kitche migawap âcimowin
Tipi Tectonics: Building as Medicine

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A thesis submitted in partial fulfillment of the requirements for the degree of Master of Architecture (M.Arch)

The Faculty of Graduate Studies
Laurentian University
Sudbury, Ontario, Canada

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THESIS DEFENCE COMMITTEE/COMITÉ DE SOUTENANCE DE THÈSE
Laurentian Université/Université Laurentienne
Faculty of Graduate Studies/Faculté des études supérieures

Title of Thesis
Titre de la thèse       kitche migawap âcimowin; Tipi Tectonics: Building as Medicine

Name of Candidate
Nom du candidat        Clark, Krystel

Degree
Diplôme               Master of

Department/Program       Date of Defence
Département/Programme   Date de la soutenance April 08, 2019

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ABSTRACT

The exploration of the Cree Tipi’s construction and structure is investigated to reveal pre-colonial tectonics that will be implemented into a building design by interweaving traditional knowledge and technical applications. The research is to propose alternate building practices as a strategy to implement Cree cultural significance into building construction to promote Indigenous health. The documentation is guided by Cree oral histories (stories) from my Indigenous heritage, originating from Montreal Lake Cree Nation in the Boreal Forest region of Saskatchewan. Indigenous tectonics are explored by deconstructing the Tipi through Gottfried Semper’s Four Elements of Architecture. The method of unearthing or discovery is explored through a series of drawings. Tipi tectonics establish a framework to better understand the differences between non-Indigenous and Indigenous construction and methodologies of health. Indigenous knowledge will develop strategies to implement Indigenous design and ways of healing into a final building design.

KEYWORDS

ACKNOWLEDGMENTS

Thesis Advisor   Dr. David Fortin
Second Reader   Chris Cornelius
Thesis Professors   Patrick Harrop and Dr. Terrance Galvin

The most generous people are those who teach.

I am thankful to my family for sharing our Cree stories, knowledge of the Tipi and revisions.

I am thankful to my mother Robin Pepin, my grandmother Christine Clark, great aunt Elder Rose Hewison, my aunt Peggy and sister Lulu. I am grateful to Dr. David Fortin who has taken countless hours navigating the thesis development. To Chris Cornelius who had provided critical feedback every phase of the thesis design and inspired me to challenge myself. To friends and family who provided consistent love and support. To the Elders and professors who were not obligated but took the time to share their knowledge. I am grateful to the Elders and knowledge holders who came into my path and stayed with me during my studies, Elder Delphina Nova, William Morin, Rob Spade and Melvin Nootchatai and professors Izabel Amaral, Ted Wilson, Jake Chakasim, Jason Surkan.

The Tipi is a sacred construction. I hope that this research can be informative to promote cultural awareness and personal well-being.

tinke, Thank you,

Krystel Clark
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My Spirit name is osk-îskwêw which was translated by my grandmother as ‘A young woman, young at heart,’ and it means that I will always be defined as osk-îskwêw, even in my old age. Indigenous knowledge and philosophy will be implemented into the thesis by sharing the translation of the Cree language and teachings from my matrilineal heritage and Indigenous elders to help shape the narrative I am sharing of the Tipi.

The title of the Thesis is kitche migawap âcimowin which is composed of two phrases - kitche migawap and âcimowin. kitche migawap is the Cree word for a traditional Tipi, during the era prior to exterior influence from non-Indigenous cultures. âcimowin is translated to ‘story,’ however, it is not a good or bad story. I choose to represent the term to be neutral since the story is not meant to sway in a particular direction but rather be informative. Therefore, the Cree translation for the thesis title is, ‘a traditional Tipi story.’ The second part, Tipi Tectonics: Building as a Medicine, describes the approach to the story which is to reflect on an architectural discourse of tectonics and how a building can be medicine. I am inspired by designing with nature. Specifically, how a design can revitalize an individual’s well-being. I explore the iconic kitche migawap to elevate Indigenous knowledge.

The Tipi reveals a profound worldview of Indigenous culture. The importance of sharing this story is to define elements that are Cree and to further develop the language of contemporary architecture to include Cree values and culture. So, this is the story.
CHAPTER 1

Introduction - Native Medicine

Traditional Native medicine, described by Russel Willier in *A Cree Healer and His Medicine Bundle: Revelations of Indigenous Wisdom*, begins with the smudging in Indigenous health. To smudge is a way to purify ourselves in mind, body and spirit by burning plant material used for healing such as sweet grass, sage, cedar and diamond willow fungus.3 The smoke carries our prayers to the creator. The use of plants for medicine has been known for centuries. However, during the last century Indigenous medicine had been banned by the government, that has been instead promoting alternative, Western medicine, for improving health.4

Willier expresses the difficulty he faced when sharing his knowledge within a text. Since Indigenous histories are passed down orally,5 written representation is typically not accepted by knowledge holders or Elders. However, over time, with the realization that traditional knowledge could fade away with the Elders, the importance of sharing that knowledge to the next generation became imperative.6 The exploration of an iconic Cree dwelling, the Tipi, comes from this thought process of collecting the Tipi narrative to share before it becomes forgotten from my family, and for the next seven generations.

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4David Young, 8.
5Ibid.
6David Young, 173.
As Russel expands, Indigenous medicine and Indigenous culture have vastly changed due to the breakdown of family relationships caused by the displacement of children forced into residential schools and taught a completely different worldview. Indigenous knowledge and history are passed down orally. Therefore, families and Elders could no longer pass down their knowledge of medicine, or culture. Russel expresses that Elders are fundamental to revitalizing Indigenous medicine, traditions and knowledge. Many Elders today are survivors of residential school. The cultural genocide that was practised at the schools instilled a fear and prevented many Elders from sharing or passing down knowledge to younger generations. Russel conveys that the knowledge Elders share should not be taken for granted but treasured and passed on, and so it is important to listen. Elder Mary Lee introduces the teaching of the Cree Tipi and its significance to health. As she states,

This way of being in the world was taught to me by my mother through the teachings of making a tipi. The tipi teachings, as I call them today, relate to nurturing the four aspects of the self, the spiritual, physical, emotional and mental, which are rooted in the four directions [of the Medicine Wheel]. The tipi is also a symbol of the women, so in honour of my mother and great grandmother and Cree women everywhere, I will share some of these tipi teachings.7

7Elder Mary Lee, 2016.
Personal health for Elder Mary Lee, is acquired by maintaining the balance of the four directions of the Medicine Wheel - spiritual, physical, emotional and mental. The Tipi teachings teach us how to balance ourselves. At the center of the Medicine Wheel is the fire and it represents self and the place to start. As you look out a circle is created representing the people in your life. It is life itself, the spring is in the east, summer in the south, fall in the west and winter in the north. It tells the story of how all life came into being by rising in the east and then fading away as it moves west and north. All life rises and sets like the sun.

1.1  
migawap: The Tipi

The word Tipi does not mean anything. The Cree word used today is migawap. Traditionally, it was kitche migawap. This thesis explores the Tipi to better understand personal well-being and translate Indigenous design concepts to aid in one’s healing journey. Native Medicine is guided by the medicine wheel and the Tipi embodies those teachings.

Tipis were more than a home but a culminate representation of Cree culture. The Tipi is a sacred construction and it is said that the knowledge is a gift. Today we understand the Tipi to have come from many different Nations, usually conical in form with straight wooden poles to support a cover made with animal skins and an opening at the top to draw out smoke from the fire.

---

8Elder Mary Lee, “Cree Nehiyawk Teaching.”
The photograph titled “Buffalo Tipi 1878,” (Fig 1) demonstrates a traditional Tipi dwelling and cooking Tipi structure used for smoking meat. This Native conical dwelling is best known by the Sioux Nation as Tipi or teepee. Hungrywolf defines the structure as the home for nomadic people. He further uses the term nomadic to describe the lifestyle of Indigenous Nations. To grasp the Tipi lifestyle the term nomadic will be re-defined. Nomadic implies that Indigenous people had no place of their own but merely moved from one place to another.

Figure 1: Buffalo Tipi 1878. Adolf Hungrywolf, Tipi: Traditional Native American Shelter (Summertown, TN: Book Publishing Company, 2006) 65.


Adolf Hungrywolf, 6.

Nomad, described by 2019 Dictionary.com, LCC 1. a member or tribe that has no permanent abode but moves about from place to place usually seasonally and often following a traditional route or circuit according to the state of the pasturage or food supply. 2. Any wanderer; itinerant.
To explain, the movement patterns of Indigenous people and their homes is defined by my sister Laurel,\textsuperscript{14} a student from the Indigenous Relations program at Laurentian University in Sudbury, Ontario. Her description can be demonstrated in the map illustrating the Cree dialect\textsuperscript{15} area across Canada (Fig. 2). The Cree dialect language map closely corresponds with the Boreal Forest Map of Canada 2011 (Fig 3), which demonstrates the Cree regional boundary.

\textsuperscript{14}Laurel, Indigenous Student, in discussion with the author, December 2018.

Tribal hunting and gathering grounds, or territory, were distinguished by environmental markers. For example, an Elder from Rankin First Nation in Ontario stated that a territory typically extended to the fields of wild rice or body of water and it would be known that beyond the fields or landscape landmark would be another ‘Tribe’ area. The Cree Tipi region is identified through this process. Therefore, The Boreal Forest is the traditional territory of the Cree Nation and they traveled the great expanse of their home. The entire area was their home and therefore they were not nomadic people. It is important to define cultural design solutions for residents who want to feel connected to their identity and therefore it is imperative to understand Cree culture and their sense of place.

Figure 3: Boreal Forest Map of Canada 2011. Rick, Boychuk, “War for the Woods: Boreal Forest Agreement” (Canadian Geographic 2011). www.canadiangeographic.ca/article/war-woods-boreal-forest-agreement

16Unknown, Rankin First Nation Story, in discussion during a visit as part of the graduate design studio, January 2017.
1.1 The Tipi Simplification Process

The entire process of constructing and erecting a traditional Tipi embodies cultural significance since it is a communal act. In this way, there is a complexity to Indigenous artifacts. Tipis today are misunderstood due to poor representation. For example, the photo titled “Big Indian Village Pow Wow” (Fig. 4) is from Adolf Hungrywolf’s text, *The Tipi: Traditional Native American Shelter*, where he states that the camp was probably a set for a movie. Hungrywolf argues that during the 1920 communities would have enjoyed a paid opportunity to set up their Tipis and to wear their regalia.

![Figure 4: Postcard from 1920, “Big Indian Village Pow Wow.” Adolf Hungrywolf, *Tipi: Traditional Native American Shelter* (Summertown, TN: Book Publishing Company, 2006) 81.](image)

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17 Adolf Hungrywolf, 81.
18 Regalia described by Mike Dangeli, “All our regalia has our stories and history behind it. And the regalia we use in our dance group, our masks, we have over a hundred songs, and just as many masks, which are tied and attached to the songs. It’s important to share these stories, and to share the importance of the regalia.” In, Culture, Not Costumes: The Art of Regalia” (Indigenous Tourism B.C, 2016). https://www.indigenousbc.com/blog/culture-not-costumes-the-art-of-regalia/.
In the image some of the Tipis are on the hillside and normally this would never have occurred on sloped ground since anyone trying to sleep in one would have an uncomfortable night.\textsuperscript{19} The postcard’s authenticity is dependent on the artist representing the content accurately. The consequences of inaccurate information cause misconceptions. The Tipi has multiple dimensions of connectivity to the land, of spirit, form, of story, history, time, community and to oneself. The narrative of the Tipi in this document will unfold a deeper understanding of Cree culture. These attributing factors will inform an architectural dialogue to promote a sense of personal well-being and health, spiritually, physically, mentally, and emotionally.

\textsuperscript{19}Adolf, Hungrywolf, 81.
CHAPTER 2

Tipi Teachings by Elder Lee Mary

Elder Mary Lee was referred to me during my research on the Tipi by another Elder and my mother. This led me to read her online platform called The Four Directions Teachings where she explains that in the beginning the Tipi was a dome structure called a Sweat Lodge used with heated stones, not a fire, as the source. Rocks would be gathered outside, heated and then brought into a pit in the middle of the lodge. The heat from the rocks kept the lodge warm and the cooking was done outside. The need for a larger lodge generated the structure of the Tipi and a fire could be made inside. The women were named after that fire in the centre of the Tipi, which brought that warmth and comfort. In the Cree language, the centre, the fire, is iskwuptew. “Woman” in our language is iskwew, more than one woman, iskwewuk. We were named after that fire, iskwuptew, and that is very powerful, because it honours the sacredness of that fire.

She further shares that in the Cree language, for an old woman, it is notegweu or notaygeu, meaning when she covers herself with a shawl. A Tipi cover is like an old woman with a shawl and it embraces the teachings and the values of community that the women hold. An old woman always has room for more children and great grandchildren to come into her circle, and this is the meaning for the Tipi cover.

When the Tipi is erected properly, the poles are covered and the Tipi stands with dignity, just as a woman who covers her legs with a skirt a representation of the circle of life. When the flaps are up it is a symbol to embrace life and visually seems like a woman standing with her arms out saying, ‘thank you to everything.’ The Tipi is the spirit and body of a woman. The woman represents family, community and values, which bring balance into our lives. When a Tipi is constructed it involves a ceremony to respect the value of the woman’s teachings.\(^\text{22}\)

The Tipi ceremony described by Elder Mary Lee is the same as picking sweetgrass. The sweetgrass is picked, then braided with the intentions to gift the bundle. A prayer is said during the process of picking and braiding the sweetgrass. The sweetgrass is then burned and the prayers are released and help the receiver. It is the same with a Tipi being constructed for the first time.\(^\text{23}\) The Tipi must face east only for the first time it is erected because it represents the beginning of creation.\(^\text{24}\) Prior to making a Tipi, tobacco is offered to Mother Earth by sitting humbly on the ground and acknowledging everything used from Mother Earth since everything we are borrowing from her is needed to make a Tipi.\(^\text{25}\) Whoever is building the Tipi also offers tobacco with humbleness, along with the women in that family to offer the tobacco since the Tipi is a woman’s symbol; and the ceremony is a woman’s teaching. Ceremony reminds us of the balance we must bring to our lives and of the powerful teachings of women.

\(^\text{22}\)Elder Mary Lee, 2006.  
\(^\text{23}\)Ibid.  
\(^\text{24}\)Ibid.  
\(^\text{25}\)Ibid.
2.1 Tipi Poles and Their Meaning

The Cree Tipi uses fifteen poles to make the structure and each pole holds a teaching. The Tipi does not have to face east all the time.\(^{26}\) The first three poles are tied together to form a tripod and fortify the structure. The teachings are named obedience, respect and humility. Notice the poles are in a reciprocal frame;\(^ {27}\) they network and support one another to stand.

The teaching is that in order to make a family you need three - two parents and the child - to make that balance.\(^ {28}\) The tops of the poles have many teachings and each one points in a different direction. The poles represent our need in the strength and support of our families, communities and our acceptance that everyone’s journey is different. Each pole has its own teaching and takes time to explain. The poles’ teachings for the thesis are summarized to share a glimpse of an observational and land-orientated culture.\(^ {29}\) To expand knowledge is not separated from experience, and starting at a young, age youth are taught to respect their environment since it is necessary for a good life.\(^ {31}\)

The first pole is obedience and means to accept guidance and wisdom by listening to traditional stories, our parents, grandparents, and Elders. The second pole is to respect by honouring Elders, strangers, and all of life. The third pole is humility and it is to be humbled in understanding our relationship with creation and completes the Tripod.

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\(^{26}\)Elder Mary Lee, 2006.  
\(^{27}\)Reciprocal Frame, described Olga Popovic Larsen as structures consisting of linear flat or inclined elements which support each other and are arranged in a way to form a closed circuit or unit. The assembly formed in such a way is a stable geometrical configuration and forms a spatial structural system, most commonly used for roof structures, where the members share the load and transfer it down to a ring beam, columns or supporting walls, in “Reciprocal Frame (RF) Structures: Real and Exploratory,” Springer Link, 2014. https://link.springer.com/article/10.1007/s00004-014-0181-0  

Krystel Clark | Tipi Tectonics
THE TEEPEE

Poles Represents:
1. Obedience .... Nashitamowin
2. Respect ........ Myototamowin
3. Humility ..... Kisewatishwin
4. Happiness .... Myotekeswin
5. Love ......... Sakehitowin
6. Faith ........ Tegokehtumowin
7. Kinship ......... Pakohtowin
8. Cleanliness .. Kaschikowin
9. Thankfulness . Nakuskowwin
10. Sharing ........ Fakwenematinowin
11. Strength .......... Muskawiswin
12. Good Child .... Meyo
13. Reading ........ Chikhanawiswin
14. Hope ............. Pakoseyimowin
15. Ultimate Protection .... Nakotokishwin
16. Controls Flaps from winds .... Meyo Pakwesaktim

41 Yards of Hide

"HIDE" - Warmth & Protection
Fasteners

Figure 5: Pole Names Diagram. Tia Lalani, “Augustana raises tipi to raise awareness” (University of Alberta: Aboriginal Student Office, 2015). https://news.augustana.ualberta.ca/2015/09/augustana-raises-tipi-to-raise-awareness/
Happiness is the fourth pole and completes the doorway. We must show enthusiasm to encourage others and share happiness. Love is the fifth pole and it is the acceptance of others is the only way to live in harmony and to be good to one another. The sixth pole is faith and it is the believe to trust in others, in the creator and to sustain our spirituality. The seventh pole is kinship, and more specifically our family, parents, brothers, sisters, extended family, grandparents, aunts, uncles and anyone who gives us a sense of belonging to a community. The eighth pole is cleanliness, a spiritual cleanliness from clean thoughts come from a clean mind and this comes from our spirituality. A clean mind gives us peace and to not inflict harm to others. The ninth pole is thankfulness and reminds us to appreciate the Creator’s gifts, and to share them with others. The tenth pole is sharing by contributing as a member of a family and community by helping with provisions and other basic needs. The sharing of responsibilities the value of working together and enjoying the fruits of labour is learned. The eleventh pole is strength, a spiritual strength that is instilled in youth during fasting and teaches patience in times of trouble but to endure and how understanding. The twelfth pole is good child rearing which means the ability to teach children, since children are gifts from the Creator. We are responsible for their wellbeing, spiritually, emotionally, physically, and intellectually, since they represent the continuing circle of life. The thirteenth pole is hope which reminds us that we must be optimistic of the future and that the seeds we are planting will bear fruit for our children, families, communities, and others.

\(^{28}\)Elder Mary Lee, 2006.
\(^{29}\)Ibid.
\(^{31}\)Ibid, 53.
Finally, the control flap pole allows the occupant to adjust the top opening since it is connected to an extended piece of leather which can wrap around the front of the Tipi. It is used to direct the wind to assist the smoke out of the top opening or as protection from the rain. The control flap pole teaches that we are connected and depend on one another. Every time a pole is added they are tied in place and represent that all the teachings are connected. The teachings are shared to help sustain the strong will of women who help communities by nurturing healthy, balanced people.32 The Tipi reveals and embraces Indigenous knowledge.

CHAPTER 3

Introduction to Tectonics

To grasp tectonics and Tipi tectonics specifically, I will define it as described by Eduard R Sekler to give a context of the term’s development since the seventeenth century. The word tectonics derives from the Greek root tekton meaning the craft of the carpenter or the builder. In the seventeenth and eighteenth centuries the term expanded to include “convincing the viewer of its solidity, or plausibility.” The craft expanded to appear aesthetically supportive and offer credibility to its structure. By the middle of the nineteenth century tectonics was a by-product or final result that was inevitably produced from a technological construction. Later, tectonics was recognized as a manifestation of empathy or soul, which Sekler defines by asking, “how can tectonic forms be expressive?” The twentieth century references work from the 1870s to reintroduce the concept of pure visibility. Sekler describes the history of tectonics as, “The relations between support and load – these laws apparently fixed forever – will also have to re-evaluate their image.” Therefore, structure and construction are constant, but the tectonic language will adapt. The term thus evolved to recognize tectonic architectural expression as a structural concept that is implemented through construction but represented visually to evoke expressive qualities.

34Ibid, 90.
35Ibid.
36Ibid, 92.
37Ibid, 94.
38Ibid.
3.1 Research Process

The design solution emerges from transference of Indigenous knowledge by incorporating cross-cultural assemblies and programming into a contemporary building. The process of deconstruction enables a methodology to fully embody the Tipi structure to gain an insight of the Tipi’s inner workings, which is then adapted into a contemporary building. The process of documenting the Tipi will be categorized by Gottfried Semper’s four elements of architecture, the hearth, the roof, the enclosure and the mound.39

3.2 Tipi Construction and Deconstruction Process

The deconstruction of the Tipi is a critical process to isolate compositional parts to better understand their interdependence, and to thus reveal its overall constitution. This notion of ‘unbuilding’ (from the German word abbau), was used by Lewis Mumford as a conceptual framework to better understand how industrial society tends towards simplified relationships, rather than acknowledging their rich complexities.40 Mark Wigley describes unbuilding as, “a tradition [of] inhabiting [a] structure in a way that exploits its metaphoric resources against itself, not to abandon the structure but to locate what it conceals.”41 David Fortin further suggests that such methodology “implies an essential recognition of the existential value in better understanding the component through its myriad networks.”42

42David Fortin 57.
There is a system of reciprocal relationships between parts that can be understood first individually, then reconstructed to seek a better understanding of the Tipi. Each component of the Tipi has the capacity to alter our understanding or perspective of the whole. The Tipi is also examined as singular parts with regards to its structure. The four assemblies - the hearth, the roof, the enclosure and the mound - are deconstructed into a series of details with their reflective twenty-first century construction detail counterpart. The process is used to determine pre-colonial concepts by comparing standard construction methods that are typically used in the twenty-first century.

### 3.3 Gottfried Semper’s Four Elements

Gottfried Semper’s four elements of architecture were derived from his interest in material history. As he states, “when allied with antiquarianism, this materialistic way of thinking has led me to strange and fruitless speculations and overlooked the most important influences on the development of art.” His speculation led him to question human society, noting that, “I see myself forced to go back to the primitive conditions.” Semper’s architectural theory is centered on the problem of the primitive hut (Fig. 6) and can be described in two stages. First, “the ethnological fact still seen in dwellings of primitive societies and delineating man’s early industrial or artistic exercises.” Specifically, the lifestyle of early cultures and their

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44Antiquarian described by 2019 Dictionary.com, LCC, 1. Pertaining to antiquaries or to the study of antiquities. 2. of, dealing in, or interested in old or rare books.
45Gottfried Semper, 102.
46Ibid.
relationship with their home. And secondly, “the hut as an ornamental analogue, rendering transparent man’s ornamental instinct and giving rise to monumental form.” Jimena Canales and Andrew Herscher, expand on Semper’s perspective of ornament, or ‘cladding,’ and will provide an introduction to his four elements of architecture in their text, Criminal Skins: Tattoos and Modern Architecture in the Work of Adolf Loos. As they write,

... for [Semper], architectural ornament emerged organically from a specific cultural milieu, as a representation of a building’s inner structure. He identified a building’s ‘cladding’ as the complement to a building’s internal tectonic structure, but also as a crucial representation of that structure in aesthetic terms... Cladding transformed the completely material, structural, and technical prototype that was the dwelling ... into monumental form, out of which arose true architecture.

In the late 1840s Semper’s lectures transitioned from early society building typologies to the motives underlying prehistorical dwellings. He introduced his definition of the vertical enclosure and the roof as fundamental architectural concepts during a lecture in 1848. Here he identified the enclosure as having phenomenological value since it created a new spatiality, since it was “an inner world separated and protected from the outer,” that surrounded the hearth.

47Ethnological described by 2019 Dictionary.com, LCC, 1. a branch of anthropology that analyzes cultures, especially in regard to their historical development and the similarities and dissimilarities between them. 2. (formerly) a branch of cultural anthropology dealing with the origin, distribution, and distinguishing characteristics of human societies.
49Milieu described by 2019 Dictionary.com, LCC, 1. Surroundings, especially of social or cultural nature.
His theory was further developed in 1849 by positioning the elementary building components initially as “mats woven with leaves bats or animal parts,” which transitioned to his first elemental theory of the enclosure, “timber scaffolds,” This developed the concept for the roof and “earthen or masonry mounds for terraces,” as combined elements, as the hearth and earthwork. The primitive hut on display at the London Great Exhibition in 1851 of an Indian’s hut from the Caribbean Island of Trinidad fascinated architects with its appearance, which credited Semper’s theory. Semper’s theory progressed to his four categories, “textiles (walling), ceramics (hearth making), wood framing (roofing), and masonry (terracing).” Semper’s elements of architecture will be used to categorize the Tipi’s ‘primeval,’ nature as a way to reflect on western theory and Indigenous thought to demonstrate different worldviews.

51 Ibid.
53 Harry Francis Mallgrave, 63
Figure 6: Primitive Hut: Harry Francis Mallgrave, “Gottfried Semper: Architecture of the Primitive Hut,” University of Illinois, Vol. 3, n.1. Fall 1985, 63
3.4 Tipi Tectonics

In the twenty-first century, typical construction conveys the tectonic language of resistance, or ‘to repel’ by creating air tight building envelopes that resist wind, water, insects, thermal bridging etc. The objective is to create controlled spaces that can be adjusted internally with advanced technological systems for a well-tempered environment. In contrast, the Cree Tipi tectonics can be described as *nisitohtamonâhk*, or ‘field of meaning,’ which means literally, “the land and territory of understanding.”58 I use the term to define Tipi tectonics since the environment is fundamental to the function of the Tipi. In other words, the Tipi embodies and adapts to its surrounding environment to function.

3.5 Process

The examination of the Tipi construction is divided into four drawn panels reflecting Semper’s topics: The Tipi opening and wooden pole structure (roof), the fire (hearth), the Tipi cover (enclosure), and the permanent Tipi wall assembly (mound or earthwork). However, a Tipi shares the enclosure with the roof and earthwork, therefore, the roof will focus on the pole structure and the enclosure and earthwork are combined in the analysis. To describe the design process, I drew a Tipi in the center of an 18” x 24” sheet of watercolour paper (Fig 7).

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54 Harry Francis Mallgrave, 63
55 Ibid.
56 Harry, 60.
57 Harry Francis Mallgrave, 67.
58 Neal McLeod, 230.
The drawing displayed the construction method of each part of the Tipi corresponding with a twenty-first century typical construction detail. These details responded to the purpose of the Tipi assembly. For example, the top opening of the Tipi is related to skylight details. Both details allow natural light to filter from a roof opening and offers a view to the sky.

The page was scanned and printed into the four panels to further deconstruct Semper’s topics. The prints were sized 24” by 18” and adjusted with transparencies to fade selected detailed to only reveal the theme of the panel. To expand, the Tipi opening and wooden pole structure (roof) panel revealed the flow of water and the movement over, or within, the structure. The (mound or earthwork) revealed the flow of wind. The fire (hearth) revealed the path of warm and cool air and its effect on interior spaces. the tipi cover (enclosure) conveyed the narrative of gender roles regarding the Tipi.

3.6 The First Element: The Roof

Semper defines the roof as a response to protecting the hearth from the weather, whether it appeared as a movable tent, or stood over a hollow hole in the ground and was only gradually lifted over the soil. The roof or cover is one of the same when referring to the form of the Tipi.

Semper identified a building’s cladding as a crucial representation of that structure in aesthetic terms. In other words, cladding transformed the material, structure, and technical prototype that was the dwelling into monumental form, out of which rose true architecture.

In the breakdown of the Tipi, the roof will incorporate the structure. The Tipi opening and wooden pole structure (roof) panel reveals the path of water after a rainfall. The smoke flap is manually closed by the outer poles and the rain flows down the cover; however, some of the rain enters the opening at the top of the Tipi. The rain droplets run down the inner side of the structural poles. Two short sticks (Fig. 8), are placed parallel against the inner pole with sinew to create a gap between the liner and structural poles, this allows a path for the water to flow.61

The liner stays dry and the water has a path directly to the earth (Fig. 10). The corresponding skylight detail, however, reveals a different narrative. The skylight opening is tightly sealed with sealant and metal flashing to resist any water from compromising the barrier.62

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61 Gottfried Semper, 111.
Figure 9: The Tipi Opening and Wood Pole Structure (The Roof): Original Scanned and Hand Drawn Over in Graphite 18” x 24”
Figure 10: The Hearth: Original Scanned and Hand Drawn Over in Graphite 18" x 24"
3.7 The Second Element: The Hearth

Semper defines the hearth as the following: “The fireplace [is a] warming, and food preparing flame… Around the hearth the first groups assembled… Throughout all phases of society the hearth formed that sacred focus around which the whole took order and shape.”63 The second panel illustrates the hearth and heat transfer. In the Tipi, a small dug out area is made under the smoke hole and closer to the front, since the Tipi is conical in form, for the fire.64 The warm air rising inside the Tipi drew in cold air from outside, from beneath the cover, up the lining, creating a draft for the fires smoke to ‘flow’ up through the smoke hole.65 The smoke, fire and heat fill the space and warm the occupants. In the woodstove detail the heat transfer is contained within its structure. The fire is lit within the woodstove and tightly sealed allowing the heat to build up and warm the surrounding air. The woodstove has a pipe extending through the wall assembly to intake outdoor air into its system. The smoke is directed up the shaft and exits through the roof assembly, demonstrating a controlled heating system.

This phenomenon is reoccurring with the Tipi. For example, the exterior wind moves or ‘flows,’ from the base of the Tipi up the liner and escapes through the roof opening. The window, if it is operable can be opened to allow wind into the building. By contrast, a contemporary building’s air intake is typically recycled within a confined space, potentially with fixed windows.

63Gottfried Semper, 102.
64Reginald and Gladys Lauren, 108.
65Ibid, 64.
Figure 11: Heat Transfer Diagram
Figure 12: Wind Movement Diagram
The underlying theme I use to describe this occurrence is Sâpociwan, ’it flows through’: sapo- ‘through’; -ciwan, a verb stem that denotes flowing. This theme is constant with the wind movement and the hearth’s warmth. I develop this method to emphasize the Tipi tectonic expression.

3.8

nisitohtamonâhk

In the next phase of the research, scanned panels were placed over one another as a reconstruction with all the components to be evaluated again with nisitohtamonâhk. The colours demonstrate the flow of the fire’s smoke by outlining how the air flows through the Tipi. I placed my mother’s sketches within the work. She would draw an image to demonstrate a function or to illustrate her story. I would redraw her image beside hers to gain an understanding, and she would usually correct me, so that narrative is in the artwork.

66Neal McLeod, 100 Days of Cree (Canada: University of Regina Press, 2016), 60.
Figure 13: Collective Research Layered: Digital Composition in Black and White
3.9 Third and Fourth Elements: The Enclosure and Mound

Semper defines the enclosure as, “the art of the wall fitter… a weaver of mats and carpets. Wicker work is the essence of the wall.”\(^{67}\) The last panels, the Tipi cover (enclosure) and the Tipi (Earthwork), convey the narrative of gender roles regarding the Tipi. The woman is represented by the ‘skirt’ of the Tipi. The woman’s skirt is connected to the earth and the Tipi is a symbol of that connection.\(^{68}\) The woman erected, constructed and designed their Tipis. The only role a man may have assisted with was the painting of the cover in most cultures.\(^{69}\) Typically, a Buffalo Tipi could be erected in fifteen minutes by one woman.\(^{70}\) A beautiful straight Tipi represented a good home and therefore well-constructed Tipis were prized. The cultural significance of the Tipi resonates with the woman, her surroundings, and the significant roles women held prior to colonization.

\(^{67}\) Gottfried Semper, 103-104.

\(^{68}\) Elder Delphina, in discussion with the author, November to December 2018.

\(^{69}\) Reginald and Gladys Lauren, 43.

\(^{70}\) Ibid, 61.
3.10 Exploration of the Building Envelope

This research resulted in the design question: How would the building envelope assembly today differ to respond to environmental conditions that are so prevalent in pre-colonial Cree dwellings? One solution can be achieved by rearranging the composition of a twenty-first century wall assembly. A typical rain screen construction detail illustrates the rain water being pulled within a fixed cavity to drain water away from the building.\textsuperscript{71} The exterior wall thickness is roughly 12” in depth with all its parts. The Cree Tipi wall assembly uses hay, sticks or straw and snow compacted to insulate the exterior base of the cover. (Fig. 18) The hay or sticks are used to allow the cool air to enter at the base of the Tipi and move up the interior liner to keep the cool air draft away from the occupants and move the smoke from the fire up through the smoke hole. The snow thickness varies on the local climate and the depth is determined by the user. The distinct difference is where the continuous barrier is located within the assembly since the barrier determines how the water flows through the space and assemblies. My critical response was to test out a typical wall detail with the Tipi construction method of allowing water and air to move through the wall structure.

The ambition was to maintain the integrity of the insulation. The space between the concrete foundations allows an opening for drainage and air to flow into the building.

The continuous vapour barrier guides the water that flows through the skylight to move along the lower glass plane and with the aid of gravitational forces is channelled down the interior wall into the gutter system. I took the approach of re-evaluating standard construction materials and rearranging the composition to function, similar to a Tipi’s skin. The design thinking progressed from this point to reflect on other elements concerning the Tipi. The study expanded a personal understanding of how to literally reinterpret a system with standard construction, but it did not capture the importance of the Tipi: culture, story, health, warmth, knowledge, spirit etc.
A selection of projects from three Indigenous architects across Canada will be explored to share different aspects of Indigenous design. The Projects include *Niitsitapi* Learning Centre designed by Wanda Dalla Costa, The First Peoples House by Alfred Waugh, and two projects from Douglas Cardinal; Aanischaaukamikq Cree Cultural Institute and *Me No-Ya Win* Health Centre for the Sioux Lookout First Nation Health Authority.

### 4.1 Wanda Dalla Costa: *Niitsitapi* Learning Centre

Wanda Dalla Costa is a citizen of Saddle Lake Cree Nation, Alberta. She specializes in community design and placekeeping. She worked with Beck Vale Architects to design a 11,000sqft addition to a 30,300sqft site with a $8.5 million budget in 2017. The focus of the Aboriginal Early Learning Centre is in the internal space circular room (Fig. 19). The space is designed for gatherings as an approach to learning. Urban Indigenous communities use the building to learn about and celebrate their culture and languages. The process included a series of community consultations as well as one-on-one interviews with Elders and leaders from the Indigenous community. The project instills community engagement and the importance of having spaces to learn and teach traditional knowledge.

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73 Ibid.

Alfred Waugh is a citizen of Fond Du Lac (Denesuline) Nation of northern Saskatchewan, Canada. He worked with the University of Victoria to design the 12,875sqft First Peoples House in British Columbia, completed in 2010 (Fig. 21). The multi-purpose educational facility is inspired by the Coast Salish Longhouse. The entrance is built with a series of contemporary and traditional poles. The centre’s design is predominately Coast Salish with influences by surrounding coastal First Nations. The structure maximizes sunlight, ventilation (Fig. 20), natural resources, and local materials. The project further highlights traditional functionality by filtering in outdoor air, similar to a Salish Longhouse. The building represents a contemporary approach to designing a traditional dwelling, without directly duplicating the original form.

4.3 Douglas Cardinal: Aanischaaукамикw Cree Cultural Institute

Douglas Cardinal was born in 1934 in Calgary Alberta. He is a forerunner of philosophies of sustainability, green buildings and ecologically designed community planning. His architecture derives from his observation of nature and its understanding that everything works seamlessly together.74 The Aanischaaукамикw Cree Cultural Institute was designed for the Cree Nation in Ouje-Bougoumou, Quebec. The project is 2800sqm and cost $11 million. The community and Cree Nations of northern Quebec envisioned a centre of identity and the Aanischaaукамикw Cree Cultural Institute was proposed close to the village core of Ouje-Bougoumo, overlooking the cultural and ceremonial grounds.

The building has a sloping roof, starting close to the earth and intersects with another roof emulating the traditional shaptwam building form (Fig. 22). The project is inspired and informed by nature, a definitive characteristic of many First Nation traditional structures. The Aanischaaукамикw Cree Cultural Institute respects its inhabitants and the environment. The building is orientated towards an important site, the location is close to the village, and included the community within the design process.

4.4 Douglas Cardinal: Me No-Yo Win Health Centre

Douglas Cardinal and Murphy Hilger were commissioned to design a building that combines traditional First Nations healing practices with modern medical facilities in Sioux Lookout, Ontario. The project is 145,000sqft and cost $90 million and was completed in 2010. The hospital provides services for 28 Aboriginal communities in northern Ontario. The design has a medicine wheel only seen from fly-in patients and represents a northern lodge retreat, rather than an institution. Doctors, Elders and traditional healers contributed to the design, which celebrates the healing of a community. Me No-Ya Win Health Centre outreaches to a vast number of communities and the holistic approach demonstrates the need and similarities of Indigenous health across twenty-eight Aboriginal Communities.


CHAPTER 5
Introduction of Site

The site is located where the current Jeanne Bird Clinic resides in Lac La Ronge Reserve in Northern Saskatchewan. The location is central to various Saskatchewan Northern First Nations and two hours north of Prince Albert. The existing building was imposed onto the site and reflects no cultural significance. The site was drawn in AutoCad software (Fig 28).


5.1 Site Analysis Study

The site was reviewed through a series of hand drawings and a contemplation of layered media. It began with the question of how the site will be reclaimed and redesigned to better reflect the region. The drawing titled Northern Lights (Fig. 29) reclaims the site by fracturing the existing building to allow the natural landscape of Lac La Ronge to take over the drawing and site. The image was inspired by Lac La Ronge’s occurrence with the northern lights, so the colours are a reflection of that experience. The idea behind the drawing was to imagine the view from the street and to re-evaluate the space. The discovery through the drawing reveals the importance of the natural environment.

The AutoCAD file, printed and scaled at 1:250 was drawn over to illustrate the movement throughout the site. The outline of the existing building is maintained within the plan but is slowly erased by the layers of green ink. The paths were informed by existing walkways, as if people would meander through the site. A path was added to and around the existing pond. The linework reflects a drawing style that flows through the site, which was repeated with each study. The pathways eventually informed the shape of the buildings (Fig 30).

Figure 28: Lac La Ronge Site
Figure 29: Northern Lights in Lac La Ronge Hand drawn in Pencil Crayon 18" by 24"
Figure 30: Pathway Study: AutoCad Underlay Printed and Hand Drawn Over in Shades of Green Ink
The same approach was taken with the sun study (Fig. 31). An AutoCAD file was printed and scaled at 1:250 and was drawn over to illustrate how the sun moves across the site. The orange colour represents a higher intensity of sunlight where the yellow is diffused light. The sun study informed the layout of the windows in each of the proposed buildings. The sun study also assisted in the location of the buildings and their orientation to take advantage of the natural light and solar gains. The wind study (Fig. 32) evaluated how the prevailing winds blow across the site and around the trees. The dark blue colour represents a stronger wind and the light blue illustrates weaker winds. The wind study also assisted in the location of the proposed buildings. Trees will be planted in areas to avert strong wind tunnels.

Next, the site elemental studies were scanned individually and layered digitally in Illustrator to evaluate how the elemental conditions functioned together. The site study was printed and worked out with paper to inform the buildings. The first building is placed into the cove of trees and directly on a heavily used path. The windows open to the east, south and western directions. The third and fourth buildings were designed similar since both were shaped to flow with the route of the pathways. The two structures are separated by a pathway to allow the user to freely move between them. The site’s environmental conditions ultimately formed the shapes of the buildings as a way to reclaim the site.

Figure 31: Sun Study: AutoCad Underlay Printed and Hand Drawn Over in Yellow and Orange Ink
Figure 33: Site Study Analysis and Layered Digitally to Inform Design Development
CHAPTER 6

Implementing Indigenous Design Concepts of Health

The study of the Tipi, and the cultural aspects it reveals, initiates the narrative of how to implement Indigenous design concepts into a built form. Kyle Campiou, introduces the Indigenous philosophy of health by explaining that,

We don’t believe a body just gets sick. We don’t believe a person gets sick in isolation. We believe it is connected to their spirit, their community and ultimately, their environment. So that is why we feel it is important to have healing and welcoming places in their environment. The word tawaw in Cree means, ‘Come in, you’re welcome; there’s room.’

Campion is describing the energy within a healing space as welcoming, and that everyone should feel comfortable. For instance, my Great Aunt Rose’s home is roughly 25sqft x 25sqft compartmentalized into four rooms. When entering her home, the front door splits through tall, wide windows that stretch two feet from the ground up to the roof and leads directly into a living and kitchen space. There is a round table by an open oven for warmth (it was more convenient then starting the woodstove). The table was roughly three feet away from the door. Over the course of three days sitting with her and my grandmother, relatives would arrive and sit with us at the table.


Krystel Clark | Tipi Tectonics
The table sat eight people and during the course of three days there were brief moments when it would only sit the three of us. The guests rotated in and out, we shared chips, tea, and coffee with real cream; most guests brought food with them and it was always passed around. Part of what made the home so welcoming was when there was no more room at the table for guests they would spill onto the couches and chairs and the talking would not cease. This is what tawaw means.

6.1 Indigenous Programming

The programming of the site was determined by four important themes of individual well-being and how they contributed to spiritual, physical, emotional and mental health. This would include the following: 1) a place to heal that re-evaluates a typical clinic distribution system of providing support and services, 2) a place to feast that embraces the important qualities of food and bringing people together around a fire, 3) a place to burn medicine carries our words to the creator, and 4) a place to pitch a Tipi with a space to teach. The buildings (Fig. 34) will be separated to stimulate movement throughout the site and promote physical health.
6.2 A Place for Healing: Decolonizing the Waiting Room

The floor plan of a typical clinic (Fig. 35) is coloured to illustrate spiritual, physical, emotional and mental health, natural light and design differences. The typical clinic favours physical health and practically none of the latter. The design proposed will promote spiritual, emotional and mental health by placing Elders on site in rounded, naturally informed spaces to promote movement in and outdoors.

6.3 A Place to Pitch a Tipi

The Tipi reveals the significance of woman’s role in Cree culture and the making of the Tipi. The building program will instill the Tipi teachings as its mandate and will provide cultural health services and community-based programs to promote cultural awareness of the Tipi teachings. A woman will guide the first Tipi ceremony and take the role of teaching how a Tipi is constructed, in respect to Cree tradition. A large gathering will ideally take place to inform surrounding communities to take part in painting the cover (Fig. 36).
6.4 A Place to Feast (Kitchen) and Burn Medicine (The Lodge)

The kitchen is diagramed as a social space, also known as a community gathering space (Fig. 37 and Fig. 38). The social layout is inspired by the interior network of the Tipi and Tipi Village. The feasting and social area share the same space around a central large counter and fire. The structure in the lodge is diagramed to show the frame’s evolution of the Tipi pole layout to a design that honours the three-pole foundation and sacred numbers, three, four and fifteen.
Figure 35: A Place for Healing
Figure 36: A Place to Pitch a Tipi
Figure 38: A Place to Feast and Burn Medicine Interior Perspective Mixed Media, Digital and Graphite Drawing
6.5 Conclusion

The process of deconstruction enabled a methodology to fully embody the Tipi structure to gain an insight of the Tipi’s inner workings and the imperative significance of the woman’s role in Cree culture. The Tipi was reconstructed with all the components to be evaluated again with *nisitohtamonâhk*. The Tipi’s construction assemblies can be executed into current building systems by functioning with the natural environment. The thesis is contributing to architectural thinking by asking the question, what is the Indigenous perspective spatially? Materially? Tectonically? To move forward in architectural thinking, culture should take the lead in Indigenous design to inform a meaningful project. The shortfalls of the research included the language barrier of translating Cree to English. To have the entire text offered in both languages would offer a truer account of the traditional Tipi.

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80 Neal McLeod, *100 Days of Cree* (Canada: University of Regina Press, 2016), 230.
Bibliography


Appendix A: Tipi Artifact

The chair is representative of an Indigenous artifact that will be adapted to something that would be typically used today. The artifact is reflective of the Tipi backrest. The chair is placed at the rear of the Tipi facing the fire and the door opening. The largest area in the Tipi is occupied by the artifact. The chair expresses a cultural significance and demonstrates importance to the person leaning into the form. Woman were responsible for many things regarding the Tipi including the maintenance of the furniture. Guests visiting would be offered the backrest. The backrest was a luxury item and during the colonial shift the backrest was became rarely used.

I choose this artifact to reflect the adaptions of Tipi dwelling and construction methods. In Cree the backrest is highly respected. I designed and built a 1:1 chair as a gift to a Fire Keeper or to a Tipi that houses rotating Fire Keepers. The chair is built with similar construction details as the traditional to the Tipi. I used a tripod support that is tied at the top with vegetable tanned tool leather. The current poles are to be replaced during the spring when the saplings are ready to be harvested to ensure straight strong poles. The tripod is set up as a Tipi would have been, placed on the earth before being tied together and lifted into place. The cowhide leather was tested in position before cut into its final form.
Figure 39: Process Diagram and Breakdown of The Tipi Back Rest

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<tr>
<th>Materials</th>
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<tbody>
<tr>
<td>Tooling Leather</td>
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<tr>
<td>Soft Leather</td>
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<td>Leather Lace/Strap</td>
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<tr>
<td>Wood burning Tool</td>
<td>$30</td>
</tr>
<tr>
<td>Poles (Harvest)</td>
<td>$0</td>
</tr>
</tbody>
</table>

Total Cost: $130 - $193

FIRE KEEPER CHAIR

Feburary
- 3 4 5 6 7 8 9
- 10 11 12 13 14 15 16
- 17 18 19 20 21 22 23
- 24 25 26 27 28

Gather Materials
Leather Weaving

March
- 3 4 5 6 7 8 9
- 10 11 12 13 14 15 16
- 17 18 19 20 21 22 23
- 24 25 26 27 28 29 30

First Assembly
Revisions
Harvest Poles
Final Assembly
Final Deadline

Leather Weaving Types
- Basket
- Satin
- Twill
  - Custom
  - Basic

Krystel Clark
Cost

- Tooling Leather $10/sqft $20
- Soft Leather $6 - $15/sqft ($42 - $105)
- Leather Lace/Strap $10 $20
- Leather Scissors $8.85 $8.85
- Leather Hole Puncher $10 $10
- Wood burning Tool $30 $30
- Poles (Harvest) $0

Total Cost: $130 - $193

Leather Weaving Types

- Basket Satin Twill

Materials Price Per Piece Cost

- Top View
- Model Progress

KEEPER CHAIR

- Fire Keeper Chair
- February
- March
- Harvest Poles
- Final Assembly
- Final Deadline
- Leather Weaving
- Revisions
- Gather Materials
- First Assembly
The chair piece is designed to have the leather straps wrap around each pole and tighten when in use. The final step was to ensure the portable of the Tipi chair. The leather piece can roll up the poles and tied when not in use.

The chair can be used indoors or outdoors. When outside the poles will dig into the earth when someone sits in the chair, similar to the Tripod pegs/poles that use the earth to brace the structure.

Figure 40: Chair Preparation and Final Product Interior Photograph