

A JUXTAPOSITION OF WORLDVIEWS:  
How Emerging Regenerative Frameworks  
can be Enriched by Plains Cree Ways of Knowing

by

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## ABSTRACT

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Proponents of regenerative design and development have attempted to adopt Indigenous philosophies and sacred teachings into their research and publications. Though well intentioned, merely using quotations from Indigenous people does not constitute a culturally sensitive approach to learning from Indigenous ways of knowing. Even though some founding theories draw on Indigenous ways of knowing, existing regenerative frameworks do not explicitly take a holistic approach to exploring the worldviews, values, processes and practices, which are the basis of Indigenous teachings.

Without acknowledging how Indigenous knowledges were formed and how subsequent processes and practices have been shaped, regenerative researchers leave themselves in a position to be criticized for oversimplifying, tokenizing or romanticizing aspects of Indigenous ways of knowing by a-contextually attempting to adopt Indigenous teaching into their methodologies. A thorough and careful exploration of the intersecting worldviews, values, processes and practices between Indigenous ways of knowing and regenerative methodologies has not previously been undertaken.

In this thesis I endeavour to answer the following questions. First, what commonalities or nuanced differences exist between the worldviews, values, processes and practices of Plains Cree and regenerative practitioners? Second, to what extent can emerging regenerative frameworks, be enriched by Plains Cree ways of knowing?

In response to the research questions six recommendations were established which address the following topics:

1. Articulating the community's worldview;
2. Planning for changing contexts;
3. Using human experiences to validate scientific data;
4. Maintaining balance through reciprocity;
5. Transforming interconnections into synergies; and

6. Looking beyond scientific and “professional” roles.

The lessons learned from this research will have the potential to reshape how practitioners and other community participants use regenerative tools and shift who participates in the regenerative process.

## **PREFACE**

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This dissertation is original, unpublished, independent work. I created figures 1.1, 1.2, 1.3, 5.1, 5.2, 5.4, 5.6, 6.6, and 7.1.

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## CHAPTER 1: INTRODUCTION

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### 1.1 Research Statement

It is culturally disrespectful to attempt to adopt the ways of knowing<sup>1</sup> of an Indigenous Peoples into a non-Indigenous context, especially without properly acknowledging the founding worldviews and values of the Indigenous society. This superficial adoption of Indigenous ways of knowing into a non-Indigenous context is over simplistic and may be considered tokenising, romanticising and demeaning by Indigenous scholars (O'Riley, 2013).

Existing regenerative frameworks<sup>2</sup> appear to share similar worldviews and values with various Indigenous Peoples such as valuing the interconnections and interdependencies between the natural (ecological), the human (built and social) and spiritual realms. However, these worldviews and values have not been fully acknowledged or made explicit in regenerative methodologies<sup>3</sup>. Consequently, existing regenerative frameworks fall short of facilitating continuity and harmony between the natural, human and spiritual realms.

The purpose of this thesis is to a) explore the intersections between the worldviews, values, processes and practices of Plains Cree and regenerative practitioners and b) discover if, and to what extent, the Plains Cree ways of knowing can enrich emerging regenerative frameworks.

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<sup>1</sup> For the purposes of this thesis, the phrase *ways of knowing* is used to describe the worldviews, values, processes and practices of a particular Indigenous Peoples.

<sup>2</sup> *Regenerative frameworks* are tools used by practitioners to implement regenerative projects and are an embodiment of regenerative methodologies.

<sup>3</sup> *Regenerative methodologies* refer to the process of regenerative development, design and sustainability.

## 1.2 Research Objectives

Specifically, this thesis:

- Explores the potential intersections (in the form of potential commonalities and nuanced differences) between Plains Cree ways of knowing and current regenerative methodologies.
- Examines if and to what extent Plains Cree ways of knowing can enrich emerging regenerative frameworks during the predesign phase and offer guidance as to:
  - How regenerative projects are initiated;
  - How to establish collective project aspirations;
  - Whom to engage throughout the design process; and
  - How to inclusively engage community participants.

The thesis examines only how frameworks can be enriched by drawing lessons from Plains Cree ways of knowing in general ways rather than their application to specific regenerative methodologies.

## 1.3 Background

### 1.3.1 The Relationship Between Worldviews, Values, Processes and Practices

Throughout this thesis, and as depicted in Figure 1.1, the term *society* is used to describe a cultural group (such as the Plains Cree First Nation) or an academic/practitioner group sharing a similar realm of interest (such as proponents of regenerative development and regenerative design). Although both the Plains Cree and regenerative practitioners share similar worldviews, values, processes and practices; the Plains Cree cultural practices evolved over many generations (Stonechild, McLeod, & Nestor, 2004) while regenerative methodologies began to emerge more recently in the 1970s (Lyle, 1994). Both are still changing as new theories are developed and linkages are made between socio-ecological and political realms. The worldviews held

by a society gradually mature and ultimately become driving forces in shaping human endeavor. From a western perspective worldviews operate silently to filter information, categorize experience, anchor interpretation, orient learning, secrete norms, and legitimize narratives, ideologies, and power structures (Gladwin, Newberry, & Reiskin, 1997, pp. 243–245). For a traditional Indigenous perspective “people lived in constant interaction with a host of beings, powers, spirits who tricked us, protected us, quarrelled with us, guided us, taught us, punished us, and conversed with us.” (Apffel-Marglin, 2011, p. 3)

Worldviews shape a society’s values and describe societal standards of behaviour as they pertain to the formation of functional and prosperous societies (such as the Plains Cree and proponents of regenerative approaches). Therefore a society’s processes and practices can be described as the manifestation or embodiment of its worldviews and values. For example, Plains Cree processes and practices have helped them thrive and prosper over the past 11,000 years (Stonechild, 2007, p. 1). These processes and practices grow out of Plains Cree collective narratives, cosmologies, ceremonies, governance structures and lifestyles.

On the other hand, regenerative processes and practices are design-based approaches that have been established in order to implement holistic regenerative projects. These processes and practices are based in regenerative methodologies which have emerged over the past 30 years (Reed, 2007).

Figure 1.1 illustrates how the formation of worldviews precedes and governs the formation of core values within a society and how that precedes and shapes a society’s practices (France, 1997).

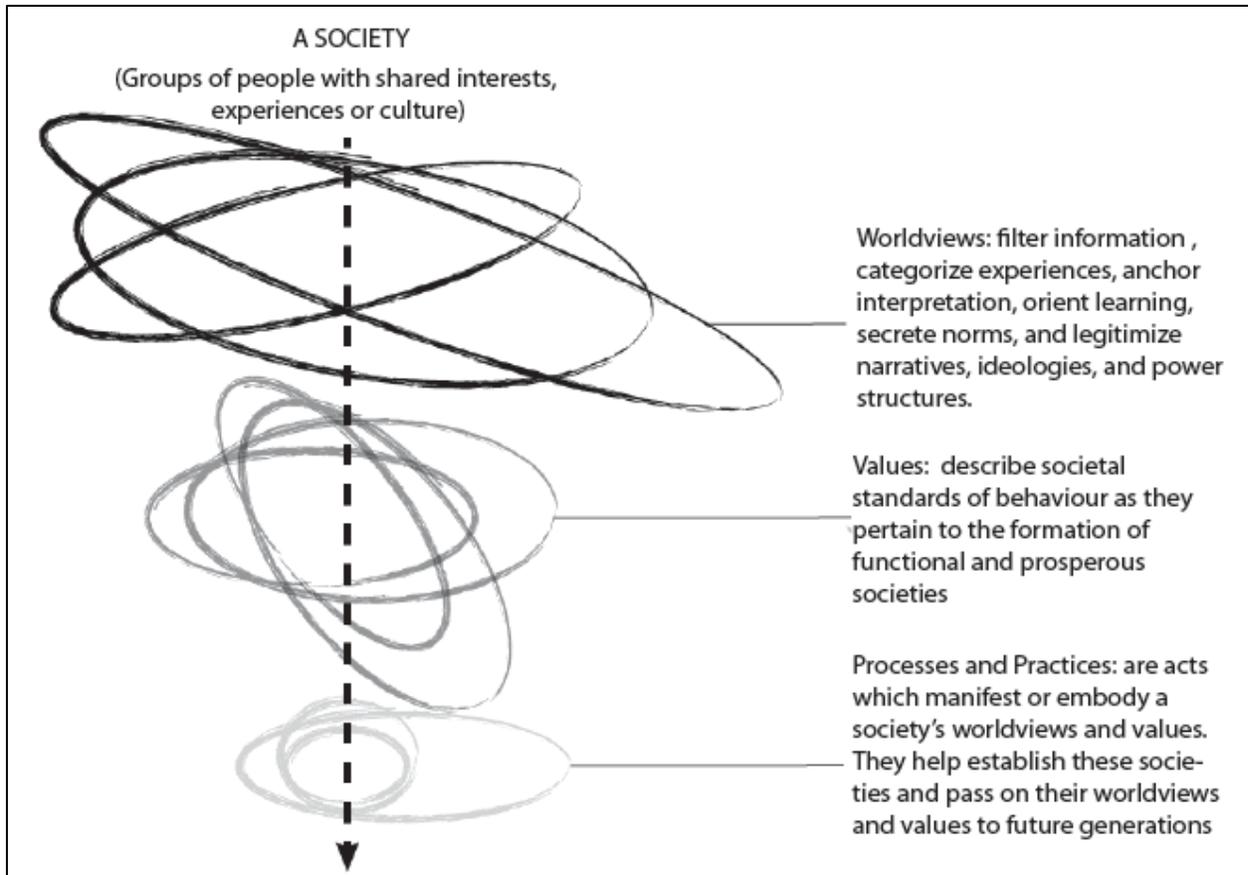


Figure 1.1 The Relationship Between Worldviews, Values, Processes and Practices

### 1.3.2 An Overview of the Plains Cree

The Plains Cree is one of the largest First Nations in Canada. There are an estimated 75,000 Cree speakers comprising dialect groups located in much of Canada, ranging from Quebec to north-eastern British Columbia and into the Northwest Territories (Wolvengrey, 2006). While they are unified as a distinct Nation and are bound together by shared collective memories, worldviews, spiritual practices, and experiences, there are also variations between the different regional groups (McLeod, 2007a). This thesis, however, will not explore the nuanced differences of various Cree Nations, but will seek to highlight their common worldviews, values, processes and practices.

### 1.3.3 An Overview of Regenerative Design, Development, Sustainability and Existing Regenerative Frameworks

Regenerative *design* has been described as the act of designing and constructing built systems (or design interventions) that support mutually beneficial and life-supporting relationships between built and natural environments (du Plessis, 2012b, p. 15). In other words, regenerative design places emphasis on the design and construction phases of built systems. Regenerative *design* takes place between the design and construction phases to establish tangible, community-generated design objectives. In regenerative design, a system of strategies and technologies based on an understanding of the inner workings of community needs (living systems) is applied to give “form” to processes and practices that can generate new and healthier patterns in a place (Lyle, 1984).

On the other hand, Mang and Reed (2012) suggest that regenerative *development* begins before design and does not end once a project has been constructed. It includes fostering strong relationships with and between communities, helping to develop a long-term collective vision and promoting ownership among community members. This is typically initiated in the early stages of a project to ensure that the ongoing regenerative capacity of the project is sustained through its life. Regenerative development also entails the use of local skills and resources to improve a community’s well-being in a way that builds capacity for future growth (Dutta, 2013). This form of community development empowers members of a community to participate in the creation, design, operation, and adaptation of regenerative systems in ways that a) create long-term positive impacts; b) foster new initiatives in the community; and c) heal past socio-ecological damage in the community. Regenerative *development* spans both the predesign phase of a project (to help the community and design team establish the project scope and aspirations in a participatory manner) and the post construction phase (to provide continued support and capacity building to occupants and community members so that the project can remain meaningful).

Proponents of both regenerative development and design argue that it is important to see them as distinct, yet interdependent, synergistic approaches (Mang & Reed, 2012). Therefore regenerative design could be viewed as a distinct phase within the process of regenerative development.

Regenerative sustainability is based on the view that human activity does not necessarily have to be minimized in order to have positive outcomes on natural and humans systems. Regenerative sustainability is therefore a process of collective discussion making based on a series of negotiations, where all community members have a voice. This process requires that both the initial project goals and outcomes (of the goals) be realised (Robinson & Cole, 2015, p. 138).

All three approaches (regenerative design, development and sustainability) “embrace the notion of adding value to place and aspire to deliver enduring, positive benefits to social, economic and ecological systems” (Robinson & Cole, 2015, p. 139). Therefore the purpose of this thesis the term regenerative methodology refers all three approaches of regeneration.

Regenerative frameworks identify, characterize and organize the processes and practices to practitioners in the implementation of regenerative projects. They employ aspects of both regenerative development and design and provide tangible strategies for practitioners to apply throughout the key phase of a design project such as:

- Participatory community engagement and relationship building;
- Understanding the context and “the story of place”;
- Fostering a long-term collective vision for ongoing regeneration; and
- Designing and building regenerative built systems (which help communities prosper ecologically, socially, and economically).

Existing regenerative frameworks are not considered to be prescriptive in terms of how they may be used. Practitioners are anticipated to draw on them on a project-by-project basis, and this is strongly influenced by the practitioner’s level of experience, degree of

engagement with the context, his/her relationship with the community and project constraints. Such frameworks would, therefore, invariably be used in regenerative development and design. This thesis will focus on the design of frameworks and will not explore the manifold ways that they are likely to be used in practice.

#### **1.4 Defining the Problem: Superficial Adoption of Indigenous Ways of Knowing**

Proponents of regenerative design and development have attempted to adopt Indigenous philosophies and sacred teachings into their research and publications. Reed (2005), for example, cites the works of Paula Underwood (1990), an Iroquois oral historian, who argues that the Indigenous scientific approach understands the universe, or all things, as being constantly in motion—either towards unity or disunity. Reed observes that:

Aboriginal peoples believe that when humans are gone from an area long enough, they lose the practical knowledge about correct interaction, and the plants and animals retreat spiritually from the earth or hide from humans. When intimate interaction ceases, the continuity of knowledge passed down through generations is broken, and the land becomes “wilderness.” (Reed, n.d.)

In other words, Reed advocates an intimate connection to the land should be maintained in order to understand how to interact with the land and implies that regenerative practitioners may embrace other perspectives (such as Indigenous ways of knowing) as part of the process of reconnecting to the natural world and understanding the story of place. Similarly, Svec, Berkebile, and Todd (2012) postulate that the wisdom and collective narratives about regional ecology, geology, hydrology, and biodiversity (including human) are embedded in the land’s history and are embodied in the Traditional Ecological Knowledges (TEK) of Indigenous elders.

Though well intentioned, merely using quotations from Indigenous people does not constitute a culturally sensitive approach to learning from-Indigenous ways of knowing.

Cole and O'Riley (2005) have criticized western researchers for making arms-length observations about Indigenous cultures without providing proper context for their findings and acknowledging the process of how these knowledges were formed. In other words, tokenizing Indigenous ways of knowing.

Existing regenerative frameworks (REGEN, Perkins+Will's framework, Eco-Balance Planning and LENSES) do not take a holistic approach to exploring the founding worldviews, values, processes and practices which are the basis of Indigenous teachings even though some of their founding theories (Reed, n.d.; Svec, Berkebile , & Todd, 2012) are similar to Indigenous ways of knowing; they have attempted to adopt Indigenous teachings and philosophies in a fragmented manner. Though regenerative methodologies seek to counteract fragmented and compartmentalized thinking, their attempted adoption of Indigenous ways of knowing suffers from the very ailment it seeks to counteract.

A thorough and careful exploration of the possibility of intersecting worldviews, values, processes and practices between Indigenous ways of knowing and those embedded in regenerative methodologies or emerging frameworks has not previously been undertaken. Without acknowledging how the referenced Indigenous knowledges were formed and how subsequent processes and practices have been shaped, regenerative researchers (such as Reed n.d.; Svec et al., 2012) leave themselves in a position to be criticized for oversimplifying, tokenizing and/or romanticizing aspects of Indigenous ways of knowing by a-contextually attempting to adopt Indigenous teaching into the way they characterize regenerative methodologies.

## **1.5 Intersections Between Plains Cree Ways of Knowing and Regenerative Methodologies**

Indigenous and non-Indigenous worldviews and values are not binary opposites, in many contexts they are incommensurable, however, there is potential for overlaps in the worldviews despite their distinctly diverse roots and different paths. Therefore, it is

possible that strong intersections exist between the Plains Cree and those guiding current regenerative worldviews, values, processes and practices, despite them having distinctly unique origins.

Within Plains Cree worldviews, time is cyclical and there is a deep and spiritual interconnection between life forces including the land, plants, animals, humans and inanimate entities (Stonechild et al., 2004). The values embedded in Plains Cree teaching are learning through humility, practicing reciprocity and maintaining balance, all of which promote healthy individual, societal and ecological growth (Wenger-Nabigon, n.d.).

Cyclical time is also implicit in regenerative worldviews although they draw on concepts such as systems thinking, ecology and permaculture, which are based on western scientific thought (Meadows, 2002; Regenerative Design Institute, 2006). The values embedded in regenerative methodologies also emphasise learning through humility, practicing generosity and maintaining balance in order to design prosperous regenerative built systems, which help communities prosper ecologically, socially and economically (Cole, 2012a; Fisk, 2009; Mang & Reed, 2012).

Potential intersections between Cree ways of knowing and regenerative methodologies therefore include their cyclical worldviews, the values of exercising humility, exchanging services as well as the practice of maintaining balance on a personal and community level.

## **1.6 Enriching Existing Regenerative Frameworks**

A key premise of this research is that the potential intersections between the Plains Cree ways of knowing and regenerative methodologies warrants further exploration in order to a) reveal the nuanced differences and distinctions between these observed intersections and b) to determine if and to what extent regenerative frameworks can be

enriched by drawing lessons from the long-established processes and practices embedded within Cree ways of knowing.

I explore the predesign phase of existing regenerative frameworks specifically because this is where the essence of all regenerative projects lies, and this is where paradigms can best be challenged in order to positively affect project outcomes. More specifically, the following aspects within the predesign phase are explored:

- How regenerative projects are initiated;
- How to establish collective project aspirations;
- Whom to engage throughout the design process; and
- How to inclusively engage community participants.

Figure 1.2 illustrates the intersections between Cree and regenerative worldviews, values, processes and practices that exist when Cree ways of knowing and regenerative methodologies are juxtaposed. Common intersections can provide grounds for further exploring how Cree ways of knowing can enrich emerging regenerative frameworks as seen in figure 1.3.

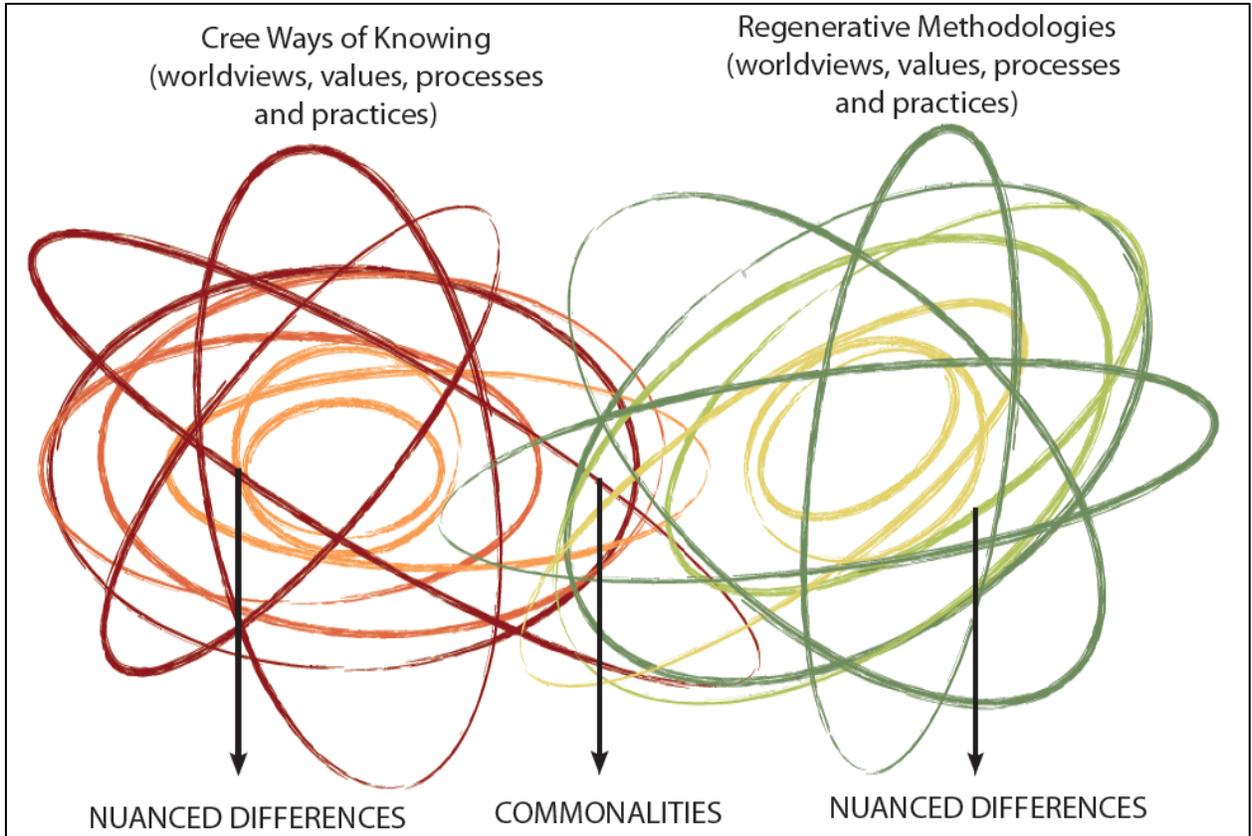


Figure 1.2 Intersections Between Plains Cree Ways of Knowing and Regenerative Methodologies

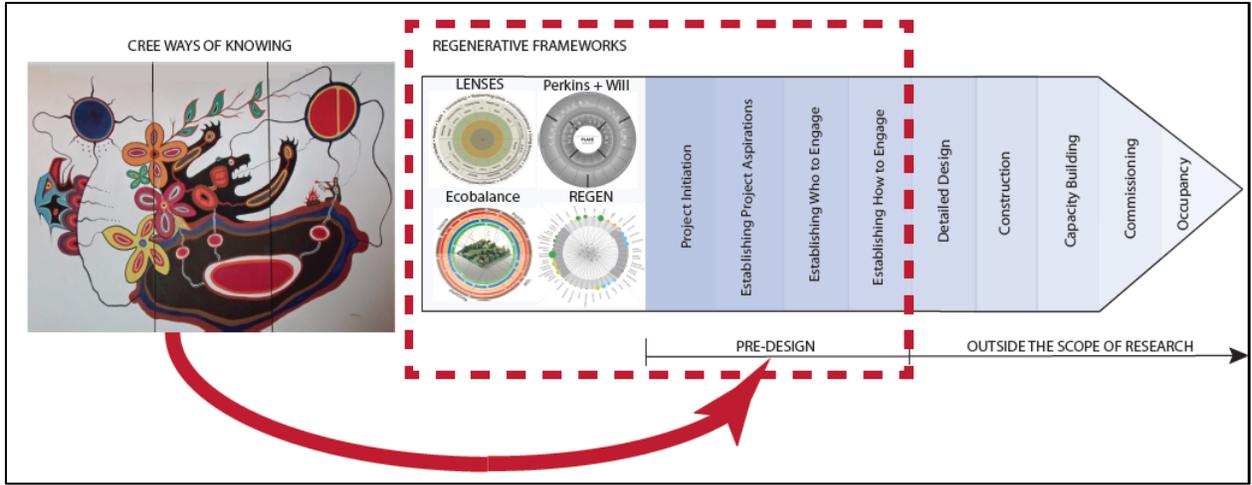


Figure 1.3 Exploring how Emerging Regenerative Frameworks can be Enriched by Plains Cree Ways of Knowing

## CHAPTER 2: METHODOLOGY

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### 2.1 Gaining Perspective

Bishop, Higgins, Casella, and Contos (2002) recognize that understanding the worldviews of a targeted community is imperative if one is seeking to do more good than harm. As an embodiment of such observations, this thesis provides a conceptual analysis of the intersections between Plains Cree ways of knowing and regenerative methodologies. This thesis also explains how emerging regenerative frameworks can be enriched by Plains Cree ways of knowing.

#### 2.1.1 From an “Outsider” Perspective

As a non-First Nations researcher, I do not have a long-standing relationship with the Plains Cree community. My understanding of Plains Cree ways of knowing are informed by my being a female, a visible minority and a professional engineer. I currently work with First Nations communities throughout Alberta, Saskatchewan and Manitoba as a Senior Environmental Assessment Coordinator for the federal Ministry of Environment. The bulk of my experience with these Indigenous communities has been engaging with and promoting First Nations’ concerns about resource development projects to subject matter experts and other professionals within the federal government. I fully acknowledge that First Nations and the federal government have had, and continue to have, strained relations due to the many past and reoccurring injustices committed by the federal government. However, as I am one of a few people from a visible minority who work with Indigenous groups, I believe that my “unique” perspective has enabled me to relate to some of the challenges faced by First Nations communities. The literature, collective narratives, case studies and other works I encountered throughout this research have been filtered and interpreted through my “unique outsider” perspective. I fully acknowledge that in order for this research to have potency and longevity in the Plains Cree and regenerative discourses, direct engagement with Plains Cree Peoples need to take place in order to ground-truth my research findings – thus

advancing this research from largely theoretical to applied and tested.

### 2.1.2 Indigenous Methodologies

I have chosen to engage the Indigenous research methodologies outlined by Shawn Wilson (2008) and Michael Anthony Hart (2010) in order to juxtapose Plains Cree ways of knowing and regenerative methodologies. As emphasized by both Wilson and Hart, non-Indigenous researchers need to acknowledge and develop a respect for the worldviews and values of the Indigenous communities they are researching prior to attempting to adopt processes and practices originating from an Indigenous perspective. Wilson (2008) emphasises that Indigenous ways of knowing and non-Indigenous methodologies should not be compared and contrasted (as better or worse than). Rather, they may both be explored in such a way that their core worldviews and values are honored.

## **2.2 Literature Review of the Plains Cree Ways of Knowing and Regenerative Methodologies**

The objective of this literature review is to establish a basis by which intersections, in the form of commonalities and nuanced differences between Cree ways of knowing and regenerative methodologies, can be drawn. My exploration of Plains Cree ways of knowing, with the intent of contextualizing them, includes, but is not limited to studying cosmologies, collective narratives, TEK, works of art, collective memory and governance structures. Indigenous scholars, Cree elders and leaders whose literature I include are:

- Blair Stonechild, Neal McLeod and Rob Nestor, *Survival of a People* (2004);
- Blair Stonechild, *Aboriginal Peoples of Saskatchewan* (2007);
- Cree Elder Mary Lee, *Cree (Nehiyawak) Teaching* (n.d); *Four Directions Teachings* (2006);
- Neal McLeod, *Cree Narrative Memory: From Treaties to Contemporary Times* (2007b); *Cree* (2007a); *Cree Identity* (2000); “Cree Narrative Memory” (2007b)

- Willie Ermine, *Cree Cosmology* (2007);
- Taiaiake Alfred, *Peace, Power, Righteousness: An Indigenous Manifesto* (2008);
- Deborah McGregor, “Linking Traditional Ecological Knowledge and Western Science: Aboriginal Perspective from the 2000 State of the Lakes Ecosystem Conference” (2008); “Traditional Ecological Knowledge and Sustainable Development: Towards Co-existence” (2004).

Similarly, an exploration of regenerative methodologies includes, but is not limited to, green, sustainable design, shifting paradigms in the field of design, systems thinking stakeholder engagement and understanding place. These topics are explored as a means of conceptualising regenerative worldviews and design processes and practices. The literature review will draw on the research and publications of the following architects, designers, ecologists and regenerative practitioners:

- Kevin Lynch, *The Image of the City* (1960);
- Ted Relph, *On the Identity of Place* (1976);
- Fritjof Capra, *c* (1996);
- Donella Meadows, “Dancing with Systems” (2002);
- Senge, Scharmer, and Jaworski, *Presence: “Exploring Profound Change in People, Organizations, and Society”* (2005);
- Bill Reed, “Shifting our Mental Model: ‘Sustainability’ to Regeneration” (2006); “Expanding our Approach to Sustainable Design” (2005); “From Sustainability Through Regeneration: Whole and Living System Design” (n.d.); “Shifting from ‘Sustainability’ to Regeneration” (2007);
- Dominique Hes, “Exploring Principles of Regenerative Tourism in a Community Driven Eco-tourism Development in the Torres Straight Islands” (2008);
- Pamela Mang and Bill Reed, “Designing from Place: A Regenerative Framework and Methodology” (2012);
- Pamela Mang, “Toward a Regenerative Psychology of Urban Planning” (2009);
- Ray Cole, “Regenerative Design and Development: Current Theory and Practice” (2012a); “Transitioning from Green to Regenerative Design” (2012b);

- Ray Cole, Amy Oliver and John Robinson, “Regenerative Design, Socio-ecological Systems, and Co-evolution” (2013);
- Ray Cole and Amy Oliver, “The Next Regeneration” (2012);
- Ray Cole, Peter Busby, Robin Guenther, Leah Briney, Aiste Blaviesciunait, Tatiana Alencar, “A Regenerative Design Framework: Setting New Aspirations and Initiating New Discussions” (2012);
- Charisna du Plessis, “From the Autonomous House to Regenerative Design and Beyond: an Evolutionary Narrative” (2012a).

### **2.3 Exploring Intersections Between Cree and Regenerative Worldviews, Values, Processes and Practices**

Ideally, intersections (in the form of commonalities and nuanced differences) between the Plains Cree ways of knowing and emerging regenerative methodologies can–be derived by directly engaging representatives from both groups as a means of validating the research findings. However, direct engagement with Cree communities necessitates time-intensive commitments (that go beyond my academic timelines) in order to establish trusting relationships and culturally sensitive ethics. The scope of this research is, therefore, limited to a literature review and analysis. The worldview, values, processes and practices held by the Cree and regenerative practitioners are juxtaposed in order to explore possible intersections. Observed intersections are used as a basis for analyzing the possibilities and the limitations of how existing regenerative frameworks can be enriched by drawing lessons from Plains Cree ways of knowing.

### **2.4 Identifying How Regenerative Frameworks can be Enriched by Drawing Lessons from the Plains Cree Ways of Knowing**

Through a literature review the following regenerative frameworks are analyzed and critiqued:

- REGEN: proposed by the US architectural practice Berkebile Nelson Immenschuh McDowell (BNIM) for the US Green Building Council (USGBC);

- The Perkins+Will Framework: proposed by the global multidisciplinary architecture and design firm Perkins+Will;
- Eco-Balance Planning: proposed by the Center for Maximum Potential Building Systems (CMPBS); and
- LENSES: proposed by the Colorado State University's Institute for the Built Environment.

The objective of this critique is to identify gaps within existing regenerative frameworks and identify how emerging regenerative frameworks can potentially be enriched by Plains Cree ways of knowing, particularly for their application during the early phases of a design project.

The findings from this critique are not reflective of how members of the Plains Cree community view regenerative frameworks. Future research would require engaging representatives from the Plains Cree community and the developers of regenerative design frameworks directly in order to assess the validity of the proposed research findings.

## **CHAPTER 3: PLAINS CREE WORLDVIEWS, VALUES, PROCESSES AND PRACTICES**

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In this chapter, I explore Plains Cree ways of knowing including, but not limited to, their cosmology, collective narratives, TEK, sacred teachings, collective memory and governance structures. I explore these topics as a means of characterising Plains Cree worldviews, values, processes and practices.

### **3.1 First Nations and the Plains Cree Peoples**

According to the current Canadian Constitution, the term “Aboriginal Peoples” includes “Indian, Inuit and Métis Peoples of Canada” (Government of Canada, 1982). The term “First Nations” has become commonplace following the assertion of Aboriginal political rights in the 1980s and refers to Aboriginal Peoples who are neither Inuit nor Métis.

Treaty “Indians” are members of First Nations who are descendants of the signatories to one of the numbered treaties. On the prairies, non-treaty Indians are members of First Nations (primarily Dakota) who have reserves and are recognized as having Indian status under the Indian Act, but were not signatories to treaties. Non-status Indians are those First Nations who, for varying reasons, never signed treaties nor fell under the jurisdiction of the Indian Act. The Métis are descendants of French men who participated in the fur trade and of First Nation women (Stonechild, 2007, p. 9).

The Plains Cree are one of the largest groups of First Nations in Canada (McLeod, 2000). The Cree language has the largest Aboriginal speaker population of all of Canada’s First Nations languages with an estimated 75,000 Aboriginal speakers. Dialect groups range from Quebec to northeastern British Columbia and are also found in the Northwest Territories. However the largest population of Cree-speaking First Nations can be found in the prairies (Alberta, Saskatchewan and Manitoba) (Wolvengrey, 2006). The Plains Cree have inhabited the Canadian prairies for more than 11,000 years, during which time they established self-sustaining societies; their

stories have been ones of adaptation and survival (Stonechild, 2007) in climates that range from subarctic temperatures in the winter to dry desert-like heat conditions during the summer months.

### **3.2 Plains Cree Worldviews**

The Cree have cyclical worldviews that are founded on deep, spiritual, circular, interconnections to the land, non-human (animals), more-than-human (spiritual) entities. Life is a process of developing relationships and striving for well-being within this 'circle' (Stonechild et al., 2004). Cree Elder Alma Kytwayhat (2008) explains:

The circle represents a harmonious relationship with nature and with all living things. . . . The earth and planets, the four seasons and the life cycle of all living forms (plants, insects, the winged and water life forms, the two- and four-legged animals, and human beings) all move in a circular motion. [For example] human life begins in the womb, then ends and returns to the Creator; yet life continues on with the next generation.

The circularity of Cree worldviews is also depicted in the work of Cree artist Jackson Beardy. In his painting, titled *The Great Chain of Being*, all entities are interconnected by energy lines (see Figure 3.1). He describes his painting in the following way:

The worldviews of the Cree Peoples reveal the close relationship that they have with nature. All things including the earth, heavens, rivers, plants and animals possess powerful spiritual forces that must be honored. By means of the gifts of the Dream and Vision Quest, these spiritual beings teach humans their place in the universe and transmit knowledge to be used for the common good (Beardy & Pettipas, 1979).



Figure 3.1 Cree Worldview: The Great Chain of Being (artist: Jackson Beardy, © 1978, by permission from the publisher)

Beardy and Pettipas (1979) describe the elements of the painting in the following way:

- Grandmother Moon: Symbolizes the first mother and primacy of womanhood in creation. The moon represents birth, nourishment and protection;
- Grandfather Thunder Bird: Symbolizes the first father and appears as the thunderbird whose residence was in the heavens and whose power lay in lightning and thunder;
- Mother Earth: Composed of the most elemental substance, rock, represents constancy. All creation owes its physical well-being to the bounty of Mother Earth and, in the end, returns to her at death;
- Father Sun: Through Father Sun all four orders of creation are given light for guidance and heat for growth. Together with Mother Earth, the sun provides nourishment for their children;

- The Plant Beings: Created second, after the spiritual entities, the Plant Beings offer beauty and provide well-being to humans in the form of food, medicine, ceremonial tobacco and incense;
- The Animal Beings: Third in the order of creation, the bear, considered closest to human form, represents the animal world. Admired for its power and strength, the bear is also the source of several of the strongest medicines;
- The Humans: Last of the four orders of creation, humans are the most dependent beings. In recognition of their vulnerability, the Cree petition and give thanks through prayer to the beings upon whom life depends;
- The energy lines flowing from one element to another indicate this interconnection.<sup>4</sup>

Beardy's painting illustrates the order between the spiritual and physical realms. All four orders of creation maintain a deep interconnection through interdependence and reciprocity. Father Sun gives light and warmth to plants, animals and humans; plants and animals provide food and tools to humans; and humans practice stewardship and offer back prayers and thanksgiving to all higher orders of creation.

As expressed by Wilson (2008, p. 89), spirituality is not separate from but an integral, infused part of the whole in Indigenous worldviews. This vital spiritual element is what connects individuals, generations, and all orders of creation. The interconnectedness of spiritual and physical entities in Plains Cree worldviews can also be viewed as a large living organism with vital components and functioning units, which work together to sustain life (Ermine, 2007). The driving force of this organism is rooted in the spiritual realm.

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<sup>4</sup> The ideas expressed in this description were discussed with Beardy in 1979 and represented his views on the painting and its meaning. Those views were typical of the period and, although those in the Indigenous community are now more critical of the idea of Mother Earth as an Indigenous idea and organizing principle, at the time this was how Jackson wished his painting to be understood (Phil, 2013).

### 3.2.1 Plains Cree Cosmology

The record of Plains Cree's long existence is largely unwritten; it is etched in their collective memory and in the oral tradition of song, dance, art and rituals that are still maintained today. Like most other Indigenous Peoples, the Plains Cree recount their sacred beginnings in stories of creation. One of the collective Cree narratives regarding the beginning of time speaks of the emergence of a cultural hero who changed the chaotic myth-world into the ordered creation of today. This trickster (wîsahkêcahk) named and organized everything that existed in the Plains Cree "life-scape" and made the flora and fauna, earth, and heavens harmonious and safe in preparation for the arrival of the Plains Cree (Ermine, 2007).

The anthology of Plains Cree collective narratives is an archive of centuries of learning and a synthesis of human, ecological and spiritual knowledge. In many cases, Plains Cree knowledge is mainly accessible through the understanding of a complex set of sacred oral narratives and communal spiritual practices that are re-enactments of aspects of creation. The whole scheme of creation and mythological beginnings, along with a complex array of peoples' experiences since ancient times, contributes to what Plains Cree people consider the "truth of existence" (Ermine, 2007).

### 3.2.2 Significance of the Circle

The most significant symbol for the Plains Cree is the circle. It is depicted in nearly all aspects of Plains Cree life and used both for functional and spiritual purposes. Functionally, the circle appears as a Plains Cree migration pattern, and in artwork and architecture. Spiritually, the circle is often depicted in Cree ceremonial rituals, dances, sacred teachings, as well as Cree worldviews on life, death and rebirth ( Neihardt, 2008). On a similar note, Elder Dr. Danny Musqua explains how the circle connects generations and helps revive traditions:

In our circle, we need the old and the young, the old to teach and the young to keep the tradition alive. Nothing really dies out in a circle, things might get old and

wear away but they renew again, generation after generation. That is what the circle is about (2008, p. 28).

The Saskatoon Tribal Council (1993) has produced a visual representation of the Plains Cree circle titled “The Circle of Life” (See Figure 3.2). This figure gives order to the interconnections of various elements of creation (such as plants, animals, humans and seasons) and aspects of human life (such as Cree worldviews, values and the cycle of life and death). This figure is also used as a teaching tool for First Nations students.

Figure 3.2 has been removed due to copyright restrictions.

Saskatoon Tribal Council. (1993). *The circle of life: Grade one teacher resource for science*. Saskatoon: Saskatoon Tribal Council.

Figure 3.2 The Circle of Life (Saskatoon Tribal Council, 1993)

### 3.2.3 Plains Cree Ceremonies

For the Cree, ceremonies mark certain life events that have special significance to community members as they pass through various seasons and stages of life. Ceremonies are also a means of showing respect and gratitude to the Creator, more-than human entities, elders and chiefs for providing protection, sacred teachings, food and other provisions (Ahenakew, 1973). Overall, Plains Cree ceremonies celebrate connections between the land, humans, non-humans, and more-than-human entities, which are mutually enriching. Two common ceremonies practiced by Cree Peoples include the sweat lodge and Sun Dance. Many First Nations across North America, including the Plains Cree, practice the sweat lodge ceremony. Sitting in the sweat lodge symbolizes a womb-like experience intended to cleanse the body, mind and spirit. This return to the womb also symbolizes the circle of life (being born) and death (returning to the earth). This ceremony can be performed on its own or as a prelude to other ceremonies (Association of BC First Nations, n.d.). At the end of the ceremony, participants share a meal and wish each other well in their future lives and endeavors

(Asikinack, 2007).

The Sun Dance is considered one of their most sacred ceremonies by the Plains Cree (Wesley, 2012) and typically takes place near the summer solstice. Participants usually begin with the sweat lodge ceremony then proceed to the Sun Dance. The participants dance and pray from sunset to sunrise to the beat of drumming, from four to eight days. Animals such as the eagle and the bison are honored in the ceremony with feathers or bones placed at the center of the site (Asikinack, 2007).

As a representation of a cyclical worldview, the Sun Dance lodge contains many literal and symbolic circles.

- Tipis are arranged in a large circular formation;
- Participants dance in the center of the tipi formation in a circular direction;
- The central pole (a young sapling) represents the cycle of life and death;
- Dancing from sunset to sunrise represents a continual cycle from life to death;
- The onset of the summer solstice represent renewal and rebirth.

The value of reciprocity between community members and between the Great Spirit and community members is expressed throughout the Sun Dance:

Offerings of food and clothing are made throughout the ceremony, which are distributed to the lame, sick, blind, widows and orphans. Those who receive these offerings go in their turn to the center of the lodge and pray for blessings for the givers and their tribe as a whole. (Ahenakew, 1973, p. 68)

### **3.3 Plains Cree Values**

Plains Cree values differ from western values because they are not based on individualism, scientific logic, and dominance (Fair, 2013). Plains Cree values are focused on reverence for creation expressed in balance, sharing and practicing humility (which will be explored in further detail in the following sections). Traditionally, Plains

Cree values have been (and continue to be) passed down in sacred teachings like the medicine wheel, collective narrative memory and governance practices.

### 3.3.1 Promoting Balance Through the Medicine Wheel

For many Indigenous Peoples, having a healthy sense of spirituality is just as important as other aspects of mental, emotional and physical health (Wilson, 2008, p. 89). The use of the Cree medicine wheel (see Figure 3.3) facilitates balance, thus promoting health, growth and positive development (Wenger-Nabigon, n.d.). Balance between the seasons allows for the circle of life to reach full completion (birth, growth, death and rebirth), while balance between the physical, spiritual, emotional and mental states leads to healthy and prosperous communities and individuals.

Figure 3.3 has been removed due to copyright restrictions.  
Peter Ballantyne Cree Nation. (n.d.). *Traditional medicine wheel*. Retrieved from  
<http://www.pbcfs.net/fwellness.html>

Figure 3.3 The Cree Medicine Wheel (Peter Ballantyne Cree Nation, n.d.)

The Cree Medicine Wheel is represented as a circle divided into four quadrants representing the four cardinal directions as well as essential parts of human beings (the spiritual, physical, emotional and mental). Cree Elder Mary Lee explains how the Medicine Wheel represents the life journey of people:

Look at the four seasons and follow the sun. Spring in the east, summer in the south, fall in the west and winter in the north. It tells the whole story of how all life came into being abundantly bright, rising in the east and then fading away as it moves west and north. All life rises and sets like the sun. What we do in between is our journey. As Cree people, we were given the gift of being named for the four parts of human beings . . . found in the four directions of the Medicine Wheel. These four parts for human beings are the spiritual, physical, emotional and mental aspects of the self. We need to try and balance these four parts that were

given to us, to function as people. . . . Today, many people are out of balance because they tend to only favor two realms of self, the mental and the physical. They forget to look after their spiritual side, and often don't know how to express and deal with their emotions (n.d, p. 2).

### 3.3.2 Practicing Humility

For many First Nations, “keepers” or Elders transfer a community’s history and traditional knowledge to subsequent generations orally. Although family members are involved in passing on life skills, it is the elders who serve as the primary instructors of life’s necessary lessons and values (McLeod, 2007b). “Passing down stories and teachings has been the way the Plains Cree have preserved collective memory for countless generations,” according to McLeod (2007b, p. 37). However, this process is much more than simply storytelling—it is what situates their individual lives into a larger context, linking the past to the present and the present to the past. By operating both in the past and the present, Cree collective narrative memory retains its potency, authenticity and relevance to existing generations. McLeod elaborates:

The ancient poetic memory of our ancestors allows us to reshape our experiences so that we can interpret the world we find ourselves in. As we find ourselves enmeshed in the trajectories of various stories, we also make contributions to the larger narrative. While we are influenced by the stories of the kehte-ayak (the Old Ones), we also add to the meaning of these stories through our experiences and understanding, and add, in small ways, to the ancient wisdom. (p. 2)

Moreover,

The weaving of these stories into the present is an essential aspect of Cree memory in that it is an ongoing process between the present and the past, and also between the individual and the collective. While we cannot live in the past, we can draw upon the memories of the past to make sense of our experience today. (p. 38)

One of the fundamental aspects of Plains Cree collective narrative memory is humility. Humility is commonly observed in the elders who share collective narratives and sacred teachings. While there may be oral narratives that are very similar to sacred teachings, most elders hesitate to claim that they know the narratives in their entirety. Many elders begin collective narratives or sacred teachings with *namoya mistahi e-kiskeyihtaman*, meaning “I don’t know very much” (McLeod, 2007b, p. 16). This phrase is important in understanding humility from a Plains Cree perspective. Traditionally, Cree people do not believe that they have power over the collective narratives, or own them. Instead, the Cree believe that they are conduits of their collective narrative memory and that there must be balance between the individual’s perspective and tradition. When the play between individual and collective is taken into account, it becomes evident that no individual’s understanding can ever be complete, because there could always be more interpretation (McLeod, 2007b, p. 16). The collection of various memories over many generations is what gives potency to Plains Cree narratives. Therefore, humility is manifested in an understanding that an individual’s experiences are incomplete without the influence of the collective.

Other aspects of Cree collective narrative memory include open-endedness, the need for strong kinship bonds, layers and repetition:

- The stories told are open-ended. Elders will not explicitly say what the points of their stories are. Instead they leave collective narratives open-ended. Listeners are given the opportunity to make up their own minds about the meaning of the collective narrative and interpret it through their own experiences (McLeod, 2007b, p. 13).
- There must be a strong kinship bond between the storyteller and the listener. Accountability is built into the relationships that are formed in storytelling because the moral responsibility on the part of the listener to remember is assumed (McLeod, 2007b). Similarly, keepers of the collective narrative memory are responsible for whom they share information with and how it is shared—at the right time and place (Wilson, 2008, p. 126).
- Often collective narratives have several layers that are incrementally revealed

over an extended period of time. Cree Elder Walter Lightening (1992) remarks that often stories can be coded and structured with multiple layers of metaphor, which unfold over time as the listener is readied to receive the knowledge. Therefore, not all knowledge is available to the listener regardless of his/her desire to acquire it. A deeper level of engagement with collective narratives requires time, trust and an open and teachable mind.

- Some stories need to be absorbed by repetition before the significance of the message can be understood. These types of narratives cannot be analyzed for meaning or facts (as done in academic settings), instead, they need to be re-heard and re-absorbed for deeper degrees of revelation (Hildebrandt, Carter, & First Rider, 1996; Cole R. , 2013).

### 3.3.3 Governance

First Nations have been practicing their own forms of governance for millennia prior to the arrival of European colonizers. First Nations' governance varies according to a community's particular needs, as defined by their own economic, social and geographical conditions. Political structures for many First Nations (including the Plains Cree) were formed because of strong kinship connections that influenced social and economic interaction (Alfred, 2008).

In most Cree communities, decision making by consensus prevails, and persuasion rather than coercion is the preferred way for leaders and elders to implement the collective will (Ray, 1996). Sharing circles are often used to build consensus within communities when the topic under consideration has no right or wrong answer. Moral or ethical issues can often be dealt with using this approach without causing offense to groups with diverse perspectives:

The purpose of sharing circles is to create a safe environment for people to share their points of view and experiences with others in order to gain a sense of trust in each other. Participants of sharing circles come to believe that what they say will be listened to and accepted without criticism. They also gain respect and an

appreciation for other community members' points of view. During the circle time, people are free to respond however they want as long as they follow agreed upon guidelines. (Burnstick & Bellrose, 2013)

The following ten principles are guidelines for successful sharing circles:

1. Respect each participant and appreciate each other's diversity;
2. Value and consider all contributions and belittle none. Withhold evaluation until sufficient information has been gathered;
3. Contribute and express opinions with complete freedom;
4. Carefully consider the views of others and if a valid point of view has been offered, accept it as your own;
5. Keep to the vision at hand;
6. Share in the communities [sic] unified purpose;
7. Expect the truth to emerge from the clash of differing opinions. Optimum solutions emerge from a diversity of opinion;
8. Once stated, let go of opinions. Don't try to "defend" your position, but rather let it go. Ownership causes disharmony among the circle and almost always gets in the way of finding the truth;
9. Contribute to maintaining a friendly atmosphere by speaking with respect [,] courtesy, dignity, care, and moderation. This will promote unity and openness; and
10. Seek consensus with dedication and prayer, if consensus is impossible, let the majority rule. (Burnstick & Bellrose, 2013)

Common to all ten principles is an understanding that sharing is based on a trusting relationship. Each participant trusts that the other will uphold these principles despite the temptation to serve their own interests. In addition to the human perspective, it is also imperative that participants in sharing circles seek to bring forth other than human perspectives such as those of local plants, animals, symbolic objects, the land and more-than-human entities (Burnstick & Bellrose, 2013).

Similar to the value of sharing, reciprocity plays a fundamental role to the Cree Peoples. Unlike western capitalist societies, Cree economic practices do not value individual accumulation of goods and wealth; the priority is to spread resources and wealth throughout the community (Lavenda & Schultz, 2013; Alfred, 2008). Gift-giving, generosity and reciprocity are the basis of diplomacy between Plains Cree nations, the natural and the spiritual realms. Reciprocity between nations was traditionally shown when leaders of various nations met and presented gifts of equal value to each other as symbolic gestures of good will. Exchanges of this type were an integral part of international trade because they served to create and renew peaceful relations as a prerequisite for regular commerce (Haggarty, 2008).

Reciprocity between the Plains Cree, non-human and more-than-human natural realms is facilitated through the land. In the past, covenants were established between the Plains Cree and the land, water, plant life and animals. These covenants symbolized spiritual agreements of reciprocity and dictated how all life forms would co-exist in order to be mutually beneficial. Today, these symbolic forms of reciprocity are maintained through the revival of traditional ceremonies, songs, collective narratives, dances and the practice of Cree spirituality (Ermine, 2007).

### **3.4 Plains Cree Processes and Practices**

For the purposes of this thesis, Plains Cree processes and practices are used to describe culturally-based approaches that have helped this Indigenous nation thrive and prosper over the past 11,000 years (Stonechild, 2007, p. 1). Cree processes and practices such as enacting and passing down TEK, promote collective engagement and embracing change. These processes and practices also prompt community members to maintain physical and spiritual connections to the land through language and stewardship.

### 3.4.1 Traditional Ecological Knowledge

Berkes (2012), an applied ecologist who has worked extensively with Cree communities to preserve their TEK, defines it as “a cumulative body of knowledge, practice and belief evolving by adaptive processes and handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment” (p. 7). Berkes suggests that TEK includes both ways of knowing (the process) and information (the knowledge) that are formed through the experience of adapting to changes in the landscape (p. 8). However, many Indigenous people object to the use of the term TEK to describe their knowledge systems for the following reasons:

The term TEK as it is used tends to imply a false homogeneity of knowledge across the diverse nations and cultures of [Indigenous people]. . . . Each of the words “traditional,” “ecological,” and “knowledge” limits this form of understanding in many significant ways. For example, “traditional” implies that the knowledge is static and confined to information gained in the past. In reality, this form of knowledge is continually evolving and expanding to incorporate new information as part of adapting and responding to current challenges. “Ecological” limits TEK to a field of study defined by Western science. Even the use of “knowledge” as a descriptor for this form of understanding is problematic, as [Indigenous] people tend to describe TEK as more of a “way of life” than something which can be concisely described or written down. (LaDuke, 1999, p. 241)

Finding an alternative to the term TEK is difficult because of the holistic nature of this form of understanding. There is a general agreement among Indigenous and non-Indigenous scholars that any term that is used will be limiting in some way (McGregor, 2008). Nevertheless, various alternatives have been proposed. Among these are “traditional knowledge” (Deloria, 1992), “ethno-science” (Grenier, 1998) and “Indigenous knowledge” (Wolfe, Bechard, Cizek , & Cole, 1992). Currently, TEK continues to be the most widely used and recognized term in discussions on this subject, and it will,

therefore, be the term used in this thesis.

Aside from the shortcomings of the term TEK, First Nations people describe TEK as much more than a body of knowledge and associated processes. “TEK also encompasses such aspects as spiritual experiences and relationships with the land. It is also noted that TEK is a ‘way of life’; rather than being just the knowledge on how to live it is the actual *living* of that life” (McGregor, 2004; emphasis original). One way to conceptualize the difference between Indigenous and non-Indigenous views of TEK is that Indigenous Peoples view TEK as a verbal-based, action oriented way of life (McGregor, 2004) whereas non-Indigenous researchers tend to readily accept that empirical knowledge or information is separate from actions (Spak, 2005).

Similar to Cree collective narrative memory, there are several layers of TEK, some of which are too sacred to share liberally. Although there is no agreement on the delineation of these layers, Berkes describes them as follows:

- “The first layers pertain to local and empirical knowledge of animals, plants soils and landscapes. This level of knowledge includes information on species identification, taxonomy, life histories, populations and behaviors” (2012, p. 18).
- “There is a resource management system at the second level, which uses local environmental knowledge and also includes a set of practices, tools and techniques (which require an understanding of functional relationships amongst species)” (2012, p. 18).
- “Third, a traditional system of management requires appropriate social institutions, norms and codes of social relationships” (2012, p. 18). For example, for a group of hunters to function effectively there needs to be a social organization for coordination, cooperation and rule making (1989).
- “A fourth level of analysis is the worldview, which shapes community members’ environmental perceptions and gives meaning to their teachings and observations in their particular context.” (2012, p. 18)

Berks (2012) emphasizes that these four levels of analysis in TEK are not always

distinct and there are dynamic linkages among the levels: “local knowledge may grow; both management systems and institutions may adapt, change, fall apart and be renewed” (p. 19). In other words, as the physical, social and spiritual contexts of a community change, the links between their worldviews, social institutions, management systems, and local knowledge will inevitably change as well. Community members must be collectively engaged in order to embrace these changes (see Figure 3.4.1).

Figure 3.4 has been removed due to copyright restrictions.  
Berkes, F. (2012). *Sacred ecology* (3rd ed.). New York: Routledge.

Figure 3.4 Levels of Analysis in Traditional Knowledge and Management Systems (Berkes, 2012, p. 17)

### 3.4.2 Language and Stewardship

The Plains Cree language and its various dialects are deeply rooted in the speaker having a strong connection to the land. These languages depict narratives of how multiple generations have related to the land. McLeod (2007b), drawing on a quotation from Beardy and Pettipas (1979) explains: “the Cree language (*nehiyawewin*) grounds us and binds us with other living beings [and places], and marks these relationships.”

Despite many attempts by British colonizers to eliminate the Cree language, it has been revived allowing the Cree to restore a deep connection to their traditional lands. This connection is manifested through such things as the knowledge of plants, sacred ceremonial and burial sites, and hunting grounds. Many Indigenous people remain attached to their traditional lands and sacred sites because they have been taught to maintain these connections through language, story, songs and ceremonies passed down from previous generations (McLeod, 2007b, p. 19). Robinson and Quinney (1985) explain that for most Indigenous groups the loss of land entails the loss of the spirituality of a people: “[the] land is the closest tie to the Creator for it is our lands from which we

begin. . . . To lose our land will be to kill our Mother and break our deepest and strongest ties with the Creator” (p. 10).

Traditional and contemporary Plains Cree values regarding land are centered on stewardship as a responsibility passed down by the Creator and as an ongoing practice. For example, Plains Cree senior hunters believe that their reliance on resources from the land must be tempered with common sense and good management—they carefully observe nature, interpret observations and manage resources (Berkes, 2012, p. 119). Therefore, it is their responsibility to ensure that the land and resources are protected for future generations and that they teach younger generations to do the same.

The value of stewardship is also observed during hunting. The cyclical migration pattern of Plains Cree hunters is a sacred reminder of a) their past reliance on the land and buffalo to sustain their lives and provide continual renewal and b) their responsibility to protect, preserve and respect the land.

The Cree believe that it is the animal, not the hunter, who controls the success of the hunt (Berkes, 2012, p. 107). Traditionally, the Plains Cree view all other orders of creation as greater than humans and have reverence for each animal’s life that was sacrificed in order to provide for their needs (Poundmaker Cree Nation Elder, 2010). As previously mentioned, this worldview is also depicted in Jackson Beardy’s art where humans (most dependent beings) are the last of the four orders of creation and are illustrated kneeling in reverence before the other orders of creation (Beardy & Pettipas, 1979).

Prior to European settlement, the lives of the Plains Cree were largely centered on the buffalo. As an act of respect for the buffalo’s sacrificed life, the Cree took it upon themselves to leave no part of the animal as waste. Buffalo meat and organs were cooked or dried for long term preservation, hides were used for clothing and shelter, and bones and teeth were crafted as tools for hunting, harvesting, artwork, jewellery, etc. (Milloy, 1991, p. 57). In this way the Plains Cree demonstrated reverence and

humility for the gift of the buffalo and the life that was taken to provide them with food, shelter, clothing and tools (see Figure 3.5).

Figure 3.5 has been removed due to copyright restrictions.  
Miller, G. (n.d.), *Buffalo Hunt*. Retrived from  
[www.thecanadianencyclopedia.com/articles/buffalo-hunt](http://www.thecanadianencyclopedia.com/articles/buffalo-hunt)

Figure 3.5 Traditional Uses of the Buffalo (Miller, n.d.)

### 3.5 Discussion

The objective of this chapter has been to explore the worldviews, values, processes and practices which were traditionally central to the Plains Cree and which currently play a role in contemporary Cree communities. Fundamental to Cree worldviews are the concepts of life cycles and deep interconnection between all entities, physical and spiritual. These cyclical interconnections are life giving and establish order between the Creator, the spiritual realm, the moon, earth, sun, plants, animals and humans. The values of balance, humility and reciprocity have been discussed repeatedly thought this literature review. The emphasis on these three values in Cree communities often lead subjects to a greater sense of reverence or respect for all orders of creation.

The Cree pass down key values to younger generations in a variety of ways: collective narratives, dances, sharing TEK, language, artwork, hunting, etc. Traditional and contemporary Cree processes and practices such as enacting and passing down TEK, encourage community members to engage collectively and embrace changing contexts. Vital practices such as reviving the Cree language and promoting responsible stewardship also draw subjects towards a deeper connection (physically and spiritually) to the land.

It is anticipated that that Cree worldviews, values, processes and practices outlined in

this chapter will intersect with those of regenerative methodologies as will be explored in the following chapter.

## **CHAPTER 4: REGENERATIVE WORLDVIEWS, VALUES, PROCESSES AND PRACTICES**

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In this chapter I explore the worldviews, values, processes and practices that are embedded in regenerative development and design. The purpose of this literature review is to establish a basis by which intersections (in the form of commonalities and nuanced differences) between Cree and regenerative worldviews, values, processes and practices may be drawn, which I do in Chapter 5. The following topics will be explored as a means of conceptualizing regenerative methodologies:.

- An essential paradigm shift;
- Whole systems approaches;
- Embracing uncertainty;
- Practicing generosity;
- Maintaining balance;
- Diversifying stakeholders;
- Co-evolutionary relationships;
- Continual regeneration;
- Connecting to place; and
- Forming synergies

### **4.1 An Essential Paradigm Shift**

It has been 25 years since the first report from the Intergovernmental Panel on Climate (Watson, Rodhe, Oeschger, & Siegenthaler, 1990), yet global greenhouse gases have continued to rise. A decade and a half later, the Millennium Ecosystem Assessment (2005b) report concluded that human activity is putting such strain on the natural functions of the earth that the ability of the planet's ecosystems to sustain future generations can no longer be taken for granted. These types of reports are not uncommon to western societies, yet most industrialized countries continue to operate and consume as though their actions have no adverse environmental implications. It appears as though the connection between actions and the resulting ecological impacts

is rooted in a flawed paradigm.

Hes (2008) suggests that a resistance to move towards more sustainable industrial and building practices could be partially based on worldviews and values that place humans outside of, and in opposition to, nature. This mindset stems from a reductionist approach to current sustainability initiatives, which results in solutions to environmental problems being based on the same mindset that created them. Similarly, Pike (2010) has identified five common mental barriers (or misconceptions) that keep the majority of western societies from meaningfully engaging environmental issues:

1. Environmental Sainthood: the environmentally responsible lifestyle is seen as unachievable or too extreme, even for the eco-minded;
2. Elitism: environmentalists are seen as elitists and this lifestyle is too expensive for the common person;
3. Fatalism: people care but that does not mean they think they have a large role to play. If they take action there is a concern that others will not act together with them;
4. Overload: people do not know whom to trust and how to validate claims; and
5. Cognition: making the connections between issues is challenging. There are concerns over unintended consequences, which stifles action.

Apart from the misconceptions outlined above, another contributing factor to our disconnection from the environment stems from our understanding of what is meant by “sustainable development.” As Hes argues:

Sustainability, depending on the point of view, is about sustaining, keeping things as they are—or not letting them get worse. The problem, and the cause of its contestability, and possibly the inertia, lies in what people are trying to sustain. The use, misuse and consequent renegotiation of the term “sustainability” has resulted in a reduction of its potency. In particular, its connection with the conceptually divergent goals of economic growth and production under the popularized Brundtland definition of “sustainable development” has led to scepticism of the value and meaning of this term.

Furthermore, she contends that:

the framework of minimizing impacts, or perhaps even more problematically offsetting impacts, is seen as both ineffective and presumptuous since it continues to grant indulgences on behalf of the planet (Hes, 2008, p. 2)

According to Hes, sustaining our society's current conditions (peak oil, food security, population growth and overcrowding in urban centers and global warming) should not be the legacy we pass on to future generations. Robinson (2004) argues that sustainable development maintains an anthropocentric view and favors incremental change that "does not challenge any existing entrenched powers or privileges" (p. 376), a perspective that places more emphasis on society's immediate desires than on the needs of future generations. Overall existing mindsets regarding our relationship to the environment appear to be reductionist, fragmented, misinformed, divergent and anthropocentric.

Within the field of design, similar mindsets prevail. Green building rating systems, such as the Leadership in Energy and Environmental Design (LEED), are widely considered as tools for improving the environmental performance of buildings and market transformation. By offering incremental levels of achievement, green building rating systems provide clear guidelines for identifying and implementing practical green techniques during the design, construction, operation and maintenance phases of a project for design professionals (U.S Green Building Council, 2011). However, the use of these rating systems is simply a mechanism to slow down the damage caused by excessive resource consumption. Reed (2006) argues that rather than focusing on doing less damage to the environment, it is necessary to learn how we can participate with the environment by using healthy ecological systems as a basis for design in order to reconcile the past damages we have caused.

## 4.2 Regenerative Methodologies

For regenerative practitioners, the science of ecology has offered essential lessons about the complexities and processes of ecological systems. These lessons have been critical to our understanding of how to design the built environment in a way that restores and maximizes the health and resilience of ecosystems (Graham, 2003; McDonough & Braungart, 2002; Pedersen Zari, 2012; Lyle, 1994).

While regenerative design is described as the act of implementing design interventions to build self-renewing, synergistic capacities between built and natural environments (Robinson & Cole, 2015; du Plessis, 2012b), regenerative development is considered to create the conditions necessary for sustained, positive evolution over time by building the capacities of people to design, create, operate and evolve regenerative socio-ecological systems (Robinson & Cole, 2015; Svec et al., 2012).

The more recent concept of regenerative sustainability (Robinson, Cole, Cayuela, & Kingston, 2013; Waldron & Miller, 2013) rests on the notion of “procedural sustainability,” which is rooted in collaborative planning for sustainable community development and, subsequently, a particular stream of constructivist social theory (Robinson, 2004, 2008). Unlike regenerative design and development, regenerative sustainability is

based on the view that human activity does not necessarily have to be minimized because it is inherently harmful, but can instead contribute directly to both environmental and human well-being (i.e. net-positive outcomes). . . . [It is] an empirical process of societal discussion and negotiation, in which both goals and outcomes must emerge from that process (Robinson & Cole, 2015, p. 138).

In other words regenerative sustainability focuses on how human (social and economic) activities can both continue to grow while simultaneously contributing positively to the natural environment. This can only be accomplished through place-based dialogue, where the project aspirations are produced, but also where the outcomes are realised.

All three approaches (regenerative design, development and sustainability) “embrace the notion of adding value to place and aspire to deliver enduring, positive benefits to social, economic and ecological systems, while considering these systems and benefits in an integrated way” (Robinson & Cole, 2015, p. 139). Robinson and Cole (2015) also argue that the approaches fundamentally differ in that the precepts of regenerative design and development are rooted in a particular set of “truths” about the world (the science of ecology, whole systems thinking and the political ideology of ecologism), whereas regenerative sustainability “is rooted in an understanding of reality (including such concepts as “truth,” “sustainability,” “regenerative” and so on) as contested and socially constructed” (p. 139). Instead of giving ecology and science a central role in the discourse, regenerative sustainability places more emphasis on collective decision-making and socially constructed realities to dictate the determination of what is considered sustainable for a particular context. In short, regenerative design and development compared to regenerative sustainability have slightly nuanced worldviews. In a regenerative design and development worldview, reality is based on unchanging pillars of truth while in a regenerative sustainability worldview, reality is understood to be socially constructed and dynamic.

As will be expanded on in the following chapter, Cree ways of knowing are closely aligned with regenerative development and sustainability. Regarding regenerative development, Cree Peoples seek to build capacity and a strong sense of identity in its youth by passing down TEK, sacred teachings and collective narratives. Pertaining to regenerative sustainability, Cree ways of knowing contribute directly to the well-being of all entities through respectful hunting and stewardship practices as well as collective decision making and consensus based governance.

Regenerative methodologies are in their infancy but are increasingly used, in the form of regenerative frameworks, by professionals in the field of design as exemplified in the growing number of firms which claim to implement regenerative practices (e.g., Perkins+Will, Regenesys, NM, Regenerative Design Group, MA and Integrative Design

Collaborative). With the spread of regenerative approaches and the development of supporting frameworks comes the need to understand how such frameworks can potentially constrain design. These constraints create a gap between core regenerative worldviews and values and how they are manifested in existing regenerative frameworks. Of significance to this thesis is that the emerging regenerative frameworks (although founded largely from an anthropocentric viewpoint) can be enriched by drawing lessons from the long-established processes and practices embedded in Plains Cree ways of knowing which provide insight into the process of balance between the human, natural and spiritual realms.

### **4.3 A Regenerative Worldview**

#### 4.3.1 Essential Paradigm Shift

As described by du Plessis (2012a), the notion of regenerative methodologies has emerged out of the urgent need for designers to shift their paradigms from a “mechanistic” to an “ecological” or living systems worldview. As a way to shift a society’s paradigms or worldviews, Svec et al. (2012) suggest adopting the following approaches:

- “Focus on a broad definition of the quality of life;
- Make connections and show synergies between the things that give life meaning and vitality and the things that support function;
- Focus on positive (motivating) outcomes;
- Encourage [community] participants to focus on what they want to bring into being rather than on catastrophes to avoid;
- Demonstrate what is possible by sharing examples and strategies, from similar projects, that have been successful in the past.” (p. 86)

Though the above approaches embody significant shifts away from reductionist mindsets, this list falls short of embodying an approach, which considers non-traditional design participants such as animals, plants and other entities. Senge et al. (2005) suggest that paradigm shifts also need to be based on a deeper awareness and

connection to the larger context, producing a dramatic change in the person, organization or society.

Bill Semple, who has considerable experience working with Indigenous communities in northern Canada, suggests that the following approaches may be added to the list prepared by Svec et al. (2012) as part of shifting paradigms:

- Focus on developing consensus in all discussions and decision making;
- Reinforce the connection between one's way of life and the land one lives on;
- Ensure that there is a voice that speaks for other than human living things;
- Bring a willingness to examine the principles upon which decisions are being made and ensure those principles respect all living things and all cultures;
- Operate with the understanding that the process and the outcome can not be separated (Semple, 2013a)

Semple's expanded list illustrates how the regenerative discourse can be further informed by exploring Indigenous perspectives such as consensus building, connecting to the land, considering other than human perspectives and respect for all.

In conclusion, through a deep and personal shift in worldviews, a regenerative practitioner can begin to view his/her design project through a new lens (such as cyclical energy systems, webs of interconnected dynamic processes, or adaptive designs which continually restructure a site) rather than seeing a design project as a collection of things (such as slopes, drainage routs, roads, buildings, etc.) (Haggard, 2002).

#### 4.3.2 Living Systems Approach

Regenerative methodologies are characterized as a living systems approach (Reed, 2007), which stands in contrast to green building practices that are linear, fragmented and technologically biased. To regenerative practitioners, the project site and surrounding community are viewed as a mosaic of whole, living systems, which are

cyclical, interconnected, dynamic and evolutionary (Meadows, 2002, p. 6). Similarly from a whole systems-based perspective, living systems have complex interconnections within and between social, economic, built and ecological systems at different scales (Mang & Reed, 2012; Reed, 2007). The project site and living systems both comprise smaller systems nested within larger systems, and there is a mutuality of interest between the different scales based on the energies that are exchanged (Capra, 1996; Sanford, 2011). Mang and Reed (2012) use the following example to demonstrate Capra's and Sanford's point:

a home is nested within a neighborhood, which is nested within a community, which in turn is nested within a watershed. Recognizing all of these levels as living systems enables [practitioners to see mutual interests among systems] something that is less evident when they [systems] are segregated into categories of the natural and built environments (p. 11).

Just as built and ecological systems are nested and interconnected across scale, so are human and ecological systems. Regenerative practitioners have a deep ecological awareness and consider that individuals and societies are embedded within (and ultimately dependent on) the cyclical processes of nature (Capra, 1996). In a similar way, the argument made in the Millennium Ecosystem Assessment (2005a) is that people are integral parts of ecosystems and that a dynamic interconnection exists between humans and the natural world. This dynamic interconnection is observed when the changing human condition directly and indirectly drives changes in ecosystems, thereby causing changes in human wellbeing, and vice versa (Cole et al., 2012, p. 99). An example of this is our increasing reliance on natural resources (such as water and fossil fuels) because of our growing population. Because of our overconsumption and lack of foresight, aquatic ecosystems and groundwater aquifers have been contaminated and fossil fuel reserves have been severely depleted.

Living systems are dynamic and evolve through time. For example, Svec et al. (2012) encourage practitioners to consider entire social and ecological systems—"such as a watersheds, native plants, food systems, the unemployed, or the transportation

infrastructure” (p. 84)—as they currently exist and how they have evolved over time, in order to gain a deeper understanding of what gives a particular community life and vibrancy.

Furthermore, living systems need to be interconnected as explained by Hoxie, Berkebile, and Todd (2012):

[A] collaborative dialogue of discovery can help a group of individuals experience firsthand the intense power of community connection, the visceral experience that comes not from the data, but from experiencing something in common. Once this connection has been made and shared within a community it is possible for them to sustain it long after the practitioner is gone. (p. 68)

Overall, the cyclical, interconnected and dynamic characteristics of the worldviews embedded in regenerative methodologies are the foundations of regenerative values. These values will be discussed in the following sections.

## **4.4 Regenerative Values**

Though there are many values embedded within regenerative methodologies, three—embracing uncertainty, practicing generosity and maintaining balance—have been selected for the following discussion because they are most central to subsequent design processes and practices (as explored later in this chapter).

### 4.4.1 Embracing Uncertainty During Design

According to Meadows (2002), we can never fully understand our world and its intricacies, at least not using our traditional, reductionist science-based approaches:

We can't find a proper, sustainable relationship to nature, each other, or the institutions we create, if we try to do it from the role of omniscient conqueror. . . . Systems can't be controlled, but they can be designed and redesigned. We can't surge forward with certainty into a world of no surprises, but we can expect

surprises and learn from them and even profit from them. We can't impose our will upon a system. We can listen to what the system tells us, and discover how its properties and our values can work together to bring forth something much better than could ever be produced by our will alone (p. 2).

Here, Meadows highlights that embracing uncertainty through design and leaving room for spontaneous discovery can yield far richer outcomes than implementing prescribed plans. She also embraces uncertainty throughout all phases of design in order to hear what the under-represented voices of a project (including the ecological, social and economic) have to contribute. Meadows resists the desire to enter projects with preconceived ideas and maintains an open mind, allowing participatory engagement processes to organically shape and drive the design process.

By engaging stakeholders using a participatory approach, opportunities are intentionally created for practitioners to be enlightened by the local context and gain insight from the community members in an experiential way. The resulting designs embrace uncertainty through recognizing the future potential of a building (even though existing constraints may not fully allow building potentials to be met). Designing for a building's potential can be defined as permitting design features to remain open-ended for future alternations as a result of changing contexts and occupant needs. Examples of open-ended design include:

- Buildings designed to be net-zero energy-ready;
- Structures designed with extra loading capacity for future green roofs;
- Facades that may easily incorporate the addition of photovoltaic panels; and
- Mixed-use spaces and adaptable floor plans (for changing ecological cycles, weather patterns, energy requirements, programming, occupancy levels and demographics).

Robinson and Cole summarize the value of embracing uncertainty: “the explicit acceptance of uncertainty clearly represents a significant departure from [conventional] green performance” (2015, p. 138). Therefore, in order to find their place in a world that

is ever-changing and inherently unpredictable (du Plessis, 2012b), those in the design field need to redefine their roles and seek to learn from other knowledge bases, for instance Cree ways of knowing.

#### 4.4.2 Practicing Generosity

One of the central themes of regenerative methodologies is that the act of designing and building should result in net benefits to both ecological and social systems (Hes, 2008). This aspiration is what distinguishes regenerative methodologies from green and sustainable design, which respectively seek to do less harm and sustain already degrading systems. Though this aspiration is easier to theorize than it is to implement, it is based on a central value of generosity, to build capacity where the need exists (Reed, 2006) and to improve social and ecological problems as they arise.

The objective of practicing generosity in regenerative projects is to promote positive outcomes in the design context by giving back more than what is taken. Conventionally, architectural projects consume resources (such as land, energy and materials) with little or no consideration of how the consumed resources can be compensated for. In regenerative practices, generosity is evident when the act of building contributes simultaneously and positively to the health of human and ecological systems, through seeking to heal damaged ecological systems and improving the performance of resource flows (Cole et al., 2012, p. 100). Buildings can be considered as being generous if they contribute to increasing social, economic and ecological capital within the communities they are situated (Cole, 2012a, p. 3). This can be strengthened through the formation of synergies that build lasting relationships between users and systems and help communities prosper. Examples of such synergy include:

- Built systems collaborating to save on building materials and sharing energy costs;
- Built and social systems exchanging ideas, collaborating and sharing programming space and
- Built and ecological systems increasing efficiencies, reducing the burden on

ecological services as well as repairing damages caused by historically destructive building practices.

Practicing generosity through the act of building is exemplified by the Centre for Interactive Research in Sustainability (CIRS) building located on the University of British Columbia's Vancouver campus, designed by Perkins+Will (2011). The CIRS building is widely acclaimed and internationally recognised as a net positive building in terms of energy and water consumption (UBC RPF, 2008) as well as treating waste water onsite and recharging an onsite bioswale and groundwater table. Another example of practicing generosity through design can be seen in the Vancouver Convention Centre West's foundation design (figure 4.1) which is an attempt to restore a healthy aquatic environment in an area that was previously contaminated by industrial and railway activity. According to LMN Architects (2015), approximately 35% of the site was built over water, which meant that the building presented challenges to preserving shore habitat and aquatic life. Plans were developed for the restoration of 200 feet of shoreline and 1,500 feet of marine habitat. After the building was commissioned in 2009, a 2011 survey reported:

high species richness, such that the concrete tiers are almost entirely covered in barnacles and mussels, with an increasing number of sea urchins, sea stars, and juvenile and adult crab competing for space. . . . The survey also observed large schools of chum, coho, and chinook salmon feeding on plankton and finding shelter in the skirt's plant life. (LMN Architects, 2015)

Figure 4.1 has been removed due to copyright restrictions.

LMN Architects. (2015). *Research*. Retrieved from <http://5e6.c74.myftpupload.com/case-study/vancouver-greened-waterfront>

Figure 4.1 Vancouver Convention Centre West Foundation Design (LMN Architects, 2015)

### 4.4.3 Maintaining Balance

Eco-balance<sup>5</sup> planning and design is the principle of balancing life support systems (air, water, food, energy and materials) in the life-cycle phases (source, process, use and re-source) of a project. It is the act of balancing resource flow in ways that continually supply our basic needs in a regenerative manner. Eco-balance planning is rooted in resource life cycles (where things come from and where they go) so that the sourcing and re-sourcing process occurs within a spatial context that is manageable either by the individual or the community (Fisk, 2009). In this context, the degree to which cycles have been completed or loops have been closed (from sourcing, process, use and re-source) can be used to identify the success of a sustainable system, where the scale can vary from the building to the site, neighbourhood and beyond, if the project scope permits. If a cycle is well balanced, a surplus of resources may result which can be used as sourcing in subsequent cycles (e.g., the exchange of excess heat from one system to another). A surplus of resources can also be bartered in some manner outside the built system (e.g., providing the by-product of composting toilets to a local green roof or garden in exchange for fresh produce).

In addition to closing loops, balance within a regenerative context also involves understanding what can be “added to” (Dutta, 2013). In other words, leading regenerative practitioners (such as Fisk) have the ability to identify those parts of a system that are lacking but that have the potential to grow and serve the community in a meaningful way. For example, an abandoned adjacent brown field could be acquired and converted into a wetland in order to remediate existing contamination and restore the natural ecosystem or into a community garden to produce food for local facilities. Considering what can be added to maintain balance provides an impetus for design professionals to imagine their roles as contributors to the completion of cycles rather than just implementers of one-way conservation procedures or professionals who check off items on a list (Fisk, 2009).

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<sup>5</sup> The term “eco-balance” was coined in research undertaken at The Center for Maximum Potential Building Systems.

Both closing loops and understanding what can be added to a system have the objective of maintaining balance for the purpose of system improvement. The former approach seeks to improve the efficiency of existing system components while the latter seeks to add to what already exists.

The embedded values in regenerative methodologies (embracing uncertainty, practicing generosity and maintaining balance) are the building blocks by which regenerative processes and practices are established and will be discussed in the following section.

## **4.5 Regenerative Processes and Practices**

### 4.5.1 Diversifying Stakeholders

While the integrated design process<sup>6</sup> has been a necessary and enormously valuable complement to green design since the early 1990s, a more inclusive dialogue has the potential to engage and maintain stakeholder commitment (Cole, 2012b, p. 51). Svec et al. (2012) outline how regenerative engagement (processes that are based on a collaborative dialogue of discovery) can reveal the cultural, economic, constructed and ecological stories of a place. The notion of engagement in regenerative practices goes far beyond a charrette, or traditional stakeholder involvement technique often used in green projects. A regenerative practice engages local inhabitants, ecosystems and other entities through a variety of means some of which include a) face-to-face engagement with professionals and community members; b) mapping socio-ecological patterns in the land and c) observing changes in the landscape and local culture over

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<sup>6</sup> While there is now no single “right” definition for integrated design, most practitioners would agree that the common elements of integrated design are that the process is goal driven with a focus on sustainability, it is facilitated by a designer, it is structured, there is a clear decision-making methodology, and it seeks to be more inclusive than traditional design processes (Zimmerman, n.d).

time. Regenerative engagement reconnects participants with:

- Systems that are often under-represented in traditional design settings (such as a watershed, native plants, species, ecological services, food webs or transportation systems); and
- Under-represented stakeholders within the community (such as children, the elderly, the socially marginalized, those with low income, etc.). The purpose of this outreach is to gain an understanding of how each built system can serve existing needs within the project scope.

There has been criticism of core design aspirations (e.g., diversifying stakeholders) from some researchers in the design field, such as Tainter (2012), as to whether or not they are scalable from the building, site, neighborhood and city (Cole & Oliver, 2012). Tainter (2012) argues that “there may be a scalar contradiction between the aspirations of regenerative designers and the realities of their profession” (p. 371). In other words, the desire to include a diverse group of stakeholders may be realistic on a building or neighborhood scale, however, if the scope of a regenerative project is expanded to the city scale, the sheer number of stakeholders and participants required to meet this aspiration would be overwhelming and perhaps even counterproductive. Such a large-scale concern could be navigated by initially involving large numbers of stakeholders in meetings and charrettes in order to establish networks and identify core individuals or groups who could serve as representatives in more detailed phases of the design and construction. The intent of initially involving a diverse group of stakeholders and later identifying representatives would be to hear from a variety of perspectives while also maintaining efficient working relationships.

Regenerative engagement also has implications for the traditional role of architects and other design professionals. Cole (2012b, p. 51) suggests that a regenerative approach to designing will change the responsibilities and skills of designers; within a whole systems setting they will gain familiarity with a host of environmental strategies and professional boundaries will be blurred. The participatory and co-creative nature of a

regenerative process requires ecoliteracy,<sup>7</sup> psychological and cultural literacy, and the ability to tap the latent creativity of a community by weaving broader sets of expertise and insight into the design process (Landry, 2006; Mang, 2009). Svec et al. also echo these sentiments: “This collaborative process may include new voices that are not typically heard on design teams (such as artists, teachers, biologists, sociologists or economists)” (2012, p. 84).

Proponents of regenerative methodologies (Reed, 2005; Cole, 2012b; Svec et al., 2012) have also started to recognize the need to look beyond western professions and sciences in order to gain wisdom and insight into inclusive and meaningful engagement. Reed (2005), in particular, cites the works of Paula Underwood, a Native American oral historian, who outlines an Indigenous scientific approach in which the Universe—or all things—is constantly in motion. Reed (n.d.) also states that:

Aboriginal peoples believe that when humans are gone from an area long enough [or lose their spiritual connection to the land], they lose the practical knowledge about correct interaction, and the plants and animals retreat spiritually from the earth or hide from humans. When intimate interaction ceases, the continuity of knowledge passed down through generations is broken, and the land becomes “wilderness.” (p. 21)

By considering Indigenous worldviews, Reed further suggests that practitioners need to embrace other perspectives and ways of knowing as part of the process of understanding the story of place. Cole (2012b) also echoes this sentiment:

The architectural diversity and richness evidenced in the way that Indigenous and vernacular practices offered regionally specific solutions is largely absent in current mainstream architectural practice. The central emphasis on “place” within regenerative design provides the necessary frame by which this collective knowledge can perhaps be rediscovered and reinterpreted into a contemporary

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<sup>7</sup> An understanding of how living systems work (Orr, 1992).

context. (p. 51)

Wisdom and collective narratives about regional ecology, geology, hydrology and diversity of life forms (including human) throughout a place's history might be embodied in the TEK of Indigenous elders (Svec, Berkebile , & Todd, 2012, p. 84). However, this sacred knowledge is largely undocumented but rather exists in ancient oral traditions and collective narratives of Indigenous Peoples. In order for non-Indigenous designers and architects to glean wisdom from these ways of knowing, a relationship built on mutual trust, transparency and respect would need to be established on a local level. In this process, the duration of time required to establish such relationships could be a challenge that non-Indigenous designers might face. It would therefore be beneficial for local firms to establish connections with local Indigenous communities. Overtime, as various projects are executed with Indigenous input, fruitful, trust-based relationships would potentially flourish and avenues of respectful listening and consensus-based decision-making would emerge.

#### 4.5.2 Co-Evolutionary Relationships

Co-evolution is defined in biological terms by Raven and Johnson (1989) as “the simultaneous development of adaptations in two or more populations, species or other categories that interact so closely that each is a strong selective force on the other” (p. G6). More specifically, central to regenerative methodologies is the reality that co-evolutionary, adaptive relationships exist between socio-cultural and ecological systems where mutually beneficial relationships are formed and thrive (Cole, Oliver, & Robinson, 2013). However, a deeper understanding of the nature of this co-evolutionary relationship is still required in order for both socio-cultural and ecological systems to further develop. Weisz and Clark (2011) state that “further development . . . hinges on more thorough understanding of the internal complexities of societies, how these relate to the environment, and how society and ecology mutually shape their respective long-term evolutionary trajectories” (p. 325). In other words, the relationships between social, ecological and built systems are constantly co-evolving and the prosperity of each

hinges on a recognition that these partnered relationships are complex, intricate and dynamic. Co-evolution between these systems therefore needs to be continually re-discovered as contexts change. One possible way to rediscover socio-cultural and ecological systems is as follows:

By [mindfully] aligning human activities with natural processes we can create communities that celebrate biological wisdom, cultural diversity, and local living economies. We can create living environments. This requires abandoning the old thinking and worldviews that created degenerative systems in the first place. It requires fundamental shifts in how we relate to each other, to the environments we inhabit, and to the very definition of prosperity (Institute for the Built Environment, n.d, p. 5).

Because regenerative methodologies are still in their infancy, and because of the long-term nature of co-evolutionary relationships, it is difficult to identify regenerative projects that demonstrate co-evolution between sociocultural and ecological systems. However, as regenerative projects continue to be developed and as climate change continues to pose an imminent threat to built systems, the formation of tangible mutually beneficial relationships between sociocultural and ecological systems will become a significant priority for many more design professionals.

#### 4.5.3 Continual Regeneration

The Oxford Dictionary defines the act of regeneration as “bringing new and more vigorous life to an area, industry or institution” (2013). By definition, regenerative methodologies seek to generate new life and prosperity at multiple scales, through the act of designing and building. Regeneration can be initiated by healing previously damaged systems (social, ecological and/or economic) and forming new ones by improving efficiencies, closing loops and forming synergies between systems (Regenesis Group, n.d.a). An example of ecological regeneration is the Loreto Bay Villages in Baja California Sur, Mexico. Regenesis Group participated in the design of a 6,000-unit eco resort and mixed-use community development on an estuary of the Sea

of Cortez (as seen in figure 4.2).

Figure 4.2 has been removed due to copyright restrictions.  
Regenesis Group. (n.d.a). *Loreto Bay Villages*. Retrieved from  
<http://www.regenesishgroup.com/userfiles/SampleProjects08.pdf>

Figure 4.2 Loreto Bay Villages in Baja California (Regenesis Group, n.d.a)

An original master plan had sited several of the development phases on an eroding and degraded estuary, which had gradually devolved into drylands over the last 300 years. In most naturally occurring estuaries, “the inflows of both sea water and fresh water provide high levels of nutrients in both the water column and sediment, making estuaries among the most productive natural habitats in the world” (McLusky & Elliott, 2004). The Regenesis Group specifically helped the design team to understand the critical importance of regenerating the estuary and to re-conceptualize the affected aspects of the site so that they served to restore and enhance the critical functions of the estuary, created a picturesque human environment and brought economic benefit to the local community. “The resulting master plan created villages integrated with tree-lined canals to re-establish the functioning of the estuary, which was projected to produce 500 metric tons of fish per hectare in an area where marine life had almost disappeared” (Regenesis Group, n.d.a). In this example, both ecological and economic regeneration resulted from Regenesis’ services; previously damaged and degrading systems were revived, giving new prosperity to the community and marine life. It illustrates that a variety of strategies (understanding the narrative of place, regenerative planning, community engagement and integrative design) and diverse perspectives (ecologists, hydrologists, designers, architects, planners, engineers, economists and local community members) were vital to restoring and regenerating the estuary. Without such diverse perspectives and a multiplicity of strategies this project would probably not have been successful.

As highlighted in section 4.5.1, regenerative development is not only perpetuated by design professionals but also through regenerative engagement processes where community members are empowered to participate in the design process to create, operate and evolve regenerative systems. It is only through including the local community in the process of creating built systems that a) lasting positive change can be created, b) new objectives and aspirations can be fostered and c) local solutions to challenges (such as depleted resources) can be found (Dutta, 2013). Community members are the pulse of all regenerative projects; a core regenerative aspiration is that they will carry on the spirit of regeneration long after the design professionals have fulfilled their role in a project.

#### 4.5.4 Connection to Place

The concept of place began to gain prominence in the 1960s and 70s. For example, in his book titled *The Image of the City*, Kevin Lynch (1960) “defines the identity of a place as that which provides its individuality or distinction from other places and serves [as a] basis for its recognition as a separable entity” (p. 8). In other words, the difference between a place and a space is that places offer a distinguishable sense of unique individuality which can be recognized by occupants, whereas spaces are those that lack this sense of unique familiarity.

Subsequently, the term “placemaking” emerged, when authors such as Jane Jacobs (1961) and William Whyte (1964) proposed revolutionary ideas (for the time) about designing cities that catered to people, not just to their components (such as buildings, houses, cars and shopping centers). Creating lively neighborhoods and inviting public spaces which could be enjoyed were the main foci of Jacobs’ and Whyte’s work.

Relph (1976) then went on to expand on Lynch’s concept of place:

identity is a basic feature of our experience of places which both influences and [is] influenced by those experiences. . . It is not just the identity of a place that is important, but also the identity that a person or group has with that place; in

particular whether they are experiencing it as an insider or outside. (p. 45)

Given Relph's observation, the relationship of regenerative practitioners to a particular place will form and dictate how they perceive the space or place they seek to transform. As an outsider, a place may have less meaning and sentiment than it would for its inhabitants, and this is something designers should keep in mind as they shape their experiences in that particular place.

Christopher Alexander (1977), in his book *A Pattern Language*, uses placemaking to describe the process of designing practical, safe and attractive built systems on every scale (regions, cities, neighborhoods, gardens, buildings, rooms, built-in furniture, fixtures, down to doorknobs). Over the past four decades, the patterns identified in Alexander's book have been tested and adopted by many in the design field. More recently, according to Projects for Public Spaces (n.d) (a nonprofit planning, design and educational organization dedicated to helping people create and sustain public spaces), placemaking "involves the planning, design, management and programming of public spaces and facilitates creative patterns of activities and connections (cultural, economic, social, ecological) that define a place and support its ongoing evolution."

From a regenerative perspective, place is defined as

the unique, multi-layered network of living systems within a geographic region and timeframe that results from the complex interactions between built systems, the natural ecology (climate, mineral and other deposits, soil, vegetation, water and wildlife, etc.) and culture (distinctive customs, expressions of values, economic activities, forms of association, ideas for education, traditions, etc.).  
(Mang & Reed, 2012, p. 8)

They continue: "It serves as the basis for illuminating what has shared meaning for all human and natural stakeholders in a community; it is bigger than any one issue or cause" (p. 28).

Regenerative methodologies promote knowing and experiencing “the essence of place” as the primary starting point for connecting people to their physical context (Reed, n.d.). The intent is that people will be revitalized by a deeper connection to the places and communities they inhabit and become intrinsically motivated to care for their natural, social and built surroundings, ultimately improving the health of their communities (Mang, 2009). Mang and Reed (2012) illustrate how the concept of place is used in regenerative methodologies to discover how a project can become truly meaningful to a community. They emphasize the importance of using the “narrative of place,” together with “pattern literacy,”<sup>8</sup> as a means of providing a coherent organization of information and understanding the connections between discrete pieces of information and different types of information. As designers discover the underlying narrative of a place (through site visits, existing ecological data, historical reports and maps, and face-to-face interviews with the local community) they will be better equipped to connect the information they acquire in a way that reveals a holistic picture of the place that they are working in (pp. 29–30). For example, hearing the narratives and experiencing the patterns of a place can help regenerative practitioners gain the ability to accept and incorporate various forms of information including TEK, which may not have been considered relevant within conventionally design processes.

Similarly, as community members rediscover the narratives and patterns of the places that they inhabit and the potential these places hold within a larger spatial context, their connections to place often deepen and they begin to appreciate what they share with one another as a community. In this way the “story of place replaces limited problem solving with true insights about how a whole community can thrive” (Regenesis Group, n.d.b).

An example of a community’s transformation as a result of community members rediscovering their place can be seen in Regenesis Group’s work in Mahogany Ridge,

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<sup>8</sup> Pattern literacy involves being able to read, understand and generate appropriate patterns that harmonize with and enable a place and its inhabitants to more fully realize what they can be (Marvick, 1998).

Idaho. Local environmental groups were fighting to prevent development of 3,500 acres of abandoned and failing farmland on an alluvial fan at the base of the mountains used by migratory birds. After undertaking an assessment and discovering the story of that particular farming community, a “living bridge,” which supported multiple nutrient and wildlife flows, was discovered (Mang & Reed, 2012). This assessment further revealed that the row-crop agriculture on the alluvial fan had nearly destroyed the original ecological abundance of the three distinct ecological systems in this area (the mountain, alluvial fan and river system). If the farming community had insisted on preserving the existing farmland, the degenerative cycle would have continued. Instead, heavy involvement and direction from community members as a result of a new understanding of the core place patterns yielded a new project concept in which:

the development of the land [was used] to rebuild the living bridge by regenerating severely simplified and destabilized ecosystems. . . . [This was] key in shaping the revised master plan which called for the development of homes in tight clusters, producing additional revenue that would pay for the restoration of the stream and habitat corridors that originally connected the Teton River and the mountains while providing wildlife corridors as well as many ecosystem services for community residents. (Mang & Reed, 2012, p. 22)

Not only were ecosystems regenerated by this rediscovery of place, but the community was also given a renewed sense of identity and hope for future prosperity. Farming practices were revived through diversified agriculture and wild harvesting allowing community members to still take part in their traditional vacations in more sustainable ways.

#### 4.5.5 Forming Synergies

Svec et al. (2012) characterize the act of forming synergies as making connections between the things that give life and meaning and the things that support function (p. 86). From a regenerative perspective:

- “Things that give life” can be described as ecological systems (including but not

limited to hydrological cycles, wildlife migration patterns, ecological services, sun path and prevailing winds).

- “Things that give meaning” can be described as social systems (for example local culture, governments, organizations, community groups, dynamics between various population groups, significant and historical events and the flow of information).
- “Things that support function” can be described as built systems (which could include resources, materials, energy, transportation networks and waste streams).

Synergies between these three aspects provide pathways to discover new possibilities for collaboration, solutions to problems, conservation of resources and the discovery of revolutionary ideas and theories. Synergies can be formed among and between various built, ecological and social systems. As regenerative projects mature, the benefits of formed synergies between systems also have the potential to grow exponentially. For example, after the formation of a partnership between several social groups, trust-based relationships within the community will gradually be strengthened if built on the basis of respect and transparency. If based on strong built, social and ecological synergies, in the future “regenerative buildings [will have the potential to] restore or even create natural habitats, purify water, sequester carbon, produce oxygen, generate energy, and enhance human connections with their environment” (Cole & Oliver, 2012, p. 29).

Figure 4.3 has been removed due to copyright restrictions.

Centre for Interactive Research on Sustainability. (n.d.). Executive Summary, CIRS Building, Retrieved from [http://cirs.ubc.ca/sites/cirs.ubc.ca/files/1\\_ExecutiveSummary.pdf](http://cirs.ubc.ca/sites/cirs.ubc.ca/files/1_ExecutiveSummary.pdf)

Figure 4.3 Sustainable Systems within the CIRS Building (Centre for Interactive Research on Sustainability , n.d.)

The CIRS building (as seen figure 4.3) exemplifies synergies between and among ecological and social systems that are housed in the built form. Notable features include:

- Synergies between ecological and social systems: a green wall on the exterior façade is used for both shading, improvement of outdoor air quality and visual appeal;
- Synergies among built systems: photovoltaic panels are strategically placed throughout the building to generate onsite renewable energy, shade interior spaces, and drive a chimney (or stack) effect to assist with natural ventilation;
- Synergies between built and social systems: the waste heat being recovered from a neighboring building and being used to preheat air for space ventilation and radiant heat panels; and
- Synergies between social and ecological systems: green roof absorbs rainwater, provides additional building insulation and is used to grow organic food for the café (Perkins+Will, n.d.).

These types of synergies not only serve to improve the systems that they connect as they are shaped and evolve, practitioners and community members will also become better equipped to identify and maintain future synergies as project uses and needs shift.

## **4.6 Discussion**

The objective of this chapter has been to, highlight founding regenerative worldviews, values, design processes and practices as they appear in existing regenerative literature, rather than a comprehensive characterization of regenerative design and development. As a result of this literature review, I have gleaned several critical insights:

- Due to an essential paradigm shift, regenerative methodologies have evolved dramatically from green and sustainable approaches. However, the regenerative discourse can further be expanded through the exploration of Indigenous perspectives;

- In order for whole, regenerative systems to function properly they need to operate cyclically, be interconnected with other systems and be dynamic in nature. If cycles are well balanced, a surplus of resources, time, or man-power may result which can be used to improve the function of other cycles;
- Benefits of embracing uncertainty during design include providing an opportunity for designers and participants to hear from traditionally underrepresented groups and systems. Embracing uncertainty will create opportunities for built systems to reach their full potential by implementing open-ended design features and remaining relevant during changing contexts and user needs;
- The objective of practicing generosity in regenerative projects is to promote positive outcomes in the design context by giving back more than what is taken.
- Diversifying stakeholders can reveal the previously unnoticed cultural, economic, constructed and ecological narratives of a place, which may not be discovered through conventional design approaches. However, the feasibility of including a diverse group of stakeholders may vary significantly based on the scale and time constraints of a project;
- The relationships between human, natural and built systems are co-evolutionary in nature. Therefore, the prosperity of each of these systems hinges on recognizing that these partnered interrelationships are complex, intricate and dynamic;
- Regenerative built systems generate new life and prosperity at a community scale. Community members are the pulse of all truly regenerative projects and will carry on the aspiration of regeneration long after the design professionals have completed their roles;
- The objective of connecting to place is to revitalize practitioners and community participants by fostering a deeper connection and understanding of the cycles, processes, relationships and history of that place and to gain an appreciation of what they share with one another. As a result, participants will become more motivated to care for the natural, social and built systems and entities in that place; and

- Forming synergies between social, ecological and built systems opens pathways to discovering new possibilities for collaborations, discovering solutions to problems, redirecting and conserving resources and the discovering of revolutionary ideas and theories.

It is anticipated that the worldview and resulting values, processes and practices of regenerative practitioners, may potentially intersect with those embedded in Plains Cree ways of knowing (as outlined in Chapter 3). The following chapter juxtaposes Plains Cree ways of knowing and regenerative methodologies in order to exploring potential commonalities and nuanced differences. Delving deeper into the nature of potential intersections (commonalities and nuanced differences) will provide a basis to articulate if and to what extent Plains Cree ways of knowing can enrich emerging regenerative frameworks.

**CHAPTER 5: INTERCONNECTIONS BETWEEN THE PLAINS CREE WAYS OF KNOWING AND REGENERATIVE METHODOLOGIES**

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This chapter provides a critical exploration of the commonalities and nuanced differences between Plains Cree ways of knowing and regenerative methodologies through juxtaposing their worldviews, values, processes and practices.

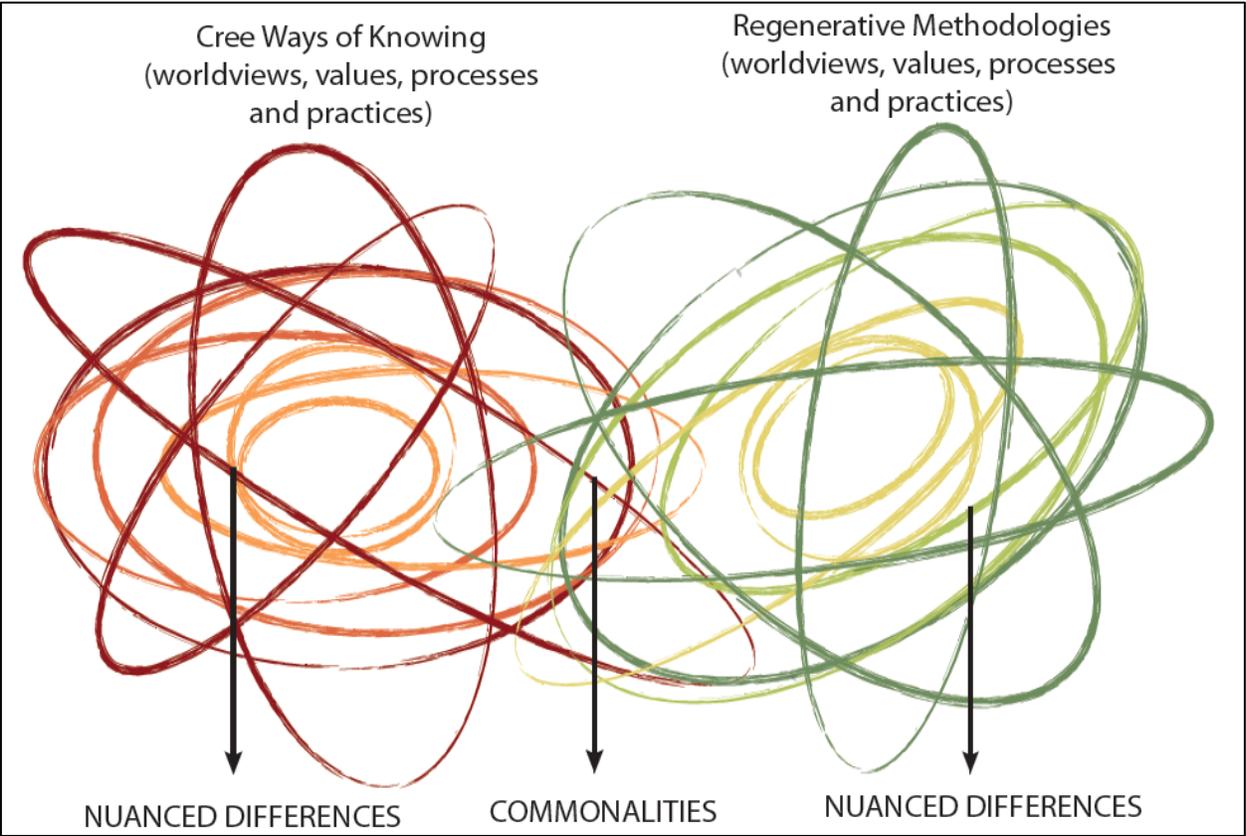


Figure 5.1 Commonalities and Nuanced Differences Between the Worldviews, Values, Processes and Practices of Plains Cree and Regenerative Practitioners

As illustrated in Figures 5.1, though they have distinct and diverse origins, Plains Cree ways of knowing and regenerative methodologies have intersecting worldviews, values, processes and practices. Intersections are observed in the form of:

- Commonalities between the aspirations embedded in both sets of worldviews, values, processes and practices; and
- Nuanced differences rooted in the different contexts and lived experiences of the Plains Cree and regenerative practitioners.

Because of the subjective nature of this exploration, the following discussion is not meant as a comprehensive characterization of the intersections between Plains Cree and regenerative methodologies. Rather, the following observations have been made and interpreted through my unique perspective as an outsider, both to Plains Cree Peoples and regenerative practice. Such a vantage point has allowed me to identify links between both of these groups with less bias of customs, norms or conventions of each group.

## **5.1 A Juxtaposition of Worldviews**

The following figure is a depiction of the intersections between Plains Cree and regenerative worldviews. The three common aspects of their worldviews (cyclical time, cyclical motion and interconnection) illustrate realities that are opposite to mainstream, western paradigms of linear, fragmented thought processes.

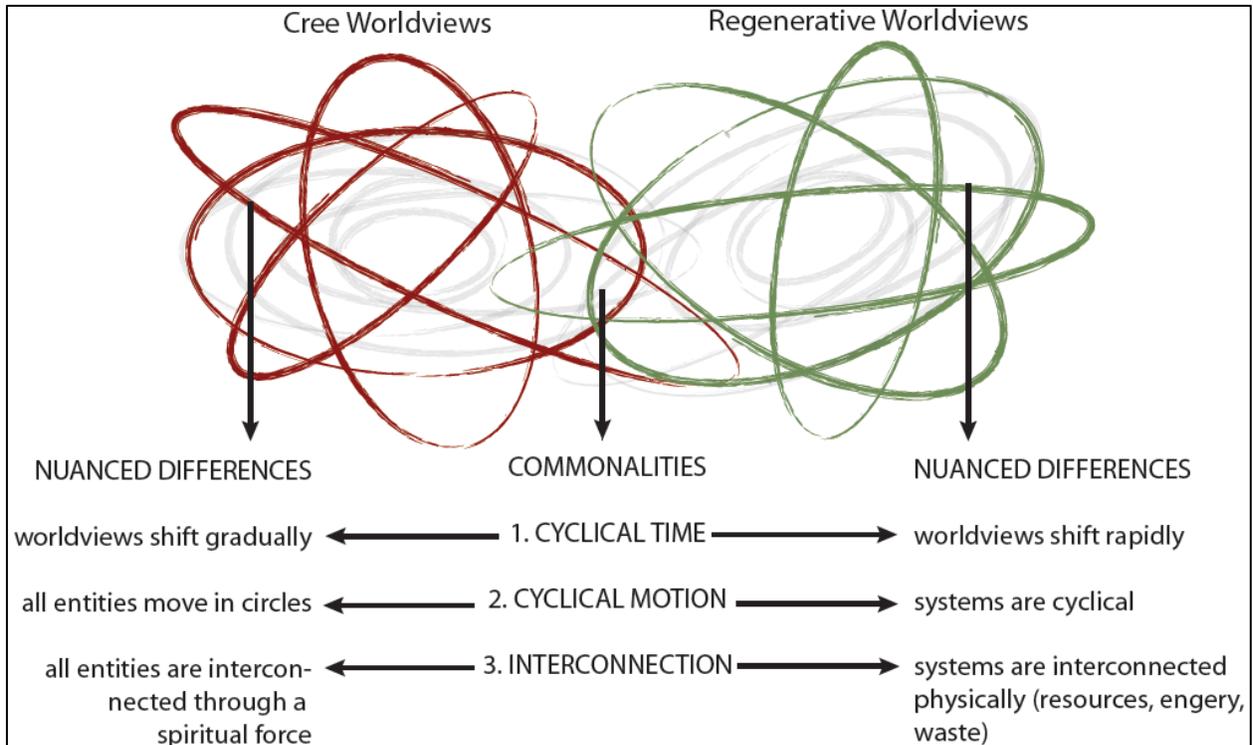


Figure 5.2 Commonalities and Nuanced Differences Between the Plains Cree and Regenerative Worldviews

### 5.1.1 Cyclical Time

Plains Cree worldviews have been formed over millennia (McLeod, 2007b). They are sophisticated, fluid, dynamic entanglements of human, non-human and more-than-human forms, passed on from generation to generation. They change according to the time, place and contexts (O'Riley, 2015). For example, some TEK can only be understood through cumulative, intergenerational understanding (Berkes, 2012) where one generation's knowledge and observations builds on another's. In the Plains Cree context time is viewed from an intergenerational perspective as each generation comes into being, experiences life, adapts to changes and passes its wisdom onto the next generation.

The worldview governing regenerative methodologies has its roots in the emergence of ecological and biological sciences founded in the late-nineteenth century and continues

to evolve as new theories are discovered and strong linkages are made between socio-ecological systems in the field of design including biomimicry, biophilia, permaculture, etc.<sup>9</sup> Much like the Plains Cree context, time in a regenerative paradigm moves in a cyclical pattern as socio-ecological systems are formed, operate, adapt and deteriorate. However, as new discoveries are made, the worldview of regenerative practitioners shift and adapt rapidly to new realities. Therefore, time can be characterised as moving quickly. Due to the emerging nature of this field, the life cycle of regenerative processes and systems are still unknown and few examples of longstanding regenerative systems exist.

### 5.1.2 Cyclical Motion

Like the life processes found in nature, the Plains Cree also see life as organic and asymmetrical and fluid. These organic and asymmetrical patterns are dominant in Beardy's depiction of Cree worldviews as seen in Chapter 3. Each life process—birth, life and death—moves in a circle, has a unique path, and ends in the same place (Wilson, 2008, p. 89). Cyclical motion reoccurs in Plains Cree ceremonies (such as the Sun Dance and sweat lodge), sacred teachings, migration patterns and artwork. These aspects of the Plains Cree ways of knowing all lead back to the concept of continuity and renewal through the physical and symbolic reoccurrence of circles.

In regenerative methodologies circles and circular motion are symbolic representations of the act of regeneration. Regenerative practitioners seek to regenerate previously damaged socio-ecological systems (such as the life cycle of renewable building

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<sup>9</sup> *Biomimicry* is a relatively new discipline, which “seeks sustainable solutions by emulating nature’s time-tested patterns and strategies, e.g., a solar cell inspired by a leaf. The goal is to create products, processes, and policies that are well-adapted to life on earth” (Biomimicry 3.8, 2012). *Biophilia* is the term coined by Edward O. Wilson to describe humanity's innate affinity for the natural world. Wilson has observed how our tendency to focus on life and life-like processes might be a biologically based need, integral to our development as individuals and as a species (Kellert, 1993). *Permaculture* is a branch of ecological design, ecological engineering, and environmental design that develops sustainable architecture and self maintained agricultural systems modeled from natural ecosystems (Hemenway, 2009; Mars, 2005).

materials, watersheds and local food supply), some of which have deteriorated because of historically exploitive design practices (e.g., sprawl into ecologically undisturbed areas or stand-alone buildings that consume large amounts of fossil fuels), in order to generate a new sense of vitality in a built system (Regenesis Group, 2011b).

While circular motion is important to both the Plains Cree and regenerative perspectives, there are nuanced differences when one observes what is in motion. To the Plains Cree, life processes are centered on the cyclical motion of all living and spiritual entities while regenerative processes currently focus primarily on the cyclical motion of systems. In Cree discourses, the term is inclusive of all physical and spiritual beings, as well as natural and anthropogenic systems within a particular context. The term “systems” (which is recurrent in regenerative discourses) is generally limited to anthropogenic and science-based natural systems—they do not include spiritual or ancestral elements. The Cree perspective is holistic while the regenerative perspective still remains somewhat fragmented and excludes paradigms, which do not immediately inform the field of design.

### 5.1.3 Interconnection

The Plains Cree believe that all entities have spiritual significance (Stonechild et al., 2004), and this vital spiritual element is primarily what interconnects individuals to both past generations and the natural world (Wilson, 2008). As such, life is a process of developing relationships between and among the human, non-human and more-than-human realms and striving for well-being by participating in various life cycles (Stonechild et al., 2004). In Beardy’s painting (Figure 5.4 A) the Plains Cree worldview of interconnection is depicted through the continuous line that connects every entity in the image (such as the Grandfather Thunderbird, Grandmother Moon, Mother Earth, Father Sun, plant beings, animals and humans).

Regenerative practitioners often recount a paradigm shift and values from a traditionally fragmented and linear paradigm to one that is cyclical, interconnected and complex.

Interconnections between systems are often viewed in terms of energy and other resources such as water, food, land, building materials, waste, etc. (Fisk, 2009; Plaut, Dunbar, Wackerman, & Hodgins, 2012a; Svec et al., 2012; Cole et al., 2012). As illustrated in many of the existing regenerative frameworks (Perkins+Will, LENSES, Eco-balance and REGEN), systems are often depicted in the form of circles with no definite start or end point. In a general sense, socio-ecological and built systems are physically interconnected through resources and energy including water, building materials, energy, waste and food.

The following figure is a juxtaposition of two images. One is a painting by Jackson Beardy that depicts the cyclical and interconnected nature of a Plains Cree worldview while the other is a graphic from Perkins+Will’s framework for implementing regenerative built systems. (Note that the objective of the Perkins+Will graphic is to illustrate the structuring of key issues rather than provide detailed content.)

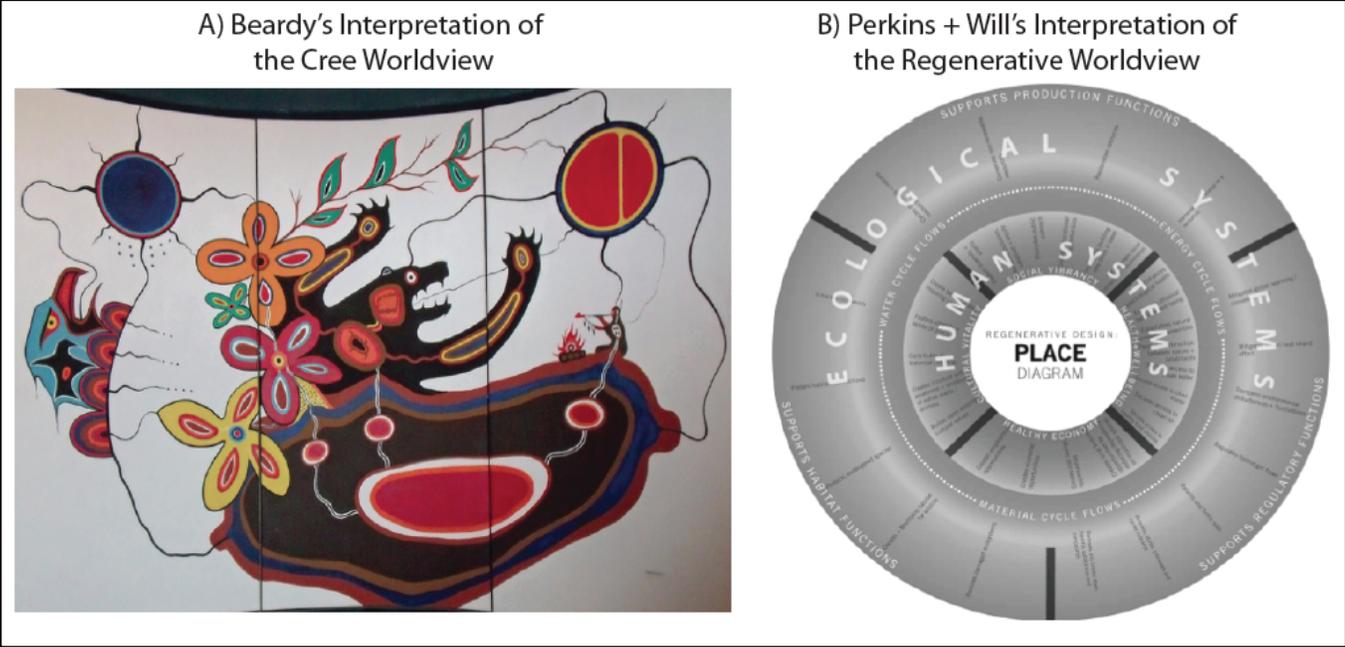


Figure 5.3 Juxtaposition of Cree and Regenerative Worldviews (Beardy, © 1979; Perkins+Will, © 2011, adapted with permission from the publishers)

In Beardy's painting there is no separation between the human, non-human and more-than-human entities; there is a centre but no people or anthropogenic elements in it. Outside of yet connected to the centre, are the land, plants, animals, humans and other entities. In the Cree worldview all are equal and there is complete neutrality. The Plains Cree aspire to maintain a spiritual interconnection between life cycles for the purpose of maintaining well-being between all entities. The notion of well-being is open ended because all entities play a vital role in supporting life, therefore well-being is not determined by a single entity but must be achieved collectively. There is room for interpretation, as each entity will manifest well-being in its own unique form.

In the Perkins+Will framework human, ecological and built systems are separated through nested spheres. The centre of the graphic is intended to be populated with a design feature that the design team and stakeholders have chosen to focus on (based on the project scope). In the worldviews governing regenerative methodologies, the focus is on forming interconnections between human, ecological and built systems in order to perpetuate ongoing system improvement. When juxtaposed with Plains Cree views of well-being, the aspirations of system improvement in regenerative methodologies are rigid and subjective in nature. First, system improvement implies that there are spatial and temporal constraints within a project scope that are often used to determine whether or not improvement was achieved. Second, the notion of improvement is subject to the interpretation of those seeking the improvements (most often the design professional). Though the objectives of non-design professionals and community participants are often solicited during participatory engagement, the means of inquiry, interpretation and methods of documentation are often carried out by the design professionals.

In order to transition from the rigid and subjective aspiration of system improvement to a more inclusive and open-ended approach, regenerative practitioners have to embrace the value of well-being as part of their participatory engagement process. Practitioners could seek to understand the extent to which social and ecological systems could potentially contribute to well-being by engaging and gaining input from community

representatives (each speaking on behalf of various systems based on their wisdom, traditional or professional knowledge, lived experience and/or role in the community). These discussions may be flexible and informal, allowing all participants (including the design team) to make adjustments to the design process or objectives in order to maintain a sense of overall community well-being.

**5.2 A Juxtaposition of Values**

Figure 5.5 is a depiction of the commonalities and nuanced differences of Plains Cree and regenerative values that sit within the larger context of their worldviews. The three identified common values (balance, sharing and humility) dictate how various groups, systems and entities interact.

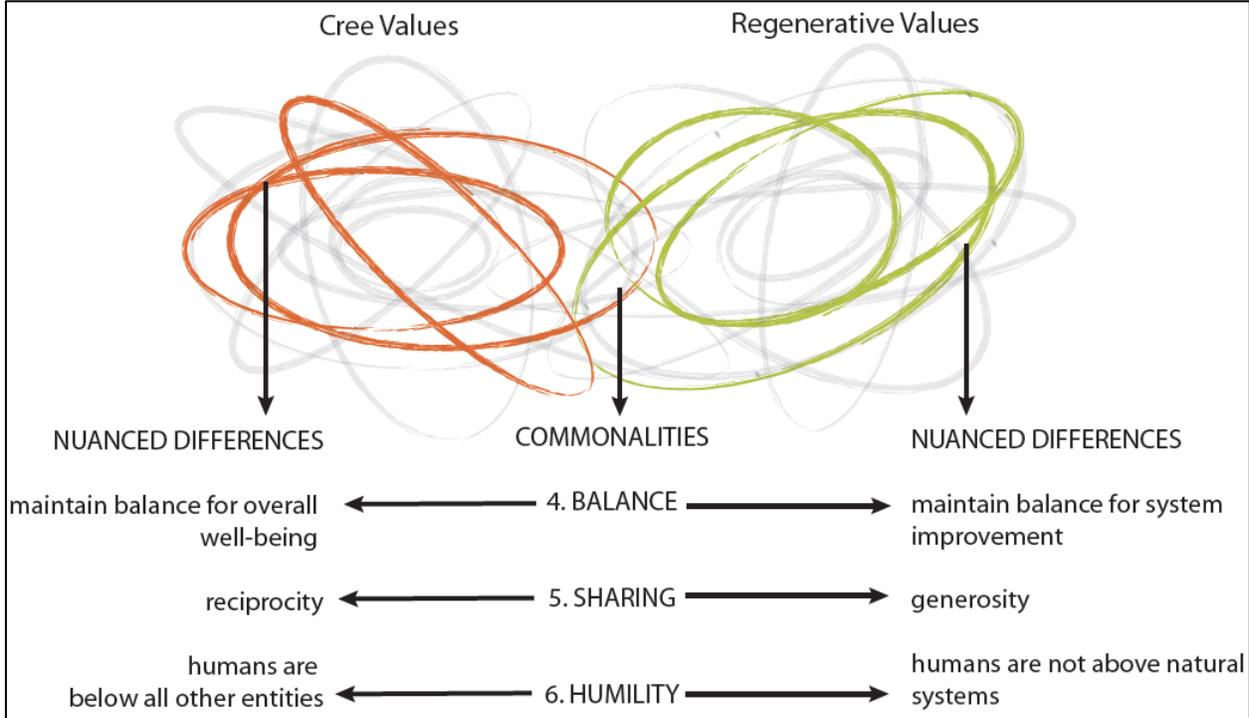


Figure 5.4 Commonalities and Nuanced Differences Between Plains Cree and Regenerative Values

### 5.2.1 Balance

Maintaining 'balance' in communities requires careful observation of the surroundings and the ability to respond to needs in an appropriate and meaningful way. In both Plains Cree communities and regenerative design and development, maintaining balance among life cycles, systems and various entities in ways that promote overall well-being is valued. For example, the Plains Cree believe that the Creator has appointed people as the stewards of the land (Berkes, 2012, p. 119). As depicted by the medicine wheel (Wenger-Nabigon, n.d.), people are called to maintain balance and harmony between the physical (ecological), emotional (social) and spiritual realms in order to sustain healthy growth (individually and collectively). The value of maintaining balance is also evident in the 14th Tipi Teaching (as outlined in Chapter 3), which states that our ultimate responsibility is to maintain balance of the body, mind, emotions and spirit (individually, with the family, the community and the nation) (Lee, 2006).

As illustrated in Figure 5.5 B, the term "eco-balance planning and design is the principle of balancing life support systems (air, water, food, energy and materials) across life cycle phases (source, process, use and re-source)" (Fisk, 2009, p. 2). In the field of regenerative design and development, maintaining balance is generally viewed in terms of the skilful management of resources by humans in ways that will continually supply basic needs in a regenerative manner. In addition, Dutta (2013) proposes that maintaining balance from a regenerative perspective involves recognizing the areas in a system which are lacking yet have the greatest potential to serve the community in meaningful ways.

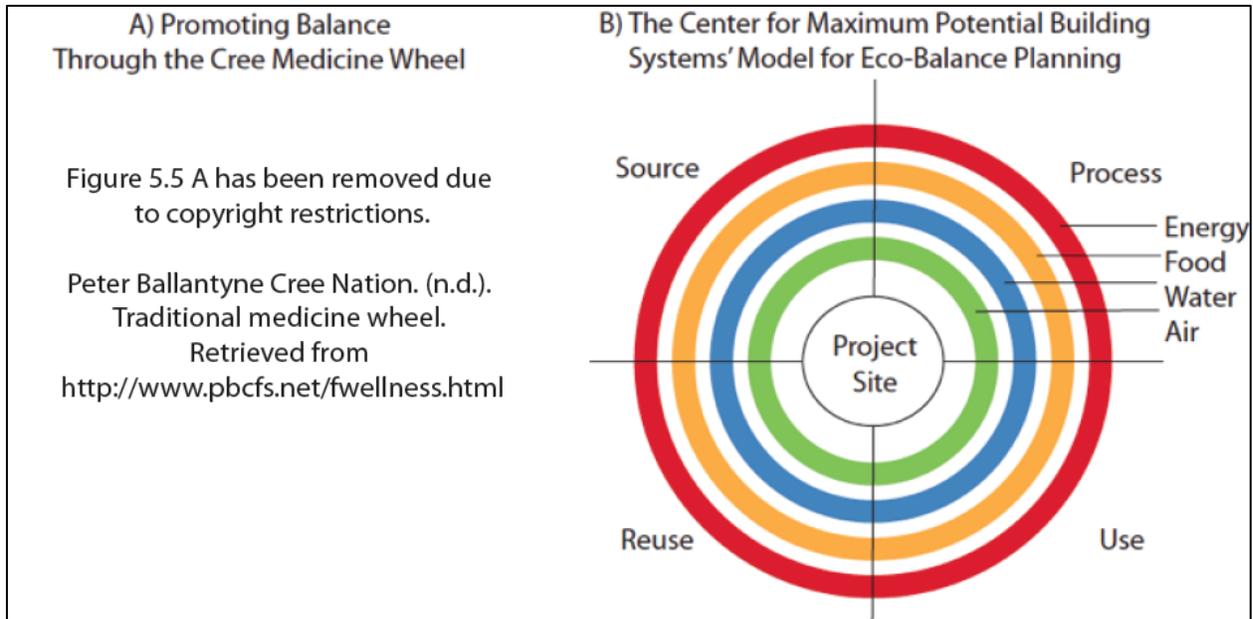


Figure 5.5 Juxtaposition of Plains Cree and Regenerative Value of Balance (Peter Ballantyne Cree Nation, n.d.; Fisk, © 2009, adapted with permission from the publisher)

In both Plains Cree ways of knowing and regenerative methodologies, balance is not achieved from an even distribution of resources (as done when balancing a scale) but rather requires meeting needs with appropriate actions within an ever-changing context. Balance requires recognition of hierarchies, priorities and varying levels of needs, all of which are dynamic in nature and shift as the context changes. It also requires appropriately assessing changing conditions and adjusting and reassessing needs within systems. For example, if an individual is seeking personal healing using the medicine wheel (as seen in figure 5.5 A), they may be encouraged to reconnect spiritually with the Cree spiritual practices in order to achieve overall personal balance. Similarly, regenerative practitioners often need to exert more effort in healing and regenerating previously damaged ecological and social systems resulting from an overemphasis on technological and economic progress (as demonstrated by the global rise in industrialization and capitalism [McMurty, 1999]).

The Plains Cree and the regenerative perspectives on balance, however, differ in scope. As evidenced in the medicine wheel, the Plains Cree integrate the ecological,

social and spiritual realms in the act of balance as a means of maintaining peace and centeredness.

Elder Mary Lee (n.d) expands on the concept of balance as a means of individual and community health in the following quotation:

Individuals seek to balance their physical, emotional and spiritual realms for healthy growth, while communities seek to maintain balance between a spiritual life-force, the land, their ancestors, plants and animals, and community members as the natural order to life.

On the other hand, regenerative practitioners often seek to restore balance to degraded systems primarily through design interventions which redistribute resources from systems with excess to other systems which are lacking. For example, to address the growing issue of water shortage, many regenerative practitioners seek to implement a cascading approach to using and reusing water from other potential sources within a built system. As seen in the CIRS building designed by Vancouver architects, Perkins+Will, municipal potable water is only used when there is the potential for human consumption (not for every water need as done in many green and conventional buildings). When fully operational, grey and black water is collected from sinks, showers and toilets, treated on site (using a bio-filtration system) then reused for landscape watering or diverted directly into local hydrogeological systems. By implementing a cascading approach to water usage, regenerative practitioners are placing less demand on municipal systems which have embedded energy requirements from treatment and transpiration and are also resupplying ecological and hydrological systems with clean water (Centre for Interactive Research on Sustainability , n.d.).

### 5.2.2 Sharing

To the Plains Cree the value of sharing is expressed in the form of reciprocity and is evident throughout their traditional and contemporary lifestyles, including ceremonies (e.g., thanksgiving and sacrifices offered during the Sun Dance), governance and

intertribal relations (sharing circles and intertribal gift giving), and the spiritual covenants established with land, water, plant life, animals, etc. (Ahenakew, 1973; Gladwin et al., 1997; Ermine, 2007). These acts of reciprocity come from a perspective of humility towards and reverence for all other entities. Reciprocity is not only with humans but also with ~~evident among~~ the plant, animal, and spiritual realms. For example, the Plains Cree believe that spiritual entities (the Creator and ancestors) give life, protection and health to plants, animals and humans, animals and plants provide food and resources to humans, and in return humans (the Cree) enact respectful interrelationships and interdependencies with non-human and more-than-human entities (Bready & Pettipas, 1979).

The value of sharing in regenerative design and development is embodied in acts of generosity when a surplus of resources is generated in one system and provided to another system in order to meet a particular need or deficiency. Specific examples include contributing to the health of socio-ecological systems by healing degenerating ecological systems is exemplified in the building foundation of the Vancouver Convention Centre West, which is designed to recreate a natural shoreline and provide habitat for marine life (DA Architects + Planners, 2009). Acts of generosity from regenerative practitioners stem from an acknowledgement that some natural and social systems may need restoration, particularly due to the damage that human activities have caused.

Both the Plains Cree Peoples and regenerative methodologies recognize the many gifts of life, resources and energy provided from the earth. As part of maintaining balance, it is essential for exchange to take place amongst and between human, natural and built systems. Though sharing is central to both Plains Cree Peoples and regenerative practices, this value is manifested in two distinct ways. The Plains Cree value of reciprocity is more holistic than the western value of generosity because it is rooted enactments of respect and reverence with other all entities. In regenerative discourse, acts of generosity are often framed as unidirectional, anthropogenic processes in which resources (such as water or energy) are shared with other built, social and ecological

systems. Examples include treating grey and black water in order to recharge local hydrogeological systems or collecting waste heat from mechanical systems and heating adjacent built systems. Though beneficial, limiting acts of generosity to solely support human endeavor fails to acknowledge how nonhuman systems generously contribute to the well-being of built, social and ecological systems. From a Plains Cree perspective, reciprocity is experienced as mutually beneficial among and between the social, built and natural realms where, as from a regenerative perspective, acts of generosity are characterized as originating from the human realm to other social, ecological or built systems.

### 5.2.3 Humility

In many societies humility is often considered a weakness; those exhibiting humility are considered to be unduly submissive and lacking in confidence (Nietzsche, 1895). However, to the Plains Cree humility is central to many facets of their ways of knowing and is rooted in an understanding that all forms of life, systems and actions are interconnected—none is greater than, or independent, of the other (Stonechild, et al., 2004; Lee, 2006). When compared to anthropocentric western attitudes, a position of humility within Plains Cree communities is a more realistic view of where humans stand with respect to the larger cycles and processes of life.

To Plains Cree Peoples, the value of maintaining humility is passed down intergenerationally through collective narratives and hunting practices. Youth are taught to understand that one individual cannot obtain a comprehensive understanding of collective narratives, rather it is the compilation of intergenerational perspectives which leads to true understanding (McLeod, 2007a, p. 16). They are also taught that hunting is an exercise of humility. As an act of sacrifice, it is the animal, not the hunter who controls the outcome of the hunt (Berkes, 2012, p. 107). In addition, the third Tipi Teaching (as outlined in Chapter 3) states:

We are not above or below others in the circle of life. We feel humbled when we understand our relationship with Creation. We are so small compared to the

majestic expanse of Creation, just a “strand in the web of life.” Understanding this helps us to respect and value life. (Lee, 2006)

The Cree have a deep understanding that they are neither greater than nor lesser than the rest of creation. They carry a humble sense of acceptance that they play a small, yet vital, role in the narrative of life.

The value of humility is also embraced in regenerative development wherein its practitioners recognize that human systems (built, social, economic) are not dominant over or independent of ecological systems. Built, social and economic systems sit within the context of ecological systems and are reliant on them for their prosperity. As more integrated design processes are being explored, there is also increasing recognition that design professionals are no longer the sole visionaries of successful design processes. Rather, the collective vision of the community is central to the success of regenerative projects (Cole R. , 2012b). Such a more humble approach to design is demonstrated by:

- Regenerative practitioners abandoning their preconceived plans and designs in early stages;
- Allowing participatory engagement processes to organically shape and drive the design process; and
- Incorporating open-ended design features for future adjustments initiated by changing contexts and inhabitant needs.

Maintaining humility requires a conscious effort to recognize one’s true position within the larger context. Both the Plains Cree Peoples and regenerative practitioners share an understanding that individuals are not (and can never be) omniscient nor can they completely control their context and future outcomes. As an alternative approach to conventional design approaches (which place emphasis on and determine certainty through human-made tools), Plains Cree and regenerative practitioners celebrate the unknown mysteries and processes hidden within the ecological systems.

**5.3 A Juxtaposition of Processes and Practices**

Figure 5.7 is an overview of the commonalities and nuanced differences between Plains Cree and regenerative processes and practices.

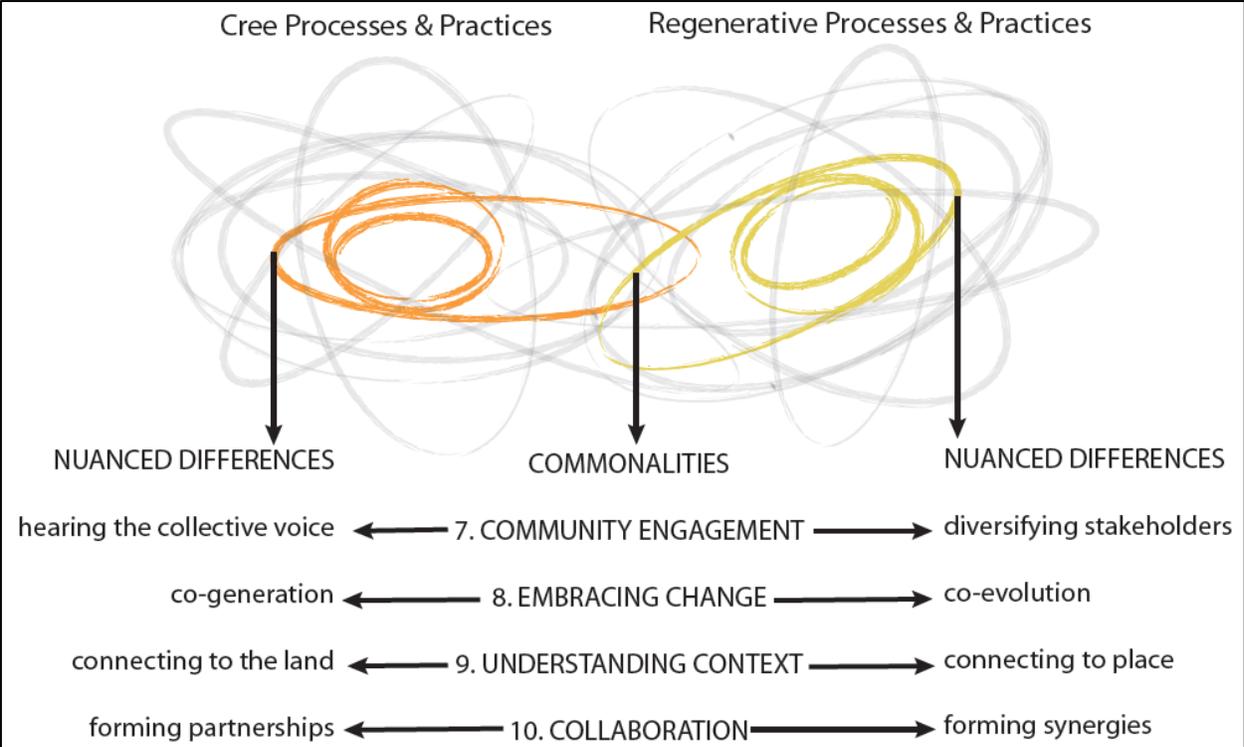


Figure 5.6 Commonalities and Nuanced Differences Between Plains Cree and Regenerative Processes and Practices

5.3.1 Community Engagement

The Plains Cree embody an inclusive perspective of community engagement by focusing on hearing the collective voice through sharing circles. Sharing circles are rooted in respecting all community members (ecological, human and other than human) and understanding that the collective voice is more important than that of the individual (Lane, 2013). This process is also evident in how traditional knowledge and collective narratives are formed and shared intergenerationally. Collective narratives are lived and

spiritual experiences passed down over several generations; each individual's wisdom has a significant role to play in contributing to the collective understanding and interpretation of traditional knowledge and sacred teachings (McLeod, 2007a, p. 37). To the Plains Cree, sacred knowledge cannot be fully understood without each generation's input—"it is an ongoing process between the present and the past, and also between the individual and the collective" (McLeod, 2007a, p. 38).

Though the sacred wisdom of their elders is held in very high regard, the Plains Cree also value the perspectives of younger generations. One way that hearing the voices of younger generations is through the open-ended nature of collective narratives so that younger generations can enrich and contextualize them as the teachings are applied in their lives. Hearing from younger generations is also demonstrated in consensus-based decision-making (McLeod, 2007a, p. 13). The use of sharing circles to facilitate consensus allows all community members (including the youth and other marginalized groups) to share their perspectives openly without criticism or offense. In addition to considering human perspectives, consensus-based decision-making processes also seek to hear from the land, non-human and more-than-human realms. Often representatives in the community (respected for their wisdom, traditional knowledge, lived experiences and leadership roles) such as elders, healers, chiefs and hunters speak on behalf of the other-than-human realms in order to practice consensus holistically (Lane, 2013).

There has been an increasing recognition in the field of regenerative design and development that engaging only design professions and stakeholders (such as architects, urban designers, engineers and clients) does not yield built systems which contribute to the prosperity of the community in the long term (Cole, 2012a; Svec et al., 2012). Growing out of this recognition, regenerative practitioners are seeking more meaningful community engagement by incorporating input from other professionals outside of traditional design fields (such as local artists, teachers, sociologists, biologists, ecologists, hydrogeologists, economists, etc.) in order to enrich their understanding of the context they are working in (Svec et al., 2012, p. 84).

In addition, participatory engagement practices have expanded the regenerative dialogue to include local Indigenous communities where projects are located in, or in close proximity to, Indigenous communities or their historical hunting, trapping, burial or ceremonial lands. An example includes the recently built Canadian Museum of Human Rights where the architectural building blocks of the museum are said to draw on Indigenous principles of the earth, ceremony and universal rites of passage (Albo, 2014). Practitioners, however, need to be aware that dialogue and engagement with Indigenous groups does not necessitate satisfactory project outcomes, as was the case with this museum. In order to circumvent superficial and tokenistic gestures of inclusion, it is imperative that careful and transparent engagement protocols be established and revisited throughout the process, such as the one outlined by the not-for-profit Indigenous organization, Indigenous Architecture and Design Victoria (2015).

The regenerative practice of diversifying stakeholders and the Plains Cree process of seeking the collective voice are similar in that both depend on a wide range of individuals with unique perspectives and experiences to contribute to a process of generating collective vision and decision-making. There is an understanding in both Plains Cree ways of knowing and regenerative methodologies that making decisions together strengthens communities and that these decisions have more longevity than those that are made on an individual basis.

### 5.3.2 Embracing Change

The Plains Cree embrace change through intergenerationally co-generating processes and practices that have helped them adapt to and thrive in harsh prairie landscapes, overcome oppressive colonial forces and keep Cree ways of knowing relevant in a technology saturated society. The term “co-generation” is used to describe the cumulative formation of Plains Cree worldviews, values, processes and practices through the passing of time. For example, Plains Cree collective narrative memory and traditional knowledge are co-generated intergenerationally so that present day

experiences can be deciphered and navigated. McLeod (2007b) explains that as Plains Cree elders pass down sacred teachings and traditional knowledge to the next generation they are contributing to the larger narrative. They also add to the meaning of collective narratives by using their experience and understanding. In this way elders co-generate collective wisdom and encourage younger generations to do the same (p. 2).

The term “co-evolution” is used to describe “the simultaneous development of adaptations in two or more populations that interact so closely that each is a strong selective force on the other” (Raven & Johnson, 1989, p. G6). Cole, Oliver and Robinson (2013) argue that a co-evolutionary, partnership exists between sociocultural and ecological systems. Similarly, environmental biologist John Cairns argues that “mutualistic co-evolution is the only path to success” and that “a ‘partner’ unable to co-evolve with the other partner is in serious, probably fatal, trouble” (2007, p. 105). In other words, if socio-cultural systems are not able to maintain a balanced partnership with ecological systems both will likely perish.

One of the main objectives of regenerative methodologies is to form mutually beneficial relationships that embrace change over time. An example is to integrate photovoltaic panels into the building design that provide shade to south-facing glazing during the summer months while simultaneously generating renewable energy. The building’s structure and orientation would be primary considerations in order for the photovoltaic panels to function optimally. Weisz and Clark (2011) believe that the prosperity of co-evolving human, natural and built systems hinges on a recognition that their relationships are complex, intricate and dynamic. Therefore the nature of co-evolution of systems needs to be continually rediscovered.

As described by McLeod (2007b), the Plains Cree concept of co-generation has four dimensions (the past, present, individual and collective) and has a clear purpose: to use past knowledge (individual and collective) in order to understand the present day. As described by Weisz and Clark (2011), the objective of co-evolution is to achieve a greater degree of prosperity in each system than could be achieved in isolation.

### 5.3.3 Understanding Context

The Plains Cree have an intimate understanding of their context through a deep connection to their traditional lands. This connection is manifested the Cree language, TEK, sacred ceremonies and burial grounds, as well as hunting and fishing grounds. Today the Plains Cree remain deeply attached to their lands because previous generations were taught by their elders to maintain these connections. The Plains Cree continue to teach their youth to do the same (McLeod, 2007b, p. 19). The loss of their traditional lands leads to loss of the above-mentioned aspects of their ways of knowing and vice versa (Robinson & Quinney, 1985). This loss is evident in the legacy of the colonization of Indigenous groups in Canada.

Regenerative practitioners place considerable emphasis on understanding the design context (also known as “the essence of place”) as a primary starting point for connecting their clients to their physical context (Reed, n.d.). Mang and Reed (2012) argue that there is potency in using the historical and existing narratives of the place, in combination with pattern literacy, as a means of providing a coherent organization of information and understanding the connections between discrete pieces of information and different classes of information (pp. 29–30). In other words, understanding the essence of place, in order to form comprehensible depictions of a place, can assist regenerative practitioners and community participants in interpreting pieces of information which may otherwise appear to be unrelated. In addition, Mang (2009) states that the intent of knowing and experiencing the essence of place is that people will be revitalized by a deeper connection to their context and become intrinsically motivated to care for their natural, social and built surroundings (p. 5). The Mannahatta and the Welikia Projects<sup>10</sup> are examples of seeking to discover the essence of place. The intent of these projects was to uncover the precontact ecology of Manhattan Island,

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<sup>10</sup> Mannahatta means “island of many hills” in Lenape, the Native American language spoken in the New York City region at the time of first contact with Europeans. Welikia means “my good home” in Lenape (Wildlife Conservation Society, 2008).

the Bronx, Queens, Brooklyn and Staten Island (Wildlife Conservation Society, 2008):

Through the Mannahatta Project, we learned that the center of one of the world's largest and most built-up cities was once a remarkably diverse, natural landscape of hills, valleys, forests, fields, freshwater wetlands, salt marshes, beaches, springs, ponds and streams, supporting a rich and abundant community of wildlife and sustaining people for thousands of years. . . It turns out that place celebrated for its cultural diversity, was acclaimed by early settlers for its biological diversity and fertility: home to bears, wolves, songbirds, and salamanders, with clear, clean waters jumping with fish, and porpoises and whales in the harbor. In fact, with over 55 different ecological communities, Mannahatta's biodiversity per acre rivaled that of national parks like Yellowstone, Yosemite and the Great Smoky Mountains. (Wildlife Conservation Society, 2008)

According to the Wildlife Conservation Society (2008), these two projects “provide the basis for all the people of New York to appreciate, conserve and re-invigorate the natural heritage of their city no matter which borough they live in.”

Both the Plains Cree and regenerative practitioners seek to foster a deep connection to the land and place, through seeking to understand and interdepend with their surroundings. There is a common understanding in both discourses that the land unifies all of its inhabitants because it bears witness to significant past, present and future events; these events are denoted by symbolic and physical markers in the landscape.

Regenerative methodologies seek to use the narratives of and patterns in a place to organize and understand fragments of information, whereas the Plains Cree seek to maintain connections to their land in order to perpetuate traditional and contemporary cultural practices and language, foster a strong sense of identity in a contemporary context and inspire ongoing future generations (McLeod, 2007b; Alfred, 2008). In most instances, there is an inherent gap between regenerative practitioners and the land or place where their projects are carried out. Most regenerative practitioners do not live on the land where their projects are implemented. Though a significant amount of time and

effort is spent on grasping the essence of place, there are limits (physical, intellectual and emotional) to the extent practitioners are able to invest in a place (particularly once the project is complete). This means that there is a qualitative limitation to how the Plains Cree process of connecting to the land and the regenerative process of connecting to place can converge (Cole, 2013). There is a greater need for practitioners to increase their reliance on local community members to share and interpret information about the site as well as to direct the objectives of and aspirations for the project's future.

#### 5.3.4 Collaboration

One of the most significant animals for the Plains Cree is the buffalo. When they were hunting them, the Plains Cree used all the parts of the buffalo to sustain life. They were used for clothing, food, shelter, ceremonial artifacts, hunting tools, etc. (Abel & Friesen, 1991, p. 57). Because the buffalo herds were too large to be hunted by a single tribe, several Plains Cree tribes formed partnerships and hunted collectively. Collaboration through collective hunting and trading partnerships supplied communities with a variety of resources throughout winter months and strengthened intertribal alliances. Another example of forming partnerships includes the Plains Cree hunter–hunted animal relationship. The Plains Cree believe that the animal willingly sacrifices its life to provide for human needs (food, tools and furs) and in return, out of honor and respect, hunters practice good stewardship by only taking what is needed and not hunting in excess of their immediate needs (Berkes, 2012).

From a regenerative perspective, collaboration is manifested in the formation of synergies, or making connections between the things that give life and meaning and the things that support function (Svec et al., 2012, p. 86). Synergies are formed on varying scales (from single building to whole communities) and between ecological, social and built systems. An example of a synergy among and between social, built and ecological systems is a community centre green roof which absorbs rainwater (reducing surface runoff and erosion), provides additional building insulation (reducing heating and cooling

requirements) and functions as a space to grow organic food or traditional plants and medicine for community members. Regenerative methodologies recognize that built systems sit within an ecological context. When built systems exist in harmony with, not stifle or exploit, ecological systems, both will mutually benefit (The World Commission on Environment and Development, n.d.).

Both the Plains Cree ways of knowing and regenerative methodologies value the process of collaboration between various entities because it strengthens communities by forging new relationships between members, generating place-based and land-based solutions to common problems, redistributing resources to where they are most needed, building collective ownership and inspiring collective vision for future endeavours.

#### **5.4 Discussion**

Though the intersections identified between the Plains Cree ways of knowing and regenerative methodologies are subjective in nature, they illustrate how both perspectives have common, yet nuanced differences in their worldviews, values, processes and practices.

Through juxtaposing Plains Cree and regenerative worldviews, it is revealed that in both Plains Cree and regenerative worldviews time is viewed as cyclical, however regenerative worldviews depict time as moving quickly while from a Plains Cree perspective, time moves slowly. Though systems and entities are viewed as moving in a circular motion, regenerative methodologies place emphasis on systems (social, ecological and built), while Plains Cree ways of knowing focus on entities (land, human and non-human and more-than-human). Finally, the importance of interconnection is evident in Plains Cree and regenerative worldviews. However regenerative worldviews lead practitioners to explore new connections between systems, while Plains Cree ways of knowing seek to maintain long-standing spiritual connection between entities.

The value of maintaining balance is shared by both the Plains Cree and regenerative practitioners. However a nuanced difference exists in the purpose behind maintaining balance. For regenerative methodologies, balance is valued in order to perpetuate system improvement, while Plains Cree ways of knowing seek to foster community well-being. Similarly the common value of sharing is also nuanced; sharing takes the form of generosity in regenerative discourse while it is manifested as reciprocity to the Plains Cree. Furthermore, the common value of humility is demonstrated in regenerative methodologies through a paradigm shift and revelation that humans are no greater than natural systems. In contrast, Plains Cree ways of knowing emphasize that humans are less than any other entity (natural, non-human and more-than-human); they are reliant on all other entities for survival.

Overall the nuanced differences between Plains Cree ways of knowing and regenerative methodologies are rooted in the fundamental distinction that regenerative methodologies are nascent while Plains Cree ways of knowing are timeless, tested and relevant despite changing contexts.

Examining Plains Cree and regenerative processes and practices reveals that in regenerative methodologies emphasis is placed on tangible processes and practices, while the Plains Cree largely focus on the intangible processes and practices. For example, participatory community engagement is used to diversify the number of stakeholders (a quantitative exercise) as a regenerative process, while in a Plains Cree context, sharing circles seek to connect community members on a deeper level by hearing the collective voice (a qualitative process). Furthermore, from a regenerative perspective, the process of understanding context is manifested as a connection to place, which is based on the tangible attributes of a place (such as scientific data, historical facts, practitioners' observations), but from a Plains Cree perspective, understanding context takes the form of a deep spiritual connection to the land through maintaining and passing down intangible aspects of their ways of knowing such as stewardship practices, TEK, sacred teachings, language, etc.

These nuanced differences make evident that regenerative discourse is still in its infancy based on a short-term view of time, over emphasis on tangible systems and lack of consideration for the role that spiritual aspects of place can play in regenerating damaged social, ecological and/or built systems. As noted by Cole (2012a): “The diversity and richness, evidenced in the way that Indigenous and vernacular practices offer regionally specific solutions, is largely absent (yet needed) in architectural practice” (p. 51).

The observed commonalities and nuanced differences between the Plains Cree ways of knowing and regenerative methodologies warrant further exploration of how rich and diverse Plains Cree worldviews, values, processes and practices can enrich emerging regenerative methodologies, more specifically, emerging regenerative frameworks. In the following Chapter I will explore the strengths and weaknesses of existing regenerative frameworks particularly how they are used during the early phases of the design process, which informs how regenerative projects are initiated, how collective project aspirations are established, whom to engage throughout the design process and how to engage community participants inclusively.

## **CHAPTER 6: HOW EMERGING REGENERATIVE FRAMEWORKS CAN BE ENRICHED BY PLAINS CREE WAYS OF KNOWING**

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The purpose of this chapter is to identify gaps within existing regenerative frameworks in order to articulate how incorporating Plains Cree ways of knowing can a) improve how regenerative projects are initiated, b) help in establishing collective project aspirations, c) inform whom to engage throughout the design process and d) help in engaging community participants more inclusively.

### **6.1 Existing Regenerative Frameworks**

Plaut and other members of the Building Research Institute at Colorado State University argue that current green building tools “offer little guidance in the way of guiding people through the creation, implementation, and operation of projects. . . . [They focus on] measuring the performance of an end result or product” (Plaut et al., 2012, p. 115). In other words, green building tools are described as product-based rather than process-based. Tools such as The US Green Building Council’s Leadership in Energy and Environmental Design (LEED) rating system were designed to provide an objective assessment of building environmental performance and, in doing so, keep individual environmental performance requirements compartmentalized. A product-based approach to building assessment is considered necessary so that it is relatively simple for the environmental performance of buildings to be compared and distinguished from one another. Such tools, however, typically focus on a narrow spectrum of technology-based criteria with little regard for upstream energy and resource requirements for many of these technologies. Furthermore, these tools do not account for how various technologies operate either synergistically or antagonistically to affect environmental performance.

In contrast, existing regenerative frameworks are best described as process-based and are primarily directed at guiding practitioners through regenerative processes throughout the entire life cycle of a built system. Regenerative frameworks go beyond

technology-based criteria to include social, cultural, economic and ecological systems to explore the relationship between various systems (Cole R. , 2012a, p. 5). They “accept the built environment as a complex socio-ecological system and attempt to offer guidance to designers and other stakeholders in situating projects within it” (Cole R. , 2012a, p. 5). In other words, regenerative frameworks acknowledge that the built environment is a network of complex systems and offer practitioners and community members processes and strategies that they can implement in order to find synergies and mutually beneficial outcomes between various systems.

Because regenerative methodologies are constantly evolving, several frameworks have emerged. For this analysis, I have selected some of the more developed and well-articulated framings of regenerative design and development:

- REGEN, proposed by the US architectural practice Berkebile Nelson Immenschuh McDowell (BNIM) for the US Green Building Council (USGBC), is intended to be a “web-based, data-rich and values-based framework to guide dialogue and help professionals to practice regenerative thinking and design” (Svec et al., 2012).
- Perkins+Will Framework, proposed by the global multidisciplinary architecture and design firm Perkins+Will, is intended to be applied in all market sectors, ranging from individual buildings to urban design (Cole R. , 2012b, p. 49).
- Eco-Balance Planning, proposed by the Center for Maximum Potential Building Systems (CMPBS) in Austin Texas, is a framework rooted in transect-based planning. It seeks to balance resources so that the sourcing and re-sourcing occurs within a spatial context that is manageable either by the individual or the community (Fisk, 2009, p. 2).
- Living Environments in Natural, Social and Economic Systems (LENSES), proposed by the Colorado State University’s Institute for the Built Environment, is a tool that is intended to guide and develop capacity within teams to create dialogue and action directed toward regenerative practices. This tool provides a visual model that helps people see interconnections between systems and processes in order to generate new ideas and potential solutions for existing

damaged conditions (Institute for the Built Environment, 2013).

Regenerative frameworks are not prescriptive in terms of how they should be used; they are designed to allow practitioners to apply various processes and practices on a project-by-project basis. If different practitioners carried out the same regenerative project, using the same framework, it would be expected that project outcomes would be drastically different because of the following variables: a) the design team's level of experience, b) how the design team engages the context and c) the design team's relationship with the design context. Therefore, there is a distinction between the processes and practices within a regenerative framework and how they are implemented. This research focuses on the common processes and practices of the above-mentioned frameworks but does not explore the implications of how they might vary in their use.

## **6.2 Enriching Emerging Regenerative Frameworks**

### 6.2.1 Initiating Regenerative Projects

#### *6.2.1.1 Articulating the Community's Worldview and Values*

All four of the frameworks were founded on an understanding that a worldview or paradigm shift from a mechanistic approach to a living systems one is essential. However only the LENSES framework echoes the Cree understanding that worldviews and values shape and govern all other aspects of life. The LENSES framework consists of three lenses. The foundation lens, the first, represents the governing philosophy of sustainability represented by such core values as “stewardship, respecting limits, interdependence, living economy, social justice, intergenerational view, nature as a model, health and spirit” (Plaut et al., 2012a, p. 8). Although these core values have been generated a-contextually by the designers of the LENSES framework, the recognition that overarching worldviews govern other aspects of a project is unique to this framework and is aligned with the Cree belief that worldviews and values dictate all

aspects of life. The LENSES framework leaves blank spaces throughout the tool in order to allow for a degree of customization and flexibility. The blank spaces in this tool represent what cannot be accounted for a-contextually. In addition, the process of filling in the blanks challenges users to ask themselves what is missing from the existing parameters and what else could be taken into consideration to make the framework more relevant to the project context.

In addition to providing flexibility and adaptability, the blank spaces are included as an act of humility, showing the users that the developers cannot and do not assume to have all the answers. This gesture illustrates to users of the framework that it is not a closed system, but rather an open system where there is opportunity for engagement and co-creation (Plaut et al., 2012).

However, bolder steps could be taken to allow this process to be more community driven. Instead of simply having a single blank space in the first and second lenses, providing a larger number of blank spaces throughout the entire framework (including the foundations lens where core worldviews and values are articulated) would enable framework users to input their unique worldviews and values, aspects of place and flows which they view as relevant and vital to the project scope. Users would also have the ability to remove or exclude the generic elements that do not align with their views or the project needs. The prepopulated, generic information in the existing LENSES framework could simply be used as guidance or to generate discussion after the project team and community participants have, through a series of charrettes, populated the lenses to suit their needs.

It may be appropriate to incorporate an exercise at the beginning of the design process (for example, charrettes, sharing circles, interviews, engagement sessions, etc.) where regenerative practitioners and community members collectively explore the unique worldviews, values and cultural practices that are central to the community. By considering a community's worldview and core values, project outcomes will likely reflect the community more accurately and a stronger sense of ownership will be built in

the long term. In the case of LENSES, this exercise would replace the approach of automatically adopting the core values outlined in the foundations lens. For the other existing regenerative frameworks, which do not explicitly recognize the role of worldviews and core values, this approach could also be adopted as one of the first objectives to be carried out prior to initiating any design work.

#### 6.2.1.2 *Planning for Changing Contexts*

In general, the regenerative frameworks have similar tenants to the Cree worldviews in that social, ecological and built systems are cyclical in nature, deeply interconnected and complex. As seen in Figures 6.1 to 6.4, the cyclical nature of systems within regenerative projects emulates the cycle of birth, life, death and re-birth found in nature. In both the Cree and regenerative context there is a natural transition from one phase to another and there is no distinct start and end point as seen in EcoBalance (Figure 6.1) where there is an organic transition from source, process, use, re-use and then back to source. The concept of interconnection between systems is depicted through the use of nested circles. As seen in the Perkins+Will framework (Figure 6.2), place is nested within human systems that are nested within ecological systems. Finally, as shown in Figure 6.3 C, D and Figure 6.1 C, D, the EcoBalance and REGEN frameworks celebrate the complexities of various systems through the use of webs that connect common systems, functions and resources. The complexity of systems is also celebrated through the use of different sized nodes or spheres or a numbering system to denote varying scales of significance from one component to another.

In addition to being cyclical, interconnected and complex, whole systems are dynamic evolve over time. However, all four of the regenerative frameworks fail to depict how the systems under consideration will change as the context changes (seasonally, ecologically, economically and socially). They only capture the intricacies of the current social, ecological and built systems as a snapshot in time without considering how systems will evolve and how to plan for these changes.

Cree ways of knowing greatly value the role of time as an agent to reinforce their values and collective narratives from one context to another in a meaningful and relevant way. This can be seen in the way that TEK and collective narratives are shared intergenerationally. Elders share their wisdom without explicitly stating what the point of the narrative is. Instead they allow subsequent generations to discover how the sacred teachings can shape and influence their experiences and views (McLeod, 2007b). Cree Elders and teachers acknowledge the importance of leaving room for future generations to take part in contributing to their ways of knowing.

If this Plains Cree approach of intergenerational perspectives would be used to shape emerging frameworks, changes to the frameworks could include a process to populate the figures both for existing project needs and for various stages in the future in increments which suit the scope and capacity of the community such as:

- At 5, 10 and 15 year increments in the future;
- For each seasonal change;
- For each generation living within the community;
- After a change in local or regional politics;
- After a major flux in local resource, etc.

If one were to re-examine the REGEN framework, (Figure 6.3 D) it would look drastically different for current project needs when compared to future project needs; the size and distribution of the nodes would change and the configuration of the web would shift. Future stakeholders, such as the youth in the community, could be invited to participate in this exercise to gain perspective on their values and concerns for the community. Though it may be a challenge to accurately predict the needs of future generations, the design team and community participants would be enriched by learning how the younger generations' perspectives differ from theirs. Early engagement would also build a sense of ownership (of some of the decisions made) and awareness within the younger generations that their perspectives are vital to the community as a whole.

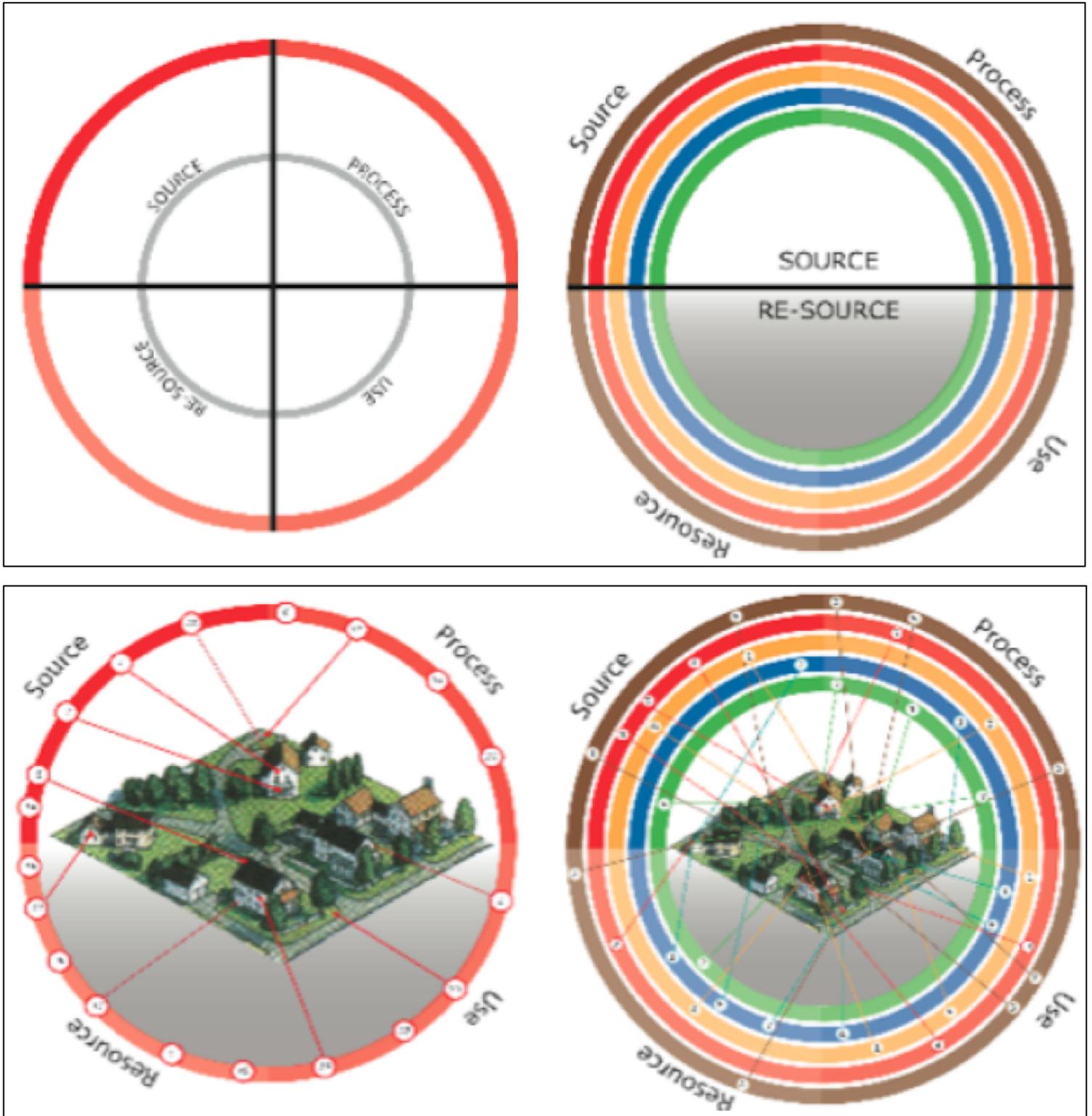


Figure 6.1 (A, B, C, D) Eco-Balance Planning (Fisk, © 2009, by permission from the publisher)

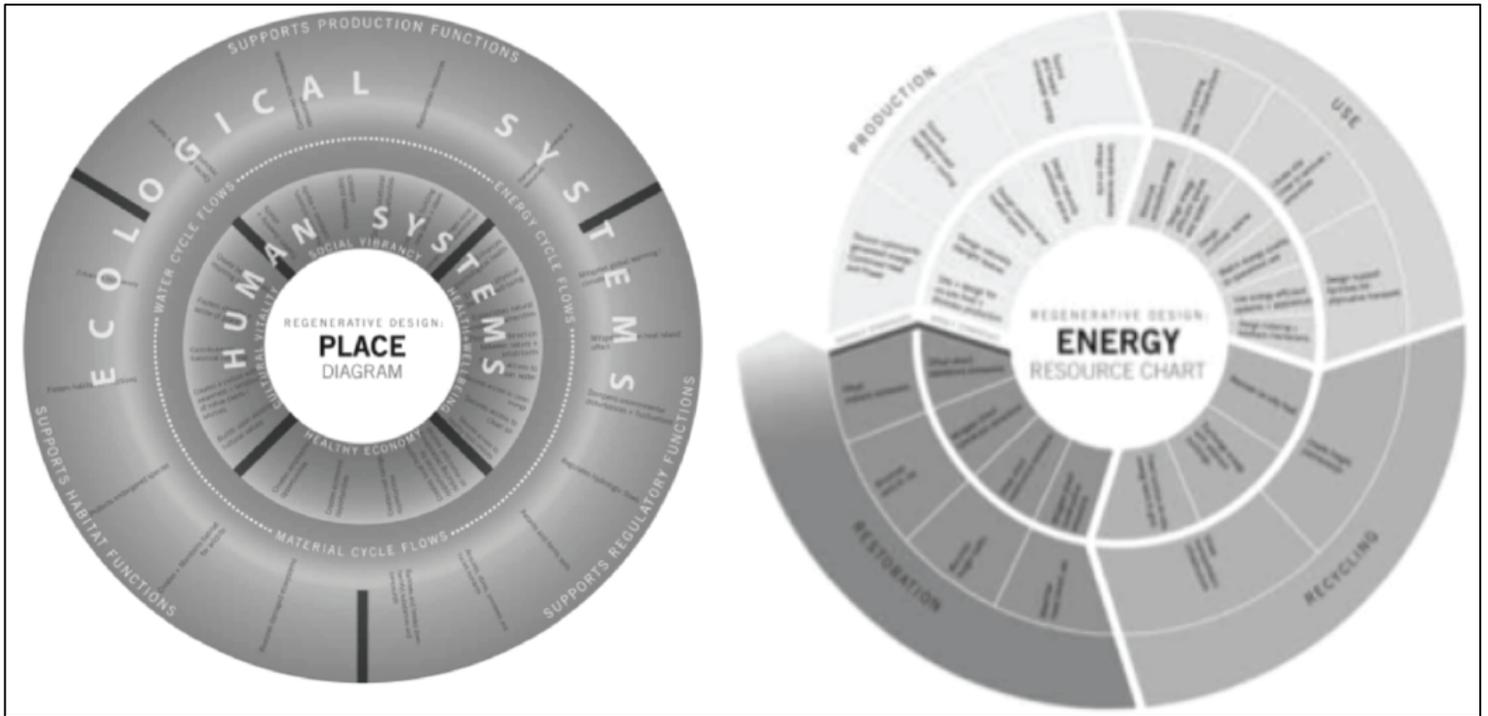


Figure 6.2 (A, B, C, D) The Perkins+Will Framework: A Regenerative Design Framework (Cole et al., © 2012, by permission from the publisher)

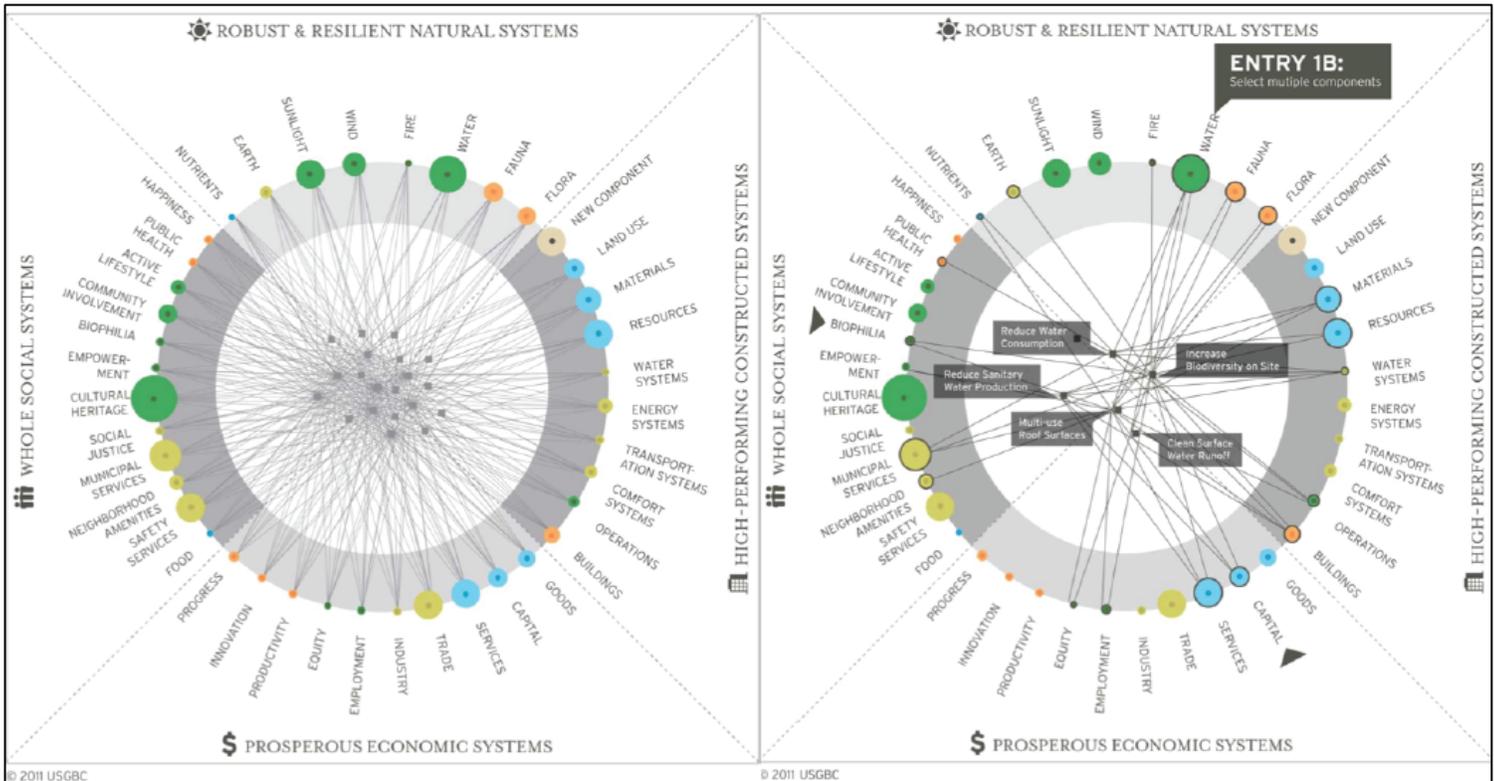


Figure 6.3 (A, B, C, D) The REGEN Framework (Svec et al., © 2012, by permission from the publisher)

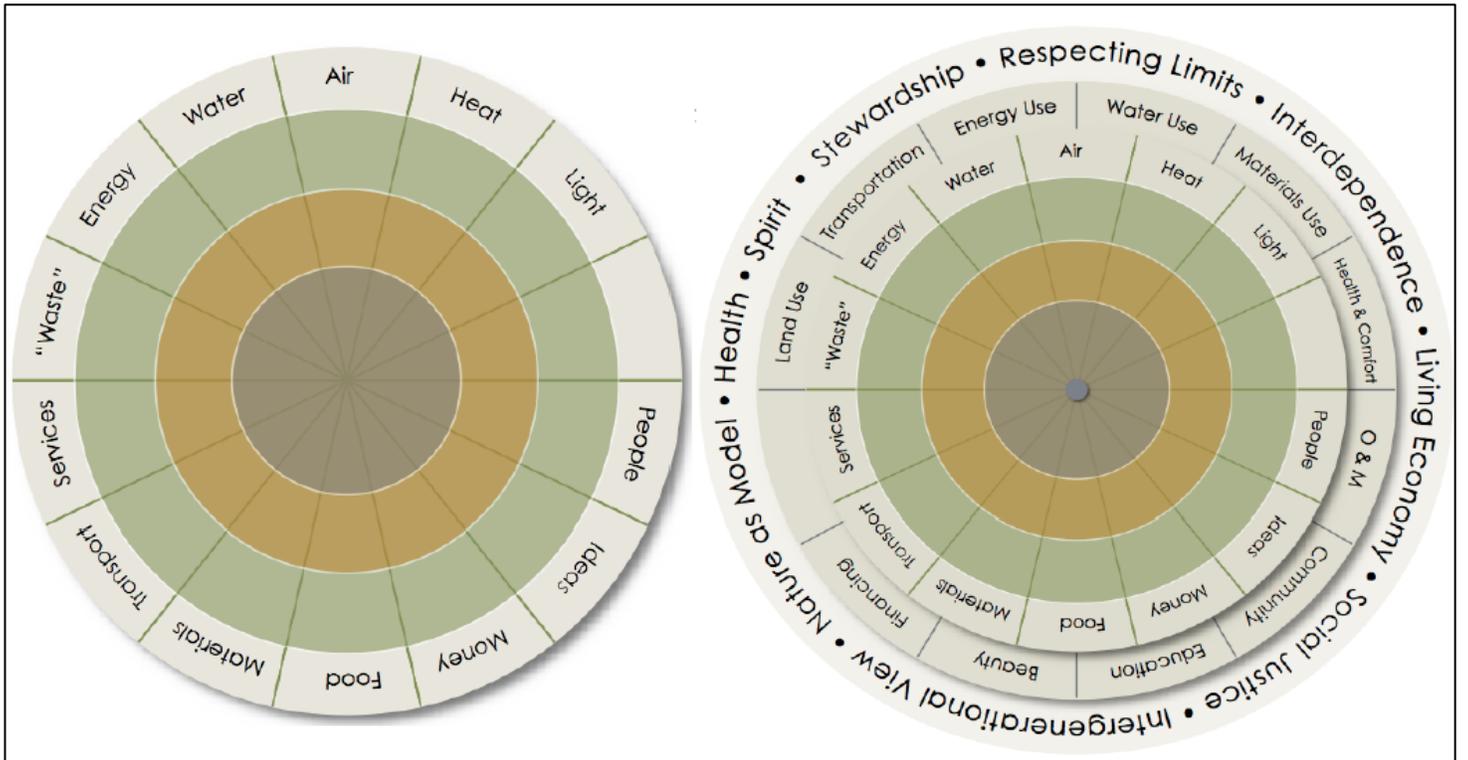
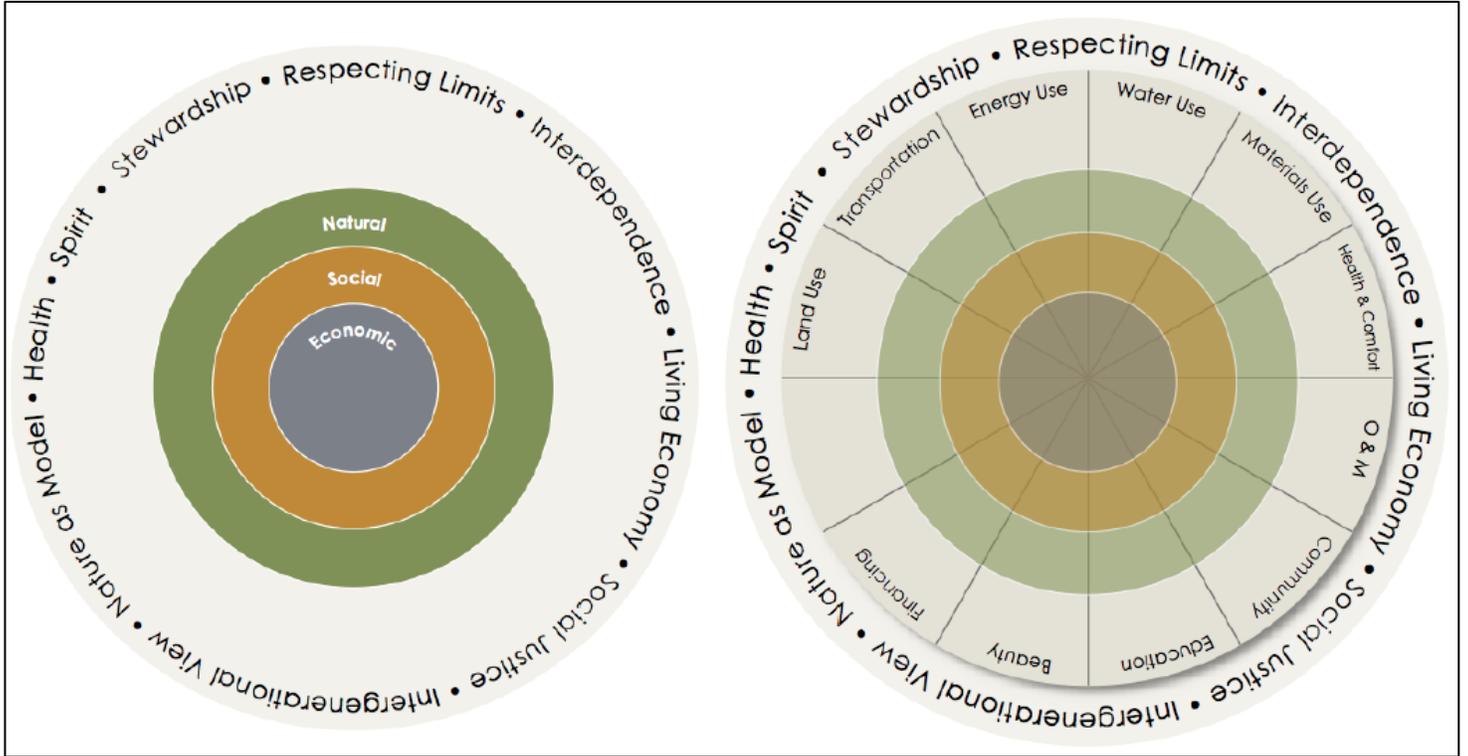


Figure 6.4 (A, B, C, D) LENSES: A Visionary Guide to Creating Living Environments (Plaut et al., © n.d., by permission from the publisher)

As mentioned in Chapter 5, Plains Cree ways of knowing focus on maintaining balance for the well-being of all entities in the community (Stonechild et al., 2004). The Plains Cree perspective on balance is open-ended and inclusive allowing room for all members of the community to establish well-being in different ways. However, because regenerative methodologies focus on maintaining balance in order to perpetuate system improvement (Fisk, 2009; Dutta, 2013), there are limited opportunities for other entities, which are not defined within the project scope, to be enriched by the project outcomes. Furthermore the notion of system improvement as a measure of success is problematic because it focuses solely on the observed qualitative and quantitative outcomes of the design team. There is little room for the community members (including the other-than-human realms) to define and assess what needs improvement on their own terms. For example, systems improvement from a social standpoint (e.g., supporting a local lumber mill by buying building materials there) may lead to degradation from an ecological standpoint, therefore disrupting balance within the community as a whole.

### 6.2.2 Establishing Collective Project Aspirations

After framing a project within the context of the community's worldviews and values, it is essential that all existing regenerative frameworks establish collective project aspirations, such as community well-being, rather than subjective ones like system improvement. Project aspirations could be assessed from diverse perspectives and seek to represent the interests of as many entities within the community as possible. In addition to engaging project stakeholders, this can be done by engaging community leaders, elders, professionals and representatives who speak from ecological, spiritual and other underrepresented perspectives. This approach will require significant time commitments and engaging large numbers of community participants. However, once inclusive and consensus-based project aspirations are established, the need to continually involve large numbers of participants may be lessened as collective needs are addressed.

Allocating additional time in order to establish inclusive project aspirations, at the front end of regenerative projects, may potentially evade project disruptions resulting from disagreements and miscommunications between the design team and community members.

Plains Cree Peoples and regenerative practitioners share three common aspirations that both drive and enrich collective aspirations: seeking the story of place, maintaining balance and forming partnerships or synergies.

#### *6.2.2.1 Using Human Experiences to Validate Scientific Data*

To varying degrees each of the frameworks implement a process to understand place so that practitioners can consider the social, built, historical and ecological driving forces of a particular context and ultimately engage with community members more effectively. At each major decision-making juncture in the design process, the observations of and lessons learned about place are reconsidered in an effort to represent to the essence of place. This approach is graphically demonstrated by placing the physical site (or an aspect of the site such as water or materials) at the center of a set of nested circles or systems (see 6.1 C and D; 6.2; and 6.3 D). In addition, the REGEN framework places emphasis on understanding place through the use of a database that is meant to be populated with locally generated ecological, economic and social data. This database is not intended to replace on-site research but to supplement it and allow the project team to access existing regional data more readily if available (Svec et al., 2012, p. 90). The process of selecting and using local data not only adds relevance to the project but also facilitates place-based dialogue and promotes discussions about which data best communicates the story of a place and what type of information is missing.

Though the intent of the REGEN framework is to facilitate open dialogue, the language used in this framework is somewhat problematic. The developers of the

REGEN framework indicate that “the purpose of the database would be to provide information to community members to enable them to develop a fuller understanding of their community and project aspirations” (Svec, Berkebile , & Todd, 2012, p. 83). The language used in this framework assumes that the design team and other professionals hold greater knowledge and understanding in two major ways:

- There appears to be an assumption that the community does not have a fundamental understanding of itself or that its knowledge and experience is insufficient in establishing relevant project aspirations; and
- The language used assumes that a western, science-based approach of collecting qualitative and quantitative data is the primary means for the community to develop a fuller understanding of place.

While gathering and integrating ecological, social and economic data is a useful step in building the story of place, drawing lessons from the Cree Plains would suggest that this not be adopted as the primary process for obtaining an understanding of place and then later supplemented with onsite research or community engagement.

Emerging frameworks could first, engaging community members and seek to hear their experiences and local knowledge in order to provide a context of place, prior to collecting and interpreting science-based data and information. This approach could potentially generate a far deeper and more nuanced understanding of place as opposed to simply using community insight to validate quantitative and qualitative data after it has been gathered.

As regenerative methodologies continue to mature, the next generation of regenerative frameworks must go beyond the need to understand place. They may also seek to incorporate processes that impart a unique legacy and sense of identity for future generations that will inhabit the land and built systems. Without passing down a legacy, communities will continue to suffer from a sense of

placelessness caused by inauthentic, mass-produced spaces (Relph, 1996). Examples of processes that impart a place-based legacy to future generations could include:

- Integrate monuments, plaques or artwork which celebrate the contributions of central figures who resided at or near the site;
- Revive local traditions, folklore or narratives which are linked to the site; and
- Illustrate a timeline of buildings, landmark and/or events which previously existed at the site.

#### *6.2.2.2 Maintaining Balance Through Reciprocity*

Though all four frameworks touch on the importance of balancing resources, the Eco-Balance framework graphically integrates the value of maintaining balance through reciprocity into the tools. The Eco-Balance framework actively challenges regenerative practitioners and community participants to maintain balance between the social, ecological and built systems. Fisk (2009) describes Eco-Balance Planning and Design as the principle of balancing life-support systems (air, water, food, energy and materials) across life-cycle phases (source, process, use and resource). In other words, Eco-Balance planning is the act of balancing the flow of resources by interacting with ecological systems in ways that simultaneously supply human needs and regenerate ecological systems. This framework embodies a life-cycle approach so that the process of sourcing and resourcing materials for human consumption occurs within physical boundaries that are manageable on an individual, family or community scale.

The process of maintaining balance is graphically represented by nested closed loops (Fisk, 2009) which transition from source to process to use and to re-use. Another important and positive aspect of the Eco-Balance planning framework is the inclusion of eco-industrial development as a means of balancing consumed and produced resources. An eco-industrial development is described as an

adjunct space in a community that houses highly efficient technologies that produce renewable energy or resources (such as a gasification facility that burns waste organics and generates power). Such facilities are meant to offset the resources used by the adjacent building (or system of buildings) by contributing surplus energy or resources into the system. Collaboration with these highly efficient processes results in offsetting or surpassing the energy needs within the immediate site (Cole R. , 2012b). Within Eco-Balance planning and design, the completion of cycles (from source to process to use and re-use) is the primary indicator of a sustainable system (Fisk, 2009).

Though they have common underpinnings, Plains Cree ways of knowing and regenerative methodologies differs in scope when it comes to balance. The Plains Cree seek to maintain balance among and between the human, natural and spiritual realms in order to maintain community well-being (Wenger-Nabigon, n.d.). In the wake of massive population growth, food shortages, peak oil and climate change and other global crises, regenerative practitioners seek to respond to these imbalances by implementing design interventions and technologies that redistribute resources. Though closing the gap between sourcing, using, re-using and resourcing goods is known to reduce unnecessary waste and curb consumption (United States Environmental Protection Agency, 2013), maintaining balance is much more than an act of managing resources. Maintaining balance may be viewed from a whole systems perspective where the natural and spiritual realms are also part of the balancing process. It should not be perceived as an anthropocentric effort, but rather a collective phenomenon. The Eco-Balance framework may be enriched as practitioners seek to embody the Plains Cree value of reciprocity where exchanges occur multi-directionally, among various realms and systems rather than unidirectional from the human to the natural realm.

Using the example of water balancing and management in the CIRS building (as outlined in section 5.2.1) the Eco-Balance framework could, for example, be

enhanced by including outer loops in its graphics to represent exchanges outside of human activity (such as plant and animal use of water, local hydrology and the spiritual significance of water to the local community). As depicted in Figure 6.5, these outer loops would not be characterized within the four categories of source, process, use and re-use but would be used as elements that would shape how the inner loops are closed.

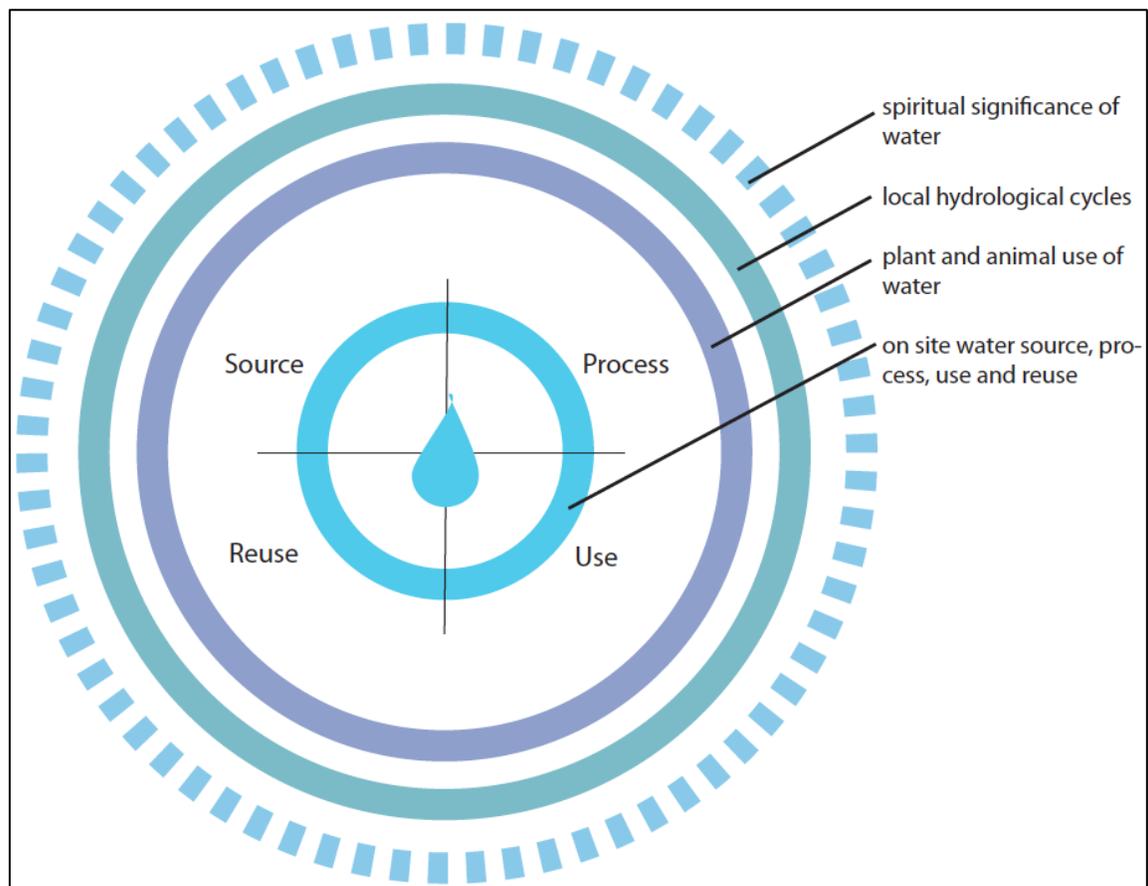


Figure 6.5 Revised Eco-Balance Graphic for Local Water Use (Fisk, © 2009, adapted by permission from the publisher)

The process of acknowledging the role of nature and spirituality as agents of balance in each community will be unique to the community where the project is situated, and how to direct how these elements take shape and which areas they influence may be the responsibility of the community participants.

### *6.2.2.3 Transforming Interconnections Into Synergies*

The REGEN, LENSES and Perkins+Will frameworks best acknowledge the importance of interconnections between ecological, social and built systems. However, improvements can be made to the LENSES and Perkins+Will frameworks in order to guide users through a dialogue that transitions observed interconnections into synergies that yield tangible outcomes.

As demonstrated in Figure 6.2.1 A, the REGEN framework allows participants to conceptualize the project from several different perspectives—a broader system level (as demonstrated in the four quadrants: social, economic, constructed and natural), a system component level (demonstrated by the spheres on the perimeter of the ring) or from a strategy level (the dots within the web). This framework is intended to facilitate systems thinking and provide the design team and community participants with a platform to draw interconnections. Within the circle of Figure 6.3 C, the small dots represent where various system components intersect. These intersections are then used to formulate strategies (such as on-site rain water collection, the use of photovoltaic panels or the use of a green roof) that multiple system components can contribute to and benefit from to produce outcomes which could not be achieved in isolation. Though the REGEN framework uses the term ‘strategies’ instead of synergies, this framework provides a clear path for users to reach the goal of generating tangible outcomes through the collaboration of multiple systems. In the REGEN framework, interconnections between various strategies and systems can be readily identified and explored by users of the framework and others who join the dialogue later in the design process.

Each participant within the project team will ultimately value certain strategies over others and therefore not every strategy that is identified will be implemented. By undergoing the exercises of drawing interconnections between systems, forming a web and subsequently generating multiple strategies, a wide

range of options will be documented for future framework users to identify, implement or re-evaluate.

The LENSES framework provides a visual model that helps the design team and community participants to conceptualize interconnections within their project. As illustrated in Figure 6.2 D, the framework nests three lenses: the foundation lens, the aspect-of-place lens and the flows lens. Each lens is designed to rotate on a center pivot, either in isolation or with other lenses, which encourages users to contemplate the complexities of and interconnections between system components. As each lens rotates new interconnections are revealed. For example, if stewardship is considered in the foundation lens, users can rotate the other lenses to discover how the land (in the aspect-of-place lens) and waste (from the flows lens) generated onsite can play a role in addressing an ongoing community concern and social issues.

Collectively, the three dynamic lenses represent the complexity of the living environment (Plaut et al., 2012, p. 8). However, unlike the REGEN framework, there is no process in place within the LENSES framework to guide further discussions on how users can form tangible synergies resulting from the observed interconnections. As a result, this framework falls short of transforming interconnections into actionable outcomes that draw on the resources and capabilities of various systems.

It is evident that the LENSES framework is a tool that can assist users to conceptualize interconnections between systems components. However, these frameworks have not fully reached their potential as tools in facilitating the formation of synergies that could be implemented and evaluated within the broader community context. Without tangible synergies to pursue, there is a danger that all the time and effort spent implementing the LENSES framework would be unfruitful. The objectives and project aspirations initially established would remain largely theoretical. Over time these projects would potentially lose

momentum in achieving desired changes in the built system and larger community. In order to alter the LENSES framework into a tool that is a platform for meaningful social, ecological and built synergies, a deeper dialogue needs to take place to help users form synergies that yield lasting outcomes.

In order to gain greater value from the regenerative frameworks, the design team and community participants, after identifying interconnections, could be prompted to ask themselves a series of question that assess the potential of the observed interconnections to form lasting synergies. The following questions could be used as guides to help users generate discussion and assist in forming more specific questions each time the framework is used:

- Do the observed interconnections align with the previously identified project aspirations and community needs?
- Are there other unidentified systems, organizations or processes within the built systems and/or community that could help facilitate the formation of fruitful synergies?
- Are the proposed interconnections possible given existing budget, time and capacity constraints? If not, how can additional resources be transferred or borrowed from other systems, organizations or processes?

In this way the identified interconnections will have undergone a level of assessment as to how other system components and entities can play a role in the formation of synergies. For example, users may chose to follow the following decision-making flow diagram.

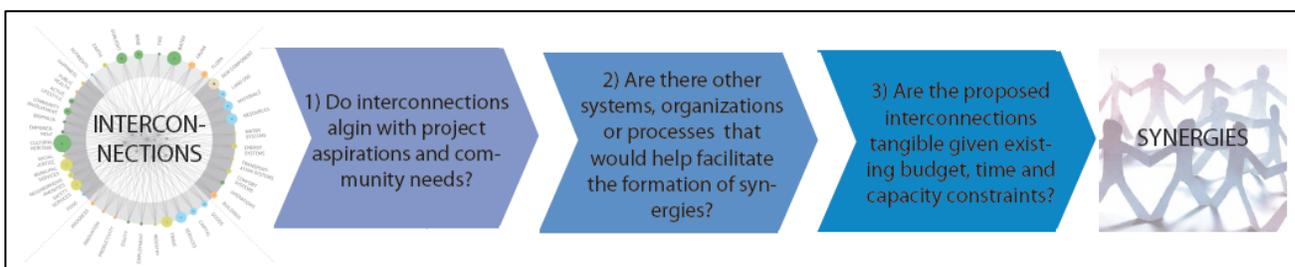


Figure 6.6 Questions to Help Transform Interconnections into Synergies

Using the previous example of stewardship (from the foundations lens), land (from the aspect-of-place lens) and waste (from the flows lens) to address social issues in Indigenous communities, a resulting synergy could be to pass on the Plains Cree value of stewardship to younger generations by partnering elders with youth organizations and schools to establish after school programs. The youth and elder partners would simultaneously walk through historically significant sites, burial and ceremonial grounds, participate in site clean up and non-hazardous remediation as needed and share TEK in the Cree language.

In a non-Indigenous context, a similar approach could be adopted to partner local environmental consultants, ecologists and farmers with at-risk youth organizations and schools to do after school site clean up, and simultaneously to teach about local ecological systems. This approach would celebrate the value of stewardship in a social setting, while addressing issues of waste management from an intergenerational perspective.

As part of the process of establishing synergies, the Perkins+Will framework incorporates a series of questions that change as the design team and community participants move through the design process. However, these questions are predetermined by the developers of the framework and therefore only capture their perspectives based on the energy, water and material flows. The following is a progression of the questions posed in the Perkins+Will framework regarding the energy flow:

- Produce: How can the energy required by the project be acquired and used in such a way that there is a net benefit for the health of the inhabitants, the community and the effected ecosystems?
- Use: How can the construction and operation of this building and other actions complete a regenerative energy cycle in support of human and natural processes across scale?
- Recycle: How can the building and its natural and constructed context

function as a system that matches energy quantities and quality to the various needs in the most effective manner?

- Restore: What are site and context opportunities for the project to be net carbon negative in terms of both operational and transportation emissions (Cole et al., 2012, p. 106)?

Though they touch on important concepts (such as reducing resource consumption and increasing system efficiency) the above questions are mainly directed towards the design professionals rather than incorporating dialogue with community participants who may not have design backgrounds. In addition the above questions mainly focus on energy, water and material flows. There are no mechanisms within this framework for users to customize the questions based on broader community concerns which address social issues, celebrate local culture or empower future generations to take ownership of the project. Providing users of the Perkins+Will framework with an opportunity to generate their own questions that go beyond resource flows would expand the nature of synergies which are formed. This change would not only form partnerships between built and ecological systems but also reveal how social and cultural aspects of the community can facilitate lasting synergies. As suggested for the LENSES framework, the questions established in the Perkins+Will framework could still be used as guides to help users generate discussion based on their own questions.

### 6.2.3 Seeking to Hear the Collective Voice

As articulated by Cole (2012a), the strength of LENSES lies in its ability to help regenerative practitioners and community members consider key concepts and elements often missing in conventional building performance tools such as LEED (p. 49). The foundation lens in this framework draws attention to two important questions:

- Who is given a voice in this project?
- How do we build capacity for regenerative solutions within the team?

The first question offers guidance on team selection; the design teams are encouraged to consider who is represented, who should be represented and which voices are underrepresented (or missing altogether from the dialogue). The founders of LENSES encourage practitioners to invite “social workers, children, local farmers, healthcare practitioners, seniors, scientists, and teachers” to participate in the design process (Plaut et al., 2012, p. 117). The purpose of this approach is to extend an invitation to participants beyond the field of design to gain perspective, optimize inclusiveness and build a relationship between members and non-members of the community (Plaut et al., 2012, p. 117). A fruitful working relationship between a diverse group of stakeholders is very important to the founders of LENSES. Similarly, one of the objectives of the Perkins+Will framework is to facilitate a broader integration of professionals outside of the design disciplines (such as ecologists, botanists, hydrologists, etc.), which are not typically involved in the design process (Cole et al., 2012, p. 106).

The existing frameworks all acknowledge the important role played by those traditionally not involved in the design process and are not explicitly prescriptive in the team selection process. However the language used in the frameworks is not particularly inclusive of non-professional perspectives. In the case of the LENSES framework, only two out of the seven suggested participants were ‘non-professionals (children and seniors), while the Perkins+Will framework only include scientists and other professionals, LENSES is more inclusive in its approach by explicitly acknowledging the involvement of participants in and outside the scientific and professional realms.

By seeking to draw primarily from the scientific realm, regenerative practitioners are exploring limited perspectives regarding the natural (or ecological) world; no voice is explicitly given to First Nations Peoples, which is just as significant as engaging the collective “voice of a place.” As Davis (2009) explains, there are

rich and comprehensive knowledge bases outside of western concepts of “expertise” which have been established for thousands of generations and can truly inform our modern world. We cannot afford to overlook and dismiss any Indigenous wisdom because we are not only impoverished without it, we are vulnerable without it.

Regenerative practitioners specifically could learn from local Indigenous Peoples who have lived and worked on the land and have formed deep spiritual and ecological connections to the place where the project is located. Wisdom about local plants, animals, weather patterns, stewardship practices, behaviour of local building materials, historical events and traditionally significant sites can inform how the design team and community participants formulate the story of that place and ultimately enrich the design process. Even though many regenerative projects will not take place in First Nations communities the existing regenerative frameworks could endeavour to incorporate local First Nations perspectives where possible as part of the process of understanding place from non-traditional design perspectives.

In order to build on the LENSES framework, it is important that both community participants and designers collectively answer the question of whose voices could be represented in the design process at the onset of a regenerative project. Community participants could be part of this dialogue and be free to extend an invitation to Indigenous groups (which have often been overlooked for their insights).

The process of incorporating local First Nations wisdom and TEK will vary from one project to another depending on the setting and the number of First Nations involved. Community engagement can include learning about TEK from Elders, collective narratives, attending traditional ceremonies, participating in local customs, interviewing community members and visiting historically significant sites. These activities will provide a spiritual, historical and cultural context to

frame the data and potentially allow practitioners to draw new links between the data that otherwise may have seemed unrelated. Gathering this type of community-generated insight will be subject to project scope, available time and budget. For large projects that require a sizable number of participant input, a significant challenge would be reaching consensus between so many diverse perspectives. However, an approach to addressing this challenge could be to implement an approach where, early in the engagement process, several small groups of participants (having similar experiences, concerns or perspectives) share their views in an iterative decision-making forum (such as a sharing circle where each participant shares their views iteratively, in a circular discussion forum) until a central message or idea is agreed upon. Once consensus is reached in the smaller groups, in later stages of the engagement process representatives from the small groups would share their consensus-based views with the larger collective in ongoing engagement and decision-making processes. Subsequent discussions and decisions making in the larger group would follow a similar process of sharing views iteratively until central ideas or decisions were agreed upon through consensus. This approach may allow a large number of participants to be engaged, share their unique views, and come to consensus-based decisions while navigating around common scheduling and budgeting constraints, which often manifest during the later phases of the design projects.

In addition, regenerative practitioners could allocate more money up front in order to properly facilitate appropriate community engagement with local Indigenous Peoples. Taking the extra time and funds to do so will strengthen relationships and play a role in the process of healing between Indigenous and non-Indigenous communities.

Giving greater emphasis on exploring the local culture can strengthen a sense of place in the communities where projects take place. Emerging regenerative frameworks could be used to implement processes that seek to teach practitioners about local Indigenous Peoples by seeking close guidance from

community members on how to meaningfully incorporate the community's unique ways of knowing into the built form. Careful research on Indigenous protocols such as the following could be considered:

- the University of Victoria's *Protocols & Principles For Conducting Research in an Indigenous Context* (2003);
- the Government of Canada's *Tri-Council Policy Statement 2, Chapter 9, Research involving the First Nations, Inuit and Métis Peoples of Canada* (2013); and
- Shawn Wilson's *Research is ceremony: Indigenous research methods* (2008).

The implemented protocols need to acknowledge Indigenous values and ownership in the research design, promotes open, direct and transparent methods of engagement and requires the full consent and collaboration of all parties involved in the research (University of Victoria, Human & Social Development, 2008). Key concepts such as Indigenous self-determination, intellectual property rights, protection of sacred knowledge, acknowledgements for research contributions, review and distribution of draft and final publications as well as mutually beneficial research outcomes must be at the forefront of the engagement process with local Indigenous communities.

The following example both illustrates the downfalls of not properly engaging local Indigenous Peoples in the design of public spaces, as well as the fruits of successfully celebrating local Indigenous perspectives in the design process. Designed by the Edmonton-based architectural firm, Masasc Isaac, the Traditional Burial Grounds and Fort Edmonton Cemetery Memorial is located in the heart of Edmonton, Alberta and is significant because it is where Edmonton's fur trade was born. It is also a once-forgotten, desecrated First Nations burial site. Building the Memorial in 2007 was a gesture meant to recognize the sacred nature of the grounds to the local First Nations communities and to begin the healing process for the pain, frustration and many decades of mistrust felt by the

descendants of those buried at the site (Manasc Isaac, 2014).

Three years of a very difficult and complicated design process began in August 2003, when the architect team held the first of a dozen workshops to plan the design of the site with the City of Edmonton, EPCOR, descendants of the burial site, stakeholders and community volunteers, including people of First Nations [Cree (of various local tribes), Blackfoot, Dene, Papaschase], French Canadian, Métis and European ancestry. After numerous delays and the desecration of human remains with past developments, there was an understandable level of mistrust. The first six months of the design process were spent building relationships and earning trust and confidence [between various] groups. (Manasc Isaac, 2015)



Figure 6.7 The Traditional Burial Grounds and Fort Edmonton Cemetery Memorial (Atherton, © 2006, by permission from the publisher)

The Memorial's final design incorporated elements that reflected the values and heritage of the individuals buried at the site:

- The infinity (mobius) loop is a key part of Métis symbolism and is incorporated into the steel sculpture at the center of the memorial;
- The “light spears” (or light posts) are a reference to Blackfoot culture of marking the ground with spears or staffs;
- The plinths of rock create an unfinished circle that speaks to how the burial ground and sacred area has not been completely reconciled;
- The corten steel was chosen specifically for its rusting nature creating streaks of red that are symbolic of the loss of life at the site;
- The wildflowers and medicinal plants in the gardens were planted to acknowledge the elders who use sacred medicines for healing (Kaba, 2015).

Local First Nations communities were not consulted or engaged during previous developments at the burial site. It is this lack of perspective and consideration that desecrated a sacred element of these communities' identity and caused them to deeply mistrust the City of Edmonton's building approval process. However, the small gesture to finally recognize the significance of this site informed how the design team and community participants collectively formulated the story of that place. This collective effort also contributed significantly to the heritage and cityscape of the City of Edmonton. The memorial not only stands as a visible symbol of the rich heritage of local Indigenous communities, but it also marks a significant piece of Edmonton's history shifting from a perspective of oversight and exclusion to one of acknowledgement and celebration.

### 6.3 Discussion

Overall, the REGEN and LENSES frameworks are the most aligned with Plains Cree worldviews:

- REGEN provides a visual interconnection of systems (in a web) to form strategies and a place-based repository for information which can be revisited for future projects and enriched over time.
- LENSES offers a recognition that worldviews and values govern and shape all other aspects of the project, celebrates a visual interconnection of systems through rotating lenses, seeks to engage a diverse group of participants inside and outside of western scientific professions and acknowledges the importance of intergenerational planning through the use of the tool for future projects.

Because regenerative methodologies have not fully acknowledged interconnection and interdependence between the natural and human and spiritual realms evidenced in Indigenous worldviews and values, the existing regenerative frameworks fall short of facilitating continuity and harmony between these realms. After analyzing the existing regenerative frameworks and identifying gaps, seven core lessons we drawn from the Plains Cree ways of knowing aimed at enhancing the REGEN, Perkins+Will, Eco-Balance and LENSES frameworks.

Regarding how regenerative projects are initiated it was discovered that emerging frameworks may benefit by:

7. Articulating the community's worldview;
8. Planning for changing contexts;
9. Using human experiences to validate scientific data;
10. Maintaining balance through reciprocity;
11. Transforming interconnections into synergies; and
12. Looking beyond scientific and "professional" roles.

## **CHAPTER 7: CONCLUSION AND RECOMMENDATIONS**

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### **7.1 Introduction**

The purpose of this thesis has been to explore the nature of the intersections (in the form of potential commonalities and nuanced differences) between the worldviews, values, processes and practices of Plains Cree and regenerative practitioners. Furthermore, I set out to discover if, and to what extent, emerging regenerative frameworks (during the predesign phases) might be enriched by Plains Cree ways of knowing could enrich emerging regenerative frameworks during the predesign phases.

Some leading regenerative practitioners have adopted teachings and from various Indigenous Peoples. Though there are some intersecting tenets, these regenerative practitioners have only acknowledged fragments of Indigenous worldviews and values; they have not fully embraced Indigenous worldviews that emphasize the interconnection and interdependence between the natural, human and spiritual realms. Consequently existing regenerative frameworks have fallen short of facilitating continuity and harmony between these realms.

### **7.2 Findings**

In this thesis I have endeavoured to answer the following questions:

- What commonalities and/or nuanced differences exist between the worldviews, values, processes and practices of the Plains Cree and those held by regenerative practitioners?
- To what extent can the Plains Cree ways of knowing enrich emerging regenerative frameworks?

The following identifies the key findings in the search to provide answers to these questions.

### 7.2.1 Commonalities and Nuanced Differences Between Plains Cree Ways of Knowing and Regenerative Methodologies

In Chapter five I established that there are strong commonalities and nuanced differences between Cree ways of knowing and regenerative methodologies in terms of worldviews, values, processes and practices.

Commonalities in worldviews include the view that time is cyclical, systems and entities move in a circular motion and interconnection is a central driving force; common values include maintaining balance, sharing and practicing humility, and finally, common processes and practices involve inclusive community engagement, embracing change, understanding the larger context and collaboration.

The nuanced differences between Cree ways of knowing and regenerative methodologies are rooted in the fundamental distinction that regenerative worldviews and values are young and evolving while Cree worldviews and values are timeless, tested and relevant in changing contexts. For instance:

- Regenerative worldviews depict time as moving quickly, while time is viewed as moving slowly from a Plains Cree perspective;
- Regenerative worldviews lead practitioners to explore new connections between systems, while Cree ways of knowing seek to re-establish longstanding spiritual connections between entities; and
- The value of humility is demonstrated in regenerative methodologies through a paradigm shift and revelation that humans are no greater than natural systems. The Plains Cree, however, have taught for many generations that natural, non-human, and more-than human entities are greater than humans, who rely on them for survival.

Furthermore, the observed nuanced differences reveal that regenerative processes and practices place emphasis on the tangible systems (social, ecological and built) while Cree processes and practices celebrate the relationship between tangible and intangible entities (the land, human, non-human, and more-than-human). For example:

- From a regenerative perspective, participatory community engagement seeks to increase the number of stakeholders, while in a Plains Cree context, sharing circles embody the act of hearing the collective voice by qualitatively improving it through consensus building; and
- From a regenerative perspective, the process of understanding one's context is manifested as a connection to place, which is based on the tangible attributes of a particular place (including scientific data, historical events and practitioners' observations). For the Plains Cree, understanding one's context takes the form of a deep spiritual connection to the land through maintaining and passing down tangible and intangible aspects of their ways of knowing (including hunting practices, TEK, sacred teachings, language, etc.).

### 7.2.2 How Plains Cree Ways of Knowing can Enrich Emerging Regenerative Frameworks

After critiquing the REGEN, Perkins+Will, Eco-Balance and LENSES regenerative frameworks, fundamental gaps were identified which affect:

- How regenerative projects are initiated;
- How to establish collective project aspirations;
- Whom to engage throughout the design process; and
- How to inclusively engage community participants.

The following six lessons were drawn from the Plains Cree ways of knowing and aim to address deficiencies in the predesign phase of regenerative projects:

### *7.2.2.1 Lesson One: Articulating the Community's Worldview*

The Plains Cree have cyclical worldviews founded on deep and spiritual interconnections between entities. These worldviews are foundational to their resilient collective identity. The existing regenerative frameworks could benefit by integrating a process for the design team and community participants to collectively explore and articulate the unique worldviews and values of each community as one of the first steps in the design process. This process could include charrettes, sharing circles, interviews, engagement sessions, etc.

### *7.2.2.2 Lesson Two: Planning for Changing Contexts*

The Plains Cree believe that whole systems can only survive through an intergenerational perspective. Existing regenerative frameworks guide users to generate solutions for addressing current project needs. However, the frameworks would also be enhanced by including a process which projects future socio-ecological needs at various stages (e.g., five, ten and/or fifteen years in the future). This process would be subject to the project scope and capacity in the community to follow through with future projections. Formulating such future projections would involve the project team, community participants and, most importantly, younger generations (who will ultimately inherit the current regenerative project outcomes). Participants may work together to envision where future needs and priorities will lie.

### *7.2.2.3 Lesson Three: Using Human Experiences to Validate Scientific-Data*

Because the Plains Cree believe that all members of a community have a vital role to play in the collective narratives, which take place in their communities, the perspectives and actions of an individual deeply impact the collective whole. Instead of using scientific data as a primary means of information gathering, regenerative practitioners could also seek to incorporate local Indigenous

knowledge (such as TEK and collective narrative memory), which would provide a spiritual, historical and cultural element to the project site.

Though the project may not be located within an Indigenous community, the rich experiential wisdom of local Indigenous Peoples could provide the project team with a deeper understanding of place and provide context to historical events and significant sites that may otherwise have not been acknowledged. Scientific data could be used in conjunction with Indigenous knowledge to complement certain concepts and to fill in gaps where oral history and sacred teaching does not cover. It is imperative that Indigenous protocols are established between local First Nations and the project team in order to make this process fruitful for all parties involved.

#### *7.2.2.4 Lesson Four: Maintaining Balance Through Reciprocity*

To plains Cree Peoples, balance is considered to be a delicate process of reciprocal exchanges between the natural, spiritual and human realms (Ermine, 2007). Existing regenerative frameworks need to acknowledge that balance is not simply an anthropocentric process of balancing resources, energy, waste etc. Existing regenerative frameworks could also consider how natural and spiritual elements might play a central role in maintaining balance, subject to the community's worldviews and values. One means of acknowledging the role of nature and spirituality as agents of balance, could be to add these aspects to the regenerative tools, graphics and worksheets. This process would be unique to the community where the project was taking place and how to direct how these elements take shape and which areas they influence may be left up the community participants.

#### *7.2.2.5 Lesson Five: Transforming Interconnections Into Synergies*

The Plains Cree believe that interconnection (between the natural, spiritual and human realms) may produce continual, fruitful, life-giving outcomes. Though the process of forming synergies is foundational in the regenerative discourse, existing frameworks fail to provide users with strategies on how to transition observed interconnections into actionable synergies. The existing frameworks may allow users to assess the strength and potential of the observed interconnections (developing at the end of the regenerative process) in order to form life-giving synergies. This process can be made possible by prompting users of the frameworks to generate a series of questions, which contemplate how other system components and entities can play a role in the formation of synergies.

#### *7.2.2.6 Lesson Six: Looking Beyond Scientific and “Professional” Roles*

When faced with potential conflicts and major decisions which affect the community as a whole, the Cree value hearing the collective voice over that of the individual by using sharing circles. Instead of focusing on the roles which have traditionally influenced regenerative design and development, the existing frameworks could look beyond scientific, professional and leadership roles in order to further advance the current discourse. It is imperative that community participants and practitioners collectively decide which new perspectives are represented in the design process and specifically look for opportunities to include local Indigenous voices which speak from a rich, long standing experience and wisdom that could help inform how the story of place is viewed. Engaging local Indigenous groups could be done through interviews, charrettes and participating in cultural activities, events and customs.

### 7.3 Theoretical Implications

The first implication of the research findings has the potential to reshape the structure and content of regenerative tools, and how practitioners, stakeholders and other community participants use them. It encourages community participants to articulate their worldview and values. If implemented, it would be possible to transition the existing frameworks from being primarily used to address immediate needs (social, ecological and built) to being used to articulate and strengthen a community's collective identity, thereby broadening the purpose of the frameworks. Similarly *Lesson Five* recommends a process that would help transition observed interconnections into fruitful synergies through a series of community-generated questions. This recommendation would change how the frameworks would be used by prompting users to question what is missing and which components, systems and/or entities might have been overlooked in the process of forming synergies, challenging framework users to go beyond the limitations of the existing frameworks.

The second implication of the research findings is that the enriched frameworks will shift who participates in the regenerative process. *Lessons Two, Three and Six* specifically address how local Indigenous communities where projects take place and their younger generations can enrich the understanding of place and provide fresh perspectives to future planning processes when they are included throughout the participatory process. Though they may not be directly affected by the built systems, their inclusion in the regenerative process will be mutually beneficial; the design team will benefit by being provided with additional context and understanding of place and concerns for future planning, while local Indigenous communities and youth will benefit by having their voices and perspectives acknowledged and understood in a setting which has historically overlooked them.

Finally, the lessons learned from this research will transform the content within

existing regenerative frameworks. *Lesson One* recommends that framework users be given the ability to both add and remove content based on project and community needs, as an alternative to using generically populated framework components. Implementing this recommendation could drastically transform the content of each framework by shifting the decision-making power from those who design the frameworks to those who use the frameworks, a change which is needed in a sector, which has relied heavily on professional opinions and perspectives.

*Lesson Four* recommends incorporating natural and spiritual entities into the regenerative tools, graphics and worksheets in order to shift away from an anthropocentric approach to balance. Expanding the content of the regenerative tools to include nature and spiritual elements as agents of balance in a particular community would facilitate discussions and project outcomes with stronger ties to the community's identity and natural processes.

#### **7.4 Limitations and Considerations**

Two major challenges that the developers of frameworks and their users will face as they apply the seven lessons are engaging a large number of participants given time and budget constraints and more specifically, engaging local First Nations communities in a careful and meaningful way.

*Lessons One, Two, Three and Six* all highlight collective engagement with large groups of people from various backgrounds in order to articulate complex and nuanced ideas (such as collective worldviews, future socio-ecological needs and the story of place). Gathering this type of community-generated insight will be subjective to project scope, available time and budget. For large projects, which would require a large number of participants, an immense challenge would be reaching consensus among so many diverse perspectives. However, an approach to addressing this challenge could be to have several small groups of

people (with similar experiences, concerns or perspectives), early in the engagement process, share their views in an iterative discussion-making forum (such as a sharing circle) until a central message or idea could be agreed upon. Once consensus would be reached in the smaller groups, representatives from the small groups would share the consensus-based views with the larger collective in later stages of the engagement process. Subsequent discussions and decision making in the larger group would follow a similar process of sharing views iteratively until central ideas or decisions were agreed upon through consensus. Dedicating extra time in the early phases of the project to establish consensus would, in turn, help avoid project disruptions resulting from disagreements and miscommunications between the design team and participants. This approach would also reduce the number of participants and amount of time spent in the later phases of the project where schedules and budgets would be more constrained.

*Lesson Six* specifically touches on incorporating local First Nations wisdom and TEK into the process of understanding place. Each project and community would vary depending on the setting, the number of First Nations groups involved and the experience level of the regenerative practitioners. It may be noted that additional funding and time would also need to be dedicated to relationship building in order to carry out meaningful engagement.

This thesis does not explore how environmental performance and technology-based processes and practices (such as appropriate material selection, water conservation, renewable energy use and net positive energy) can be enriched by drawing lessons from the Plains Cree ways of knowing. The topic of building environmental performance has been, and continues to be, well researched and therefore has not been included in this research. Moreover, the application of regenerative frameworks or the manner in which they would be used would vary drastically from one case to another and would be subject to the practitioners' levels of experience, the socio-ecological context as well as community and

project needs. Therefore this thesis does not address how the Plains Cree ways of knowing could enrich the application or use of the existing regenerative frameworks because the range of variables would have been too great to assess in a meaningful way. Rather, it simply challenges concepts presented in the regenerative frameworks.

Plains Cree community members were not involved in the research or findings throughout this process, instead Plains Cree ways of knowing were explored through a literature review. Although this approach is contrary to the fundamentals of Indigenous research (where establishing trust-based relationships is imperative), direct engagement with Cree communities was not possible because time-intensive commitments and culturally sensitive ethics approvals would have been required but not attainable within the existing scope of work and time constraints of this master's program.

## **7.5 Future Research**

### 7.5.1 Embodying the Value of Reciprocity

The value of reciprocity is central to the Plains Cree People. Reciprocity is an iterative process that requires well-established, trust-based relationships between all parties involved. This process of exchange and enrichment must be mutually beneficial to all participants.

As demonstrated throughout this thesis, not only is there an opportunity for the regenerative frameworks to be enriched by drawing lessons from the Plains Cree ways of knowing, Plains Cree communities can also be enriched by regenerative methodologies as illustrated in the following figure.

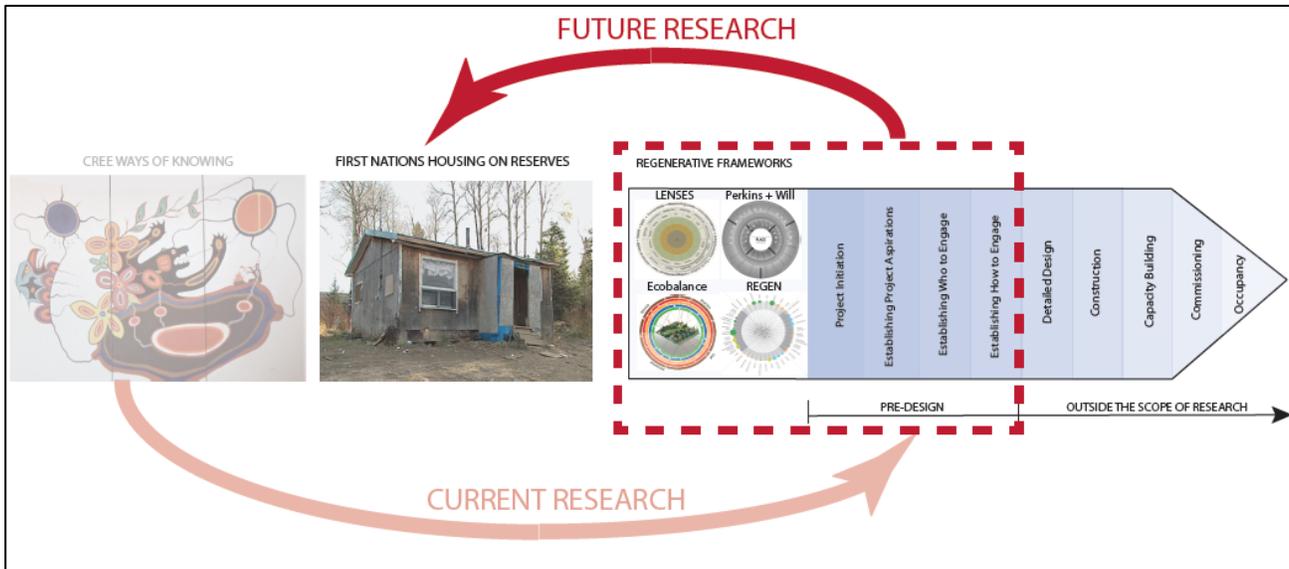


Figure 7.1 Embodying the Value of Reciprocity

Plain Cree communities, particularly those located on reserves, could be enriched by regenerative methodologies by focusing future research on exploring how regenerative methodologies could address inadequate housing on reserves. A majority of First Nations households on reserves reported living in band-owned housing, which is typically in the poorest condition. Acquiring this type of housing is subject to complex bureaucratic processes and intermittent funding which affects maintenance and repairs (Aboriginal Affairs & Northern Development Canada, 2011). Overall First Nation communities rank 76th out of 174 nations when using the United Nations Development Index 2001, while non-Indigenous Canadian communities rank 8th, a gap of 68 points (Catherine Palmer & Associates Inc., 2007, p. 19). This gap indicates that there is inequality between Indigenous and non-Indigenous people living in Canada and a clear need to provide basic shelter if we want to consider Canada as a developed nation.

Specific concerns and challenges identified by First Nations living in band-owned housing include:

- Overcrowding;
- Mould and associated health concerns;

- Housing shortages and allocation, particularly for vulnerable groups like seniors, the mentally ill, those suffering from drug addiction, victims of domestic abuse and low income households (Terra Housing Consultants, 2012);
- Poor funding and affordability (Kyser, 2011);
- A lack of cultural considerations and an imposition of western values (Catherine Palmer & Associates Inc., 2007);
- The use of cheap, nonlocal material (BC Aboriginal Housing Management Association, 2007); and
- The deployment of complex green technologies which do not suit the local climate (Kyser, 2011).

Many of these problems stem from how the Canadian Federal Government imposed oppressive housing standards on the First Nations in colonial days and then later failed to properly support them in attaining proper standards of living once legislation changed (Aboriginal Affairs & Northern Development Canada, 2011).

### 7.5.2 Gap Between Regenerative Methodologies and Emerging Frameworks

Regenerative methodologies are currently in their infancy but are increasingly being implemented in the form of regenerative frameworks to guide design practice. This trend is exemplified in the growing number of proponents of regenerative practices (e.g., Perkins+Will, Berkebile Nelson Immenschuh McDowell (BNIM), Regenesi, the Regenerative Design Group, and Integrative Design Collaborative). However, with the spread of regenerative methodologies and the development of supporting frameworks comes the need to understand how such frameworks can potentially constrain design. An apparent gap exists between core regenerative methodologies and how they are implemented in existing regenerative frameworks due to two main factors:

- Project constraints (time, funding, and practitioners' levels of expertise) create; and
- How quickly the fields of regenerative design and development are evolving.

Future research could explore the nature of the gap between regenerative methodologies and regenerative frameworks and the roles that project constraints and new emerging theories can play in narrowing or widening this void.

## **7.6 Conclusion**

Plains Cree ways of knowing might play a role in enriching the existing regenerative frameworks by transforming how regenerative projects are initiated, how collective project aspirations are established, who is engaged in the design process and how community participants are engaged. The resilience of Cree ways of knowing that have thrived for millennia generations and withstood oppressive colonial regimes is evidence that they have significant wisdom to offer new and emerging paradigms. Furthermore, the strong intersections I perceive in this study between Cree and regenerative methodologies suggest that this might be a valuable partnership. The lessons learned from imparted by the Plains Cree ways of knowing are invaluable to the emerging regenerative discourse because they challenge disrupt remnants of the western, reductionist mindset that this discourse endeavours to separate itself from.

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