Prospects for place-based climate change adaptation: An exploration of place, vulnerability and collaborative planning in Churchill, Manitoba

by

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Author's Declaration

This thesis consists of material all of which I authored or co-authored: see Statement of Contributions included in the thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

I understand that my thesis may be made electronically available to the public.

Statement of Contributions:

The following dissertation contains five chapters, including an introductory chapter, three manuscript chapters and a concluding chapter. I am the sole author of chapters one, four and five. I am the main contributor to chapters two and three, although revised versions of these chapters have been submitted for academic publication as co-authored manuscripts.

Abstract

The need to plan for climate change is an emerging reality for Canadian communities. Impacts like flooding or changes in the formation of sea ice have already contributed to significant financial and social disruptions in many cities, towns, and regions. In response, a growing number of municipalities have adopted climate change adaptation plans that lay out a pathway to prepare for such events. It is typical for such planning efforts to recognize that local economies, elements of the built environment, and the ecosystems that support them are vulnerable to climate change impacts. However, these plans often fail to examine how intangible socio-psychological dimensions of community life might condition these vulnerabilities. They also typically do not ask whether experiential aspects of community life like local values or identity might also be vulnerable, or explore the potential consequences of their disruption. Accordingly, this thesis argues that there may be a blind spot in dominant approaches to adaptation planning that is exposing communities to unforeseen risks. It also questions whether current planning efforts will be sufficient to buffer against disruptions to the many foundations of community life that are not captured in the rational calculus of climate change adaptation practice.

Churchill, Manitoba is examined as a case study of the potential for a place-based approach to climate change adaptation planning. When conceptualized as a bond between a person and a particular landscape, the place perspective offers a vehicle for incorporating local values and identity into adaptation planning processes. Place provides a language that is familiar to the planning profession, and that is also conducive to community engagement. That said, results from a community survey (n= 51) demonstrate that inaction in the face of acknowledged climate change impacts can persist even in the presence of strong place connections. When place is considered more broadly through the lens of mobility, a potential explanation for this finding emerges. Results of a structural equation model show that visitors' (n= 306) place identity and sense of nature relatedness shape the desire to consume vulnerable landscapes (i.e., a last chance tourism motivation). At the same time, in-depth community interviews (n= 24) conducted as part of grounded theory show that manifestations of power and mobility influence the place bonding process and condition the belief that an active citizenry has no legitimate role in shaping a community's climate future.

This thesis illustrates how processes that financially exploit a community's place identity can condition community vulnerability and constrain options for community adaptation planning. It also challenges the dominant notion that the primary benefit of the place perspective is encouraging individual behavioural change through place protective action. From a critical place perspective, an equally important role is probing how mobility and power condition a state of collective inefficacy, and exploring how place might provide a point of connection for resistance and collaborative change.

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Many individuals have supported the completion of this work. I have been in the privileged position to have not one, but two supervisors to guide me through the process.

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I would like to acknowledge the people who make up the School of Planning and Faculty of Environment. Saying goodbye to the many individuals that made the ENV complex such an exceptional place to call home has been truly difficult. In particular, I owe a great debt of gratitude to Dr. Mary-Louise McAllister, whose passion as a scholar and teacher is something we should all aspire to.

To dedicate yourself to the study of place is to openly acknowledge the places that have shaped you as a person. For me, the landscapes and people of Northwestern Ontario are an ever-present reminder of why we must find the strength to work together in ensuring the sustainability of the world we have been entrusted. At the same time, I found a deep connection to the community of Churchill, its landscape and its people. I am most thankful to all of those individuals from Churchill who contributed their time and stories to this work.

I want to thank my parents Edna and Monty Groulx for their unwavering support, and my sister Michelle Groulx for always demonstrating why life is richer when it is lived with compassion and laughter. Finally, thank you to my wife Asifa Groulx for the many years of love and encouragement you have offered over my graduate career. For the past five years you have provided advice and support that made this work possible.

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CHAPTER 1:

INTRODUCTION

1.0 An unexpected story

If you travel to Churchill Manitoba you are not likely to arrive without first hearing a common story about this remote, northern community. You might hear this story from a friend before you leave, or read an editorial in the Toronto Star that will inevitably include a paragraph about Churchill's polar bear population, and the threat they face from climate change. You might hear it from an eager flight attendant as you leave the Winnipeg International Airport aboard your CalmAir flight, or during a game of cards on your train journey, depending on your travel preferences.

In any case, this story will likely grip you with a sense of fascination and anticipation. It will flood your mind with images of a harsh frozen landscape. After hearing this story, you may wonder how you might ever hope to return from a place where polar bears stalk the streets, and where citizens await their arrival, shotgun in hand. Then you will arrive. Your feet will touch the this landscape, and members of the community will welcome you, armed not with shotguns, but with a unique northern hospitality. You will be happy that you are safe in your hotel room when you hear the siren that you were told is a warning that a bear has arrived within the town's limits. Then you will ponder over the coming days why polar bears only seem to come to town once a day, precisely at ten in the evening. If you are open to this place, you will be invited for a brief time into an long unfolding history that includes a connection to polar bears, but also much more.

1.1 Land use in the Churchill region prior to European settlement

Present day Churchill, Manitoba is by any account a unique and complex place. However, it must be recognized that the current community stands on lands with an equally unique and complex history that pre-dates the establishment of the municipality in 1933 CE or the Churchill Hudson Bay trading post in 1717 CE (Brandson, 2011). Between 1965 and 1967 an archaeological expedition unearthed several pre-dorset settlements at the present day Twin

Lakes site and on the western shore of the Churchill River at Seahorse Gully. The later of these sites was composed of at least two-dozen houses and associated artifacts (Nash, 1976). In 1968 a dorset settlement composed of five structures was discovered immediately North of Seahorse Gully, approximately one kilometer from the pre-dorset site. At the time, this dorset settlement not only greatly expanded the known settlement areas of dorset culture along the West coast of Hudson Bay, but also illustrated occupation of the Churchill area by Palaeo-Eskimos spanning back as far as 1500 BCE (Brandson, 2011).

Recent genetic evidence suggests that Palaeo-Eskimo culture ended some time between 1150 to 1350 CE. While debate over the Dorset-Thule tradition persists (Park, 2014), this evidence indicates that the decline of dorset culture may have occurred subsequent to the sudden arrival of Neo-Eskimo Thule whale hunters, suggesting that these two cultures overlapped both temporally and in some areas geographically (Raghavan et al., 2014). It is generally accepted that Thule culture spread east from Alaska, through Arctic Canada and into Greenland (Park, 2010). However, the 1997 discovery (and ongoing archeological documentation) of a seasonal Thule hunting settlement at present day Hubbard Point (known as Qikiqtaarjuit by local Inuit hunters), along with previously known Thule sites (Riewe et al., 1989), illustrates that this expansion also went south along Western Hudson Bay (Petch, 2014). As decendants of the Thule people, Caribou Inuit from the Nunavut community of Arviat carry on hunting traditions on the lands and waters near Churchill, harvesting caribou, beluga, char, ringed seal, and to a lesser extent bearded seal, geese, white fish, wolves, polar bear and arctic fox (Brandson, 2011; Riewe, 1991). As a member of the team documenting the Hubbard Point site, a former resident of Arviat (Johnny Mamgark) reflected on the history of traditional land use in the area: "…they've been using the place forever. That's a long time. I was proud to be still using it. I'm really proud that I still hunt there" (Gregoire, 2014).

While present day Churchill occupies the southern boundary of traditional territory for the Caribou Inuit and their Thule ancestors, it simultaneously occupies the Northern boundary of traditional lands used by the Swampy Cree. The Maskekowininiwak or Swampy Cree populate an area covering much of the Hudson Bay Lowlands running from the southern tip of James Bay northwest to the western shores of the Churchill River estuary (Brandson, 2011). Oral history among the Swampy Cree suggests that the lowlands were occupied for many generations prior

to European contact (Bird, 2005). However, based on reports from the Button and Munk expeditions that indicated that no aboriginal peoples were encountered at winter encampments on the Nelson and Churchill Rivers, Arthur S. Morton advanced a theory in 1939 suggesting that the lowlands were devoid of humans prior to European settlement. Drawing on this theory, much of the historical and anthropological literatures that followed tended to propagate a *terra nullis* account of the lowlands, arguing that permanent habitation of the "harsh" region was not made desirable or even possible until the Hudson Bay outposts offered provisions and trade opportunities. These theories persisted for decades despite the known presence of pre-contact pottery fragments in the lowland region, which was attributed to seasonal use of the lowlands by hunting parties. It was not until numerous archeological investigations were conducted throughout the 1970s and 1980s, notably that of Jean-Luc Pilon in the Severn River basin, that these literatures began to acknowledge permanent settlement of the lowlands stretching back more than 1000 years before European settlement (Lytwyn, 2002). Not only does archeological evidence from the Severn River basin (and elsewhere) confirm the accounts offered through oral histories (Bird, 2005), it demonstrates a continuous use of the lowlands by the Swampy Cree that is carried on by members of a sizable Cree population that resides in Churchill, as well as a Metis population of Cree ancestry (Brandson, 2011).

As members of the larger Dene Nation, the Sayisi Dene occupy the eastern most portion of the Dene territory (Brandson, 2011; Dana, 2008). The name dechinule, or "land of the little sticks", characterizes both the size and abundance of trees within their traditional territory, which traces the transition between the boreal and tundra ecozones (Petch, 1998). Dene oral history holds that the Dene people "have always lived in this place, in the North" as a "people of the land…no different than the trees, the caribou, and the raven…" (Blondin, 1997, p.18). The term Edthen-eldeli-Dene or "caribou-eaters" distinguishes the Sayisi-Dene from other Chipewyan speakers. It also signifies their traditional subsistence culture that was shaped by the migration of barren ground caribou herds, which provided resources for sustenance, shelter, clothing, tools, and more (Bussidor & Bilgen-Reinart, 2006; Petch, 1998).

The 245 residents of present day Churchill that identify as First Nations include both Cree and Dene residents. However, following a forced relocation to Churchill in the 1950s, the majority of the Sayisi-Dene returned to their traditional territory in Tadoule Lake, a fly-in community west

of Churchill. While a detailed recount of the relocation of the Sayisi-Dene is beyond the scope of this dissertation, it serves as a tragic example of the strife indigenous peoples of Northern Manitoba have, and continue to face as a result of European settlement (Tough, 1995). The book "Night Spirits: The story of the relocation of the Sayisi-Dene" recounts from the perspective of community leaders the social and cultural impacts of their relocation from traditional lands (a region stretching from the Churchill river far north beyond Dubawnt Lake in the Northwest Territories) to a series of settlements on the outskirts of the Town of Churchill. In just over 20 years (1956-1977) nearly one-third of the Sayisi-Dene people (117 in total) died violent deaths related to alcoholism and substandard living conditions that resulted from the federal government's relocation policies (Bussidor & Bilgen-Reinart, 2006). While the unique landscape surrounding Churchill holds affections and aspirations for many people, for others like the Sayisi-Dene it tells a dark and tragic story. As Ernie Bussidor, a member of the Tadoule Lake community explains, much of healing that must occur within the Sayisi-Dene First Nation will happen "only if we can overcome the disruption of our lives caused by this baggage we carry from Churchill…" (Bussidor & Bilgen-Reinart, 2006, p. 142)

1.2 Getting at Churchill's climate change story

As the long and complex history of First Nation settlement and land use in the area illustrates, Churchill is a place that holds many different stories for many different peoples. These stories are often shaped, even controlled by actors who have interests in the region's resources, but little lived experience on its lands (Tough, 1995). In this dissertation I examine the importance of a community's story, or more accurately its ability to own, control and shape its story in the face of global environmental challenges, to the task of adapting to climate change. More specifically, I draw on a long history of place theory and research to examine how a community's unique connection to the local landscape shapes its relationship to climate change and its capacity to adapt to future impacts. I do this with full recognition that as an outsider, I can only present an approximation of life and culture in Churchill, or of the meaning this unique landscape holds for different individuals and peoples.

In this vein, I acknowledge seminal works documenting an indigenous sense of place that have been compiled by scholars such as Basso (1996), Feld and Basso (1996), and Hay (1998), among

others. These works highlight the importance of indigenous culture, patterns of movement on the land, ancestral ties, and knowledge frames to the development of a unique sense of place. Moreover, subsequent work has built upon this foundation to further illustrate how an indigenous sense of place can shape health and well being (Wilson, 2003), inform a socially and culturally responsible approach to infrastructure development (Windsor & McVey, 2005), and even influence the link between the experience of climate change impacts and mental health (Willox et al., 2012).

While acknowledging the important contributions of this body of place research, this dissertation uses place in a somewhat different manner. In line with a tradition of collaborative planning (outlined below), place is used in an integrative fashion, rather than to highlight what is unique about different groups' connections to the landscape. It should be noted that survey and interview data presented in the following chapters include perspectives from citizens of First Nation, Metis, and European decent. However, rather than highlighting how place might be distinct amongst these groups, the research attempts to explore what is shared and commonly valued in Churchill's landscape. Set against a background of inaction in the face of climate change that is often marked by conflict, misunderstanding, and mistrust, this approach attempts to show how place might frame opportunities for collaboration, even in the face of difference.

Through this use of place I make an explicit attempt to move past the often-misrepresented facts and anecdotes that shape perceptions of (and perceptions in) this community. That said I still take very seriously the risk of getting the story wrong. To guard against this risk I adopt a methodological stance that allows me to reconstruct, verify and interpret this story from multiple, at times competing perspectives. This is supported through the use of a mixed methods research approach that ties together case study and grounded theory orientations. Key methodological considerations of this approach are outlined at the end of this chapter, and specific methods associated with it are elaborated on in each of the individual manuscripts (Charmaz, 2014; Yin, 2003). A broad suite of methods, ranging from grounded theory coding to structural equation modeling are used to support data triangulation and complementarity (i.e., seeking elaboration, enhancement, illustration, and clarification of the results from one method with results from the other method) (Johnson & Onwuegbuzie, 2004).

1.3 Study Purpose and Research Questions

A growing body of scholars is interested in the value a place-based lens can bring to discussions of climate change adaptation (Adger et al., 2011; Agyeman et al., 2009; Fresque-Baxter & Armitage, 2012). These scholars have argued that vulnerability to climate change extends beyond the material assets of society, and that a place-based approach can better account for experiential risks and losses in the planning process. However, despite recent empirical studies (Amundsen, 2015; Marshall et al., 2012; Willox et al., 2012), evidence supporting or refuting the efficacy of a place-based approach is still highly limited. The objective of this dissertation is therefore to explore the concept of place as a lens for understanding collaborative climate change adaptation planning, particularly as it relates to adaptation planning carried out at a municipal level. This includes examining whether a place-based approach can deepen the current understanding of how a community's intangible fabric (e.g., its identity, values and traditions) can be vulnerable to climate change. It also includes an emphasis on why actors working at a municipal level on climate change adaptation should acknowledge these same factors as part of what makes a community vulnerable to impacts (Adger et al., 2013; Marshall et al., 2012; O'Brien, 2009). As such, this research also explicitly examines how a community's connections to place might shape, even contribute to the risks it faces due to climate change impacts (e.g., by constraining opportunities for collaboration, policy development, and implementation).

This work is expected to enhance planning scholars' and practitioners' ability to understand and respond to the socio-psychological factors that can constrain the development and implementation of critical adaptations. It also outlines how a place-based approach can create opportunities for the type of inclusive planning approach that is needed to ensure these adaptations respond not only to expertly identified risks, but the richness of community life more broadly. There are thus key lessons for effective community engagement on climate change adaptation to be learned from this research.

As the following Chapters will discuss, work on place and climate change adaptation has already begun to illustrate why place might be an effective frame for adaptation planning. However, it is important to note that scholars have often drawn on evidence from highly distinct communities and planning contexts to make the case for a place-based approach (e.g., indigenous

communities or island nations) (Adger et al., 2011; Agyeman et al., 2009; Willox et al., 2012). To support the objective of this dissertation, my research focuses on a Northern Canadian community whose planning context is more akin (or at least one step closer) to the experience of most Canadian municipalities grappling with this issue. In this sense, Churchill, Manitoba offered three key benefits as a case study, particularly because it is a community:

1. *where climate change impacts (e.g., changes in sea ice formation and break up) are already evident in the landscape;*
2. *where a highly unique and complex landscape is an integral part of community life; and*
3. *where the planning context is largely recognizable to most Canadian planning practitioners and scholars.*

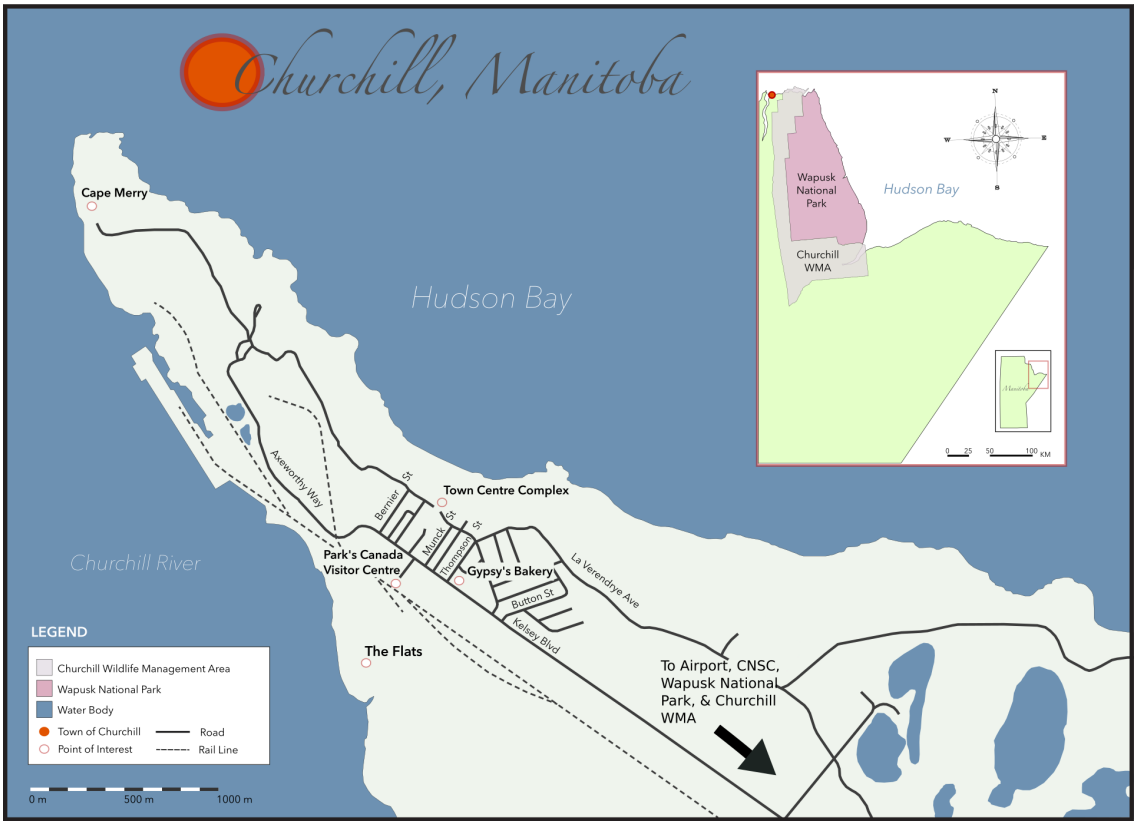

Figure 1.1 - Map of Churchill, Manitoba study areas (see Appendix E for full size map)

There seem to be two prominent organizing approaches that scholars adopt when relating place to climate change adaptation. Some papers build their discussion around key concepts within the climate change discourse (e.g., risk, vulnerability, etc.) and draw place in as an important idea of interest (Adger et al., 2011; Marshall et al., 2012). Others focus more centrally on the

concept of place as a distinct organizing lens that can offer a novel perspective for exploring issues related to climate change adaptation (Amundsen, 2015; Fresque-Baxter & Armitage, 2012). The conceptual frame for this study, which is described in detail below, links place, vulnerability and collaborative adaptation. However, the work in this dissertation is guided first and foremost by theory and empirical research within the place literature. This orientation will be apparent in the conceptualization, analysis, and interpretation of each of the novel research contributions that make up this dissertation. These manuscripts explore how connections to place shape perceptions of climate change among citizens and tourists, and what the implications of this relationship are for efforts to engage in collaborative climate change adaptation planning. The following specific research questions support this broader objective:

Manuscript 1 (Chapter 2):

1. How are citizens' place attachments and place identity linked to their perceptions of local climate change?

2. Does this link have any implications for framing effective messaging and dialogue as it relates to climate change adaptation and collective action?

Manuscript 2 (Chapter 3):

1. Is a desire to consume vanishing landscapes a distinct and identifiable motivation among polar bear tourists in Churchill, Manitoba?

2. If a last chance tourism motivation exists, how does it relate to other motivations for travel?

3. If a last chance tourism motivation exists, how are tourists' place identity and nature relatedness associated as underlying dimensions, if at all?

Manuscript 3 (Chapter 4):

1. What can a critical conception that understands place as the coming together of people, knowledge and capital reveal about the construction of citizens' sense of place identity and its influence on their perceptions of climate change?

2. What are the implications of this process of identity construction for collaborative climate change adaptation planning at a community level?

1.4 Dissertation Structure

The manuscript format adopted for this dissertation comes with both benefits and limitations. The ability to conceptualize, analyze and discuss various research topics as stand-alone manuscripts arguably offers more freedom to explore a diverse range of ideas than a traditional dissertation format. However, the space constraint that is implicitly imposed by the goal of writing journal oriented manuscripts presents several key barriers. First, it limits the opportunity to adequately present and reflect on the practical context and considerations of the research within each manuscript. Second, it presents a notable challenge in terms of building upon, and synthesizing the findings across the set of manuscripts.

To address these limitations I have used the introduction and conclusion chapters of this dissertation to rather precise ends. The first objective for these sections is to introduce and describe the practical planning context that is relevant to this research (introduction), and then to reflect upon key study findings that warrant practical considerations (conclusion). The second objective for these sections is to outline (in the introduction) the broader conceptual framework that guides the research, and then to synthesize the research findings by reengaging this conceptual framework (in the conclusion). The remainder of this introductory chapter therefore presents the practical planning and policy context relevant to this research, describes the conceptual framework that has informed this research, and outlines a hybrid methodological approach that is elaborated on in each manuscript.

1.5 Practical Planning and Policy Considerations

The examination of place and climate change adaptation that is presented throughout this dissertation describes a range of phenomena that extend well beyond the formal planning mechanisms within Canadian communities. If anything, this dissertation is a direct call to consider how intangible values, attitudes, cultural traditions, and identities fit in the development of climate change policies, programs, and projects. Research has shown, for instance, that cultural worldviews and the process of psychological discounting (among many other factors) can limit an individual's perceived need to act in the face of climate risks (Gifford, 2011; Swim et al., 2011). There is also a growing consensus that socio-psychological factors like these must be considered as having an important influence on a community's adaptive capacity, because they shape the collective will to coordinate actions that can address complex

environmental challenges (Grothman & Patt, 2005; O'Brien & Wolf, 2010; Rees & Bamberg, 2014). Despite this recognition, socio-psychological considerations are often only weakly integrated into climate change adaptation scholarship, and are almost entirely absent in practice (Adger et al., 2011; O'Brien & Wolf, 2010).

This presents a significant risk in that adaptation plans developed in this context may fail to achieve the cultural or social acceptance that is needed to translate policies into meaningful community change. As a sub-arctic community Churchill lies in a region that is expected to experience some of the most dramatic warming trends anywhere in Canada (IPCC, 2014; Warren and Lemmen, 2014). Stirling et al (2008) note "that between 1971 and 2001, the average annual temperature increased at 6 of 7 weather stations distributed throughout Hudson Bay and specifically by 0.5 °C per decade at Churchill" (p. 194) (see Table 1.1 for historical weather data). Compared to the 1961-1990 reference period, Churchill also experienced 87.9 *more* degree days above 5°C and 144.9 *fewer* degree days below 0°C in the 1981-2010 reference period (Environment Canada, 2015).In line with these past trends, by 2050 temperatures are projected to increase by as much as 2-3°C in the summer and 5-6°C in the winter (compared to 1961-1990 averages) (Warren et al., 2014).

Warming has already been linked to a range of impacts, most notably an earlier break up and later formation of sea ice in Hudson Bay, which is directly linked to the long term health of the local polar bear population and the town's tourism economy (Stirling et al., 2008). Other impacts include potential disruptions to the Churchill railway corridor (the community's main source of food) from permafrost melting, as well as the nesting and migratory patterns of bird populations that are another important part of Churchill's tourism economy (The institute of urban studies, 2011). Indeed, a thesis project conducted in 2004 showed that segments of the community are concerned about the impacts of climate change on tourism (Chotka, 2004).

These climate trends and their associated impacts frame the true risk of plans and policies that emerge in a socio-cultural vacuum. A community with limited resources to address impacts that are already unfolding can hardly afford to expend material (e.g., finances) and immaterial (e.g., trust) resources developing an adaptive pathway that is a political non-starter, or worse that fails to identify and protect what is important to the community (Adger et al., 2013; Marshall et

al., 2012). This research therefore presents an opportunity for planners to consider how their work can respond to a critical body of literature that may greatly enhance the effectiveness of climate change adaptation efforts in their community.

To be fair, many of the socio-psychological factors that contribute to climate (in)action are beyond the direct control of formal planning processes, but they are not completely intractable. Local values and culture shape, but are also shaped by the research, planning, and actions that are undertaken to address societal and environmental challenges. In the context of climate change adaptation in Churchill, Manitoba, this recognition makes several key projects, policies and initiatives particularly relevant. This planning context is delineated in the following sections by focusing on key federal, provincial, and municipal initiatives.

Table 1.1 - Historical weather data for Churchill Manitoba, 1929-2007.

Year	Mean Max Temp	Mean Min Temp	Mean Temp	Total Precipitation	Climate Station ID	Climate Station Name
1929	M	M	M	M	5060602	Churchill Marine Manitoba
1930	M	M	M	M	5060602	Churchill Marine Manitoba
1931	M	M	M	M	5060602	Churchill Marine Manitoba
1932	-3	-11.9	-7.5	355.5	5060602	Churchill Marine Manitoba
1933	-5.1	-13.1	-9.1	329.6	5060602	Churchill Marine Manitoba
1934	-4.2	-11.7	-8	460.9	5060602	Churchill Marine Manitoba
1935	-3.9	-12.3	-8.1	281	5060602	Churchill Marine Manitoba
1936		-13.2		450.4	5060602	Churchill Marine Manitoba
1937	-2.4	-10.2	-6.3	289.5	5060602	Churchill Marine Manitoba
1938	-1.8	-9.5	-5.7	507.4	5060602	Churchill Marine Manitoba
1939	-4.4	-11.8	-8.1	351	5060602	Churchill Marine Manitoba
1940	-2.4	-9.5	-6	348.2	5060602	Churchill Marine Manitoba
1941	-2.6	-10.4	-6.5	306.6	5060602	Churchill Marine Manitoba
1942	-3.6	-11	-7.3	329.5	5060602	Churchill Marine Manitoba
1943	-3.2	-11.9	-7.5		5060602	Churchill Marine Manitoba
1944	-1.9	-10.3	-6.1	214.1	5060602	Churchill Marine Manitoba
1945	M	M	M	M	5060602	Churchill Marine Manitoba
1946	M	M	M	M	5060602	Churchill Marine Manitoba
1947	-3	-10.6	-6.8	352.4	5060602	Churchill Marine Manitoba
1948	-1.9	-10.4	-6.2	376.3	5060602	Churchill Marine Manitoba
1949	-4.2	-11.5	-7.9	562.1	5060602	Churchill Marine Manitoba
1950	-5.1	-13.1	-9.1	447.6	5060602	Churchill Marine Manitoba
1951	-3.6	-11.2	-7.4	446.6	5060602	Churchill Marine Manitoba
1952	-2.4	-10.2	-6.3	451.2	5060600	Churchill A
1953	-2.7	-10	-6.3	380.9	5060600	Churchill A
1954	-2.4	-10.6	-6.5	322.4	5060600	Churchill A
1955	-2.8	-10.6	-6.7	533	5060600	Churchill A
1956	-3.8	-11.6	-7.7	346	5060600	Churchill A
1957	-3.6	-11.5	-7.5	404	5060600	Churchill A
1958	-3.5	-10.3	-6.9	372.4	5060600	Churchill A

1959	-4	-11.3	-7.7	570.2	5060600	Churchill A
1960	-3.3	-11.1	-7.2	600.9	5060600	Churchill A
1961	-3	-11.9	-7.5	522.4	5060600	Churchill A
1962	-4.1	-12.2	-8.2	455.2	5060600	Churchill A
1963	-3.3	-11.5	-7.4	366.5	5060600	Churchill A
1964	-3.5	-11.9	-7.7	272.2	5060600	Churchill A
1965	-3.6	-12	-7.8	318	5060600	Churchill A
1966	-3.2	-11.6	-7.4	286.3	5060600	Churchill A
1967	-2.8	-11.5	-7.2	469.4	5060600	Churchill A
1968	-2.8	-10.6	-6.7	382.3	5060600	Churchill A
1969	-2.7	-10.4	-6.5	326.3	5060600	Churchill A
1970	-3.3	-11.7	-7.5	362.6	5060600	Churchill A
1971	-2.3	-10.2	-6.3	368.3	5060600	Churchill A
1972	-5.6	-14	-9.8	427.8	5060600	Churchill A
1973	-1.9	-10.4	-6.1	415.5	5060600	Churchill A
1974	-4.5	-12.7	-8.6	306.4	5060600	Churchill A
1975	-2.6	-11	-6.8	300.3	5060600	Churchill A
1976	-2.3	-11.4	-6.9	357.9	5060600	Churchill A
1977	-1.2	-9.1	-5.1	346.5	5060600	Churchill A
1978	-3.6	-11.8	-7.7	531.2	5060600	Churchill A
1979	-4	-12	-8	340.9	5060600	Churchill A
1980	-2.7	-11	-6.9	482	5060600	Churchill A
1981	-0.7	-9.1	-4.9	394.1	5060600	Churchill A
1982	-4.4	-12.5	-8.5	603	5060600	Churchill A
1983	-3	-11.2	-7.1	618.4	5060600	Churchill A
1984	-2.3	-10.6	-6.4	412.7	5060600	Churchill A
1985	-2.8	-11.5	-7.2	447	5060600	Churchill A
1986	-3	-11.7	-7.4	498.7	5060600	Churchill A
1987	-1.1	-9.7	-5.4	431.1	5060600	Churchill A
1988	-3.1	-11.5	-7.3	439.9	5060600	Churchill A
1989	-3.9	-12.2	-8	357.2	5060600	Churchill A
1990	-3.1	-11.8	-7.4	483.7	5060600	Churchill A
1991	-2.6	-11.5	-7.1	522.8	5060600	Churchill A
1992	-4	-12.3	-8.2	400.6	5060600	Churchill A
1993	-3	-11.3	-7.1	290.5	5060600	Churchill A
1994	-2.6	-10.7	-6.7	344.7	5060600	Churchill A
1995	-3.1	-10.8	-6.9	414.8	5060600	Churchill A
1996	-3.1	-11.7	-7.4	422.5	5060600	Churchill A
1997	-2.6	-10.5	-6.6	507.8	5060600	Churchill A
1998	-0.3	-8.7	-4.5	486.8	5060600	Churchill A
1999	0.5	-8.3	-3.9	439.1	5060600	Churchill A
2000	-2	-10.1	-6	461	5060600	Churchill A
2001	0.1	-8.7	-4.3	596.6	5060600	Churchill A
2002	-3.2	-11.6	-7.4	536.3	5060600	Churchill A
2003	-1.4	-9.8	-5.6	545	5060600	Churchill A
2004	-4.3	-13.1	-8.7	373.3	5060600	Churchill A
2005	-1.3	-9.4	-5.3	692.3	5060600	Churchill A
2006	0.8	-8.1	-3.6	453	5060600	Churchill A
2007	M	M	M	M	5060600	Churchill A

Note: Data taken from Environment Canada (2015)

M = Missing data in Environment Canada online historical weather database

1.5.1 The Federal Planning Context

At a Federal level a highly visible initiative that is relevant to climate change adaptation in Churchill was the implementation of Canada's six-year International Polar Year (IPY) program. As a participant in the largest ever international scientific effort to document and build capacity to address changes in the Arctic and Antarctic, the Government of Canada dedicated over $150 million dollars to 52 scientific projects (Aboriginal Affairs and Northern Development, 2011). Canada's IPY program focused on climate change impacts and adaptations, as well as the health and well being of northern communities. The knowledge, connections and skills developed through this collaborative research effort were an important step in moving our understanding of climate change beyond the realm of physical science (Ford et al., 2013). IPY findings have begun to detangle the complex human dimensions of this global issue. This includes exploring the role of traditional knowledge in monitoring and planning for climate impacts, and the importance of understanding culture when trying to conceptualize well-being in a northern community context (Kulkarni et al., 2012; Parlee & Furgal, 2012).

Although not explicitly focused on Churchill as a case study, the Community Adaptation and Vulnerability in Arctic Regions (CAVIAR) project is of particular note to northern adaptation planning initiatives. The CAVIAR project was funded under the IPY program and sought to address critical gaps in knowledge surrounding vulnerability and adaptive capacity at a local level. It documented the environmental conditions that communities are sensitive to; explored the strategies that these communities use to cope with changing environmental conditions; and delineated many factors that constrain community resilience (Smit et al., 2008).

Taking vulnerability as a core construct, the project applied a common case study framework across eight arctic countries and provided a unique opportunity for cross-case comparison and knowledge synthesis (Smit et al., 2010). Findings highlight the need for an understanding of vulnerability and resilience that is rooted in local cultural and knowledge systems. For instance, Bulgakova (2010) found that adaptations adopted by reindeer herders (e.g. moving herds over large areas to avoid hazardous conditions) can directly conflict with 'official' land management practices. The project also found that a diversification of livelihoods has taken place in most case study communities through increased wage-employment in government, extractive industries, and tourism. Paradoxically, this shift has increased adaptive capacity in certain areas (e.g. it

offers an alternative source of food), while contributing to vulnerability in others (e.g. by contributing to a decline in local knowledge transfer across generations) (Ford, 2009; Hovelsrud et al., 2010). Complex relationships like this illustrate the need to widely engage communities in the adaptation planning process.

Natural Resources Canada also recently released an update to their second national assessment of climate change impacts and adaptations. In the second report climate change was characterized as an issue that is already affecting communities across Canada through impacts like coastal erosion, flooding, extreme weather events and melting permafrost, to name only a few. It was also noted that while Canada is generally considered to have a high adaptive capacity, vulnerability to climate change impacts is unevenly dispersed, and can be higher in northern communities due to lower rates of education, less diversified resource economies, and a higher rate of environmental change (Lemmen et al., 2008).

The update to the second assessment confirms earlier reported climate impact trends and reinforces the argument that adaptive capacity is unevenly distributed across Canadian communities (Warren & Lemmen, 2014). Drawing on a wealth of new adaptation based studies, the report also argues that adaptation planning at an international scale has advanced in the past 5-10 years, but that implementation "is in the early stages in most, if not all, developed countries" (Warren & Lemmen, 2014, p. 257). Based on an assessment of these planning activities, Natural Resources Canada presents a synthesized framework for adaptation planning. This framework identifies seven stages in the adaptation planning process:

1. *Building awareness of climate change*
2. *Building awareness of the need to adapt*
3. *Mobilizing resources*
4. *Building capacity to adapt*
5. *Implementing targeted adaptation actions*
6. *Measuring and evaluating progress*
7. *Learning, sharing knowledge with others and adjusting.*

The assessment also acknowledges recent critiques of federal inaction on the adaptation front, which have been particularly critical of the persistent lack of a national adaptation strategy. In

response the authors argue that the federal role in adaptation is to deliver scientific information relevant to adaptation, to encourage adaptation policy integration, and to incent people and organizations to undergo proactive adaptation (Warren & Lemmen, 2014). The extent to which the provincial and municipal actions discussed below have been spurred by federal initiatives (as opposed to local stakeholder groups or the actual experience of climate change impacts) is debatable. However, the federal government's self-defined role as a facilitator of collaboration is consistent with their attempts to promote partnerships and knowledge sharing through IPY projects, as well as through the creation of the Canadian Climate Impacts and Adaptation Research Network (CCIARN), Regional Adaptation Collaboratives, and more recently the Adaptation Platform (Adaptation platform plenary, 2013).

Finally, particularly relevant to this research is the assessment report's brief discussion of the psychological foundations of adaptation. While limited in scope the inclusion of this section is an important signal that research on this topic is having an impact beyond academic boundaries. One caveat to this is the report's strong framing of socio-psychological factors as a barrier to action. While not erroneous, this perspective overlooks the fact that scholars also argue that such factors should be viewed as a critical guide to appropriate and effective adaptation programs (Adger et al., 2013; Wolf et al., 2012). This notable policy gap presents an interesting opportunity for the research contained in this dissertation to contribute to a more balanced consideration of this topic in a Canadian planning context.

1.5.2 The Provincial Planning Context

The cross cutting nature of vulnerability makes the legislative environment that is relevant to adaptation planning highly specific to a given time and place. In Churchill, Manitoba for instance, *The Churchill Arctic Port Canada Act* has recently provided powers to Churchill Arctic Port Canada Incorporated to "facilitate the long-term development and viability of the Churchill gateway system" and to "promote the Churchill gateway system" (Government of Manitoba, 2014). Given the changing structure of Canada's grain industry, ongoing debates over proposed pipelines, and the perceived opportunity to increase shipping in response to changing arctic sea ice conditions, this mandate is likely to impact Churchill's economy and the flow of goods and people through the community (Borgerson, 2008; Meredith & Norquay, 2013). As

Chapter four illustrates this shift in mobility could also have a considerable influence on the community's adaptive capacity.

The health and operation of Churchill's eco-tourism sector has become an increasingly important force shaping the community's economy and social structure. *The Resource Tourism Operators Act* sets the context for operator licensing and permitting within Manitoba's tourism economy. Its application therefore shapes Churchill's network of tourism actors and activities, and by extension levels of trust within the community (Government of Manitoba, 2002). While applicable to adaptation in Manitoba more broadly, *The Planning Act, The Environment Act, The Climate Change and Emissions Reduction Act, The Provincial Parks Act* and *The Northern Affairs Act* are also key pieces of the provincial legislative landscape as it relates to adaptation in Churchill (Government of Manitoba, 1987, 1996, 2005, 2006, 2008b).

Manitoba's proposed *Green Prosperity Act* is of particular interest in this regard. The *Green Prosperity Act* is set to replace *The Sustainable Development Act* as the umbrella under which all future government sustainability initiatives will be guided (Government of Manitoba, 2013a). This new piece of legislation will maintain a focus on the three pillars of sustainable development. However, it will seek to shift the emphasis to environmental sustainability, and to redefine society as being a part of, rather than apart from the environment. Several proposed principles that are relevant to adaptation in Churchill are listed below in Table 1.2.

Table 1.2 - Sample principles from the proposed Manitoba Green Prosperity Act.

Section and Sub-section	Proposed Principle
3(2)	*Manitobans understand that environmental, social and economic challenges and opportunities extend beyond political borders. Proper solutions will frequently require national and international collaboration.*
1(1)	*Manitobans recognize that the environment, the economy, and human society, including cultural, political and social dimensions are completely inter-connected. The best decisions will be ones which reasonably integrate the needs of all these areas.*
8(1)	*Manitobans should consider the potential of community economic development (CED) to help address challenges and capture opportunities into guidelines:*
8(2)	*Aspects of CED include but are not limited to:*
(a)	*Local Employment – support long-term employment opportunities for local residents including hiring locally, create opportunities for greater personal and community self-sufficiency, and enable spending of wages within the local economy.*
(b)	*Local Ownership and Decision-making – promote local ownership and control of community-based businesses, co-operatives and other resources, and encourage grassroots involvement and democratic decision-making.*
(e)	*Local Knowledge and Skill Development – provide education and training opportunities that are accessible to local residents.*

In addition to a new *Green Prosperity Act*, the Province of Manitoba is working to develop a standalone climate change adaptation strategy and action plan. Until its release, provincial guidance on adaptation planning stems from the province's climate change action plan (Government of Manitoba, 2008a). Similar to other plans released prior to (or shortly after) the IPCC's fourth assessment report, this plan emphasizes climate mitigation strategies. It also presents adaptation considerations, but the focus is largely on the vulnerability of key ecosystems and infrastructure networks. One important caveat is the recognition that climate change impacts will shape human health, and the acknowledgement that "for Aboriginal and northern communities, climate change has profound implications for traditional ways of life and culture" (Government of Manitoba, 2008a, p. 48). This final recognition further highlights the policy relevance of this research.

Another important companion to the *Green Prosperity Act* is Manitoba's recent sustainability strategy update (Tomorrow Now: Manitoba's Green Plan). Within this policy framework climate change adaptation is allocated a dedicated section that lays out the province's proposed 'Climate Change Adaptation Pathway' (Government of Manitoba, 2013b). The pathway sets three key priorities whose implementation could build existing capacity for community level

adaptation planning, and would bring the province in line with best practices in other jurisdictions (e.g. Ontario and British Columbia). These priorities include:

1. *Establishing a cross-departmental adaptation team to conduct an assessment of the government's risks and vulnerabilities to climate change.*

2. *Conducting a province wide-risk assessment to identify risks and priorities for action in Manitoba's communities, ecosystems and economy.*

3. *Developing a comprehensive adaptation strategy and evaluation and monitoring framework.*

Given the current absence of a stand-alone adaptation plan, many of the policies and initiatives identified in Manitoba's Green Plan are of particular relevance to adaptation in Churchill. For instance, the plan identifies the need for a provincial eco-tourism strategy that has the goal of increasing "local capacity for implementing a community-based vision for tourism, including youth engagement and business development" (Government of Manitoba, 2013b, p. 18). The plan also contains a commitment "to support a child's right to the outdoors" through initiatives like the Youth Angling Program (Government of Manitoba, 2013b, p. 56).

Finally, the province has illustrated its dedication to realizing its sustainability agenda by dedicating funding to both sustainability, and climate change specific initiatives. As a specific funding stream within the Sustainable Development Innovations Fund, the Manitoba Climate Change Action Fund (MCCAF) has allocated nearly $2.9 million between 2004 and 2013 to support research, projects and activities that move forward the province's goals in this area (Government of Manitoba, 2015).

1.5.3 The Municipal Planning Context

Within the community of Churchill, sustainability and climate change policy considerations have been supported through a multi-year collaborative sustainability planning initiative. These efforts culminated in the creation of the Churchill Sustainability Planning Framework (CSPF), and represent a unique partnership between the University of Winnipeg and the Town of Churchill (The Institute of Urban Studies, 2011). The efforts of the Churchill Sustainability Committee and of researchers at the University's Institute of Urban Studies have contributed to a framework that lays out a vision, set of values, and priorities for a sustainable Churchill.

Appropriate for a community as diverse as Churchill, the CSPF acknowledges the importance of placing culture alongside social, economic and ecological dimensions of sustainability. It also recognizes that "value systems amongst northern communities and their citizens may differ as to the view of sustainable development and their approach to achieving sustainability" (The Institute of Urban Studies, 2011, p. 12). Rather than laying out a specific linear process, the document identifies a general pathway to building capacity around six locally defined priority areas, including: food security; economic development; youth education, training and recreation; waste management; housing; and built environment.

The CSPF identifies climate change as a key driver of economic and ecological change in Churchill, and as a key barrier to the community's long-term sustainability. Highlighted threats and opportunities are similar to provincial and federal adaptation policy discussions in that they focus largely on economic, ecological and infrastructure related risks. The significant threat to the health and population of the Western Hudson Bay polar bear subpopulation is noted as a key issue faced by the tourism sector. However, a longer ice free season is also acknowledged as a potential benefit to the shipping industry, with the caveat that any increase in port activity is dependent on a rail line that is increasingly vulnerable to heaving and sagging caused by thawing permafrost.

In addition to the community's priority sustainability areas, the CSPF lays out several key policy recommendations and initiatives that are relevant to this research. These include the proposed creation of new categories within the zoning by-law (including one to protect cultural and historical assets), an expansion and refinement of environmental policies within the town's development plan (currently three broad policy statements exist), and a revision of the town's strategic plan (completed in 2000) to improve its alignment with the CSPF. Most relevant, however, is the recommendation to develop a specific climate change adaptation and mitigation strategy.

On a policy level there is an obvious alignment between recommendations laid out in the CSPF, and the province's goal to complete a province wide risk assessment and adaptation strategy. With the Port of Churchill and an increasingly important eco-tourism engine (particularly in

terms of marketing Manitoba tourism) located in Churchill, it is not unreasonable to expect that adaptation planning efforts could be part of the community's near future. Two specific adaptation policy tools are therefore worth mentioning, particularly because they are designed to support collaborative adaptation planning in a municipal context (see Table 1.3 for a summary).

In 2011 the Canadian Institute of Planners released *Climate Change Adaptation Planning: A handbook for Canadian municipalities.* The handbook is an action-oriented tool meant to walk small Canadian communities through the process of developing a climate change adaptation plan. It takes an integrated approach by recommending the integration of policies across a municipality's planning framework. The creation of an interdepartmental adaptation team and stakeholder engagement strategy, and the adoption of a council resolution (including dedicated funding) are also recommended. The tool recognizes the pragmatic needs of climate change planning and argues that communities must work with the best available science and local knowledge at their disposal to initiate adaptation efforts. Finally, an emphasis on impacts and risk assessment, without a complete assessment of vulnerabilities, may limit the tool's ability to identify deeper root causes that constrain a community's adaptive capacity (Bowron & Davidson, 2011).

The Building Adaptive and Resilient Communities (BARC) tool developed by Natural Resources Canada and the Canadian division of the International Council for Local Environmental Initiatives (ICLEI) emphasizes a vulnerability assessment as a core component within its adaptation planning milestones. The BARC tool builds on capacity and recognition around climate change planning that was developed through the Partners for Climate Protection program by utilizing a similar five-milestone approach. The BARC tool heavily emphasizes a collaborative approach, stakeholder involvement, and the use of an interdepartmental adaptation team. Reflecting its broader focus (i.e., not specific to small communities) the tool proposes a research and planning approach that is organized around vulnerabilities and adaptations within a municipality's various service sectors. In addition to the tool itself, municipalities can opt for paid access to ICLEI's BARC membership network. This provides access to other ICLEI member municipalities, as well as professional services including research assistance, planning guidance, and facilitation support (ICLEI Canada, 2010).

Table 1.3 - Summary of CIP and ICLEI Adaptation Planning Tools.

Source	Guiding Principles	Steps	(Select) Actions
Canadian Institute of Planners	• Climate change will affect all aspects of sustainable planning • Adaptation is an imminent need • Small communities require additional capacity to act • A lack of certainty is not a reason to not act (NOTE: These principles were not identified explicitly in the CIP handbook. They have been summarized from the content of the guide.)	Get Started	• Develop political and staff awareness • Create interdepartmental teams • Obtain council endorsement
		Analyze how local climate will change	• Gather scientific knowledge • Obtain community knowledge • Build climate change scenarios
		Scope potential impacts	• Develop inventory of climate change impacts • Document consequences and prospects • Review inventory with community
		Assess risks and opportunities	• Assess risks • Assess opportunities • Evaluate municipality's adaptive capacity
		Prepare adaptation plan	• Establish adaptation planning principles • Specify adaptation policies and actions • Draft CCAP
		Adopt, implement, monitor and review adaptation plan	• Obtain council approval of CCAP • Develop implementation strategy • Establish key indicators and milestones
ICLEI Canada	• Balance of immediate and long-term needs • Interaction must be supplemented with action • Commitment to act in the face of uncertainty • Recognizing existing work (NOTE: These principles were drawn directly from the BARC tool.)	Initiate	• Identify stakeholders • Build climate change adaptation team • Pass council resolution and community charter
		Research	• Identify impacts in key service areas • Vulnerability assessment (study of sensitivity and adaptive capacity) • Risk assessment (consequence and likelihood of impacts and prioritization)
		Plan	• Establish adaptation vision and objectives • Identify options and actions • Create action plan
		Implement	• Develop political and community support for plan • Identify strategy pilot projects • Follow the adaptation plan
		Monitor and Review	• Assess actions based on indicators • Take stock of existing and missing partnerships • Communicate successes

At the centre of both adaptation planning toolkits noted above is a call for collaboration and community engagement. Theoretical and practical guidance as to how these goals might be approached, however, is still under examined in a municipal planning context. To help address this gap, this dissertation examines whether and how a place-based approach to adaptation might inform a model of collaboration and community engagement that suits the uncertain and complex nature of this planning challenge. In the following section, I therefore present a

conceptual framework that links the concepts of place, vulnerability and collaborative planning. This framework serves as the scaffold for this dissertation, although the place literature is emphasized.

1.6 Conceptual Framework

The three manuscripts that make up this dissertation explore the story of how the climate change issue is unfolding in the community of Churchill, Manitoba. They also examine how this experience is shaped by the community's complex relationship to place. While each manuscript presents a somewhat unique angle of this story, they are organized around a common conceptual framework that links together principles of collaborative planning, an evolving understanding of vulnerability (as it relates to climate change adaptation), and a vision of place as both a psychological bond and an instantiation of mobility.

Through this framework, the manuscripts in this dissertation put forward an argument that effective adaptation planning must take a more holistic view of what it means for a community to be vulnerable to climate change, and what it takes for a community to build resilience in this context. Each paper explores how the psychology of climate change and place condition vulnerability, and how a deeper understanding of such factors might help inform collaborative adaptation planning. As place connections are often strongest at a local level (Lewikca, 2010), and because the context for community vulnerabilities is often clearest at this level (Smit and Wandel, 2006), this research takes a strong local focus. The components in this conceptual framework are depicted in Figure 1.2 and are elaborated on in the following sections. This figure offers a visual heuristic illustrating the core concepts within my framework. It also depicts related concepts that are less central, but still important to this work. The spatial organization of the figure depicts the linkages between concepts, but only in a broad theoretical sense.

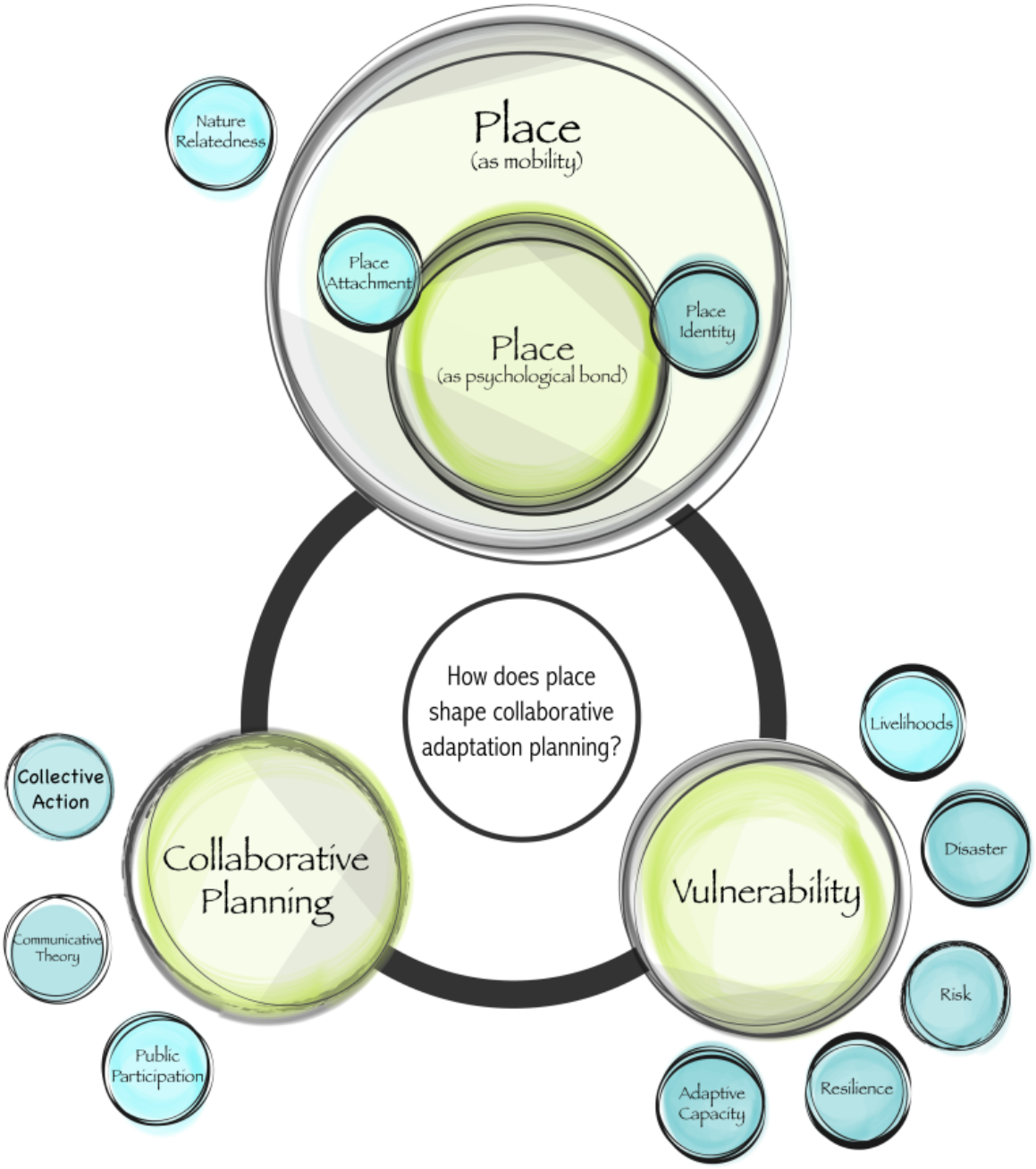

Figure 1.2 - Conceptual framework linking place, vulnerability and collaborative planning.

1.6.1 Collaborative Planning

Collaborative planning is a concept that is familiar to many disciplines and that is characterized in many different ways. Delineating the roots and dimensions of the concept as it relates to this research is therefore an important first step in presenting my conceptual framework. Collaborative planning as it is used here refers to a model of decision-making rooted specifically in the theoretical and empirical foundations of urban planning, most notably that of communicative planning scholars (Forester, 1989; Healey, 1992; Innes, 1996). It is a model of planning that arose as a direct reaction to the seeming failure of rational-comprehensive planning to recognize the importance of people, and their involvement in deliberative discourses that seek to create healthy, democratic and sustainable communities (Arnstein, 1969; Fischer, 2000; Healy, 1997; Innes & Booher, 2014).

Within the communicative tradition collaborative planning acknowledges that robust solutions to complex problems often require open policy discussions, the involvement of diverse stakeholders, and the participation of an active citizenry (Forester, 1989; Innes & Booher, 2004; Innes & Booher, 2014; Umemoto, 2001). Communicative planning theory is guided by Habermas' notion of communicative action, and has more recently adopted Castell's notion of communication power (Innes & Booher, 2014). Drawing from these constructs theorists argue that the role of urban planners is not to act as a sole knowledge authority, but as a facilitator who can explore consensus in the face of competing values, diverse interests, and complex knowledge systems (Innes, 2004). Following this tradition, collaborative planning can be characterized as participatory, consensus seeking, and oriented toward building and protecting trust amongst stakeholders. It can also be associated with a desire to integrate scientific and local knowledge, and a capacity to understand that even seemingly technical problems are rooted in often hidden values and worldviews (Forester, 1999; Sager, 2012).

This orientation is highly relevant to the place-based form of adaptation that this research examines. However, this conception of collaborative planning and particularly its commitment to the notion of communicative action is not without its critics. Inch (2014) recently argued that despite the deliberative planners' ostensible commitment to open speech and citizen participation, planning practice has implicitly defined good citizenship as involving rational thinking, an overtly non-activist stance, and a commitment to system sanctioned change. As the

following manuscripts discuss in more detail, this notion of citizenship can be a central source of community vulnerability, particularly in its tendency to limit opportunities for collective action.

Here, collective action is related to collaborative planning through the concept's roots in Social Identity Theory (Hogg, 2003; Tajfel, 1974). For climate action scholars it is a conceptual frame that encourages a shift from thinking about individual behaviours (e.g., through social marketing) to exploring the conditions that allow (perhaps even catalyze) people to coordinate their efforts in pursuit of a common goal (Rees & Bamberg, 2014). This includes examining why "collective action requires networks and flows of information between individuals and groups to oil the wheels of decision making" (Adger, 2003). It also includes an emphasis on how the congruity of individual and group identities, and of conceptions of self and place, can act as a cohering force that shapes coordinated motivations, goals, and behaviour (Devine-Wright, 2009; Fresque-Baxter & Armitage, 2012; Spears, 2011). Strong shades of the ideals of collective action can be seen the transition towns movement, and in the Region of Waterloo's approach to developing a climate change action plan (Hopkins & Lipman, 2009; The Regional Municipality of Waterloo, 2013).

Beyond the concern about planners' desired model of citizenship, the communicative model has received arguably harsher critique for its treatment of power. Critics argue that the core concept of communicative rationality does not adequately account for ways that sources of power that exist beyond the planning process shape planning outcomes (e.g., state power, financial inequality, etc.,) (Fainstein, 2000; Sager, 2012; Yiftachel & Huxley, 2000). In response communicative theorists have challenged the definition of power that is used to levy these criticisms. They contend that in an increasingly networked society "power is not something possessed by institutions or individuals – rather it lies in specific relationships in specific times and places" (Innes & Booher, 2014, p. 9). It follows that existing power structures can be challenged through the establishment of new networks; a process that can be initiated through a more deliberative approach to planning (Sager, 2012). In this regard, communication becomes a source of power (Innes & Booher, 2014).

By no means has this central debate been resolved by adopting a new view on power and planning processes. Moreover, this research will not try to resolve this decades-long debate.

That said, Chapter's four and five do highlight how a deliberative approach to sustainability planning in Churchill has contributed to new community structures that are helping citizens reclaim their place identity in the face of powerful forces that shape their relationship to the landscape.

1.6.2 Vulnerability

The second tenet of my conceptual framework draws on scholarship that has defined vulnerability, particularly in the context of communities. Vulnerability is considered here in its historical context, having evolved through the contributions of scholarship on disasters, sustainable livelihoods, and more recently resilience (see Chapter two) (Adger, 2006; Fischer, 2000; Hewitt, 1998; Kasperson et al., 2005; Sen, 1982). In line with the IPCC, vulnerability is understood as a "propensity or predisposition to be adversely affected" (IPCC, 2014 p.4), and therefore a condition that adaptation planning would seek to reduce. Reflecting advancements that were initiated through discussions about what defines a disaster (Dombrowsky, 1998; Gilbert, 1998; Wisner et al., 2004), community vulnerability is considered to be a function of a community's exposure to a particular risk event (e.g. a drought), and also its sensitivity to that risk (Smit et al., 2010; Smit & Wandel, 2006).

Vulnerability is therefore not conceptualized in this research as a purely social construct. In line with what Wisner et al. (2004) refer to as a weak constructivist perspective, I hold that there must be some external factor to which one is vulnerable. However, while recognizing that a community faces external risks, I also view vulnerability as a socially and historically contingent force. Through social and economic processes that are rooted in place, communities build up a propensity to disruption that can be triggered when a climate related event (e.g., a drought) exceeds a threshold in that community's adaptive capacity (Adger, 2006; Pred, 1984; Smit & Wandel, 2006). The root causes of climate change vulnerability therefore include factors that may appear rather unconnected to climate change impacts (e.g., a legacy of colonial planning). For planners, this highlights the important realization that vulnerability can be as much about poverty and inequality as it is about zoning and flooding. Finally, drawing on Hewitt's (1998) work on disasters, and more recently work on resilience thinking (Adger, 2000; 2006; Berkes, 2007), individual actors and communities are viewed as agents that shape their relationship to climate risks, and thus their own vulnerabilities. This capacity and responsibility makes

understanding the socio-psychological context that surrounds adaptation planning all the more important.

1.6.3 Place

Adaptation planning in Canada has gained significant momentum at a local level (Burch, 2010; Warren & Lemmen, 2014). This has been an important first step in mobilizing Canada's adaptive response, because many of the key policy frameworks, infrastructure networks, and institutional arrangements that shape vulnerability fall under the jurisdiction of local governments. However, while many ongoing local efforts reflect a commitment to enhancing collaboration and collective action (City of Thunder Bay, 2014; The Regional Municipality of Waterloo, 2013), there is still little explicit recognition of the need to examine the socio-psychological roots of effective adaptation planning.

In particular, there is insufficient knowledge about what shapes individual and collective perceptions of climate change in a Canadian community context. There is also little known about the extent to which these perceptions make communities sensitive to risks, and thus become a source of vulnerability. This omission is not entirely unique to a climate change adaptation planning context. It reflects a longer standing history in the field of planning, wherein integrating knowledge from cognate fields like environmental and social psychology has remained a challenge (Churchman, 2002; Manzo & Perkins, 2006). However, in light of the pressing need to identify, plan and implement critical adaptations (Warren & Lemmen, 2014), this gap presents a considerable barrier to building adaptive capacity in Canadian communities.

Overcoming this challenge ought to be a priority because the knowledge that planning efforts often overlook is highly relevant to the goals of fostering effective collaboration and collective action. Work over the past decade in the fields of environmental and social psychology, as well as the field of risk perception, has provided a strong foundation for understanding the socio-psychological roots of climate (in)action. Research has shown that local frames for communicating climate risks are more salient to the public (Scannell & Gifford, 2013); that individual perceptions interact with higher order communication channels that distort collective understandings of climate risks (Dessai et al., 2004); and that our understanding of risks are rooted in a motivation to protect and perpetuate our cultural beliefs (Kahan, 2012; M.

Thompson, 2003; M. Thompson et al., 1990). Yet despite this highly relevant body of knowledge, recognition that such work might guide appropriate and effective adaptation planning remains limited.

By applying a place-based perspective to adaptation planning this research offers a bridge between the field of planning and the fields of environmental and social psychology. The fact that planners often discuss place at a neighbourhood or regional scale, while psychologists focus on individual relationships between peoples and landscapes can be a barrier to cross-fertilization (Churchman, 2002). However, the language of place is common to both audiences and offers a way to integrate important psychological perspectives into discussions about climate change adaptation planning.

Place is conceptualized here through two distinct, but related lenses. Both approaches to place have their roots in early phenomenological perspectives that define place as the meaning that individuals derive from their lived experience in social and physical environments (Relph, 1976; Tuan, 1974, 1977). That said each perspective has taken a unique theoretical trajectory since this origin, and they now define place in a distinct, yet complementary manner.

Chapter two and three explore the relationship between place and climate change in the environmental psychology tradition. In this tradition an individual's experiences in a social and physical environment are thought to contribute to an emotional bond to a place (i.e., place attachment) (Altman & Low, 1992; Lewicka, 2011; Scannell & Gifford, 2010a), and to the use of that place to define one's self-concept (i.e., place identity) (Proshansky, 1978; Proshansky et al., 1983; Rollero & De Piccoli, 2010; Uzzell et al., 2002). In this tradition it is argued that place bonds can shape a range of individual and collective behaviours, as well as attitudes towards local sustainability initiatives (e.g., renewable energy projects) (Devine-Wright, 2013; Devine-Wright & Howes, 2010; Tapsuwan et al., 2011). The techniques and tools common to this tradition offer a precise means to tap into place bonds and to relate them to other relevant constructs (Lewicka, 2011). At the same time, this quantitative approach cannot fully capture the richness of place meaning, and often treats place as a static background to human experience.

Chapter four therefore considers place through a broader critical lens that defines place as a specific instantiation (in time and space) of different flows and connections of people, capital and knowledge (Escobar, 2001; Massey, 1991; Pred, 1984). This critical perspective is often associated with the critique of overtly positive conceptions of place that were common among early phenomenological theorists (Manzo, 2003). It is also often used as a platform to resist homogenizing processes that may manifest at a community level, but that often extend well beyond what would be considered 'local' (Cresswell, 2004; Lefebvre, 1991; Manzo, 2005; C. J. Mitchell, 2013). Within this tradition the full richness of place is typically captured through a qualitative approach to research, although this richness often comes at the expense of measurement precision.

As Figure 1.2 on page 16 illustrates, these two place perspectives are best viewed as having a nested, complementary relationship. Indeed, the distinction in these bodies of place research is arguably a function of emphasis more than epistemology. While a critical place perspective focuses on ways that broader social, political and economic processes shape knowledge and networks of local actors, this framing is not inconsistent with psychological models of place. It is simply a matter of shining a light in a different area. The social, political and economic processes that are identified and discussed by critical place scholars shape the types of place connections and meanings that environmental psychologists seek to define and measure. At the same time, as Chapter two and three will demonstrate, a desire to define who we are through our relationship to place can have an equally salient influence on mobility and the unfolding of these processes. The hybrid methodological framework and mixed methods approach described in the following sections were thus adopted specifically to avoid falsely implying that one perspective is innately superior to the other. Each has its benefits and arguably the most important research on place will be that which seeks a way to bring these often-estranged traditions together.

1.7 Towards a Methodological Framework

Recent place-based discussions are contributing to a deeper understanding of the socio-psychological roots of climate change adaptation (Agyeman et al., 2009; Fresque-Baxter & Armitage, 2012; Scannell & Gifford, 2013). They illustrate how place can be used to encapsulate, even measure the intangible risks that communities face due to climate change impacts (Adger et al., 2011; Willox et al., 2012). However, much of the empirical research into this topic to date

has become tightly aligned with the traditions and techniques of the field of environmental psychology (e.g., Devine-Wright, 2013; Scannell & Gifford, 2013). There is great value and clarity in many of the models and precise measurement instruments that have been developed in this tradition, yet climate change scholar's have not fully delineated the origins of constructs like place attachment and place identity within the work of early human geographers (Relph, 1976; Tuan, 1974, 1977). The conceptualization of place within much of this literature has therefore lost touch with the phenomenological roots that are important to describing the rich and nuanced experience of place in a climate changed world. For example, no research on place and climate change to date has considered place in a critical tradition. This gap has left the place and climate change literature with little to say about questions of power, dominance, and resistance that are vital to understanding vulnerability in Canadian communities.

Following this recognition I was initially drawn to a case study approach for my research. As Flyvbjerg (2006) notes, context-dependent knowledge is central to a meaningful understanding of social phenomena, and the case study method emphasizes context as the core of the research process. When investigating phenomena that lack clear boundaries and that are beyond the control of the researcher, case studies also provide the flexibility to draw on a range of evidence (e.g. surveys, interviews, documents, etc.). They are therefore particularly well suited to clarifying key relationships and findings through data triangulation (Stake, 2006). Still, while these strengths are pertinent to the proposed research, the case study approach also requires a clear theoretical model to be developed prior to data collection (Yin, 2003).

Developing a theoretical model can help to ground a study in an established body of work. It can also support the identification of gaps in the current understanding of a social process. In the context of this research, however, there is arguably too little evidence to delineate a strong *a priori* model relating place, vulnerability and collaborative climate change adaptation. For example, we still have much to learn about why place relationships serve as a barrier to pro-environmental behaviour in some situations (Devine-Wright & Howes, 2010), and an enabler in others (Halpenny, 2010; Vaske & Kobrin, 2001). My conceptual framework has therefore focused primarily on highlighting the principles of key concepts and potential relationships between them. Perhaps more importantly, if this research established strong theoretical propositions about people's sense of place before even entering their community, it would be a

direct affront to the respect for authenticity and individuality that defines the phenomenological origins of place (Relph, 1976; Tuan, 1977).

Following this realization I was drawn to a constructivist approach to Grounded Theory as a potential methodological orientation (Charmaz, 2014; Corbin & Strauss, 2008). In this approach social phenomena are believed to arise from the shared structures we create through our intersubjective experiences (McCann & Clark, 2004a). Research is therefore viewed as a process of exploring and constructing meaning from the outcomes of this intersubjectivity (Corbin & Strauss, 2008). This makes grounded theory a suitable methodology for describing how a community's connections to the landscape might shape their relationship to climate change. It is also aligned with the weak constructivist view of vulnerability that underpins my perspective on what tools planners need to engage in effective climate change adaptation planning (Wisner et al., 2004). Finally, Grounded Theory employs inductive theory building and the constant comparative method to allow an understanding of phenomena to flow from the data collection and analysis process, not from a totalizing theory (Charmaz, 2014). It is therefore well suited to allowing the proposed project to emerge in-place.

Despite these benefits Grounded Theory offers inconsistent guidance as to how a researcher should approach a priori theoretical knowledge in the theory generating process (Glaser, 2002). The constructivist approach to Grounded Theory can allow for the use of pre-existing constructs. However, there are still epistemological debates as to whether a priori knowledge provides helpful sensitizing concepts, or leads to the forcing of data during analysis (Bowen, 2008; Charmaz, 2014). While I maintain that the literature on place and climate change is still young and knowledge of key relationships is yet emerging, I by no means free from conceptual baggage. In the current context Grounded Theory therefore also has limitations as a methodological framework.

As a standalone framework neither a pure case study nor a pure Ground Theory approach offer the tools necessary to adequately meet the research objective identified above. Taken together, though, they offer a helpful overall methodological framework. This research design takes advantage of this by adopting a hybrid case study/Grounded Theory approach. For example, Chapter four draws heavily on the techniques and epistemic frame offered by constructivist

Grounded Theory, which is inline with the critical place frame used in the chapter. This manuscript uses in-depth interviews and the constant comparative method of analysis to explore place and collaborative climate change adaptation in the context of how mobility has shaped place identity in Churchill. It presents a substantive theory that explains how the coupled processes of prioritizing, shaping and appropriation influence place identity, constrain efficacy, and limit opportunities for collaborative adaptation (Charmaz, 2014).

In contrast, Chapter three follows a case study approach to examine how tourists' connections to place and nature shape their motivations for visiting Churchill (Yin, 2003). It draws from an established literature on the psychological drivers of travel behaviour to examine travel motivations amongst polar bear viewing tourists. Using a largely quantitative survey that is analyzed following SEM techniques, it relates nature connectedness, place identity, climate change perceptions, and last chance tourism in a manner that explains how nature and place shape motivations to experience landscapes that are threatened by climate change.

Finally, Chapter two follows a similar case study approach, although its findings from a community survey are more closely related to findings from Chapter four. It adopts a mixed methods data collection and analysis approach that includes inferential and descriptive statistics to examine the structure of citizen's place attachments and identities. In doing so, place is conceptualized in an environmental psychology tradition and techniques common to this field are used to explore the relationship between these constructs and citizens' perceptions of climate change.

In this introductory chapter I have presented the practical planning context related to this research, outlined my conceptual framework, and justified my overall methodological approach. In Chapters two, three and four I present the three manuscripts that make up the body of this dissertation. I then summarize these findings and reflect on the practical relevance of this body of work in Chapter 5.

CHAPTER 2:

PLACE-BASED CLIMATE CHANGE ADAPTATION: A CRITICAL CASE STUDY OF CLIMATE CHANGE MESSAGING AND COLLECTIVE ACTION IN CHURCHILL, MANITOBA

2.0 Introduction

The Intergovernmental Panel on Climate Change's fifth working group II report demonstrates a pressing need to adapt to climate change impacts that society is already experiencing (IPCC, 2014). In a North American context, it also reinforces the recognition that local governments have taken a leading role in climate adaptation planning, largely in response to unprecedented threats to human wellbeing (e.g. Hurricane Sandy in New York, U.S.A), pressure from local citizen stakeholders, and a perceived lack of upper-tier government action (Burch, 2010; Fresque-Baxter & Armitage, 2012). The local adaptation response itself also reflects a recent theoretical shift in climate adaptation thinking (Smit & Wandel, 2006). First-wave adaptation emphasized national scale issues and conceived of adaptations through a macro-economic policy lens. This approach used adaptation policy primarily to help determine how far critical systems could bend before breaking; making adaptation a tool to define a minimum threshold for mitigation investment (Dessai & Hulme, 2004; Schipper, 2006).

Drawing on scholars like Hewitt (1998) and Sen (1982), second-wave thinking has reorganized around the concept of vulnerability to emphasize ways that local, historically contingent factors constrain adaptive capacity. Community risks due to events like flooding are therefore understood as a function of long-standing planning practices (e.g. allowing development in floodplains), not just the properties of a particular hazard. Likewise, citizens are not viewed as passive recipients of hazards, but as agents who have the ability to shape their relationship to various risks. This form of thinking is highly reflective of Pred's (1984) efforts to explain how human action and experience shape, and are shaped by, the landscape through a process of mutual exchange. Most importantly, it also emphasizes human agency as a means to protect ecological and social systems, not because it is economically rational, but because these systems have value in their own right (Eakin & Luers, 2006; Smit & Wandel, 2006).

Subsequent to this shift a critical body of work has examined the local climate risks and tangible vulnerabilities facing communities (Burton et al., 2002; Eakin & Patt, 2011). Yet as O'Brien (2009) argues, second-wave studies have done comparatively little to identify the intangible norms, attitudes, and values that shape vulnerability in more nuanced ways. Community climate adaptation research often overlooks psychological studies, which indicate that a lack of issue salience can contribute to complacent attitudes about climate change and thus suppress knowledge mobilization within citizen networks (Marx et al., 2007; Pidgeon, 2012). Findings also demonstrate that when media communications frame climate impacts as spatially and temporally remote, or appeal to fear-based messages, they can dampen public concern or produce a disempowering sense of fatalism (Lorenzoni & Pidgeon, 2006; Scannell & Gifford, 2013). Accordingly, while second-wave adaptation thinking engages society's tangible vulnerabilities, a holistic approach goes further by examining the local socio-psychological factors shaping adaptive capacity (Adger, 2003; O'Brien, 2009).

Of interest here is a body of evidence linking community vulnerability, citizen perceptions of climate change, and community connections to valued places. Scannell and Gifford (2013) recently compared global and local climate messaging and found that place-based messages are more meaningful to the public. At the same time, place is more than just a way to frame climate communications. In the context of climate adaptation planning, locally valued places are a point of commonality for diverse stakeholders who have otherwise differing worldviews. Place can therefore be a common language for understanding the realities of local climate adaptation, as well as a vehicle to help acknowledge that climate change threatens established cultural traditions and identities (Adger et al., 2011).

The emerging nexus of psychology, place and climate action is promising from a research and policy standpoint. Little is known about its practical relevance however, because studies to date have emphasized experimental designs that do not reflect the realities of daily life that shape place bonding. Even when research is carried out as a community case study, local conditions tend not to reflect dominant climate change discourses (e.g. media depictions of melting glaciers or threatened polar bears). There is thus a significant need to expand the knowledge of place-based climate adaptation by examining a case study where the lived experience of climate change provides a closer fit with scientific and mainstream media climate discourses.

To capitalize on this opportunity I selected Churchill, Manitoba as a 'critical case study' (Yin, 2003). Churchill is the polar bear capital of the world and has an economy that is supported by thousands of tourists who visit during polar bear viewing season (Dawson et al., 2010). Due to a diminishing ice pack, Churchill's polar bears and tourism economy are also viewed as the frontline of climate change within the mainstream media and scientific discourse (Regehr et al., 2007; Roach, 2007). This northern community therefore offers a rare chance to explore the impact of dominant climate communications on local climate perceptions, and to more fully understand the socio-psychological roots of community vulnerability and collective action (Adger et al., 2011). These goals are accomplished by examining two related research questions:

1. How are citizens' place attachments and place identity linked to their perceptions of local climate change?

2. Does this link have any implications for framing effective messaging and dialogue as it relates to climate change adaptation and collective action?

2.1 Literature Review

2.1.1 Linking Vulnerability to Values in Adaptation Thinking

The link between adaptive capacity and the experiential nature of citizens' perception of climate change is receiving increasing attention. By reorganizing the vulnerability discourse around values, O'Brien and Wolf (2010) challenged conceptions of authority and priority setting in the climate adaptation planning process. As O'Brien (2009) notes, second-wave adaptation thinking tends to ignore local attitudes and values. In contrast "a values-based approach to vulnerability and adaptation directs attention toward what matters to groups or societies" (O'Brien & Wolf, 2010, p. 239). This distinction offers a critique of the continued expert dominance of the adaptation discourse. It also underscores two gaps in dominant adaptation thinking that may be fostering an emerging third-wave approach to climate adaptation. First, it demonstrates how local attitudes, values, and cultural traditions can condition perceptions of what is at risk, and thus how these factors can contribute to vulnerability. Second, it suggests that these experiential factors should also be folded back into a more inclusive process for identifying a community's adaptive pathway (Wolf et al., 2012).

By embracing the experiential nature of community life, values-based adaptation appeals to a more deliberative model of planning. It is thus more consistent with the nature of local culture and identity than expert driven approaches (Adger et al., 2011). Still, there are notable challenges to implementing a deliberative approach to climate adaptation, particularly the task of facilitating dialogue around abstract values (e.g., tradition, freedom, unity) (O'Brien & Wolf, 2010). The concept of place may therefore be an important heuristic for examining local values in a climate changed world because many community values are embedded in the local landscape (Basso, 1996). A place focus offers a common language that is familiar to, and shared by, landscape professionals and citizens. Capitalizing on this language, however, requires a clearer understanding of how place is defined and measured in relation to climate change.

2.1.2 Defining Place in a Climate Changed World

The current conceptualization of place was introduced by human geographers like Relph (1976) and Tuan (1974) as the meaning that people ascribe to spaces through their lived experience. In a climate change context, place is therefore often presented as a means to examine how the public perceives local climate risks and impacts in the course of their daily lives (Fresque-Baxter & Armitage, 2012). In communities with strong connections to the land, place attachments can be a rallying point to resist demographic trends (e.g. population decline) that can reduce resilience to climate change impacts (Amundsen, 2015). Place attachments can also help communities recognize ways that a climate changed landscape will affect access to traditional hunting areas, or the sustainable supply of other country foods (Willox et al., 2012).

While work from Amundsen (2015) and Willox et al. (2012) demonstrates the benefits of a rich, qualitative approach; place-based climate research has drawn heavily from the field of environmental psychology (Marshall et al., 2012). This body of work has thus followed a tradition of quantitatively defining and measuring place connections as an attitude toward a particular landscape. Jorgensen and Stedman (2006), for example, drew on attitude theories to develop a tripartite model that describes place bonding as having unique cognitive, emotional and functional dimensions (see Figure 2.1). That said there is no consensus about the conceptualization of place (Lewicka, 2011), and recent studies have adopted a two-dimensional model that excludes place dependence (Devine-Wright, 2013; Rollero & De Piccoli, 2010). These

recent studies still examine place connections as a personal judgment of the landscape, but only consider the roles of place attachment and place identity in this process.

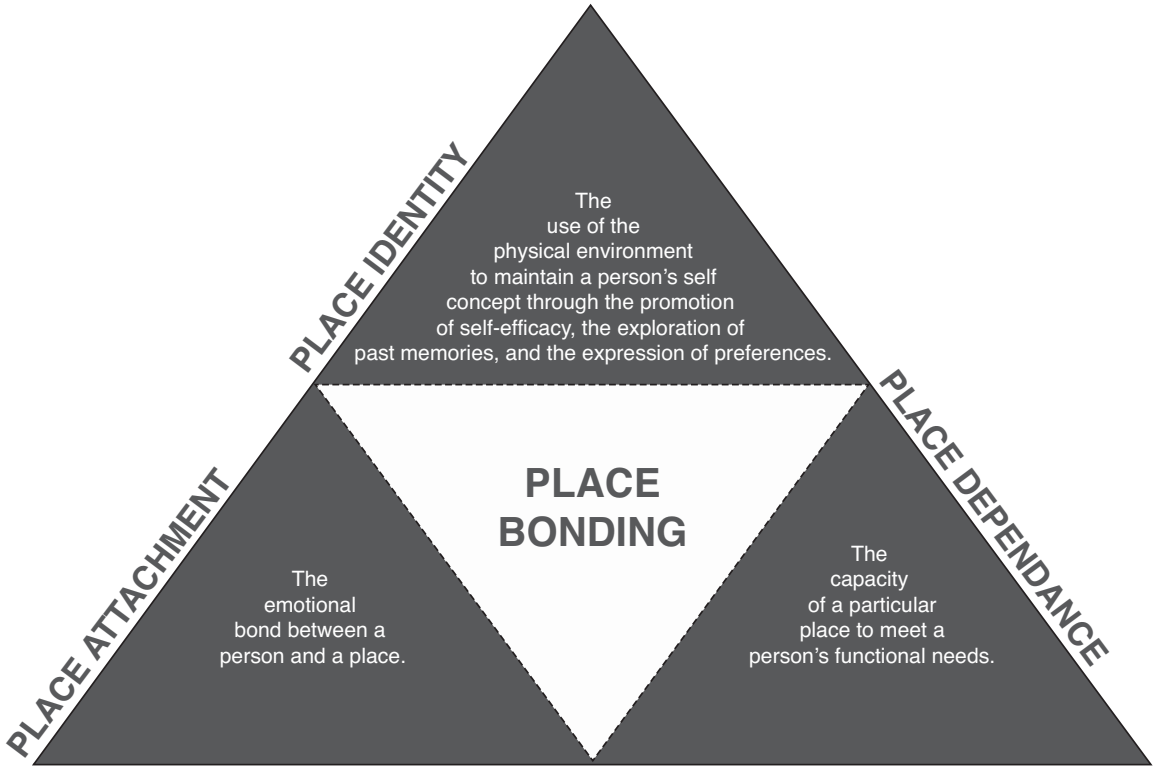

Figure 2.1 - Three-dimensional place bonding model emphasizing place attachment, place identity and place dependence.

Drawing on Tuan's (1974) notion of Topophilia, place attachment is conceptualized as an emotional connection that links a person to an environmental setting. Scannell and Gifford (2010b) have shown that place attachment involves sub-dimensions with distinct physical and social roots. Emotional connections that directly target the physical landscape, because of its aesthetic beauty for instance (i.e. natural attachments), should thus be treated separately from connections that are mediated by an embedded social meaning (i.e. civic attachments).

As a counterpart to place attachment, place identity is a cognitive construct that emphasizes an individual's dynamic sense of identity. Following Proshansky et al. (1983), it is defined by the use of the physical environment to maintain a person's self-concept through the promotion of self-efficacy, the exploration of past memories, and the expression of preferences. The

conceptualization of place identity has, in fact, changed little since its origin, with the exception of efforts to better operationalize the concept. Work has shown that Breakwell's identity process model can provide a helpful frame for examining how an individual's place identity might contribute to an enriched self-concept (Twigger-Ross & Uzzell, 1996; Uzzell et al., 2002). As Figure 2.2 illustrates, place is especially important because it can promote a sense of distinctiveness, continuity, self-efficacy and self-esteem.

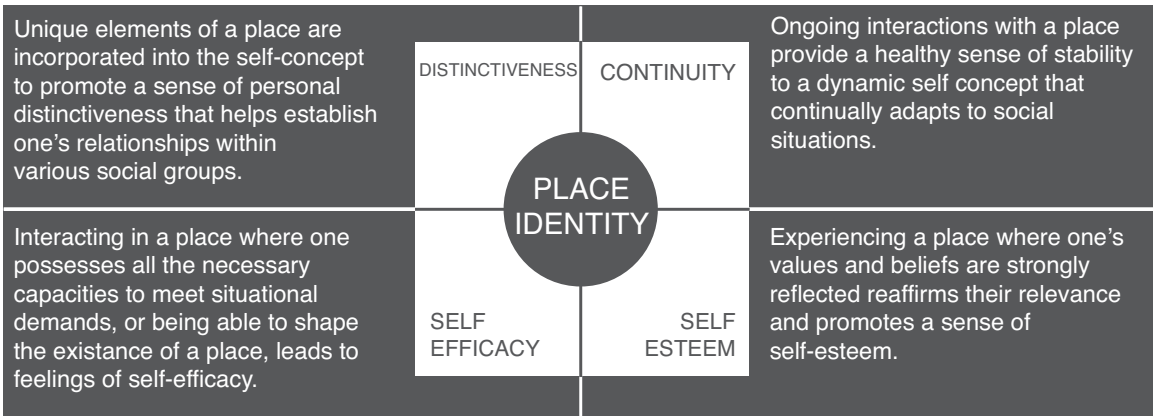

Figure 2.2 - Application of Breakwell's identity process model to the place identity construct.

Returning to the broader question of how place is defined, it is important to note that decades of social psychology research supports a dual-pathway model of perception that includes intertwined cognitive and emotional functions (Fiske & Taylor, 2008; Marx et al., 2007). The idea that person-place bonding involves distinct, yet interrelated attachment and identity processes is thus well supported. This is not to say that a two-dimensional model is the only acceptable conceptualization of place. Empirical evidence for the two place models discussed above is contradictory, and the fact that competing models exists is a testament to the maturity of the place literature. Still, when examining the interface of place and climate change, studies should acknowledge the history and assumptions that come with their chosen model. Yet, while notable exceptions exist (Tapsuwan et al., 2011), this important consideration often goes unexamined in empirical place-based climate studies.

2.1.3 Place-based Approaches to Climate Change Adaptation

Although empirical place-based climate adaptation studies are comparatively rare, the concept has received vigorous theoretical discussion (Adger et al., 2013; Fresque-Baxter & Armitage, 2012). By highlighting the unique way of life in atoll and arctic communities for

instance, Adger et al. (2011) illustrate the importance of putting threats to local attachments and identity on par with risks to economically based measures of human welfare. They argue that place offers a means to reevaluate experiential losses within current climate policy and science discourses, which tend to privilege economic valuation. In a similar discussion of managed retreat, Agyeman et al. (2009) argue that resettlement programs should plan for the mechanisms and effects of place detachment. This is not only to ensure that supports are present during transition periods, but also to understand why some people refuse to leave places despite the fact that climate change impacts threaten their wellbeing (Marshall et al., 2012).

This latter point was underscored by Willox et al. (2012), who demonstrated the impacts that climate driven landscape change can have on human well-being in a Northern Inuit community. Through interviews Willox and colleagues identified how changes in snow levels and sea ice were disrupting the community's connection to the land. They also noted that citizens recognized their diminishing physical health due to reduced access to country foods, and diminished mental and emotional health due to "climate- and environmental-induced feelings of sadness, fear, anxiety, depression, anger, and distress" (p. 545). Finally, there is the challenge of effectively implementing climate change interventions that may themselves threaten established place connections. Devine-Wright and Howes (2010) illustrated that the perceived industrial aesthetic of wind turbines can contribute to local resistance if the project is not perceived to fit the natural identity of the landscape. Accordingly, Devine-Wright (2013) suggests that an understanding of place bonding is a valuable tool for designing publically acceptable climate change interventions.

Despite its promise the place-based climate adaptation concept requires additional empirical examination (Adger et al., 2011; Agyeman et al., 2009; Devine-Wright, 2013; Scannell & Gifford, 2013). There is a dearth of community case studies examining place-based climate adaptation from a collective action standpoint. The issues that are presented in dominant climate change communications also often do not reflect the realities of communities that are selected for research. The place-based approach is also weakly integrated within the vulnerability discourse guiding adaptation thinking. There is therefore little discussion of whether place-based climate adaptation is actionable in a community-planning context. Finally, most studies have only

implicitly considered the dimensions underpinning citizens' place connections, making current conclusions about the link between place, climate change perceptions, and climate action somewhat tentative.

In this study I address these gaps by rooting the place-based approach in an emerging discourse on values-based adaptation and vulnerability. In the following sections I also present a critical case study of a community (Churchill, Manitoba) whose place connections, economy, and daily life are tied to an iconic species that dominates global climate change discourses (i.e. polar bears or *Ursus maritimus*). Finally, I utilize a systematic process to model and measure place, and demonstrate how these bonds can shape perceptions of climate change at the local scale.

2.2 Methods

2.2.1 Case Study Context

Churchill, Manitoba has a population of 810 people and is located ~1500 kilometers north of Winnipeg (Statistics Canada, 2013). The current town site extends a long history of settlement (circa 4000 B.P.) that is tied to a unique landscape at the confluence of marine, tundra and boreal biomes (see Figure 2.3). The community also possesses a rich cultural history, as the town site falls within a comparatively small intersection in the historical territories of three aboriginal peoples (the Caribou Inuit, the Sayisi-Dene, and the Maskêkô-wininiwak or Swampy Cree) and, following the establishment of a Hudson Bay trading post became home to a significant Métis population (Brandson, 2011).

Due to the lingering influence of the Hudson Bay ice pack, Churchill exhibits notably cool summer temperatures for its latitude (Gagnon & Gough, 2005). At the same time, seasonal temperatures exhibit relatively high inter-annual variability, which has contributed to debate about the significance of warming trends and changes to ice conditions in Western Hudson Bay (Dyck et al., 2007). Nonetheless, convergent evidence from weather stations and satellite data suggest that average coastal air temperatures near Churchill have in fact warmed as much as 0.5 °C per decade since 1971, and that this has led to earlier spring break up in the bay (Stirling et al., 2008).

Figure 2.3 – Examples of the tundra, marine and boreal biomes surrounding Churchill, Manitoba. Photo Credit: Mark W. Groulx

Churchill's economy is based on three main pillars: tourism, port activities and health services. Since its inception in 1997 the Churchill Regional Health Authority has seen increasing service demand and employment due to its link to small Nunavut communities (Churchill Regional Health Authority Incorporated, 2010). In contrast, the Port of Churchill has become less economically stable due in part to the loss of the Canadian Wheat Board and the rise of more opportunistic international grain companies. Recent efforts have sought to diversify exports through the port (Meredith & Norquay, 2013). However, a proposal by the port's U.S. owner (OmniTRAX) to export crude oil met significant local opposition (Goomansingh & Schroeder,

2013). Finally, Churchill's eco-tourism sector has developed an international reputation as the beluga whale and polar bear viewing capital of the world, attracting some 6000 to 10 000 visitors a year (Dawson et al., 2010).

2.2.2 Measuring Place Connections and Nature Relatedness

To develop a robust place scale I drew from previous place studies and work in the field of social psychology. I conceptualized place as a two dimensional construct that includes related place attachment and identity dimensions. Following Scannell and Gifford (2010b) I operationalized place attachment around separate natural attachment and civic attachment sub-dimensions, while place identity was operationalized around four distinct identity sub-dimensions, including distinctiveness, continuity, self-esteem and self-efficacy (Scannell & Gifford, 2010b; Twigger-Ross & Uzzell, 1996; Uzzell et al., 2002).

Due to the study focus, this place scale measured the natural environment's contribution to an individual's place connections using a five point Likert rating. To identify items for the scale I conducted a literature search, qualitative content analysis, and a quantitative pretest. This began by identifying existing place scales within prominent journals that publish quantitative place studies (e.g. The Journal of Environmental Psychology and Landscape and Urban Planning). From over 120 papers I selected twenty-two that explicitly identified items that were used to measure place attachment or identity. From these I extracted 261 survey items and subjected this list to a qualitative content analysis. This involved first developing discrete, holistic themes, and then categorizing relevant themes into the place attachment and identity sub-dimensions noted above (Miles & Huberman, 1994). After completing the coding exercise, I selected thirty items to use in a quantitative pretest. An item was included in this pretest only if:

- *its content fit the core definition of one of the six sub-dimensions;*
- *its inclusion extended the conceptual breadth of the pretest scale; and,*
- *its wording could be adapted to fit the context of the study location and purpose.*

Due to Churchill's remoteness and small population, pretesting was conducted in a separate northern community. Participants rated and commented on the clarity of each question in an online survey. The sample size for this pretest was relatively small (N=25), but the purpose was

primarily to identify ambiguous or confusing questions and to inform an overall judgment for selecting a final scale. Ultimately, I created a 14 item scale that included place identity (α = 0.73) and place attachment (α = 0.77) sub-scales with acceptable internal reliabilities (Cortina, 1993).

Finally, because I focused on connections to natural places, I also included the short version of the nature relatedness scale (Nisbet et al., 2009). While place measures landscape connections that are directed at a particular target, the nature relatedness scale measures a more general relationship with nature at a trait level. Nature relatedness is similar to other constructs such as ecological worldview, but goes further by considering emotions, experiences and a respect for "all aspects of nature, even those that are not aesthetically appealing to humans" (Nisbet et al., 2011, p. 306).

2.2.3 Measuring Climate Change Perceptions and Survey Pretesting

The remainder of the survey included open and closed-ended questions capturing perceptions of climate change in Churchill. This section of the survey was developed to reflect the literature on the socio-psychological roots of climate (in)action (Swim et al., 2011), but also local issues identified in Churchill's sustainability planning process (The Institute of Urban Studies, 2011). The climate perception questions cover a range of topics including beliefs about future climate change risks, experiences with local impacts, concern for these impacts, and barriers to action.

While the public judges risk along a wider range of dimensions than the probability and likely consequence of a hazard (i.e. risk = likelihood x magnitude) (Slovic et al., 2010), this approach is used in popular stakeholder risk assessments (ICLEI, 2010). I therefore created an analogous 5-point community-based risk perception scale that measured the probability (very unlikely to very likely) and consequence (very negative to very positive) of ten relevant climate change impacts. Belief in experiencing climate change was measured on a five-point Likert scale and concern for community impacts on a five-point scale ranging from not at all concerned to very concerned. Upon completion, the full survey was pretested in the same community as the place scale. Survey instructions, item wording, and overall survey length were modified accordingly.

2.2.4 Survey Distribution and Sampling Protocol

A pretest of an initial systematic random door-to-door sampling plan indicated that a very small sample might be obtained given Churchill's small population. To ensure a viable sample, I opted for a sampling approach that solicited participation at prominent public locations (e.g. the town complex). Recruitment was conducted in person and via posters for an online survey. A five-dollar voucher to a local coffee shop was provided to residents upon survey completion. In an effort to enhance the diversity of the sample, I adopted a rotating survey schedule for various locations and offered a mail back version of the hardcopy survey.

2.2.5 Analysis of Survey Results

Analysis procedures included both inferential statistical tests and exploratory factor analysis (EFA). While the place identity scale (**α=** 0.82), place attachment scale (**α=** 0.77), and the nature relatedness scale (**α=** 0.80) all demonstrated acceptable reliability, a Kolmogorov-Smirnov test showed that responses to the nature relatedness and place questions were negatively skewed. Inferential analyses were therefore limited to non-parametric tests.

An EFA using principal axis factoring and a direct oblimin rotation was performed on the place attachment, identity and risk perception scales. Factors were selected if their eigenvalues were greater than one and if the scree plot confirmed the factor solution (Stevens, 2009). Compared to some rules of thumb for EFA, a sample of 51 might be considered small in absolute terms. However, subject to item ratios were greater than the commonly used 5:1 threshold (Osborne & Costello, 2005). Moreover, Sapnas and Zeller (2002) argue that traditional protocol has led to sampling overkill and that samples close to fifty can be adequate. Despite this, I adopted a more conservative threshold (0.50) for accepting that an item loaded meaningfully onto a factor, and only accepted a factor if it had multiple loadings (Osborne & Costello, 2005).

2.3 Results

2.3.1 Respondent Characteristics

Efforts to capture a range of community perspectives led to a broadly representative sample in terms of gender composition (50:50 split) and median age (37) (see Table 2.1). Likewise, while the lowest educational attainment category seems to be underrepresented, this

discrepancy occurred because the sample excluded individuals under the age of 18. Due to the use of the online survey I cannot report an exact response rate. However, the sample does account for 8.2% of the total population over 18. Finally, it is worth noting the relatively high mobility within the sample. Despite a mean length of residence of 17.5 years, Table 2.1 illustrates that a large cohort has been in Churchill for five years or less. A considerable proportion of respondents (89.6%) have also lived outside of Churchill, and outside of the province of Manitoba (65.1%) before moving to Churchill.

Table 2.1 - Comparison of sample and population demographics.

Variables and Categories	[2]Sample	Population
Sex		
Female	23 (50%)	n=405 (50%)
Male	23 (50%)	n=405 (50%)
Age		
Range	18 - 77	0 – 85+
Median	37	36.3
[1]**Educational Attainment**		
No certificate, diploma or degree	2 (4.5%)	185 (28.7%)
High school certificate or equivalent	15 (34.1%)	135 (20.9%)
Apprenticeship or trades certificate or diploma	3 (6.8%)	65 (10.1%)
College, CEGEP or other non-university certificate or diploma	8 (18.2%)	140 (21.7%)
University certificate or diploma below the bachelor level	2 (4.6%)	0 (0%)
University certificate, diploma or degree	14 (31.8%)	120 (18.6%)
Length of Residence		
Less than 5 years	15 (32.6%)	
5 -10 years	7 (15.2 %)	
10 – 20 years	5 (10.9%)	
20 – 30 years	9 (19.6%)	
30 – 40 years	4 (8.7%)	
40 + years	6 (13.0%)	
Residency Outside Churchill		
No	5 (10.4%)	
Yes	43 (89.6%)	
Within Manitoba	15 (34.9%)	
Within Canada but outside Manitoba	24 (55.8%)	
Outside Canada	4 (9.3%)	

1 Data taken from the Canadian National Household Survey

2 Some categories tally to less than the total sample due to non-responses

2.3.2 Perceptions of Place, Nature and Climate Change in Churchill, Manitoba

Descriptive statistics shown in Table 2.2 illustrate a strong connection to the natural environment among participants. The mean ratings for natural attachment, place identity and nature relatedness are high, while the rating for civic attachment is notably lower. To explore these differences I ran a Friedman's Anova with Wilcoxon post-hoc tests and applied a Bonferroni correction to compensate for error inflation. The results show a significant difference in mean ratings among these scales ($X^2(3) = 27.29$; $p<.000$). More interestingly, Wilcoxon post-hoc tests and effect size calculations show that civic attachments were rated significantly lower than place identity ($z = -2.73$, $p< 0.0083$, $d = 0.55$), natural attachments ($z = -4.97$, $p< 0.0083$, $d = 0.98$), and nature relatedness ($z = -3.35$, $p< 0.0083$, $d = 0.73$), and that these differences are moderate to large in magnitude (see Table 2.3).

Table 2.2 - Descriptive statistics for place identity, attachment and nature relatedness variables.

Dimensions/Sub-dimension	M	SD
Place Identity	**3.84**	**0.70**
Continuity	*3.34*	*0.88*
Distinctiveness	*4.02*	*0.93*
Self-Efficacy	*3.81*	*0.88*
Self-Esteem	*4.21*	*0.76*
Natural Attachment	**4.18**	**0.63**
Civic Attachment	**3.37**	**0.99**
Nature Relatedness	**3.98**	**0.66**

Table 2.3 - Friedman's Anova and Wilcoxon post-hoc tests of place and nature relatedness variables.

Scale Comparison	N	Friedman's Anova			Wilcoxon Signed-Rank		Effect Size
		df	X^2_F	Sig.	Z Value	Sig.	Cohen's d
All Scales	46	3	27.29	.000			
Nature Relatedness - Place Identity	46				-1.16	0.248	0.21
Natural Attachment - Nature Relatedness	46				-2.25	0.025	0.31
Nature Relatedness - Civic Attachment	46				-3.35	0.001 (*)	0.73
Natural Attachment - Place Identity	46				-4.08	0.000 (*)	0.51
Place Identity - Civic Attachment	46				-2.73,	0.006 (*)	0.55
Natural Attachment - Civic Attachment	46				-4.97	0.000 (*)	0.98

*Bonferroni correction applied. Post-hoc test is significant at the .0083 level.

Results show that 88.2% of study participant's believe in climate change, and that 67.4% of these individuals attribute the primary cause to human activities. When asked about local

impacts, 54.9% of the total sample agreed or strongly agreed that they had experienced impacts in Churchill. Changes related to ice conditions in the bay were the most common experience reported (see Table 2.4). This echoes the scientific findings discussed above (Gagnon & Gough, 2005; Stirling et al., 2008), as sixteen comments directly noted changes in ice formation and breakup, while twelve noted changes in the local polar bear population (e.g. later migration) that are tacitly linked to ice formation. Despite these experiences participants did not exhibit extensive overall concern regarding local climate change impacts (M = 3.47), although threats to the tourism industry drew the highest concern (M = 3.80) (See Table 2.5). Interestingly, the fact that tourism might be a key area of concern reflects findings from Chotka (2004).

Table 2.4 - Experienced climate change impacts as reported by citizens in Churchill, Manitoba.

Description of category	Example from citizen	No. of Mentions
Changes in the summer season	"Hotter summer" / "Longer summer"	7
Changes in the winter season	"Milder winter" / "Different winter"	4
Changes in the spring season	"Earlier spring" / "No spring"	3
Changes in water levels	"Lower water level in river" / "Lower water"	3
Changes in snow	"Less snow (less storms too)" / "Less snow cover"	7
Changes in ice in the bay	"Longer for bay to freeze" / "Earlier thawing of bay"	16
Changes in general weather patterns	"More rain" / "Warmer, hotter weather"	8
Changes within local animal populations (excluding polar bears)	"Explosion of Snows population" / "More geese"	6
Changes within the local polar bear population	"Bears that appear skinny and hungry" / "The bay melts faster = bears in town"	12
Changes within local plant populations	"Fewer berries" / "More forest activity"	4
Other	"Forest fire" / "Road closure due to lack of freeze"	4

To examine links between place connections and perceptions of local climate change I conducted an EFA on the place and risk perception scales. Initially, the eight place identity items and six place attachment items produced separate two-factor models that explained just over 50% of the original variance in the data. Closer examination of the place identity model revealed that the CONTINUITY 1 variable was cross-loaded and had a low communality because of its unique focus on individuals' place history. A second EFA excluded this variable and all remaining identity items loaded onto a single factor. Overall, the two factor place attachment model confirmed the initial distinction between natural and civic attachments, while the single factor place identity model indicated that any difference between distinctiveness, continuity, self-efficacy and self-esteem may be too nuanced to detect.

Finally, the EFA of the climate impact risk scale also produced a two-factor model that explained 56.0% of the variance contained in the original variables. Interestingly, as Table 2.6 illustrates, the emergent factor structure suggests a divide between risks that have direct implications for human health or well-being, and those that are related to ecological changes, making them only indirectly related to human health and well-being. Moving forward I refer to factor 1 as 'anthropocentric risk' and factor 2 as 'ecocentric risk'. In all cases factor scores were saved for further analysis using a regression method.

Table 2.5 - Descriptive statistics regarding perceptions of climate change in Churchill, Manitoba.

Items	M	SD
Likelihood of Climate Impacts (α = 0.88)		
An increase in extreme weather events	4.06	0.97
An increase in flooding	3.30	1.36
Changes in the potential for local food production	3.16	1.27
An increase in forest fires	3.83	1.23
Reduced ice thickness during winters	4.36	0.93
A decline in the number of polar bears in the area	4.08	1.28
A decline in the quality of local drinking water	3.21	1.36
Impacts on human health	3.26	1.28
A decline in the health of polar bears in the area	4.03	1.28
A decline in the supply of local drinking water	3.08	1.27
Overall Perception of Likelihood of Climate Effects	***3.64***	***1.22***
[1]**Consequence of Climate Impacts** (α = 0.82)		
An increase in extreme weather events	2.01	0.66
An increase in flooding	1.99	1.01
Changes in the potential for local food production	2.73	1.29
An increase in forest fires	1.87	0.93
Reduced ice thickness during winters	1.88	1.12
A decline in the number of polar bears in the area	1.46	0.86
A decline in the quality of local drinking water	1.93	1.03
Impacts on human health	2.20	1.06
A decline in the health of polar bears in the area	1.57	1.02
A decline in the supply of local drinking water	1.88	0.93
Overall Perception of the Impact of Climate Effects	***1.95***	***0.99***
Concern for climate change (α = 0.75)		
Concern for the community's tourism industry	3.80	1.07
Concern for the community's shipping industry	3.21	1.29
Concern for the community's access to food	3.75	1.19
Concern for the community's cultural traditions	3.46	1.20
Concerned for the community's opportunities for social relationships	3.12	1.23
Overall Concern for Climate Effects	***3.47***	***1.20***
Experience with climate change		
Personal experience with climate change in Churchill	***3.38***	***1.24***

1 Original scale recoded for analysis. Reported scale ranges from 1 (very negative) to 5 (very positive).

Table 2.6 - Exploratory factor analysis of the climate risk perception scale.

Items	Factor 1 Loadings	Factor 2 Loadings
Drinking Water Supply	0.919	
Flooding	0.660	
Drinking Water Quality	0.653	
Local Food Production	0.578	
Human Health	0.557	
Forest Fires		0.807
Polar Bear Population		0.693
Extreme Weather		0.649
Polar Bear Health		0.575
Ice Thickness		0.575
Initial Eigenvalues	4.930	1.519

2.3.3 Linking Perceptions of Place and Nature with Perceptions of Local Climate Change

Building on the EFA results I conducted a correlational analysis that attempted to link participant's perceptions of climate change to their connections to place and nature (see Table 2.7). There were several significant relationships within the range of local climate change perceptions, and between these perceptions and participants' place connections. Reported experiences with climate change impacts in Churchill correlated weakly with participants' overall natural attachment ($r_s = 0.310$, $p < .05$) and sense of place identity ($r_s = 0.307$, $p < .05$), and moderately with their sense of civic attachment ($r_s = 0.468$, $p < .001$), but did not correlate with their sense of nature relatedness. Reported experiences with climate change impacts were also not significantly associated with heightened anthropocentric or ecocentric risk perceptions, or a greater concern for local impacts. Anthropocentric ($r_s = 0.306$, $p < .05$) and eco-centric ($r_s = 0.383$, $p < .01$) risk perceptions were, however, both significantly associated with concern for local impacts, although only weakly. Finally, experiences with climate change and the associated levels of concern and risk perceptions do not seem to have precipitated actions to become more resilient to future impacts. Only three participants suggested they have acted recently to prepare for climate change. Those who were not taking action reported the perceived uncertainty of future climate impacts, and an inability to identify appropriate preparatory actions as the primary barrier (See Table 2.8).

Table 2.7 - Correlations for place, nature relatedness and climate change perception variables.

	1	2	3	4	5	6	7	8
1. Nature Relatedness	-	0.516 (***)	0.365 (*)	0.695 (***)	0.256	0.092	0.077	-0.082
2. Natural Attachment		-	0.528 (***)	0.647 (***)	0.310 (*)	0.039	0.132	-0.093
3. Civic Attachment			-	0.432 (**)	0.468 (***)	0.099	0.120	0.210
4. Place Identity				-	0.307 (*)	0.193	0.195	0.097
5. Experience					-	0.195	0.273	0.057
6. Anthropocentric Risk						-	0.489 (***)	0.306 (*)
7. Ecocentric Risk							-	0.383 (**)
8. Concern								-

*Correlation is significant at the .05 level
**Correlation is significant at the .01 level
***Correlation is significant at the .001 level

Table 2.8 - Citizen reported barriers to taking action to prepare for climate change.

Barrier	No. of citizens who noted barrier
I am unsure what local climate change impacts to expect	25
I have limited access to products and services that could help me prepare for the impacts of climate change	9
I have other priorities in my life that are more important than preparing for the impacts of climate change	12
No one else I know seems to be making changes to prepare for the impacts of climate change	6
I am already sufficiently prepared for the impacts of climate change	3
Making changes that can prepare me for the impacts of climate change would cost too much	3
I think the science of climate change is too uncertain to act upon	11
I am unsure what actions can help make me more prepared for the impacts of climate change	14
I feel like any action I take will not really make me more prepared for the impacts of climate change	13
Other	3

2.3.4 Mobility, Place and Climate Change Perceptions

To further explore how perceptions of place and nature might shape respondents' views of local climate change I reexamined the issue focusing on the high mobility in the sample. In

particular, I was interested in a low overall rating for the place continuity items within the overall place identity scale (see Table 2.2 above). A Friedman's Anova test confirmed that the original place identity sub-dimensions were in fact rated significantly different ($X^2(3) = 37.52$; $p < 0.001$), and Wilcoxon post-hoc tests confirmed that place continuity was rated significantly lower than any sense of distinctiveness ($z = -4.37$, $p < 0.0083$, $d = 0.75$), self-esteem ($z = -4.61$, $p < 0.0083$, $d = 1.05$) or self-efficacy ($z = -3.09$, $p < 0.0083$, $d = 0.53$). Again, effect size calculations showed these differences to be moderate to large (Table 2.9).

Given this difference, I correlated the mean ratings for the original place identity sub-dimensions and other related constructs against a range of demographic variables, including residence length. As Table 2.10 shows, there were significant correlations between expected relationships like household income and education level ($r_s = 0.614$, $p < 0.001$), and between nature relatedness and various place constructs. There were not, however, any significant correlations between demographics and the place variables.

Table 2.9 - Friedman's Anova and Wilcoxon post-hoc tests of place identity sub-dimensions.

Scale Comparison	N	Friedman's Anova			Wilcoxon Signed-Rank		Effect Size
		df	X^2_F	Sig.	Z Value	Sig.	Cohen's d
All Sub-dimensions	46	3	37.52	.000			
Distinctiveness - Continuity	46				-4.37	0.000 (*)	0.75
Self-esteem - Continuity	46				-4.61	0.000 (*)	1.05
Self-efficacy - Continuity	46				-3.09	0.002 (*)	0.53
Self-esteem - Distinctiveness	46				-1.69	0.091	0.22
Distinctiveness - Self-efficacy	46				-1.91	0.056	0.23
Self-esteem - Self-efficacy	46				-3.31	0.001 (*)	0.49

*Bonferroni correction applied. Post-hoc test is significant at the .0083 level.

It is possible that strong place connections can develop quickly in a place as unique as Churchill, and that this can occur independent of time, education or income level. Still, studies suggest that length of residence should be a determinant of place bonding (Lewicka, 2011). As such, I examined this relationship further. Findings presented in Table 4.10 show that there was a weak but significant negative correlation between nature relatedness and length of residence ($r_s = -0.312$, $p < 0.05$), indicating that Churchill's newer residents tend to have a stronger general connection to nature. At the same time, nature relatedness was only weakly correlated with civic attachment ($r_s = 0.366$, $p < 0.05$), but was moderately correlated with natural attachment (r_s

= 0.537, p< 0.001) and strongly correlated with place identity (r_s = 0.613, p< 0.001). More interestingly, the Wilcoxon post-hoc tests showed (Table 4.3 above) that despite the fact that participants' natural attachments (z = -2.25, p> 0.0083, *d* = 0.31) and place identity (z = -1.16, p> 0.0083, *d* = 0.21) were directed at a specific target, they were not rated significantly different from connections to nature in general.

Table 2.10 - Correlations for place, nature relatedness, and demographic variables.

	1	2	3	4	*5*	*6*	*7*	*8*	9	10	11
1. Nature Relatedness	-	0.537 (***)	0.366 (*)	0.613 (***)	0.132	0.552 (***)	0.408 (**)	0.646 (***)	0.138	.006	-0.312 (*)
2. Natural Attachment		-	0.556 (***)	0.725 (***)	0.254	0.668 (***)	0.428 (**)	0.748 (***)	0.211	0.169	-0.071
3. Civic Attachment			-	0.505 (***)	0.452 (**)	0.443 (**)	0.272	0.403 (**)	0.073	0.109	0.006
4. Place Identity				-	0.474 (**)	0.809 (***)	0.812 (***)	0.821 (***)	0.119	0.084	-0.081
5. Continuity					-	0.265	0.247	0.145	0.074	0.241	0.082
6. Distinctiveness						-	0.565 (***)	0.619 (***)	0.005	0.077	-0.152
7. Self-efficacy							-	0.570 (***)	0.028	-0.163	-0.050
8. Self-esteem								-	0.247	0.155	-0.125
9. Educational Attainment									-	0.614 (***)	-0.041
10. Household Income										-	0142
11. Residence Length											-

*Correlation is significant at the .05 level
**Correlation is significant at the .01 level
***Correlation is significant at the .001 level

Taken together, these findings provide a more nuanced explanation as to why residence length was not significantly related to natural attachment or place identity. Churchill is a relatively isolated community and has developed a known reputation as an eco-tourism destination. Accordingly, it may be that Churchill is attracting citizens with a strong affinity for nature (i.e. high nature relatedness), and that this affinity becomes a catalyst to a rapid place bonding process. In connection with the results discussed above, these findings also suggest that while place bonding may develop rapidly for individuals who are highly in tune with nature, there is no guarantee this will lead to greater concern for, or action toward, addressing climate change. Below, I draw on the notion of issue salience to explore the implications of these findings for local climate adaptation planning.

2.4 Discussion

Connections to the local landscape and nature in general were high among participants, while civic attachments were significantly weaker. These results were examined from a mobility perspective and findings showed no association between participant's place connections and length of residence. While a recent review of the literature supports the existence of such a link (Lewicka, 2011), McCool and Martin (1994) show that residence length and attachment can in fact be quite weakly correlated ($r = 0.20$).

By contrast, results did indicate a significant negative correlation between length of residence and nature relatedness, and significant moderate to strong correlations between the nature relatedness construct and various place attachment and identity dimensions. This evidence suggests that in a community as unique as Churchill, the influence of time on place bonding may be more complex than the current literature acknowledges. More precisely, I argue that a natural identity that is reinforced by Churchill's eco-tourism reputation is attracting individuals who are highly in tune with nature, and that this trait becomes a springboard to developing a rapid connection to place.

With respect to perceptions of local climate change, an exploratory factor analysis revealed that participants conceptualized local climate risks around separate anthropocentric and ecocentric dimensions. This divide reflects a vast literature on environmental attitudes, and fits well within a discourse that shows how and why individuals conceptualize themselves as distinct from ecological systems (Eder, 1996; S. C. Thompson & Barton, 1994). What is most interesting, however, is that these risk perceptions were only weakly associated with an increased concern for local impacts. Moreover, given the scale of change that scientists anticipate in Churchill, and citizen's recognition of current impacts, concerns for climate change and attempts at adaptive actions seem markedly low (Regehr et al., 2007).

Overall, there was no strong evidence to suggest that participants' nature relatedness, natural attachments, civic attachments or place identity were associated with heightened concern for local climate change, or even an increased perception of climate change risks. Initially, this appears to refute the potential efficacy of a place-based climate adaptation approach. As posited, robust connections should be expected to heighten sensitivity to place threats, and to

lead to place protective attitudes and actions (Devine-Wright, 2009). Still, while this is not currently happening in Churchill, I argue that a deficiency in climate messaging, particularly in terms of message salience, may partly be to blame.

While citizens with stronger place connections were not more concerned about climate change, they were more likely to suggest that they had experienced climate change within the local environment. Moreover, these self-reported experiences with climate impacts were actually most strongly associated with social connections to the landscape (i.e. civic attachments). This occurred even though in absolute terms citizens' possessed a stronger sense of place identity and natural attachment. The research design used here does not permit the conclusion that civic attachments have *sensitized* certain Churchill citizens to the local impacts of climate change. That said local climate adaptation efforts might benefit from recognizing that citizens' *sensitivity* to local climate change impacts is associated most strongly with their connection to the social meanings that are embedded in the natural landscape. In Churchill, this means that discussing how future climate conditions might shape local traditions in gathering country foods, or how changing snow conditions might shape recreational access to the landscape, may be more effective at generating action than emphasizing economic or biophysical losses.

In the context of this case study the social basis for experiencing climate change impacts may provide common ground for discussing the threat that climate change poses to local values in Churchill. However, it also offers insight into the current gap between experienced impacts and concern for future climate conditions among participants. Dominant scientific and media coverage of climate change presents a message that is, by and large, a relevant account of the current and potential changes facing Churchill. Moreover, findings suggest that many participants actually share in the scientific view that changes in sea ice and polar bear health are among the current impacts (Stirling et al., 2008). Yet despite the fact that external and internal narratives of experienced impacts have partially converged, questions remain as to why concerns for future climate risks are still at odds.

Studies illustrate that the public tends to temporally discount environmental risks (Weber, 2010), which may partly explain the low sense of concern among participants. I argue, however, that this particular disconnect is also related to a lack of issue salience in current climate

communications, although not in a traditional sense. To date, issue salience in a climate change context has emphasized the temporal and spatial congruity between a given message and a target audience (Lorenzoni & Pidgeon, 2006; Scannell & Gifford, 2013). Yet despite the fit between current messaging and local conditions in Churchill, the wealth of communications that are propagated through visiting researchers, media outlets, environmental advocates, and even eco-tourists, are not generating heightened concern and action. As findings suggest that experiences with local climate change are intertwined with civic attachments, I argue that concern and action remains suppressed partly because the messaging that citizens receive does not capture the community's unique social values. In other words, climate messaging has not been made socially salient.

The idea that the social experience of climate change can be rooted in the landscape is an important and novel finding in the context of place-based climate research. It also suggests that there may be a worrisome blind spot in current efforts to foster collective climate action. In particular, by overlooking shared social experiences, science-first communications may be undermining community buy-in and opportunities to build trust. This is not to say that scientifically derived climate futures are not critical to local climate adaptation discussions. It is simply an acknowledgement that they are often incongruent with the experiential nature of local climate change narratives, and that their use too early in a planning process can be disempowering for those who lack expert knowledge. To create the necessary space for an active citizenry in local climate change discourses, a more effective communication strategy may be to focus first on shared experiences in valued places.

2.5 Conclusions

This study capitalized on Churchill, Manitoba's unique relationship to the climate change issue to investigate the efficacy of place-based climate adaptation. It represents an important advance in current understandings of this emerging concept, but its contributions must be considered in light of several limitations. First, while Churchill's unique relationship to the climate change issue provided an ideal case study, the community's population limited the overall sample size. Further research is therefore required to verify and contextualize these early findings. Second, the apparent link between nature relatedness, place and mobility discovered here is enticing, but must be examined in future studies to explore these tentative

findings. Finally, while the field of environmental psychology offers an established and revealing methodological toolkit for examining the relationship between place and climate change, it is not well suited to exploring the rich stories and histories that are the basis for a community's place connections. Future studies examining this topic from a critical place perspective, and using a naturalistic approach, would thus add depth to the findings uncovered here.

In spite of these limitations, this much needed community based analysis provides novel evidence that connections to local landscapes are a social platform for experiencing climate change impacts. It also illustrates key conceptual linkages between values-based and place-based approaches to climate adaptation, and offers landscape professionals a recognizable and actionable frame for exploring how local values can shape community vulnerability. Findings illustrate that message salience in a climate change context is a question of social fit, as well as spatial and temporal congruity. This suggests that even local messages may better spur meaningful actions if they embrace social frames.

More broadly, this study's use of the place-based perspective reinforces the idea that adaptation thinking must ask a different question than it has in the past. Rather than asking how entire systems or communities can be made more resilient to climate change impacts given the best scientific knowledge, it highlights the importance of asking how scientific knowledge might be integrated with local experiences to help direct "attention toward what matters to groups or societies" (O'Brien & Wolf, 2010, p. 239). Importantly, such an approach may prove to be more inclusive than current expert-driven models, and as a result may legitimize community values, encourage a stronger civic culture based on capacity building, and engender a collective will to work toward critical climate adaptations.

CHAPTER 3:

MOTIVATIONS TO ENGAGE IN LAST CHANCE TOURISM IN THE CHURCHILL WILDLIFE MANAGEMENT AREA AND WAPUSK NATIONAL PARK: THE ROLE OF PLACE IDENTITY AND NATURE RELATEDNESS

3.0 Introduction

Individuals with a suitable spirit and the requisite finances now enjoy unprecedented mobility and access to tourism destinations. Places that were once the exclusive realm of adventurous jetsetters are now part of a global capital and cultural exchange system that can link almost any traveller to any destination. This exchange system can produce meaningful benefits, like poverty reduction or the exchange of cultural traditions (de la Barre & Brouder, 2013; UNWTO & SNV, 2010, p. 264). However, there is also a growing concern regarding the sustainability of this highly consumptive tourism paradigm (Hall et al., 2013).

Hall et al. (2013) present the challenges of such extensive mobility in light of climate change. They argue that climate change impacts driven by emissions from the tourism sector may actually offset economic gains from local tourism growth. In this sense, the extensive carbon producing travel required to access many destinations means that the growth of tourism economies is not always self-reinforcing. Indeed, an emerging body of work on last chance tourism (LCT) illustrates how travel to destinations that are perceived to be vulnerable to climate change might even be part of a self-destructive cycle (Dawson et al, 2010). In this study, I explore LCT from a socio-psychological perceptive, and examine the intersection of place, nature and travel motivations as means to more fully understand this tourism phenomenon.

Little is known about the foundations of LCT behavior. However, it is accepted that the media plays a central role in perpetuating notions of climate vulnerability, and thus in shaping LCT motivations (Lemelin et al., 2010; Olsen et al., 2012). In this regard LCT is a rather unique adaptation to climate change that highlights the unequal adaptive capacities of actors within the tourism sector (Hall et al., 2013; Weaver, 2011). Supported by a closer coupling of air transport policy and tourism development (United Nations World Tourism Organization, 2014a), travellers enjoy increasing access to tourism opportunities across a diverse range of destinations (United

Nations World Tourism Organization, 2014b). Between 2000 and 2013 these opportunities translated into rapid growth in visitor arrivals in both advanced economies (from 674 million to 1.087 billion arrivals, or a 61.3% increase) and emerging economies (from 255 million to 505 million arrivals, or a 98% increase) (United Nations World Tourism Organization, 2014c). Coupled with unprecedented access to information, this access to destinations means tourists have a relatively high adaptive capacity in the face of climate change, at least in terms of their ability to realize travel motivations (e.g. through destination substitution) (Hall, 2011).

By contrast, operators and tourism dependent communities are often highly vulnerable to climate change (Lemieux & Eagles, 2012). Some tourism stakeholders (e.g. cruise ship tourism) may be able to adjust their resource catchment areas to follow shifting climate conditions (Lamers et al., 2012), but most are place bound and have limited adaptation options. This trend varies by destination, and even by operator (Scott et al., 2008). However, as a whole the tourism industry has been characterized as being comparatively unprepared to respond to climate change impacts (Scott, 2011). On the ground, the face of this vulnerability is as diverse as the destinations in question. It ranges from the inability of some ski tourism operators to adjust to decreasing snowfall (Scott et al., 2008), to the risks beach tourism operators face from sea level rise and extreme weather (Hyman, 2014), which literally threaten to erode their tourism niche.

The divide between high (i.e. tourists) and low (i.e. destinations) adaptive capacities suggests that understanding how travel motivations are shaped by climate change will become increasingly important to effective and equitable climate adaptation within the tourism sector. Shifting travel motivations will alter global travel patterns and redistribute economic resources derived from tourism at a global level (Scott et al., 2004). Understanding travel motivations is therefore a central part of a tourism management paradigm that not only acknowledges existing climate change risks, but that adapts to these risks in a manner that does not undermine a destination's desirability.

Reduced visitation to LCT destinations could be viewed as having the benefit of reducing carbon production. However, many LCT destinations coincide with some of the world's most valued protected areas, where funding is often predicated on visitation (e.g. Alberta's Athabasca Glacier site in Jasper National Park). Designing adaptations that balance conservation goals and

visitor experiences is therefore important to the sustainability of protected areas agencies (Eagles et al., 2002). Understanding LCT motivations in this broader context (rather than simply discouraging visitation) also presents an added opportunity, because the natural and cultural assets in protected areas facilitate not only viewing and appreciation, but also public education on environmental issues (Lemieux et al., 2011).

The LCT phenomenon represents a precise intersection of issues related to travel motivations, the psychology of place, and the management of vulnerable landscapes. It is therefore a unique crucible in which to explore climate change adaptation in a context that is local, but also inherently defined by connections between a myriad of locales. The concept of LCT as a distinct travel behaviour was originally identified in studies of polar bear and cruise ship tourism in polar regions (Lemelin et al., 2010). This emerging trend has received pointed discussion exploring how the media shapes perceptions of vanishing destinations (Olsen et al., 2012), as well as the ethical dimensions associated with carbon intensive travel to these vulnerable sites (Dawson et al., 2011; Lemieux & Eagles, 2012). Despite a growing critical discourse, however, there is scant empirical evidence examining LCT as a distinct travel motivation, especially within a parks and protected areas context. Little is known about how LCT motivations interact with other travel motivations, and what socio-psychological dimensions drive this unique form of tourism. As many ecotourism and LCT attractions are inherently housed within protected areas, the current dearth of information related to LCT motivations also threatens the effective management of many sites that house the world's most valued natural and cultural endowments.

Beyond the LCT literature the tourism field has a rich history of examining the socio-psychological drivers of travel behavior (Driver, 1976; Manfredo et al., 1996). In this study I draw on this history and analyze surveys of polar bear viewing tourists in Churchill, Manitoba. To do this I adopt a structural equation modeling (SEM) approach and examine the three related research questions presented below. Consistent with the broader SEM literature, the following literature review examines the core constructs considered in the model (i.e., last chance tourism, place identity, and nature relatedness) and considers these constructs in light of the goal of understanding LCT motivations.

1) Is a desire to consume vanishing landscapes a distinct and identifiable motivation among polar bear tourists in Churchill, Manitoba?

2) If a LCT motivation exists, how does it relate to other motivations for travel?

3) If a LCT motivation exists, how are tourists' place identity and nature relatedness associated as underlying dimensions, if at all?

3.1 Literature Review

3.1.1 Last Chance Tourism

The recent IPCC Working Group II AR5 report strongly acknowledges that society is already facing pervasive climate change impacts (IPCC, 2014). That said LCT is only indirectly driven by such impacts. The catalyst for tourists' desire to consume vulnerable destinations lies at the interface of their perception of place bound climate risks, and the communication of these risks in the media (Lemelin et al., 2010). LCT is therefore driven by a nexus of burgeoning global mobility, the discussion of irreversible climate change impacts in the media, and the promotion of niche tourism markets (Dawson et al., 2011). In other words, the sensationalist reporting of climate change risks, not the direct experience of impacts, drives perceived place vulnerability and LCT demand.

While the drivers of LCT involve complex societal perceptions that may or may not correspond to real-world conditions, green house gas (GHG) emissions related to LCT are very real. Dawson et al. (2010) measured the emissions of polar bear viewing tourists in Churchill, Manitoba and estimated that each visitor generates between 1.54 to 8.61 t/CO_2, which contributes to a total of 20,892 t/CO_2 annually. As a result of these emissions LCT tends to perpetuate the impacts of climate change on already vulnerable destinations. Among other things, in Churchill this means contributing to the later formation of sea ice, which has implications for the individual and population level health of polar bears (Stirling & Derocher, 2012). This paradox, wherein travellers contribute to damaging impacts in the very place they value enough to visit, raises complex ethical questions about LCT (Dawson et al., 2011). It also suggests that there is a moral and practical obligation for research to ask whether the current cycle of decline can be disrupted, or at least made to contribute to some broader societal good.

One opportunity is to use tourism experiences to promote behavioural change by illustrating how the drivers of climate change (e.g. transportation) link to impacts at LCT destinations. In addition to fostering a greater understanding of the dynamics of climate change, this approach is consistent with research showing that place attachments can be related to an increase in pro-environmental behaviour (Halpenny, 2010; Vaske & Kobrin, 2001). That said, there are challenges to translating visitation into climate change ambassadorship (Lemelin et al., 2010). Travellers have access to host a of destination alternatives that may well meet their needs just as well as the place in question (Hall, 2011). The link between place experience and behavioural change is therefore far from guaranteed. It is also questionable whether the experience of impacts will even motivate desired perceptions. As Eijgelaar et al. (2010) showed in a survey of Antarctic cruise tourists, opinions of climate change can remain unaltered (77% of participants), or worse, shift toward the belief that climate change is not as bad as previously thought (14% of participants). Similarly, Maher et al. (2010) surveyed a small group (n= 39) of cruise tourists and found that while a slim majority (54%) agreed that cruise tourism contributed to climate change, the contribution was often viewed as a small impact or not wide spread.

The fact that LCT motivations are driven by the climate change discourse, not impacts *per se*, makes it a unique travel adaptation in a climate change context. It is not a coping strategy meant to address the *uncertainty* that a *particular destination* can deliver on desired climatic conditions (e.g. hot sunny weather) (Scott et al., 2004). It is a response to the perceived *certainty* that a *particular experience* will be inaccessible in the future. In addition to developing a clearer scientific understanding of climate change impacts in rare and vulnerable destinations, an essential research priority is therefore to examine tourist perceptions of climate driven landscape change, and their desire for an LCT experience. The following sections explore the constructs of place identity and nature relatedness (NR) as one foundation for such a research endeavor.

3.1.2 Tourism and Place Identity

More work is needed to assess the climate change ambassador concept in an LCT context (Maher et al., 2010). As LCT motivations are unlikely to be the only reason for travel, it is particularly important to explore interactions with other motivations. Likewise, if visitation is to be used to promote behavioral change, a fundamental understanding of what factors underpin

the LCT motivation itself is essential. In this regard, visitors connections to place may be an important area of focus, as research indicates that they can develop a "rich and meaningful appreciation of place, even when they have been at that destination for a very short time" (Stewart et al., 1998, p. 264). While no known empirical studies have examined this in an LCT context, Dawson et al. (2011) offer an important insight. Delineating the intersection of place rarity and vulnerability, they argue that last chance tourists have a desire to distinguish themselves as elite travellers by connecting to pristine and authentic natural landscapes. This suggests that a need to construct one's identity in relation to natural places may be a key motivational influence.

A popular approach to researching identity, place, and tourism is to evaluate changes to the physical identity of places brought on by tourism (Gu & Ryan, 2008; Simone-Charteris et al., 2013). However, while often described as place identity research, this use of the place concept illustrates the conflation of place identity and regional identity (Hough, 1990). Regional identity relates to the distinctness of a particular locale, while place identity emphasizes a dynamic process wherein physical and social environments are used to construct and maintain an individual's self-concept (Oyserman et al., 2011; Proshansky et al., 1983). As part of the place bonding process, I therefore consider place identity to be the cognitive counterpart to an individual's emotional connection to the landscape (i.e. place attachment) (Rollero & De Piccoli, 2010). Moreover, I follow Proshansky et al. (1983) by defining place identity as the use of the physical environment to maintain a person's self-concept through the promotion of self-efficacy, the exploration of memories, and the expression of preferences. Although somewhat nuanced, the difference between these concepts can be illustrated by way of an example. To describe how the development of beachfront resorts shapes the physical form of a coastal community is to evoke the concept of regional identity. In contrast, to suggest that members of the same community may no longer see this area (post-development) as an important part of who they are illustrates a change in their place identity.

While not LCT focused, there is a healthy body of work on place identity and tourism. Two early studies explored place meaning among whitewater recreationists. Findings indicated that visitors with higher levels of specialization (e.g., more experienced, more skilled, etc.,) also had stronger connections to place (Bricker & Kerstetter, 2000). The same authors showed further

that place can be a platform for overcoming personal challenges, developing self-esteem, and expressing self-efficacy (Bricker & Kerstetter, 2002). This level of connection between place and recreational activities highlights how the concept might be used in management activities related to tourism, for instance by helping to identify knowledgeable stakeholders for involvement in planning processes.

More recently, Wynveen et al. (2012) argued that scholars need to distinguish more clearly between the meaning that individuals find in places, and the resulting person-place connection. Exploring tourism at the Great Barrier Reef Marine Park, they found that visitors not only drew on the pristine environment to express and confirm their identity, but that this process strengthened their place bonds. Although not focused on climate change, these studies highlight the benefit of designing key adaptations, particularly those with a physical manifestation (e.g. a sea wall), with a regard for place identity. This frame can help ensure adaptations not only address key vulnerabilities, but do so in a manner that does not undermine visitors' ability to realize their travel motivations.

These studies illustrate how expressing one's identity through place can shape travel motivations; but this is, of course, a dynamic process. As Mlozi and Pesämaa (2013) illustrate, visitors' motivation to reaffirm their identity (e.g. through novel cultural experiences) can diminish with increasing destination familiarity. Accordingly, as visitors' psychological drive to consume places evolves, it is likely that motivations for travel will also change. Visitors looking to simply bolster their place identity by connecting to a notable and threatened landscape may be less likely to make a return visit than those who develop an affective connection with a destination. Beyond this, it must also be recognized that place itself is not a static background to our experience. Examining canoe recreation in a Northern Canadian landscape for instance, Mullins (2009) showed how place identity is formed through movement among and between places, thus highlighting how landscapes shape place identity by influencing mobility and lived experience.

3.1.3 Tourism and Nature Relatedness

In contrast to place identity, NR describes the link between a person and nature in general. Accordingly, Mayer and Frantz (2004) argue that the NR concept provides a deeper view of sustainability than past research paradigms because it transcends the local. They follow Aldo Leopold by describing NR as an "individual's experiential sense of oneness with the natural world" (Mayer & Frantz, 2004, p. 504). Importantly, while it is similar to concepts like the New Ecological Paradigm, NR is a broader construct because it considers individuals' affective connections to all aspects of nature (Nisbet et al., 2011).

There are two primary ways that NR can shed light on the LCT phenomena. First, it can help to explain the nuances of why visitors seek out vulnerable natural landscapes. There is a strong recognition that experiencing natural environments and possessing a connection to nature can be critical to mental and spiritual well-being (Russell et al., 2013). Studies have found a consistent link between NR and numerous aspects of well-being; including feeling a sense of purpose in life (Cervinka et al., 2012), possessing a fulfilled social life (Howell et al., 2011), and experiencing happiness (Zelenski & Nisbet, 2014). From this perspective NR may provide an important lens to examine how LCT motivations interact with more general motivations to visit natural landscapes.

The NR construct is also popular in pro-environmental behavior (PEB) research. For Nisbet et al. (2009) it offers an additional layer to the traditional model of attitudes and beliefs as drivers of PEB. These authors illustrated that as a trait level factor, NR captures non-rational aspects of decision making that are often left out of behavioral models. Gosling and Williams (2010) also showed that NR can help explain complex land management decisions, for instance, why some farmers are more likely to conserve natural vegetation on their farms. From a LCT perspective, the NR-PEB link is salient because studies have shown that experiential educational programming can foster a greater sense of NR (Liefländer et al., 2013; Theimer & Ernst, 2012). In efforts to turn last chance tourists into climate change ambassadors, NR may therefore be a vehicle that allows visitors to transfer the experiential and affective outcomes of their trip into other aspects of their daily lives.

While there is a growing critical discourse examining LCT, there are still many unknowns regarding this distinct travel adaptation. This includes the extent that LCT is a central motivation for travel, as well as what drives the perceived need to consume disappearing landscapes. There is also very limited understanding of the implications of this emerging phenomenon for visitor attractions, visitation patterns, and the overall quality of visitor experiences within parks and other forms of protected areas. Based on recent evidence linking place, nature and travel behavior, I adopt a structural equation modeling approach to examine place identity and NR as potential drivers of LCT. Figure 3.1 illustrates a general model of this relationship. Consistent with the LCT literature to date, it proposes that perceptions of climate change mediate the influence of NR and place identity on LCT motivations.

The results of this study are organized in order of the research questions presented above, but also around the presentation of this model. After presenting sample and visitation characteristics, the results of an exploratory factor analysis that identifies a distinct LCT travel motivation (as well as two additional travel motivations) are presented (see Section 3.3.2). Following this, I examine a measurement and structural model that links this LCT factor to visitors' sense of place identity and nature relatedness (see Sections 3.3.3 and 3.3.4 respectively). Table 3.1 documents the six hypotheses that are tested via this model. Before presenting these results I describe the methods followed in this study, including a review of best practices related to structural equation modelling.

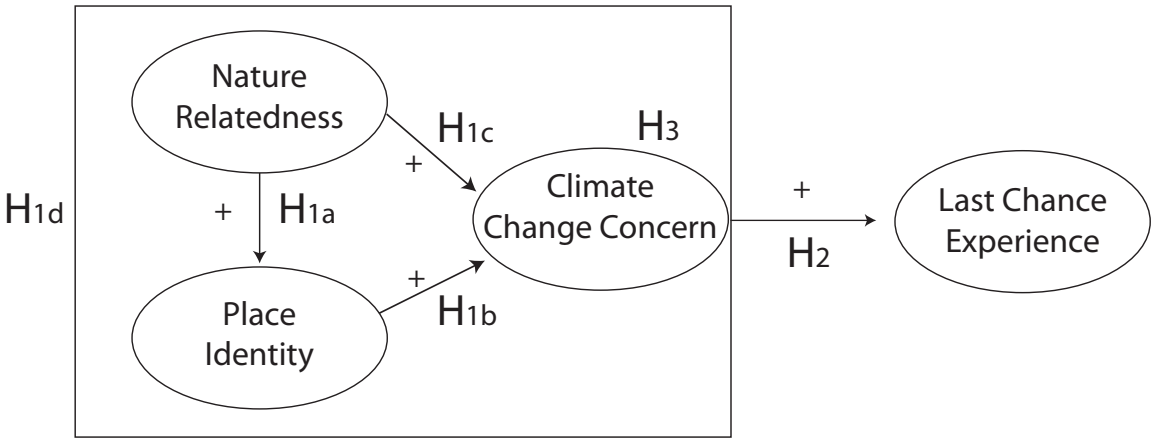

Figure 3.1 - General model relating nature relatedness, place identity, climate change concern and motivation for last chance tourism.

Table 3.1 - Research hypotheses related to the general model of last chance tourism motivation.

Hypothesis	Variables	Statement
H1a	Nature relatedness → Place identity	Tourists' nature relatedness will have a direct positive influence on their place identity
H1b	Place identity → Climate Change Concern	Tourists' place identity will have a direct positive influence on their concern for climate change
H1c	Nature relatedness → Climate Change Concern	Tourists nature relatedness will have a direct positive influence on their concern for climate change
H1d	Nature relatedness → Climate Change Concern	Tourists' nature relatedness will have an indirect positive influence on their concern for climate change
H2	Climate Change Concern → LCT motivation	Tourists concern for climate change will have a direct positive influence on their motivation for last chance tourism
H3	Climate Change Concern (Full Mediation)	Tourists' concern for climate change will fully mediate the influence of place identity and nature relatedness on their motivation for last chance tourism

3.2 Methods

3.2.1 Study Site Context

Despite its size (population of 810) and remote location (~1500 kilometers north of Winnipeg), Churchill, Manitoba has an international tourism reputation for polar bear viewing, beluga whale watching, and birding. The community's economy, however, is based on three pillars that include tourism, but also an internationally significant port and regional health center (Churchill Regional Health Authority Incorporated, 2010; Meredith & Norquay, 2013). If Churchill and the surrounding protected areas (i.e. The Churchill Wildlife Management Area (WMA) and Wapusk National Park) are marked by any distinguishing factor, it is perhaps their striking sense of diversity. The ecotone landscape in the region traces the transition between three distinct biomes (i.e., tundra, marine and boreal) and throughout the year it is home to a range of species including caribou, moose, polar bears, beluga whales, and over 250 bird species. The town site has also been home to a diversity of peoples, including aboriginal groups (the Caribou Inuit, the Sayisi-Dene, the Maskêkô-wininiwak or Swampy Cree, and a more recently a significant Metis population), European settlers, the Canadian and U.S. military, and currently a temporary labor force with ties stretching from the U.K. to Australia and into Southeast Asia (Brandson, 2011).

Although Churchill's tourism industry is diversifying, polar bear viewing remains the primary economic generator with an estimated 6,000-10,000 annual visitors (Dawson et al., 2010). Historically, polar bear viewing was limited to access via tundra vehicles that operate on a

remnant military road network within the Churchill WMA (Manitoba's largest WMA: managed by Manitoba Conservation and Water Stewardship), and for one operator within the boundary of Wapusk National Park (managed by Parks Canada Agency). However, as the Churchill WMA and Wapusk National Park protect the largest known polar bear maternity denning grounds in the world (Parks Canada, 2007), spring tours have offered a chance to experience polar bear mothers and cubs during denning season. Despite this alternative experience visitation still peaks in autumn when the polar bears begin a period of fasting as they await ice formation in Western Hudson Bay, and are thus accessible by tundra vehicle.

Figure 3.2 - An interior and exterior view of a tundra vehicle used to transport polar bear viewing tourists. Photo Credit: Mark W. Groulx

3.2.2 Data Collection

To facilitate the construction and evaluation of a LCT model, survey data were collected from visitors during the peak 2013 polar bear viewing season (i.e. October and November). Due to the sensitive and proprietary nature of tourism operators' client lists, it was deemed infeasible to construct a complete sample frame that would allow for random sampling. Survey solicitation was therefore carried out on an approach basis similar to that described by Ramkissoon et al. (2013). To foster ecological validity sampling was conducted when tourists were able to effectively reflect on their polar bear viewing experience. This primarily involved soliciting participation at three prominent tourist locations in Churchill, which also enhanced respondent diversity. Locations included the Churchill Northern Studies Centre (CNSC), the Parks Canada Visitor Centre, and the Churchill Airport. Potential respondents were informed about the study purpose, the self-administered survey procedure, and the survey incentive (equivalent

to five Canadian dollars). Adult tourists were invited to complete either a hardcopy survey, or an electronic copy on an iPad (if a tablet was available).

3.2.3 Survey Design

To support the study purpose and SEM approach the survey was primarily composed of multi-item scales measuring four distinct latent constructs, including place identity, NR, climate change concern, and travel motivations. Due to the unique context of LCT, a travel motivation scale was adapted from the Recreation Experience Preference (REP) instrument (Manfredo et al., 1996). An explicit effort was made to incorporate a wide range of domains from the REP, while also selecting items that reflect what is known about LCT visitors. As Table 3.2 shows, the final 18-item scale incorporated eight of the REP domains and includes *one additional domain that asks LCT related questions.

Table 3.2 - Travel motivation scale illustrating original REP domains.

Original REP Domain	**Adapted item used in travel motivation scale**
Achievement/Stimulation	To have a story to tell
Family Togetherness	To be with family and friends
Similar People	To feel a connection with others who value nature
Learning	To experience a sense of discovery
	To learn about polar bears
	To experience places I have read about
	To learn about the impacts of climate change on polar bears
Enjoy Nature	To be close to nature
	To be able to view an easily accessible polar bear
Introspection	To reflect on life
	To develop personal, spiritual values
	To reflect on how humans are impacting the environment
Escape Physical Pressure	To experience solitude
	To experience natural quiet
Teaching-Leading Others	To share what I have experienced with others
*Last Chance Experience	To view an iconic feature that may disappear from the area in the future
	To feel connected to an environment that may not exist in the future
	To feel like I was one of the last people to view polar bears here

Tourists' connections to the landscape were measured at two separate levels. General connections to nature were measured using the NR scale (Nisbet et al., 2009). Although several related instruments exist, the NR scale was selected because its six-item version (i.e., NR-6) limited the threat of response fatigue. The NR construct also provides a broader measure than other instruments because it captures affective, cognitive and physical aspects of the human-nature relationship (Nisbet et al., 2009; Nisbet & Zelenski, 2013).

Place identity measures a more targeted relationship with a particular landscape, and the use of the physical environment to maintain a healthy self-concept (Proshansky et al., 1983; Uzzell et al., 2002). Studies relate place identity to other place constructs in a variety of ways (Lewicka, 2011). However, recent work examining place in the context of environmental perception, as well as convergent evidence from the field of social psychology, indicates that place identity is the cognitive counterpart to an affective construct (i.e. place attachment) in a two-dimensional place bonding process (Fiske & Taylor, 2008; Rollero & De Piccoli, 2010). The creation of the place identity scale was informed by an extensive literature review, qualitative content analysis, quantitative pretest, and a final item review. A more detailed description of the process that informed the creation of this scale is presented in Chapter two.

As Figure 3.1 illustrates, the model assumed that LCT motivations would be mediated by visitors' perceptions of climate change impacts. A scale that measured distinct, yet related aspects of climate change concern was developed from the existing literature on climate change perception (Gifford, 2011; Weber, 2010). In an attempt to be as robust as possible, items captured a visitor's belief that climate change is occurring, their concern for climate change, and their perceived experience with actual impacts.

3.2.4 Survey Design: Common Method Bias

Due to the extensive use of self-reported surveys, common method bias is a legitimate threat to the validity of many studies in the tourism field (Hult et al., 2006). To guard against this threat a number of procedural remedies were incorporated in the study and instrument design (Podsakoff et al., 2003). First, data were collected from participants during their visit, when they would be most in tune with any sense of place identity related to Churchill. Second, each scale in the anonymous survey included a statement to reduce potential social desirability effects. Third, response scales were varied where possible. Fourth and finally, the survey separated items measuring the criterion variable and predictor variables onto different pages and, where possible, separated scales with a set of questions about simple trip logistics (e.g. how long is your current visit to Churchill?).

3.2.5 Model Development

Prior to developing the measurement model, the 18 items in the visitor motivation scale were subjected to an exploratory factor analysis to determine if a desire to engage in a *last chance experience* was a distinct motivation. The EFA employed principle axis factoring and a direct-oblimin rotation, which is an appropriate rotation method for psychological variables that are expected to correlate (Fabrigar et al., 1999). Factors were accepted only if their eigenvalues were greater than 1 and if the screeplot confirmed the solution. Due to the moderately large sample size, an item was considered to contribute meaningfully to a factor if its loading was above 0.40 (Stevens, 2009). Finally, factor scores were calculated using a regression method to facilitate correlations with other latent constructs.

Following SEM best practice I tested two competing models that were versions of the same general model illustrated in Figure 3.1 (Hoyle, 2011; Hult et al., 2006). The primary structural model treated NR as a precursor to developing a sense of place identity, testing the notion that a stronger connection to nature predisposes an individual to developing a strong sense of place identity in a natural setting. The alternative model treated NR and place identity as constructs that influence climate change concern independently. Estimation of the measurement and structural models was done in two separate steps using the AMOS software package (v.21) and a Maximum Likelihood method.

In their review of tourism SEM studies Nunkoo et al. (2013) noted that explicit recognition of normality considerations was a particular weakness. As data preparation steps in this study revealed that several scale indicators were leptokurtic, which data transformations did not resolve, the analysis employed bootstrapping to provide a robust indication of standard errors for path coefficients (Hoyle, 2011; Kline, 2011). Amos' bootstrapping function also facilitated the examination of direct and indirect effects of the predictor variables in the model.

3.3 Results

3.3.1 Sample and Visitation Characteristics

The primary data collection period resulted in 238 completed questionnaires, representing an overall response rate of 71%. An additional 67 surveys were collected throughout the remainder of the viewing season from visitors to the CNSC, producing a total sample of 306. Data collected from participants had a very low percentage of missing or unengaged responses, and Little's MCAR test indicated that absent values were not missing in a systematic manner. Accordingly, only 11 participants were removed during data cleaning. After cleaning all scale variables contained less than one percent missing values, which were imputed using the Maximization-Expectation method (Kline, 2011). Levels of Chronbach's alpha for the scales that measured visitor motivations ($\alpha = 0.87$), NR ($\alpha = 0.81$), place identity ($\alpha = 0.73$), and perceptions of climate change ($\alpha = 0.75$) were all above 0.70, indicating acceptable internal reliability (Cortina, 1993).

Similar to a previous survey of Churchill polar bear tourists (Dawson et al., 2010), the majority of visitors surveyed were female (67.2%), had at least a bachelor's degree (75.5%), and despite a wide range of ages (see Table 3.3), were predominately older-adults (M = 63). This was the first visit to Churchill for nearly all participants (94.9%), and most visitors were non-Canadian citizens (76.5%). Despite the distance travelled to reach Churchill, the vast majority of visitors stayed seven nights or less (93.6%), and many stayed for three nights or less (30.8 %).

Tourists scored quite highly on the NR scale (M=4.2, SD= 0.67), and demonstrated a lower sense of place identity (M=3.7, SD=0.77). The vast majority of tourists agreed that climate change was occurring (89.2 %), and most respondents took the position that climate change is caused primarily by human influences (74.6 %). Most individuals also took the position that they have personally experienced climate change impacts (75.5 %), and 82.7% were either moderately or extremely concerned about climate change (M=4.26, SD=1.01).

Table 3.3 - Sample and visitation characteristics.

Demographic	Categories	[1]Sample N = 295
Sex		n = 287
	Female	193
	Male	94
Age		n = 263
	Range	18 - 88
	Median	63
Educational Attainment		n =286
	No certificate, diploma or degree	3
	High school certificate or equivalent	26
	Apprenticeship or trades certificate or diploma	11
	College, CEGEP or other non-university certificate or diploma	20
	University certificate or diploma below the bachelor level	10
	University certificate, diploma or degree at the bachelor's level	89
	University certificate, diploma or degree above the bachelor's level	127
Citizenship		n = 289
	Non-Canadian	221
	Canadian	68
First Visit		n=295
	Yes	280
	No	15
Last Visit (Yrs)		n=15
	Range	1-44
	Median	17
Trip Length (Nights)		n=295
	One to three nights	91
	Four to seven nights	185
	Eight to ten nights	14
	More than ten nights	5

1 Some categories tally to less than the total sample due to non-responses

3.3.2 Motivations for Travelling to Churchill, Manitoba

After removing cross loaded items and items that did not load significantly on a factor, twelve visitor motivation items loaded on three separate factors in the EFA. This three-factor model explained 54.1 % of the variance in the original data. Factor one included five items that indicated a desire to use Churchill's remote natural environment as a means to foster self-reflection. This factor was titled *natural reflection*. Factor three included three items that all

related to becoming part of Churchill's ongoing story, and was titled *joining the story*. Most importantly for this study, Factor two included four items that all converged on a desire to experience Churchill and its polar bears as a result of the recognized threat they face due to climate change. This factor was titled *last chance experience* (See Table 3.4).

Table 3.4 - Exploratory factor analysis of visitor motivation scale.

Items	Factor 1 Loadings	Factor 2 Loadings	Factor 3 Loadings
To experience solitude	0.874		
To experience natural quiet	0.807		
To develop personal spiritual values	0.710		
To reflect on life	0.698		
To feel a connection with others who value nature	0.415		
To feel connected to an environment that may not exist in the future		0.879	
To view an iconic feature that may disappear from the park in the future		0.773	
To reflect on how humans are impacting the environment		0.599	
To learn about the impacts of climate change on polar bears		0.569	
To have a story to tell			0.834
To share what I have experienced with others			0.500
To experience places I have read about			0.432
Initial Eigenvalues	4.934	1.594	1.289

As expected, Table 3.5 shows that these motivational dimensions were significantly correlated with one another at a moderate level. The natural reflection and last chance experience dimensions were also weakly correlated with NR and moderately correlated with place identity. Finally, the joining the story motivation was weakly correlated with place identity, but not correlated with NR.

Table 3.5 - Correlations between visitor motivations, place identity and nature relatedness.

	Place Identity	Natural Reflection	Last Chance Experience	Joining the Story
Nature Relatedness	0.469 ***	0.290 ***	0.330 ***	0.096
Place Identity		0.473 ***	0.471 ***	0.390 ***
Natural Reflection			0.512 ***	0.526 ***
Last Chance Experience				0.455 ***
Joining the Story				

*Correlation is significant at the .05 level
**Correlation is significant at the .01 level
***Correlation is significant at the .001 level

3.3.3 Last Chance Tourism Motivations in Churchill, Manitoba: Measurement Model

Following recommendations for a two-step SEM process, I estimated measurement and structural models separately. This involved incorporating the *last chance experience* variable into a confirmatory factor analysis along with the three other latent variables (i.e. NR, place identity, and climate change concern). Due to a potential link between national identity and place identity, I tested the measurement model for construct-level metric invariance. The measurement model was fit to different groups across gender, education and citizenship variables and the unstandardized factor loadings proved to be equivalent across all groups (Kline, 2011).

In addition to procedural remedies used to control for common method bias, I ran two diagnostic tests. A Harman's single factor test identified four factors within the unrotated factor solution and none explained a majority of the covariance in the measurement model. While this suggested that common method bias was not present, concerns have been raised about the sensitivity of the single factor test (Podsakoff et al., 2003). Accordingly, I also followed a common latent factor approach as described by Hult et al. (2006). The common latent factor improved the fit of the model only marginally, and the significance levels for loadings on the latent factors did not change. These results further confirmed that there was not strong evidence of common method bias.

Finally, before constructing the structural model I assessed the reliability and validity of the measurement model. Initially the average extracted variance (AVE) for the place identity and last chance experience latent constructs was narrowly below the 0.50 threshold. After removing three items with low factor loadings from the model, the AVE for all latent variables met the 0.50 requirement, the squared correlation of each pair of constructs was less than these AVE values, and the composite reliability of all constructs was above 0.70, illustrating acceptable levels of reliability and construct and discriminant validity (Hult et al., 2006). Figure 3.3 shows the final measurement model.

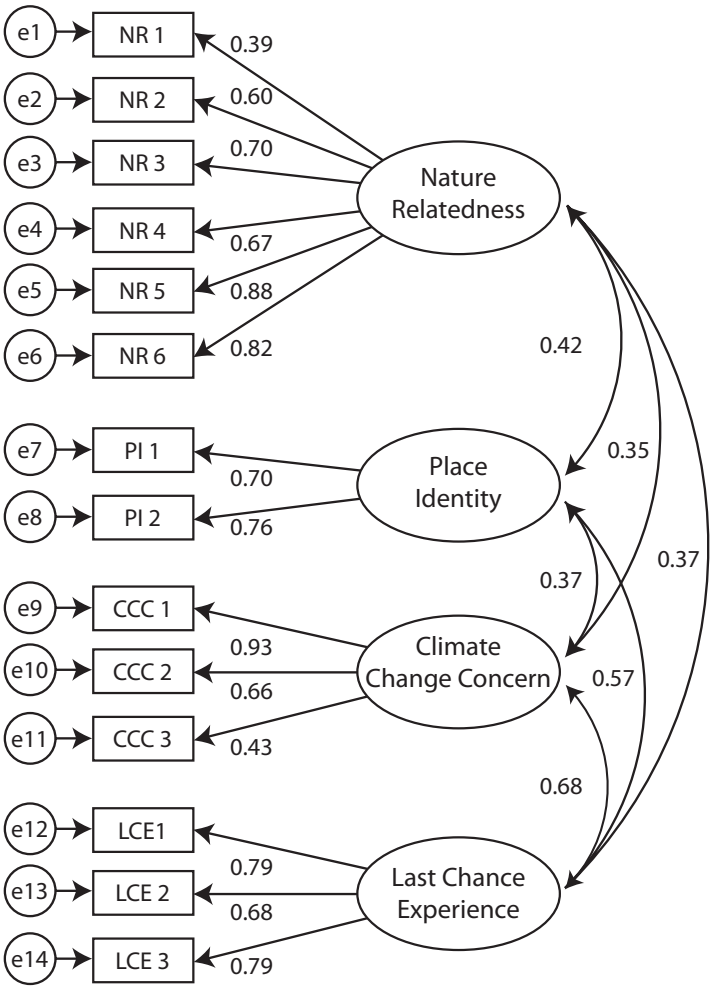

Figure 3.3 - Measurement model linking place identity, nature relatedness, climate change concern and last chance experience.

As different measures of model fit are sensitive to various data properties (e.g. sample size or non-normality), best practice is to report multiple model fit indices (Nunkoo et al., 2013). The Chi-square statistic is a commonly reported measure of fit, and ideally should be non-significant. The Chi-square statistic for the measurement model ($X^{2} = 146.10$, $p<.01$) was significant. However, the statistic is known to return significant results due to large sample size (Ramkissoon et al., 2013), and is not recommended for samples as large as the one obtained for this study (i.e. above 200) (Hult et al., 2006). Due to the Chi-square statistic's sensitivity, scholars have developed a number of additional indices. These include the goodness of fit index (GFI), Tucker Lewis index (TLI), comparative fit index (CFI), standardized root mean residual square (SRMR), and root mean square error of approximation (RMSEA) (Kline, 2011).

Although 0.90 is often used as a lower bound for acceptable fit when referencing the GFI, CFI and TLI, the measurement model approached the more stringent threshold of 0.95 for both the GFI (0.934) and TLI (0.937), and exceeded the 0.95 threshold for the CFI (0.951), indicating good model fit (Hoyle, 2011; Hu & Bentler, 1999). In contrast to these indices, the standardized root mean residual square (SRMR) evaluates fit by examining the absolute covariance residual, with a value of zero indicating perfect fit. The SRMR (0.055) for the measurement model was below Hu and Bentler's (1999) recommended 0.08 threshold, again supporting the fit of the measurement model. Similar to SRMR, the root mean square error of approximation (RMSEA) indicates closer fit as the value approaches zero. The value for the measurement model (RMSEA = 0.060) again indicates a close fitting model.

3.3.4 Last Chance Tourism Motivations in Churchill, Manitoba: Structural Model

After validating the measurement model I tested the primary structural model that assumed a mediated relationship between NR and place identity. Figure 3.4 illustrates the full structural model along with the standardized regression weights and significance of direct effects within the model. As expected, the Chi-square statistic for the primary model ($X^{2 =}$ 173.81, $p<.01$) was again significant. Despite a modest drop in the values of the GFI (0.921), TLI (0.917), and CFI (0.934), and modest increase in values for the SRMR (0.068) and RMSEA (0.069), however, all fit indices still indicated an acceptable fit to the data (Hoyle, 2011; Hu & Bentler, 1999).

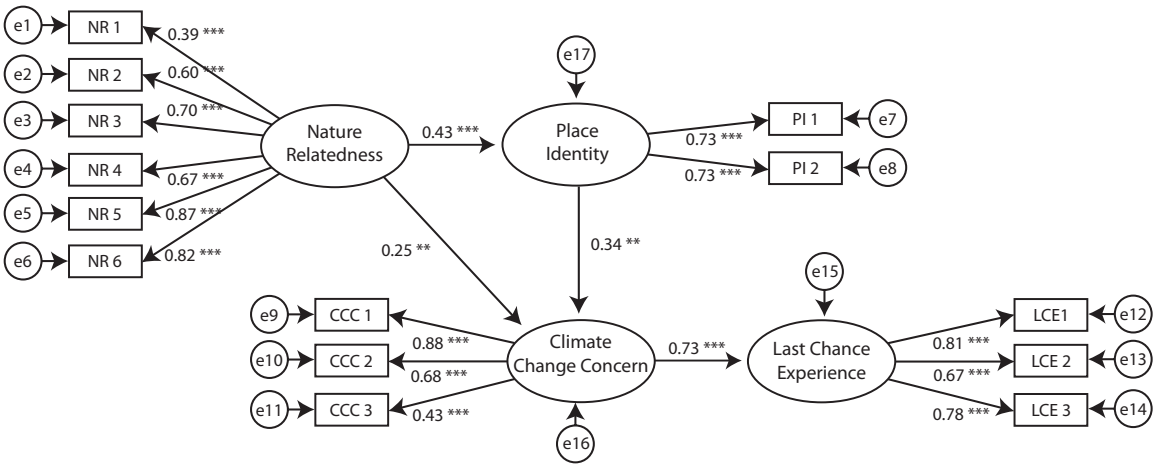

Figure 3.4 - Primary structural model linking place identity, nature relatedness, climate change concern and last chance experience.

By comparison, a test of the alternative model that assumed NR and place identity influence climate change concern as independent constructs was a poor fit for the data. The Chi-square statistic proved to be significant ($X^2 = 207.59$, $p<.01$), but more importantly the values for the CFI (0.912), GFI (0.906) and RMSEA (0.078) were all only marginally within the range of an acceptable fitting model. Moreover, both the SRMR (0.110) and TLI (0.892) indicated that the alternative model was a poor fit for the data. When considered in concert the poor fit of this alternative model and the fit values for the primary structural model provide convergent support for a mediated relationship between NR, place identity and climate change concern, and the subsequent influence of these constructs on a motivation to engage in last chance tourism (see Table 3.6).

Table 3.6 - Summary of model fit indices for the structural models.

Model	Chi-square	CFI	GFI	TLI	RMSEA	SRMR
Primary	173.81 (p<.01)	0.934	0.921	0.917	0.069	0.068
Alternative	207.59 (p<.01)	0.912	0.906	0.892	0.078	0.110

Having confirmed the fit of the primary structural model, path relationships within the model were tested using Amos' bootstrap function. These results are summarized in Table 3.7. With the exception of hypothesis $\mathbf{H_3}$, the significance of the standardized regression weights on the direct and indirect paths supported all initial hypotheses about the relationships between NR, place identity, climate change concern and last chance experience. This includes a direct influence of NR ($\mathbf{H_{1c}}$: $\beta = 0.246$, $p<0.01$) and place identity ($\mathbf{H_{1b}}$: $\beta = 0.335$, $p<0.01$) on climate change concern, and a direct link between NR and place identity ($\mathbf{H_{1a}}$: $\beta = 0.431$, $p<0.001$). There was also a weaker indirect relationship between NR and climate change concern ($\mathbf{H_{1d}}$: $\beta = 0.145$, $p<0.001$), and a direct link between climate change concern and the last chance experience construct ($\mathbf{H_2}$: $\beta = 0.730$, $p<0.001$). Finally, NR ($\beta = 0.285$, $p<0.001$) and place identity ($\beta = 0.245$, $p<0.01$) both had a significant direct influence on last chance experience, which led to the rejection of hypothesis $\mathbf{H_3}$.

Table 3.7 - Standardized regression weights and significance values for direct and indirect paths in the primary structural model.

Relationship	Estimate	Lower CI	Upper CI	pvalue	Hypothesis	Supported
Nature Relatedness → Place Identity	0.431	0.310	0.535	0.000 ***	**H1a:** Tourists' nature relatedness will have a direct positive influence on their place identity	**Yes**
Place Identity → Climate Chance Concern	0.335	0.150	0.507	0.003 **	**H1b:** Tourists' place identity will have a direct positive influence on their concern for climate change	**Yes**
Nature Relatedness → Climate Chance Concern	0.246	0.101	0.386	0.005 **	**H1c:** Tourists' nature relatedness will have a direct positive influence on their concern for climate change	**Yes**
Nature Relatedness → Climate Chance Concern	0.145 †	*0.061*	*0.233*	0.000 ***	**H1d:** Tourists' nature relatedness will have an indirect positive influence on their concern for climate change	**Yes**
Climate Chance Concern → Last Chance Experience	0.730	0.623	0.824	0.000 ***	**H2:** Tourists' concern for climate change will have a direct positive influence on their motivation for last chance tourism	**Yes**
Climate Chance Concern (Full Mediation)					**H3:** Tourists' concern for climate change will fully mediate the influence of place identity and nature relatedness on their motivation for last chance tourism	**No**
Nature Relatedness → Last Chance Experience	0.285	*0.185*	*0.385*	0.000 ***		
Place Identity → Last Chance Experience	0.245	*0.101*	*0.399*	0.003 **		

* relationship significant at the .05 level
** relationship significant at the .01 level
*** relationship significant at the .001 level
† indicates an indirect relationship

3.4 Discussion

This study sought to validate the existence of a LCT motivation among polar bear viewing tourists in Churchill, Manitoba. It also considered what other travel motivations might be related to LCT, and whether visitors' place identity and sense of NR might help explain this travel motivation. The results of an EFA that examined a range of visitor motivations identified a distinct LCT motivation. As Table 3.4 shows, the two items that loaded most strongly on this last chance experience factor both identified a motivation to consume aspects of Churchill's 'vulnerable' landscape. Importantly, the other two items suggested that a drive to learn about

society's role in climate change, and in this case its impact on Churchill's polar bears, was also part of the last chance experience.

Using a novel methodological approach this study confirms previous studies that argue LCT is a distinct motivation to visit Churchill (Lemelin et al., 2010), and by extension the protected areas established to conserve polar bears. While this finding is substantial, it is important to emphasize that other influencing factors were also evident in the motivation to visit the Churchill region. The last chance experience variable explained only 10.0% of the variance in the original motivation scale within the EFA. By contrast, the majority of the variance (37.5%) was explained by the related natural reflection factor, which captured tourist's desire to reflect on their values in a remote natural environment.

The items that loaded the strongest on this factor emphasized the experience of solitude and natural quiet, but also a desire to share natural values with others. The perception of solitude in this case seems to be framed more in relative terms (i.e. Churchill's general remoteness), rather than as an absolute absence of people. Perhaps not surprisingly, this motivation was significantly correlated with visitors' sense of place identity (r= 0.47) and NR (r= 0.29). This finding extends existing knowledge of LCT motivations. Previous studies have discussed the fact that last chance tourists often do not recognize the ethical dilemma inherent in their travel choice (Dawson et al., 2011), and have shown that last chance travel does not necessarily increase a concern for climate change (Eijgelaar et al., 2010). This study shows that LCT motivations exist against a backdrop of other equally salient reasons for visiting disappearing destinations, which provides context to these previous findings.

Results also validate the limited earlier work identifying last chance tourists as being predominantly older (M=63) females (67.2%) who are well educated (75.5% with a Bachelor's degree) (Dawson et al., 2010; Eijgelaar et al., 2010). Results also fit with previous findings indicating that the Churchill experience is novel for most tourists (94.9% first time visitors) (Lemelin & Smale, 2006). Finally, while results reflect findings from Dawson et al. (2010) by showing that the average trip length for polar bear tourists is five days, they also show that a large proportion of visits were of short duration (30.9% were three days or less).

This somewhat unexpected finding is interesting in the context of how increasingly accessible air travel may contribute to the growth of LCT opportunities. Short-stay travel is a recognized economic opportunity for many tourism markets (Dwyer et al., 2009), and innovations that reduce travel cost and time are seen as a way to facilitate short-stay visitation. In the Churchill context tour agencies are already promoting a single day all-inclusive polar bear tour that offers visitors "a **one day** jet excursion from Calgary, Edmonton or Saskatoon to polar bear country in Churchill, Manitoba" (original emphasis) (Classic Canadian Tours, 2014).

The potential for an increase in short stay visitation is an important aspect of LCT that has gone unexamined to date. The notion of a ***one day*** *jet excursion* further underscores existing critiques about the ethics of LCT. Short-stay visitors are, after all, contributing less economically to local businesses per ton of carbon being produced. Perhaps more importantly, any increase in this travel pattern could contribute to an imbalance in local tourism economies by offering more economic control to already influential stakeholders (e.g. airlines and large operators). It is therefore important to ask whether a trend toward short-stay visitation could both foster a regressive pattern of sustainable tourism development, and/or stunt adaptive behavior by limiting competition and innovations within local tourism markets (Hall et al., 2013).

Taken together results suggest that Churchill's remote northern landscape, inclusive of the protected areas established in the region, has become an important place for tourists to explore and reaffirm personal natural values. It could be inferred that the contrast that Churchill's unique landscape offers compared to home is an important component in this. However, the natural reflection factor specifically identified a need to connect with people of similar values. As such, the limiting factor for value reaffirmation for these individuals is not just a missing connection to a physical environment. What also seems to be lacking is an opportunity for social reaffirmation, or what Zavestoski (2003) refers to as "safe social spaces" that encourage a connection between self and nature.

As discussed, a distinct desire to have a last chance experience correlated with a need for natural reflection (r= 0.512), visitor's place identity (r= 0.470) and their sense of NR (r= 0.330). Results from the SEM analysis, however, shed additional light on how visitor's identity shaped this LCT motivation. The initial theoretical model assumed that any influence of the place

identity and NR variables on participants' motivation for a *last chance experience* would be fully mediated by their concern for climate change. However, while place identity and NR were significantly linked to climate change concern, which was in turn linked LCT motivations, this relationship was not fully mediated. Findings indicate that place identity and NR had both a direct and indirect influence on LCT motivations. It is possible that the climate change concern scale only captured part of visitors' concern for the climate issue, leading to this residual influence. However, as a motivation to engage in LCT was related to other reasons for travelling to Churchill (i.e. *natural reflection*), I argue that this additional relationship is further evidence of the multiple, complexly related factors that shaped tourists travel decisions.

One final comment is warranted regarding these findings and the potential of LCT to foster climate change ambassadors. Past studies have found that sustainable tourism experiences do not necessarily create a greater awareness or concern for climate change (Eijgelaar et al., 2010; Maher et al., 2010). However, results from this study present a different perspective. In particular, the EFA suggests that for participants in this study, the motivation to engage in LCT includes a drive to learn about climate change and its impacts on Churchill. As visitors' place identity and NR appear to be a foundational part of this motivation, it may be possible to use these concepts to design experiences that are more likely to create climate ambassadors.

To some extent this is beginning to happen in Churchill through citizen science projects such as those established through the EarthWatch program and delivered by the CNSC. The CNSC's learning vacations offer visitors a chance to collect data and document environmental changes in remote northern locations (e.g., through species identification). Not only do such programs advance understanding of bio-physical changes occurring across the north, they have the potential to create deep connections between visitor and place, which is critical if participates are to engage in ambassadorial activities post-experience.

As NR appears to be a springboard to place bonding, it may also be an effective vehicle that can translate place based experiences into everyday environmental actions. In a place with a rich narrative tradition like Churchill, the question may be how visitors can be further connected to local citizens in an attempt to enrich connections to place and nature. Such an approach would go beyond the continued attempt to bring about behavioral change by merely piling on more or

better scientific climate information. It would draw on local experiential narratives of climate change, highlight how climate change impacts shape cultural traditions, and create safe social spaces that foster place stewardship and efficacy in the face of complex global change.

3.5 Conclusion

This study is the first to apply a SEM approach to understand visitors' motivation to engage in LCT. It has provided an important confirmation of a LCT motivation among polar bear tourists in Churchill, Manitoba. This study is also one of the first to establish a LCT motivation within a protected areas context, although more research is necessary to confirm if these findings are applicable to other protected areas both in Canada and beyond. Findings extend past research by exploring how LCT is related to other reasons for travel, as well as to place and nature based connections. This study makes a novel contribution by showing that a desire for a last chance experience is complexly related to a need to reflect on natural values with individuals who share a similar connection to nature. Results of the SEM analysis also indicate that visitor's NR and place identity were a significant force shaping their concern for climate change, and by extension their motivation to experience Churchill's threatened landscape. It seems that a strong sense of NR may be a springboard to constructing a place identity in a new destination, and potentially to environmental stewardship. Given the cross-sectional nature of this study, research using a developmental design is required to explore how this process unfolds. Important future research also lies in tracing LCT visitors as they return home to monitor how their tourism experience might have impacted attitudes and behavior.

While results here suggest that LCT motivations are related to other reasons for visiting Churchill, it must be recognized that polar bears are a highly charismatic mega-fauna and may draw unique attention from tourists. Future research is needed to determine if results found here generalize to other threatened natural features, particularly those housed within parks and other types of protected areas. As Lemieux and Eagles (2012) point out, protected areas are often legislated specifically to permanently protect, restore, and provide opportunities to appreciate many features that are highly vulnerable to climate change (e.g., glaciers, rare species, etc.,). Despite this, the broader implications of LCT for visitor experiences and the management thereof remain underexplored.

Finally, it is important to emphasize that this study has practical relevance to stakeholders in Churchill, as well as protected areas managers elsewhere. In particular, the results revealed a desire to learn about climate change that is embedded in the LCT motivation. Findings also demonstrates why, compared to scientific narratives, local experiential climate change narratives might better engage visitors' connections to place and nature in hopes of promoting climate ambassadorship. This is, indeed, a significant opportunity that needs to be capitalized upon. Still, the pertinent question from a management standpoint may be less whether the opportunity exists, and more whether relationships between tourism industries, protected areas agencies, and community stakeholders are strong enough that it can be realized.

CHAPTER 4:

"EVERYBODY HAS GOT TO TAKE EVERYTHING WHEN THEY GO": PRIORITIZING, SHAPING AND APPROPRIATION OF PLACE IDENTITY AS BARRIERS TO COLLABORATIVE CLIMATE CHANGE ADAPTATION

4.0 Introduction

Scientific evidence supporting the call for immediate climate change action is beyond reasonable contestation (IPCC, 2014; Warren & Lemmen, 2014). For this very reason scholars and policy makers remain perplexed by the persistent gap between a body of sound evidence and effective public action on this pressing issue. A growing scholarship on climate change psychology is therefore becoming central to understanding the reason for and possible means to overcome inaction in the face of climate change (Lorenzoni et al., 2005; Swim et al., 2011; Weber, 2010). Key theories, models and techniques from the fields of social and environmental psychology have sought to clarify the determinants of climate change attitudes and beliefs, the facilitators of climate change action, and the potential catalysts to much needed behavioural change (Fielding et al., 2014). Among other things, this work has illustrated that there are key deficiencies in the way climate risks are reported and communicated (Boykoff & Boykoff, 2007; Moser, 2009), that perceived norms for participation influence intentions to engage in collective action (Rees & Bamberg, 2014), and that experiential and socio-cultural factors are better at explaining climate change risk perceptions than either cognitive or socio-demographic factors (van der Linden, 2014).

As part of this research endeavor a smaller contingent of scholars has examined issues related to climate change action using an explicit place-based frame. Here the goal is typically to understand whether and how local experiences shape perceptions of climate risks, as well as motivations to address these risks as either individuals or members of a collective (Adger et al., 2011; Agyeman et al., 2009; Amundsen, 2015; Devine-Wright, 2013). Scannell and Gifford (2013) illustrated that climate change communications are more effective when they incorporate local messages that tap an individual's sense of place attachment. Similarly, Marshall et al. (2012) proposed that adaptations requiring a transformation in an individual's sense of place (e.g., relocating their home) are more likely to be rejected. The adoption of this place-based

perspective is still comparably novel in the context of climate change research. However, its growing popularity reflects the role place can play as an integrative frame for understanding the experiential and socio-cognitive roots of climate change perception, behavioural change, and collective action (Fielding et al., 2014; Fresque-Baxter & Armitage, 2012; van der Linden, 2014).

In pursuit of effective climate change adaptation, a place based perspective offers a means to link the local and global, as well as the material and immaterial (Devine-Wright, 2013). However, a strong influence from the fields of social and environmental psychology may actually be limiting the full potential of this conceptual tool. To the author's knowledge no study has drawn on a critical place perspective to examine how broader forces shape place, and by extension a community's adaptive capacity. Rather than focusing on individual or shared connections to the landscape, critical place scholarship tends to focus on ways that social, economic or political processes structure human experience. This body of work also tends to call to light issues of power, domination and resistance, for instance in illustrating the way urban design contributes to a gendered landscape or how conscious government policy has led to the 'inevitable' decline of rural communities (Markey et al. 2008; Monk, 1992).

Given that the critical place literature presents a sobering alternative to environmental psychology's overtly positive conception of place (Cresswell, 2004; Manzo, 2005), its exclusion greatly limits the effective scope of place-based climate change research. This paper seeks to address this gap by outlining a thorough history of the place concept that explores what a critical place perspective might reveal about collaborative adaptation planning. Drawing from citizen interviews in the northern community of Churchill, Manitoba, the paper then presents a grounded theory that illustrates how the related processes of prioritizing, shaping, and appropriation impact place identity and constrain opportunities for collaborative planning. Two broad related research questions guide this work:

1. What can a critical conception that understands place as the coming together of people, knowledge and capital reveal about the construction of citizens' sense of place identity and its influence on their perceptions of climate change?

2. What are the implications of this process of identity construction for collaborative climate change adaptation planning at a community level?

4.1 Literature Review

4.1.1 In Support of a Local Climate Change Adaptation Response

Before exploring the need for a critical place perspective further, it is important to briefly outline the rather local orientation of Canada's climate change adaptation response. International efforts to bring about meaningful action on climate change have been hindered by the complexity of negotiating international agreements (Okereke et al., 2009). Competition within an increasingly borderless global economy, particularly between developed and developing nations, has obstructed international attempts to establish norms for action (Bodansky, 2010; Dimitrov, 2010). Likewise, a vision for a Canadian economy driven by an engine of energy exports has become a central part of this competition. Policies and investments meant to achieve this vision have also been a key driver of an ongoing cycle of setting, missing, and then softening green house gas (GHG) reduction targets. The 2013 Emissions Trends report from Environment Canada, for instance, projects that with current mitigative measures, emissions in 2020 (734 Mt CO_2e) will be 19.9% above the proposed target (612 Mt CO_2e) (Environment Canada, 2013a).

This is not to say that national climate change action has been absent in a Canadian context. On the adaptation front the Federal Government will have invested nearly $150 million between 2011 and 2016 in an attempt to prompt a multi-level adaptation response (Environment Canada, 2013b). Moreover, by facilitating collaboration and research through programs like the International Polar Year (IPY) and the Adaptation Platform, the federal government is contributing to an emerging knowledge base around impacts and adaptation needs (Kulkarni et al., 2012; Natural Resources Canada, 2013; Parlee & Furgal, 2012).

Still, a recent evaluation of research funded under the Canadian IPY program concluded that "the component of the IPY focusing on climate change in Canada can be characterized as a 'missed opportunity' to connect science and decision-making" (Ford et al., 2013, p. 1324). Moreover, Natural Resources Canada itself has acknowledged persistent critiques of federal climate change action, particularly the ongoing lack of a clear national adaptation strategy (Warren & Lemmen, 2014). In response, the authors argue that the federal government's role in adaptation is to deliver relevant scientific information, to encourage adaptation policy

integration, and to incent people and organizations to undergo proactive adaptation (Warren & Lemmen, 2014). Whilst these goals are consistent with federal actions to date, outcomes like the 'missed opportunity' of connecting decision-makers with IPY research illustrates the broader concern that national and international efforts are out of sync with the needs of a prompt and proactive adaptation agenda.

In contrast, Canadian adaptation policy development has been accelerating at the provincial and municipal level, and on a whole has become highly community focused (Burch et al., 2014). Since the Intergovernmental Panel on Climate Change's fourth assessment report (IPCC, 2007), a host of local community's have developed climate action plans (Bowron & Davidson, 2012; Warren & Lemmen, 2014), often with the guidance of provincial adaptation strategies (Government of British Columbia, 2010; Government of Ontario, 2011). Moreover, a recent national survey of Canadian municipalities found that 60.5% of respondents (n=481) felt that climate change adaptation was being discussed in their community, either by council, staff, local organizations or community leaders (NMAP, 2014).

The knowledge and partnerships that have catalyzed adaptation efforts are largely organized around emerging networks of local actors. Across Canada the ICLEI Building Adaptive and Resilient Communities (BARC) program supports a community of practice around adaptation planning. Through a number of relevant planning guides and conferences, it is also facilitating an exchange of knowledge and experience among active Canadian municipalities (NMAP, 2014). In places like Thunder Bay, Ontario, adaptation planning is also building on local partnerships and planning frameworks that were established through ongoing sustainability planning processes (City of Thunder Bay, 2008). Collaborative approaches like these illustrate the importance of maintaining ongoing relationships that protect and foster community trust and local control over priority setting (O'Brien & Wolf, 2010). They also show how scaffolding adaptation efforts onto an established generation of sustainability planning processes can facilitate policy integration (City of Thunder Bay, 2014).

Innovative adaptation approaches like these are an encouraging signal that the responsibility for climate change adaptation has not gone unmet. However, it must be recognized that with the shift toward a local adaptation response, the once blurry reality of climate change has come into

sharper focus. As the CAVIAR project demonstrates (see Chapter one), it is not sufficient to consider vulnerabilities only in terms of economies, resource flows, and social systems in aggregate (Hovelsrud et al., 2010). The term vulnerability no longer has such an ambiguous face, and cannot be adequately reflected in coarse statistics alone. In the Arctic, vulnerability takes the face of cultural groups and individuals whose traditional livelihoods are threatened, not merely by climate change impacts, but by top-down policy responses that are unable to identify a culturally appropriate adaptive pathway (Bulgakova, 2010). Further south, vulnerability has the face of neighbors or family members who lost their home due to a major flood, or an environmental refugee who has left their community to escape an oncoming forest fire. In short, vulnerability looks a great deal like the type of immaterial human experience we must incorporate into conversations about how and why we adapt to climate change (Adger et al., 2013). The following section provides a detailed review of place-based research traditions and highlights how a critical place perspective might inform an emerging local adaptive response that recognizes the new reality faced by Canadian communities.

4.1.2 Conceptualizing Place in the Context of Climate Change Adaptation

A growing body of scholars is applying the lens of place to examine how climate change will impact the intangible experiences and socio-cultural assets that enrich community life (Adger et al., 2011; Willox et al., 2012). They are also exploring how such experiences might contribute to (in)action in the face of this mounting challenge (Adger et al., 2011; Agyeman et al., 2009; Amundsen, 2012; 2015). By considering the importance of person-place bonding, this place-based adaptation literature puts human experience at the centre of discussions of vulnerability, risk, and climate change action. Within this literature threats to values, histories and identity are thus considered to be as salient as threats to economic or ecological systems (Adger et al., 2011). Perhaps more importantly, impacts like melting sea ice or sea level rise and the threat they pose to citizens' place connections are viewed as a potential motivating force to catalyze not only individual behavioural change, but also collective climate change action (Fresque-Baxter & Armitage, 2012).

One key benefit to the place-based approach is that it offers a common language between expert and citizen stakeholders (Manzo & Perkins, 2006), including a platform for developing a shared perception of future risks (van der Linden, 2014). A language of place can also serve as

an important tool for collaborative adaptation planning, where the uncertainty of long-term climate change impacts can complicate the process of building consensus among actors with differing values and worldviews (Akerlof et al., 2013; Gifford, 2011). While recognizing these potential benefits, it is also important to note that the adoption of place by climate change scholars has been influenced heavily by theories and methods in social and environmental psychology. Research on place and climate change to date has therefore not fully capitalized on the concept's broader history, particularly the epistemic frame and methodological tools of a more critical place perspective (Casey, 1996; Manzo, 2003; Markey et al., 2008; Massey, 1998). This presents a considerable challenge, as the concept of place has been subject to a lengthy philosophical battle to legitimize its existence, and has developed along a more divergent path than the current climate change literature acknowledges.

As Lefebvre (1991) outlines, the concept of place we know today was almost non-existent as an intellectual entity for much of history. It was suppressed and kept alive only in an undercurrent of interest that can be traced back to Aristotle through Bachelard, Foucault and Heidegger (Escobar, 2001). What dominated Western thought instead was a mental space defined by Mathematics and Cartesian logic, where spaces were part of a larger patterned structure, but contained no particular uniqueness (Casey, 1996). This container view of space, the idea that it is universal and extends without bounds, was not challenged until the early 18th century. At this point Leibniz argued that space was not an absolute property, but a function of the interrelationships between objects (Curry, 1998), and therefore identifiable as a unique entity.

Even with this step, however, the concept of place that is common today did not become truly distinct in Western thought until the mid 20th century. It was the effort of human geographers working in Heidegger's phenomenological tradition (Norberg-Schulz, 1980; Relph, 1976; Tuan, 1974; 1977) that recast place not as *being in a particular locale*, but as a way of *being-in-the-world* (Cresswell, 2004; Manzo, 2003, 2005). Occurring in parallel with the development of an emerging constructivist research paradigm (Guba, 1979), this work redefined place as the meaning that spaces take on through our lived experience (Gustafson, 2001; Lewicka, 2011). Much of the place discourse can therefore be traced back to Heidegger's early work, and the belief that place meaning flows from one's perception of and subsequent relationship with their surrounding environment (Basso, 1996). It is this orientation toward human-landscape

interaction as a process of constructing meaning that makes place relevant to understanding the intangible outcomes of climate change impacts (Agyeman et al., 2009). At the same time, this tenet has led to an often-unexamined assumption within the place psychology tradition; namely that the core-defining function of place is to offer a sense of temporal and social continuity for our sense of identity.

For Relph (1976) this meant using the shared symbols, signs and languages that we find in *existential space* to create a common identity. This suggests that place emerges through a competition of group identities that share different sets of these defining elements, and only exists to us because it provides a counter position to relevant 'others'. A similar use of continuity is evident in Harold Proshansky's foundational examinations of the relationship between place and identity. In *The City and Self-Identity*, Proshansky (1978) notes the importance of one's occupational role to identity, and the fact that "the physical setting related to this role is represented in a very focal way by expectations, beliefs, feelings, ideas, and aspirations about this setting" (p.159). This particular paper is arguably the origin of the place identity concept. Yet, the most often cited definition of place identity comes from a later work where Proshansky and colleagues shift the focus away from roles, toward a more purely psychological definition of place (Proshansky et al., 1983). In this work place identity is conceptualized "as clusters of positively and negatively valenced cognitions of physical settings" wherein "the places and spaces a child grows up in, those that he or she comes to know, prefer, and seek out or avoid also contribute significantly to self-identity" (Proshansky et al., 1983, p. 74).

This shift is subtle, but its influence seems to have been critical to the historical trajectory of scholarship on place and place identity. It aligned a nascent conception of place identity with Henri Tafjel and John Turner's highly influential work on prejudice, intergroup conflict and social categorization. This work is now the foundation of Social Identity Theory (SIT) (Hogg & Smith, 2007; Hogg et al., 1995), but more importantly was already established in the field of social psychology at the time of Proshansky and colleagues early work on place identity. Based on Tafjel and Turner's work, SIT argues that individuals develop a social identity by first categorizing 'others' into homogeneous groups based on a salient social variable (Social Categorization), and then comparing their own identity to group prototypes to determine which group they fit into (Social Identification) (Spears, 2011). The full influence of any alignment between place identity

and the roots of SIT is unclear. However, the dominant body of place research has seemingly followed a similar trajectory in using boundaries and continuity to define the essence of place. Within the place-based adaptation literature this typically means using place to explain why one group might react differently to climate change than another (Marshall et al., 2012). This conception offers diagnostic value, but a critical and unbounded view of place can also highlight what policies, institutional arrangements and/or shared histories contribute to community vulnerability in the first place.

4.1.3 Toward A Mobile and Critical Approach to Place-based Adaptation Research

In her seminal works on place, Massey (1991; 1998) describes the trajectory of place scholarship as a process where place has been constructed as a *bounded identity*, largely out of a defensive reaction to increasing global connectivity and diversity. Through this work Massey reveals a further assumption of the bounded notion of place; namely that there are inherent positive benefits to being in 'one's rightful place' (e.g. safety, security, self-esteem, etc.,) (Manzo, 2003). It is this pairing of continuity and an overtly positive conception of place that has worked its way to the centre of the literature on place and climate change. By invoking these assumptions, place, climate change risks, and climate change action have been linked in a rather direct causal chain. Despite exploring various impacts (e.g., drought, melting sea ice, etc.), the central and sometimes implicit argument is typically that climate change threatens to alter the landscape, which puts established place bonds at risk, and in turn motivates a desire to protect one's place connections (Marshall et al., 2012; Willox et al., 2012).

There is still much to be learned about the way that individuals perceive place threats, how these perceptions translate into a motivation for action, and whether place-based approaches have a role in real-world adaptation planning. However, to adequately address these questions the current notion of place as a bounded identity may need to be expanded. Our place identities are not set in stone as children, but grow with us as we experience new physical and social environments. Perhaps more importantly, communities themselves are not static entities simply awaiting the potential new realities of climate change. They are dynamic systems where flows and connections of people, knowledge and capital are constantly reworked across multiple temporal and spatial scales. In this regard, the place and climate change literature has not

adequately acknowledged the multifaceted evolution of our communities and landscapes, nor our connections to them.

One way to expand the scope of place and climate change research is to move beyond the idea of boundaries and an obsession with "fixity" (Massey, 1991). To do so would mean, first and foremost, recognizing that place gains its specificity in part because any unique combination of people, knowledge, and capital at any point in time structures our lived experience (Pred, 1984). In this view the influence of mobility on place cannot be overlooked. Place is certainly created through our experiences, but our experiences are also shaped by patterns of mobility at scales beyond our immediate control or even perception. This more dynamic perspective highlights the fact that when people, knowledge and capital meet, the occasion is just as likely to be marked by exploitation and domination, as safety and security (Cresswell, 2004). As questions of power and justice are often not well articulated in the place psychology tradition, a more mobile and critical view of place might greatly extend the ability of place-based climate change research to unearth the root causes of vulnerability.

Many feminist geographers and critical cultural anthropologists have laid the foundation for such a perspective (Laws, 1997; Monk, 1992). This work argues that place has taken on a nostalgic vision of civility, security, rootedness and domestic bliss, which neglect experiences of oppression, displacement, struggle and even violence (Cresswell, 2004; Franck & Paxson, 1989; Grosz, 1993). Monk (1992), for instance, challenges the civility of post-war suburban development and illustrates how differences in mobility created by barriers like zoning privilege a patriarchal society and suppress women's urban experiences outside of the domestic sphere.

Similar concerns are also raised in critical strands of the human geography and cultural anthropology literatures. Markey et al. (2008) use place to frame the question of whether decades of rural decline are an inevitable part of an evolving global economy, or the result of conscious policy choices that treat rural Canadian hinterlands as a resource bank. Within these literatures the starting point for discussing place is often the tension between power, domination and resistance (Casey, 1996), particularly in the context of colonialism, public space control, and globalization (Goss, 1992; C. J. Mitchell, 2013; D. Mitchell, 2010; Pawson, 1992). The influence of mobility on place in this case is typically described through the universalizing

nature of capital, for example in the writings of urban sociologists and neo-Marxists like Henri Lefebvre and David Harvey (Harvey, 1990; Lefebvre, 1991). An essential argument to this discourse is that the spatial and social structure of the landscape, and thus one's experience in it, are shaped by the localization of flexible global capital. The concern is that because the reproduction of capital seeks out the efficiencies of standardization, its highest return can be realized through the mass homogenization of place (Goss, 1992; Lefebvre, 1991; C. J. Mitchell, 2013; Woods, 2007). Turned on its head, the same logic is a warning that what may appear on its face to be an economically efficient approach to adaptation, may upon deeper examination be a source of maladaptation that fails to protect what is most valued by citizens of a community.

As Lefebvre (1991) predicts, any effort to produce or protect unique and authentic places within such a system may face a considerable struggle. Landscapes that are *a work* have an inherently irreplaceable and enigmatic quality that is imbued through their creation over long and impossibly complex histories. Their experience can therefore never be constructed or described so adequately as to be reproducible. This inconceivability is a source of their uniqueness and authenticity, but also ensures such places possess only *use value*. In contrast, as *a product* a landscape arises through repetitive acts and gestures. The production of its experience is understood in comprehensive detail so its exact reproduction can be made as efficient as possible. Such places are therefore created to maximize *exchange value,* stripping them of their specificity and essence. Most places we experience in the course of our daily lives lie somewhere on a continuum between a pure work and a pure product. Nonetheless, Lefebvre's dialectic captures the complex, scalar forces that shape our experience of place.

A view of place that is shaped by flows and connections has been articulated over several decades, and is a prominent theme in the writings of many critical geographers, neo-Marxists and feminist theorists. Despite these important contributions, place has been incorporated into the climate change literature mainly by drawing on a psychology of place and a bounded notion of identity. This has limited the capacity of the place-based climate adaptation literature to engage more deeply with questions of power, dominance, vulnerability and resistance. In an effort to push this emerging literature in a more critical direction, the remainder of this paper describes a grounded theory approach that examines how place identity is shaped by mobility in

Churchill, Manitoba, and how the processes of *prioritization*, *shaping* and *appropriation* manifest as barriers to collaborative adaptation.

4.2 Methods

4.2.1 A Grounded Theory Approach

A critical perspective on place is central to the evolution of the place concept and has been employed to highlight inequities in rural development and suburban design - to name only two - (Markey et al. 2008; Monk, 1992). By contrast, within the climate change adaptation literature place is typically operationalized following an environmental psychology tradition. As a critical place perspective offers insights into the way that power, dominance and resistance shape adaptation planning, the following sections present a grounded theory approach that is a starting point for incorporating a critical view of place into the adaptation literature.

Grounded theory was developed as a methodology in the 1960's through the blending of Barney Glaser and Anselm Strauss' distinct methodological traditions (Bryant & Charmaz, 2007). It was the creation of a distinct epistemological foundation that allowed Ground Theory to make inroads during a positivist-dominated era of research. For Glaser and Strauss, Grounded Theory was an epistemological alternative to the objectivist perspectives that guided many of their contemporaries' search for universal truths (Suddaby, 2006). For other scholars, Grounded Theory offered a systematic methodology that could stand the tests of positivist critique, while remaining flexible and privileging the value of rich qualitative data (Seaman, 2008). By establishing a robust qualitative process for theory generation, the pair reconstituted many existing, but unarticulated norms and procedures of early qualitative inquiry. In doing so they presented a recognizable, actionable and replicable qualitative methodology at a time when qualitative inquiry was strongly principled, but somewhat unstructured (Bryant & Charmaz, 2007). Put more simply, they gave scholars the "license required to write generated theory that explains what is going on in this world" (Glaser, 2002, p. 23).

As a result, this *methodology* offered qualitative researchers a new foundation for developing research programs. Studies could be defensibly presented to funding agencies, publishers, and the academy at large in a form that was not reliant on positivist assumptions. Rather than

seeking legitimacy by conceding to objectivity and realism, it became possible to organize legitimate research around a set of distinct qualitative canons. Foremost, through Strauss' injection of symbolic interactionist values, scholars gained the ability to see citizens as having control over their social and physical worlds. Moreover, Grounded Theory offered the capacity to explore the outcomes of such agency through a coupled process of data collection and analysis (Corbin & Strauss, 2008).

After over four decades a commitment to agency, theory generation, and the constant interplay of data collection and analysis are still at the core of Grounded Theory. However, Glaser and Strauss' initial description has received continued criticism as being open to interpretation through an objectivist lens, and even for being objectivist itself (Bryant & Charmaz, 2007; Seaman, 2008). Early reformulations of Grounded Theory, most notably that of Charmaz (1990) and Strauss and Corbin (1998), have therefore sought to evolve the strict *methodology* into a more fluid constructivist *approach* (McCann & Clark, 2004b). Corbin and Strauss (2008), for instance, emphasize Grounded Theory as the practice of constructing an interpretation of social processes, rather than an exercise in discovering a hidden but fixed social reality (Seaman, 2008).

This perspective recognizes that researchers actively shape, perhaps in unrecognizable ways, the processes and participants they are studying. It also challenges the assumption of early Grounded Theory that scholars can enter the field free from the influence of pre-existing knowledge about a topic (Charmaz, 2014). As Ian Dey notes, "there is a difference between an open mind and an empty head" (Dey, 1999, p. 251). By building on Blumer's notion of sensitizing concepts, constructivist grounded theory has therefore acknowledged that the research process is awash in background ideas that are not only inescapable, but that may even help direct interpretation and "lay the foundation for the analysis of research data" (Bowen, 2008, p. 14). There is still debate about the appropriate use of existing concepts within the theory generating process, and scholars must be aware of the risks of forcing their data (Glaser, 2002). Nonetheless, the shift toward Grounded Theory as a constructivist *approach* has opened the door to a more flexible application that can fit within existing theoretical contexts (Seaman, 2008).

4.2.2 Data Collection and Analysis

To move interpretation and theory construction beyond an outsider's perspective, the Grounded Theory *approach* requires researchers to be fully subsumed in the collection of rich or thick data (McCann & Clark, 2004a). Since data collection and analysis are part of an ongoing interplay, I immersed myself in Churchill's culture and daily life early, and on an ongoing basis. Early interactions in the community focused on building trust and experiencing community life, rather than seeking entry points into the local network. Mornings and afternoons were spent in local coffee shops and restaurants facilitating introductions with local citizens. Evenings were spent exploring the town and its surrounding landscape, sharing stories in the local pub, and writing reflections about these interactions. While these steps may be viewed as a costly investment of time, they were critical to developing a theoretical sensitivity that allowed data collection and analysis to move beyond processes and actions that seem prominent, but that may only be relevant from an outsider's view (Charmaz, 2014).

The identification of potential participants began with a purposive selection of Churchill citizens that were known to spend a great deal of time on the land. Knowledge holders at this early stage were identified based on activities that were known to bring them in contact with Churchill's landscape. These individuals offered a rooted perspective on how Churchill's landscape was changing, both in response to climate change and other forces. Early sensitizing activities included harvesting and intensive recreation on the landscape that went beyond casual use (e.g., a multi-day canoe trip vs. a walk along the shore behind the town complex). A stronger classification of stakeholders was not desirable for numerous reasons. First, while all participants demonstrated working knowledge of the local landscape, the types of activities (harvesting for example) that brought individuals on to the land varied greatly even within each 'category'. Second, participants do not necessarily engage in these activities in a mutually exclusive manner, making a strong 'categorization' along these lines largely artificial. Finally, the implicit goal of drawing a boundary around various groups with a presumably internally coherent motivation is out of step with this paper's treatment of place and its commitment to constructivist grounded theory.

Face-to-face interviews followed a semi-structured approach, although the interview guide continually evolved to incorporate new and important ideas (Corbin & Strauss, 2008). To

overcome the formality that often hinders semi-structured interviews, meetings were held on the landscape in a place that was meaningful to participants, or used a map of the region as a bridge between my experiences in Churchill and participants' more rooted place histories. Interviews ranged from 45 minutes to over two hours in length. Quotations included here use a pseudonym.

Following one of the main tenets of Grounded Theory, data collection and analysis were carried out in an iterative, rather than linear fashion (Corbin & Strauss, 2008). The six initial weeks spent in Churchill offered a limited first window to connect with participants. Data were therefore analyzed in the field by listening to interview recordings and performing what Stern (2007) describes as a *search and seizure* process for isolating core emerging categories and concepts. Throughout this process the constant comparative method was used to compare incidents to each other, to compare concepts to other incidents, and finally to compare various concepts (Charmaz, 2014; Holton, 2007). Concepts earned their way into the evolving theory only when subsequent data collection confirmed their relevance and when underlying categories achieved triangulation (Corbin & Strauss, 2008).

After only five interviews, emerging concepts triggered a shift from a purposive to a theoretical mode of sampling. At this point potential participants were selected not only to reflect early sensitizing activities, but also to help elucidate the dimensions, properties and boundaries of the emerging theory (Morse, 2007). For example, the category of capitalizing arose as an early indication of how the tourism industry's cyclical nature shapes trust and conceptions of what it means to be committed to the community and its landscape. This category also indicated that tourism employment was another source of activities that brought Churchill citizens out on to the land. Accordingly, stakeholders within the tourism industry were interviewed to expand and saturate the growing theory.

After returning from an initial trip to Churchill all interviews were transcribed and submitted to a second round of substantive coding that refined and extended the initial categories and concepts. A second round of comparative open coding proceeded on a line-by-line basis to saturate categories, further delineate their properties, and identify missing categories (Holton, 2007). During this process the abstraction of data and concepts were supported through a

constant process of memoing. At this early stage, memos did not form a scaffold for the evolving theory and instead sought to "conceptualize the data in narrative form" (Lempert, 2007, p. 245). During this second round of open coding it became apparent that several categories were not sufficiently defined by the existing data. This necessitated a return trip to Churchill where additional data collection and analysis helped to complete and validate the early categories (Stern, 2007).

By the end of data collection participants included a diverse range of knowledge holders with first hand experience of Churchill's changing landscape. This included stakeholders working in the tourism industry, individuals with a tradition of harvesting, and intensive outdoor recreationists. A small number of participants had lived in Churchill for only four to five years, but the majority had been members of the community for over 25 years; some much longer (i.e., 60+ years). Focused coding of 24 interviews produced 162 initial open codes and nearly 50 categories (see appendix D) (Charmaz, 2014). As categories and concepts began to cohere, theoretical coding was used to integrate the codes into a more parsimonious theoretical framework that described relationships between core phenomena. Attention during this process consistently flipped between delineating and describing theoretical relationships, and elevating these descriptions to a higher level of conceptualization through memoing (Charmaz, 2014; Lempert, 2007). The processes of *prioritization*, *shaping* and *appropriation* ultimately captured the clearest picture of how place identity continually evolves in Churchill, how climate change impacts fit into this evolution, and what this means for collaborative adaptation planning. Table 4.1 summarizes these processes.

4.3 Results and Discussion

When considering the role that place might play in climate change adaptation there are many reasons to look at place not only as an emotional or cognitive bond. Mobility also shapes the flow and connection of people, knowledge and capital through and within a community and structures the lived experience of its citizens (Cresswell, 2004; Lefebvre, 1991; Massey, 1991). In Churchill, the influence of mobility on local histories, values and identities cannot be separated from the connection that citizens develop with the landscape. The following sections therefore explore place from this interrelated perspective. They focus on ways that spatial, labour and

capital mobility condition citizen's daily experiences and place identities, and by extension how this influences opportunities for collaborative adaptation.

Table 4.1 – Summary of prioritization, shaping and appropriation processes.

	Description	Influence of Mobility	Impact on Place Identity	Related Categories	Example Quotation
Prioritization	Climate change is not the only threat to citizens' place identities. Attention and capacity for action (both individual and collective) weigh the risks of climate change against equally credible place identity threats (e.g., development and resource use).	Investment of outside capital in Churchill can become a source of a competing threat. High rates of settlement turnover and population decline can disrupt place histories and the transfer of traditions.	Leads to a negotiation and tradeoff over what is important to protect and where resources should be invested. May draw attention away from climate driven impacts that could alter the human-landscape relationships on which place identities are predicated.	Facing Cultural Trends Prioritizing Threats Grasping	"Like this is what I wanted to show you. This is worse than global warming." *Related quotations from 15 other citizens*
Shaping	The decisions and actions of institutional actors (e.g., the Province of Manitoba) mediate citizens' sense of place identity. This includes actions that shape the physical environment (e.g., damming the Churchill River) or the social environment (e.g., creating conditions for a transient labour force).	Provincial housing policy has restricted home ownership opportunities and shaped the movement of people through the community. Large-scale investment in Hydro infrastructure has restricted access to the Churchill river, and limited citizens' ability to freely access the surrounding landscape.	Constrains citizen's ability to realize a sense of freedom by navigating the landscape. Limits opportunities to engage in and exchange land based traditions (e.g., harvesting, navigating, etc.). Contributes to a learned sense of inefficacy.	Controlling Information Distrusting Outsiders External Identity Creation	"It's just funny. The things that the outside world doesn't know because they haven't experienced it. And they are trying to tell the people of the town what to do. This infuriates me and it infuriates many people in the community I think because they don't listen to the local point of view. They don't have the experience of the local point of view either." *Related quotations from 17 other citizens*
Appropriation	Churchill's place identity is recognized as a valuable commodity. Actors within and outside of the community increasingly obtain financial or political benefit by attaching themselves to Churchill's place identity.	Tourism businesses that are increasingly based outside of Churchill (and Canada) contribute to unhealthy competition over the control of Churchill's place identity. Tourists' extensive spatial mobility is contrasted against citizen's decreasing access to move freely on the landscape, creating tensions between the community and tourism sector.	Contributes to a narrative where Churchill citizens are not the stewards of their own place identity. Ubiquitizes and urbanizes place experiences, striping them of their uniqueness and source of authenticity. Contributes to a learned sense of inefficacy.	Ubiquitizing Place Experiences Being an Occupied Place Exploiting Place Identity	"And you know, the province and everything. They are always bringing people up here so there is always hype going on. Like whether it's PR…hyping because they want to show off the province." *Related quotations from 16 other citizens*

In Churchill, considering place from this interrelated perspective begins by first acknowledging a long history of powerful institutions that are intimately tied to the community and its landscape (e.g., The Hudson Bay Company; the U.S. and Canadian militaries; Manitoba Hydro). The fact

that Churchill is continually shaped by a high level of mobility is largely a function of the role that key institutions have played in the community. The Hudson Bay Company and more recently the tourism industry have certainly facilitated the exchange of goods and services in this northern hub. However, these and other institutions have also greatly increased the movement of the people through this small and remote community, becoming a catalyst for exchanging experiences, ideas and values. Not surprisingly, this ongoing process of movement and exchange continues to have a considerable impact on citizen's sense of self. At a time when the spatial mobility of citizens on the landscape is diminishing, the mobility of visitors and the movement of temporary labourers through the community are growing. Perhaps more than anything, this sense of contrast has come to define citizen's relationship to the climate change issue.

For **Mary**, a long time citizen of the community, "*Churchill has always been known kind of as a meeting place"*. This is visible not only in the meeting of different peoples and cultures, but also in the landscape itself. Churchill is a point of connection where boreal, marine and tundra biomes unite; where polar bears find their first contact with the ice of Western Hudson Bay; where the aurora borealis reaches down to the landscape; and where approximately 3,500 beluga whales find a home during mid to late summer (Brandson, 2011). By chance or by choice, the fact that Churchill occupies such a unique junction goes a long way to understanding how the landscape can evoke such a strong, yet diverse range of connections from people. As the history of the Sayisi Dene demonstrates, these connections do not inevitably carry a positive sense of security and belonging. In this case, they carry tragic and painful memories of personal and cultural losses that were initiated by a forced settlement at the edge of the community (Bussidor & Bilgen-Reinart, 2000). Yet as much pain as the landscape holds for one group of people, for others it offers a sense of identity that is drawn from the pride that comes with being connected to such a unique place. This function can come from the freedom one gains from their knowledge and use of the land, or the sense of self-reliance that comes with meeting the tests of this demanding environment (MacIver & MacIver, 1992).

Ellen: *I think the people that choose to stay here, either come here and choose to stay, or whatever. It's all about the land. It really is. We are very strongly, I hesitate to use spiritual, but there is a very strong connection.*

Ross: *Oh yeah, lots more freedom. I got a grandson, he'd be 9-10 now. Fuck he's already shot two caribou. He's shot lots of geese, ducks. Yeah. He shot a beaver, fuck. Oh yeah. Lots of freedom up here.*

Josh: *Minus forty and your out on you're own and you break down. Ha, ha. There is no one coming to rescue you, you know. You have to be prepared and you have to think like that.*

Churchill is also a place where climate change impacts are present in the landscape, and where the associated implications are slowly finding their way into the community's consciousness. A constant stream of climate change research bolsters the community's awareness of climate change issues. Layer on this the intense media scrutiny over the health of the Western Hudson Bay polar bear sub-population (see Chapter three), and there is no lack of information or opinion about Churchill's climate change future. Yet with all this information at hand, for participants the most convincing evidence that climate change might be impacting Churchill does not seem to come from the media or scientific reports. It is read in the landscape through experiences that have accumulated over years, even decades.

This is not to say that the process of reading such evidence is not complicated (Amundsen, 2015), or that there is not an interchange of scientific and local perspectives in making such a determination. The community's highly variable weather and what participant's describe as a life of extreme conditions can make it difficult to perceive shifts that unfold slowly over the course of decades (Gagnon & Gough, 2005; Stirling et al., 2008). Nonetheless, for citizens' whose quality of life is *"all about the land"* there is a certain respect and trust for evidence that is rooted in local experience.

Charlie: *I've seen research change, and I've seen it change through the years. People like yourself and candidates that come here and they are looking for a different angle and looking for a different way of doing research. Yeah, it is encouraging for us too, they call this traditional knowledge, you know what I mean. It's important. I like to be honest and I have no reason to embellish things. My back does get up on some of these people coming here and tell us what to do. It always makes you question, where's your funding coming from?*

Jeff: *And I don't know if we experience climate change as much as some of the places down south. I mean, sure we get severe storms here, but that is nothing out of the ordinary. We live on the bay, that's part of life here.*

The messy process of blending scientific and local perspectives has not prevented citizens from identifying climate change impacts that have implications for the community. Citizens acknowledge broad changes in the length and condition of seasons, but also more specific impacts like changes in access to country foods (e.g. berries), or in the timing of freeze-up on Hudson Bay (see also Chapter two). In contrast, while the consistent experience of later freeze-up and earlier thaw has led to a consensus that the bay is changing, perspectives about probable impacts on the Western Hudson Bay polar bear sub-population seem to be more varied. Some citizens share scientific concerns about individual and population health impacts related to climate change (Castro et al., 2013; Stirling & Derocher, 2012). Others take the recent birth of twin cubs, the presence of large healthy adult males, and a perceived high frequency of human-bear interactions as evidence to the contrary.

Simon: *If you think about climate change up here. We see it. You know I have seen, I mean, anyone whose spent any time up here and denies it, they are walking through life like that* [puts hands over eyes]*. Ummm, when I used to drive buggies bear season ended after, well probably by November 8th. You could probably run bear season until the end of November beginning of December now.*

Marla: *When you were talking about climate change, when I first came here in the 1940s I was only about ten years old. In them days we were experiencing really cold winters. Lots of wind and things like that. And in all that time, its now different now because we see the ice in the bay. We see the ice gone maybe at the end of the first week and maybe part of the second week in June. We have no ice. And before that ice used to stay right till after July first.*

Ross: *You know, like I say in here we don't have to turn up our heat as much because it doesn't cost much for heating. It doesn't change the food prices and animal wise I don't think it changes much because we got more fucking polar bears than we've ever had before.*

Charlie: *I have to say yes, I definitely have seen change. There's no ifs ands or buts about it. I guess when people were asking me if I've seen any changes. Generally the people are asking, well have you seen any different change in numbers? Usually it's the number of animals we are seeing and stuff like that. I have always told people, every day is different out here and every season is different out here. It all depends on the weather, what is happening ice and so on and so forth, where the bears got off, you know. All this kind of stuff. So that's the way I was answering this question. But now getting back to the actual climate change, it has definitely changed.*

If Churchill's citizens have a strong connection to place and are conscious of local climate change impacts, it is logical from a place-based adaptation perspective to ask whether perceived threats to their place identity are priming conditions for collective action. Interestingly, similar to

quantitative results from Chapter two, results suggest that the answer to this important question appears to be no. Despite acknowledging impacts, citizens did not feel that they were making proactive changes to cope with current or future threats. More importantly, while there was a sense that the community's connection to the land was at risk, even diminishing, there was not strong evidence that climate change impacts were interpreted as an especially pressing and poignant threat in this regard.

Charlie: *Oh yeah, you just opened a whole can of worms there. And I will say, we're getting more and more Americanized. Yeah we're losing the connection to the land for sure.*

James: *It used to be with lots of families that were out on the land. Like I would say probably 50 years ago, and before that. And now its, nobody is out there any more. Like the people just go out from town, and there is way fewer people.*

Ashley: *There's an erosion of some hunting opportunity. They will be more discussing it around Gypsy's bakery table or amongst their friends. If Churchill isn't a place they want to stay they will be gone, and that includes a certain number of aboriginal people.*

This finding differs from a recent study conducted in an Inuit community, where the authors found that climate change impacts had disrupted harvesting traditions, threatened place connections, and produced anxiety and depression among community members (Willox et al., 2012). There are two prominent factors that explain this discrepancy. First, while Churchill is a sub-arctic community whose citizens maintain an active relationship to the land (including harvesting), its governance and way of life have evolved to be less oriented around traditional uses than the Inuit community of Rigolet. Climate change impacts in Churchill may therefore be seen as less of a threat because place connections are increasingly less dependent on a functional relationship with the land. The difference in findings is therefore not necessarily an anomaly, but evidence that research on place and climate change needs to incorporate a wider range of case studies. While much has been learned from studies of arctic and First Nations communities, additional research is clearly needed to capture the broad socio-cultural diversity that exists across Canadian communities. The core argument of the place-based approach, after all, is precisely that socio-culturally appropriate adaptation planning requires a respect for and understanding of the peculiarities of place.

Second, to the author's knowledge this dissertation study is also the first to examine place and climate change explicitly using a critical place perspective. As the following sections will demonstrate, this has situated the relationship between experiences of place and climate change impacts in a broad political and economic context, where climate change is only one source of place disruption. The novelty of the finding presented above, and elaborated on below, is therefore also a testament to the need to treat place not only as a psychological bond to the landscape, but a function of far-reaching social, political and economic processes as well.

4.3.1 Prioritizing Place Threats: Evaluating Threats to Place Identity

Participants had a clear sense that connections to the land have diminished in Churchill, but did not appear highly concerned about the contribution of current climate change impacts and future risks to this trend. Part of the reason for this is a process described here as *prioritization*. When threats to one's place identity are evaluated, it seems the process is carried out on a holistic, rather than a piecemeal basis. In the recent IPCC assessment climate change experts have sought to include a broader range of foundational drivers in order to understand future climate scenarios (IPCC, 2014). Similar to this pathways approach, citizens seem to envision narratives of the future in a multifaceted fashion that also incorporates numerous drivers of change. The potential for climate change impacts (e.g., changing sea ice conditions) to alter one's place identity is therefore not evaluated in a vacuum. This risk is perceived against a wide backdrop of other, often more salient risks. To perceive and respond to potential climate driven place threats, citizens have to not only evaluate a specific risk event and find it credible, but also compare that risk to the broader field of place identity threats and judge it to be a priority.

In Churchill, the second step in this process of prioritizing (i.e., comparing place identity threats) is currently tied most closely to the fate of the Churchill River. For decades the river supported the livelihoods of citizens and served as an important gateway to the boreal landscape south of the community during the summer and fall. However, subsequent to the diversion of the river in 1977, its flow into Hudson Bay has been reduced by approximately 60% (Manitoba Hydro, 2014). As a result citizens have reported extensive concern, anger and even a sense of fatalism associated with these changes, noting that they have contributed to a diminished quality of life. Those with a longstanding relationship to the river report changes in the aquatic ecosystem that

have irreparably damaged fish stocks, making fishing largely unavailable as a recreational activity or support for community livelihoods. Access to the river as a gateway to the South has also been severely restricted due to low water conditions, making passage by conventional means of transportation (i.e. a boat and motor) difficult.

These experiences are not brought up here as evidence of the biophysical impacts of the diversion project. They are merely meant to illustrate the context that surrounds citizens' identification of climate change impacts, and their ability to link them to their sense of place identity. Experiences with the risks posed even by climate change impacts that put established place bonds in peril are not parcelled out as discrete stimuli for evaluation. They should not therefore be expected to motivate discrete actions via the clean causal chain that is often presented in the literature on place and climate change. Identity relevant climate change impacts are experienced and evaluated against a complex and continuous background of landscape change. Moreover, as a discussion of the related processes of shaping and appropriation will show, the source of this change can include powerful institutional actors. When faced with risks that seem more significant than those posed by climate change, it is therefore argued that citizen's cognitive, emotional and functional capacities for action can be biased toward addressing more prevalent threats. Under such circumstances there may be little perceived value in attempting to protect one's place identity from climate change impacts through adaptation (regardless of what one believes), because other seemingly uncontrollable forces are already dismantling it.

Ross: *They took our river away. If you go down there you're lucky if you catch a fish. I am very pissed off because that's one of the reasons I stayed here. It's quite the place, I love it, but I hate to leave it. If I ever leave. We want to go blow the dam up, seriously. They ruined all our activity. There is no Churchill, let's put it that way.*

Steve: *That's our only source of fish around here. You know. They, we can't get to traditional grounds because they hold the water back so when, with the weir that's there now, now the ice won't leave. It gets trapped in that big bay that they have created. We can't get out soon enough to get to traditional fishing grounds. Whereas there is nothing to catch there anyway. But you know what? You can't get there, so you cant, the only thing that you can tell them is that there is no fish, and they don't listen. And this is what happens. Now what is more affecting Churchill. Global warming or fucking hydro. This is what you got. I just want to cry.*

4.3.2 Shaping Place Identity: Moving People, Ideas and Values

The process of prioritizing emphasizes a psychological process for perceiving and responding to a changing landscape. It also only partially captures the influence of changing mobility on citizen's connections to place. Through the process of *shaping*, the manner in which people come together to share experiences and exchange ideas and values in a particular place is also directly modified. The process and effects of shaping are deeply embedded within Churchill's unfolding history, particularly in how key institutional actors have altered the form of the landscape. Stakeholders with interests, but not roots in the community have expressed a great deal of influence in Churchill since at least the days of the Hudson Bay trading post. Put more eloquently by **Ashley**, a long time citizen, the community's history is one where "*Churchill has been the recipient of other peoples' initiatives*".

Perhaps the most notable influence in this regard is the former presence of the U.S. and Canadian militaries. During full operation this presence bolstered the local population by 5000-7000 people (Brandson, 2011), and the ultimate withdrawal of the military brought with it a significant population decline and loss of infrastructure (Churchill's current population is 810) (Statistics Canada, 2013). Subsequently, Churchill was the recipient of a provincial redevelopment initiative that sought to restore many of the assets that were lost to the community. During this initiative local houses were expropriated and a high proportion of row housing was introduced into the residential building stock. These decisions not only changed the physical character of the community, they also significantly changed the tenure of home ownership and likely citizen's sense of connection to the community with it (Lewicka, 2011; The Institute of Urban Studies, 2011).

Ashley: *People have been used to being the recipient of somebody else thinking this was a significant area. If you start to kind of look at it from outside, like it's not like a business entrepreneurship or something. So they are kind of used to somebody, and it's very significant in the early 1970s to have the town redeveloped. And that was a mood that Canada's future, that the north had a lot to do with Canada's future. And Churchill was considered to be an international port that had a slum like town that should be more a showcase and should have a better future.*

Dan: *I guess what I was trying to get across is talking about people that have left the town, whether it was government employees or whatever. A lot of them are being replaced by suitcase people. You know you don't have the husband and wife and two kids type of deal anymore. Just*

recently as last year our port here for example, laid off an employee that's married with two kids. Been here for years and years. So this employee of course is thinking about leaving because there is nothing here for him. But he is replaced by a guy with a suitcase. So there is three people gonna be less in the community. Plus they have no vested interest in the community. They are just here to put in their time at the elevator or whatever it is, and then they are gone south again.

These examples demonstrate a long history of investment, divestment and government policy that has shaped citizens' connection to the Churchill landscape. Since the world developed a fascination with Churchill's polar bears, however, the eco-tourism industry has become the most prominent engine moving people, knowledge and values through the community. As Chapter three suggests, these visitors are not merely passive observers. They come to Churchill specifically to become actively engaged in its unfolding story, seemingly with the goal of constructing their positive self-image in the process. The challenge here is that for citizens a significant part of developing and maintaining a healthy identity comes from the capacity to connect to and carry on a legacy that is rooted in the varied history of this place. This can be a legacy that is as broadly shared as a tradition of moving freely on the land, or as specific as a responsibility of passing on the knowledge, skills, and craftsmanship required to maintain trapping traditions. In either case, the legitimacy of such legacies and the place identities that are tied to them can be disrupted by a constant churning of values and knowledge that accompanies the constant and frequent movement of people through a community.

A poignant example in Churchill is what many citizens describe as an increasingly fear-based relationship between the community and polar bears. The question of human-bear interactions in Churchill is highly complex and is affected by a wide range of factors including conservation efforts and waste management policies (Castro et al., 2013; Stirling & Derocher, 2012; Towns et al., 2009). Nonetheless, while recognizing the need for safety precautions, long time citizens express a concern that short-term residents' (i.e., seasonal staff) and visitors' lack of experience with the bears is contributing to a narrative where free exploration of the landscape is off limits. Importantly, such a narrative threatens the values of freedom and self-reliance that are deeply intertwined with ways that citizens use the land to support a healthy identity.

Ellen: *I've never seen so many fences. You know, and the kids are all, oh be careful for the bears. Kids have roamed these rocks for years. In fact, hundreds of years. And I am not saying don't be safe with your children. But I think it is starting to add to a more fear based society with some of*

the newer comers, because they are just not equipped to handle the uncertainty. Even for some of us who have lived here many years it's a bit tricky. So I understand it. I think it's definitely become much more fear based. Which is very unfortunate, because that defeats the greater purpose of being here. The freedom of going where ever you want whenever you want.

With respect to climate change action, the important question is how the process of shaping might influence citizen's motivations to engage in adaptive behaviours or collective action. In Churchill, many of the processes that shape place identity, be they specific expressions of power (e.g., damming the Churchill River) or broader economic trends (e.g., increasing labour mobility), are often associated with a sense of inefficacy, even fatalism. The concern here is that continued conditioning seems to be teaching citizens that the ability to shape their own place identity (e.g., through the process of adaptation) is already beyond their control. For those seeking to inspire collaboration through place, this learned sense of inefficacy bodes poorly for hopes that a place protective instinct might spur individual or collective action.

4.3.3 Identity Appropriation: Mobile Capital and Place Authenticity

As indicated above, the process of shaping is not the only way that social processes have affected the link between place identity and climate change action in Churchill. A related process of appropriation is another prominent, if not more contentious phenomenon. Like the process of shaping, appropriation is tied directly to the relationship that institutional actors have with Churchill and its landscape. However, unlike the process of shaping, appropriation involves an often-conscious attempt to leverage political and financial benefit, not from the landscape itself, but from citizens' place identity. In Lefebvrian terms (1991), it is a process of extracting exchange value vis-à-vis the community's place connections. While the process is not limited exclusively to non-local actors, it is most apparent in a powerful and often non-local pool of capital that has ties to the community.

Recent trends within Churchill's tourism industry, particularly citizens' concerns that its ownership structure falls increasingly outside the community, are related to the process of appropriation. However, these trends are not the only or even the most illustrative example. The recognition that trading on Churchill's place identity can be a highly profitable endeavor reaches much farther. At the Assiniboine Park Zoo in Winnipeg a physical manifestation of this process is now the centrepiece of a $90 million redevelopment project supported by the City of

Winnipeg ($28.1 million) and the Province of Manitoba ($34 million) (Assiniboine Park Conservancy, 2014). The Journey to Churchill Exhibit is based not only on a replication of Manitoba's tundra habitats, which house abundant northern flora and fauna. It also includes the Churchill town site that is home to many northern peoples and cultures. As such, visitor experiences culminate in a trip through a re-creation of the town, complete with a polar bear jail, town sign, and replica of a 'typical' dwelling (see Figure 4.1)

Figure 4.1 - Photos of the Assiniboine Park Zoo Journey to Churchill exhibit. Photo Credit: Mark W. Groulx

Promotional materials for the exhibit draw in visitors by offering them the ability to don the identity of a hearty, resilient northerner and by promising an experience of a "harsh environment where polar bears are part of everyday life". With the slogan "Say you were there", the exhibit is not shy to attach itself to the international ecotourism reputation that Churchill has earned over the past four decades. Viewed from outside the community, it is possible to see statements made in one of the exhibit's early promotional videos (see below) as a benign tip of the hat to a unique and fascinating place. Likewise, nothing should be taken away from the importance of the conservation efforts that such an exhibit might help to fund. However, for those who have actually lived The Journey to Churchill's second-hand stories, the

development and promotion of a zoological exhibit that tries to capture not only the ecology of Churchill's landscape, but the identity of its people, feels rather more like exploitation.

Journey to Churchill Video: *The exhibit is rooted in real places, from forests, tundra and ice, to the northern town of Churchill, the polar bear capital of the world. In other words, Journey to Churchill is world class.*

Ellen: *An exhibit in Winnipeg. Why would people come here? Like when they can jump on a Tundra buggy and drive around The Journey to Churchill exhibition. And the bears, real bears. And it's stupid. And we, of course, tend to pride ourselves on individuality, you know. When I was a buggy driver, and there were eight, nine of us at that time, we are all buggy drivers but we aren't going to be wearing the same little outfit and all branded and trademarked, because we are giving you our experience, our knowledge. Not the brand.*

Beyond the economic exploitation, there is a more central concern that the process of appropriation might distort citizen's place identity. As is often the case when highly mobile capital touches down in rich and unique places, there is a homogenizing effect (Goss, 1992; Lefebvre, 1991; C. J. Mitchell, 2013; Woods, 2007). Those stories and experiences that do not provide an adequate return on investment are filtered out, leaving only the most profitable cream. For a place where citizen's sense of identity is drawn from a deeply varied, and even more deeply rooted connection to the land, the effect of this homogenization is tantamount to a personal attack on one's individuality and sense of self-worth.

At the heart of initiatives like The Journey to Churchill or Google's Street View Treks, which has photographed and digitized the experience of the landscape surrounding Churchill, there is an implicit goal to ubiquitize and urbanize rare experiences. The issue is that the experiences that are being marketed and consumed to create exchange value are also at the heart of citizens' sense of self (Lefebvre, 1991). As select stories, histories and experiences are packaged for consumption beyond the boundaries of the community, a subtle but persistent transformation strips down local experiences into their component parts. As these parts are carefully reconstituted into a profitable narrative, it is hard to accept that much of their original essence is maintained. Moreover, as this process unfolds over time and over space, those important individualized histories that citizens carry with them slowly become replaced by a demand to fit within a totalizing story.

As appropriation evolves and expands, citizens slowly lose the capacity to contribute to and carry on a legacy that is rooted in local values and knowledge. Under such circumstances, it seems unlikely that such a heavily exploited sense of place identity could become a helpful lever for climate change action. Attempts to invoke place as a source of connection and motivation to engage in adaptation are likely to be met with skepticism and mistrust, if not hostility. Perhaps justifiably so.

4.4 Conclusion

The processes of prioritizing, shaping and appropriation speak to the types of exploitation and dominance that are not well articulated in the broader place and climate change discourse. Moreover, experiences in Churchill reflect the damaging impact such processes can have on individual and collective efficacy, and the likelihood of local collective action. The potential limiting nature of these processes, in terms of employing a place-based approach to enrich local adaptation efforts, cannot therefore be overlooked. Planning efforts may well benefit from a place-based approach, but must recognize the broader context in which it is housed. Still, as presented up to this point these processes do not capture the individual agency and forms of resistance that are also at the centre of the critical place literature (Cresswell, 2004; Escobar, 2001; Manzo, 2005). To not explore the question of resistance in the context of mobility, place and collective action would therefore be an incomplete reflection of Churchill's complex relationship with climate change.

The threat of climate change impacts on place identities in Churchill has not been explicitly incorporated into experiences of climate change, at least not to the extent that it has become a conscious motivation for action. This does not mean, however, that there are not implicit expressions of resistance that capture the spirit of the place-based adaptation approach. The Churchill community garden project, for instance, reflects much of what might hope to be achieved from a place-based adaptation initiative. It emerged out of a *collaborative* sustainability planning effort that was facilitated by the University of Winnipeg's Institute of Urban Studies, but that was championed by a *local* sustainability committee. It has *built capacity* in the area of growing local food in a northern climate, and has promoted awareness of food insecurity by spreading important skills and knowledge. It embodies the type of *creative and contextualized* approach to design that is often achieved only when rooted history and culture

are at the core of problem solving. Finally, it *addresses a direct vulnerability* to future climate change impacts by reducing the community's reliance (albeit it in a small way) on food that is imported via an aging, privately owned rail corridor that is susceptible to future permafrost melting (Rouse & Bello, 1985; Warren & Lemmen, 2014).

Although not developed as part of an explicit adaptation strategy, the garden project is contributing in a tangible way to the resilience of the community. At its core it reflects the realization that for citizens of Churchill, a sustainable future must "also encompass their culture, or way of understanding the world" (The Institute of Urban Studies, 2011, p. 5). Perhaps most impressive in this regard is the garden's overall design, which manages to creatively capture a Churchill identity despite the project's limited budget and consequent simplicity. While the garden contains planters that were designed based on plans taken from the Internet, the most prominent feature is the brightly painted Tundra Buggy tire plots (see Appendix A). Relying on local ingenuity and creative problem solving, the buggy tire plots were partly the result of a chance connection between the garden's steering committee and the manager of the community's landfill. This is the type of chance encounter and exchange of ideas that cannot be created, but that becomes increasingly likely when planning is done in a collaborative manner.

From a design standpoint, the halved Tundra Buggy tires offer a coherent and vibrant focal point for the garden, and for the community more broadly. They also offer a number of ancillary benefits that prove to be important when designing a garden that meets the needs of Churchill. First, having been designed from discarded materials, their use has repurposed waste that would otherwise have ended up in the community's landfill. Being designed to carry the weight of a fully loaded tundra buggy, the tires are also most certainly hardy enough to remain part of the garden for years to come. As such, their use has limited the need for future resource investment. Whether by coincidence or by design, the heavy black rubber walls of the new plots also do an excellent job of capturing, storing, and reradiating heat into the soil (a welcome property in a garden that can face large daily temperature fluctuations, even in mid-summer). Finally, the reuse of the tires as a feature in a prominent community-led project ties the garden and its users to the tourism industry, and marks the local roots of Churchill's now internationally recognized tourism experience.

Given the range of influences over Churchill's landscape and its citizen's place identity, it is uncertain whether the threat that climate change poses to citizen's place connections will spur adaptive actions. The development of the Churchill garden is exactly the type of project adaptation scholars and activists might envision. However, it was not a planned response developed via a formal adaptation planning process (place-based or otherwise). Still, in a place where institutions control access to the landscape, where continued outmigration threatens the stability of a community, and where the priorities of business leave "suitcase people" in the place of families, this small project marks the beginning of a hopeful story. Quiet expressions of resistance are emerging in the face of consistent mobility that disrupts, displaces and at times devalues the community's rich and varied identities and place histories. Such expressions show that through a respect for culture and identity, collaborative planning can tap into place to produce the type of commitment, trust and ingenuity that produces small but meaningful change in the face of seemingly intractable complexity and uncertainty.

CHAPTER 5:

CONCLUSION

5.0 Returning to the Story

I opened this dissertation by arguing that the pursuit of local collective climate action can benefit when a community gains control over its climate change story. Unfortunately, in Churchill this control still seems to be elusive, although there are encouraging counterexamples to this general trend. The forces that have led to this outcome have been explored in a variety of ways in each of the manuscripts that make up this dissertation. Results from Chapter two suggest that climate change messaging has overlooked the social story of place that is woven through citizens' experiences of climate change. Chapter three demonstrates that tourists visit this threatened landscape in part to enhance their own sense of place identity by becoming part of this local story. Finally, Chapter four explores the challenges that are inherent in this dynamic, and argues that place identity in Churchill has been appropriated and repackaged as a homogenized story that has considerable political and instrumental value.

This dissertation adopted a complementary mixed methods approach that was informed by best practices in case study and grounded theory research (Charmaz, 2014; Yin, 2003). Each of the manuscripts in this dissertation has therefore elaborated on key findings presented in other chapters, or has approached the same central research objective from a unique angle. The result is that these manuscripts contain implicit empirical and/or conceptual linkages. In this final chapter I return more earnestly to the allegory of a community controlling its story to summarize and more explicitly synthesize the findings contained in this dissertation. Consistent with the conceptual framework that was outlined in Chapter one, I do so by emphasizing the relationship between place and vulnerability, and by underscoring how this relationship shapes opportunities for collaborative adaption planning. In addition to guiding this narrative summary, this conceptual framework is also used as a framework to summarize key findings on the next page (see Table 5.1). Following this summary, I reflect on the practical relevance of this research and present recommendations for adaptation planning that are germane to Churchill's unique context, but that also have application more broadly. The goal throughout is to highlight the significant contributions the place literature has made thus far, to illustrate how my work has

extended this emerging discourse, and finally to suggest where scholarship and practice on this topic might go from here.

Table 5.1 – Summary of key findings

	Chapter 2	Chapter 3	Chapter 4
PLACE	• Citizens' sense of natural attachment was significantly stronger than their sense of social attachment. • Citizens had a strong sense of place identity and slightly stronger sense of nature relatedness. • A strong sense of nature relatedness may provide a platform for a rapid place bonding process. • A strong connection to place and nature has not precipitated adaptive behaviour despite the recognition of local climate change impacts.	• Visitors had a notably higher sense of nature relatedness than place identity, likely due to their limited experience in the local environment. • Visitors' place identity was significantly correlated with all three motivations for visiting Churchill • Nature relatedness and place identity influence LCT motivations directly, and by shaping visitors' concern for climate change.	• A critical conception of place highlights how place connections are influenced by broader flows and connections in society. • Citizens weigh risks to their place identity from climate change impacts against other relevant risks. • A history of top-down planning has shaped the Churchill landscape, limiting citizens' control over their place identity. • Place identity in Churchill has been appropriated to promote instrumental and political benefit.
VULNERABILITY	• Both material (e.g., infrastructure) and immaterial (e.g., cultural traditions) community assets are vulnerable to climate change impacts • There is a social dimension to the experience of climate change impacts, but biophysically or economically focused communications fail to translate this into individual concern and action	• Travel motivations will shift with a changing climate. A lack of understanding about this process can contribute to destination vulnerability by undermining visitation (e.g., by reducing financial resources). • LCT travel contributes to impacts in vulnerable destinations. Churchill visitors also wanted to engage in natural reflection and be part of a local story, not just experience a disappearing destination.	• Churchill's community based sustainability planning process has built trust and capacity in the community. • Citizen's attend to a wide range of place identity threats, potentially drawing attention away from the need to adapt to climate change, which could increase vulnerability.
COLLABORATIVE ADAPTATION	• Place can provide planners and citizens a common frame for examining how local values, traditions and identities are vulnerable to climate change • Focusing early discussions on experienced impacts in valued places can help build trust and consensus before tackling more complex and contentious issues regarding climate science and climate futures.	• A desire to learn about climate change appears to be part of the LCT motivation, presenting opportunities to engage visitors in discussions about the realities of local climate change. • Visitors illustrated a desire to reflect on natural values with similar individuals. This desire could be capitalized on to create a stronger social norm regarding sustainable behaviour amongst visitors and citizens.	• A lack of personal control over citizen's place identity limits the likelihood of place catalyzing collaborative planning efforts. • A place based framework for adaptation planning is likely to generate conflict, rather than consensus, if the locus of control is perceived to come from outside the community.

5.1 Experiencing Climate Change Through Place

As I have stated at various points throughout this dissertation, the concept of place has emerged as a constructive frame for rethinking, or perhaps thinking more deeply about what it means to be vulnerable to climate change. This argument is not, however, distinct to discussions that adopt place as a means to examine society's relationship to this issue. The use of the place

concept within the climate change field parallels broader calls to examine culture, identity and local values in the context of climate change impacts and adaptation (Adger et al., 2013; O'Brien, 2009; O'Brien & Wolf, 2010). In either case, there are two overarching themes that are apparent within this body of scholarship. The first is a drive to understand how climate change will shape the intangible factors that are critical to quality of life within communities, and society more broadly (Willox et al., 2012; Wolf et al., 2012). The second is a need to explore whether and how these same forces might act as enablers and/or barriers to adaptation (Adger et al., 2013; O'Brien, 2009).

In both instances place has proven itself to be a fruitful investigative frame. In a recent review of the climate adaptation literature, Adger et al. (2011) argued "that climate change policy underemphasizes, or more often ignores completely, the symbolic and psychological aspects of settlements, places, and risks to them" (p. 2). This gap signals why place has arisen as an important new way of conceptualizing climate change vulnerability and adaptation. As Chapter two argues, it may even be part of a broader shift toward a third wave of vulnerability thinking. The shift from first to second wave thinking was precipitated by the recognition that vulnerability is to varying extents a socially constructed phenomenon (Dessai & Hulme, 2004; Schipper, 2006; Smit & Wandel, 2006). Still, many of the dominant frames that guide second-wave adaptation research and policy development (e.g. climate science, economics, ecology) lack mechanisms for weighing non-material dimensions like culture, identity or local values in the risk accounting process. Place, on the other hand, offers climate change scholars a meaningful way to engage with these issues.

The concept of place has theoretical origins that stem directly from an appreciation of the value and uniqueness of symbolic experience, and the role culture plays in the construction of authentic landscapes (Hough, 1990; Lefebvre, 1991; Relph, 1976). These theoretical roots have given way to multiple traditions of place research (Morgan, 2010), but this common origin means a language of place is shared across many disciplines (e.g., Geography, Urban Planning, Sociology, Environmental Psychology, etc.) (Cresswell, 2004; Gieryn, 2000; Lewicka, 2011; Manzo & Perkins, 2006). Place can therefore promote collaboration by supporting interdisciplinarity. As Manzo and Perkins (2006, p. 336) note, this integrative way of thinking also offers a "grounded or ecological approach to community planning". In other words, place

offers a means to get at what is important to communities. Taken together, these characteristics have allowed this decades-old concept to act as a new vehicle for weighing experiential risks in a field where material threats tend to dominate.

The importance of this role from the perspective of fostering collaborative adaptation planning cannot be overlooked. Cultural forces are not only embedded within the social, economic and political processes that construct both landscapes and environmental risks (Beck, 1992; Hough, 1990), they also shape the way these risks are perceived, interpreted and acted upon (Kahan, 2012; Lima & Castro, 2005; M. Thompson, 2003; M. Thompson et al., 1990; van der Linden, 2014). In a recent meta-analysis examining applications of cultural theory for instance, Xue et al. (2014) found that a wide body of empirical work has confirmed that cultural biases are a significant predictor of risk perceptions. This work also found that cultural worldviews have a stronger influence on risk perceptions when the threat in question is human-induced, as in the case of climate change. In this sense, what a group deems to be an acceptable adaptive pathway might depend not only on what experts argue is necessary for reducing climate-driven risks, but also what that group sees as being appropriate for their preferred cultural frame.

Generally speaking, cultural theory and place theory have not had a strong influence on each other, although Lima and Castro (2005) have illustrated that cultural biases can lead to an attenuation of local risk perceptions. That said, the idea that the psychological process of risk perception is rooted in complex social phenomena, including our interactions within coherent social networks (Douglas & Wildavsky, 1982; M. Thompson et al., 1990), is consistent with findings in this dissertation. As Chapter four argues, an individual's experience of climate change within the local landscape is not frozen in time and place. It is part of a convoluted and ongoing suite of life experiences. Impacts like melting sea ice and thawing permafrost can have relevant consequences for an individual's relationship to place. But so do many other forces. Some may be more focused than climate change, like the damming of a river. Others may be equally diffuse, like the ongoing shift toward a technological society. Regardless, the outcome is that one's choice to engage (or not engage) in place protective behaviour is ultimately based on more than the perceived desirability of achieving that end. A potential action can be deemed desirable on psychological grounds, yet be viewed as being completely futile at the same time. If an individual judges that a proposed adaptation will not influence the threat to their place

connection (or that his/her connection is under imminent threat from something else), they may well choose to apply their attention, efforts, and resources elsewhere, or not at all.

An important contribution of this work has therefore been to clarify how individuals interpret climate-driven place risks within the broader context of their lives. The perception of climate change risks and the actions taken in response to such risks are not linked in a clean causal chain. The findings compiled here illustrate that even when perceptions align in a manner that seems conducive to action (e.g., risks are seen as temporally and locally salient) (Swim et al., 2011), an absence of proactive behavior can and does persist. As Chapter two illustrates, citizen's can fail to act, or even exhibit extensive concern, even after they perceive themselves to have experienced climate change impacts in the local environment. Perhaps more notably, both quantitative (Chapter two) and qualitative (Chapter four) approaches followed here also suggest that this lack of action and concern can persist even when citizens have a strong connection to place.

This finding belies the somewhat linear thinking of place and climate change scholarship to date, which ostensibly argues that when climate impacts threaten valued places, this threat should provoke a place protective motivation that leads to concern and action. It also points to a key need for future research. Despite the ostensible hope that place might catalyze autonomous collective action, the potential for communities to lose the places they love and that define them may not be a sufficient shock to shake loose a business as usual mindset. Explorations into the link between place and pro-environmental behaviour have shown that place can contribute to highly distinct behavioural outcomes among different groups (Devine-Wright & Howes, 2010; Halpenny, 2010; Scannell & Gifford, 2010b; Vaske & Kobrin, 2001). Similarly, a future research priority should be to compare case study communities facing the same climate change impacts (e.g., sea level rise, drought, etc.,), and to trace whether and how a sense of place attachment and identity can explain why different groups often have "vastly different responses" to the same risks (Adger et al., 2013).

Demonstrating that a gap between 'desired' perceptions of climate change and adaptive action can persist despite a strong sense of place attachment and identity is a key finding for this research. However, exploring why such a gap might exist was an equally, if not more important

goal. A considerable part of the answer to this question relates back to how the climate change story is unfolding in Churchill. As evidence presented in Chapter two illustrates, the framing of salient risks within the scientific and media driven climate change narrative seems to be not so salient for citizens in this community. Once again, messaging of climate change risks in scientific outlets, the media, and even community presentations seems to meet many of the scholarly conditions of an effective communication for the Churchill context (e.g., they focus on an economically relevant issue, they are spatially salient, they highlight current impacts, etc.) (Moser, 2009; Swim et al., 2011). Despite this, communications still seem to miss the mark in terms of generating concern and promoting action.

It is argued here that this is an indication that issue salience in a climate change context involves a wider range of dimensions than the literature is currently emphasizing (i.e., spatial and temporal congruity) (Swim et al., 2011). Chapter two suggests that issue salience is biased towards the here and now (Scannell & Gifford, 2013), but also involves a social bias. This work is the first to the author's knowledge to identify and argue for the importance of social salience in a climate action context. Similar research, however, has shown that climate driven place change can disrupt social and cultural structures, which can become a significant frame for experiencing climate change (Willox et al., 2012).

These findings are relevant for communities interested in a collaborative approach to adaptation. They appear to suggest that climate change communication strategies can be rendered more effective if they directly acknowledge the link between impacts and the social reality(s) of a community or cultural group. In support of Amundsen (2015), this work therefore suggests that stakeholder engagement or citizen participation campaigns might find more fertile ground for consensus by building early discussions around current experiences with climate change, and the cultural and social implications therein. The obvious alternative is to initiate discussions by emphasizing the scientific certainty of climate change. However, after decades this approach has been shown to be ineffective in a community context. While the details of how to tap the social reality of a community will necessarily vary from place to place, this general strategy is highly consistent with the idea that the experiential nature of community life is a critical starting point for effective and meaningful climate adaptation (Grothman & Patt,

2005; O'Brien, 2009; O'Brien & Wolf, 2010). It also underscores the importance of a collaborative approach, particularly the need to tap into local knowledge structures.

As the recent synthesis report from Natural Resources Canada indicates, this type of call to recognize the socio-psychological foundations of climate change action is beginning to have an impact beyond the halls of academia (Warren & Lemmen, 2014). Despite this encouraging early indicator, the climate change story continues to be framed largely around quantitatively measurable impacts (e.g., ecological or economic losses; impacts on human health; etc.,). This framing may suit the needs of climate change and planning experts (Adger et al., 2011; Fischer, 2000), but it seems to have failed to adequately connect with the place-based frames that citizens use to understand environmental change. As this research illustrates, this persistent gap appears to be hindering much needed collective action around this pressing issue. A second priority for future research is therefore to examine more closely the conditions required for collective action, and how a culturally and socially conscious approach to communication and public engagement might help to mobilize communities.

5.2 The (Co)Construction of Place and Climate Change Experiences

For decades scholars have uncovered and explained the psychological processes that lead to pro-environmental behaviour. Much has been learned, but perhaps nothing as important as the fact that these psychological processes interact with broader social, cultural and economic structures (Kollmuss & Agyeman, 2002; Steg & Vlek, 2009). These structures shape perceptions, and are shaped by them. An understanding of what leads to (or inhibits) desired behavioural outcomes requires an examination of both. Understanding how place influences climate change adaptation is no exception.

Thus far I have discussed how place reinforces cultural and social frames for experiencing climate change. I have also argued that these same frames might offer a window into communication and engagement strategies that are more conducive to collective action. This does not, however, address the fact that a broader suite of structural forces is also at play. Nor does it acknowledge the fact that empirical research on place and climate change to date seems to have largely overlooked their influence. In the context of this research, examining this gap meant looking more deeply into the ways that mobility shapes connections to place in Churchill.

Consistent with my conceptual framework, this involved examining how people, knowledge and capital come together to shape and control the community's place identity and relationship to climate change.

Thousands of visitors are drawn to Churchill each year by a desire to experience a vulnerable, and in their eyes disappearing place. In addition to engaging in a last chance experience, these visitors are also interested in becoming part of the climate change story, at least as it is currently unfolding in Churchill. As findings from Chapter three illustrate, visitors are also looking to explore and reaffirm a sense of nature relatedness and place identity through their last chance experience. This link suggests that a desire to consume threatened destinations is tied up in visitors' efforts to construct and maintain their sense of place identity. It also illustrates how place-based psychological motivations contribute to the movement of people and capital through the community. Consistent with much of the LCT literature (Dawson et al., 2011; Lemelin et al., 2011; Smith, 2012), this finding sheds light on the ethical dilemma of this travel behavior. Tourists seem willing to accept or remain ignorant of the fact that their material actions have negative consequences for a destination, so long as there are individual psychological benefits to their behaviour.

This travel behavior shapes not only visitor identities, but the place identities of citizens in Churchill as well. The rise of tourism investment in Churchill, and the associated need to provide desirable visitor experiences puts pressure on citizen's rights to the community and landscape during the peak of tourism season. The construction of what Mitchell (2013) describes as a neo-productivist leisure-scape means citizens sense of place identity is squarely at the centre of a negotiation over the future of the community's relationship with the landscape. This includes the right to access key places whose value may be viewed quite differently depending on one's position (or lack thereof) within the tourism sector. It is tempting to simply assume that there is a simple divide between local and non-local individuals here. For instance, one could easily conclude that local citizens would prioritize the *use value* of local places, and stand opposed to the tourism sector's motivation to withdraw *exchange value* from these same places (Lefebvre, 1991). However, this false inside-outside dichotomy does not adequately capture the challenges presented by this negotiation over place.

Citizens' access to the landscape and community is drastically altered as a result of tourism. At times, they limit their time spent in, or even abstain from using restaurants, pubs and other public spaces in order to make space for visitors. The presence of tourists can also lead to an adaption in one's use of the landscape in order to accommodate the needs and expectations of others. Several participants, for example, described the conflict in values that can arise when visitors come face-to-face with Churchill's trapping and hunting traditions. However, as Mitchell and de Waal (2009) argue, it is important to note that not all citizen's will be resistant to a transition in identity. For example, findings from Chapter two suggest that new citizens may actually position themselves differently in relation to nature and place than individuals who have lived in the community for a longer time. Contrasted against the community's historic industrial identity, some may even find that having a strong eco-tourism sector reinforces their belief that the local landscape is unique and has value in its own right.

The key challenge may therefore lie more in the way that visitation dynamics actually shape social interactions between citizens and visitors to the community. As last chance tourists engage in interactions with primarily other visitors and/or seasonal employees (e.g. buggy drivers, restaurant staff, etc.), they receive a filtered and homogenized experience of the community. With reduced interaction between visitors and local citizens, opportunities for the community to challenge, contextualize, or even comment on the last chance story (wherein Churchill's future is somehow beyond hope) become increasingly rare. As Chapter three illustrates this trend can reach an extreme in the form of single day tours that bring visitors to Churchill for a highly compressed experience. In this particular case it is not inconceivable for visitors to spend less time in the community than on the plane ride in and out of Churchill. Under these circumstances the story they are joining is one that is almost wholly defined by the specific needs and values of the tourism sector. This is an extreme example. However, it illustrates the ways in which the community's control over its place identity and its climate change story are contested by a range of institutional agendas.

Perhaps more importantly, this example highlights the fact that the influences that shape these outcomes are highly dispersed. The media and the tourism industry outside of the community, for instance, reiterate and reinforce the message that Churchill will be inevitably and irrevocably altered by climate change (Kasperson et al., 2010). Allowed to run unchecked, stories that

define places like Churchill as "things you must see before they disappear forever" (Yahoo Travel, 2014) ensure more and more that communities are understood as part of global story with an undesirable, but inevitable end. The current forecasting of Churchill's story seems not to involve a collection of committed actors who adapted to ensure the future of their community. Instead, it involves a once unique and vibrant place that became a warning to others. While this story may sell tours and newspapers, its also helps to ensure that the community understands itself not as a place with the strength and commitment to build resilience in the face of climate change, but as a signpost whose fate was always in the hands of others. That consistently facing such a narrative would lead to a perceived lack of control and at times a sense of fatalism, as this work has demonstrated, is not entirely surprising.

Yet to date, the place literature has said little about these types of influences, and how they shape trust, collective efficacy, and commitment in the context of collaborative adaptation. This work moves past this current roadblock by exploring how a definition of place that is centred on mobility can clarify how flows of people, knowledge and capital shape opportunities for collective action. Stripped of its sense of purity and its need for boundaries, a critical perspective adds new dimensions to discussions of place and climate change. It illustrates that the social and economic forces that have produced the risks that communities face due to climate change, have also produced a broader influence. These same forces seem to condition a host of other risks that threaten our connections to place and complicate the process of identifying and *prioritizing* actions that are relevant to addressing the threat of local climate change impacts. Such forces are also shown to appropriate and strip down place identity to create a marketable product, and thus leach out much of the uniqueness and authenticity a community might act to protect.

This dynamic view of place is a rather important contrast to the place and climate change literature's current use of a bounded notion of place. It challenges the moral view that individuals and groups can and even should be able to discretely identify and react to place threats that are specifically related to local climate change impacts. As Chapter four argues, the processes of *shaping* and *appropriation* help to ensure that even our most rooted local connections are influenced by forces that extend beyond our immediate experience. In this sense, our place identities are neither static, nor completely under our control. Pinning down

what exactly is threatening this connection can thus be a rather complex and muddled task. In considering the conditions that are conducive to collective action, it may therefore be necessary to question whether the supposedly clear and sacred connections we build with places are merely constructed through our experience, or are co-created by powerful, often instrumental agendas on the part of both government and industry.

If the latter, the trajectory of research on place and climate change may need a course correction. A significant step in the evolution of adaptation thinking was the acknowledgement that vulnerability is the product of multiple complex drivers, and the source of equally complex and diverse outcomes (Adger, 2006; Smit and Wandel, 2006). If the concept of place is to truly deepen our understanding of vulnerability then, it must arguably be conceptualized in a manner that is equally multifaceted. Despite this, the literature to date has tended to overemphasize a purely psychological understanding of place. The focus on mobility that was used here is by no means the only viable approach to considering place in a more critical manner (Gruenewald, 2003). However, if future research in this area is to contribute to the discussions about power and resistance that are at the heart of communities' vulnerabilities to climate change, a more critical view of place is a necessary starting point.

5.3 Lessons for Climate Change Adaptation Planning: Preparing for Action

A key limitation of the manuscript dissertation structure used here is the limited space that each manuscript offers to reflect on the practical context and relevance of the research. To help address this limitation I outlined the practical context related to adaptation planning in Churchill, Manitoba in the introduction to this dissertation. This included a review of key documents, planning frameworks, and research and policy initiatives. To further address this limitation, I reflect here on the practical relevance of this research given Churchill's current relationship to the climate change issue. I make a number of key recommendations that reflect the research findings that are summarized above, and that are outlined in more detail in Chapters two through four. These key recommendations are also summarized in Table 5.2. Importantly, these recommendations emphasize actions that can be reasonably taken given the community of Churchill's current resources and planning capacity.

Churchill has a history of planning and development initiatives that have offered limited, and at times no control over local outcomes. These initiatives have had a considerable impact on the character and function of the local landscape. By extension, they have greatly impacted citizens' connections to place. Being externally imposed, their influence has conditioned the belief that citizens' cannot act to maintain their place connections. Worse, the scale of changes imposed, most notably by the Churchill river diversion, have led some members of the community to conclude that they have little connection left to maintain.

Despite this history, recent collaborative efforts to develop Churchill's community sustainability framework have demonstrated that there is a viable alternative to top-down decision-making. By focusing on capacity building and citizen involvement, these efforts put the community more squarely at the centre of the process of defining Churchill's future. In this regard they have spurred ongoing, locally led initiatives like the Churchill community garden project that are helping community members to reclaim their place identity. This particular project is also helping to address climate change vulnerabilities within the community in a small, but symbolically meaningful way.

The adaptive capacity this project is helping to build is an outcome with a somewhat ad hoc origin. Despite recommendations in the Churchill Sustainability Planning Framework (CSPF), the community has yet to conduct a vulnerability assessment and is operating without the guidance of a climate adaptation action plan (The Institute of Urban Studies, 2011). For a community whose economy and local culture are tied to a landscape that is already being shaped by climate change (e.g., through changes in the formation/retreat of sea ice) this presents a troubling blind spot. Having not conducted a vulnerability assessment, there is limited knowledge of the risks the community is facing. More importantly, there is no collective understanding of what local and non-local forces are contributing to community vulnerabilities. Finally, without an adaptation plan there is no source of coordinated guidance as to what investments, partnerships, policies and projects might help to limit unwanted disruption, or allow the community to capitalize on unexpected opportunities presented by climate change.

A more significant risk, however, might lie in a potential failure of the community to take ownership over the process of defining its vulnerabilities and ongoing relationship to climate

change. The province of Manitoba does not yet have a provincial adaptation strategy and action plan, but has laid out a clear mandate to develop a comprehensive adaptation strategy (see Chapter one) (Government of Manitoba, 2013b). Provincial guidance in this regard is most necessary, particularly in the continued absence of a national adaptation strategy. However, the goal to "undertake a province-wide climate change risk assessment to examine potential risks facing Manitoba's communities, ecosystems and economy" (Government of Manitoba, 2013b, p. 23), means that provincial efforts present both opportunities and challenges in the Churchill context.

Obtaining or aligning the financial and human resources needed to support adaptation planning is a prerequisite for any municipality (Burch, 2010), but can be a particular challenge for small municipalities (Bowron & Davidson, 2012). Access to provincial resources would therefore help address capacity gaps in Churchill. That said there is also the risk that a provincially driven adaptation agenda could make Churchill the recipient of yet another imposed initiative, not unlike those that have already contributed to a sense of disempowerment in the community. Indeed, given Churchill's location, global tourism reputation, and the sensitivity of the polar bear population to shifting ice conditions (Stirling & Derocher, 2012), it is reasonable to expect that Churchill is high on any list of communities slated for a provincial risk assessment. These same factors do, after all, make Churchill a highly strategic political choice for unrolling the province's adaptation pathway.

The challenge here lies in the fact that the current state of planning in Churchill leaves the community poorly positioned to take ownership over such a process. As this dissertation has argued, any expert driven adaptation process that does not have legitimate local leadership could therefore undermine the goal of capturing the needs, priorities and values of this highly unique community (O'Brien, 2010). An outside adaptation agenda therefore runs the risk of addressing issues that seem significant at a provincial level, but that are inconsequential to quality of life in this northern community. Worse, a top-down agenda could damage the somewhat tentative trust and adaptive capacity that has already been built through the sustainability planning process. This would not only be a step back for local stakeholders, but could reinforce the ongoing narrative that Churchill is not in control of its own future. While possessing an adaptation action plan should be a key goal for Canadian communities (including

Churchill), it is not worth achieving this goal at the expense of the trust and political will that is ultimately needed to implement necessary changes. In Churchill, building this trust and political will must continue with the collaborative, inclusive approach to defining the community's future that was initiated through the CSPF process.

Thankfully the CSPF process has provided an ideal staring point for this goal. A short-term priority in working towards a locally defined adaptation action plan should therefore be to create a climate adaptation task force as a sub-committee of the existing sustainability committee. Given the legacy of top-down planning in Churchill, this task force might also benefit from the involvement of a broader advisory group that includes stakeholders from key organizations, sectors, and demographic sub-groups in the community (e.g. the town, the CNSC, tourism businesses, first nations groups). This approach would not only build on the momentum of recent planning efforts, but also encourage a planning structure where adaptation thinking can be effectively integrated across dimensions of the existing community sustainability plan. Perhaps more importantly, establishing an adaptation task force would put the community in a stronger position to partner with the province as leaders in any local adaptation effort, helping to ensure that local values and priorities shape any future planning processes.

5.4 Lessons for Climate Change Adaptation Planning: Taking Back Control

Establishing a task force that is ready to capitalize on any opportunities for change is a logical starting point. However, there is still the question of catalyzing even this initial step, and perhaps more importantly, of building the broader momentum needed to sustain a community oriented planning process. As evidence presented in Chapters two and four illustrate, a general awareness of local climate change impacts and a strong connection to place have not precipitated extensive concern or adaptive actions to date. Following the Natural Resources Canada planning model presented in Chapter one, this suggests key next steps in Churchill involve building an awareness of the need to adapt and finding a way to mobilize resources (Warren & Lemmen, 2014). The findings presented throughout this dissertation suggest that the community's place connections are not currently poised to catalyze a shift from general awareness, to a perceived need for coordinated action. More importantly though, they illustrate several key reasons for this gap. In particular, place has not become a motivation for action not because strong connections do not exist, but in large part because there is little sense that

actions to address climate change will ultimately help protect them. If a place-based approach is going to help move the community forward, citizens must first begin to feel ownership over the processes that shape their connections to the landscape.

Key challenges like the ongoing influence of the Churchill River diversion are not likely to be addressed easily or in the short-term. As one citizen put it, "hydro will never let millions of dollars worth of water go so we can go boating. That's never going to happen". This is most likely accurate. Economic considerations related to the Churchill River diversion, the tourism industry, or the Assiniboine Park Zoo will continue to have significant influence over citizen's sense of place identity and attachment. However, a counter position does exist within the community. This counter position recognizes that the value of Churchill's landscape extends well beyond the exchange value that can be extracted from its use or appropriation. Most importantly though, it suggests that questions of place are still embedded within the processes that shape this unique landscape. There may therefore be short term and low cost steps that could have a meaningful impact on taking back the community's sense of place.

It is apparent that Churchill is not in control, or even an active participant in the pervasive conversation that currently casts it as an inevitable casualty of climate change. As the perpetuation of this story seems to have a disempowering impact, becoming part of the conversation would represent a positive step for the community. Clearly, this could mean many things. However, given the current situation it might logically start with the community clearly defining its position on climate change, and what it means for the future of Churchill. Many communities across Canada have adopted a climate change action charter to catalyze climate change planning. In Churchill, this step could be not only an important call to action, but also a symbolic act in reclaiming ownership over the community's relationship to this global issue.

Recognizing that climate change is a highly political topic in Churchill, disagreement and conflict is likely to be part of early community discussions (regardless of the approach taken). That said a strategic starting point for discussion could be a focus on local experiences of climate change impacts and the cultural and social relevance therein (Amundsen, 2015). First and foremost, this approach would recognize that knowledge and authority in Churchill are often derived through experiences that are read in the landscape. Second, it would acknowledge that much of the

scientific research that has provided evidence about climate change impacts in Churchill has not always been entirely transparent to the community. Thus, building a point of consensus around the community's current experiences and then working backward into more contentious issues of the community's climate future could help build trust around an issue where feelings of exploitation are often present.

In this same vein, early planning efforts should explicitly acknowledge how climate change impacts are linked to other complex and dynamic drivers of change in the community (e.g., population decline) (Amundsen, 2012). Decades of media and research attention have left Churchill somewhat exhausted with the topic of climate change. Highlighting how climate change fits with other equally important issues the community is facing may help to address this sensitivity.

Given findings discussed in Chapter two, focusing on experiences that have an explicit social or cultural emphasis may be a key strategy to building community buy-in. The Climate Wisconsin Project, for instance, has produced a set of videos describing the relevance of climate change impacts throughout the state. Topics range from forestry to fly-fishing, but most importantly are captured through the eyes and voices of local citizens. Notably, much of what these citizens deem to be at stake is a clear reflection of research on place and climate change (Wisconsin Educational Communications Board, 2014). A similar approach in Churchill could help build a shared understanding of what climate change impacts mean for the community. Whatever media product is produced could also be used to communicate this understanding beyond the boundaries of the community, offering a secondary benefit. The overall impact of a project of this nature on reclaiming Churchill's climate change story would likely be small given the intense media scrutiny that is imposed on the community. That said, it would ensure local perspectives are part of the conversation, and would offer outsiders looking for information on Churchill an alternative to those limited perspectives that benefit financially or politically from the disappearing Churchill narrative.

Finally, thousands of social interactions take place between visitors and representatives (both local and non-local) of the community every tourism season. Every interaction should be treated as an opportunity to redefine and take ownership over the story of Churchill's future. This effort,

however, must first recognize and then address key trends within the community that present a barrier to this goal. These include a withdrawal of local citizens from public spaces during bear season, and a tendency for employees in the tourism sector to be non-local. Again, exactly how these barriers are addressed could take on many forms. Several steps in the short term, however, could set the path toward a future where the tourism sector becomes a strong means of reinforcing citizens' sense of place.

It should be pointed out that channels for making such connections already exist. The best example is arguably the Churchill Northern Studies Centre (CNSC), which offers learning vacations, citizen science programs and presentations from community members. However, these channels often do not focus on the community's relationship to climate change, or conversely are not told through the eyes of local citizens. A story exchange emphasizing local experiences of climate change impacts could therefore serve an important purpose. It would allow visitors who seem to posses a motivation to learn about the realities of climate change in Churchill (see Chapter three) to see beyond the story that is constructed by the media and the tourism industry. It would also offer willing citizens a chance to correct what are often seen as misperceptions about the community, and to build a sense of control over how the outside world sees their relationship to the land.

A much broader objective in support of this goal should be to reestablish strong local employment within the tourism sector. There was a time when buggy drivers in the community were mainly local. However, outside seasonal employees are now a noticeably dominant labour pool for not only polar bear tours, but also employment in the tourism industry more generally. As discussed in Chapter four, this trend has contributed to a homogenization of visitor's experiences of Churchill. It also perpetuates the exchange of second hand stories that often fail to resist the dominant discourse that contributes to the community's inefficacy.

Generating more local employment in the tourism sector is a long-term goal that faces many barriers. Employment seasons for the port and the tourism industry overlap, for instance, which puts tourism jobs in direct conflict with higher-wage jobs in the shipping industry. Employment in the industry is also seasonal and often part-time, offering less stability as a source of livelihood. There also seem to be perceptual barriers limiting local employment opportunities.

For example, workers within the tourism industry (including local workers) note that this form of employment can be viewed as "singing for your supper". A social stigma around employment within the tourism sector may therefore also be limiting the desirability of these employment opportunities. The structure of these barriers are complex and far beyond the scope of this research. Nonetheless, stronger local employment within the tourism sector could not only help reclaim the community's sense of place, but also help stem other trends that are contributing to vulnerability in the community (e.g. population decline, unemployment, etc.,). Research into this topic is thus a key priority not only related to climate adaptation, but the sustainability of the community more generally.

Table 5.2 – Summary of key recommendations

Recommendations	Timeline
The community of Churchill should define its relationship to climate change by adopting a climate change charter.	Short term (12 months)
The community of Churchill should form a climate change adaptation task force as a sub-committee of the current community sustainability committee.	Short term (12 months)
Any adaptation task force should include representation from key institutions, businesses, and demographic sub-groups, potentially through a broader community advisory committee.	Short term (12 months)
A presentation series focused on local stories of climate change experiences should be developed and offered for visitors. Messaging should emphasize the cultural and social implications of local climate change impacts.	Short term (12 months)
The Town of Churchill should secure resources for an adaptation coordinator to support the efforts of the adaptation task force.	Mid term (1-2 years)
The community of Churchill should initiate a collaborative planning process to explore its climate change risks and vulnerabilities.	Mid term (2-3 years)
Churchill should draft a local climate change adaptation plan.	Mid term (2-3 years)
Churchill's climate change charter should be translated into a media product that tells the story of climate change from a local perspective.	Mid term (2-3 years)
Research should examine the structure of and barriers to local employment in the tourism sector	Long term (3-5 years)
Churchill should develop and adopt a local employment strategy	Long term (3-5 years)

5.5 Final Summary and Thoughts

In this dissertation I have put the concept of place at the centre of an examination of climate change adaptation planning. I have taken the explicit stance that a collaborative model of planning is necessary for any planning process that hopes to ensure that a community's adaptive pathway is rooted in the culture, values and identity of its citizens. In doing so, I have adopted a methodological approach that draws from case study and grounded theory

epistemologies. This approach has been operationalized following the principles of mixed methods research. It includes a mixed methods survey that relates Churchill citizens' perceptions of place to their perceptions of climate change; a quantitative survey that examines how place and nature contribute to travel motivations among polar bear viewing tourists; and interviews with Churchill citizens that delve more deeply into how a community's place identity shapes opportunities for collective action and collaborative adaptation.

Each of these manuscripts is methodologically distinct and to a certain extent draws from a unique set of literatures. They coalesce around the goal of contributing to a deeper understanding of what it means for a community and its citizens to be vulnerable to climate change. This research demonstrates that place can be a helpful frame for accounting for the experiential risks of climate change, but only when such risks are considered in the context of the broader range of factors that threaten a community's culture, values, and identity. Findings clearly illustrate that the concept of place is no panacea. Inaction and a lack of significant concern can persist even when a community has strong connections to a landscape that is acknowledged to be undergoing climate driven change. How and why this situation might occur is not particularly well examined in the broader scholarship on place and climate change to date. A key contribution of this work has been to illustrate that the continual use of a bounded notion of place within this literature is a central reason for this gap. By examining place as a product of not only personal experience, but also mobility, this work has opened a new and important avenue for a more critical examination of place and climate change.

Still, I do not wish to discount the significant contributions scholarship on place and climate change has made (and will likely continue to make). This body of work offers a novel lens for exploring how climate change impacts shape quality of life in ways that go beyond our material understanding of risk and loss. This is an invaluable contribution to a discourse that often assumes only that which is tangible, and often instrumental, is worthy of our attention and resources. In support of this I have argued that a focus on place may well be at the centre of a shift toward a third wave of thinking about vulnerability. Still, scholarship and practice related to adaptation planning will increasingly shift away from a focus on plan development, toward the realization of adaptive actions. To continue to play a useful role in this context, place will need to be re-examined as more than a means to define what is at risk, or as a potential catalyst for

action. Practically, this means developing a clearer picture of how place can contribute to plan implementation. This could involve the development of a place-based approach to community engagement, or a place-based framework for identifying which early projects can help build community trust and commitment, and thus help to catalyze additional adaptive change.

In the introduction to this dissertation the long history of settlement and land use in the Churchill region by indigenous peoples was discussed. For reasons already mentioned, while interviews and community surveys include the perspectives of First Nations and Metis citizens, this dissertation did not examine the link between place and climate change from a uniquely indigenous perspective. That said, findings from this work like the limited relationship between length of residence and place attachment or the social nature of experiencing climate change impacts bely past research on this topic. Given the community-scale focus, examining the extent that such findings reflect a uniquely indigenous perspective was beyond the scope of this dissertation. Accordingly, future work that explores how indigenous connections to place and landscape relate to experiences of, and actions to address, climate change impacts ought to build on the limited work that has been conducted in this area to date (e.g., Fresque-Baxter, 2015; Willox et al., 2012).

Finally, on more theoretical grounds, the continued efficacy of the place concept may require a more drastic turn. Critical perspectives on place exist in feminist and critical geographies. However, the use of place in a climate change context has maintained the concept's traditional sense of purity, and the associated assumption that a moral obligation to protect our rightful place trumps all else. As this dissertation work suggests, it is imperative to ask whether our sense of place may be less sacrosanct than this. While potentially devastating forces may focus our attention and draw out a place-protective response, this is not true of each and every threat to our sense of place. In Churchill for instance, the tourism sector has had a considerable and long standing influence on citizen's place identity, and has in many regards relied on this identity as a significant commodity. Despite this, the community has seemed highly tolerant of this potential source of disruption, largely because with this disruption comes a host of ancillary benefits (i.e., significant economic opportunities for the community). Only as the commoditization of place has become increasingly displaced, which has in turn limited the perceived benefits associated with this exchange, has the community begun to truly resist. In

rethinking the role place might play in our ongoing efforts to adapt to climate change, it may therefore be time to stop asking what happens when a specific risk transgresses some unseen, static threshold. Instead, we ought to be exploring how the production of place is part of the ongoing negotiation that shapes communities' climate change story.

REFERENCES

Aboriginal Affairs and Northern Development. (2011). Government of Canada program for international polar year: Highlights and achievements. Ottawa, Canada: Aboriginal Affairs and Northern Development.

Adaptation platform plenary. (2013). The adaptation platform: 1st annual report March 2013. Ottawa, Canada: Natural Resources Canada.

Adger, W. N. (2000). Social and ecological resilience: Are they related? *Progress in Human Development, 24*(3), 347-364.

Adger, W. N. (2003). Social capital, collective action, and adaptation to climate change. *Economic Geography, 79*(4), 387-404.

Adger, W. N. (2006). Vulnerability. *Global environmental change, 16*, 268-281.

Adger, W. N., Barnett, J., Brown, K., Marshall, N., & O'Brien, K. (2013). Cultural dimensions of climate change impacts and adaptation. *Nature Climate Change, 3*(2), 112-117.

Adger, W. N., Barnett, J., Chapin, F. S., & Ellemor, H. (2011). This must be the place: Underrepresentation of identity and meaning in climate change decision-making. *Global Environmental Politics, 11*(2), 1-25.

Agyeman, J., Devine-Wright, P., & Prange, J. (2009). Close to the edge, down by the river? Joining up managed retreat and place attachment in a climate changed world. *Environment and Planning A, 41*, 509-513.

Akerlof, K., Maibach, E. W., Fitzgerald, D., Cedeno, A. Y., & Neuman, A. (2013). Do people ''personally experience'' global warming, and if so how, and does it matter? *Global Environmental Change*, *23*(1), 81-91.

Altman, I., & Low, S. M. (1992). *Place Attachment*. New York, New York: Plenum Press.

Amundsen, H. (2012). Illusions of resilience? An analysis of community responses to change in northern Norway. *Ecology and Society, 17*(4), 46.

Amundsen, H. (2015). Place attachment as a driver of adaptation in coastal communities in Northern Norway, 20(3), 257-276.

Arnstein, S. (1969). A ladder of citizen participation. *Journal of the American Planning Association, 35*(4), 216-224.

Assiniboine Park Conservancy. (2014). Journey to Churchill Northern Species Exhibit Now Open at Winnipeg's Assiniboine Park Zoo. Winnipeg, Canada.

Basso, K. H. (1996). Wisdom sits in places: Notes on a Western Apache Landscape. In S. Feld & K. H. Basso (Eds.), *Senses of Place*. Santa Fe, New Mexico: School of American Research Press.

Beck, U. (1992). *Risk Society: Towards a New Modernity*. London, United Kingdom: Sage Publications.

Berkes, F. (2007). Understanding uncertainty and reducing vulnerability: Lessons from resilience thinking. *Natural Hazards, 41,* 283-295.

Bird, L. (2005). *Telling our stories: Omushkego legends and histories from Hudson Bay*. University of Toronto Press: Toronto, Ontario.

Blondin, G. (1997). *Yamoria the lawmaker: Stories of the Dene*. NeWest Press: Edmonton, Alberta.

Bodansky, D. (2010). The Copenhagen climate change conference: A postmortem. *American Journal of International Law, 104*(2), 230-240.

Borgerson, S. G. (2008). Arctic meltdown: The economic and security implications of global warming. *Foreign Affairs*, 63-77.

Bowen, G. (2008). Grounded theory and sensitizing concepts. *International Journal of Qualitative methods, 5*(3), 12-23.

Bowron, B., & Davidson, G. (2011). Climate change adaptation planning: A handbook for small Canadian communities. Ottawa, Canada: Canadian Institute of Planners.

Bowron, B., & Davidson, G. (2012). Climate Change Planning: Case Studies from Canadian Communities. Ottawa, Canada: Canadian Institute of Planners.

Boykoff, M. T., & Boykoff, J. M. (2007). Climate change and journalistic norms: A case study of US mass-media coverage. *Geoforum, 38*, 1190-1204.

Brandson, L. E. (2011). *Churchill Hudson Bay: A guide to natural and cultural heritage*. Churchill, Manitoba: Churchill Eskimo Museum.

Bricker, K. S., & Kerstetter, D. L. (2000). Level of specialization and place attachment: An exploratory study of whitewater recreationists. *Leisure Sciences, 22*(4), 233-257.

Bricker, K. S., & Kerstetter, D. L. (2002). An interpretation of special place meanings whitewater recreationists attach to the South Fork of the American River. *Tourism Geographies, 4*(4), 396-425.

Bryant, A., & Charmaz, K. (2007). Grounded theory in historical perspective: An epsitemological account. In A. Bryant & K. Charmaz (Eds.), *The SAGE Handbook of Grounded Theory* (pp. 31-57). London, England: Sage Publications.

Bulgakova, T. (2010). Climate change, vulnerability and adaptation among Nenets reindeer herders. In G. Hovelsrud & B. Smit (Eds.), *Community Adaptation and Vulnerability in Arctic Regions*. Dordrecht Netherlands: Springer Science and Business Media B.V.

Burch, S. (2010). Transforming barriers into enablers of action on climate change: Insights from three municipal case studies in British Columbia, Canada. *Global Environmental Change, 20*, 287-297.

Burch, S., Shaw, A., Dale, A., & Robinson, J. (2014). Triggering transformative change: a development path approach to climate change response in communities. *Climate Policy* 14(4), 467-487.

Burton, I., Huq, S., Lim, B., Pilifosova, O., & Schipper, E. (2002). From impacts assessment to adaptation priorities: The shaping of adaptation policy. *Climate Policy, 2*, 145-159.

Bussidor, I., & Bilgen-Reinart, U. (2000). *Night Spirits*. Winnipeg, Canada: University of Manitoba Press.

Casey, E. S. (1996). How to get from space to place in a fairly short stretch of time: Phenomenological prolegomena. In S. Feld & K. H. Basso (Eds.), *Senses of Place*. Santa Fe, New Mexico: School of American Research Press.

Castro, d. l. G. L., Derocher, A. E., Myers, P. G., Terwisscha, v. S. A., & Lunn, N. J. (2013). Future sea ice conditions in Western Hudson Bay and consequences for polar bears in the 21st century. *Global Change Biology, 19*(9), 2675-2687.

Cervinka, R., Röderer, K., & Hefler, E. (2012). Are nature lovers happy? On various indicators of well-being and connectedness with nature. *Journal of Health Psychology, 17*(3), 379-388.

Charmaz, K. (1990). 'Discovering'chronic illness: Using grounded theory. *Social Science & Medicine, 30*(11), 1161-1172.

Charmaz, K. (2014). *Constructing Grounded Theory*. London, United Kingdom: Sage Incorporated.

Chotka, M. (2004). *Climate Change and the Tourist Economy of Churchill: Perspectives of Local Residents.* University of Winnipeg, Winnipeg, Canada.

Churchill Regional Health Authority Incorporated. (2010). Strategic plan 2011-2016. Churchill, Manitoba: Churchill Regional Health Authority Incorporated.

Churchman, A. (2002). Environmental Psychology and Urban Planning: Where Can the Twain Meet? In R. B. Bechtel & A. Churchman (Eds.), *Handbook of Environmental Psychology* (pp. 191-200). New York, New York: John Wiley and Sons.

City of Thunder Bay. (2008). EarthWise Thunder Bay: Community environmental action plan - A living document. Thunder Bay, Ontario: EarthWise Thunder Bay.

City of Thunder Bay. (2014). EarthCare sustainability plan: 2014-2020. Thunder Bay, Canada: EarthCare Thunder Bay.

Classic Canadian Tours. (2014). Polar Bear Safari. Retrieved February, 16th, 2014, from http://www.classiccanadiantours.com/our_tours/churchillpolarbeartour

Corbin, J., & Strauss, A. (2008). *Basics of Qualitative Research: Techniques and procedures for developing grounded theory*. London, United Kingdom: Sage Incorporated.

Cortina, J. M. (1993). What is coefficient alpha? An examination of theory and applications. *Journal of Applied Psychology, 78*(1), 98.

Cresswell, T. (2004). *Place: A short introduction*. Malden, Massachusetts: Blackwell Publishing.

Curry, M. (1998). *Digital Places: Living with geographic information technologies*. New York, New York: Routledge.

Dana, L. P., Anderson, R. B., & Meis Mason, A. (2008). Globalisation and the Dene First Nations of Canada.*The Global Studies Journal*, *1*.

Dawson, J., Johnston, M. J., Stewart, E. J., Lemieux, C. J., Lemelin, H., Maher, P. T., & Grimwood, B. S. R. (2011). Ethical considerations of last chance tourism. *Journal of Ecotourism, 10*(3), 250-265.

Dawson, J., Stewart, E. J., Lemelin, H., & Scott, J. (2010). The carbon cost of polar bear viewing tourism in Churchill, Canada. *Journal of Sustainable Tourism, 18*(3), 319-336.

de la Barre, S., & Brouder, P. (2013). Consuming Stories: Placing food in the Arctic tourism experience. *Journal of Heritage Tourism, 8*(2-3), 213-223.

Dessai, S., Adger, W. N., Hulme, M., Turnpenny, J., Kohler, J., & Warren, R. (2004). Defining and experiencing dangerous climate change. *Climatic Change, 64*, 11-25.

Dessai, S., & Hulme, M. (2004). Does climate adaptation policy need probabilities? *Climate Policy, 4*(000-000).

Devine-Wright, P. (2009). Rethinking NIMBYism: The role of place attachment and place identity in explaining place-protective action. *Journal of Community & Applied Social Psychology, 19*, 426-441.

Devine-Wright, P. (2013). Think global, act local? The relevance of place attachments and place identities in a climate changed world. *Global Environmental Change, 23*(1), 61-69.

Devine-Wright, P., & Howes, Y. (2010). Disruption to place attachment and the protection of restoritive environments: A wind energy case study. *Journal of Environmental Behaviour, 30*, 271-280.

Dey, I. (1999). *Grounding grounded theory: Guidelines for qualitative inquiry* (Vol. 282): Academic press San Diego, CA.

Dimitrov, R. S. (2010). Inside Copenhagen: The state of climate governance. *Global Environmental Politics, 10*(2), 18-24.

Dombrowsky, W. R. (1998). Again and again: Is a disaster what we call a "disaster"? In E. L. Quarantelli (Ed.), *What is a disaster? Perspectives on the question.* (pp. 3-12). New York, New York: Routledge.

Douglas, M., & Wildavsky, A. (1982). *Risk and culture: An essay on the selection of technical and environmental dangers*. Los Angeles, California: University of California Press.

Driver, B. L. (1976). Quantification of outdoor recreationists' preferences. In B. Smissen & J. Myers (Eds.), *Research: Camping and environmental education* (pp. 165-187). University Park, PA.: Pennsylvania State University.

Dwyer, L., Edwards, D., Mistilis, N., Roman, C., & Scott, N. (2009). Destination and enterprise management for a tourism future. *Tourism Management, 30*(1), 63-74.

Dyck, M. G., Soon, W., Baydack, R., Legates, D., Baliunas, S., Ball, T., & Hancock, L. (2007). Polar bears of western Hudson Bay and climate change: Are warming spring air temperatures the “ultimate” survival control factor? *Ecological Complexity, 4*(3), 73-84.

Eagles, P. F. J., McCool, S. F., & Haynes, C. D. (2002). *Sustainable tourism in protected areas: Guidelines for planning and management*: Geneva, Switzerland: IUCN Gland.

Eakin, H., & Luers, A. L. (2006). Assessing the vulnerability of social-environmental systems. *Annual Review of Environment and Resources, 31*, 365-394.

Eakin, H., & Patt, A. (2011). Are adaptation studies effective, and what can enhance their practical impact? *Wiley Interdisciplinary Reviews: Climate Change, 2*(2), 141-153.

Eder, K. (1996). *The social construction of nature: A sociology of ecological enlightenment*. London, United Kingdom: Sage Incorporated.

Eijgelaar, E., Thaper, C., & Peeters, P. (2010). Antarctic cruise tourism: The paradoxes of ambassadorship,“last chance tourism” and greenhouse gas emissions. *Journal of Sustainable Tourism, 18*(3), 337-354.

Environment Canada. (2013a). Canada's Emissions Trends. Ottawa, Canada: Environment Canada.

Environment Canada. (2013b). Canada's ongoing commitment to climate change adaptation Retrieved August, 10th, 2014, from http://ec.gc.ca/default.asp?lang=En&n=2D1D6FA7-1&news=B67A7995-A1CA-4DE3-89D2-E4E3C0E24BFB

Environment Canada. (2015). Historical climate data. Retrieved August 4, 2015, from Government of Canada http://climate.weather.gc.ca/index_e.html#access

Escobar, A. (2001). Culture sits in place: Reflections on globalism and subaltern strategies of localization. *Political Geography, 20*, 139-174.

Fabrigar, L. R., Wegener, D. T., MacCallum, R. C., & Strahan, E. J. (1999). Evaluating the use of exploratory factor analysis in psychological research. *Psychological Methods, 4*(3), 272.

Fainstein, S. S. (2000). New directions in planning theory. *Urban Affairs Review, 35*(4), 451-478.

Feld, S., & Basso, K. H. (1996). *Senses of Place*. School of American Research Press: Santa Fe, New Mexico.

Fielding, K. S., Hornsey, M. J., & Swim, J. K. (2014). Developing a social psychology of climate change. *European Journal of Social Psychology, 44*(5), 413-420.

Fischer, F. (2000). *Citizens, Experts, and the Environment: The politics of local knowledge*. United States of America: Duke University Press.

Fiske, S. T., & Taylor, S. E. (2008). *Social Cognition: From brains to culture*. New York, New York: McGraw Hill

Flyvbjerg, B. (2006). Five misunderstandings about case-study research. *Qualitative Inquiry, 12*(2), 219-245.

Ford, J. D. (2009). Vulnerability of Inuit food systems to food insecurity as a consequence of climate change: A case study from Igloolik, Nunavut. *Regional Environmental Change, 9*(2), 83-100.

Ford, J. D., Knight, M., & Pearce, T. (2013). Assessing the 'usability'of climate change research for decision-making: A case study of the Canadian International Polar Year. *Global Environmental Change, 23*(5), 1317-1326.

Forester, J. (1989). *Planning in the face of power*. Los Angeles, California: University of California Press.

Forester, J. (1999). Dealing with deep value differences. In L. Susskind, S. McKearnan & J. Thomas-Larmer (Eds.), *The consensus building handbook: A comprehensive guide to reaching agreement*. Thousand Oaks, California: Sage Publications.

Franck, K. A., & Paxson, L. (1989). Women and urban public space *Public places and spaces* (pp. 121-146): Springer.

Fresque-Baxter, J.A. (2015). 'Water is life': Exploring the relationship between place identity, water and adaptive capacity in Fort resolution, Northwest Territories, Canada. *Theses and Dissertations (Comprehensive).* Paper 1701.

Fresque-Baxter, J. A., & Armitage, D. (2012). Place identity and climate change adaptation: A synthesis and framework for understanding. *Wiley Interdisciplinary Reviews: Climate change, 3*(2), 251-266.

Gagnon, A. S., & Gough, W. A. (2005). Trends in the dates of ice freeze-up and breakup over Hudson Bay, Canada. *Arctic, 58*(4).

Gieryn, T. F. (2000). A space for place in sociology. *Annual Review of Sociology, 26*, 463-496.

Gifford, R. (2011). The dragons of inaction: Psychological barriers that limit climate change mitigation and adaptation. *American Psychologist, 66*(4), 290-302.

Gilbert, C. (1998). Studying disaster: Changes in the main conceptual tools. In E. L. Quarantelli (Ed.), *What is a disaster? Perspectives on the question.* (pp. 3-12). New York, New York: Routledge.

Glaser, B. G. (2002). Conceptualization: On theory and theorizing using grounded theory. *International Journal of Qualitative Methods, 1*(2), 23-38.

Goomansingh, C., & Schroeder, L. (2013, October 15, 2013). Company postpones plans for trial run of oil by rail to Churchill. Retreived from http://globalnews.ca/news/874971/oil-shipping-plans-spark-fear-in-northern-port/

Gosling, E., & Williams, K. J. H. (2010). Connectedness to nature, place attachment and conservation behaviour: Testing connectedness theory among farmers. *Journal of Environmental Psychology, 30*(3), 298-304.

Goss, J. (1992). Modernity and post-modernity in the retail landscape. In K. Anderson & F. Gale (Eds.), *Inventing Places: Studies in cultural geography* (pp. 159-177). Melbourne, Australia: Longham Cheshire Pty Limited.

Government of British Columbia. (2010). Preparing for climate change: British Columbia's adaptation strategy. Victoria, Canada: Ministry of Environment.

Government of Manitoba. (1987). The environment act *S.M. c. E125*. Winnipeg, Canada: Government of Manitoba.

Government of Manitoba. (1996). The Provincial Parks Act *C.C.S.M. c. P20*. Winnipeg, Canada: Government of Manitoba.

Government of Manitoba. (2002). The resource tourism operators act *S.M. c. R119.5*. Winnipeg, Canada: Government of Manitoba.

Government of Manitoba. (2005). The planning act *S.M. c. P80*. Canada: Government of Manitoba.

Government of Manitoba. (2006). The northern affairs act *S.M. c. N100*. Winnipeg, Canada: Government of Manitoba.

Government of Manitoba. (2008a). *Beyond Kyoto: Manitoba's green future*. Winnipeg, Manitoba: Government of Manitoba,.

Government of Manitoba. (2008b). The climate change and emissions reductions *S.M. c. C135*. Winnipeg, Canada: Government of Manitoba.

Government of Manitoba. (2013a). *Consultation on proposed green prosperity act*. Winnipeg, Manitoba: Government of Manitoba.

Government of Manitoba. (2013b). *Tomorrow Now: Manitoba's green plan*. Winnipeg, Manitoba: Government of Manitoba,.

Government of Manitoba. (2014). The Churchill arctic port Canada act *S.M. 2014 c.7*. Winnipeg, Canada: Government of Manitoba.

Government of Manitoba. (2015). Climate change and green initiatives: The Manitoba climate change action fund. Retrieved October, 20th 2014, from http://www.gov.mb.ca/conservation/climate/mb_doing/action_fund.html

Government of Ontario. (2011). *Climate Ready: Ontario's adaptation strategy and action plan*. Toronto, Canada: Queen's printer for Ontario.

Gregoire, L. (2015). Ancient Thule site in northern Manitoba still used by Kivalliq Inuit. *Nunatsiaq Online*. http://www.nunatsiaqonline.ca/stories/article/65674ancient_thule_site_in_northern_manitoba_still_used_by_kivalliq_inuit/

Grosz, E. (1993). Judaism and Exile: The ethics of otherness. In E. Carter, J. Donald & J. Squires (Eds.), *Space and Place: Theories of identity and location* (pp. 303-330). London, United Kingdom: Lawrence & Wishart Limited.

Grothman, T., & Patt, A. (2005). Adaptive capacity and human cognition: The process of individual adaptation to climate change. *Global Environmental Change, 15*, 199-213.

Gruenewald, D. A. (2003). The best of both worlds: A critical pedagogy of place. *Educational Researcher, 32*(4), 3-12.

Gu, H., & Ryan, C. (2008). Place attachment, identity and community impacts of tourism: The case of a Beijing hutong. *Tourism Management, 29*(4), 637-647.

Guba, E. G. (1979). Naturalistic Inquiry. *Improving Human Performance Quarterly, 8*(4), 268-276.

Gustafson, P. (2001). Meanings of place: Everyday experience and theoretical conceptualizations. *Journal of Environmental Psychology, 21*, 5-16.

Hall, C. M. (2011). Climate change and its impacts on tourism: Regional assessments, knowledge gaps and issues. In A. Jones & M. Phillips (Eds.), *Disappaering Destinations: Climate change and future challenges for coastal tourism*. Oxford, United Kingdom: CABI.

Hall, C. M., Scott, D., & Gössling, S. (2013). The primacy of climate change for sustainable international tourism. *Sustainable Development, 21*(2), 112-121.

Halpenny, E. (2010). Pro-environmental behaviours and park visitors: The effect of place attachment. *Journal of Environmental Psychology, 30*, 409-421.

Harvey, D. (1990). *The condition of post-modernity*. Malden, Massecheusetts: Blackwell Publishing.

Hay, R. (1998). Sense of place in a developmental context. *Journal of Environmental Psychology*, *18*(1), 5-29.

Healy, P. (1992). Planning through debate: The Communicative turn in planning theory. *The Town Planning Review, 63*(2), 143-162.

Healy, P. (1997). *Collaborative Planning: Shaping places in fragmented societies*. Vancouver, British Columbia: UBC Press.

Hewitt, K. (1998). Excluded perspectives in the social construction of disaster. In E. L. Quarantelli (Ed.), *What is a disaster? Perspectives on the question.* (pp. 71-88). New York, New York: Routledge.

Hogg, M. A. (2003). Social Identity. In M. R. Leary & J. P. Tangney (Eds.), *Handbook of Self and Identity*.

Hogg, M. A., & Smith, J. R. (2007). Attitudes in social context: A social identity perspective. *European Review of Social Psychology, 18*, 89-131.

Hogg, M. A., Terry, D. J., & White, K. M. (1995). A tale of two theories: A critical comparison of Identity Theory with Social Identity Theory. *Social Psychology Quarterly, 58*(4), 255-269.

Holton, J. A. (2007). The coding process and its challenges. In A. Bryant & K. Charmaz (Eds.), *The SAGE handbook of grounded theory* (pp. 31-57). London, England: Sage Publications.

Hopkins, R., & Lipman, P. (2009). Who we are and what we do. Totnes, United Kingdom: Transition Network.

Hough, M. (1990). *Out of Place: Restoring identity to the regional landscape*. London, U.K.: Yale University Press.

Hovelsrud, G. K., White, J. L., Andrachuk, M., & Smit, B. (2010). Community adaptation and vulnerability integrated. In G. K. Hovelsrud & B. Smit (Eds.), *Community adaptation and vulnerability in arctic regions*. Berlin, Germany: Springer Science and Business Media

Howell, A. J., Dopko, R. L., Passmore, H.-A., & Buro, K. (2011). Nature connectedness: Associations with well-being and mindfulness. *Personality and Individual Differences, 51*(2), 166-171.

Hoyle, R. H. (2011). *Structural Equation Modeling for Social and Personality Psychology*. London, England: Sage Publications.

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal, 6*(1), 1-55.

Hult, G. T. M., Ketchen, D. J., Cui, A. S., Prud'homme, A. M., Seggie, S. H., Stanko, M. A., . . . Cavusgil, S. T. (2006). An assessment of the use of structural equation modeling in international business research. *Research Methodology in Strategy and Management, 3*, 385-415.

Hyman, T. (2014). Assessing the vulnerability of beach tourism and non-beach tourism to climate change: A case study from Jamaica. *Journal of Sustainable Tourism, 22*(8), 1197-1215.

ICLEI. (2010). Changing climate, changing communities: Guide and workbook for municipal adaptation.

ICLEI Canada. (2010). Changing climate, changing communities: Guide and workbook for municipal climate adaptation. Toronto, Ontario: ICELI Canada.

Inch, A. (2014). Ordinary citizens and the political cultures of planning: In search of the subject of a new democratic ethos. *Planning Theory*, May, 1-21.

Innes, J. E. (1996). Planning through consensus building: A new view of the comprehensive planning ideal. *Journal of the American Planning Association, 62*(4), 460-472.

Innes, J. E. (2004). Consensus building: Clarification for the critics. *Planning Theory, 3*(1), 5-20.

Innes, J. E., & Booher, D. E. (2004). Reframing public participation: Strategies for the 21st century. *Planning Theory and Practice, 5*(4), 419-436.

Innes, J. E., & Booher, D. E. (2014). A turning point for planning theory? Overcoming dividing discourses. *Planning Theory*, January, 1-19.

IPCC. (2007). Impacts, Adaptation and Vulnerability: Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge, United Kingdom: Cambridge University Press.

IPCC. (2014). Climate Change 2014 Impacts, Adaptation, and Vulnerability: IPCC Working Group II Contribution to AR5. Geneva, Switzerland: IPCC.

Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. *Educational Researcher, 33*(7), 14-26.

Jorgensen, B., & Stedman, R. (2006). A comparative analysis of predictors of sense of place dimensions: Attachment to, dependence on, and identification with lakeshore properties. *Journal of Environmental Management, 79*, 316-327.

Kahan, D. M. (2012). Cultural cognition as a conception of the cultural theory of risk. In S. Roeser (Ed.), *Handbook of Risk Theory*. London, United Kingdom: Springer.

Kasperson, J. X., Kasperson, R. E., Pidgeon, N. F., & Slovic, P. (2010). The social amplification of risk: Assessing fifteen years of research and theory. In P. Slovic (Ed.), *The Feeling of Risk: New perspectives on risk perception*. London, United Kingdom: Earthscan Publications.

Kasperson, J. X., Kasperson, R. E., Turner, B. L., Hsieh, H. W., & Schiller, A. (2005). Vulnerability to global environmental risk. In J. X. Kasperson & R. E. Kasperson (Eds.), *The Social Contours of Risk: Risk analysis, corporations & the globalization of risk* (Vol. II). London, United Kingdom: Earthscan.

Kline, R. B. (2011). *Principles and Practice of Structural Equation Modeling*. New York, New York: The Guilford Press.

Kollmuss, A., & Agyeman, J. (2002). Mind the gap: Why do people act environmentally and what are the barriers to pro-environmental behavior? *Environmental Education Research, 8*(3), 239-260.

Kulkarni, T., Watkins, J., Nickels, S., & Lemmen, D. (2012). Canadian International Polar Year (2007–2008): An introduction. *Climatic Change, 115*(1), 1-11.

Lamers, M., Eijgelaar, E., & Amelung, B. (2012). Last chance tourism in Antarctica: Cruising for change? In H. Lemelin, J. Dawson & E. J. Stewart (Eds.), *Last Chance Tourism: Adapting tourism opportunities in a changing world*. Abingdon, U.K.: Routledge.

Laws, G. (1997). Women's life courses, spatial mobility, and state policies. In J.P. Jones III, H.J. Nast & S.M. Roberts (Eds.), *Thresholds in feminist geography: Difference, methodology, representation*. Lanham, Maryland: Rowman & Littlefield Publishers.

Lefebvre, H. (1991). *The Production of Space*. Malden, Massacheusetts: Blackwell Publishing.

Lemelin, H., Dawson, J., Stewart, E. J., Maher, P., & Lueck, M. (2010). Last-chance tourism: The boom, doom, and gloom of visiting vanishing destinations. *Current Issues in Tourism, 13*(5), 477-493.

Lemelin, H., & Smale, B. (2006). Effect of environmental context on the experience of polar bear viewers in Churchill, Manitoba. *Journal of Ecotourism, 5*(3), 176-191.

Lemelin, H., Stewart, E., & Dawson, J. (2012). An introduction to last chance tourism. In R. H. Lemelin, J. Dawson & E. J. Stewart (Eds.), *Last chance tourism: Adapting tourism opportunities in a changing world*. Abingdon, U.K.: Routledge.

Lemieux, C. J., Beechey, T. J., & Gray, P. A. (2011). Prospects for Canada's protected areas in an era of rapid climate change. *Land Use Policy, 28*(4), 928-941.

Lemieux, C. J., & Eagles, P. (2012). Last chance tourism in Canada's protected areas: Management implications and emerging ethical considerations. In R. H. Lemelin, J. Dawson & E. J. Stewart (Eds.), *Last chance tourism: Adapting tourism opportunities in a changing world*. Abingdon, U.K.: Routledge.

Lemmen, D., Warren, F., Lacroix, J., & Bush, E. (2008). From impacts to adaptation: Canada in a changing climate 2007. Ottawa, Canada: Government of Canada.

Lempert, L. B. (2007). Asking questions of the data: Memo writing in the Grounded Theory tradition. In A. Bryant & K. Charmaz (Eds.), *The SAGE Handbook of Grounded Theory* (pp. 31-57). London, England: SAGE Publications.

Lewicka, M. (2011). Place attachment: How far have we come in the last 40 years? *Journal of Environmental Psychology, 31*, 207-230.

Liefländer, A. K., Fröhlich, G., Bogner, F. X., & Schultz, P. W. (2013). Promoting connectedness with nature through environmental education. *Environmental Education Research, 19*(3), 370-384.

Lima, M. L., & Castro, P. (2005). Cultural theory meets the community: Worldviews and local issues. *Journal of Environmental Psychology, 25*(1), 23-35.

Lorenzoni, I., & Pidgeon, N. F. (2006). Public views on climate change: European and USA perspectives. *Climatic Change, 77*, 73-95.

Lorenzoni, I., Pidgeon, N. F., & O'Connor, R. E. (2005). Dangerous climate change: The role for risk research. *Risk Analysis, 25*(6), 1387-1398.

Lytwyn, V. P. (2002). *Muskekowuck Athinuwick: Original people of the great swampy land*. University of Manitoba Press: Winnipeg, Manitoba.

MacIver, A., & MacIver, B. (1992). *Churchill on Hudson Bay: The stories and history of Churchill, Manitoba as told by two of this community's pioneers*. Churchill, Manitoba: Churchill Ladies Club.

Maher, P. T., Johnston, M. E., Dawson, J. P., & Noakes, J. (2010). Risk and a changing environment for Antarctic tourism. *Current Issues in Tourism, 14*(4), 387-399.

Manfredo, M. J., Driver, B. L., & Tarrant, M. A. (1996). Measuring leisure motivation: A meta-analysis of the recreation experience preference scales. *Journal of Leisure Research, 28*(3), 188-213.

Manitoba Hydro. (2014). Churchill River Diversion, Retrieved October 27th, 2014 from https://http://www.hydro.mb.ca/corporate/water_regimes/churchill_river_diversion.shtml

Manzo, L. C. (2003). Beyond house and haven: Toward a revisioning of emotional relationships with places. *Journal of Environmental Psychology, 23*, 47-61.

Manzo, L. C. (2005). For better or worse: Exploring multiple dimensions of place meaning. *Journal of Environmental Psychology, 25*, 67-86.

Manzo, L. C., & Perkins, D. D. (2006). Finding common ground: The importance of place attachment to community participation and planning. *Journal of Planning Literature, 20*(4), 335-350.

Markey, S., Halseth, G. & Manson, D. (2008). Challenging the inevitability of rural decline: Advancing the policy of place in northern British Columbia. *Journal of Rural Studies,* 24, 409-421.

Marshall, N. A., Park, S. E., Adger, W. N., Brown, K., & Howden, S. M. (2012). Transformational capacity and the influence of place and identity. *Environmental Research Letters, 7*, 1-9.

Marx, S. M., Weber, E. U., Orlove, B. S., Leiserowitz, A., Krantz, D. H., Roncoli, C., & Phillips, J. (2007). Communication and mental processes: Experiential and analytic processing of uncertain climate information. *Global Environmental Change, 17*, 47-58.

Massey, D. (1991). A global sense of place. *Marxism Today, 36*(6), 315-323.

Massey, D. (1998). "Identity": some parallels between feminist debate and the identity of place. *Berichte zur deutschen Landeskunde, 72*(1), 53-59.

Mayer, F. S., & Frantz, C. M. (2004). The connectedness to nature scale: A measure of individuals' feeling in community with nature. *Journal of Environmental Psychology, 24*(4), 503-515.

McCann, T., & Clark, E. (2004a). Grounded theory in nursing research: Part 1–methodology. *Nurse Researcher, 11*(2), 7-18.

McCann, T., & Clark, E. (2004b). Grounded theory in nursing research: Part 2-Critique. *Nurse Researcher, 11*(2), 19-28.

McCool, S. F., & Martin, S. R. (1994). Community attachment and attitudes toward tourism development. *Journal of Travel Research, 32*(3), 29-34.

Meredith, D., & Norquay, D. (2013). Federal-provincial task force on the future of Churchill: Government of Canada/Government of Manitoba.

Miles, M. B., & Huberman, A. M. (1994). *Qualitative Data Analysis: An expanded sourcebook*: Sage Publications.

Mitchell, C. J. (2013). Creative destruction or creative enhancement? Understanding the transformation of rural spaces. *Journal of Rural Studies, 32*, 375-387.

Mitchell, C. J., & De Waal, S. (2009). Revisiting the model of creative destruction: St. Jacobs, Ontario, a decade later. *Journal of Rural Studies, 25*(1), 156-167.

Mitchell, D. (2010). The end of public space? People's park, definitions of the public, and democracy. In A. Orum & Z. Neal (Eds.), *Common Ground? Reading and reflections on public spaces* (pp. 83-99). New York, New York: Routledge.

Mlozi, S., & Pesämaa, O. (2013). Adventure tourist destination choice in Tanzania. *Current Issues in Tourism, 16*(1), 63-95.

Monk, J. (1992). Gender in the landscape: Expressions of power and meaning. In K. Anderson & F. Gale (Eds.), *Inventing Places: Studies in cultural geography* (pp. 159-177). Melbourne, Australia: Longham Cheshire Limited.

Morgan, P. (2010). Towards a developmental theory of place attachment. *Journal of Environmental Psychology, 30*, 11-22.

Morse, J. M. (2007). Sampling in grounded theory. In A. Bryant & K. Charmaz (Eds.), *The SAGE Handbook of Grounded Theory*. London, United Kingdom: Sage Publications.

Moser, S. C. (2009). Communicating climate change and motivating civic action: Renewing, activating, and building democracies. In H. Selin & S. D. VanDeveer (Eds.), *Changing Climates in North American Politics: Institutions, Policymaking, and Multilevel Governance*. Cambridge, Massachusetts: The MIT Press.

Mullins, P. M. (2009). Living stories of the landscape: Perception of place through canoeing in Canada's North. *Tourism Geographies, 11*(2), 233-255.

Natural Resources Canada. (2013). The adaptation platform: 1st annual report. Ottawa, Canada: Natural Resources Canada.

Nash, R. J. (1976). Cultural systems and culture change in the Central Arctic. *Memoirs of the Society for American Archaeology*, 150-155.

Nisbet, E. K., Zelenski, & Murphy, S. A. (2009). The nature relatedness scale: Linking individuals' connection with nature to environmental concern and behaviour. *Environment and Behaviour, 41*(5), 715-740.

Nisbet, E. K., & Zelenski, J. M. (2013). The NR-6: A new brief measure of nature relatedness. *Frontiers in Psychology, 4* (813).

Nisbet, E. K., Zelenski, J. M., & Murphy, S. A. (2011). Happiness is in our nature: Exploring nature relatedness as a contributor to subjective well-being. *Journal of Happiness Studies, 12*, 303-322.

NMAP. (2014). NMAP Results: Results from the national municipal adaptation survey: National Municipal Adaptation Project.

Norberg-Schulz, C. (1980). *Genius Loci: Towards a phenomenology of architecture.* London, United Kingdom: Academy Editions.

Nunkoo, R., Ramkissoon, H., & Gursoy, D. (2013). Use of Structural Equation Modeling in Tourism Research: Past, Present, and Future. *Journal of Travel Research, 52*(6), 759-771.

O'Brien, K. L. (2009). Do values subjectively define the limits of climate change adaptation? In W. N. Adger, I. Lorenzoni & K. L. O'Brien (Eds.), *Adapting to Climate Change: Thresholds, values, governance*. Cambridge, U.K.: Cambridge University Press.

O'Brien, K. L., & Wolf, J. (2010). A values-based approach to vulnerability and adaptation to climate change. *Wiley Interdisciplinary Reviews: Climate change, 1*(March/April), 232-242.

Okereke, C., Bulkeley, H., & Schroeder, H. (2009). Conceptualizing climate governance beyond the international regime. *Global Environmental Politics, 9*(1), 58-78.

Olsen, D. H., Koster, R. L., & Youroukos, N. (2012). Last chance tourism? Public sector views of marketing endangered tourism destinations in Northern America. In H. Lemelin, J. Dawson & E. J. Stewart (Eds.), *Last chance tourism: Adapting tourism opportunities in a changing world*. Abingdon, U.K.: Routledge.

Osborne, J. W., & Costello, A. B. (2005). Best Practices in Exploratory Factor Analysis: Four recommendations for getting the most from your analysis. *Practical Assessment, Research and Evaluation, 10*(7), 1-9.

Oyserman, D., Elmore, K., & Smith, G. (2011). Self, Self-Concept and Identity. In M. R. Leary & J. P. Tangney (Eds.), *Handbook of Self and Identity* (2nd ed.). New York, New York: Guilford Press.

Park, R. W. (2014). Stories of Arctic colonization: Genetic data elucidate the population history of the North American Arctic. *Science, 345*(6200), 1004-1005.

Parks Canada. (2007). Wapusk National Park of Canada: Management Plan. Gatineau, Quebec: Parks Canada.

Parlee, B., & Furgal, C. (2012). Well-being and environmental change in the arctic: A synthesis of selected research from Canada's International Polar Year program. *Climatic Change, 115*(1), 13-34.

Pawson, E. (1992). Two New Zealands: Maori and European. In K. Anderson & F. Gale (Eds.), *Inventing Places: Studies in cultural geography* (pp. 159-177). Melbourne, Australia: Longham Cheshire Limited.

Petch, V. P. (1998). *Relocation and loss of homeland: the story of the Sayisi Dene of northern Manitoba* (Doctoral dissertation, University of Manitoba).

Petch, V. (2014). Hubbard Point: Excavating ancient Thule ruins. *Above and Beyond: Canada's Arctic Journal*. http://www.arcticjournal.ca/index.php/news-item/hubbard-point-excavating-ancient-thule-ruins/

Pidgeon, N. F. (2012). Public understanding of, and attitudes to, climate change: UK and international perspectives and policy. *Climate Policy, 12*, 85-106.

Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88*(5), 879-903.

Pred, A. (1984). Place as historically contingent process: Structuration and the time- geography of becoming places. *Annals of the Association of American Geographers, 74*(2), 279-297.

Proshansky, H. M. (1978). The city and self identity. *Environment and Behaviour, 10*(2), 147-169.

Proshansky, H. M., Fabian, A., & Kaminoff, R. (1983). Place-identity: Physical world socialization of the self. *Journal of Environmental Psychology, 3*, 57-83.

Raghavan, M., DeGiorgio, M., Albrechtsen, A., Moltke, I., Skoglund, P., Korneliussen, T. S., . . . Friesen, T. M. (2014). The genetic prehistory of the New World Arctic. *Science, 345*(6200), 1255832.

Ramkissoon, H., Graham-Smith, L., & Weiler, B. (2013). Testing the dimensionality of place attachment and its relationships with place satisfaction and pro-environmental behaviours: A structural equation modelling approach. *Tourism Management, 36*, 552-566.

Riewe, R. (1991). Inuit use of the sea ice. *Arctic and Alpine Research, 23*(1), 3-10.

Riewe, R., Suluk, L., & Brandson, L. (1989). Inuit land use and occupancy in northern Manitoba. *Northern Review* (3/4), 85-96.

Rees, J. H., & Bamberg, S. (2014). Climate protection needs societal change: Determinants of intention to participate in collective climate action. *European Journal of Social Psychology, 44*(5), 466-473.

Regehr, E. V., Lunn, N. J., Amstrup, S. C., & Stirling, I. (2007). Effects of earlier sea ice breakup on survival and population size of polar bears in Western Hudson Bay. *Journal of Wildlife Management, 71*(8), 2673-2683.

Relph, E. (1976). *Place and Placelessness*. London, United Kingdom: Pion Limited.

Roach, J. (2007). Most polar bears gone by 2050, studies say. *National Geographic News*. Retrieved on October 15th, 2014 from http://news.nationalgeographic.com/news/2007/09/070910-polar-bears.html

Rollero, C., & De Piccoli, N. (2010). Place attachment, identification and environmental perception: An empirical study. *Journal of Environmental Psychology, 30*, 198-205.

Rouse, W. R., & Bello, R. L. (1985). Impact of Hudson Bay on the energy balance in the Hudson Bay lowlands and the potential for climatic modification. *Atmosphere-Ocean, 23*(4), 375-392.

Russell, R., Guerry, A. D., Balvanera, P., Gould, R. K., Basurto, X., Chan, K. M., . . . Tam, J. (2013). Humans and nature: How knowing and experiencing nature affect well-being. *Annual Review of Environment and Resources, 38*, 473-502.

Sager, T. Ø. (2012). *Reviving critical planning theory: Dealing with pressure, neo-liberalism, and responsibility in communicative planning*: Routledge.

Sapnas, K. G., & Zeller, R. (2002). Minimizing sample size when using exploratory factor analysis for measurement. *Journal of Nursing Measurement, 10*(2), 135-154.

Scannell, L., & Gifford, R. (2010a). Defining place attachment: A tripartite organizing framework. *Journal of Environmental Psychology, 30*, 1-10.

Scannell, L., & Gifford, R. (2010b). The relations between natural and civic place attachment and pro-environmental behaviour. *Journal of Environmental Psychology, 30*, 289-297.

Scannell, L., & Gifford, R. (2013). Personally relevant climate change: The role of place attachment and local versus global message framing in engagement. *Environment and Behaviour, 45*(1), 60-85.

Schipper, E. (2006). Conceptual history of adaptation in the UNFCCC process. *Review of European Community and International Environmental Law, 15*(1), 82-92.

Scott, D. (2011). Why sustainable tourism must address climate change. *Journal of Sustainable Tourism, 19*(1), 17-34.

Scott, D., Dawson, J., & Jones, B. (2008). Climate change vulnerability of the US Northeast winter recreation–tourism sector. *Mitigation and Adaptation Strategies for Global Change, 13*(5-6), 577-596.

Scott, D., McBoyle, G., & Schwartzentruber, M. (2004). Climate change and the distribution of climatic resources for tourism in North America. *Climate Research, 27*, 105-117.

Seaman, J. (2008). Adopting a grounded theory approach to cultural-historical research: Conflicting methodologies or complementary methods? *International Journal of Qualitative Methods, 7*(1), 1-17.

Sen, A. K. (1982). *Poverty and Famines: An essay on entitlement and deprivation*. Oxford, United Kingdom: Oxford University Press.

Simone-Charteris, M., Boyd, S. W., & Burns, A. (2013). The contribution of place identity to dark tourism in Northern Ireland. In L. White & E. Frew (Eds.), *Dark Tourism and Place Identity: Managing and interpreting dark places*. Oxon, U.K.: Routledge.

Slovic, P., Finucane, M. L., Peters, E., & MacGregor, D. G. (2010). Risk as analysis and risk as feelings: Some thoughts about affect, reason, risk and rationality. In P. Slovic (Ed.), *The Feeling of Risk: New perspectives on risk perception*. London, United Kingdom: Earthscan Publications.

Smit, B., Hovelsrud, G., & Wandel, J. (2008). CAVIAR: Community Adaptation and Vulnerability in Arctic Regions: Framework document for an international polar year consortium. Guelph, Ontario: University of Guelph.

Smit, B., Hovelsrud, G., Wandel, J., & Andrachuk, M. (2010). Introduction to the CAVIAR project and framework. In G. Hovelsrud & B. Smit (Eds.), *Community Adaptation and Vulnerability in Arctic Regions*. Dordrecht Netherlands: Springer Science and Business Media B.V.

Smit, B., & Wandel, J. (2006). Adaptation, adaptive capacity and vulnerability. *Global Environmental Change, 16*, 282-292.

Smith, M. (2012). Apres moi le deluge: Ethics, empire, and the biopolitics of last chance tourism. In H. Lemelin, J. Dawson & E. J. Stewart (Eds.), *Last Chance Tourism: Adapting tourism opportunities in a changing world*. Abingdon, U.K.: Routledge.

Spears, R. (2011). Group identities: The social identity perspective. In S. J. Schwartz, K. Luyckx & V. L. Vignoles (Eds.), *Handbook of Identity Theory and Research: Volume 1 Structures and Processes*. New York, New York: Springer.

Stake, R. E. (2006). *Multiple Case Study Analysis*. New York, U.S.: The Guilford Press.

Statistics Canada. (2013). Churchill, T, Manitoba (Code 4623056) In S. Canada (Ed.), *National household survey (NHS) profile. 2011 national household survey*. Ottawa, Canada.

Steg, L., & Vlek, C. (2009). Encouraging pro-environmental behaviour: An integrative review and research agenda. *Journal of Environmental Psychology, 29*(3), 309-317.

Stern, P. N. (2007). On solid ground: Essential properties for growing grounded theory. In A. Bryant & K. Charmaz (Eds.), *The SAGE Handbook of Grounded Theory*. London, England: SAGE Publications.

Stevens, J. P. (2009). Exploratory and confirmatory factor analysis *Applied multivariate statistics for the social sciences* (pp. 325-395). New York, New York: Routledge.

Stewart, E. J., Hayward, B. M., Devlin, P. J., & Kirby, V. (1998). The "place" of interpretation: A new approach to the evaluation of interpretation. *Tourism Management, 19*(3), 257-266.

Stirling, I., & Derocher, A. E. (2012). Effects of climate warming on polar bears: A review of the evidence. *Global Change Biology, 18*(9), 2694-2706.

Stirling, I., Derocher, A. E., Gough, W. A., & Rode, K. (2008). Response to Dyck et al.(2007) on polar bears and climate change in western Hudson Bay. *Ecological Complexity, 5*(3), 193-201.

Strauss, A., & Corbin, J. (1998). Basics of qualitative research: Procedures and techniques for developing grounded theory: Thousand Oaks, California: Sage Publications.

Suddaby, R. (2006). From the editors: What grounded theory is not. *Academy of Management Journal, 49*(4), 633-642.

Swim, J., Clayton, S., Doherty, T., Gifford, R., Howard, G., Reser, J., . . . Weber, E. (2011). Psychology and global climate change: Addressing a multi-faceted phenomenon and set of challenges. A report by the American Psychological Association's task force on the interface between psychology and global climate change. *American Psychological Association,* Washington, U.S.

Tajfel, H. (1974). Social identity and group behaviour. *Social Science Information, 13*(2), 65-93.

Tapsuwan, S., Leviston, Z., & Tucker, D. (2011). Community values and attitudes towards land use on the Gnangara Groundwater System: A Sense of Place study in Perth, Western Australia. *Landscape and Urban Planning, 100*, 24-34.

The Institute of Urban Studies. (2011). Churchill sustainability planning framework. Winnipeg, Manitoba: University of Winnipeg.

The Regional Municipality of Waterloo. (2013). A climate action plan for Waterloo region: Living smarter in 2020. Kitchener, Ontario: The Regional Municipality of Waterloo.

Theimer, S., & Ernst, J. (2012). Fostering "Connectedness to Nature" through US Fish and Wildlife Service Education and Outreach Programming: A Qualitative Evaluation. *Applied Environmental Education & Communication, 11*(2), 79-87.

Thompson, M. (2003). Cultural Theory, Climate Change and Clumsiness. *Economic and Political Weekly, 38*(48), 5107-5112.

Thompson, M., Ellis, R., & Wildavsky, A. (1990). *Cultural Theory* Boulder, Colorado: Westview Press.

Thompson, S. C., & Barton, M. A. (1994). Ecocentric and anthropocentric attitudes toward the environment. *Journal of Environmental Psychology, 14*, 149-157.

Tough, F. (2011). *As their natural resources fail: Native peoples and the economic history of northern Manitoba, 1870-1930*. UBC Press: Vancouver, British Columbia.

Towns, L., Derocher, A. E., Stirling, I., Lunn, N. J., & Hedman, D. (2009). Spatial and temporal patterns of problem polar bears in Churchill, Manitoba. *Polar Biology, 32*(10), 1529-1537.

Tuan, Y. (1974). *Topophilia: A study of environmental perception, attitudes and values*. New York, New York: Columbia University Press.

Tuan, Y. (1977). *Space and Place: The perspective of experience*. St. Paul, Minnesota: University of Minnesota Press.

Twigger-Ross, C. L., & Uzzell, D. L. (1996). Place and identity processes. *Journal of Environmental Psychology, 16*(3), 205-220.

Umemoto, K. (2001). Walking in another's shoes: Epistemological challenges in participatory planning. *Journal of Planning Education and Research, 21*(1), 17-31.

United Nations World Tourism Organization. (2014a). Air connectivity and its impact on tourism in Asia and the pacific. Madrid, Spain: UNWTO.

United Nations World Tourism Organization. (2014b). UNWTO Tourism Highlights: 2014 Edition. Madrid, Spain: UNWTO.

United Nations World Tourism Organization. (2014c). UNWTO World Tourism Barometer. Madrid, Spain: UNWTO.

UNWTO, & SNV. (2010). Manual on Tourism and Poverty Alleviation - Practical Steps for Destinations. Madrid, Spain.

Uzzell, D., Pol, E., & Badenas, D. (2002). Place identification, and environmental sustainability. *Environment and Behaviour, 34*(1), 26-53.

van der Linden, S. (2014). The social-psychological determinants of climate change risk perceptions: Towards a comprehensive model. *Journal of Environmental Psychology*.

Vaske, J. J., & Kobrin, K. C. (2001). Place attachment and environmentally responsible behaviour. *The Journal of Environmental Education, 32*(4), 16-21.

Warren, F. J., & Lemmen, D. S. (2014). Canada in a changing climate: Sector perspectives on impacts and adaptation. Ottawa, Canada: Natural Resources Canada.

Weaver, D. (2011). Can sustainable tourism survive climate change? *Journal of Sustainable Tourism, 19*(1), 5-15.

Weber, E. (2010). What shapes perceptions of climate change? *Wiley Interdisciplinary Reviews: Climate change, 1*, 332-342.

Willox, C. A., Harper, S. L., Ford, J. D., Landman, K., Houle, K., Edge, V. L., & Rigolet Community Government (2012). "From this place and of this place:" Climate change, sense of place, and health in Nunatsiavut, Canada. *Social Science and Medicine, 75*, 538-547.

Wilson, K. (2003). Therapeutic landscapes and First Nations peoples: an exploration of culture, health and place. *Health & place*, *9*(2), 83-93.

Windsor, J. E., & McVey, J. A. (2005). Annihilation of both place and sense of place: the experience of the Cheslatta T'En Canadian First Nation within the context of large-scale environmental projects. *The Geographical Journal*,*171*(2), 146-165.

Wisconsin Educational Communications Board. (2014). Climate Wisconsin: Stories from a state of change. Retrieved October 25, 2014 from http://climatewisconsin.org/

Wisner, B., Blaikie, P., Cannon, T., & Davis, I. (2004). *At Risk: Natural hazards, people's vulnerability and disasters*. London, United Kingdom: Routledge: Taylor and Francis Group.

Wolf, J., Allice, I., & Bell, T. (2012). Values, climate change, and implications for adaptation: Evidence from two communities in Labrador, Canada. *Global Environmental Change, 23*(2), 548–562.

Woods, M. (2007). Engaging the global countryside: Globalization, hybridity and the reconstitution of rural place. *Progress in Human Geography, 31*(4), 485-507.

Wynveen, C. J., Kyle, G. T., & Sutton, S. G. (2012). Natural area visitors' place meaning and place attachment ascribed to a marine setting. *Journal of Environmental Psychology, 32*(4), 287-296.

Xue, W., Hine, D. W., Loi, N. M., Thorsteinsson, E. B., & Phillips, W. J. (2014). Cultural worldviews and environmental risk perceptions: A meta-analysis. *Journal of Environmental Psychology, 40*, 249-258.

Yahoo Travel. (2014). 9 things you must see before they disappear forever. Retrieved October, 15, 2014 from https://www.yahoo.com/travel/9-things-you-must-see-this-year-before-they-are-gone-83728868413.html

Yiftachel, O., & Huxley, M. (2000). Debating dominance and relevance: Notes on the communicative turn in planning theory. *International Journal of Urban and Regional Research, 24.4*, 907-913.

Yin, R. (2003). *Case Study Research: Designs and methods*. Thousand Oaks, California: Sage Publications.

Zavestoski. (2003). Constructing and maintaining ecological identities: The strategies of deep ecologists. In S. Clayton & S. Opotow (Eds.), *Identity and the Natural Environment: The psychological significance of nature*. London, England: The MIT Press.

Zelenski, J. M., & Nisbet, E. K. (2014). Happiness and Feeling Connected The Distinct Role of Nature Relatedness. *Environment and Behavior, 46*(1), 3-23.

Appendix A: Additional Case Study Photos (Photo Credit: Mark W. Groulx)


olar Bear Alert Program
STOP
DON'T WALK
IN THIS AREA
REPORT BEAR SIGHTINGS
204-675-2327
(BEAR)
Manitoba


Zoo
Assiniboine Park


Journey to
Churchill
Voyage à
Churchill


Churchill Town Site
Ville de Churchill
With thanks to The Powell Family
for their generous support
In memory of Kenny Powell | 1976 - 1993
Nous remercions
la famille Powell de son généreux soutien
À la mémoire de Kenny Powell | 1976 - 1993

Appendix B: Community Survey (see Chapter 2)

Section A: Part 1 - Connection to the Natural Environment in Churchill

The questions in this section are about your relationship with the natural environment in the Churchill area. In this case, natural environment refers to any place where nature is more prominent than human-made features (e.g. a park or a lake somewhere near the community). Please take a moment to reflect on the places in the natural environment in and around Churchill that are important to you.

(Please check one circle on each line)	Disagree strongly 1	2	Neither agree nor disagree 3	4	Agree strongly 5
The natural environment in and around Churchill is similar to the natural environment where I grew up.	●	●	●	●	●
Changes to the natural environment in and around Churchill could disrupt chances for me to bond with my family and friends.	○	○	○	○	○
I feel like I can really be myself when I am spending time in the natural environment in and around Churchill.	●	●	●	●	●
The people who live in and around Churchill mean a lot to me.	○	○	○	○	○
Changes to the natural environment in and around Churchill could disrupt my cultural traditions.	●	●	●	●	●
My relationship with the natural environment in and around Churchill reflects the type of person I am.	○	○	○	○	○
I feel the happiest when I am spending time in the natural environment in and around Churchill.	●	●	●	●	●

Where is your
CHURCHILL?

(Please check one circle on each line)	Disagree strongly 1	2	Neither agree nor disagree 3	4	Agree strongly 5
I feel like I have control over my life when I am spending time in the natural environment in and around Churchill.	●	●	●	●	●
I am very attached to the natural environment in and around Churchill.	○	○	○	○	○
My relationship with the natural environment in and around Churchill makes me feel proud.	●	●	●	●	●
I feel good about who I am as a person when I am spending time in the natural environment in and around Churchill.	○	○	○	○	○
I feel like I am achieving something when I am spending time in the natural environment in and around Churchill.	●	●	●	●	●
The natural environment in and around Churchill means a lot to me.	○	○	○	○	○
I learn alot about who I am as a person when I am spending time in the natural environment in and around Churchill.	●	●	●	●	●

Section A: Part 2 - Your Relationship with Nature

The questions in this section are about your general relationship with nature. Please answer the way you feel, rather than how you think most people might answer.

(Please check one circle on each line)	Disagree strongly 1	2	Neither agree nor disagree 3	4	Agree strongly 5
I feel very connected to all living things and the earth.	●	●	●	●	●
My relationship to nature is an important part of who I am.	○	○	○	○	○
I take notice of wildlife wherever I am.	●	●	●	●	●
My connection to nature and the environment is part of my spirituality.	○	○	○	○	○
I always think about how my actions affect the environment.	●	●	●	●	●
My ideal vacation spot would be a remote, wilderness area.	○	○	○	○	○

Where is your
CHURCHILL?

Section B - Climate Change in Churchill

The questions in this section ask about your opinion regarding the potential effects of climate change in the Churchill area. If you answer True for the first question (B1), please answer the remaining questions in this section. If you answer False for the first question, please skip ahead to Section C.

B1. I believe that the earth's climate is getting warmer. *(If you answer False for this question please skip ahead to Section C)*

	True	False
(Check One)	○	○

B2. Please check the statement that best describes your belief about the primary cause of climate change.

○	Climate change is caused by the release of green house gases into the atmosphere due to human activities *(e.g. burning fossil fuels)*.
○	Climate change is caused by natural variations in the earth's atmosphere and is not influenced by human activities.

(Check One)

B3. I have personally experienced the effects of climate change in Churchill.

	Disagree Strongly	Disagree	Neutral	Agree	Agree Strongly
	1	2	3	4	5
(Check One)	○	○	○	○	○

Where is your
CHURCHILL?

B4. If you agreed or strongly agreed that you have experienced the effects of climate change in Churchill in the previous question, please **list up to six impacts** you have experienced (e.g. less snow) and **indicate how you feel about each impact** by selecting one response on the corresponding scale.

	Very Negative -2	Somewhat Negative -1	Neutral 0	Somewhat Positive 1	Very Positive 2
1.	○	○	○	○	○
2.	○	○	○	○	○
3.	○	○	○	○	○
4.	○	○	○	○	○
5.	○	○	○	○	○
6.	○	○	○	○	○

B5. In the past year, have you taken any actions that make you more prepared to cope with the potential effects of climate change? (e.g. floodproofed your home) [*If yes, please elaborate below and skip the next question (B6). If no or unsure, please move to the next question (B6)*]

(Check One)	Yes	No	Unsure
	○	○	○

If yes, please describe the actions you have taken in the space below.

Where is your
CHURCHILL?

B6. Listed below are some reasons that explain why an individual may not have undertaken recent actions to prepare for the effects of climate change.

- First, please **select 3 statements** that describe your situation by checking 3 circles on the left.
- Second, please **rank the statements you selected** from 1 to 3 in the space on the right, starting with 1 as the most important.

NOTE: *If an explanation is missing, use the space provided to include it in your top 3.*

	RANK HERE
● I am unsure what local climate change impacts to expect.	_____
○ I have limited access to products and services that could help me prepare for the impacts of climate change.	_____
● I have other priorities in my life that are more important than preparing for the impacts of climate change.	_____
○ No one else I know seems to be making changes to prepare for the impacts of climate change.	_____
● I am already sufficiently prepared for the impacts of climate change.	_____
○ Making changes that can prepare me for the impacts of climate change would cost too much.	_____
● I think the science of climate change is too uncertain to act upon.	_____
○ I am unsure what actions can help make me more prepared for the impacts of climate change.	_____
● I feel like any action I take will not really make me more prepared for the impacts of climate change.	_____
○ Other: _____	_____

B7. How likely is it that coping with the effects of climate change will be a priority for the community of Churchill...

(Please check one circle on each line)	Very Unlikely 1	Unlikely 2	Neutral 3	Likely 4	Very Likely 5
...in the next 2 years	●	●	●	●	●
...in the next 10 years	○	○	○	○	○
...in the next 40 years	●	●	●	●	●

Where is your
CHURCHILL?

B8. Listed below are ten climate change impacts that Churchill could face in the future. Please indicate how likely you think each of these is and how positive or negative you think its consequences might be.

LIKELIHOOD						NATURE OF CONSEQUENCE				
Very Unlikely		Neutral		Very Likely	*(For both sides, please check one circle on each line)*	Very Negative	Somewhat Negative	Neutral	Somewhat Positive	Very Positive
1	2	3	4	5		-2	-1	0	1	2
●	●	●	●	●	An increase in extreme weather events	●	●	●	●	●
○	○	○	○	○	An increase in flooding	○	○	○	○	○
●	●	●	●	●	Changes in the potential for local food production	●	●	●	●	●
○	○	○	○	○	An increase in forest fires	○	○	○	○	○
●	●	●	●	●	Reduced ice thickness during winters	●	●	●	●	●
○	○	○	○	○	A decline in the number of polar bears in the area	○	○	○	○	○
●	●	●	●	●	A decline in the quality of local drinking water	●	●	●	●	●
○	○	○	○	○	Impacts on human health	○	○	○	○	○
●	●	●	●	●	A decline in the health of polar bears in the area	●	●	●	●	●
○	○	○	○	○	A decline in the supply of local drinking water	○	○	○	○	○

Additional Comments (Optional):

Where is your
CHURCHILL?

B9. How concerned are you that the effects of climate change will negatively impact your community's...

(Please check one circle on each line)	Not at all Concerned 1	Unconcerned 2	Neutral 3	Concerned 4	Very Concerned 5
...tourism industry.	●	●	●	●	●
...shipping industry.	○	○	○	○	○
...access to food.	●	●	●	●	●
...cultural traditions.	○	○	○	○	○
...opportunities for social relationships.	●	●	●	●	●

B10. Please indicate your level of agreement with the following statement: **My community is capable of coping with the potential effects of climate change.**

	Disagree Strongly 1	Disagree 2	Neutral 3	Agree 4	Agree Strongly 5
(Check One)	●	●	●	●	●

B11. Please list **up to 4** strengths that your community has that could help it successfully cope with the effects of climate change, and **up to 4** challenges that could make coping with climate change difficult. (*Please start with 1 as the most important*)

Strengths	Challenges
1 _____	1 _____
2 _____	2 _____
3 _____	3 _____
4 _____	4 _____

Where is your
CHURCHILL?

Section C - About You

This final section will help provide some additional details important to this study. Please keep in mind that you are free to skip any questions you do not wish to answer.

What year were you born in? _____

How long have you lived in Churchill? _____

Have you lived in communities other than Churchill? Yes ○ No ○

If yes, what community did you live in before moving to Churchill? Country: _____ Community: _____

Gender Male ○ Female ○

Occupation _____

What is the highest diploma, certificate or degree you have obtained?

- ○ No certificate, diploma or degree
- ○ Secondary (high) school diploma or certificate
- ○ Registered apprenticeship or trades certificate or diploma
- ○ College, CEGEP or other non-university certificate or diploma
- ○ University certificate or diploma below the bachelor level
- ○ University certificate or diploma or degree at bachelor's level
- ○ University certificate or diploma or degree above bachelor's level

Where is your
CHURCHILL?

Please select your total household income from all sources before taxes in 2013:

- Less than $ 30 000
- $30 000 - $69 999
- $70 000 - $109 999
- $110 000 - $149 999
- $150 000 or more

Additional Comments

Please use the back of this sheet if neccessary.

THANK YOU

Thank you very much for offering your time to this research! If you wish to recieve a summary of the research, or to discuss this topic further, please read the feedback letter included with this survey closely and fill out the contact information form.

Appendix C: Visitor Survey (see Chapter 3)

Churchill, **Manitoba**

LAURIER *Inspiring Lives.* uOttawa WATERLOO APPLIED HEALTH SCIENCES

THE CHANGING NATURE OF CANADA'S PROTECTED AREAS

Dear Visitor,

The Department of Geography and Environmental Studies at Wilfrid Laurier University, the Department of Recreation and Leisure Studies at the University of Waterloo, and the Department of Geography at the University of Ottawa are conducting a study on climate change and visitor experiences in parks and other forms of protected areas.

The survey takes about **15-20 minutes** and can be completed using either a tablet or paper and pen. You may omit any question you prefer not to answer by leaving it blank and you may withdraw your participation by not submitting your responses.

To thank you for your help, after completing this survey you are eligible to **win one of three $100 gift certificates to an outdoor equipment retailer of your choice.** Participation in this survey is voluntary and **anonymous**. You are not asked for your name or any identifying information. All information you provide will be considered confidential and responses to the survey questions will be summarized. Survey responses will be kept for a period of two years on a password protected computer at Wilfrid Laurier University, then erased. There are no known or anticipated risks to participation in this study.

If you have any questions about this study, or would like additional information to assist you in reaching a decision about participation, please feel free to speak with the researcher(s) here today. If at a later time you have questions about the study please contact Dr. Christopher Lemieux at clemieux@wlu.ca. If you are interested in viewing the results of this survey, they will be posted on October 30, 2014 at https://sites.google.com/site/cjlemieux.

Your opinions are very much appreciated and needed for this project! If you wish to participate in the survey, please begin the survey!

Section A: Reasons for visiting Churchill

This section asks about why you might have visited Churchill and its protected areas. For each of the following reasons, please rate how important it was to your decision to visit. Please respond as you really feel, rather than how you think "most people" feel.

How important were the following in influencing your decision to visit Churchill?

(Please check one circle on each line)	1 Not at all important	2 Slightly important	3 Moderately important	4 Very important	5 Extremely important
To be close to nature	○	○	○	○	○
To view an iconic feature that may disappear from the area in the future	○	○	○	○	○
To experience natural quiet	○	○	○	○	○
To experience solitude	○	○	○	○	○
To be with friends and family	○	○	○	○	○
To feel a connection with others who value nature	○	○	○	○	○
To reflect on life	○	○	○	○	○

The changing nature of Canada's protected areas

How important were the following in influencing your decision to visit Churchill?

(Please check one circle on each line)

	Not at all important (1)	Slightly important (2)	Moderately important (3)	Very important (4)	Extremely important (5)
To develop personal, spiritual values	○	○	○	○	○
To feel connected to an environment that may not exist in the future	○	○	○	○	○
To reflect on how humans are impacting the environment	○	○	○	○	○
To experience a sense of discovery	○	○	○	○	○
To learn about polar bears	○	○	○	○	○
To share what I have experienced with others	○	○	○	○	○
To learn about the impacts of climate change on polar bears	○	○	○	○	○
To have a story to tell	○	○	○	○	○
To experience places I have read about	○	○	○	○	○
To feel like I was the one of the last people to view polar bears here	○	○	○	○	○
To be able to view an easily accessible polar bear	○	○	○	○	○

Section B: About your visit

1. Is this your first visit to Churchill? *(Please select one option)*

1 ○ Yes
2 ○ No

If NO, in what year did you first visit Churchill? _____

(Please select one option)

2. How long is your current visit to Churchill?

	A full day, but I will not stay over night (1)	One to three nights (2)	Four to seven nights (3)	Seven to ten nights (4)	More than ten nights (5)	Unsure
	○	○	○	○	○	○

If MORE THAN TEN NIGHTS, How many nights is your visit? _____

Section C1: General connection to nature

For each of the following, please rate the extent to which you agree with each statement, using the scale from 1 to 5 as shown below. Please respond as you really feel, rather than how you think "most people" feel.

(Please check one circle on each line)	1 Disagree strongly	2 Disagree a little	3 Neither agree nor disagree	4 Agree a little	5 Agree strongly
My ideal vacation spot would be a remote, wilderness area	○	○	○	○	○
I always think about how my actions affect the environment	○	○	○	○	○
My connection to nature and the environment is a part of my spirituality	○	○	○	○	○
I take notice of wildlife wherever I am	○	○	○	○	○
My relationship to nature is an important part of who I am	○	○	○	○	○
I feel very connected to all living things and the earth	○	○	○	○	○

Section C2: Connection to Churchill

For each of the following, please rate the extent to which you agree with each statement, using the scale from 1 to 5 as shown below. Please respond as you really feel, rather than how you think "most people" feel.

(Please select one option on each line)	1 Disagree strongly	2 Disagree a little	3 Neither agree nor disagree	4 Agree a little	5 Agree strongly
I identify strongly with the polar bears in Churchill	○	○	○	○	○
I am very attached to the polar bears in Churchill	○	○	○	○	○
I feel the polar bears in Churchill are a part of me	○	○	○	○	○
The polar bears in Churchill mean a lot to me	○	○	○	○	○
Visiting Churchill and viewing polar bears reflects the type of person I am	○	○	○	○	○
I would feel less attached to Churchill if the polar bears disappeared	○	○	○	○	○
The time spent viewing polar bears in Churchill allows me to bond with family and friends	○	○	○	○	○
I learn a lot about myself when spending time in the natural environment in Churchill	○	○	○	○	○
Changes to the natural environment in Churchill could disrupt chances for me to bond with my family and friends	○	○	○	○	○

Section D: Your experiences with climate change

The questions in this section ask about your opinions regarding the potential impacts of climate change. Please select the option that best represents your view on a particular question or statement.

(Please select one option)

1. Do you think climate change is happening?		
	1	Very sure climate change is not happening
	2	Somewhat sure climate change is not happening
	3	Don't know
	4	Somewhat sure climate change is happening
	5	Very sure climate change is happening

(Please select one option)

2. If climate change is happening, do you think it is...		
	1	caused mostly by human activities
	2	caused mostly by natural changes in the environment
	3	none of the above because climate change isn't happening

	Not at all concerned	Slightly concerned	Somewhat concerned	Moderately concerned	Extremely concerned
(Please select one option)	1	2	3	4	5
3. How concerned are you about the climate change issue?	○	○	○	○	○

	Disagree strongly	Disagree a little	Neither agree nor disagree	Agree a little	Agree strongly
(Please select one option)	1	2	3	4	5
4. To what extent do you agree or disagree with the statement: **"I have personally experienced the effects of climate change"**	○	○	○	○	○

The changing nature of Canada's protected areas

4a. **If you Agreed a Little or Agreed Strongly to the previous question:** In what ways have you personally experienced (or observed) the effects of climate change?

(Please select all that apply)

Increased forest and/or grass fire occurrences	○	Impacts on human health (e.g., heat stress)	○
Changes in snowfall (e.g., more/less snow)	○	Increased drought occurrences	○
Changes in rainfall (e.g., more/less rainfall)	○	Loss of ice cover, ice sheets, or glaciers	○
Economic impacts (e.g., weather-related insurance claims, increased air conditioning costs)	○	More frequent and/or extreme weather events (e.g., floods, tornadoes, etc.)	○
Changes to seasons (e.g., longer growing season, warmer shoulder seasons)	○	Changes to populations of animal species (e.g., observing new species)	○
Changes to water body levels (e.g., higher/ lower water levels in lakes)	○	Changes to populations of plant species (e.g., earlier flowering)	○
Changes to water body temperatures (e.g., warmer water temperatures)	○	Changes in temperature (e.g., warmer temperatures)	○
Other:	○		

(Please select one option)

	Disagree strongly 1	Disagree a little 2	Neither agree nor disagree 3	Agree a little 4	Agree strongly 5	Don't know
5. Please indicate your opinion on the following statement: **"The polar bears will disappear from Churchill due to changes in the global climate"**	○	○	○	○	○	○

If you Agreed a Little or Agreed Strongly to the previous question, in how many years from now do you think this might happen? Please enter number of years: _____

(Please select one option on each line)

	Definitely 1	Probably 2	Not likely 3	No 4
6. Would you still have visited Churchill if the polar bears appeared to be unhealthy (e.g., noticeably skinnier)?	○	○	○	○
7. Would you still have visited Churchill if you were not guaranteed to see polar bears at all (i.e. you might see some but you might not)?	○	○	○	○
8. If you were not able to see polar bears in Churchill, would you be willing to go elsewhere to view these features?	○	○	○	○

9. Would you be willing to purchase a carbon offset to compensate for your travel to Churchill?

1 ○ Yes
2 ○ No

If YES, how much would you be willing to pay? $ _____

NOTE: A **carbon offset** is a reduction in emissions of carbon dioxide or greenhouse gases made in order to compensate for or to offset an emission made elsewhere.

Section E: About You

The questions in this section ask about some background information that is helpful to this study.

	Write Your Answers Below
1. In what year were you born?	
2. Please indicate your gender	○ Female ○ Male
3. Are you a Canadian citizen?	○ Yes ○ No

4. In what province/territory do you currently live? (Please select one) Please SKIP this question if you do not currently live in Canada.

Alberta	○
British Columbia	○
Ontario	○
Quebec	○
Nova Scotia	○
Manitoba	○
Saskatchewan	○
New Brunswick	○
Prince Edward Island	○
Newfoundland and Labrador	○
Yukon Territory	○
Northwest Territories	○
Nunavut	○

5. What is the highest degree, certificate or diploma you have obtained? (Please select one)

No certificate, diploma or degree	○
Secondary (high) school diploma or certificate	○
Registered apprenticeship or trades certificate or diploma	○
College, CEGEP or other non-university certificate or diploma	○
University certificate or diploma below the bachelor level	○
University certificate or diploma or degree at bachelor's level (including LL.B.)	○
University certificate or diploma or degree above bachelor's level (e.g., Master's or PhD)	○

This is the end of the survey. Thank you for your participation!

Appendix D: Conditional relationship matrix (see Chapter 4)

Categories and Concepts	What Participant quote that captures the concept	When When does this category become relevant	Where Where does this category play out	Why What is the main driver of this category	How How does this category unfold	Consequence
Importing						
Importing outside knowledge	The influence of knowledge on the community that results from continued mobility in and out of Churchill "Suitcase people"	-During the design of community projects -During the research process -During the development of policy -During tourism season	-In council meetings -In committee meetings -In informal gathering spaces -In research presentations	- Because Churchill has researchable characteristics - Because planning uses best practices - Because institutions can attach themselves to Churchill's story	By linking outside knowledge to something Churchill has that is deemed valuable	- Creates innovation - Can lead to suboptimal solutions -Changes people's view of their relationship to nature
Importing labour	Bringing in outsiders to fill what could be local jobs	-During port operations - During tourism season - Only part of the year	- In restaurants and tour operations - At the Port of Churchill	-Because Churchill has jobs to be filled -Because experiencing Churchill is worth working for less - Because local skills don't match needs in the tourism industry	-By perpetuating a gap in skills and needs -By limiting desirability of tourism jobs	- Creates tensions between tourism operators and citizens - Diminishes opportunities for citizens to share Churchill's stories first hand
Losing social connections	"Now you have so many transient people here that you don't even know half the people that are here anymore"	- Over the course of several decades - During the loss of the military - At the end of tourism season	- In citizens homes - In schools - In informal public spaces	- Because the community's population is declining - Because tourism workers are transient - Because people don't find a reason to stay	By providing reasons and opportunities for people to stay in Churchill on a part time basis	- Disrupts social capital that has built up in the community - Contributes to the loss of local knowledge - Limits the community's ability to create a ongoing shared history
Lacking local skills	"With some of the newer comers, because they are just not equipped to handle the uncertainty"	-When visitors are exchanging stories -When newcomers are trying to fit in - When residents decide to leave	- On the landscape - In pubs and restaurants - In committee and council meetings	- Because many new residents don't have a history with the land - Because local knowledge is not being effectively transferred - Because visitor's experience in Churchill is highly mediated -Because local knowledge is guarded	By putting in place institutions that allow individuals to live and visit Churchill without skills that previous generations needed to survive	- Diminishes the sense of independence that contributes to self-sufficiency - Promotes place detachment and out-migration
Needing local credentials	"They have a pretty bad reputation around town just because its not a local company, its an American based company"	- During community decision making - When partnerships are forming - During the evaluation of legitimate knowledge	- In committee and council meetings - In informal public spaces	- Because the community has developed an informal mechanism to promote local knowledge and resist scienticism	By using an individuals' connection to the history of Churchill to gauge their localness, and the value of their knowledge	- Creates an implicit resistance to outside knowledge - Limits opportunities for social learning - Protects the value of local knowledge
Privileging local perspectives	"And I truly believe it. And you talk to most locals, and they will tell you the same sort of thing"	- During the exchange of stories by people who know Churchill's history -When resisting decisions from outside actors -When presenting information to non-locals	- In committee and council meetings - In informal public spaces -At Gypsy's 'Bullshit Table'	- Because the community struggles to maintain control over its own story	By creating an expectation that knowledge claims belong to the community, and that those who best represent the identity of the community are those with long standing local knowledge.	-Makes it difficult to resist the local discourse - Primes a mistrust of outside perspectives -Protects the definition of tradition within the community
Learning about ecosystems	An example of rooted local knowledge about Churchill's ecosystem	-Over long time periods spent in connection with the landscape	- On the landscape surrounding Churchill -At the CNSC	-Because an implicit understanding of ecosystems can develop through prolonged experience	- Knowledge is developed through everyday experience, and is shared through traditions and storytelling	- Helps to legitimize the privileging of local perspectives

Categories and Concepts	What Participant quote that captures the concept	When When does this category become relevant	Where Where does this category play out	Why What is the main driver of this category	How How does this category unfold	Consequence
Prioritizing						
Prioritizing threats	"Like this is what I wanted to show you. This is worse than global warming."	- During experiences of the landscape - During times spent reflecting on ones relationship with the landscape	- In citizens homes - In valued places around the community	- Because the most proximate threat to something needs to be dealt with first - Because individuals have limited time and resources to attend to threats	- By relegating longer term threats to the background -by negotiating with others what the most proximate threats are	- diminishes attention paid to climate driven changes - lessens drive to adapt to climate impacts
Grasping	Actively finding a way to stay connected to Churchill	- During one's introduction to the community - During a deeper exploration of the self	-In valued places in the community	-Because it offers a means of resistance to trends that force us to detach from our communities -Because it is an avenue to gaining a legitimate local perspective	- by showing a commitment to the community by investing time or money in a place -By finding ways to project your connection to the community	- Resists place detachment - Builds social capital in the community - Offers individuals a sense of pride and social acceptance
Facing cultural trends	"But I think the train really stops with the choices families make and how they spend their money. I thinks its certainly effects how much the kids are out on the land and that kind of thing."	- Over long time periods	- Within families - Within generations	- Because technology has changed - Because the high mobility in Churchill brings in new people with a different view of nature - Because the landscape has been commoditized	- By changing daily patterns of life - By changing individual priorities - By reshaping social interactions	- People stop spending time on the land - Social relationships based on traditions of being on the land become strained
Losing connection to the land	"The community also hunts and fishes a lot less than forty years ago."	-Over the course of several decades -When outside forces change access and motivation	-The Churchill River -The Bay -The boreal forest	- The damming of the Churchill River - The loss of local skills in the community -Cultural trends away from traditional activities	- By limiting physical access - By changing resources that are available -By allowing a sense of fear to creep in -By changing individual priorities	- Loss of reason to stay in Churchill - Creates a rift in the community's history -Perpetuates the loss of local skills and knowledge
Losing freedom on the land	"So I understand it, I think its definitely become much more fear based. Which is very unfortunate, because that defeats the greater purpose of being here. The freedom of going where ever you want whenever you want."	-Over the course of several decades -When outside forces change access -When the media shapes perceptions	-The Churchill River -The Bay - The town site - The flats - The media	- Because there are more polar bears around town - Because new comers don't know how to live in harmony with the bears -Because the river has less water - Because of LCT marketing	- Limits individuals ability to express liberty and self-reliance - Forces people to adopt extreme adaptations - Keeps people indoors	- individuals lose opportunities to learn and refine traditional skills - Individuals lose access to local livelihoods - Strains the community's connection to the landscape and each other
Deciding not to stay	"But because someone is aboriginal doesn't mean that they are going to stay here for ever and ever and feel that this is their home. For some people that's true, but its certainly not true for all people."	- during transitional periods in someone's life - after the lose of place connections	- at the interface between Churchill and other communities	- because individuals perceive their needs, recreationally, socially, etc. to not be attainable in Churchill any longer - because there are not enough full time jobs	- by letting go of one's attachment to the community -by breaking commitments that have been made -by following the lead of others	- Diminishes access to local knowledge - Disrupts the continuity of the community's history - Places strain on social capital - Contributes to population decline

Categories and Concepts	What Participant quote that captures the concept	When When does this category become relevant	Where Where does this category play out	Why What is the main driver of this category	How How does this category unfold	Consequence
Appropriating						
Ubiquitizing place experiences	"The new owners just sell it out. Like why would you put your tundra buggy and your name on an exhibit in Winnipeg. Why would people come here?"	- During tourism season - Any time the Churchill experience is packaged for mass consumption outside the community	- On Google treks - On the polar bear cam -In the Assiniboine park zoo	- To leverage the cache of the Churchill experience for economic benefit	- By offering massively accessible 'pseudo-experiences' of the Churchill landscape	- Exploits the community's history - Provides money and influence to those in power - Tarnishes the authenticity of Churchill's identity - Conditions mistrust of outside stakeholders
Being an occupied place	"Like the military wasn't an initiative of Churchill. It came and those who were living here … didn't reep benefits from it."	- During tourism season - During the days of the military	- In the town site -In citizen's perceptions of themselves	- Because certain opportunities can best be recognized in Churchill	- By appeasing residents enough that the negative consequences of the occupation are tolerated	- Puts decision making power in the hands of outside stakeholders - Creates a sense of reliance on specific actors -Reduces resilience
Exploiting place identity	"None of us that have actually ever been drivers, like I was a driver and that sort of thing, none of us have any respect for PBI, what so ever. Most of us believe that it was just pure economics of their research, and its all a façade. Its, business."	- During the development of development projects (i.e. Assinaboine Park Zoo) - Throughout the course of research projects -During tourism season	- On the PBI website - In Winnipeg -In the tech. sector - In Churchill -In this dissertation	- To reep economic benefits by associating with the unique nature of Churchill	- By homogenizing and branding the Churchill experience for mass consumption - By shaping the Churchill identity to suit a particular agenda	- Churchill loses control over the power to define its own identity - Economic inequality between citizens and outside stakeholders grows - Citizens develop a sense of fatalism
Agglomerating power	"Most locals are driven by the land, a few are driven because of the economy. But its usually the people who are driven by the economy are the big money players if you will, that have the more influence."	- Over the past several decades	- Within the business community - On council	- To gain influence over decision making - To achieve instrumental ends	- By buying out businesses - By competing with other tourism operators - By controlling information and access	- Citizens feel like they don't have a voice - Apathy within the community builds - Economic resources increasingly leave the community (leakage)
Appeasing locals	"You know they got a little marina there. They had to do something, after taking everything away you know, losing everything. They built this marina."	- Whenever an expression of power is so overt it requires an act of appeasement - When actions are so severe they threaten to disrupt social order	-At the marina	- To calm resistance to unpopular actions - To keep citizens under control	- By throwing money at a problem	- Short term appeasement, but longer term resentment
Negotiating values	"And you will see this fraction of our society, that says screw the port. And I'm one of them. And that's one of sort of topics that can make us a very divisive town very quickly."	-When decisions are made about the community's future -When a new 'plan' is proposed -When development occurs in the flats	-At the port - On the flats - On the Tundra	-Because there is a difference in opinion over the value of Churchill's landscape -Because people have different thresholds for exploitation	- Through a process of assessing decisions or actions against a personal threshold and determining the acceptability of those actions	-Creates tensions in the community -Makes it difficult to resist economic plans
Feeding the tourism machine	"Its, yeah, you know like, and you are not allowed to talk about the downside of tourism because you are supposed to hype everything up so the journalists write nice things."	- During tourism season - When interacting with visitors -When interacting with the media	- In informal public spaces - In businesses - In the media	- Because there is a social expectation that citizens of Churchill support the tourism image, and because there are social repercussions for not doing so	- By selling or hyping an image of Churchill that is entirely positive	-Increases tourism to the community -Creates a more satisfying experience for customers -Forces citizens to suppress their opinions -Homogenizes Churchill's image
Respecting diverse stories	"Its like your, in my opinion people are talking to the wrong people. How do you establish the right people is to make more connections in the community. Not just everybody come up to talk to one person."	-When presenting Churchill's story to the outside world	- In the media - Within the tourism sector	- Because there is a sense the full diversity of Churchill is not being captured or respected	- By engaging more people in the conversation - By not sensationalizing particular experiences	- presents a more accurate picture of the community - helps citizen build a sense of connection and ownership -reduces apathy

Categories and Concepts	**What** Participant quote that captures the concept	**When** When does this category become relevant	**Where** Where does this category play out	**Why** What is the main driver of this category	**How** How does this category unfold	**Consequence**
Standing Up						
Facing social problems	"It's a warm and…well sometimes a warm and friendly place. At two am and the dark side, its kind of a scary place."	- During social interactions	- At pubs - Within community gossip	- Because people recognize Churchill's social problems, despite what is presented to outsides	- by applying social norms	- Creates tensions in the community
Facing local scrutiny	"And they don't want to speak up because then they will be labeled negatively by some people."	- When you voice an opinion that runs counter to the expected perspective	-In the community - On committees and council	- Because Churchill is a small community and word gets around - Because there is a strong social norm to fall in line with the accepted storyline -Because dissent threatens peoples economic investments	- By calling into questions someone's local credentials - By spreading rumors about someone -By shutting someone out	- Makes it risky to share dissenting opinions - Skews outside perceptions of the community
Resisting identity disruption	"And it was just like you had to keep telling journalists over and over again, like they already had their story written before they got of the plane in October. You got so tired."	- during times when Churchill's story is being misrepresented	- In the media -In the tourism industry	- Because outside forces continually shape citizen's relationship to the landscape - Because Churchill's story is often misrepresented -Because it is an expression of power and resistance	- By drawing on local knowledge and history to counter misrepresentations	- Helps to build a sense of control in the community - Reestablishes Churchill's authenticity - Reorients Churchill's shared history
Challenging Scienticism (Cross listed with Standing-Up)	Deferring to local knowledge to challenge scienticism	-When outside decisions might affect the community -When expert discourse seeks to define the community	-in the media -in research reports - Academic publications - In books about Churchill	-Because it offers a form of resistance - Because the message may be threatening	-by deferring to local knowledge and lived experience	-Provides a motivation for collective action -Builds trust within local networks -Takes back power
Recognizing Scientific politics (Cross listed with Standing-Up)	"I look at these scientists that are around here. They all need a job right. Where are they going to work unless they get funding for a project."	-When researchers are doing climate change work in relation to Churchill	- At the CNSC -In research communications	-Because Churchill has been the subject of a lot of climate change related research	- By applying a general motivation to all researchers	-Distrust in motivation of scientists -Distrust in scientific information

Categories and Concepts	What Participant quote that captures the concept	When When does this category become relevant	Where Where does this category play out	Why What is the main driver of this category	How How does this category unfold	Consequence
Shaping						
Carrying on a legacy	"I mean I've put like, like hours, so much time into that place. That place, originally was started in the … And then my friend she was 1 years old when her step dad got together with her mother. And they, the whole family. Her sister and her mom and this step dad went out there in '31."	-During periods when those who came before you begin to pass the responsibility on to you.	- In the stories that are told about the community and its people -In the knowledge and skills passed on over generations	- Because those histories and traditions are important to defining Churchill and its people - Because all other forces seek to severe that link and see something made anew	-By respecting knowledge and traditions that have been passed on to you -By knowing places and their characteristics in intimate detail -By giving yourself over to the cause, even if it puts you at risk -By identifying those ahead of you who will protect the legacy	- A bridge is built between the past and the future -People's place identity gain a sense of continuity -Individuals gain a sense of legitimacy as a community elder
Marking past experiences	Using places to mark past experiences	-When one is called upon to define themselves or their history	-In places that have a specific meaning to individuals	-Because places provide a language to express our experiences	- By tying ones experience to the properties and characteristics of a particular place	- People gain an ability to share experiences in a more coherent manner
Distrusting outsiders	Lacking faith in the actions of outside stakeholders	-When outside interests show a stake in the community or are involved in decision-making	- Council meetings and committee meetings -Townhalls -Presentations	-Because past actions have damaged trust -Because promises have been broken	- By discrediting outside knowledge - By casting doubt on outside intentions	- Limits ability for outside information to shape local behaviours - Limits opportunities for partnerships
Defining tradition	A struggle between local and external definitions of what is traditional	- During claims for compensation from the government - During disputes about local food	- On the tundra - In Winnipeg	- Because tradition comes with status and a moral claim to certain activities and rights	- By comparing and contrasting historical uses of the land -By appealing to established law and policy	- Creates mistrust between government and citizens -Limits options to reduce food security
External identity creation	"But the port of Churchill, I mean that was a Canadian iniatiative so people have been used to being the recipient of somebody else thinking this was a significant area. If you start to kind of look at it from outside, like its not, like a business entrepreneurship or something."	-When outside stakeholders reshape local connections to the landscape -When the river was dammed -When the townsite was redeveloped - When polar bears became a protected species - When the military came and then left -When Wapusk was developed	-On the river - In town - In the media - In academic research	- Because outside parties see something significant in the area they want to capitalize on	- By investing money in infrastructure -By creating policy and laws that shape uses of/access to the land - By shaping Churchill's climate change story	-A sense of lost control over one's place identity - Initiates the process of threat comparison
Disregarding local knowledge	"Local knowledge…which is what these scientists and everybody all ignore."	-During knowledge claims about Churchill's ecosystem	-In research papers -In the media -In meetings	-Because local knowledge is deemed unscientific -Because local knowledge is a threat to established epistemologies	-By deferring to established epistemological paradigms/authority -By limiting access -By controlling information	- Diminishes citizens willingness to participate -Garners distrust of science -Provides motivation to reject ideas about climate change
Controlling information	"So when north/south has the contract for doing the fish survey, they just tell hydro what they want to hear. Because they are in the back pockets of hydro. Its all bullshit."	-When reports about the Churchill river are commissioned -When scientists are doing research in the community	-On the Churchill river -In city council -On the tundra -In academia	-Because information can prove culpability -Because there is pressure to find something novel	- By paying off consultants -By firing consultants who give you the wrong information -By rejecting data that doesn't fit your needs	-Breeds distrust of scientific data and process -Creates resistance to climate science
Miscommunicating scientific knowledge	"And that's what I asked the scientists. It seems colder here to me than it seems warmer. And he says well that can happen to in global warming. It can be opposite. And I go what the fuck does that mean."	-When communicating information about climate change to the public	-In reports -In the media -In community presentations	-Because experts use too much jargon -Because we assume it doesn't matter what the public thinks -Because we assume the public won't get it	-By using jargon -By not finding meaningful message frames -By disregarding local knowledge	-Restricts ability to change attitudes, build knowledge and promote collaboration

Limiting access	Limiting access to decision making	-During policy creation -During project design	- In council	- Because access can lead to a sharing of power	-By limiting information -By not inviting people -By sewing apathy	-More apathy -Poorly designed projects
Challenging Scienticism (Cross listed with Standing-Up)	Deferring to local knowledge to challenge scienticism	-When outside decisions might affect the community -When expert discourse seeks to define the community	-in the media -in research reports - Academic publications - In books about Churchill	-Because it offers a form of resistance - Because the message may be threatening	-by deferring to local knowledge and lived experience	-Provides a motivation for collective action -Builds trust within local networks -Takes back power
Recognizing Scientific politics (Cross listed with Standing-Up)	"I look at these scientists that are around here. They all need a job right. Where are they going to work unless they get funding for a project."	-When researchers are doing climate change work in relation to Churchill	- At the CNSC -In research communications	-Because Churchill has been the subject of a lot of climate change related research	- By applying a general motivation to all researchers	-Distrust in motivation of scientists -Distrust in scientific information

Categories and Concepts	What Participant quote that captures the concept	When When does this category become relevant	Where Where does this category play out	Why What is the main driver of this category	How How does this category unfold	Consequence
Facing Uncertainty						
Bending to nature	"When you are outside you don't feel like you, in this environment like you have too much control"	- during the experience of extreme conditions or situations in Churchill	- On the tundra - In town	-Because conditions in Churchill can be so extreme that you have to change your behavior or face risk of death	- By developing a sensitivity and sense of respect for to power of nature	-People develop an inherent adaptive mindset -People hone their environmental skills -People gain an enhanced sense of the variability of nature
Listening to nature	Reading indicators of environmental health in nature	-When spending extended periods of time on the land	- On the landscape	-Because of a stronger tradition of listening to the landscape than other places	- By building a relationship with the land and becoming sensitive to changes	- People have to attend to multiple sources of information about environmental change -Can lead to a skepticism in science if there are competing messages
Experiencing High Variability	"And I don't know if we experience climate change as much as some of the places down south. I mean, sure we get severe storms here, but that is nothing out of the ordinary. We live on the bay, that's part of life here."	- When facing extreme weather conditions	- In town -In the media	- Because Churchill's location predisposes it to experiencing high variability	- By creating extreme conditions over different periods of time	- Forces people to think adaptively - Makes it hard to identify a trend
Facing uncertainty	Living a way of life that forces you to accept a certain level of uncertainty	- When interacting with polar bears - When dealing with weather -When out on the tundra	-In town -On the tundra	- Because the community is situated in a remote location -Because people are still expected to be self-reliant	- On an individual basis as people plan for and deal with situations - Through planning processes	- Creates self-reliance - Builds individual resilience
Accepting risk	An unusually high tolerance for facing risky decisions	- When making business decisions - When facing environmental threats	-In town -On the tundra -In the tourism industry	-Because living a life with higher uncertainty builds up a tolerance to risks	- By conditioning people's attitudes towards decisions and behavior -By allowing people to make decisions without the 'acceptance' of some norm	- Spurs entrepreneurship - Contributes to a complacent attitude about climate threats
Thinking resiliently	"And you certainly are too. Minus forty and your out on your own and you break down…ha ha…there is no one coming to rescue you, you know. You have to be prepared and you have to think like that."	- When you put your self in situations were you can't rely on others	-On the tundra	- Because learning how to think resiliently is an important part of self protection -Because individualism is a more prominent worldview	- By passing on a way of thinking from generation to generation, or from resident to newcomer	- People learn to be tolerant of uncertainty - People hone the environmental skill set -The community builds up adaptive capacity
Acceptance of natural change	"Well people see it as both. Well, they see it as a natural cycle and human activities… They see the change being also part of the natural variation, but its, they see undue impact with human activities"	- When considering climate change impacts	- In the bay - In the boreal - Amongst the polar bear population	- Because people have a great deal of respect for nature -Because a number of forces have built up a resistance to scientific information - Because the community itself contributes little to the problem -Because there is a higher natural variability in Churchill	-By shaping individual attitudes and local narratives that get passed through the community	- People are more accepting of the change b/c it is less of a human induced risk -People probably don't see the need for mitigative behaviours
Adapting to new conditions	Changing behaviours to fit the needs of new conditions	-In the tourism sector -In town when bears are around	-In the tourism sector -In town when bears are around	-Because people are committed to staying in Churchill -To maintain a way of life -To protect one's livelihood	- Adaptations are reactive - Changes usually come from outside the community	- Builds tolerance to change - Reduces penchant for proactive thinking

Categories and Concepts	What Participant quote that captures the concept	When When does this category become relevant	Where Where does this category play out	Why What is the main driver of this category	How How does this category unfold	Consequence
Lacking Input						
Choosing not to consult	"But instead of starting out by talking to the community, even if you got someone that kind of guides the process, keep it together so that it can be better shared. It didn't happen. Like it was, and even now, and this is an issue between people and our council. They have the chance to speak with the people about Hudson square, they have chosen not to"	On decisions relating to the development of Churchill	- In council - At meetings	-Because there is inefficacy in the community -Because outside consultants don't value local input	-Decisions are made without community input	- Distances council from its community - Worsens apathy and inefficacy
Dealing with apathy	"Well I think that a lot of people you know, feel it doesn't make any difference anyway, so why should I bother. It's the apathy."	On decisions relating to the development of Churchill	- In council - At meetings	- Because there peoples input is not valued -Because short term residents aren't committed	-Community members remove themselves from the responsibility of being involved	- Miss out on local knowledge - Miss out on opportunities to build social capital - Volunteerism declines
Feeling left out	"I think that its important for the local community to buy into things. And if they are not part of it from the beginning, what difference does it make. You know, those people are going to do what they want anyway. And that's kind of what the feeling is."	- During decision-making processes - During winfalls in the community	- In council - At meetings - In the business community	- Because people are left out of the entrepreneurial cycle - Because powerful actors make decisions that affect Churchill	- Decisions are made that effect the community, and if they are controversial, some sort of strategy is used to suppress resistance	- Can lead to significant resistance when thresholds are breached -Can lead to a sense of fatalism -Further agglomerates power
Feeling like a pawn	"The other thing is that the federal government that we have is, is ummm interested in the North from a sovereignty and resource extraction point of view. And they do have a vested interest in the success of the port of Churchill, as does the province."	-When outside actors receive benefits on behalf of Churchill	- In the media - In the tourism industry	- Because people benefit from Churchill without being committed to it	- Stories from Churchill are appropriated -Livelihoods in Churchill are threatened	-Distrust of outsiders builds

Appendix E: Full size map of Churchill study areas