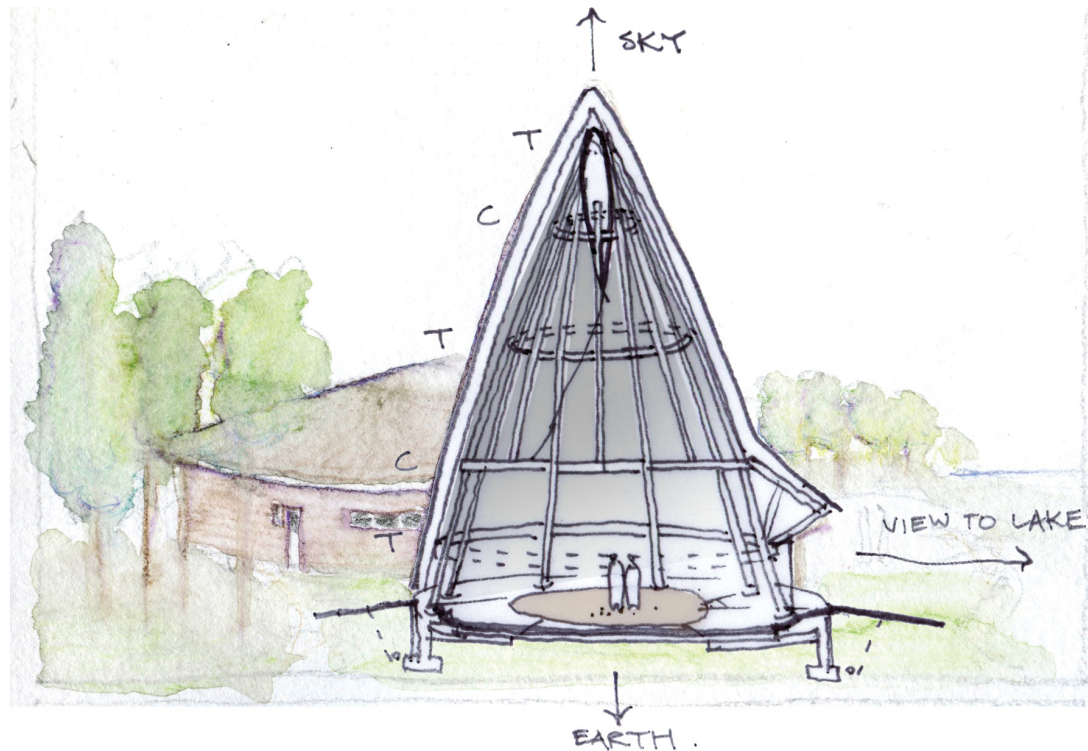
Diagram of building design principles: cultural space connects occupants to nature, with a round wood pole structure of max 35-foot lengths, paired with concentric compression and tension rings.

The main circular space provides a place to orient oneself within the world. The entrance is from the east, aligned with the rising sun. Once within, the structure is on display, acting like the points of a compass. To the south, a wide horizontal row of windows provides a visual connection to the lake, while the north has a vertical slit window that the North Star shines through at night. Daylight floods the space from above, creating a connection to the sky, while a rammed earth floor and hearth root the building to the place. The building references the site's history, while looking to future horizons.

The Healing Centre uses climatic controls and a layered approach to insulation, as lean-to and tepee structures do. The occupants can make adjustments to their interior environment easily, such as by adding another log to the fire or opening a window. Additionally, some of the glazing is paired with curtains and shutters that can enclose the space during cold nights to help insulate and reduce light pollution. Even in these small ways, having the ability to influence one's own environment has been shown to benefit psychological well-being.

Tamarack Board Siding
Strapping /Air Space
Birch Bark sealed with Spruce Gum or Weather Barrier
Peat Moss (Sphagnum) or Rigid Board Insulation
White Birch Board Interior Finish
Black Spruce Round Wood Primary Structure

Insulated Shutter

Operable Wood Window with
Triple Pane Low-E Glazing

Fabric Curtain
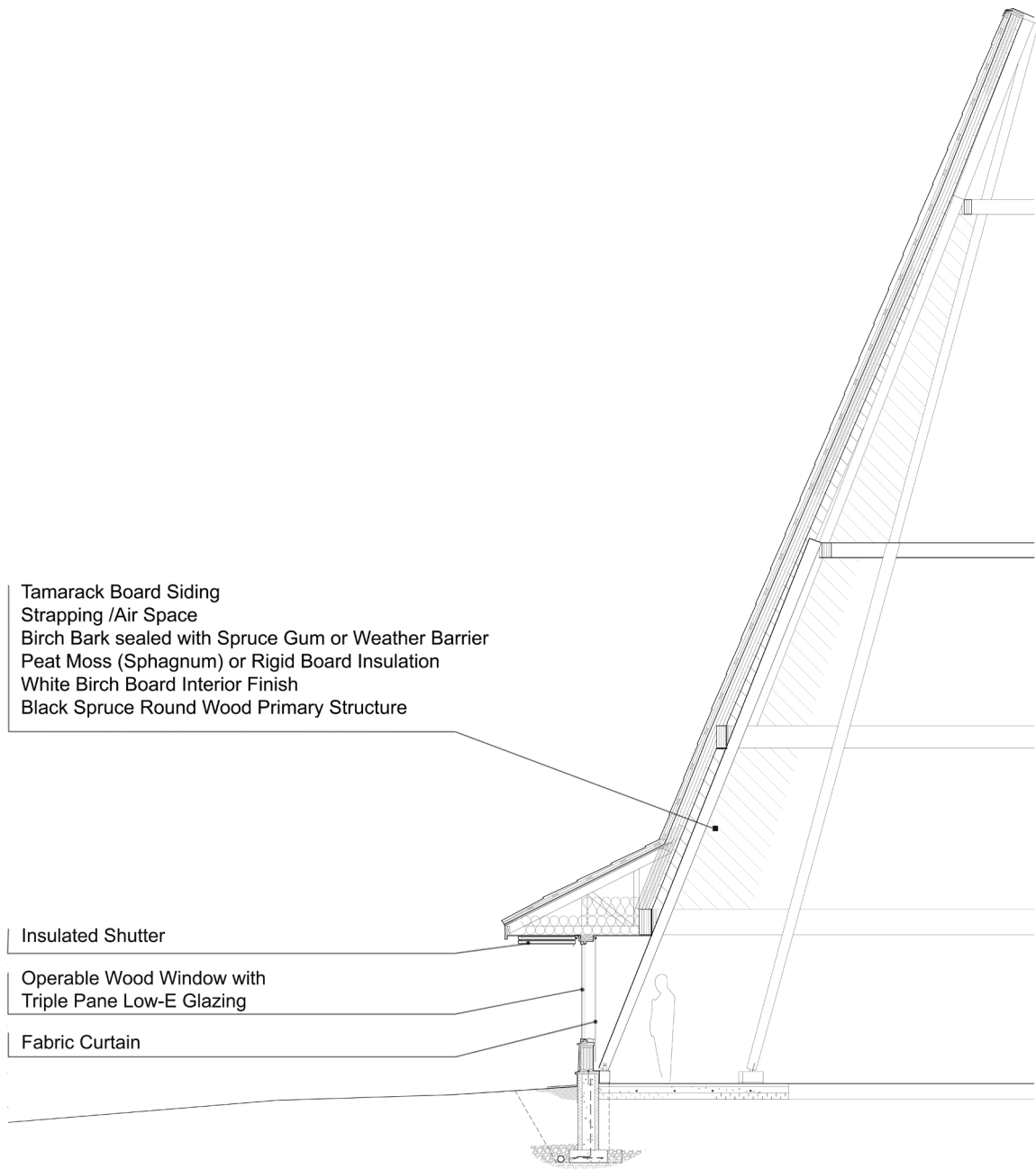
Wall Section

Scale 1/2" = 1'-0"

0   8ft.

Southwest wall section showing material assembly and climatic controls.

Site Plan

0   50 ft.

10 m

Scale 1:100

N

1:100 site plan showing building between high foot traffic node and water.

The inhabited plan showing how the site, program, and structure are brought together in the building form.

Longitudinal Section

0   50 ft.

10 m

Scale 1:100

1:100 longitudinal section along the main circulation path looking north.

Diagram of building design principles: the building's entrance connects to the high traffic footpaths to the northeast, and the spaces within enrich the experience of going down to the water.
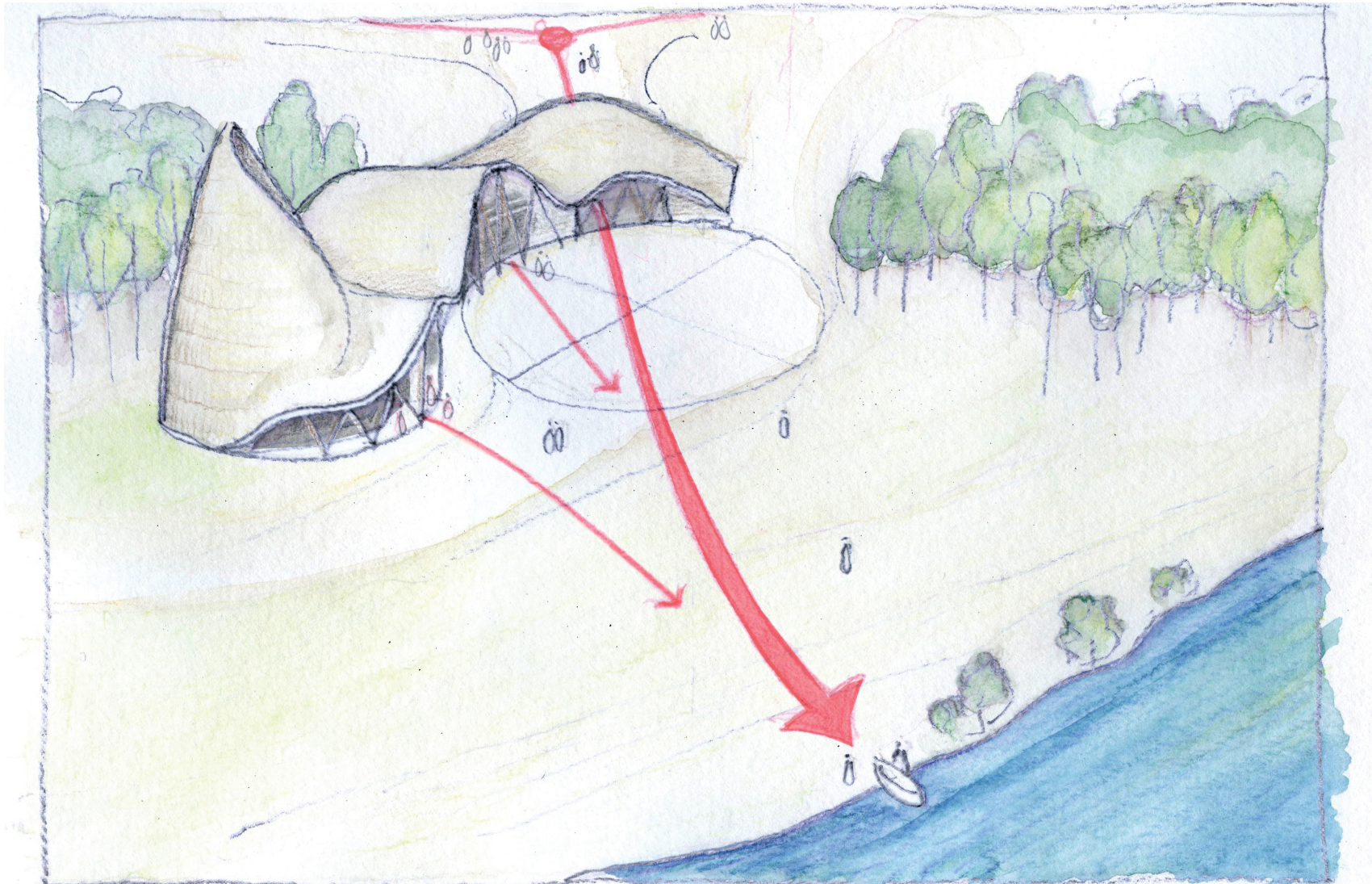
Building Process

A building process that allows people to influence their environment on a larger scale would have substantial benefits. The Healing Centre will engage the community in its construction by using mainly local materials and knowledge. A collaborative building process that educates and transfers knowledge is one that has vast benefits when paired with sustainable material use. Therefore, the construction of the Healing Centre begins with the gathering and planting of trees in the surrounding boreal forest.

Local trees will be gathered in the springtime, once the snow is off the ground and the ice has melted. The three types of trees used for the building are spruce, birch, and tamarack. These three tree species are common in northern Saskatchewan and tend to be found in the low-lying lands or muskeg. Black spruce are smaller and skinnier than white spruce, and often have a cluster of branches at the top. These trees will be used to carry the building's structural loads. White (paper) birch can be distinguished from the similar looking poplar trees at a glance because they tend to be closer to water and grow in bunches, with several trees sprouting from the same spot. The blonde wood is a desirable interior finish, while the bark can be used for waterproofing. Lastly, tamarack is found in swampy/ muskeg areas and is a type of larch that lose their needles in winter after they turn yellow-orange. They have anti-rot properties, making the wood useful for exterior applications.

Process of Gathering Materials:

1. Gather spruce trees from the forest with a minimum butt dimension of 6 inches. This diameter can be measured easily by taking a string with a marked length of 19 inches and wrapping it around the bottom of the tree where it will be cut. Strip the branches and haul the felled tree to the building site. Once on location, remove the bark to avoid insect damage and rot.

2. Harvest spruce root from the felled trees or only take a few roots from additional trees. Go about three feet from the base of the tree, then dig up the root using a stick (or shovel). Roll roots up and place in a plastic bag, keeping damp until ready to split. Split roots with fingernails, then store in a dry place until ready for use. When needed to lash or sew together parts of the building, wet the strips before use to make them workable.

3. Collect spruce gum from small wounds in the trees and store until ready to seal joints when waterproofing the exterior of the building with birch bark.

4. Cut several birch trees with bark that is a minimum of 1/8" thick. Alternately, cut sheets that have a minimum width of one-foot from standing trees by cutting vertically into the trunk to the cambium, being careful not to damage the inner layer. Haul trees to the building site. If only bringing bark, roll into a bundle lengthwise for storage until use.

5. Cut several tamarack trees, strip the branches, and haul to site.

6. Plant new spruce, birch, and tamarack trees in their respective sites to replace the trees cut for the building. This is important for sustainability, since building is a cyclical process and will require new trees to be cut in future.

7. The same areas of land will be returned to in the summer after a prolonged dry spell to gather peat moss, also called sphagnum moss. When dry, the moss has a high insulation value. Shave a depth of two inches off the top of the moss in small batches, then cut into blocks, stack, and store in a dry place until ready for use.

8. Paint for the exterior wooden frames of windows can be made by mixing fish bladder oil and iron oxide found in the region's rocks. This would be a similar paint to that used in the ochre pictographs found in northern Saskatchewan. It was also used for the oldest existing building in Saskatchewan, the Holy Trinity Church at Stanley Mission. Here the paint was noted for being still remarkably fresh after 50 years,[63] while today it is common to re–apply paint every five years or so.

As the materials are collected, the creation of the building will begin.

To build the Healing Centre, a lumber mill will be established near the site. Architects, engineers, and community members will be required to come together for the realization of the project. Work and safety procedures, such as to leave the site clean and safe each night, will be laid out. Then the construction of the building will employ as many community members as possible, both those with skills working with materials and those who are willing to learn. This way the building process and craft used to make the building will be developed within the community itself.
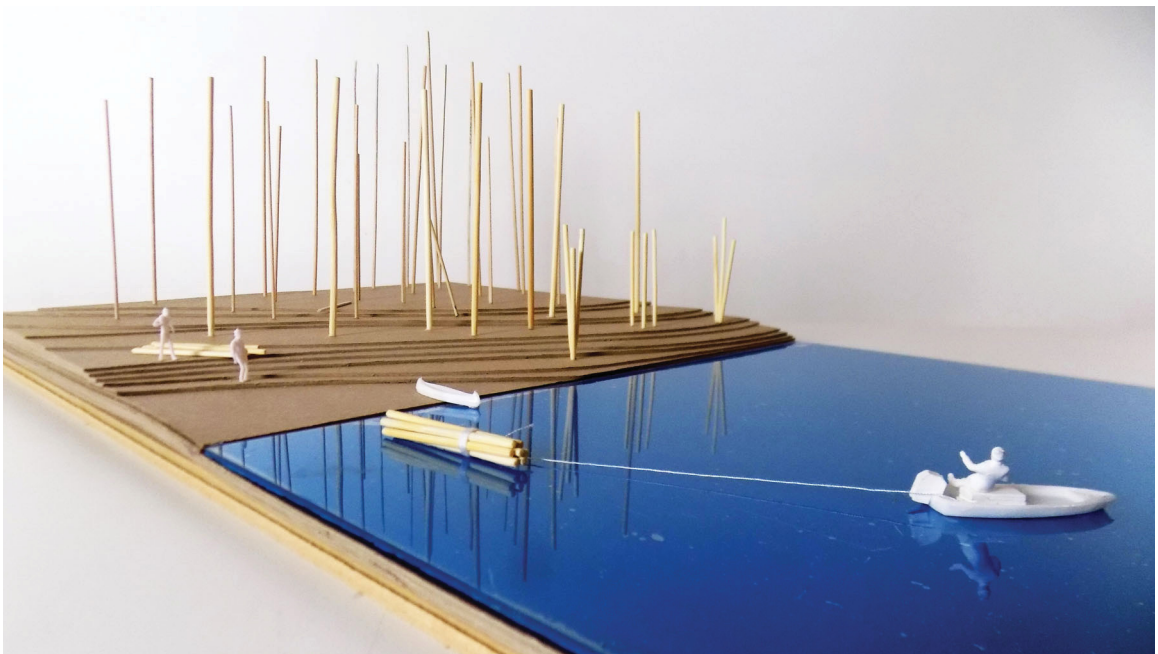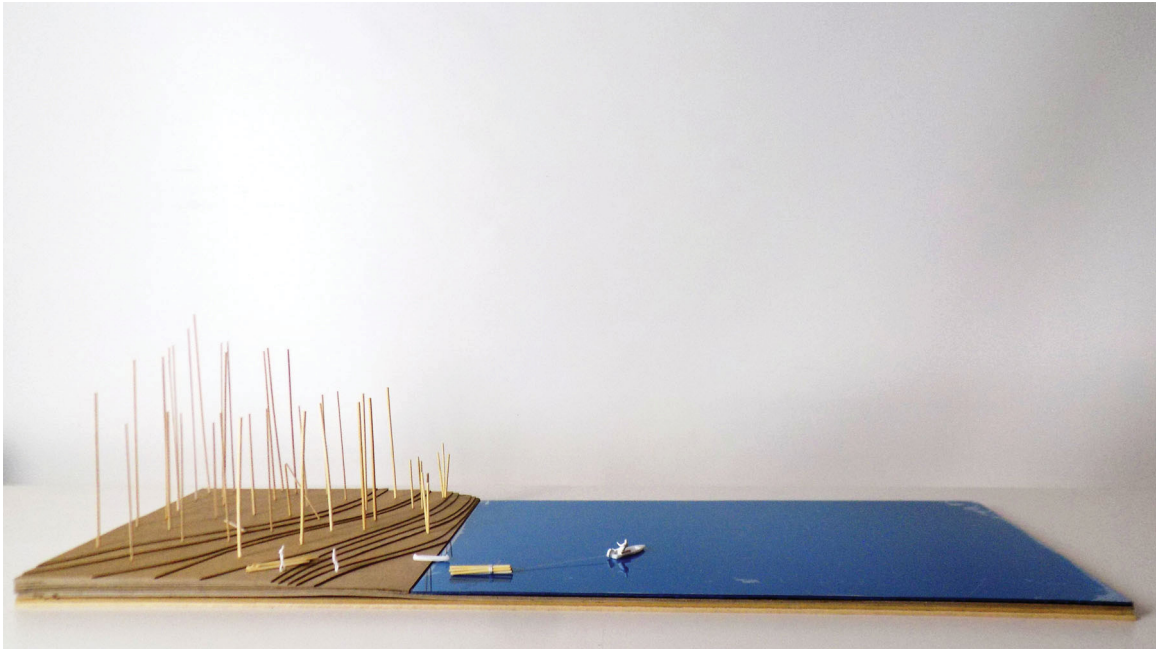
Photos of 1:100 gathering model.

Stewardship and Maintenance

As in the building process, several jobs will be associated with the completed Healing Centre. Beyond programing the events to be held there, cleaning, maintenance, and gathering firewood for heating will be ongoing. These tasks could undertaken by community members of all ages, each with a different role, allowing for transfer of generational knowledge. Since maintenance is a continuous cycle, the skills and techniques used to build the project can be taught to the next generation for maintenance, renewal, and adaptation. Therefore, a community building may extend its service life indefinitely, while providing experiential learning out on the land for the inhabitants. This engagement of the community increases pride and displays their craft within the building.

While the primary structure of the Healing Centre is relatively permanent, its didactic detailing is meant to inspire, and its readability allows for addition or replacement if needed. Finishes generally need updating and repair every so often, depending on wear and tear. More importantly, the exterior will have to be maintained to protect the building from degrading over time due to exposure to water and sunlight. The exterior roofing and siding will need renewal on cycles of approximately 25 to 30 years. This makes it important to plant new trees when cutting the original ones used in construction, so that when the tamarack boards/shakes on the building need to be replaced, the new trees are beginning to reach maturity. While the tamarack boards/shakes are off and the birch bark underlay is exposed, the spruce gum seals should be checked and re-applied where required before installing the new boards/shakes. If damaged, the boards that make up the rain screen facades can be replaced with ease, without compromising the building's weather tightness.

The windows of the Healing Centre will have to be cleaned every spring, and their wooden frames and shutters will likely need repainting every few years. Painting can be seen as positive because it creates connections and employment. Such a view is taken at the Icelandic turf hut museum south of Reykjavik, where generations lived, and still live, in turf huts together. A guide at this museum stated that it is important to see the layers of paint. Perhaps this is similar to the ancient Athenians' pride of place in Greece, where they believed it important to see one's lineage in the city.[64] There is a lot of pride in northern Saskatchewan as well, and by developing skills, techniques and technologies that use

these local materials sustainably, the region can become an example to the rest of the world.

When people come to this unique part of the world, the building would certainly be a stopping point for tourists. The market, restaurant, and workspaces would all be places that showcase the community members' work, creating entrepreneurship opportunities. When events are held in the Healing Centre, tickets can be sold that will generate income for the community and pay for the maintenance of the building. Economically, it just makes sense to invest in the community and the inhabitants of La Loche. This allows the future generation to grow up, not wanting to go somewhere else, but to build something for themselves.

The Healing Centre in the landscape.

Wish image: people celebrating.

CHAPTER 3: CONCLUSION

When I first started to explore ideas for this thesis, an architect with experience in the area told me that in La Loche they did not use tepees, but preferred trapper's cabins. Despite this, throughout the community the structural form of the tepee could be found, just relegated to back yards and corners of the schoolyard. Looking at historical photographs of the community, the form was often prominent. I therefore chose to give homage to the form, as the conical shape is an evolutionary design that developed for thousands of years to withstand strong winds.[65]

The tepee is also exemplary for its thermal and climatic controls.[66] The shape is used all over the world in varying scales, from ancient vernacular to modern architecture. Celebrated examples include the Winnipeg warming huts done by Patkau Architects in 2011, the Centre Culturel Jean-Marie Tjibaou by Renzo Piano in New Caledonia, and the Library at Delft University of Technology in the Netherlands by Mecanoo, where the architects note a cone as being "the symbol of technical engineering."[67] In northern Saskatchewan, it would be more than that; it would be a declaration of a proud heritage and a bright future.

Library at Delft University of Technology, 2018 by mecanoo architecten; photograph from architect's website.

In this thesis, the acts of gathering, building, and maintaining were to support a living on the land and waters of northern Saskatchewan. Aboriginal languages are more verb focused than English,[68] and in switching from thinking in terms of objects to actions and stories, a way of building meaning is revealed. In this way, there is an underlying humour to the work, for the resulting architectural form can be seen as a fish trap that becomes a tourist trap, or an overturned canoe to protect trade goods. It is inevitable that the form will bring to mind different things to different people. That was one of my own readings of the work; and illustrates a problem with trying to interpret a culture other than one's own. However, within the resulting forms, places were created to orient and embed the inhabitants in the natural world by providing connections to the lake, the earth, and the sky. Since the cultures and languages of northern Saskatchewan are fundamentally linked to their natural surroundings, a connection to nature is essential to aiding in the healing process.
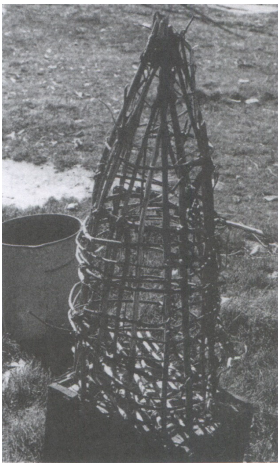
Fish Trap, La Loche, 1977; from Holland, Hewitt, and Janvier, *The Dene Elders Project.*

Frances Anne Hopkins, *Voyageurs at Dawn / Voyageurs à l'aube*, 1871; from Marchildon and Robinson, *Canoeing the Churchill.*

Twilight along the Desnethe/ Missinippi/ Churchill River.

Reflection

I decided to commit to the lifelong journey of an architectural education when I attended a lecture by the renowned métis architect Douglas Cardinal in Saskatoon in 2013. That evening, he talked about designing buildings in northern Saskatchewan. Shortly after, I applied to the School of Architecture at Dalhousie to pursue a fulfilling career. Knowing that I intended to return home, this thesis was an exploration into the role of collaborative design in healing and empowering northern Saskatchewan communities. Distancing myself from Saskatchewan allowed me to understand it in different ways, and pair new views with prior knowledge. Sometimes it takes a new perspective to reveal certain characteristics of a place; an Australian opened my eyes to the 'us vs. them' attitude of the Prince Albert region. Although I have much to learn going forward into practice, I would like to do my part to change this outlook. I am eager to return home and use architecture as a way to support positive change.

Nevertheless, I must confess that I have found this work difficult, in that it is a controversial subject, and acknowledge that there may be people upset with the work. I am sorry for this, but if the project can forward the discussion on reconciliation, it has done what was intended. Please keep in mind that this was just my story with a fictional design for the people of La Loche. Stories can be powerful, and I hope that this one has a positive impact on the communities of northern Saskatchewan.

The "Final Pin-Up" with "The Team" who helped me in the last days before the thesis defence, photographs by Dan Jolivet and Alicia Gilmore.

APPENDIX

Case Studies

Pictou Landing Health Centre

A successful and well-maintained project from 2008 is the Pictou Landing Health Centre in Nova Scotia, by Piskwepaq Design Inc. The lead designers, Richard Kroeker and Brian Lilley, acted as mediators between Health Canada and the Mi'kmaq residents of Pictou Landing First Nation. The building serves as both a health clinic and community centre, allowing for access after hours. The form avoids being superficial by building on traditional methods in a modern way, allowing the materials and site to inform the work. Locally harvested round wood of six to eight inches was used to create a bent truss design that makes up the primary structure of the building, which is left visible throughout so that it can be read and understood. Additionally, this leaves the community members' work on display, as for the most part they took on the construction of the building. Even the school children were invited to leave their mark on the building by having a hand in its construction.[69] This community participation directly invests the funding into the communities, their materials, and skills.
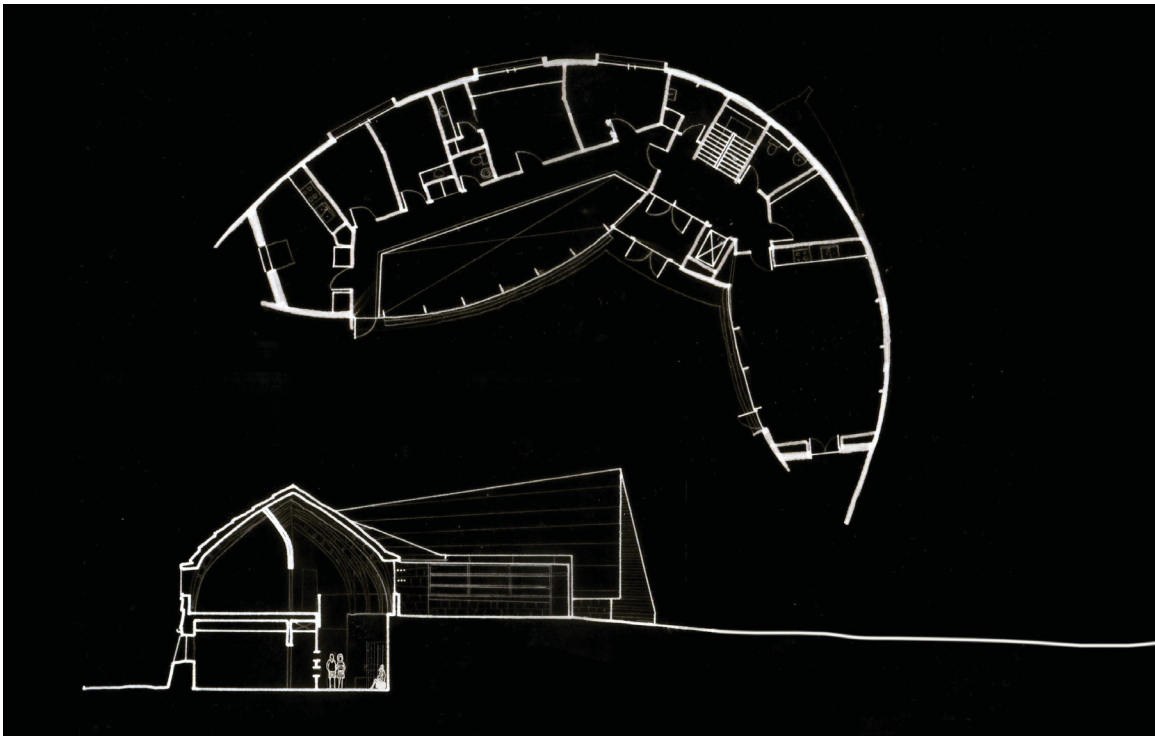
Pictou Landing Health Centre plan and cross section by Piskwepaq Design Inc.

Seabird Island School

After the Salish people of British Columbia suffered cultural genocide from the residential school system, along with the resulting self-destruction through substance abuse and violence, the Seabird Island Band worked with Patkau Architects to build a new school that promoted and enhanced their historical culture, language, and way of life.[70] Although the architects were doubtful of representing another culture, they met extensively with the whole community, and the school was built by members of the band.[71] It was the first large scale building they had done, and they were able to do it because of the 1:50 framing model the architects provided.[72] The design purposely avoids the orthogonal layouts of residential schools, and provides each classroom direct access to the outdoors.

The building's large roof is being reclad with new cedar shingles 26 years after the school was first opened in 1991. Councillor Stacy McNeil states, "The School has been a huge part of our community for a long time and we're proud of it. I'm glad that we're able to take care of it."[73] The maintenance of a building is important, for the longer it lasts, the more memories are associated with it. The architect William T. Willoughby even suggests maintenance should be the aim of architecture. "It signals that a building is fulfilling enough to be worth retaining, remembering, and revisiting."[74]
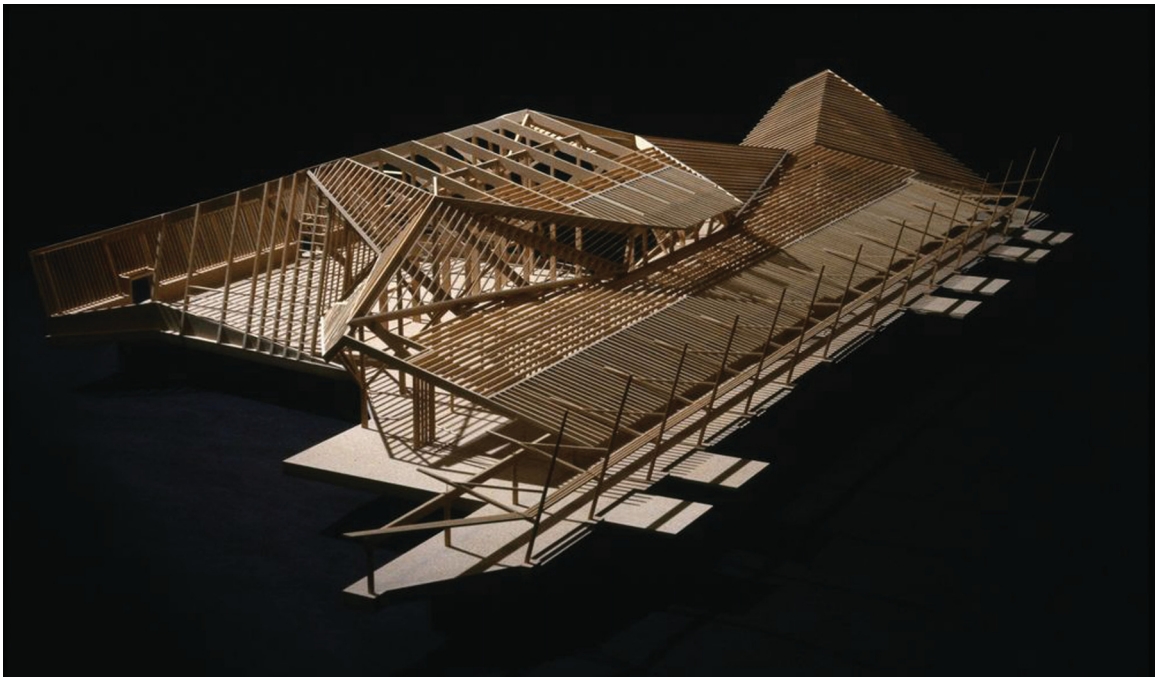
Seabird Island School framing model by Patkau Architects; from Kenneth Frampton, ed. *Patkau Architects*.

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