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Landscape of Hope: The Influence of Place and Social Capital on Collaborative Action in Sustainable Management

by

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ABSTRACT

Collaboration offers promise for sustainable development, particularly in cases where direct involvement of affected stakeholders is essential. The actor network theory (ANT) process of translation explains how diverse interests could unite to solve environmental problems. This unique theoretical approach allows a role for human actors and non-human (material) intermediaries to organize, mobilize and spread innovation. Yet mechanisms by which these actors and 'actants' might negotiate cooperation are only beginning to be explored. Similarly, social capital research suggests that trust, reciprocation and networks might play a role in successful collaboration, while place-based governance research also suggests place can motivate cooperative action. This thesis analyzes a qualitative case study of a 10-year voluntary collaboration among government, non-governmental organizations and academic researchers to explore the role of social capital and place as potential mechanisms in facilitating collaboration. Using semi-structured- interviews, a photo-elicitation exercise, a policy overview and content analysis of presentations from this period, I examine the role of social capital and place in group formation and mobilization for three key projects, through a theoretical lens of ANT translation. My results indicate both factors played a role in facilitating collaboration. Strategic use of available social capital and place-making by key actors with persuasive skills overcame cultural and human barriers imposed by context to facilitate an agreement to cooperate. Other key actors contributed to the stabilization and mobilization of the group, which sustained the group, achieved immediate goals and built social capital for new initiatives, including a sense of individual empowerment. Shared place identity created by place-making motivated cooperation with minimal conflict: participants' place meanings merged with the shared identity to create nuanced,

supportive motivations. The individual empowerment resulting from successful projects encouraged participants to reinvest in the group, or apply new knowledge elsewhere. Within the context of the ANT translation process, this case study demonstrated mechanisms to facilitate, sustain and propagate collaboration, and provided empirical evidence of the theorized diffusion of innovation from micro to macro society.

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LIST OF ABBREVIATIONS

ANT: Actor Network Theory

BHI: Beaver Hills Initiative

BMP: Best Management Practice

CAO: Chief Administrative Officer

DUC: Ducks Unlimited Canada

EINP: Elk Island National Park

ENGO: environmental non-governmental organization

ESI: Entrepreneurial Social Infrastructure

IDP: Inter-municipal Development Plan

GIS: Geographic Information System (software)

MDP: Municipal Development Plan

NGO: non-governmental organization

POS: Political Opportunity Structure

SAC: Scientific Advisory Committee

UNESCO: United Nations Organization for Education, Science and Culture

Introduction

> A small group of thoughtful people could change the world. Indeed, it's the only thing that ever has. – Margaret Mead (no date)1

> Thus, we are entering an age when communities need to define "new shared moral cultures" through deliberative dialogue on the meaning of place, limits, and scale in the twenty-first century context of sustainable development. Ann Dale (2005)

These two thoughts, the first broadly accepted to some extent as a truism, the other an emerging sense of sustainable communities, illustrate a persistent question in social research. How does social change occur? Through the determined effort of individuals possessing leadership and vision? Through considered dialogue? Through some combination of the two? Through a natural evolution of societal structure? These questions are particularly relevant as society struggles to define sustainable levels of resource use in the context of a changing social and physical environment.

Mounting environmental problems (e.g., loss of biodiversity, pollution, climate change) suggest a need for a new approach to natural resource management. Collaboration, an inclusive problem-solving process, offers important advantages as a means to negotiate such change, not least of which is the involvement of directly affected stakeholders. At best, collaboration could lead to an adaptive approach to environmental management that inspires the optimism required to explore and test innovative solutions to difficult problems. My research explored factors that can contribute to such an approach to sustainable development, through collaborative efforts. Specifically, it examined how social capital and place could contribute to long-term collaboration and achieve sustainable development objectives, through their potential to facilitate open dialogue, compromise and trusting relationships. The empirical literature suggests that the development of collaboration can dictate its outcomes (Peterson, Peterson, Peterson, Allison, & Gore, 2006; Pretty & Smith, 2004). Theoretically, social capital can aid in place-based

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[1] Note that this quote is generally attributed to Margaret Mead and is considered to be consistent with the spirit of her work, but it was not a printed statement (The Institute for Intercultural Studies, 2009). It is suspected to have come from a spontaneous and informal comment reported by a newspaper, the reference for which has been lost.

collaboration, by enhancing the capacity of communities to entertain alternative management options (Dale, 2005; Flora & Flora, 2013). Yet an understanding of the process by these factors could contribute to resilient, adaptable communities is not yet clear. It is the specific contributions of social capital and place to both the collaboration process and its outcomes that this study sought to explain.

This study arose from a personal, transformative experience with place-based collaboration, one that was, in my experience, unique and thus worthy of explanation and comparison to other examples. The capacity of a committed, diverse group to implement a sustainable development approach to land management, within a landscape with conservation value inspired hope for me as a biologist and consultant working in the field of sustainable development, and I found, in others. Closer examination of this collaboration experience suggests that such empowerment may be the most important outcome of sustained collaboration, with critical influence on social change.

The sections below set a context for this study, by outlining limitations of past attempts to achieve sustainable natural resource management and the emerging discussion about more transparent and inclusive forms of resource governance. The empirical literature suggests that social capital and place may contribute to successful short-term collaborative initiatives, but few longitudinal studies have examined their roles in the process of sustained collaboration. Gaps in this past research led me to propose potential roles for social capital and place as mechanisms facilitating collaboration, within the translation process described in Actor Network Theory (Callon, 1986). A brief overview of the knowledge gaps in collaboration research sets the context for the specific research objectives of this study that close this chapter, and the subsequent, more detailed review of the literature in the next chapter.

The Challenge of Sustainable Development

The rapid economic growth through the 20th century has brought prosperity to industrialized nations, but also unforeseen environmental and social side-effects, such as pollution, threat of climate change, globalization and inequitable distribution of development costs and benefits. Mounting public and scientific concern about such concerns stimulated new dialogue about resource governance through the 1980s, resulting in a new emphasis on sustainability, and recognition of the environmental, social and economic effects of resource use (e.g., the work of the Brundtland Commission and environmental impact assessment legislation

in the 1980s). Yet progress toward sustainability has proven a challenge for industrialized nations, due in part to differing definitions of sustainability among stakeholders and conflation of sustainability and sustainable development.

For example, the definition of sustainable development established by the Brundtland Commission in 1987 allowed for both economic development and environmental sustainability (Robinson, 2004). The inclusion of development in the Brundtland definition was a deliberate choice, intended to acknowledge the need of developing nations to pursue economic growth to counter social and environmental effects of poverty (Robinson, 2004). However, by ignoring a fundamental concern, the pace of economic growth, this definition allowed governments to focus on sustaining development or growth (sustainable development), rather than on living within environmental constraints (sustainability; Robinson, 2004; Roseland, 2012). As a result, natural resource management has remained focused on sustaining resources for predictable economic gain, rather than ecological function (Crona & Hubacek, 2010) or social equity (Roseland, 2012). Some have predicted this behavior to result in exceeding the ecological capacity of the Earth's resources, most "infamously" the 1972 study *Limits to Growth* (Turner, 2008, p. i). Although controversial in its predictions (based on projected growth), a 2008 study that reran this model using actual growth data for the prediction period confirmed the current global development conforms to the "overshoot and collapse" scenario (Turner, 2008).

Through the 2000s, public, scientific and government concern has focused on the ecological effects of human use, including impacts such as climate change and the risk of exceeding ecological capacity to adapt. Many of today's ecological problems are 'wicked' in the sense that they have a high level of uncertainty, have conflicting definitions of the problem, involve dynamic and complex systems, and are situation-specific (Franks, 2010). Such problems require innovative, context-specific solutions, governance systems capable of flexible and rapid response to change, and capacity to generate timely information as conditions change (Crona & Parker, 2012; Franks, 2010). The solutions, in turn, require the support of the stakeholders affected by the proposed solutions, since a timely and effective response to change would demand full participation of all resource users (Bardsley & Sweeney, 2010). In particular, critics of the existing resource management structure have focused on the influence of interest groups deriving benefit from resource use, and the potential for such groups to monopolize government command and control structures (de Vos & van Tatenhove, 2010; Rebick, 2009) to maintain the

existing, unequal distribution of benefits and impacts resulting from resource use (Roseland, 2012). The unequal distribution of those benefits and impacts are driving public concern as much as the environmental impacts themselves (Roseland, 2012).

These issues have led to demand for more inclusive, transparent and adaptable management systems (Franks, 2010; Rebick, 2009), or what de Vos and van Tatenhove (2010) call a shift away from government toward governance. Governance, in this way of thinking, would bring decision-making out of institutionalized government structures and more fully into the public realm. Sustainable development then would become economic policy that considers environmental constraints, social equity, and aspects of development beyond economic growth (e.g., health, community; Roseland, 2012).

Recognition of the need for new resource governance approaches has created a tension between the current approach to "sustainable development" and "sustainable" resource management. We are moving toward a system that acknowledges the "critical interdependency between the production and use of human-made capital and the maintenance of natural capital" (Hawken, Lovins, &Lovins, 1999, p. 3). Governance of natural capital, the physical and biological resources and ecological systems that comprise and regulate our shared natural world, must transcend political boundaries. This introduces a further complication of scale. Ecosystems do not acknowledge political jurisdictions; air, water, and plant and animal species are not contained within discrete political units. Ecological sustainability requires negotiation of resource use at the ecological landscape level, a distinct departure from existing sectoral and political management approaches (Brunckhorst, 2001). Inclusive regional approaches that bring together the various stakeholders with the knowledge, jurisdiction and political or self interest in sustaining natural capital are increasingly recognized as necessary for management (Borrini-Feyerabend & Borrini, 1996; Edge & McAllister, 2009; Pollack, 2004; Whitelaw, Eagles, Gibson, & Seasons, 2008).

The discourse resulting from these ideas about natural resource governance has generated "profound new ideas about social and political change" (Rebick, 2009, p. 9). Specifically, it has highlighted the need for more democratic decision-making, since sustainability deals with commons resources, resources shared by a broader community (Brunckhorst, 2001; Pretty & Smith, 2004). This requires a form of democracy measured, as Sen (2009) suggests, by its capacity to ensure that the diverse opinions within society are heard and allowed to contribute to

reasoned discussion, rather than by its institutions alone. Such changes to natural resource governance require a dramatic departure from the status quo. Some suggest adoption of "holistic embeddedness" (Dale & Newman, 2007, p. 63), the integration of institutions within a much larger system, rather than a view of institutions as the dominant authority.

Such integration can enhance civil society, by fostering a participatory form of governance that allows an engaged and literate citizenry to play a role in management decision-making (Dale & Newman, 2007). Effectively, such a governance approach would become a form of deliberative democracy (Bessette, 1980), a system in which problems and solutions are debated and selected by informed stakeholders in a balanced, comprehensive, substantive and conscientious manner (Fishkin & Luskin, 2005). Ultimately, such a system would provide a means for stakeholders to address concerns about a given place to which they may attach a particular individual or group identity (Cheng, Kruger, & Daniels, 2003), and use their local knowledge to develop practical solutions to complex problems (Bardsley & Rogers, 2011; Dale & Newman, 2007). A more integrated approach to management could facilitate the innovative problem-solving and broad support for chosen solutions necessary to address particularly difficult environmental issues (Bardsley & Rogers, 2011; Crona & Parker, 2012). Lastly, it serves to increase trust between government agencies and the public, and to legitimize governing institutions as serving in the public interest (Pollack, 2004), another key aspect of democratic process.

Past approaches to integrated resource management using expert-driven or government-initiated solutions have not been adequate for wicked problems, due mainly to insufficient breadth of perspectives about the problem. For example, solutions generated through scientific institutions alone often rely on top-down, exclusive approaches to problem-solving (Armitage, Berkes, & Doubleday, 2007; Franks, 2010) that limit the definition of the problem and the range of potential impacts to those understood in a technical, disciplinary context (Jamal & Eyre, 2003). Solutions, accordingly, address only part of the problem and could introduce unexpected impacts in areas beyond disciplinary expertise. Later policy change may fail because the proposed change makes people excluded from the decision-making process more aware of their attachments to existing conditions (Hajer, 2003). Inter-disciplinary approaches have been proposed to overcome limitations imposed expert-driven solutions, but they have their own issues. Power influences such as knowledge claims (the epistemological differences across

scientific disciplines that create conflicting views of 'reality') create barriers to the knowledge sharing required to address such problems (Buizer, Arts, & Kok, 2012; Dearden & Mitchell, 2009; Mace, Norris, & Fitter, 2012).

Similarly, broader, community-based approaches to integrated resource management have been susceptible to power dynamics that can exclude key stakeholders and limit discussion to alternatives that favor sustained benefit to certain actors (Flora & Flora 2013; Peterson et al., 2006; Wilson & Wiber, 2009). This is particularly true of voluntary and small groups, which often restrict membership to known interests and thus are susceptible to capture by local political and economic elites (Parkins, 2011). Government-driven solutions can be particularly susceptible to power dynamics, including competing interests of siloed departments (Dale & Newman, 2007; Wilson & Wiber, 2009) and limitations on solutions imposed by political objectives (for example, see the climate change process studied by Bardsley & Sweeney, 2010). Furthermore, these approaches have often excluded the broader public from decision-making, and their practical insights on the problem and potential solutions (Bardsley & Sweeney, 2010; Jamal & Eyre, 2003).

Techniques that facilitate exchange of knowledge and learning, such as stakeholder engagement and social learning, a refined form of engagement in which participants gain new knowledge, insights, relationships or trust, have been suggested as more constructive means of involvement (Armitage et al., 2007; Rodela, 2011). Similarly, a level of discourse that includes technical (work), practical and emancipatory (value-based) interests can foster a deeper understanding of the concerns of all affected stakeholders (Habermas's theory of cognitive interests, Habermas, 1978, 1989). Such methods can involve decision-makers, scientists and affected publics in generating innovative solutions, and foster the broad understanding of the solutions required to coordinate timely action and adaptation (Bardsley & Rogers, 2011; Crona & Parker, 2012). These approaches focus on empowering affected stakeholders to participate effectively in informed decision-making, but mainly by transfer of knowledge to create a sense of control over the outcome (e.g., Sobels, Curtis, & Lockie, 2001). They do not necessarily address the use of power to limit engagement and constrain the boundaries of dialogue and knowledge exchange (Flora & Flora 2013). Although the existence of 'healthy' bridging and bonding social capital has been suggested to prevent such power dynamics (Flora & Flora 2013),

the means to foster and sustain such capital within a collaborative group are not as well understood.

Furthermore, the acquisition of new knowledge does not necessarily lead to its application in creative problem-solving toward collective goals (Bardsley & Sweeney, 2010; Thomas & Velthouse, 1990). The individual's interpretation of the task at hand (level of difficulty) and their own capacity to contribute, deal with setbacks and envision success can also empower, or disempower (Thomas & Velthouse, 1990). Experience with demonstrated results can help others see new possibilities (Emery & Franks, 2012; Gilmour, Dwyer, & Day, 2011) and foster an open attitude toward the innovative solutions proposed to result from inclusive processes (Parkins, 2011; Stephenson, 2011). This implies need for a form of collaboration that addresses these cognitive issues and helps individuals to envision a broadened range of possible alternatives (Stephenson, 2011; Thomas & Velthouse, 1990), share cultural understandings of the problem and solutions (Flora & Flora 2013; Inkpen & Tsang, 2005), and increase comfort with risk and uncertainty (Biljsma, Bots, Wolters, & Hoekstra, 2011). Trust in others and the proposed alternatives can help with acceptance of risk associated with innovation (Glanville & Bienenstock, 2009; Inkpen & Tsang, 2005; Lambright, Mischen, & Laramee, 2010), which in turn implies requirement for active management of group relations and expectations to balance awareness of risks and achievability of vision (Selman & Wragg, 1999a). It also brings into question effective means of group management and appropriate leadership styles to foster such empowerment, aspects as yet little studied within the social capital or the collaboration literatures, but well studied within the business management discipline.

New Management Approaches

Various management approaches (e.g., integrated resource management, adaptive management, co-management) have attempted to incorporate inclusive problem-solving into local and regional land use planning (Armitage et al., 2007; Crona & Hubacek, 2010; Pretty & Smith, 2004; Wilson & Wiber, 2009). Yet defining sustainability objectives and developing consensus on sustainable resource management at the local and regional level has proven more difficult than originally imagined. Sustainability means different things to different people, ranging from a utilitarian focus on the so-called three pillars of sustainability (environmental, social and economic aspects), to a more aesthetic view respecting the relationship between man and nature (Robinson, 2004). Crona and Hubacek (2010) suggest that consensus is hindered by a

focus on the exchange of knowledge amongst actors representing broader management and stakeholder communities, and insufficient consideration of the role of social relationships in negotiating and implementing environmental management objectives. Lawton (2007) identifies this approach as the 'deficit model', the belief that it is a lack of information that prevents sound environmental policy, rather than acknowledging the influence of other interest groups, conflicting agendas and a lack of feasible and easily implemented solutions in policy-making. Regardless of the cause, the desire for transformative change noted by Rebick (2009), some 25 years after global commitment to sustainable development, suggests a level of impatience with these past attempts, and an urgent need for more effective management approaches.

Collaborative management initiatives have shown some promise in developing consensus regarding sustainable resource management (Lockie, 2004; Whitelaw et al., 2008). Collaborative management, as defined by Borrini-Feyerabend and Borrini (1996), is an explicitly inclusive approach in which stakeholders with interests in an area or in a set of natural resources within the area, agree to share management responsibilities in a partnership arrangement that outlines their respective functions, rights and responsibilities. Wood and Gray (1991) identified other aspects in their definition of collaboration, including the retention of autonomy: "Collaboration occurs when a group of autonomous stakeholders of a problem domain engage in an interactive process, using shared rules, norms, and structures, to act or decide on issues related to that domain" (p. 146). Such groups can form through top-down direction (Selman & Wragg, 1999a; Wood & Gray, 1991), but voluntary collaborations can also arise from partners who recognize a shared concern (Borrini-Feyerabend & Borrini, 1996; Dunmade, 2012; Ostrom, 1990). In such cases, a proactive and credible convener organization may persuade other potential collaborators to join the initiative (Wood & Gray, 1991), based on trust (Emery & Franks, 2012; Gilmour et al., 2011).

Collaborative management can go beyond the sharing of knowledge within a problem-solving process to creating a substantial role for stakeholders in management activities. The form of collaborative management varies depending on the goals of collaboration and the degree of power-sharing (Armitage et al., 2007). For example, integrated management, participatory action research, and community-based resource management each involve different management interests, consultation arrangements and expectations of duration of collaboration. Collaborative sustainable development seeks consensus among stakeholders about science-based solutions to

wicked problems, often by creating shared understanding of the science underlying both the issue and solutions (Innes & Booher, 1999; Pretty & Smith, 2004; Selman & Wragg, 1999b). In this sense, it enhances the capacity of adaptive management to develop innovative approaches through continuous feedback and co-management, such that risks and benefits of sustainable development are acknowledged and shared among all stakeholders (Armitage et al., 2007).

Consensus on collaborative solutions can be developed through various means (Whitelaw et al., 2008), including dialogue (Schusler, Decker, & Pfeffer, 2003) or social learning (Bardsley & Sweeney, 2010; Schusler et al., 2003), but it hinges on the development of trust (Payton, Fulton, & Anderson, 2005). This is especially important where the underlying science is complex. Here, stakeholders may rely on factors other than science to evaluate the problem or proposed solutions, including trust in the solutions or the proponent (Holmes, 2010; Selman & Wragg, 1999b).

This differs from current forms of integrated resource management, in which a resource agency attempts to establish suitable management options using their understanding of ecosystem processes and stakeholder consultation (Slocombe & Hanna, 2007). It also differs from coordination scenarios, in which actors may have slight conflict in interests, but ultimately share sufficient ground to make working together a clear choice (Diekert, 2012). Sustainable development, Diekert (2012) argues, relies on cooperation amongst a group of actors that may share some, but not all interests, such that the choice to work together is not clear. Collaboration involves some level of cooperation. Collaborative forms of sustainable management rely heavily on trusting relationships that allow partners to come together to acknowledge a common problem and then identify situation-specific management solutions that are practical, readily implemented and satisfy enough interests of all parties (Ostrom, 1990, 1998, 2000). Sustained collaboration relies on demonstration of results, provision of promised benefits that reward participation (Gilmour et al., 2011; Ostrom, 2000). Trust takes time to grow and so, collaborative approaches are not implemented quickly (Borrini-Feyerabend & Borrini, 1996). The reliance on trust also acknowledges a key factor limiting the management of commons resources through collaboration, the role of social relationships and networks (Diekert, 2012; Ostrom, 2009).

Research on Collaboration: Facilitating Factors

The potential in collaborative sustainable development to facilitate a more deliberative form of resource management has stimulated new research on the factors that could facilitate

effective cooperative action and stakeholder engagement. Investigation has come from two different perspectives: a descriptive standpoint (characterizing form and function of collaborations) and a more specific focus on enabling factors and process (what circumstances lend themselves to collaboration?). In the latter case, empirical studies of the influence of social capital and place on the collaboration process suggest a facilitating role in place-based resource management collaborations (collaborations interested in specific geographic locations), through means as yet not well understood.

Disciplines interested in organizational development and management have approached collaboration research from a descriptive perspective, attempting to characterize the types of collaborations and means of their formation. For example, Wood and Gray (1991) attempted to develop a comprehensive theory of collaboration, drawing from various theoretical perspectives in collaboration research at the time, including resource dependence theory, institutional economics, strategic management, microeconomics, institutional or negotiated order and political theory. Although they were able to define collaboration in a way that allowed for the observed diversity in form and outcome[2], and to create a typology of collaborations based on the type of intervention (response to request or convener-initiated) and authority (formal or informal) required of a convener, they acknowledged that a general theory of collaboration required better understanding of the social process (or range of processes) by which participating organizations established their specific form of collaboration. They identified a number of gaps related to the preconditions, process and outcomes of collaboration. Critically, they noted that only some of the theories they had reviewed addressed the process by which collaboration is convened, organized and conducted, leaving a "black box" to explain this essential process and its influence on the variation in forms of collaboration. They also speculated on the potential influence of various social factors, including aspects of social capital such as trust, reputation and access to resources on the form of collaboration, but again these remained a knowledge gap.

Collaboration research has now shifted to new theoretical frameworks, often with a focus on social capital and particularly networks, due to their role in providing necessary resources. For example, social network researchers have focussed on the means to create trust and open

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[2] Wood and Gray (1991, p. 146) defined collaboration as occurring "when a group of autonomous stakeholders of a problem domain engage in an interactive process, using shared rules, norms, and structures, to act or decide on issues related to that domain."

communication, factors essential for voluntary collaborative efforts where traditional power hierarchies do not compel participation (Friedrich, Vessey, Schuelke, Ruark, & Mumford, 2009; Lambright et al., 2010). Business management scholars have examined the role of social network structure in enabling access to social capital and knowledge transfer, presumed benefits of belonging to a network (e.g., Inkpen & Tsang, 2005). The collective action literature, particularly new social movement research, has examined the potential to use and enhance social capital through participation in voluntary organizations such as environmental movements (Diani, 1997; Diani & McAdam, 2003; Sirianni & Friedland, 1997).

Empirical investigations of the social processes facilitating development of sustainable development collaborations have been limited, tested through various theoretical frameworks. Concepts from social network theory (e.g., network mobilization, knowledge transfer and access to resources; Lin, 2001; Moody & Paxton, 2009; Moore & Westley, 2011) and Actor Network Theory (ANT, Latour, 2005) have been used as frameworks to examine the process of group formation and mobilization for coordinated action in specific cases of natural resource governance (e.g., Callon, 1986; Lockie, 2004; Pollack, 2004; Whitelaw et al., 2008). Here, investigators have focussed on the relational processes among social actors (e.g., non-governmental organizations, community groups, government agencies) involved in developing and mobilizing collaborative efforts (e.g., by describing recruitment, selection of tactical approaches, and networking; Bell, 2007; Diani & McAdam, 2003; Whitelaw et al., 2008). However, the means by which the group organized, how interested individuals developed the trust to cooperate and negotiate norms of group behaviour, other critical aspects of collaboration, were not specifically examined in these cases. As a result, the process of establishing a cohesive, effective collaboration remains a "black box", as Wood and Gray (1991) described it in their earlier study.

A collaborative effort requires an initial motivator, some reason to cooperate to address a problem (Diekert, 2012). Place is a logical motivator for collaborative natural resource management, particularly in high amenity locations. Yet in the place-based, natural resource collaboration studies mentioned above, few considered the role of the environment in collaboration in any detail. Place was the setting, rather than an active player in collaboration. Natural resource management can affect the character of place, as well as its resources, and people may react to potential change based on deeply held feelings about a specific location.

Place research has examined the role of place attachment, sense of place, and community attachment in effective collaboration, including political responses and civic action (Bell, 2007; Cheng et al., 2003; Dale, Ling, & Newman, 2008; Edge & McAllister, 2009; Lewicka, 2005; Payton et al., 2005; Pollack, 2004; Whitelaw et al., 2008). Tuan's (1974) concept of sense of place has stimulated considerable investigation into motivations for environmental action, in terms of land use planning and management (Brehm & Eisenhauer, 2008; Brunckhorst, Coop, & Reeve, 2006; Eisenhauer, Krannich, & Blahna, 2000; Walker & Ryan, 2008), environmental impact assessment, and environmental awareness (Bonaiuto, Breakwell, & Cano, 1996; Kaltenborn, 1998; Wakefield, Elliot, Cole, & Eyles, 2001). Although place influenced environmental attitudes in many of these studies, it was not always a consistent motivator for civic action. Place instead appeared to be an indirect mediator, working through other social factors including social capital (Pollack, 2004; Lewicka, 2005; Ravindra, 2004).

Such work suggests that place can motivate civic action, if combined with the appropriate social capital to "convert emotion to action" (Lewicka, 2005, p. 392). Yet, the simple presence of social capital and an interest in place have not always been sufficient to motivate civic action (e.g., Lewicki, 2005; Wakefield et al., 2001; Wilson & Wiber, 2009). In contrast, skillful use of social capital and place attachment by key actors has been shown to achieve collaborative goals (e.g., Bell, 2007; Whitelaw et al., 2008). Social capital (trust, networks, resources and expectations of reciprocity), in contrast to place, has been shown to play a direct role in the success of collaboration (Peterson et al., 2006; Pretty & Smith, 2004). Trust, in particular, is critical for cooperation (Diekert, 2012; Inkpen & Tsang, 2005). This research suggests that collaboration is a complex social process potentially mediated by social capital and place, through as yet unclear mechanisms and pathways. Empirical studies that test a theoretical process of collaboration, within a specific geographic location, could help clarify the roles of social capital and place within place-based collaboration.

Actor Network Theory as a Theoretical Framework

Part of the difficulty in analyzing the means by which social capital and place might facilitate collaboration has been in conceptualizing agency. Most theoretical frameworks have assumed that social change through collective behavior arises through human agency only (e.g., rational choice theory, network theory). Actor network theory (ANT) offers means to assess the contributions of both social capital and place in collaboration, because it allows the environment

to play an active role as a non-human actor. Specifically, ANT has helped to conceptualize a process by which a collaborative group might form, gel and contribute innovative approaches to natural resource governance and sustainable development. Through the translation process proposed by Callon (1986), actors define a shared concern, declare interest in collaborating on a solution, and then enroll in a group that mobilizes to solve the problem. Enrollment occurs at the 'moment of agreement', a point at which proponents are able to overcome barriers to cooperation, a process proposed to be aided by human-initiated mechanisms and relational strategies, and non-human actors. Although ANT proposed a role for non-humans as devices that could facilitate agreement, the specific mechanisms and relational strategies involved in the process were not theorized and require additional empirical investigation to elucidate.

Social capital and place could play roles in the ANT translation process, to motivate cooperation and provide the enabling environment for constructive and respectful interaction thought needed for effective collaboration (Pollack, 2004). Social capital (trust, resources, networks) could provide the inputs to foster collaboration and mobilize toward a goal. Place (through place attachment) could motivate cooperation among partners with diverse interests. Such theoretical roles for social capital and place in place-based governance have been described using ANT and other frameworks (Dale, 2005; Pollack, 2004), but as noted above, these models have been tested within few empirical studies. Further, those studies have often focused on confirmation of the process of translation, describing steps taken to recruit interested partners and mobilize, rather than the specific mechanisms facilitating that process. Such researchers have described the process of enrollment and eventually, mobilization for action, noting only peripherally the role of social capital and place (Callon, 1986; Selman & Wragg, 1999a). Conversely, some studies have specifically assessed the way in which social capital or place were used to foster cooperation from a strategic standpoint, but did not relate use of these factors to specific stages comparable to ANT translation (Bell, 2007; Whitelaw et al., 2008) or did not examine both social capital and place within the same study (Dale et al., 2008; Payton et al., 2005; Peterson et al., 2006; Pretty & Smith, 2004). The emerging distinction between social capital as an input and as an outcome presents another interesting research perspective on the effectiveness of the collaboration process, since it allows examination of constructive (or deconstructive) development of capital (Baldassarri & Diani, 2007; Diani, 1997; Glanville & Bienenstock, 2009; Sobels et al., 2001).

And so, although ANT has helped to conceptualize roles of social capital and place in collaborative approaches to natural resource governance, an understanding of how those factors might be applied to facilitate collaboration is lacking. These mechanisms are an important gap in our understanding of collaboration, generally, and in collaborative governance for sustainable resource management specifically. The capacity for collaboration to develop consensus around a particular management solution has several implications. If the solution was effective (i.e., satisfied concerns and needs of most stakeholders), the experience could lead to adoption of collaboration for other problems. Repeated, successful experiences could establish the practice as an institution for resource governance. An understanding of the factors that facilitate collaboration is thus, of practical and theoretical significance. To test the contributions of these factors to collaboration within the ANT framework, I proposed the following roles of place and social capital:

- Place can motivate engagement of actors toward specific management goals (i.e., facilitate definition of a problem and interest in its possible solution).
- Social capital inputs such as trust, access to networks and resources, and expectations of reciprocity can contribute to an atmosphere conducive to cooperation and negotiation of innovative solutions to management issues (i.e., achieve the moment of agreement).
- The new social capital generated by the collaboration process may, in turn, build a depth of trust, knowledge and network resources that allows more contentious issues to be raised and resolved by the collaborative group.
- Lastly the knowledge and skills developed through the collaboration process are social capital that can be reinvested in the collaboration, or to other initiatives outside the collaboration.

In this dissertation I tested these propositions using an embedded, exploratory case study of the Beaver Hills Initiative (BHI), a study of the members of a collaborative organization (the unit of analysis) over the course of three sequential projects (subunit of analysis, Yin, 2009). The BHI has tackled increasingly difficult initiatives in regional sustainable management, focusing on a key regional feature, the Beaver Hills Moraine. The path of development of the BHI over a decade offered an opportunity to test the theoretical assumptions regarding the collaboration process proposed by ANT. The durability of the BHI collaboration (now in its 10th year) also allowed me to examine a possible outcome of collaboration, normative social change

and transfer of collaboration skills beyond the original group (i.e., from the micro to macro level). My insider access to the BHI permitted a detailed assessment of the role of social capital and place in the development of the BHI as a committed, collaborative partnership as well as personal and organizational outcomes of that process.

This work expanded previous understanding of the role of place and social capital in the collaborative process and interactions between them, an area little studied thus far. It also explored the outcomes of the collaboration process in terms of creating additional social capital (including skills and knowledge that could generate normative change), a newly emerging aspect in the literature. Lastly, it described the process of formation and operation of a voluntary collaborative group comprising diverse organizations, working toward sustainability through science-based means. Such collaborations have been promoted as a means of achieving consensus on sustainability, but few groups have been described empirically, and particularly groups with the durability of the BHI. The practical implications of these findings may benefit other, similar initiatives.

Research Objectives

Through this case study, I attempted to determine what influenced the creation and stability of collaboration within a multi-agency group working through consensus toward sustainable development. Based on place-based governance, place and social capital literature, place, social capital and organizational factors that contribute to the development of social capital and associated sub-factors, may help create, maintain and sustain collaborative action (Figure 1). The case study also explored other sub-questions related to the contributions of these factors to the formation and mobilization of a collaborative management group:

- How did this collaboration work in terms of building relationships, motivating participation and using science as a basis for agreement on and implementation of proposed actions?
- What role did the social and political context play in the development of collaboration (i.e., influence of timing, or the political opportunity structure)?
- What social factors (e.g., place, trust and other forms of social capital) played a role in facilitating collaboration and how do those compare with factors and roles suggested in the literature?

- What is the influence of the conflict inherent in the representative's role as a member of a home organization and the multi-agency organization, particularly as the process transitions from discussion about possible collaboration to coordinated action?
- How is the tension between science-based management and values-based decision making managed within this process?
- How does the Beaver Hills Initiative (BHI) case study compare to other empirical examples of collaboration in sustainable resource management?

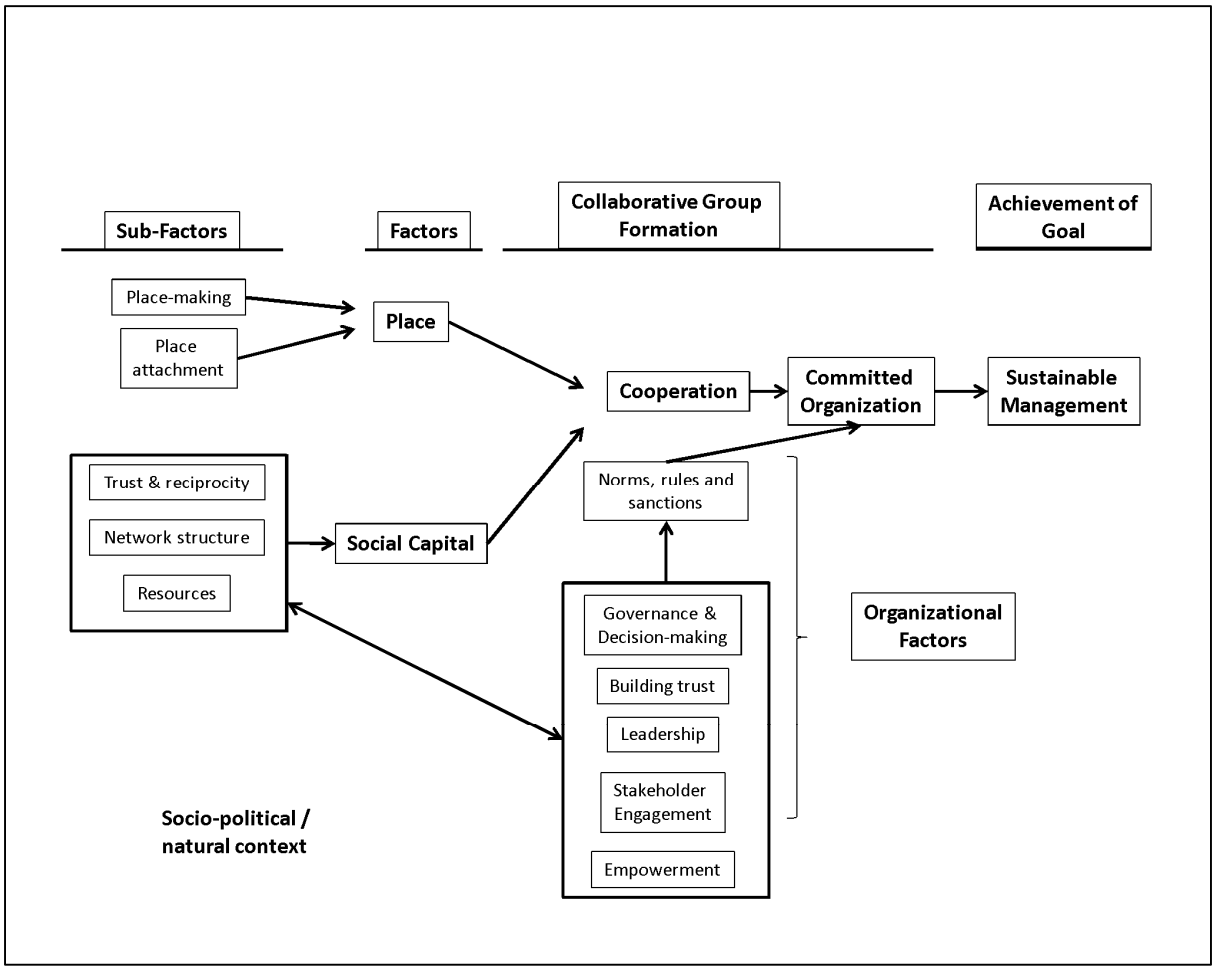

Figure 1. Conceptual factors contributing to sustainable management within the BHI –

Outline of Chapters

The subsequent chapters describe the theoretical grounding, methods and results of this study. Chapter 2 contains a literature review that describes factors identified as contributors to successes in sustainable land management through collaborative groups. Methodology for the study is outlined in Chapter 3. The results of the study are provided in four separate chapters, each addressing factors that contributed to collaboration in this case: The macro- and meso-level structural variables (natural and socio-political context, Chapter 4) and the individual level variables (Chapter 5) that influenced the BHI's development; social capital inputs and processes affecting collaboration (Chapter 6) and the role of place as a motivator for collaboration (Chapter 7). Each of these elements played a role in the ANT process of translation (Callon, 1986), illustrating mechanisms that can motivate, organize and mobilize a collaborative effort. The role of those factors in facilitating cooperation, within the context of the ANT process of translation is discussed in Chapter 8. Lastly, the study's conclusions are reviewed in Chapter 9. References cited in the text are provided in Chapter 10.

Supporting materials to the study are provided in seven appendices:

- Appendix A: Social Capital and Place Tactics
- Appendix B: Study Quality Criteria Assessment
- Appendix C: Interview Guide, Photo-elicitation Exercise Instructions and Interview Analysis Framework
- Appendix D: Information Letters and Consent Form
- Appendix E: Policy Overview
- Appendix F: The Development of the Beaver Hills Initiative
- Appendix G: Timeline of the BHI's Development

Literature Review

Introduction

A more democratic, collaborative approach to sustainable land management requires consensus on human use of land and resources, and thus, a means of airing and resolving a variety of conflicting perspectives on who should manage, how to manage and for which uses. This can be particularly challenging in landscapes that still retain significant natural areas, where conflict can arise from diverse opinions on appropriate land management and strong emotional connections to place. Empirical examples of effective collaborative organizations in such situations have been relatively rare and more so for community-based, regional management partnerships (for example, see Ravindra's (2004) analysis of past Canadian Biosphere Reserve applicants and Wilson & Wiber's (2009) case study of integrated resource management initiatives in Nova Scotia). Theoretical models suggest various factors contributing to effective place-based governance, which include a central role for social capital and an implied role for place (Dale, 2005; Flora & Flora 2013; Pollack, 2004). Hypothetical processes to facilitate collaboration have similarly implied a role for social capital and place (Callon, 1986; Dale, 2005; Flora & Flora 2013), but the mechanisms by which such factors could influence effective collaboration remain a gap.

Past research on collective behavior and social change has focused on a debate over causative factors (individual agency vs. social structure) and the means of diffusion of innovation more broadly through society (micro to macro debate) (Lockie, 2004). Actor Network Theory (ANT) is a post-structural approach that offers several advantages as a theoretical framework for study of place-based collaboration. This includes an analytical approach that allows agency to arise from human and non-human actors and the ability to integrate other theoretical understandings of collaboration. The ANT process of translation (Callon, 1986) outlines a series of steps within which concerned proponents and place could recruit and mobilize support toward collaborative solutions, through as yet unspecified mechanisms.

The sections below review advantages of the ANT framework for this study, and existing research describing collaborative processes and key factors thought to influence effective collaboration. The review establishes the theoretical basis for a proposed model of collaboration based on the ANT process of translation and driven by strategic application of social capital and

place by collaboration proponents (key actors). The chapter closes on that proposed translation model, which I used to examine an example of long-term place-based collaboration.

Theoretical Framework

Actor Network Theory.

Collaboration is a form of collective behaviour, a social process that has long puzzled social theorists. A macro-societal phenomenon describing the formation of groups to resolve social issues outside the existing social structure, its capacity to affect societal change raises question of agency of the individual and of structure (Ritzer, 2008). A variety of theoretical approaches have been used to explain collective action (Ritzer, 2008). ANT is a post-structural approach that focuses on the social interaction between human and non-human actors that can generate social change (Latour, 1996), without constraining those actors to specific motivations (e.g., rational choice). Through the process of translation (Callon, 1986), a broad range of transformative outcomes could result, which in turn can help propagate innovation across social networks (Latour, 1996, 2005). ANT thus offers a means of analysis that focuses on both process and outcome.

ANT developed as a 'project' to explain the adoption of scientific innovation (Latour, 2005), but it has since been used to address collaborations concerned with a variety of social issues, including sustainability (Lockie, 2004; Selman & Wragg, 1999a, b). Its focus on relational dynamics and the ability of actors to co-create meaning and intentionality offer means to understand the influence of context, including power interests, on the efforts of proponents to promote collaboration. That analytical focus and an active role for place offered advantages to this analysis of a case of long-term place-based collaboration.

With respect to collaborative forms of collective behaviour, the two central questions are **agency** and **process**. How does a group of individuals 'make space' for the collaboration – how does the group form and gain legitimacy? Once established, how can the micro-level (local) collaboration affect broader, macro-level social change? ANT provides a conceptual framework in which human and non-human actors and their environmental context (physical and socio-political) are recognized as potential agents of social change (Latour, 2005). The ANT framework provides a means to break down the society-nature dualism (Lockie, 2004) and the separation between micro and macro levels of social action; two key analytical problems in this area of research (Bell, 2009; Ritzer, 2008). ANT steps past the theoretical issues occupying

micro-macro linkage researchers, because it allows for micro-level actions to repeat, propagate and sum to a macro-level change.

Although sociologists have attempted to incorporate environment into social theory in the past, these efforts have been dialectical and resulted in reified and separate images of 'society' and 'nature' (Latour, 2005; Law, 1992; Lockie, 2004). ANT ignores this separation and instead proposes a view of social (actor) networks as "a diverse assemblage of humans and non-humans" (Lockie, 2004, p. 50). ANT is based in semiotics, specifically by conceptualizing the production of meaning through relationships (Ritzer, 2008). The entities within a social network, human and non-human, gain meaning through interaction, and it is the durability of the relationships that form (or do not establish) that dictates the potential for diffusion of innovation (Law, 1992). This is a relational view of social change: "action, intentionality, consciousness, subjectivity and morality all derive from relations between entities rather than from either individuals or totalities" (Lockie, 2004, p. 50). In fact, ANT holds that the essence of the entities is inconsequential. Under the right conditions, and using appropriate means, a coordinated group can form and mobilize to address a problem – ANT emphasizes the process rather than the ingredients.

Analysis of network formation provides insight into the processes of social change. In ANT, entities take form and acquire attributes (including motivation to act) from their relationship with other entities (their context of material objects and other human actors (actants); Ritzer, 2008). The summed relationships among all actants within a localized context comprise a network (Ritzer, 2008). Social change comes from diffusion of the meanings established within the localized network across other, linked networks. With repetition and successful outcomes of the innovation within the original and other networks, actors "become committed to a conventional wisdom or enduring mindset which others must accept if they wish to join mainstream practice" (Selman & Wragg, 1999a, p. 329). At this point, the network is stabilized, but only to the degree that all actants remain committed to the concept. ANT thus is able to address the dynamic nature of collective action, and the influence of social, economic or political context on the agreement achieved within the actor network.

All actants (including material objects) maintain a network through performances, and the associated devices, inscriptions, forms or formulae within the network drive summation (organization) (Ritzer, 2008). Material objects such as the environment differ from human

actants in that they perform without an intention. While human actants can manipulate the situation to have influence, material objects have a different (and seemingly inferior) effect. Their lack of intrinsic meaning (their blankness) serves to attract human actants (providing a "will to connect", Ritzer, 2008 p. 520), and can create a network in which the object "drives networks to incorporate and fold around actants" (Brown & Capdevila, 1999, p. 41). That is, the object motivates cooperation through meanings either ascribed to it by actants, or by meanings attributed to it by other actors in the network. Humans, unaware of their intentions, can also act in this way and form relations based on nameless factors (Ritzer, 2008). Thus place could motivate cooperation through the meanings constructed by a group (e.g., a shared place identity), or drive individuals to promote collaboration through personally relevant place meanings or place attachment.

Accordingly, the definition of agency and its attribution to human entities is less of a concern within ANT because agency and power derive from the relationships amongst the human and non-human actants (Lockie, 2004). In any given situation, agency and power will differ, dependent on the mix of human and non-human actors and the relationships formed and maintained between them. Within this framework, the environmental and political conditions of a given place and time and the actors involved may influence the emergence of collaboration, and perhaps broader adoption of innovative solutions. This theory conceptualizes a case of the right time, the right place and the right people.

This point alludes to a final strength of ANT - ANT also breaks down the dualism between structure and agency. The scale of the social domain does not limit the relational interactions between human and non-human actors (Latour, 1999), thus the differences between micro and macro-society become only a question of extent of relational interactions. Latour (1999) suggests that what has been described as "macro" (structure) is really the summation of "micro" (agency), the sum of the "interactions through various kinds of devices, inscriptions, forms and formulae" (p. 17).

Justification of the ANT framework.

Although other theoretical approaches have been used to study collective action (e.g., the new social movement literature), they have limitations not imposed by ANT. Specifically, these approaches assume different sources of agency, which are inconsistent with analysis of place-based collaboration (and in some cases, with modern theoretical debate). For example, rational

choice theory, network theory, structural functionalism, symbolic interactionism and neo-Marxist critical theory have all been used to analyze social movements, and have formed the basis of past research on collective behavior, resource mobilization and political process (Lockie, 2004). Structural analyses, such as structural functionalism, tend to emphasize the stability of social systems and dismiss both individual and place as passive players in society (Lockie, 2004; Ritzer, 2008). Although rational choice and network theory focus on the individual and treat them as dynamic beings capable of choice, they do not include a role for non-human actors such as the environment. The provision for an active role for the environment, a critical element in the analysis of place-based collaboration, is a key strength of ANT, in addition to its capacity to address the potential for micro to macro transition of social change.

Past focus on human agency has ignored a central aspect in contemporary environmental conflicts, the linkage between human and non-human systems (Goodman, 1999; Lockie, 2004). Resources deplete or degrade with over-use and gaps in human understanding of ecological systems introduce a level of uncertainty to human intervention regarding sustainability (Franks, 2010). Collaborative approaches to environmental management address scenarios in which human use may be pushing natural resources toward an unknown tipping point that human intervention may not be able to mitigate. Environmental management acknowledges human reliance on natural processes that largely operate independently of humans, but can still be influenced by their actions. A theoretical framework that incorporates some form of agency for the environment fills a critical gap in our understanding of human-environmental relationships.

Perhaps as critical is the failure of past theoretical approaches to collective action research to effectively resolve questions of individual and structural agency in social change. Although Della Porta and Diani (1999) suggested a synthesis of these frameworks might help explain the development and long-term performance of social movements, Lockie (2004) noted that the past focus on structural tension as a causative factor for formation of such groups would still prevent clear understanding of agency. Does social change result from the social movement or from the conditions that fostered them? Does context, including environmental condition, play a role in stimulating social change? An associated question is of organizational resilience: Does the group persist due to its efforts to maintain legitimacy and relevance, or does a lingering conflictual issue provide that support? Lastly, debate about the nature of trust and social capital has added to the confusion around agency. Trust and social capital have been conceptualized

both as within and external to structure (e.g., the "endogeneity of trust" and social capital (Rudd, 2000, p. 137) versus an external variable to structure). This unresolved question has obstructed efforts to explain the relationships between social interaction, trust and other aspects of social capital and economic or political performance (Rudd, 2000). ANT eliminates such causal distinctions by focusing instead on the relationships formed among individuals, which enables better explanation of the development and performance of collective action groups, including collaborations (Lockie, 2004).

Finally, the choice of ANT as a theoretical framework offers the opportunity to test aspects of Callon's (1986) translation process using an empirical example. ANT is a relatively new theoretical approach, and it defines the interrelationships between actants only conceptually. The actual processes by which actants relate to each other, in a way that promotes coordinated action and change, are not yet well defined conceptually or with empirical examples (Lockie, 2004; Selman & Wragg, 1999a, 1999b). Both place-based, collaborative governance and ANT might be better explained through a model that incorporates place and social capital in Callon's (1986) translation process.

As Lockie (2004) notes, the advantage of ANT is that it addresses the question of how the localized practices that organize interactions across space and time could be implemented and sustained (i.e., how the resulting actor network facilitates and maintains action). Yet empirical evidence confirming the process by which groups engage in collaborative action and affect social change, or exploring the types and range of specific "actions and interactions" (strategies) that result in effective collaboration is limited. Similarly, the means by which place could motivate conservation and potential links with social capital have been theorized, but empirical support is lacking. This theoretical approach offers a framework within which to conceptualize the 'actions and interactions' that can lead to place-based governance and collaborative action and to test the role and development of sense of place and social capital over the course of development of such initiatives. The strategies and mechanisms used to build a successful place-based collaborative action could potentially inform theory as well as provide a practical example relevant to sustainable development.

Collaboration

Various authors have attempted to describe the factors involved in establishing an effective collaboration, a form of collective behavior that could democratically identify

innovative solutions to a social problem, recruit and mobilize others toward those goals and finally, legitimize the solutions and perhaps, the group. Research on collective behavior has been hampered by debate about catalyst of organization, social structure or individual agency (Lockie, 2004). As a result, early research on collaboration focused primarily on who (individuals or government) or what (context) initiated collaboration. Later analytical approaches to collective action (e.g., network theory, rational choice) shifted focus to the role of the individual, but this work also often focused on characterization of collaborative organizations, rather than the process of their formation. More recently, researchers have begun to examine process and particularly the tools groups can use to organize for effective collaborative decision-making (e.g., social learning, knowledge transfer). Thus process and mechanisms by which individuals might foster effective collaboration have only yet begun to be examined. The sections below review our understanding of the types of collaborative groups and the factors thought to contribute to cooperation and effective outcomes of collaboration.

Characteristics of collaboration.

Blumer was first to describe the phenomenon of collective behaviour as an action that arose not from external factors, including social structure, but from the efforts of human actors (Ritzer, 2009). This was a fundamental shift in social theory that sparked the enduring structure-agency debate (Ritzer, 2009). The question of whether social structure might determine a context to which people act (or react), rather than determining patterns of social interaction, fostered intensive research interest. Since that time, various disciplines have sought to explain collective behaviour, mainly from a descriptive perspective. A few authors have attempted to create typologies of collective behaviour from that body of research, in an attempt to identify the conditions and factors that might facilitate effective collaboration. Such work has defined collaboration in terms of a range of forms, initiating conditions and organizational approaches.

Most of these authors have defined collaboration as a group representing diverse interests that forms to address a shared problem, based on a system of governance established by the group (Borrini-Feyerabend & Borrini, 1996; Ostrom, 1990; Wood & Gray, 1991). Effective collaboration is considered to be an inclusive partnership that provides decision-making roles and/or management roles for all affected stakeholders (Borrini-Feyerabend & Borrini, 1996) and respects the autonomy of those partners (Wood & Gray, 1991). Typically, the group established

norms, rules and sanctions to reinforce collective behavior, particularly in long-term collaborative approaches to resource management problems (Ostrom, 1990, 1998).

Collaborative groups may form from top-down direction or through voluntary cooperation by individuals with a shared concern and typically have either advisory decision-making power or co-management responsibility (Wood & Gray, 1991). In voluntary formation (and possibly also top-down examples), proactive and credible proponents could persuade others to join forces (Wood & Gray, 1991). Ultimately though, voluntary cooperation is initially based on weak trust and shared understanding of the concern (Ostrom, 1998). The means of establishing the initial agreement to cooperate have received considerable attention, since rational choice and game theory (e.g., Diekert, 2012; Ostrom, 1998) and empirical work (e.g., Emery & Franks, 2012; Fukyama, 1995; Gilmour et al., 2011) suggest that a propensity to distrust new actors can limit collaborative behavior.

Forms of collaboration documented in natural resource management range from groups focused simply on sharing of knowledge within a problem-solving process to those involving stakeholders substantially in management. Form depends on the goals of collaboration and the degree of power-sharing allowed by collaboration proponents (Armitage et al., 2007; Woods & Gray, 1991). Where collaboration has been used to address environmental problems, goals have included enhancing capacity for adaptive management in policy development (Dale & Newman, 2007; Pollack, 2004) and development of innovative co-management approaches (Armitage et al., 2007; Brunckhorst, 2001; Halpenny, Bowman, Aubrey, & Eagles, 2004). In such cases, the collaboration has focused on developing a shared understanding of the science underlying both the issue and the solution (Innes & Booher, 1999; Pretty & Smith, 2004; Selman & Wragg, 1999b). Decision-making is often by consensus, achieved through various means (Whitelaw et al., 2008), including open dialogue (Schusler et al., 2003) and social learning (Bardsley & Sweeney, 2005; Schusler et al., 2003). Developing consensus in such scenarios also requires negotiating comfort with uncertainty and risk (Bardsely & Sweeney, 2010; Beunen & Hagens, 2009; Bijlsma et al., 2011). Again, trust plays a critical role, because participants may rely on trust in the proponents or the proposed solutions, rather than science to evaluate the problem or proposed solutions (Holmes, 2010; Selman & Wragg, 1999b).

Lastly, integrated resource management collaborations present governance systems, organizational structures and styles of participant engagement distinct from previous command-

and-control systems (Crona & Hubacek, 2010). They also differ from the collective action groups first studied by Blumer and later by new social movement theorists (e.g., Della Porta & Diani, 1999), which openly challenged and operated outside government. Collaborative integrated resource management groups not only seek to change management, they often hope to participate in it. Such groups often form with participation or at least support of government, which is increasingly challenged to legitimize their role in management through a more inclusive approach (Bardsley & Sweeney, 2010; Crona & Hubacek, 2010; Pollack, 2004). Such research has highlighted the need to overcome barriers to organization and directed attention to the processes that can establish fair and respectful governance and decision-making processes.

Organizing collaborations.

The key challenge in the collaborative management approach lies in bringing together diverse stakeholders as a cohesive group able to make decisions and act in response to a problem. The group must develop an organizational structure and governance system, often unique and situation-specific. With few models to follow and a range of circumstances driving the need for collaboration, self-organization is a considerable challenge. New social movement research offers a starting point for investigation of the organization of collaborations. Specifically, this work has identified three factors that lead to the emergence and development of social movements, which are likely transferable to collaborative groups interested in sustainability concerns: (1) political opportunity, (2) mobilizing structures / organizations and (3) framing processes to construct issues (McAdam, McCarthy, & Zald, 1996). A key theme associated with each factor is access to various forms of capital (primarily social capital) that facilitate collective action, probably also applicable to collaboration.

The political opportunity structure (POS) recognizes the influence of power and elites on the success of a group in organizing and mobilizing toward an agreed course of action within existing government structure (Eisinger, 1973). When the political leadership is open to discussion of change, individuals dissatisfied with current social arrangements can promote change. In their case study of successful cooperative initiatives, Maloney, Smith, and Stoker (2000) found that social capital (political experience and access to political influence) was critical to recognize and capitalize on openings in the POS. They identified four key aspects of POS relative to social capital among proponents: access to power, shifting of alignments amongst political rivals, availability of influential allies and cleavages within and among elites.

Social capital could help recognize those openings or capitalize on the opportunities they presented.

The new social movement literature has identified common elements of mobilizing organizational structures that are also applicable to collaborative groups, particularly those involving partnerships among organizations. Della Porta and Diani, (1999, p. 16) defined social movements as "(1) informal networks, based (2) on shared beliefs and solidarity, which mobilize about (3) conflictual issues, through (4) the frequent use of various forms of protest." Collaborative groups also rely on informal networks and mobilize in response to conflictual issues (Crona & Hubacek, 2010; Franks, 2010). They may develop shared beliefs and solidarity, for example a shared vision and common understanding of the problem and its solution (Borrini-Feyerabend & Borrini, 1996; Dale et al., 2008; Schusler et al., 2003), but they do not engage in formal protest, relying instead on cooperation with existing government management agencies (Borrini-Feyerabend & Borrini, 1996; Schusler et al., 2003; Wilson & Wiber, 2009). Della Porta and Diani (1999) recognized that the form of protest can differ among social movements based on the group's goals. Empirical studies suggest that similar differences may occur in collaborative organizations, with examples of cooperative lobbyists (Whitelaw et al., 2008), confrontational activists (Wakefield et al., 2001) or both approaches (Bell, 2007). Selection of appropriate styles to achieve the collaborative group's goals in a given political context is a deliberate strategy (Bell, 2007; Whitelaw et al., 2008), which is consistent with the social movement literature.

Framing an issue can help to define a problem that will help to recruit support to a collective approach (Diani & McAdam, 2003; Franks, 2010). Diekert (2012) suggests that collaborative approaches to sustainable development require a reason to cooperate, because the benefits of working together may not be clear. Rudd (2000) suggested the creation of a shared vision might develop social capital that could benefit collective decision-making. A shared vision developed by consensus and with consideration of alternatives generated by the group demands acceptance of personal responsibility by group members for collective decision-making, a form of participatory democracy that may create a self-reinforcing system of trust and cooperation (Rudd, 2000). Dale (2005) suggests that community decisions on the meaning and form of sustainable development can only be reached through use of sharing and learning strategies and sustained debate on the implications of social, ecological and economic limits.

Studies of collaborative management processes support this proposition. Social learning appears to play an important role in the creation of a shared vision and through the associated discussions, facilitates development of the norms and sanctions necessary to support the new co-management strategies (Pretty & Smith, 2004; Schusler et al., 2003).

These organizational elements all rely on some form of human agency to foster development of effective collaboration, whether by selecting an appropriate strategic approach to promote change or created shared understandings. This implies that there is potential for negative and positive outcomes from collaboration, and specific mechanisms that might foster effective collaborative behaviour. Collaboration and social movement researchers have recently turned to investigation of various factors and mechanisms, including social learning, social capital and cognitive processes that might promote better collaboration outcomes.

Fostering effective collaboration.

In terms of outcomes of collaboration, integrated resource management approaches have had varying levels of success (Slocombe & Hanna, 2007). Empirical studies of collaborative management have highlight the need for a common understanding of the purpose and process of collaboration, inclusiveness, open communication and trust (Halpenny et al., 2004; Peterson et al., 2006; Ravindra, 2004; Wilson & Wiber, 2009). Differing levels of comfort with uncertainty and risk related to the science informing resource management can also lead to misunderstandings and conflict regarding proposed solutions (Beunen & Hagens, 2008; Bijlsma et al., 2011). These findings emphasize the importance of establishing an inclusive organizational structure and governance, founded on trust and open communication. Collective behavior, collaboration and social capital research has identified factors that contribute to effective collaboration, including diverse networks, stakeholder engagement, open communication, norms, rules and sanctions, inclusive governance system, trust, and various approaches to knowledge transfer.

Diverse social networks

A good network can provide access to information, political influence, financial and human resources, forms of capital needed for a group to act on proposed solutions (Flora & Flora 2013). Social capital researchers have long noted the importance of network structure to positive outcomes of cooperation (Glanville & Bienenstock, 2009). A “diversified social portfolio” (Glanville & Bienenstock, 2009, p. 1512) provides access to the resources necessary to achieve

collective goals, provided no barriers to access exist. Network structure has been defined in various ways, but generally, it is categorized either as dense, homogenous networks or dispersed networks that cross group boundaries (Briggs, 1998; Lin, 2001), including vertical connections to agencies or actors with power, finances or influence (Woolcock, 2001). Flora and Flora (2013) developed a typology that described the implications of different combinations of bonding (links between homogenous individuals or organizations) and bridging (instrumental horizontal or vertical links) social capital. High amounts of both types facilitate progressive participation, in which decisions are based on the common good, while low or imbalanced amounts can maintain established power interests. Progressive participation involves achieving a healthy balance between inclusion and exclusion to take advantage of the resources and creativity offered available from a diverse social network.

Open communication.

Effective communication is essential in a collaboration based on informal networks, to ensure that shared definitions of the relevant issues and understandings of the implications of proposed solutions develop among all stakeholders (Bardsley & Sweeney, 2010; Pretty & Smith, 2004). Effective collaboration also requires deliberate attempts to minimize use of power to control dialogue for the benefit of self-interest (Flora & Flora 2013; Ostrom, 1998). Small groups can help build the trust necessary for cooperative arrangements (Ostrom, 1998), but can also limit discussion to established interests and reinforce existing power imbalances (Flora & Flora 2013; Jamal & Eyre, 2003; Parkins & Davidson, 2008). Trust among partners can be developed by actively balancing inclusion and exclusion, which maximizes the group's problem-solving creativity (Flora & Flora 2013) and ensures representation of concerns of all affected stakeholders (Dale & Newman, 2007; Jamal & Eyre, 2003).

Flora and Flora (2013) note the importance of respectful dissent, which allows groups to acknowledge problems and perhaps, identify solutions. Ostrom (1998) emphasized the role of face-to-face communication in particular. Direct contact allows the parties involved to assess the trustworthiness of others, based on both non-verbal cues and conditional commitments that build expectations of reciprocation.

Norms, rules and sanctions.

Communication alone is not sufficient to ensure cooperation however, particularly when the stakes involved are higher (Ostrom, 1998, 2000). Norms, rules and sanctions that explicitly

define expectations are necessary to ensure reciprocal relationships and often evolve in group governance involving shared resources (Ostrom, 1990, 1998, 2000). Collaborative groups for sustainable management commonly develop an organizational structure that identifies (Borrini-Feyerabend & Borrini, 1996; Ostrom, 1990, 1998, 2009):

- The boundaries of the area of management interest, resource users and stakeholders.
- The range of functions and sustainable uses the area's resources can provide.
- The functions and responsibilities of each stakeholder and the specific benefits and rights given to each stakeholder by the group.
- An agreed set of management priorities and a management plan.
- Procedures for dealing with conflicts and negotiating collective decisions that involve all affected stakeholders.
- Procedures for enforcing such decisions, including a system of graduated sanctions.
- Specific rules for periodically monitoring, evaluating and reviewing the partnership agreement, the management plan and the condition of the managed resources.
- Recognition of the right to organize and to devise systems of self-regulation by government and other authorities.
- Nested enterprises that embed appropriation, provision, monitoring, enforcement, conflict resolution, and governance activities within multiple layers or organization.

An effective collaborative management group would develop a stand-alone agreement outlining these expectations, processes and responsibilities (i.e., governance structure), a negotiation that has potential to be contentious and thus set a tone for future relations (Borrini-Feyerabend & Borrini, 1996). Misuse of power to secure a stronger role in management decision-making or gain an inequitable distribution of resources would marginalize some participants and potentially limit future cooperation and trust (Ostrom, 1998).

The early adoption of norms, rules and sanctions by the group seems a common pattern in conditions facilitating open dialogue, learning and development of trust (Ostrom, 1990, 1998, 2000). Ostrom (1998) explains this process by comparing empirical study of collaborative resource management to the predictions of game theory. Collaboration involves some level of initial discussion between participants during which participants can make conditional commitments to each other that establish expectation of reciprocation. Game theory assumes that these are empty promises that will be abandoned once choices must be made. Empirical

results suggest that this is not always the case, because participants can discuss and agree on optimal strategies that benefit all. This leads to exchange of mutual commitment, which increases trust and reciprocity expectations, adds value to the payoff structure (reputation as an asset), reinforces prior normative values (e.g., integrity) and develops a group identity. Open communication is the starting point, and can foster trust, but mutual commitment is reinforced once norms have been established and a group identity has developed (Ostrom, 1998).

Democratization theory also addresses the establishment of norms, rules and sanctions, but through transfer of norms between organizations (nations) through coercive or non-coercive means. Where Ostrom was concerned with development of governance within the organization, democratization examines adoption of innovative governance examples, a scenario that could develop in situations where a proponent proposes a new resource governance system. The non-coercive modes of normative socialization and persuasion work through a process sometimes compared to the diffusion of innovation (Beichelt, 2012). Both modes establish new norms based on social learning, but through different means. Persuasion operates primarily through open communication and evaluation of recommended approaches, in a manner similar to Habermas' communicative action theory (Beichelt, 2012). Normative socialization relies more on experiential learning, through demonstration projects that prove the value of change. Like Ostrom (1990, 1998), voluntary participation in the organization and open communication facilitate transfer in both modes, but the openness of the organizations to change controls the spread of innovation, particularly with normative socialization (Beichelt, 2012).

Ostrom (1990, 1998, 2000) and empirical work (Emery & Franks, 2012; Gilmour et al, 2011) note that realization of benefits is critical to sustain long term collaborative management and that those benefits must satisfy interests of all parties. Proving value to individual representatives and their home organizations is important for sustained membership in voluntary collaborations in particular (Dunmade, 2012). For these reasons, collaboration is often slow to develop (Borrini-Feyerabend & Borrini, 1996), because trust in participants and in sustained benefit are established through repeated interaction over time (Ostrom, 1998, 2000).

Governance, leadership and key actors

Issues of governance and decision-making are important for any group, and probably more so for those based on voluntary cooperation (Borrini-Feyerabend & Borrini, 1996). Selection of priorities for action, delegation of resources and workers to those ends and

accountability for their effectiveness requires some form of decision-making structure and control. Developing sustainability management strategies also requires balanced debate (Dale & Newman, 2007; Pollack, 2004). Open communication and dialogue are essential to benefit from the knowledge and insight of government, external experts, and those directly affected by and most familiar with the local conditions and potential impacts (Bardsley & Rogers, 2011; Crona & Parker, 2012; Dale & Newman, 2007; Wilson & Wiber, 2009). Decision-making in collaborative groups is often by consensus, because such organizations lack the more traditional, top-down structure of government or business (Friedrich et al., 2009; Lambright et al., 2010). Consensus-based management distributes leadership and control among the participants, a governance system that must be negotiated and managed collectively based on organizational learning (Bruckhorst, 2001).

Although empirical studies have identified importance to community-based collaborative initiative of actors with leadership ability and linking social capital (Bell, 2007; Dale et al., 2008; Whitelaw et al., 2008), the process by which the leadership of 'key actors' was accepted by the group has received less attention. The involvement of key actors in those studies helped the initiative by providing the knowledge, skills and influence to organize, prioritize and implement actions within a collaborative group, but the involvement of key actors does not always guarantee success. Ravindra's (2004) historical review of the organization of Canadian Biosphere Reserves documents as many failures as successes, despite involvement of key government and local proponents. Success may relate to the means by which leadership is negotiated within the context of group governance.

The process of establishing internal governance has received little attention as yet in collaboration research, but much attention in the organizational management literature. That discipline has recently begun to examine the leadership process, the dynamics of interaction between various group members in negotiating leadership and offers models potentially applicable to collaboration. Collective leadership (Friedrich et al., 2009) seems particularly relevant to collaborative action. In groups with a depth of knowledge, broad experience and varied expertise, directive leadership by dominant individuals may suppress the development of collaborative relationships and information sharing that would best utilize the group's resources (Friedrich et al., 2009). In collective leadership, formal or informal leadership responsibility may be assigned to individuals with expertise or experience relevant to a specific concern, as the

need arises. Communication, trust-worthiness of members, ability to trust and to share information appear be important to the success and persistence of group initiatives that utilize collective leadership (Friedrich et al., 2009), factors consistent also with the social learning process facilitating healthy governance and development of social capital (Flora & Flora 2013; Pretty & Smith, 2004; Schusler et al., 2003).

Friedrich et al. (2009) identified 55 propositions that describe the conditions under which collective leadership might develop and recommendations for future research. Communication, and in particular, how two-way communication between leaders and followers is encouraged and used to access information from the networks to which team members belong, is a key aspect of the model. Empirical work demonstrating how the leadership role is distributed through the group is another important gap. Key questions include description of conditions that encourage delegation of collective leadership and the potential for those with particular expertise, experience or personalities to emerge as dominant leaders. Similar gaps apply within the collaboration literature and offer much opportunity for new research.

Research on collaborative research appears to be following the trajectory of organizational management research, in that the contribution of individual leadership qualities to effective collaborative groups has received more attention than has the process of negotiating its use within the group. Yet while the tangible and intangible characteristics of successful leaders and their contributions to group function are now well understood in organizational management (Bass, 1997; Friedrich et al., 2009; Lambright et al., 2010), collaboration research has thus far focused on the tangible skills possessed by key actors. Empirical work on the influence of key actors in collaboration has identified the contributions of their experience, knowledge and resources, including social capital such as reputation or connections to influential persons or agencies, to the successful implementation of organizational goals (Bell, 2007; Dale et al., 2008; Whitelaw et al., 2008). Aspects of personality, including persistence and persuasive ability have only recently begun to be linked to collaborative approaches to social and environmental change (Stephenson, 2011; Taylor, Cocklin, & Brown, 2012). Charisma, persuasive skills and the ability to communicate vision contribute to the ability of transformational leaders to inspire others to achieve group goals, without need for extensive direction (Bass, 1997). Such intangible leadership skills could also play a role in organizing and mobilizing an effective voluntary collaboration based on collective leadership, but is currently a gap in the collaboration literature.

Innovation and knowledge transfer

A governance structure that ensures availability of information and knowledge on which to base decisions is critical to development of more democratic sustainable management collaborations. As Dale (2005) notes, structural limitations (e.g., siloing of government departments) have prevented the sharing of information as much as they have blocked the cooperation required for sustainable management. At the local community level, the level of background training can be quite discrepant, an additional barrier (Bijlsma et al. 2011; Flora & Flora 2013). As a result, development of a knowledge-sharing culture may be as critical to decision-making as appropriate governance.

Creation of a respectful, open atmosphere that would facilitate discussion and resolution of conflict can provide a means to educate all stakeholders on the implications and impacts of environmental management decisions (Bardsley & Sweeney, 2010; Pollack, 2004; Pretty & Smith, 2004). Inkpen and Tsang (2005) identified social capital in the form of stable, broad networks, trust and common goals and means to resolve (corporate) cultural differences as factors likely to facilitate knowledge transfer in strategic alliances, an organizational arrangement similar to collaborative groups. Social learning, a participatory process whereby experiences and knowledge are shared among a group of stakeholders, has also been promoted as an effective means of knowledge transfer within collaborative problem-solving approaches.

Schusler et al. (2003) identified a variety of contributing factors reported by participants in a successful collaborative planning process based on social learning, including open communication, diverse participation, unrestrained thinking, constructive conflict, a democratic structure, multiple sources of information, an extended planning period and facilitated discussion. The trust in each other and the expectations of cooperation that developed during the decision-making process were considered essential to successful policy change in this case. The extended planning period contributed to a key benefit identified in this study: the trust and reciprocity established among participants and their engagement and satisfaction with the process. Buy-in to proposed solutions by all stakeholders has been identified as an important benefit of collaborative approaches to adaptive management scenarios such as climate change preparation (Bardsley & Rogers, 2011). Other benefits of a social learning approach reported in the literature include the potential to shift attitudes and behavior to sustain lasting change (Pretty & Smith, 2004). Such work reinforces the need for governance structures that can establish a

deliberative, inclusive approach characterized by open communication and constructive debate. The trust and reciprocity fostered by knowledge sharing can play a critical role during future implementation of management decisions, including capacity to adapt to unexpected outcomes.

Trust

Trust, developed within the group or through pre-existing relationships, is a repeating theme in the collective action and collaboration literature, with an important role in fostering the cooperation required to form and operate as a group and in establishing norms of reciprocity. In social capital research, trust is a relational asset held by the individual or a group that has potential to grow and facilitate future working relationships (Flora & Flora 2013; Glanville & Bienenstock, 2009). The specific means by which trust could be enhanced within groups and applied to achieve collective goals has received theoretical attention, recently supported by empirical examples.

Ostrom (1998) had predicted that repeated interactions based on a system of norms, rules and sanctions could build trust in the collaborative approach. Rudd (2000) expanded on that idea, proposing that a self-reinforcing cycle of trust and reciprocity would inhibit short-term self-interest behaviors and help establish long-term collaboration. At the group level, he suggested that generalized trust and institutionalized mechanisms to foster trust, reputation and reciprocity would help achieve group goals through a positive feedback loop: each goal achieved through group means would help reinforce the institutions. This prediction has been observed in recent empirical work (Emery & Franks, 2011; Gilmour et at., 2011). Those collaborative institutions might also evolve over time to adapt to new conditions, technologies and values, and in some cases, become well-established and effective means of managing natural resources. Such institutions could include formal rules and sanctions, as well as social or cultural norms established through interaction at the group level.

Empirical evidence from several Canadian case studies suggests that the approach used to establish trust and credibility is critical to success (Bell, 2007; Dale et al., 2008; Whitelaw et al., 2008; Wilson & Wiber, 2009). Successful environmental management in these studies was due, at least in part, to the creation of trust and credibility developed through effective communication, leadership and wise use of the social capital (existing trust and network connections) within the initiative (Bell, 2007; Dale et al., 2008; Wakefield et al., 2001). In contrast, Peterson et al. (2006) found that the exclusion of an opposing interest (US Fish and

Wildlife Service, USFWS) from the planning process for local management of habitat for an endangered species, and the resulting poor communication and perpetuation of misinformation reinforced misperceptions about endangered species management and mistrust of the motivations of the managing agency and regional industries. Ultimately, the negative relationship between the community residents and USFWS derailed the plan and this attempt to involve the community in the management effort. Their case study and work by Wilson and Wiber (2009) highlight the importance of trust-building for groups that have not traditionally worked together or shared management decision-making, most notably the public and government agencies.

Trust increases with frequent contact and positive interaction, which in turn affects the nature of the relationship between the actors (Fukyama, 1995; Lambright et al., 2010; Ostrom, 1998). Trust development also depends on the perceived trust-worthiness of the trustee, in turn dependent on the propensity of the trustor to trust, the existing relationship between the two actors, and recommendations by third parties (Lambright et al., 2010). Network size and structure appears particularly important since this determines potential for interaction and exposure to third party recommendations. Perceived trust-worthiness was higher within smaller, closed networks and networks with similar structure. Networks with similar structure may be interdependent; the risk of damaging an interdependent relationship also appeared to encourage cooperation (and trust). This model highlights a critical issue for effective collaborative groups. Diverse groups are better able to address community level issues (Flora & Flora 2013; Pretty & Smith, 2004), but homogenous groups can develop trust more readily due to shared interests (Lambright et al., 2010). Bridging the gap between diverse groups, particularly those that have not worked together in the past requires other factors to bring interested parties together, such as visionary leadership (Stephenson, 2011) or a common goal (Diekert, 2012).

Outcomes of effective collaboration.

Collaboration initiatives differ in the amount of control offered to participants, which has direct influence on their potential to have management influence and potentially, the effectiveness of the initiative. Some collaborations aim simply to involve citizens in evaluation of alternatives; decision-makers retain final authority to determine appropriate course of action (Bardsley & Sweeney, 2010; Pretty & Smith, 2004). Other collaborations are established to include local stakeholders in co-management of the issue of concern (Borrini-Feyerabend & Borrini, 1996; Halpenny et al., 2004; Ravindra, 2004; Whitelaw et al., 2008). In both cases,

participants may acquire new and beneficial skills and knowledge, but the second option offers participants more direct control over management outcomes that might affect them. Both outcomes are forms of empowerment, in terms of enhanced capacity to control conditions that affect personal objectives (Kanter, 1977), but they differ substantially in their magnitude. The level of control provided to participants can depend in part on pre-existing power relationships and trust among partners (Dale, 2005; Inkpen & Tsang, 2005). Accordingly, the degree to which power and benefits are shared within the collaboration (equitability) and the means by which their distribution is negotiated could determine the effectiveness of the collaboration, in terms of collective goals and personal empowerment.

For example, the nature of the relationship between government and local residents was central to outcomes of co-management in Wilson and Wiber's (2009) case study of an integrated management program in eastern Canada. A lack of commitment by government agencies to closer involvement of communities in problem-solving and implementation of resource management solutions prevented open dialogue and resulted in implementation of resource management regimes that did not fully address the management problem. Regardless, the community groups did enhance their own resource management capacity, which they considered a positive outcome of the program. They attributed that success to two factors: (1) empowerment by resource management agencies of community managed programs and (2) willingness of the external agencies and key actors managing the initiatives to negotiate with community groups on improved management approaches. Although this collaboration process was not necessarily fully inclusive or equitable, it was at least partly 'effective' in terms of enhancing capacity and fostering dialogue about sustainable management options within the community.

Because pre-existing relationships can have such influence, there is no inherent guarantee that social capital will facilitate effective collaboration. Some have noted the potential dark side of social capital: exclusion of outsiders, facilitation of free-riders, restriction of personal freedoms, enforcement of conformity, and protection of interests of elites (Flora & Flora 2013; Peterson et al., 2006; Pretty & Smith, 2004). Peterson et al. (2006) consider Mouffe's concept of democratic paradox, the delicate balance between personal liberties and social equality, in describing the risk of the misuse of social capital. Maximizing individual liberty comes at the expense of political and social equality, and vice versa. Their case study of two examples of

community-based conservation initiatives highlights the fragmenting effect when social capital is used to defend personal interests. With environmental issues, there is the additional risk of enhancing conflicts, should the collaborative group align itself with only one side of an existing debate (Peterson et al., 2006).

Empirical studies have often described the effectiveness of collaboration in terms of achieving the group's objectives (e.g., Bell, 2007; Dale, 2008; Peterson et al., 2006; Whitelaw et al., 2008). Yet despite theorized benefits of capacity development, particularly development of the collaborative skills and governance systems promoting more inclusive dialogue and creative problem-solving (Dale, 2005; Flora & Flora 2013), few studies of 'effective collaboration' have addressed development of such capacity (e.g., Pretty & Smith, 2004; Wilson & Wiber, 2009). In part, this gap is due to a lack of studies tracking development of long-term collaborative initiatives. Because collaboration takes time to become established (Borrini-Feyerabend & Borrini, 1996; Ostrom, 1998, 2009), capacity must also develop over time. As a result, our understanding of the collaboration process lacks description of the full range of potential outcomes, including the development and sharing of collaborative skills and knowledge within the collaborative and perhaps beyond.

Collaboration and capital investment.

Several types of capital appeared in the sections above, identified as facilitating factors or contextual influences on the collaboration process and its potential outcomes. A comprehensive and universally accepted framework that defines each form of capital and explains the interaction among these elements has not yet been accepted across or within disciplines. This situation has complicated research on social capital, for example, where initial levels of social capital have not been differentiated from the outcomes of its use (Glanville & Bienenstock, 2009). Human capital has been described by some as the skills and knowledge held by individuals, while others add various aspects of personality to the definition (Flora & Flora 2013). Such variation is typical of an early characterization phase of research, but as study moves on to examine collaboration process, such inconsistencies must be resolved. Two typologies have recently emerged that provide useful frameworks for analysis of collaboration, by clearly defining capital inputs, potential interactions amongst them and outcomes of such interactions.

Bourdieu (1986) and Coleman (1988) provided the first theoretical definitions for social capital. Bourdieu defined social capital as "the aggregate of the actual or potential resources

which are linked to the possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition" (Bourdieu, 1986, p. 248). This definition introduced two aspects of social capital: the quantity of network connections available to the actor and the sum of capital of all forms (financial, human, cultural) within them (Glanville & Bienenstock, 2009). This early work also established social capital as a resource formed by social interactions and held by individuals or groups (Glanville & Bienenstock, 2009; Lin, 2001). The definition later expanded to include the various resources accessed through networks, trust, network structure and an expectation of benefit or reciprocity (Glanville & Bienenstock, 2009; Pretty & Smith, 2004).

Putnam (1993, 1995, 2000) added social organization (norms) to this definition, and the capacity for social capital to improve the efficiency of society by facilitating cooperation. The linkage of social capital (trust, networks, norms and reciprocity) with various potential outcomes (personal or collective benefit) sparked considerable research, but also divergent definitions as authors explored the characteristics of social capital (Glanville & Bienenstock, 2009). Later differentiation of social capital inputs from outcomes highlighted the dynamic nature of social capital, and its ability to take on positive or negative forms depending on its application and efforts used to maintain it (Flora & Flora 2013; Peterson et al., 2006). For example, diverse participation appears to drive development of new social capital through a positive feedback loop (Flora & Flora 2013; Peterson et al., 2006; Pollack, 2004), a characteristic with considerable explanatory power in research about social change. Glanville and Bienenstock (2009) compiled a definition from this body of research with the intent to establish a base for the next phase of investigation; one that would allow assessment of the role of social capital in social change, across individual, small group or large group scales.

Glanville and Bienenstock (2009) identified three key components of social capital within the past body of work: (1) network structure, (2) trust and reciprocity, and (3) resources accessed through networks. They argue that these factors each exist on a continuum, with a fourth factor, the level of analysis (micro or macro). Essentially, their framework allows characterization of the unique aspects of social capital in a given case within a 'space' defined by these four continua (Glanville & Bienenstock, 2009). As the proportions of each component change, so does the relative position within this conceptual space. Further, the unique combination of these four factors defines only the potential for the individual or corporate actor

to respond to change and opportunity, and leaves the linkage between that unique combination and outcomes of its use open to exploration. Each component could contribute to an overall positive or negative outcome for the individual or group (depending on the level of analysis), assessed through comparison of the unique form of social capital input and the outcomes derived from its use.

Glanville and Bienenstock (2009) left the definition of resources open to the researcher's interpretation. Economic theory conceptualizes resources held within a market as forms of capital. Social researchers have expanded on this approach to assess the contribution of resources to sustainability and resilience of communities. Flora and Flora (2013) identified seven forms of capital that when invested in communities, can contribute to, or detract from, economic, environmental and social conditions: natural, cultural, human, social, political, financial and built capital. Financial and built capitals are easily measured and often used to assess economic opportunity. Access to such resources provides economic means to support an initiative, but the interactions among natural, cultural, human social and political capital can influence the motivation for cooperation and its outcomes. The multiple capitals model is thus a useful framework for analysis of the contribution of social capital to collaboration.

Cultural capital, for example, is considered in this model to be a filter that people use to see the world around them and define the problems that need to be (or can be) addressed (Flora & Flora 2013). Cultural capital includes the understandings that people have of place and the social structures that define the possible alternatives for change (e.g., values and norms related to place). As a result, it can establish the boundaries of the 'social imaginaries', the range of future possibilities for society held by a social group (Taylor, 2004). Political capital is the influence and power that can be mobilize to enforce social standards (its norms and values). Human capital includes the skills and knowledge held by individuals, but also the intangible qualities – self-esteem, vision, communication and social skills – that can contribute both creativity and effort to a community. Natural capital is defined as the specific ecological and physical features of place, which in combination with cultural capital define the possibilities for people in a specific place. This interaction has been extensively explored in place research, and the role of meanings and emotional attachments formed by individuals regarding specific places in place-based governance will be discussed in more detail below (Williams, Patterson, & Kruger, 2013). The multiple capitals model suggests other interactions among these capitals could foster or

inhibit progress toward a collective goal, but provides no explanation of the specific social processes that could foster effective collaboration.

The multiple capitals and social capital frameworks both identify a central role of social capital, and particularly network structure, in providing access to resources that could support positive outcomes of its use (Glanville & Bienenstock, 2009; Flora & Flora 2013). Yet as the multiple capitals model and preceding sections note, other factors could influence outcomes, including the types of resources accessible through social capital and means by which open communication, leadership and governance and knowledge sharing are established within a group. These two frameworks provide means to describe the unique combinations of capital accessible to a collaborative group and can support the empirical studies needed to explain the process by which interaction of these factors might produce effective collaboration.

Place-based Collaboration – A Role for Place?

Place-based management has received increasing attention within the conservation policy field in recent years, due in part to public demand for more context-driven, localized approaches (Williams et al., 2013). Place-based management requires "a fundamental repositioning between the scientific/technical view from nowhere and a more appreciated and enriched view from somewhere" (Williams et al., 2013, p. 11). This is a science-based management approach designed not for some generalized space, but for an area infused with meaning for its residents (place). Such demand has stimulated interest in means to adapt current management approaches and involve local stakeholders more directly in land management, which includes work on place-based governance. Past place-research has focused on characterizing the individual's interaction with place; processes by which place attachment and meanings might develop and motivate action related to place, including socially coordinated action, are as yet unclear. This work does, however, suggest potential for place to contribute to collaborative, place-based management action.

Place research suggests place attachment and place meanings can motivate individuals to protect valued places (Stedman, 2002; Williams, 2002), and in certain situations, place has motivated individuals to join forces in a collaborative approach (Bell, 2007; Dale et al., 2008; Scannell & Gifford, 2010a; Whitelaw et al., 2008). This work has prompted studies that have explored the circumstances under which collaboration might occur, including potential for social capital and place to facilitate cooperative action (Lewicka, 2005; Scannell & Gifford, 2010b).

The collective body of work has established that place can motivate action, through a psychological process involving personal identity, but the social process by which cooperation might result through the interaction with social and other forms of capital (as proposed by Flora & Flora 2013), remains unexplained. This gap has prompted theoretical explanations of place-based governance, a relatively new area of research. Together, this body of work offers a potential starting point to examine how place and social capital might together facilitate effective collaboration.

Place attachment, meanings and identity.

'Place' is space to which humans attach sentiment and construct links to less tangible concepts such as recreation, home or ancestry that make a location special to the individual or cultural group (Tuan, 1974). It is a geographic location (where) with material form (what) and invested meaning and value (what the place means to people) that can be an "agentic player in the game - a force with detectable and independent effects on social life" (Gieryn, 2000). Place conceptualizes the interaction between cultural and natural capital described by Flora and Flora (2013), but this is no simple relationship. Place affects humans through a complex, active process involving highly individualized emotional and cognitive aspects (Lewicka, 2011).

The complexity of place is reflected in the variety of terms used to describe human relationships with place (Trentelman, 2009). Sense of place describes "how people perceive, experience, express and give meaning to place" (Axford & Hockings, 2005, p. 3). The term includes the dynamic bond to a place that is expressed as place attachment, place identity (perception of self in a given place) and place-dependence (physical characteristics of place required to achieve one's goals) (Clayton & Myers, 2009; Lewicka, 2011; Scannell & Gifford, 2010a), but it can also include place awareness, belonging, satisfaction and commitment to place (Shamai, 1991). Various combinations of these constructs have been used to link place to pro-environmental behavior and civic action, most often place attachment (Brehm, Eisenhauer, & Krannich, 2006; Halpenny, 2010; Lewicka, 2005; Payton et al., 2005; Trentelman, 2011) and place meanings (Devine-Wright, 2009; Stedman, 2002; Trentelman, 2011; Williams, 2002).

A recently developed tripartite framework has organized the multidimensional character of place attachment into three dimensions (the person, the place and the process) (Scannell & Gifford, 2010a), which provides means to assess the role of place attachment in place-based behaviour. The framework captures the complexity of place attachment in terms comparable

with the existing literature, so that specific conditions leading to place-based behavior can be described and compared to past work. For example, the person dimension includes aspects of place attachment (including place meanings) specific to the individual or generalized to a broader community or cultural group (Scannell & Gifford, 2010a). The place aspect can be a social symbol or arena (social place) or a physical environment (natural or built). The psychological process of attachment involves three aspects: affect (emotional connection to place), cognition (how meaning is attached to place; e.g., by memory, knowledge, schema or individually specific events) and lastly, the behaviours exhibited within and about the space. The psychological process of attachment is least well understood (Lewicka, 2011), and it is here that the framework offers its best advantage. By breaking down the elements of process, dynamics of place attachment held by a specific person or for a particular place can be better examined and linked to behavioural outcomes.

The range of possible influences of place on people has generated a large body of work on the role of place in environmental management, the nature of place attachment, and its potential to motivate involvement and civic action (Halpenny, 2010; Lewicka, 2011; Scannell & Gifford, 2010b; Trentelman, 2009, 2011). Research to date has focused on describing the personal experience of place attachment, leaving the process of place attachment, including variation relative to the type of place and the actor (individual or group) relatively understudied (Lewicka, 2011). The literature describes the types of places to which people attach, in terms of their social and physical features, and the form of attachment in quantitative (type and strength, associated socio-demographic variables) and qualitative terms (place meanings). Logically, positive emotional connections and meanings should prompt a protective attitude toward a specific place and process has been explored from this standpoint (Lewicka, 2005; Scannell & Gifford, 2010b; Trentelman, 2011). Yet protective action also depends on an understanding of the need for protection and collective action requires recognition within a broad group. Examining means by which collective action might arise in a given place requires an understanding of the processes involved in forming place attachment and in motivating action.

Place attachment process.

Various factors are known to affect place attachment, and could influence the motivational power that a given place might have. These include place identity, scale of place and social aspects related to place. Each of these factors contributes to attachments that can

determine the nature of the relationship with place for the individual or a group, facilitating social relationships through which social capital could foster collaboration.

The power of the social construction of place to motivate human behaviour has been well-explored (Cheng et al., 2003; Trentelman, 2009). Threats to valued places, particularly immediately recognizable threats, have prompted strong protective action by local residents (Bell, 2007; Devine-Wright, 2011; Whitelaw et al., 2008). The intense emotional reaction characterizing some natural resource conflicts is thought to be a means to protect a self-identity derived from interaction with a given geographic location (Cheng et al., 2003; Stedman, 2002; Williams, 2002). As Cheng et al. (2003) note, natural resource conflicts are as much about competing place meanings as control over scarce resources. Development of shared meanings of place to create a group identity can also be useful in the organization of collaborative groups and in establishing norms of land management (Bell, 2007; Cheng et al., 2003; Whitelaw et al., 2008). When self-identity and group-identity are similar, sustainability management proposals may be readily developed and supported by the community (Williams, 2002). When they are not, support may be less predictable.

Place attachment varies with scale of the physical feature, such that certain landscapes may have less capacity to motivate action in response to management concerns. Lewicka (2011, p. 211) found "an almost unanimous opinion that the prototypical place is home" in her review of the place attachment literature. The curvilinear relationship of scale effect on place identified by Hidalgo and Hernandez (2001) is consistent with the literature (Lewicka, 2011) and their work serves to illustrate the influence of scale and perception on attachment. Neighbourhood-scale attachments were typically weaker than those to home and city, an effect linked to the lack of a clear boundary defining the neighbourhood. Home and city attachments were similar in strength, but attachment was to social elements at the home level and to physical elements at the city level (Hidalgo and Hernandez, 2001, Lewicka, 2011). Tuan (1974) believed that direct experience with place was important to create attachment and that clear boundaries helped to visualize and construct a personally relevant place. Cities and home are clearly distinguished from their surroundings, although home boundaries can vary in personally relevant ways among individuals due to their social nature (Lewicka, 2011).

Research at the natural region scale has been less common, in part because of the difficulty in differentiating a clear boundary (Lewicka, 2011). Regions are often socially and

politically constructed places. Their boundaries change over time in response to social and political change, such that a regional identity has both spatial and temporal elements (Taylor, 1999). Although an impediment to characterization of place attachment, the capacity to change regional identity can be used to improve community conditions and adapt to change (Vaccaro & Beltran, 2007). Place-making, a deliberate effort to establish a new regional identity is discussed further below.

Duration of residency, type of use (recreational vs. residence) and demographics have been shown to predict place attachment (Lewicka, 2011). Duration of residency has consistently been linked to place attachment (Lewicka, 2005); long-term residents have stronger place attachment (e.g., Kaltenborn, 1995; Trentelman 2011; Walker & Ryan, 2008). Home ownership has also been long understood to relate to place attachment and the pro-environmental behaviours related to attachment to recreational versus residential property (second-homes) is beginning to be explored (Lewicka, 2011). Socio-demographic variables such as age, social and economic status and education have not shown consistent relationships (e.g., Bonaiuto et al. 1999; Lewicka, 2005).

Place attachment and response to change.

Place attachment and community attachment have been used to explain effective collaboration in hypothetical scenarios (Cheng et al., 2003; Lewicka, 2005; Pollack, 2004), and empirical analyses of place-based civic action cases (Bell, 2007; Dale et al., 2008; Edge & McAllister, 2009; Payton et al., 2005; Whitelaw et al., 2008). As noted above, a meaningful place can include both social and physical aspects and both have been shown to influence civil action, although not necessarily consistently. The nature of the landscape, the cultural definitions related to that place (cultural capital) and the duration of experience in that place each influence perceptions of appropriate use of place, and thus, perceptions of threats.

The emphasis on social and natural place attachment can vary among individuals and in sum, may dictate civic action at the community level. For example, Dale et al. (2008) found the environment was a strong motivator for citizen involvement in community planning for two communities located in high amenity locations. Scannell & Gifford (2010b) found natural place attachment was the better predictor of pro-environmental behaviour than civic attachment in a comparison of two communities differing in natural character, which suggests physical characteristics that motivate action are locally relevant. Social attachments can also motivate

civic action (Brehm & Eisenhauer, 2008; Lewicka, 2005), but seem more important where community culture or identity is at risk (Brehm et al., 2006).

The duration of experience in place can also influence reaction to a proposed change in land use; long-term residents tend to react more strongly to change (Kaltenborn, 1998; Stedman, 2002). This effect is complicated by other factors however, including cultural definitions related to place (cultural capital, Flora & Flora 2013). For example, Walker & Ryan (2008) found that long-term residents of a pastoral landscape had higher place attachment and would prioritize conservation of rural landscapes before natural areas. Yet viewed in aggregate, most residents supported conservation of rural landscapes, with very limited range of variability, suggesting short-term residents also valued rural lands highly. Attitudes and behavioural responses to changes to place can be influenced by a variety of other social constructs that help to form identity, including social and moral norms and cognitive, affective and evaluative understandings of place (Bamberg & Moser, 2007; Stedman, 2002).

Attitudes summarize values and beliefs held about a particular issue and to some extent can predict behaviors regarding those issues, with motivation and perception of control over the outcome (Bamberg & Moser, 2007; Clayton & Myers, 2009; Owens, 2003). Attitudes can sometimes predict behavior, but not always, particularly for environmental issues (Clayton & Myers, 2009). The Theory of Planned Behavior suggests that behavior is influenced by attitudes, subjective norms and perception of control (Ajzen, 1991). Attitudes may help form behavioral intension, but the choice to follow-through with action can be motivated by approval of important groups or individuals (through social norms), or ability to make a difference (efficacy).

Lastly, as residency studies show, place attachment can change qualitatively over time (Lewicka, 2005; Trentelman, 2011; Walker & Ryan, 2008). Longitudinal studies of place attachment are few, but suggest that attitudes toward land management can shift to adjust to new context. Bell's (2007) longitudinal study of local resistance organized to defeat a proposed expansion of Thousand Islands National Park provides an example. In this study, strong ancestral ties to place provoked strong reaction of local residents to proposed park expansion. The group continued to play a role in regional management of the islands after the initial conflict, and over time, developed a collaborative relationship with Parks Canada, which led to the later inclusion of their islands and the national park in the Frontenac Biosphere Reserve.

Place motivated a long-term role in regional management, although the goals, objectives and partnerships of the group changed over that time.

Longitudinal studies examining qualitative change in sense of place or place attachment over time, and particularly through participation in collaborative groups, are a gap in the place literature. Intuitively, the opportunity to experience a landscape through another's knowledge of it, for example through social learning, could change the sense of place of participants and in turn, perhaps influence collaborative management. Place-making is a more deliberate version of this process, and can have more dramatic effect (Taylor, 1999; Vaccaro & Beltran, 2007).

Place attachment and social capital.

Research on attachment to social places suggests a potential link between place and social capital in motivating collective action. Social attachment is based on place meanings associated with past shared experience. Connections could be related to an existing community or to historical links with family or cultural past (Bell, 2007; Brehm & Eisenhauer, 2008; Lewicka, 2011). Lewicka (2011) noted the parallel between different relational aspects of place (e.g., open vs. closed communities, discouraging vs. open to strangers) and bonding and bridging capital. She, like Flora & Flora (2013) noted the beneficial effect of a balance of bonding capital and bridging capital for a community reported in the social capital literature and flagged the as yet underexplored relationship between social capital development and place attachment as an important area for future research.

Place-based civic action has both empirically-observed and theoretical links to social capital. Community ties (social capital) have consistently been shown to have a strong link to place attachment, but the relationship between place, community ties and civic action is less well understood (Lewicka, 2011). Payton et al (2005) found trust partially mediated civic action based on place attachment, a model only slightly better than the fully mediated relationship. Lewicka (2005) also found place attachment indirectly contributed to civic action through neighbourhood ties. Brehm and Eisenhauer (2008) observed an interesting positive feedback effect between community attachment and place satisfaction in a case study of participation in community-supported agriculture initiatives. Individuals with high community attachment and those with high community satisfaction were more likely to become involved in such initiatives, which generally improved community satisfaction. Community satisfaction appeared to motivate action to continue improvement of the community, although participants did not

perceive their actions as directly benefiting social capital (e.g., through social networking with local producers).

Some authors have attempted to model the influence of both place and social capital on civic action, to determine their relative contributions. These studies have found place often serves as an indirect mediator or catalyst, while social capital has a direct influence on civic action (Lewicka, 2005; Pollack, 2004; Ravindra, 2004; Stoecker, 2003). The role of social capital as a direct mediator between place attachment and civic action suggests that a social network may be necessary to "convert emotion to action" (Lewicka, 2005, p. 392). It leaves open, however, the question of how place might forge links among individuals with similar place-based concerns, grow networks from those linkages, or to sustain collaborative efforts the group may decide to undertake.

Place-making.

'Place-making' creates a new view of a geographic location as special or unique among a broader community (Gieryn, 2000), typically to inspire support for a broader community purpose. In natural resource management contexts it has helped elevate local concerns to a political level and establish a local management group as a relevant stakeholder (Bell, 2007; Dale et al., 2008; Whitelaw et al., 2008). It has also been used to adjust the image of a given place to promote community goals, including economic development and landscape conservation (Tobias & Muller Wahl, 2013; Vaccaro & Beltran, 2007).

As with sustainability planning, place-making can have positive or negative effects, depending on the process used to identify aspects of place. This point was well demonstrated in a study by Dale et al. (2008) that examined the land use planning process in three British Columbia communities. In two communities, community consultation was used to affirm group-identity, the understanding of the community as a distinct place ('integrative place-making') and to create a shared vision of the community's future in that place. It also helped to reinforce awareness of the inherent forms of capital comprising their place, and to establish and expand new connections among community residents (grow social capital). The less effective outcome in the third town's planning process was linked directly to the lack of recognition of the value of the downtown environment for long-term community residents as a social meeting place. The decision to develop a new suburban shopping district satisfied the requests of newer residents, but sacrificed the financial viability of downtown businesses, and the sense of community

derived through use of that place. As Flora & Flora (2013) observed, community action involves trade-offs based on the interactions among all forms of capital held by the group. Place-making that does not consider the place attachment held by individuals or the community runs the risk of creating conflict, rather than benefit (Williams, 2002).

Place-based governance.

The motivational aspects of place suggest a potential role in land management (place-based governance; Dale 2005; Pollack, 2004). Examples such as successful establishment of Canadian Biosphere Reserves (Ravindra, 2004; Whitelaw et al., 2008), sometimes evolving from local opposition to change in land management (Bell, 2007) suggest that place can have a powerful influence on governance. Such work has stimulated theoretical discussions about the potential for place and social capital to foster a more inclusive place-based approach to land management, work that requires empirical testing.

The conceptual frameworks for place-based collaborative approaches to sustainable management developed by Pollack (2004) and Dale (2005) recognize a central role of social capital in sustainability management, but they differ in terms of the process by which social capital might achieve the group's goals. The differences arise because the two frameworks attempt to answer different questions, emphasizing the point made by Glanville and Bienenstock (2009) about studies on social capital (the scope of the question tends to delimit the answer). Pollack's (2004) conceptual framework aims to explain how collaborative groups can use their social capital as leverage to establish themselves as a significant and enduring player in regional decision-making about a valued place. Dale's (2005) framework focuses on the qualitative aspects of social capital that could help to reconcile priorities regarding the environment, economy and social character of a valued place through collaborative governance. Despite their differences in approach, their propositions do help to conceptualize how social capital and place might interact to foster effective collaboration.

In her framework, Pollack (2004) proposes that place-based governance is situational: the group's relational dynamics drive formation of an 'organizational ecosystem' (Francis, 1988) focused on management of a specific geographic area. The actors involved establish a 'domain', a social space where the actors recognize a shared interest (e.g., in a given place), within which the actors can work toward a joint purpose through their respective networks. The group is regulated by the power inherent in the links between the various partners, rather than the

individual actors themselves, a proposition consistent with ANT (Latour, 1999, 2005; Law, 1992). The group becomes self-regulating, and from an organizational standpoint, effective, due to the actors' ability to create new linkages within the domain to adapt to changing context.

Dale (2005) offers an alternative framework that centers on the development of those linkages, through six "building blocks" (p. 23) of social capital: empowerment, relationship, connection, reciprocity, communication and deliberative dialogue. These forms of social capital, she suggests, arise from interactions within networks that progressively foster engagement, trust, cooperation, collective norms and knowledge diffusion. These factors ultimately contribute to better decision-making and effective collaboration. She identifies voice, commitment, diverse stakeholders, and leadership as critical aspects of networks formed around sustainability issues, which can tip the balance toward development of a positive or negative form of social capital.

Although both frameworks suggest factors indicative of a healthy cooperative decision-making system transferable to a variety of sustainable management scenarios, neither identifies specific mechanisms driving the collaboration process. Dale (2005) acknowledged this gap and its importance with respect to the strength of her framework, the possibility of positive or negative social capital to form. Without the mechanisms linking the various factors, the critical aspect of process is missing, preventing analysis of factors that might facilitate effective collaboration.

Translation.

The ANT process of translation (Callon, 1986) explains how innovation proponents could establish agreement on cooperation and action among diverse interests, and could help explain how effective collaboration might develop. Translation proposes a step-wise process by which proponents can recruit, organize and mobilize support to an innovative approach. Theoretically, repeated and successful applications of the innovation can help spread the new concept beyond the original actor network, by empowering participants by developing skills and knowledge and the confidence in their utility. This is a more detailed explanation of process than provided by place-based collaboration, but it too lacks specific mechanisms to foster the cooperation and confidence necessary to sustain a collaborative approach to sustainable management problems. The capacity of social capital and place to foster effective collaboration, reported in those respective literatures, suggests potential mechanisms that could drive the translation process.

From a theoretical standpoint, ANT allows people and place to foster cooperation and then, action. Social capital (trust, reciprocity, networks and resources) has an obvious potential role in the translation process. Efforts of collaboration proponents to increase trust and expand networks to gain access necessary resources would play an obvious role in the successful pursuit of collaboration goals. The capacity of place to inspire attachments and meanings that can divide or unite actors implies an interaction between place and human actors in this process as well. Trust in others and in the approach and solutions presented could facilitate the acquisition of skills and knowledge that could empower participants, contributing to the spread of innovation to others. The ANT translation process provides a conceptual model in which place and social capital might play a role in forming, organizing and mobilizing a collaborative sustainable management group, and by diffusion of innovation to others, promoting broader adoption of sustainable management approaches.

Translation is the process of aligning the properties, actions, interests or concerns of actants wishing to create a new network (Callon, 1986) or gain entry into an existing network (Lockie, 2004). Stabilization involves universal acceptance of the relationships constructed among human and non-human actants and human agency (Callon, 1991; Law, 1992, Murdock, 1998, 2001). A stable network has aligned member interests by creating a shared space for dialogue (Callon, 1991; Murdock, 1998) and coordinated the group through rules regulating relationships within the network (Callon, 1991). Translation and stabilization both allow a role for human agency to facilitate collaboration, through strategic efforts to align, coordinate and mobilize human and non-human members of the network.

Network construction, expansion and stabilization are political processes subject to influences of power. Potential partners may be excluded, the network and its actants may redefine themselves, or contributions of subservient actants may be denied (Callon, 1991; Star 1991). As a result, although networks may be durable, they can also often be fluid, unstable and fractious, a situation demonstrated well by Callon's (1986) case study of scallop fisheries management in France, an empirical example of translation.

In Callon's study, fisheries biologists attempted develop aquaculture as an alternative to the traditional and increasingly unsustainable harvest of wild scallops (Callon, 1986). Callon (1986) identified four "moments of translation" (p.203) to describe this process in the context of ANT: problematisation, interessement, enrolment and mobilization. The biologists first framed

the problem and their key role as expert advisors, and then outlined roles for themselves, the broader research community, local fishermen and the scallop species in an 'alliance' to research the means to domesticate the scallop for aquaculture (problematisation). The researchers worked to fix each actor into the roles they had defined in their plan, by attempting to redefine their identities in role-specific terms and exclude other competing definitions. Explaining the benefits and aspects of their plan, they gathered support from representatives of the scientific and fishing community (interessement). Research ensued and based on a preliminary year of study, potential barriers to success (primarily larval anchoring behaviors) were identified, negotiated and seemingly resolved, such that the representative actors could now accept their proposed roles within the project (enrolment). Finally, the representatives of the fishing and scientific community supported implementation of a pilot project under the direction of the biologists (mobilization).

However, as Callon (1986) noted, the alliance created during translation can be tested and renegotiated at any time; its strength depends on the stability of relationships negotiated between the interessement and enrolment stages (the 'moment of agreement"). In the pilot study, the larval scallops 'rebelled' by failing to attach to collector devices as they had in the preliminary research phase. The alliance faltered and finally a few rebellious fishermen harvested the small colony established in the initial study, thereby forgoing long-term benefit for self-interest. The program was shelved (the actor network collapsed), because the scallops were unable to maintain their 'performance' consistently.

This example illustrates two important aspects of translation, the distribution of power within the relationships and the concept of network stability. Interessement is a critical step in the process, because it creates a power imbalance favoring cooperation to resolve the problem (Callon, 1986). The "moment of agreement" (Callon, 1986) is essentially an agreement to cooperate, negotiated through a variety of generally conceived strategies and mechanisms (Callon, 1986; Selman & Wragg, 1999a; 1999b). Strategic use of place and social capital by proponents of collaborative action could facilitate agreement to act by manipulating the existing power dynamic to remove barriers to formation of a committed group. The advantage of ANT as a theoretical framework is that it recognizes the potential for collaborative efforts to fail, if the participants select tactics that will recruit unrepresentative or biased interests. This aspect of agency may help to explain why the mere presence of social capital, within a place valued by a

community, is not always sufficient to motivate and sustain groups interested in collaborative management.

Network stability requires both coordination of the human and non-human actants and creation of predictable relationships among them. As Callon's (1986) study showed, networks can be durable through space and time, but they are not stable or permanent. Coordination within of the actor network can establish rules and expectations of behavior that help sustain the understandings shared among the actors within the network. This mirrors findings in the social capital and multiple capitals literature (Flora & Flora 2013; Pretty & Smith, 2004; Schusler et al., 2003). Durability depends on the strength of the performance, or the ability of the actant to maintain the same performance consistently (Callon 1991; Law, 1992). It also depends on the diversity within the network. More heterogeneous groups become more stable if they can exclude competing definitions of the problem and solution (Callon, 1991). Durability thus involves careful control of dialogue such that the network can identify and adapt to changing conditions while still maintaining relevance.

The means by which a group organizes and establishes expectations of behavior during translation is of analytical interest, particularly if that process can be generalized across different types of collective groups. ANT has proposed these mechanisms only in general terms within the processes of translation (Callon, 1986) and network stabilization (Callon, 1991; Law, 1992). The incorporation of both place and social capital as tools available to human actors trying to create or sustain an actor network provides mechanisms currently missing from these aspects of ANT.

Summary of Knowledge Gaps

Past research on collaborative approaches to sustainable management issues has identified two key barriers to collaboration. One obstacle involves coordination: it is a challenge to unite and mobilize individuals with different perspectives around a common objective. Further, to affect lasting social change, such a group would become established as a legitimate actor in the management community. Trust is a key factor in fostering cooperation (Diekert, 2012; Ostrom, 1998). Establishing legitimacy as a long-term or permanent institution also requires proof of benefit and norms and rules to operate as a group (Ostrom, 1990; 1998). Scholars interested in new social movements have recognized access to social networks and resources as key factors facilitating formation and legitimization of a committed organization

(Della Porta & Diani, 1999) and work in collaborative resource management has highlighted the need for strategies to build knowledge and trust (Borrini-Feyerabend & Borrini, 1996; Brunckhorst, 2001; Halpenny et al., 2004). That work, in turn, has turned attention to the role of various forms of capital in collective action (e.g., trust, social networks, access to political, financial or knowledge resources) and their potential to empower the group or its members. These aspects have been categorized broadly as 'human capital' and 'social capital' (Glanville & Bienenstock, 2009; Maloney et al., 2000; Ravindra, 2004) or more finely as multiple capitals (Flora & Flora 2013).

The second obstacle lies in establishing a common goal that can incent diverse interests to cooperate (Diekert, 2012). The resilience literature identifies the capacity to envision a broadened range of options as a critical characteristic of sustainable communities (Flora & Flora 2013; Parkins, 2011; Stephenson, 2011). Cultural capital, in terms of traditional approaches and anticipated outcomes, can impose limits on the collective imagination regarding both future alternatives and partnerships (Flora & Flora 2013). Other factors can facilitate changes in approach, either by providing strong motivation related to a shared concern (e.g., change to a valued place, Williams et al., 2013) or by inspiring new vision through persuasion (Bell, 2007; Stephenson, 2011; Whitelaw et al., 2008). Such work suggests that the motivational qualities of place or key actors could contribute to a psychological process that facilitates recognition of a need and possible benefits of change in motivating collaboration, perhaps through place or visionary leadership. Yet the means (process) by which such factors could recruit support from diverse interests has had limited study within the collaboration literature.

The literature suggests a potential role for place and social capital in effective collaboration for sustainable management and other issues, particularly through the organization of the group and development of its norms for operation. The positive feedback loop related to development of social capital within a valued place that has been reported in these respective literatures and in the multiple frameworks literature suggests a potential interaction that could enhance community by generating additional social capital. The literature also suggests that an effective collaboration could be socially transformative at the macro level, by creating a shift in the institutions used to address sustainable management concerns or at the micro level, by reaffirming a sense of community.

ANT outlines a process (translation) by which individuals could challenge the status quo by promoting innovative approaches or voicing alternative views to current management systems. Although the steps in the translation process have been well theorized; the strategies and tactics that facilitate advancement through each step have only begun to be studied. The strategic use of place as a motivating factor, in conjunction with the trust, reciprocity, resources and networks offered by social capital could facilitate cooperation. The interaction of these factors suggests potential mechanisms within the translation process not previously examined within this theoretical context. The potential for social capital to be enhanced through such a process raises additional questions about the outcome of translation with respect to social capital, another area only conceptually theorized within ANT. If translation can enhance social capital, can it then be applied by the group in subsequent repeated cycles? Further, if the group is successful in implementing the sustainable management approach they chose to pursue (in the sense that it is adopted within the network), can social capital and place facilitate propagation of the innovation to other networks? The translation process theorized by ANT provides a useful theoretical framework that would allow analysis of the roles of place and social capital in motivating civic action, and in the translation of innovative ideas beyond the local scale, perhaps clarifying the mixed results found in previous empirical work and knowledge gaps within ANT theory.

Past research indicates that place and social capital can contribute individually to effective collaborative action for sustainable management, but few studies have explored the combined influence and interactions between them, particularly over a longer term. This may be the result of limitations of other theoretical approaches regarding social change, which have either a structural focus or a limited view of contributing actors that specifically ignores the role of a changing context and the environment. An accepted framework describing the contributions of place, social capital, and social capital processes to sustainable management of specific areas remains a gap, despite several recent attempts to create and test such a theoretical structure (Dale 2005; Pollack, 2004).

Lastly, several of the social capital and sense of place studies reviewed above recognized various potential or observed tactics or strategies (a ‘tactical toolbox’) that might be used to develop, enhance, expand or mobilize social capital or use place to similar effect within a collaborative group (Appendix A). A comprehensive framework explaining how collaborative

groups might form, gel and rise to influence management of regionally important places through selective use of the 'tactical toolbox' remains lacking and is an important gap in our practical understanding of sustainable management strategies and collaborative groups.

Translation in place-based governance

The place-based governance process theorized by Francis (1988) and Pollack (2004) speaks to one challenge in sustainable resource management: mobilizing concern regarding a particular issue or place. Their approach identified a means for place-based concerns to enter public discourse (e.g., through place-making) and so affect management change, but it overlooked the not inconsiderable challenges in moving from a concerned group to an effective, cohesive group affecting broader social change (what Callon (1986) described as translation). This aspect of promoting social change implies a temporal aspect to the process, which is considered within ANT as the moments of translation. Callon's (1986) four moments of translation identified the process and the potential shifts in strategic approach required to develop an effective organization for change: problematisation (awareness building), interessement (recruitment), enrolment (organization) and finally, mobilization (action).

Callon's (1986) translation process demonstrated need to establish roles through interaction of human and non-human actors in each moment of translation, as well as the need to switch tactics to recruit new supporters and resources. The translation process expands on the generalized step of 'action and interaction' proposed by Francis (1988) and Pollack (2004) regarding place-based governance, to describe the complex negotiations necessary to generate a new 'regime'. It also provides a framework within which to explore the development of the building blocks of social capital Dale (2005) thought essential to effective sustainable management collaborations.

In this case study, I examined the strategic use of and interactions between social capital and place as mechanisms to drive the ANT translation cycle (Figure 2). Conceptually, inputs of social capital (trust, norms of reciprocity, networks and resources) and place could be strategically applied or developed during the translation process to overcome contextual barriers, or in the case of place, as an intermediary device useful in achieving agreement. Timing for use of strategies would be dictated in part by the socio-political context. The case aimed to address the knowledge gaps in ANT and in the social capital and place literature.

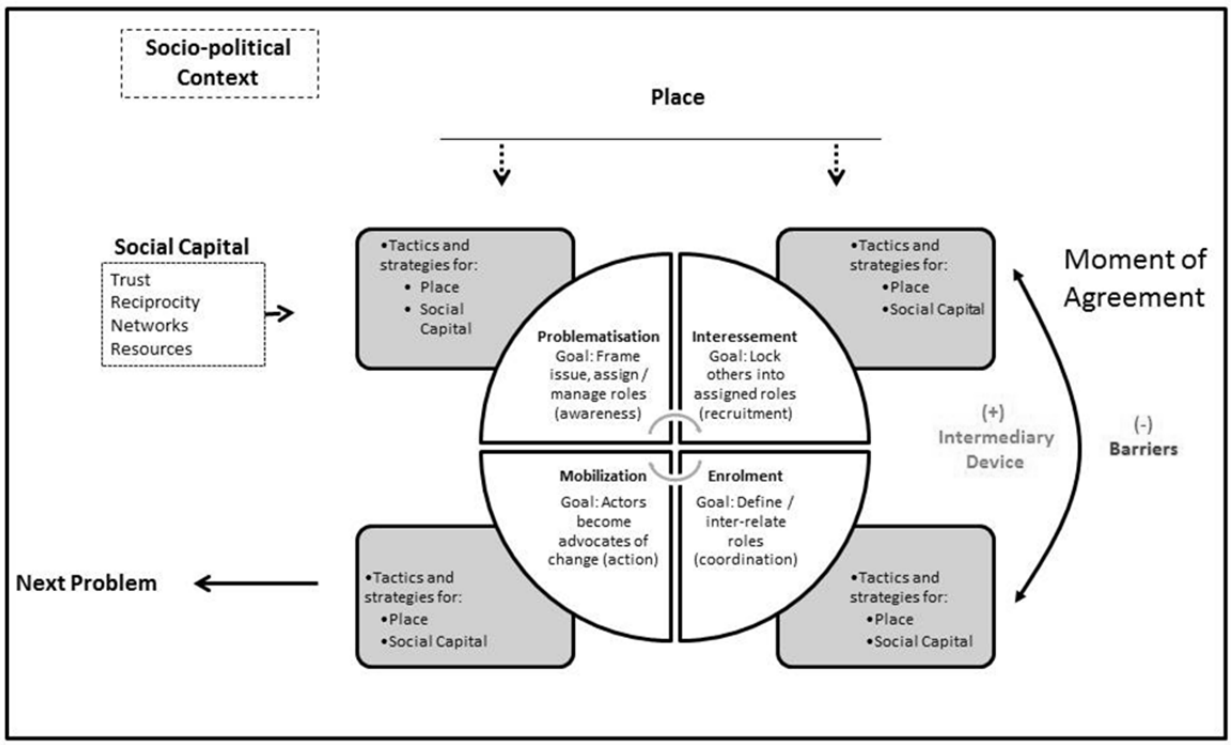

Figure 2. Influence of place, social capital and socio-political context on selection of strategies and tactics to achieve change through collaborative action within the ANT translation process.

Methodology

Overview

This study used an embedded, exploratory case study of the Beaver Hills Initiative (BHI) to examine the role of place and social capital in facilitating collaborative management, through the theoretical lens of the ANT process of translation. An embedded exploratory study allows a relatively little understood phenomenon to be comprehensively described, through the perspective of the main unit of analysis and its subunits (Yin, 2009). In this case, the experience of collaboration was investigated within the BHI from the perspective of the members of the BHI (the main unit of analysis), using as subunits three sequential major projects undertaken by the BHI. This approach allowed comparison of each participant's experience to identify common aspects of the development of each project. Specifically, the case study examined the role of social capital and place in successfully recruiting critical stakeholder support and mobilizing that support to complete three increasingly challenging, science-based sustainability projects. In each project, the BHI members and their partner organizations organized and mobilized to carry out the proposed initiative, providing repeated examples of the translation process and its outcomes, implemented through a long-term collaboration.

Undoubtedly, these achievements are linked and reinforce each other: successful endeavors reaffirm the organization and its approach, which provides a firmer base for more complicated projects. Examining the early stages of the group's development allowed me to assess how social capital and place contributed to long-term, voluntary collaboration, a rare opportunity.

I have been involved with this group since 2004 as an environmental consultant, hired to help develop the Land Management Principles and Framework. I was able to observe the growth of the BHI towards a functional and cohesive organization over that time as a participant, and afterwards, as an observer through an on-going relationship with the group. My relationship with the BHI allowed access to individual members, documents and history and the advantage of insider familiarity. It also introduced potential for bias, which required reflexive techniques to triangulate and confirm findings.

The study used interviews, photo-elicitation, a policy overview and content analysis to identify factors facilitating the three projects early in the BHI's development. The sections below outline the methodology for this case study, including an overview of the case study

timeframe and design, study participants and data collection and analysis techniques. Ethical considerations and reflexive techniques used to counter potential bias complete the chapter.

Case Study Design

The BHI case allowed certain advantages: first as a longitudinal study with repeated examples of collaborative action, and second, a controlled context of a single organization and socio-political environment. Review of a single case can limit generalizability of the findings, but the potential inherent in an in-depth study outweighed that limitation. The BHI represents a new model for natural resource management policy development that involves scientists, professional practitioners, government and NGO land managers, and politicians. Although a study of only one organization, it represents a complex system. The perspectives and mandates of the partner organizations and their representatives played a critical role in developing these collaborative projects, as did the relationship between these organizations, their representatives and the BHI. Access to a group that has negotiated collaboration several times over a long time period offers potential for rich description of the underlying processes.

Although ANT suggests a potential process to facilitate collaboration amongst diverse partners, empirical examples of translation are few and the potential methodological issues of assessment are thus not well understood. Empirical investigations of the democratization process suggest potential mechanisms for the transfer of innovative approaches among organizations, through a process comparable to ANT's translation. Both the persuasive and normative socialization modes of democratization rely on social learning to encourage change, either by experiential demonstration of the benefits of change or convincing arguments conveyed through open fora for discussion, respectively (Beichelt, 2012). Both modes result in a change of governance norms in the democratized nation, an outcome sometimes compared to diffusion of innovation. The difficulties with the study of the normative socialization mode were particularly instructive for design of this study and related to detection of shifts in norms (Beichelt, 2012). First, norm change occurs in slow increments not easily detected and thus reported by participants. Second, norms associated with the innovation in the 'sending' nation may also prevent 'receivers' resistant to change to be open about their own experience (e.g.., if the change requires alignment with a social or moral norm not readily accepted by the receiving nation). Longitudinal study and access to a variety of individuals and organizations involved in the

process are recommended to overcome these challenges (Beichelt, 2012). Both controls are provided in this case study.

Yin (2009) recommends explicit identification of the units and boundaries of analysis and the overall approach to analysis, in addition to the data collection methods to be used for a case study. The individual representatives within the BHI (representing the BHI and their own organizational interests) comprised the unit of analysis for this case study. The study approach also used an embedded unit of analysis: The three initiatives developed by and promoted to its partners by the BHI. Each project offered an opportunity to compare the translation process, within the context of a single organization. Temporally, the study was bounded by the BHI's inception and the adoption of the Land Management Framework by partner municipalities (about 2010 for the last adopters).

Data analysis included two case study analysis techniques (time series analysis / chronology and a logic model comparison; Yin, 2009) and a grounded theory approach (for analysis of interview and photo-elicitation data; Charmaz, 2006; Patton, 2002). Analysis explored the approach used in each of the three projects by the BHI members, first through the grounded theory approach, moving from open coding, to category development, memo creation and theoretical sampling (Charmaz, 2006). Theoretical sampling involved further review of the data or additional data collection to describe more fully the properties of each category that seemed to contribute to a robust theoretical explanation of the collaborative process investigated in this case. Two time series were developed from this analysis: (1) a descriptive timeline of the BHI's development and (2) analysis of the contributions of social capital and place to each phase of development of the three projects. Next, the case study findings were compared to the *a priori* theory developed from the literature, and potential rival explanations, in a logic model comparison (Yin, 2009). The *a priori* theory proposed that social capital and place attachment facilitate the Problemitization and Interessement steps of translation proposed by ANT, and then are applied by participants to organize and implement the agreed upon solution during Enrollment and Mobilization (Callon, 1986). Rival explanations for the emergence of effective collaboration in this case included the following:

- Contextual elements of timing provided an opening for change, such that less trust or motivation was required to form the collaborative group (e.g., Political Opportunity Structure (Eisinger, 1973, Tarrow 1994) or other available capital (Flora & Flora 2013).

- An ‘Ecological Opportunity Structure’ comprising an obvious, shared environmental concern with sufficient popular and political support motivated cooperation.
- Past working relationships or experience with collaboration facilitated the current effort.
- Partners had other, hidden motivations for participation (e.g., selfish interest regarding their organization) or they perceived a threat to existing power relations (e.g., concern for uncontrolled outcome dictates participation).
- Representatives had personal motivations for participation unrelated to their organizational affiliation (e.g., desire to make change, career ambitions, desire to belong).

As a final check, Yin (2009) suggests cross-referencing data requirements against proposed analyses and rival explanations to ensure that data collection addresses all alternative explanations (Table 1). In this case, the contextual field included natural setting and socio-political environment relative to the groups involved in these initiatives, which influenced the interests and relationships among potential partners. In this study, I have described this context in terms of both the Political Opportunity Structure and the multiple capitals model to allow comparison to their respective literatures regarding the collaboration process and its outcomes. Context also included the attitudes of participants. Shared attitudes toward the problem (e.g., regarding conservation of the moraine) or of the proposed solution (cooperation) could also facilitate collaboration (Sparkes, 2003). Data collection included methods to capture these factors, as well as social capital inputs, place attachment and meanings, the strategic application of social capital and place, and outcomes of their use on the collaboration. Lastly, Yin recommends a check against study quality criteria, which is summarized in Appendix B. Together, these checks confirmed that the methodology would provide the data required to explore the research question through the proposed analyses. They also provided a convenient outline for presentation of the case study results (contextual factors, social capital, place and their contributions to collaboration).

Table 1. Cross-Referenced Data Requirements for Case Study Analysis to Data Collection Methodology

Analysis type	Data Requirements	Proposed Methodology
Time series analysis / chronology	• Events in the adoption process for each of the three initiatives, including crux moments and context	Policy review, review of context and document analysis regarding development of each initiative
Grounded theory	• Social capital and place factors, relative to initiative outcomes / timeline	Interviews, photo-elicitation and other context data developed from policy overview and document analysis
Logic model (using translation process in ANT for comparison)	• Factors influencing consensus process (e.g., trust, key individuals, political timing, sense of place)	Interviews, photo-elicitation data, policy overview
	• Policy context	Policy overview
	• Evidence, if any, of a change in motivation / attitude during consensus process	Interviews, photo-elicitation data
Analysis of rival explanations	• Role of key factors involved in achieving consensus/adoption of each proposal within BHI and at municipalities • Motivations for participating in the group, personally and organizationally • Attitudes of participants toward place and environment/sustainable management • Evidence of change in motivations/attitude toward sustainable management or moraine during consensus process • Affiliations of individual representatives (resident & organizational representative, vs. organizational representative only) • Policy context at time • Environmental context of the Beaver Hills • Ecological context of each proposal (main issue) and certainty of the science	Interviews, policy overview Interviews, policy overview Interviews, photo-elicitation Interviews, photo-elicitation Interviews Policy overview, socio-economic & ecological description (report review) Review of initiative proposals

Case Study Timeframe

The Beaver Hills Initiative (BHI) was established as a voluntary collaboration with a mission of sustainable land management through cooperative action within a regionally significant landscape, the Beaver Hills-Cooking Lake moraine. The moraine lies within five municipalities, who are responsible for land management and development. One federal and several provincial parks protect about 28% of the landscape. The rest of the moraine is privately-held and regulated by the municipalities - sustainable land management in this context depends highly on municipal cooperation. After formation (the first sustainability project), the group next established a common definition of sustainable land management within the moraine (the second project, the Land Management Principles). This step led to development and adoption of more practical land use guidelines by the municipalities, created by the group (the third project, the Land Management Framework), and subsequent, increasingly difficult, cooperative projects. As an organization, it has been resilient, surviving the usual threats facing a new organization, plus the unique challenge of the three year municipal election cycle (as of 2013, a four year cycle) and the associated risk of change in political direction and support of municipal partners.

This study focused on three projects for sustainable land management promoted by the BHI to its partners in the early stages of its formation. Using a collaborative approach to promote science-based sustainable management strategies, the group established a common vision for sustainable land management among all partner organizations. Top-down legislative drivers were absent, meaning the initiatives had to stand alone as beneficial innovations. The projects hinged on support of the partnered municipal governments and required successively higher levels of commitment and trust (particularly from the municipal partners):

1. **Formation of the BHI (2002-2004):** Cooperative regional land management was first proposed by Elk Island National Park and Strathcona County to other land managers in the BH moraine (Beaver, Camrose, Lamont, and Leduc Counties, Alberta Parks, Ducks Unlimited, Nature Conservancy of Canada). *Outcome*: Formation of the BHI, creation of vision and mission statements and a Terms of Reference accepted by all charter members.
2. **Adoption of the Land Management Principles (2004-2005):** The BHI Board (with consultant assistance) developed a set of principles for regional sustainable management of

the moraine, which were taken to the partners (including each municipal council) for adoption. *Outcome:* Adoption of Principles by all partners, except one municipality.

3. **Adoption of the Land Management Framework (2005-2010):** The BHI operationalized the Principles, by mapping the key ecological resources of the moraine and developing a set of Best Management Practices (BMPs) for land use planning to manage those resources sustainably. The goal was incorporation of the information and BMPs within each municipal land use department, in part or whole, at the discretion of the municipality. *Outcome:* Adoption of the mapped information and relevant BMPs in land use departments of all municipalities (in some cases this did not occur until 2010).

Participants

The BHI has grown considerably since its initial meeting in 2002 with representatives from the five municipalities, federal and provincial parks, a federal agriculture agency, two non-governmental organizations (NGOs) and a researcher from the University of Alberta. The initial group of about 25 participants has grown considerably. Today, the BHI has representatives from about 30 different organizations, including departments and agencies representing federal, provincial and municipal government interests in the area, two academic institutions (University of Alberta North and Augustana Campuses), and various environmental non-governmental organizations (ENGOs). An industrial organization responsible for management of air quality issues in the industrial lands northwest of the moraine remains an informed but not active participant. Membership in the BHI is fluid: individuals from the various organizations have been added to the BHI Board and its operational committees (Working Groups) as relevant projects or concerns arose and new organizations have been invited to join when similar interests become apparent. Not all of these individuals hold voting privileges or are active in the organization on a full-time basis, but all can contribute to the discussions on directions and priorities of the organization at the Board and Working Group levels. As a result, the membership is dynamic: active and inactive members comprise the group and an open door policy toward new members encourages a diverse future membership.

Sampling attempted to solicit participants representing a range of experiences within the BHI during the study period. Many of the original members of the BHI remain with the organization and could be considered ‘charter members’. Fortunately, many were also involved in the governance of the group and had insight on the strategic directions taken over time. This

group of individuals held a historical context of the organization relevant to the research question on social capital, particularly regarding key actors and the emergence or departure of key individuals. They also provided insight on changes in the tactics and strategic approaches used over the course of the BHI's development. The charter members represented a range of opinions on the BHI's effectiveness over time. While some were fully supportive, some were less certain of the BHI's approach, but were still active members. The latter often provided a more critical perspective of the BHI's effectiveness as a group and its tactics and approaches. Some charter members had left the group (e.g., for new jobs, retirement, or in the case of politicians, loss of elections), but were still willing to participate in the study. These individuals offered a unique perspective, since their direct experience with the BHI had a distinct end and their recollections were limited to the period of their involvement. The potential for blurring of memories beyond the period of interest in this study was lower and their interviews provided a useful check of timelines and actions.

Participants were selected from the past and current BHI membership based on several criteria. First was involvement in at least one of the three projects addressed in this study (i.e., from 2002 –2010). Ideally, participants would have been involved throughout this time, but turnover in representatives would have prevented a broad sample of all participating agencies. Most participants did meet this condition; only a few had been involved in only one initiative. The second criterion was a stratified representation of the organizations involved in the BHI during the period of study. An initial list of potential participants representing all members that had been involved during the three initiatives was developed in consultation with the Executive Director of the BHI, a charter member. Suggestions provided by participants during the interviews added other founding members, since departed from the organization, to this list.

After an introductory presentation to the current BHI Board to inform them of the project objectives, each candidate participant was approached by phone or email and asked to participate in an hour-long, open-ended interview and a photo-elicitation exercise. A second structured interview was originally planned, but was later dropped because the initial interview provided sufficient information. Ethics requirements (consent form, information letter on study) were discussed with each participant, as described in the ethics section below. Three of the BHI's founding members had left the group to pursue new opportunities or retirement in Jasper, AB; Red Deer, AB; and Victoria, BC. These individuals were contacted by email, and participated in

the study through a combination of telephone, email and in-person interviews, according to their preference. All other participants were interviewed in person, with follow-up contact by email or telephone.

A total of 17 BHI members participated in the study. This total included up to two representatives of all of the organizational sectors involved in the BHI over the study period (Table 2). One participant had represented municipal and industry concerns while on the BHI board (as a board member of an industry association and an elected official), and could speak to both sectors. Government participants came from all three levels of jurisdiction, but were dominated by municipal government representatives, reflecting the composition of the Board. Each county has up to three representatives participating in the BHI: an elected councilor, a member of its planning staff and environmental staff (one county only). All five counties were represented in the sample, and most occupational positions within them. Turnover in some positions since the inception of the BHI left gaps that could not be addressed by the replacement staff (e.g., turnover in municipal councilors). Three politicians, including one who had left the BHI after leaving politics, did participate, but others did not respond to calls soliciting their participation. Only one representative of an environmental non-government organization (ENGO) participated, however, for most of the study period, only two ENGOs were active members. Similarly, only one university representative participated in the study. Both of these participants were charter members, with a long history of involvement in the BHI. Other potential representatives of these sectors had joined the BHI much later and were not very familiar with the early stages of the BHI's development.

Participants included 12 males and 5 females, which is consistent with the demographics of the BHI Board. Seven participants were residents in the moraine and the rest were non-residents. On average, members had been involved in the BHI for 7.3 years (the group had been operating for 10 years at the time of the study). Ten remain members today, five have left the organization (through retirement, change in job), and one member was currently only peripherally involved because another representative of the organization now sits on the board. Most participants were active throughout the time period of interest. Only five participants had joined the BHI after it had been established and had participated only in the Land Management Principles or Framework projects.

Table 2. Organizational Affiliation of Participants

Position	Municipality [1]	Federal / Provincial Parks	Agricultural support agency	ENGO	University	Total
Academic					1	1
ENGO biologist				1		1
Environmental planner	2					2
Government scientist		1	2			3
Park manager		3				3
Politician	3					3
Land use planner	4					4
Total	**9**	**4**	**2**	**1**	**1**	**17**

[1] Includes one participant who had represented municipal and industry association concerns.

Data Collection

Data collection included an initial set of open-ended (intensive) interviews to explore contextual factors, social capital held by the BHI, sense of place and the actions by members of the BHI that contributed to the development and adoption of the three initiatives. Participants also completed a photo-elicitation exercise that assessed the role of place attachment and meaning in motivating their participation in the BHI. A follow-up set of semi-structured interviews was originally proposed to expand on themes emerging from the first interviews and photo-elicitation exercise, if necessary. Participants were very generous with their time and provided rich description in the first interview, so the second interview proved unnecessary.

Analysis of place and its role in motivating participants to contribute to the BHI required several measures. The BHI promoted a particular version of place, attempting to construct new shared place meanings through place-making. The key messages used to rally support to the BHI were analyzed using content analysis of BHI presentations given over the course of the study period to provide insight on the motivational aspects of the shared understanding of place. Interview data confirmed that the shared place identity had been created. Finally, interview and photo-elicitation data were used to examine how the shared identity had merged with the place

attachments and place meanings previously held by participants, and how those meanings may have motivated collaboration.

Describing the construction and adoption of new place meanings required careful operationalization of appropriate variables. Sense of place is as a dynamic bond that can be expressed as place attachment and place identity (perception of self in a given place) (Clayton & Myers, 2009; Lewicka, 2011; Scannell & Gifford, 2010a), but it can also include place awareness, belonging, satisfaction and commitment to place (Shamai, 1991). Various combinations of these constructs have been used to link dimensions of sense of place held by individuals to pro-environmental behavior and civic action, but place attachment and place identity (Brehm et al., 2006; Halpenny, 2010; Lewicka, 2005; Payton et al., 2005; Trentelman, 2011) and place meanings (Devine-Wright, 2009; Stedman, 2002; Williams, 2002; Trentelman, 2011) have been used most often. In this study, I used these three aspects to describe how the sense of place held by participants and promoted by the BHI helped to motivate collaboration.

Finally, I developed a policy overview to describe the socio-political context during the study period and develop a timeline of key events relative to each of the three BHI projects. The review focused on materials published by the BHI over the study time frame (e.g., meeting minutes, newsletters, power point presentations). Published reports provided additional context regarding two key areas emphasized in participant interviews: (1) socio-economic context of region, and (2) environmental context and conservation history of the Beaver Hills Moraine region. The rationale for use, methods, analytical approach and ethics considerations for each data collection methodology are outlined in the sections below.

Interviews.

Rationale for approach.

Interviews allow insight into another's perspective on an event, an issue, or in this case, a collaborative initiative. I used open-ended interviews (1) to establish key points in the development of each BHI project, (2) to explore the contribution of socio-political context, social capital, place attachment and personal attitudes to the development of each project and (3) to identify specific tactics and strategies used to advance each project. Although aspects of social capital (particularly trust and reciprocity; Gilmour et al., 2011) and place attachment have been measured using quantitative methods (e.g., Williams, Patterson, Roggenbuck & Watson, 1992), a qualitative approach was more appropriate for this study for three reasons: (1) I wished to track

development of trust and reciprocity over a long time frame (ten years), (2) I wished to understand the underlying relationships among partners and to place during those same timelines, and (3) I wished to understand the reasons for selection of particular strategies, given the previous two points. A qualitative approach provided the thick, contextual description necessary to understand choices made by the BHI and key actors within the group, within the contextual conditions during each project in the study period. It also allowed each participant's recollection of the events to be cross-referenced to each other and to relevant published resources, to build a more comprehensive description of the case.

Every form of data collection has limitations. Interviews reflect the point of view of the participant, which is of interest, but also personal biases, emotional connections to the issue, and a lack of awareness (Patton, 2002). Failed recall or distortion of memories, reactivity to the interviewer and self-serving responses are other possible issues that may limit data collection (Patton, 2002). The skill of the interviewer too could affect the quality of data. In the short time available, the interviewer must establish contact that goes beyond a polite conversation into a meaningful exchange of ideas (Kvale, 1996). Questions must be asked skillfully, to draw out relevant detail and facilitate recall. Each of these factors may skew the participant's interpretation of events and affect the ability of the researcher to develop a comprehensive view. Despite these issues, interviewing is one of few means to gain deeper insight on meanings and lived experience of another (Kvale, 1996), including its inconsistencies, contradictions and paradoxes (Amis, 2005). Tone, gestures, expressions as well as actual narrative can convey emotional as well as literal interpretations that may also be important to the researcher (Kvale, 1996). These benefits were particularly relevant when describing the contributions of trust and trust development to the collaboration, since the level of trust can be better demonstrated through examples that, in turn, can be drawn out during the interview.

Interview questions were open-ended. In part this choice was intended to compensate for my past relationship with most of the participants. Open phrasing of the questions allowed the participants to provide their interpretations of the events involved in developing and implementing projects within the BHI, rather than reacting to my perceptions of those same events. Familiarity did, however, allow a deeper and meaningful discussion to develop relatively quickly. As a consultant working with the BHI on periodic projects, I had an arms-length relationship with the organization and no formal position within it. Generally, this minimized

potential power relations that might have prevented full engagement, except for those with whom I had not often worked. For these participants, uncertainty about the nature of my relationship and feelings about the organization introduced some initial concern. In these situations, it was critical to maintain a neutral position in order to assuage doubt and encourage open sharing.

Over the course of the interviews, the version of the events contributing to each project became clearer, substantiated and detailed. Contextual elements were flagged in interview notes for later follow-up in the contextual review (see below). In some cases, personal biases of participants were known (e.g., emotional connections to particular issues affecting the development of the projects), allowing detection of self-serving answers. Cross-checking against other interviews and the contextual review helped confirm shared understandings in these cases.

As suggested above, my past relationship and understandings of the BHI from past experiences introduced a concern regarding my own potential biases. Reflexivity and techniques used to minimize influence of my own experience on data collection and analysis are discussed in the Reflexive Statement below. With those controls and the measures described above, the interviews did provide rich description of the BHI's development and the roles of social capital and place in that process.

Methods.

The interview guide and introductory email to participants are provided in Appendix C. Questions for the interview were developed using a framework that related questions to a particular stage of translation, to examine specifically the events, decisions and strategies used to move through the four stages of the ANT translation process during each project (Table B1, Appendix C). Interview questions addressed key turning points, and the selection of tactics, use of resources and networks, and the influence of key actors that facilitated advancement of the group's initiatives. Questions about the participants' feelings about the moraine, their attitudes toward sustainable development and their motivations for participating in the BHI helped to demonstrate the role of place and their personal motivation for working with the BHI. Lastly, participants were asked to identify three words to describe 'how the BHI works as a collaboration' to assess, in a quantified manner, the perceived outcomes of collaboration. This systematic approach to developing the interview questions (Amis, 2005; Kvale, 1996) ensured not only comprehensive data collection, but also aided in identifying themes and subsequent analysis of the data.

Kvale and Brinkman (2009) provide two metaphors to describe idealized epistemological extremes of interviewing, the miner and the traveler. The miner assumes that the participant possesses truths that can be exposed through careful and objective probing of their experiences. The researcher is separate from the participant, recording their words and subjective meanings, but not fully immersed in their world. In contrast, the traveler approaches the search for knowledge as a journey through a foreign landscape, discovering its character through conversations and perhaps shared experiences with its residents. The traveler takes a more postmodern constructivist approach to social science; the miner is closer to a positivist perspective. For the purpose of this study, the approach of the traveler was more appropriate. Because both the participants and I shared knowledge of the events of the BHI's development, exploring ideas and concepts about what made the BHI collaboration successful was an enlightening and reciprocal process for us. The interview guides in Appendix C were designed for such an approach, outlining open-ended questions that allowed topics to be explored in more depth, when the opportunity arose (Amis, 2005; Patton, 2002).

Interviews were conducted between September 2011 and April 2012, in a location convenient for the participants (e.g., office, coffee shop). Most participants were in the greater Edmonton area (e.g., Sherwood Park, Edmonton, Camrose, Leduc, Lamont, and Ryley) and were readily accessible for in-person interviews. A few participants, past members of the BHI, were located Jasper, AB, Red Deer, AB and Victoria, BC. These interviews were also conducted in person with all but one participant, who was available only by telephone. Amis (2005) recommends interviews allow sufficient time for a quality, in-depth discussion, but not exceed two hours. The average interview was 1.6 hours long, and ranged from 1.2 to 2.5 hours, with length dictated by flow of conversation and interest of the participant. The interviews produced a total of 26.9 hours of material from the 17 participants. Interviews were recorded, with permission from the participants, and other observations were written in field notes during the interview (e.g., verbal and non-verbal cues, facts and comparative observations). Interviews were transcribed through a contracted, external service and field notes were incorporated later, as appropriate.

In their interviews, participants identified specific contextual and organization-specific barriers and opportunities that enabled each of the BHI's initiatives to begin, develop and proceed to implementation. They also identified resources (e.g. funding) and important contacts

from their personal networks that had facilitated development and implementation of particular projects or project phases. The level of trust and reciprocity norms among the BHI partner organizations was determined from several aspects of the interview. Discussion about the nature of pre-existing relationships and working arrangements during the three BHI projects allowed exploration of the perceptions of the level of cooperation that participants felt had developed within the group. During that discussion, participants described the trusting relationships and reciprocation norms that had contributed (or detracted from) to a spirit of cooperation. Most participants were quite open about the level of trust in the relationships between the BHI, their home and other organizations, and in some cases, among individual representatives (including incidence of trust and distrust). With probing questions, they could provide specific illustrative examples of how they felt that trusting and distrusting relationships had facilitated the BHI projects, often supported with explanations for the development of trust and reciprocity (e.g., previous work history). Lastly, participants shared their own attitudes about collaboration, sustainable development and the moraine, and their reasons for participating in the BHI. These data described the range of attitudes and motivations and types of place attachment represented among the group members, as well as participants' perceptions of how cooperative relationships 'should' look. Particular themes in these topical areas were identified in subsequent coding, as described below.

Data analysis.

Analysis of the interview data used a grounded theory approach (Charmaz, 2006). Grounded theory coding offers the opportunity to ask analytic questions during data collection and analysis that can help refine data collection and explore unforeseen aspects of the studied phenomenon (Charmaz, 2006). The objectivity implicit in the method was an added benefit in my case, given my relationship with the BHI. Such an approach is useful in an exploratory study, in which critical elements of the phenomenon may not be well-understood and theory building (as opposed to testing) is an objective (Patton, 2002). Coding and analysis followed the deductive-inductive sequence (Amis, 2005) and the inductive processes recommended by Patton (2002) and Marshall and Rossman (2010). Both approaches are recommended for case studies (Amis, 2005; Marshall & Rossman, 2010; Patton, 2002). Coding was entered into and managed by a software program (NVivo 10). Use of software created an 'audit trail' (Marshall & Rossman, 2010) that provided transparency for later checks on the analysis process.

Coding began after the first few interviews, which allowed identification of key themes and adjustment to the interview guide and approach (Amis, 2005; Charmaz, 2006). In the deductive stage of this approach, initial codes (or 'sensitizing concepts', Patton, 2002) were developed from the concepts identified from the literature review and the research questions (e.g., trust-building, place-making) (Amis, 2005). After initial coding, additional codes were developed to capture newly emerging themes, the inductive aspect of analysis (Charmaz, 2006). I used a line-by-line coding approach for this initial stage, recommended for empirical investigations of processes and in-depth data such as interviews (Charmaz, 2006). Line-by-line coding requires a close review of the data and can reveal nuances and subtle relationships within the data. Synthesis of the main themes emerging from the data came from a subsequent phase of focused coding, a review of significant or frequent codes to determine which best categorized the data (Charmaz, 2006).

As data analysis progressed, coding became more interpretive and broad categories were created to capture subcategory codes representing conceptual linkages that identified themes, patterns and linkages (Amis, 2005). This phase of axial coding helped to specify the properties and relationships among categories and subcategories and synthesize the data (Charmaz, 2006). Supporting observations were captured in coding definitions and memos that documented thematic or theoretical insights and observations on patterns in the data (Marshall & Rossman, 2010). Such memos supplemented observations and insights recorded in field notes, thus capitalizing on the "emergent nature of qualitative designs" and opportunities to identify alternative explanations (Patton, 2002, p. 436). This process of open and axial coding, organized digitally within the software program, helped to describe the theoretical properties of the conceptual categories suggested by the literature review and those emerging from the data (Charmaz, 2006; Marshall & Rossman, 2010). Theoretical sampling, additional sampling done to address gaps or follow leads in the definition of the categories, helped to develop robust, full descriptions that supported the theoretical explanations emerging from the data (Charmaz, 2006). Additional sampling included review of literature describing the socio-economic and land management approach context, and opportunistic 'quality checks' of the categorized data during presentations and discussions with BHI members. This process continued until no new themes or categories emerged and categories were saturated (Amis, 2005) or reached 'theoretical sufficiency' (Marshall & Rossman, 2010).

In the last phase of analysis, the patterns, linkages and categorical descriptions discovered within the data were interpreted and organized to answer the research question. This sorting process involved separate consideration of the role of social capital and place in the three projects, then integration of those factors in the context of the translation process proposed by ANT. Synthesis included description of the range of variability in the properties describing a particular category and development of relational statements that explain linkages between the conceptual relationships identified from the data (Patton, 2002).

Data supporting the emerging story were selected for use in 'telling the story' (Marshall & Rossman, 2010). Selection was based on data central to the story and clearly linked to the broader phenomenon of collaborative behavior (of 'substantive significance', Patton, 2002). Examples selected from the data also provided the thick description characteristic of qualitative research (Patton, 2002) and contributed to the story of the BHI's development as a specific instance of collaboration. Epiphanies, crises and other key points in the BHI's development, identified during the interview process, formed an important and compelling part of the storyline (Patton, 2002).

Constant comparative analysis throughout the data analysis process ensured that the emerging story included the different perspectives of the study participants (Patton, 2002). Grounded theory coding requires systematic comparison of the data to existing theory (constant comparison). By seeking the patterns of 'known' aspects, the new insights, including properties, relationships and processes that can add to the existing body of knowledge can emerge from the data (Patton, 2002). The systematic approach requires thorough examination of all of the data, effectively analyzing the experience of each participant by the same standardized steps to build a comprehensive interpretation of their collective experience. This approach also ensured that alternative understandings were explored and unintended biases from my experience with the BHI did not influence the conclusions drawn from the data, as suggested by Marshall and Rossman (2010). Logical analyses of the interactions between different factors using cross-classification matrices (Patton, 2002) provided additional insight into certain processes, for example in the exploration of the experience of land use planners, critical actors in the three initiatives. The linkages discovered through this analysis were in turn, tested against the data to ensure the typology was not forced (Patton, 2002).

Photo-elicitation exercise.

Rationale for approach.

To investigate the meanings and motivations derived from attachment to the moraine, I used member-employed photography, a type of photo-elicitation narrative inquiry (Harper, 2002). Place attachment and place meanings can be difficult to capture in interviews alone, because the participant must articulate abstract understandings of a particular place that they may not necessarily have already conceptualized (Beckley, Stedman, Wallace, & Ambard, 2007). The capacity of photo-elicitation to draw out the taken-for-granted understanding of place meaning helped develop a better understanding of the sense of place described by participants during interviews.

Harper (2002) identified three main purposes for photo-elicitation: to produce visual inventories of objects, people and artifacts important to the participant; to depict events that are part of collective or institutional paths; or to illustrate intimate aspects of the participant's social world. Photo-elicitation has been used in place research to investigate place attachment among permanent residents of high amenity locations (resident-employed photography) (Stedman, Beckley & Ambard, 2004). Beilin (2005) used resident-employed photography to explore the perceptions of Australian farmers of the benefits of the Landcare program, a sustainable management strategy for agriculture, in terms of its practice on their own farm landscapes. These studies have often found unanticipated explanations of individual attachment or action (sometimes unknown even to the participants), in terms of the underlying values and motivations. Such an approach offered means to explore the question of the motivating effects of the moraine on the often long-term involvement of BHI members in the initiative.

Photo-elicitation can provide a rich explanation of 'human beingness" that can help participants to explain abstract social concepts (Barry 1996, p 411). As Harper (2002) notes, photographs evoke information, feelings and memories linked to the specific representation within the photograph. While many select their words for unambiguous communication, with an implicit expectation of literal interpretation, images are far less clear. Images invite different interpretations and as a result, can stimulate open discussion, an advantage useful in qualitative inquiry (Barry, 1996). Use of photography as a focal point of discussion during the interview process can "catalyze alternative knowings of conscious, tacit, and non-conscious beliefs and feelings" in both the researcher and the participant (Barry, 1996, p. 411). The key point is to "invite representational crises" (Barry, 1996, p. 416), or to "break the frame" of normal view to

facilitate a reflective discussion (Harper, 2002, p. 20) that challenges the taken-for-granted societal definitions represented by objects, people and landscapes. In this sense, the method can be quite rewarding for the participant as well as the researcher, as it helps both become aware of feelings and perceptions about abstract concepts that might otherwise be difficult to describe or are rarely articulated, such as sense of place (Beckley et al., 2007).

This approach can also enhance rapport with participants, by providing common ground on which to focus discussion in an otherwise potentially awkward interview situation focused on abstract conceptual perspectives (Clark-Ibáñez, 2004; Harper, 2002). The objects and scenes within the photographs suggest to the researcher questions relevant to the research question and can help guide inquiry in a structured and grounded manner (Clark-Ibáñez, 2004). Further, because the researcher is interested in the subjective meaning illustrated by the photograph, the participant becomes the expert, reducing possible perceptions of power imbalance (Clark-Ibáñez, 2004). This rebalancing effect may have helped alleviate possible tensions with participants in my study, who included current clients in my consulting practice and former or current elected municipal councilors.

Methods.

Member-employed photography was used to identify motivations the moraine might create in people with respect to participation within the BHI. Motivations are understood to be guided by deep-seated, underlying values (Shaver, 1987). Motivations regarding a particular place may be related to values regarding human land use and the environment. How people view the potential use of such areas (e.g., utilitarian vs. conservationist) and their ethical responsibility toward environment (e.g., domination vs. nurturing) has significant influence on land management decisions (Bell, 2009). To explore these motivational linkages and their potential to facilitate cooperative action, participants were asked to take a series of photographs that illustrated features of the moraine that they felt were important to the quality of life in the moraine (i.e., features they felt deserved protection). The BHI continues to operate under its original vision of cooperative management to protect the quality of life the current environment provides from perceived development threats. Requesting participants to identify the aspects of the moraine they felt were important and deserving of protection was intended to determine some of reasons why they participate in the initiative.

The instructions provided to participants for the photo-elicitation component of the study are attached in Appendix C. Participants were asked to take at least 10 pictures that represented the aspects of the moraine important to them. Although they were offered a choice of using 24 exposure disposable cameras or their own digital camera, most chose to use their own equipment and email the photos once they had completed the exercise. Participants were allowed to use personal photographs already available to them if they wished, rather than taking new photographs, which allowed them to represent remote or seasonally available areas (Stedman et al., 2004). They were also asked to write a short paragraph that described the specific feature or concept they wanted to capture in the photograph, and why this was significant to them (e.g., it supports abundant wildlife, it is good farmland, my family was raised here). This part of the assignment had open structure. Suggestions were provided to guide the participants, but did not direct them to specific landscape features (Beilin, 2005; Stedman et al., 2004).

The response rate on the photo-elicitation exercise was relatively low (10 of 17 respondents, or 58%), despite several follow-up telephone calls and emails to encourage participation. Three simply did not respond to the follow-up contact. In another three cases, the participants could not participate in the exercise because they had moved away from the area. They no longer had access to the moraine to take photographs and did not have any personal photographs available. One of those participants, a former BHI member and moraine resident, initially accepted the offer to prepare the short paragraphs instead, but interestingly, found he could not complete that exercise. In his case, he found that moving away from the moraine to a new location had changed his view; the 'old place' had been overshadowed by the 'new place'. Another current resident of the moraine also attempted to complete the exercise, but found it difficult to capture his feelings for the moraine on paper after gathering the selection of photographs. Those participants that did respond did so quickly and in some cases with more photographs than originally requested (received an average of 12.8 photographs).

Data analysis.

Place meanings describe a setting as seen by the people who hold those meanings (Stedman, 2008) and can represent positive, neutral or negative aspects (Trentelman, 2011). Although the moraine is considered a regionally significant natural area, it is a lived-in landscape and not a high-amenity, pristine wilderness. Place meanings were derived through a deductive-

inductive coding analysis of the photographs and narratives similar to that used for interview data. Coding for the narratives was entered into NVivo 10.

The participants themselves undertook the first steps in classification of their photography by preparing the short narrative explaining the important features portrayed. I conducted the final stage of analysis, combining the place meanings identified from the photographs and narratives from individual participants with the discussions about place arising from the interviews to develop a broad view of place, as defined by the participants. First, the narratives for each photograph were coded with a short phrase capturing the place meaning(s) in the description, using the participant's own words as codes where appropriate. Often the narratives included multiple meanings, such that a photograph might have codes representing several meanings. Next, categories and patterns that linked the meanings were identified, using the approach described above for the analysis of interviews. Reflexivity concerns were similar to those identified for the interviews and the concerns and relevant controls are summarized in the Reflexive Statement section.

Contextual review and content analysis.

Rationale for approach.

Content analysis and contextual review can capture timelines, participation and key messages related to events from a particular point in time, details of which may be forgotten or distorted in the memories of participants (Patton, 2002). Although limited by the possibility of incomplete or inaccurate records, the information gleaned from review of materials published by participants or third parties can inform later interviews and provide useful context and leads for questioning (Patton, 2002). A review of socio-political conditions or environmental management approaches within the study timeframe helps portray events in relevant context, resulting in a more accurate analysis of strategic options and choices. Lastly, such documentation can be reviewed in depth and revisited to clarify certain points, a luxury not possible in interviews and surveys.

Participant interviews suggested that past relationships between the various organizations had established some level of distrust amongst some of the BHI partners (e.g., among some municipalities and between some municipalities and NGOs). The Beaver Hills moraine has a long conservation history that may have helped the BHI organize and carry out its initiatives, or created perceptions of potentially conflicting interests. The relationship between federal,

provincial and municipal governments and past experience with attempts at regional government may have hindered those same activities. A review of the literature on the conservation and socio-political context in this region at the time of the three initiatives helped clarify external contextual factors that may have influenced development of the BHI and expand the definitions of some of the categories arising through analysis of the interview data.

The BHI has produced various documents over its 10-year history, including the Land Management Principles, meeting minutes, several business plans, periodic newsletters and a number of PowerPoint presentations given to municipal councils and external agencies. These documents captured the priorities and interests of the group at the time, as well as the means by which it hoped to further its objectives (e.g., through strategic partnerships with industry, government agencies and ENGOs). Two particular sets of documentation were particularly useful for this study: the minutes and documents describing initial formation of the group and presentations given by the BHI over time. The minutes of the first meetings and the original Terms of Reference developed by the Beaver Hills Committee (as the BHI was initially known) outlined the initial goals of the group, and the level of commitment expected of partner organizations and their representatives. The presentations documented the key messages promoted by the BHI regarding the moraine's role as a special place to residents, politicians and the region. Strategies and tactics to convince others to participate or support the BHI or its programs were also embedded in these presentations.

Contextual review of the original Beaver Hills Committee documentation and the Powerpoint presentations supplemented and corroborated the information collected through participant interviews. The timelines created from review of the original documentation provided confirmation of the recollections of key events from the interviews with participants. The presentations also confirmed timing of policy changes relevant to each initiative and provided insight into perceptions about the science underlying each project (i.e., level of innovation involved in each project).

Content analysis of a selection of presentations over the course of the BHI's existence also explained the means by which the BHI used place-making to redefine the moraine using shared place identity (Cheng et al., 2003). The way that the moraine was described in these presentations (e.g., as a special place, with certain characteristics) helped to confirm if place-making had occurred and what the constructed identity of the moraine promoted to others

comprised. This characterization was compared to the descriptions collected through participant interviews and the photo-elicitation exercise to identify differences in the place identity presented by the group and the personal place identity held by individuals. The particular messages also provided insight into potential psychological motivations that may have influenced the decision of participants to join the collaboration.

Methods.

The literature review for contextual information drew from a variety of sources. Political scientists and other researchers have assessed past experiments in regional government in Alberta, and the effect on municipal, provincial and federal government relationships. Masson (1992, 1994) provided a comprehensive historical review of federal, provincial and municipal relations that was invaluable. LeSage and McMillan's updates (2008, 2010) helped bridge the gap covering the BHI's early development. This published literature regarding the municipal policy context in the province and particularly, the past history of regionalism helped to describe the socio-political climate for conservation and regional governance of the moraine. Policy documents, including the Management Plans for Elk Island National Park and municipal planning documents helped to capture the management approach applied during the study period. Participants voluntarily provided news articles and publications from their own records that helped to document the context of land use and land management during the study period, including past conservation interest in the moraine.

A timeline of the development of the BHI was established in part from the literature review and from review of the BHI's archived materials. The BHI material provided means to confirm the timing of key events in the BHI's history and to corroborate interview data. Ms. Brenda Wispinski, the Executive Director of the BHI provided presentations, business plans and other materials produced over the BHI's existence. Other charter members of the BHI had retained minutes from initial meetings of the BHI and the original Terms of Reference prepared by the group during the formation of the BHI. These materials documented the timing and involvement of certain representatives and agencies, which contributed to the completed timeline.

Content analysis of BHI presentations was used to collect evidence of place-making and use of place to motivate cooperation, and where possible, to identify other tactics, strategies and aspects of social capital used by the BHI. This approach focused on key messages known to

motivate action in support of place, such as a threat to place (Williams, 2002; Devine-Wright, 2009) and a sense of community with responsibility to protect a special place (Wheaton, 2007). Analysis of strategic behavior from written and visual material is effectively the same process as that used for interview data. Messages are inferred by the presence, meanings and relationships of words and concepts depicted in documents and other similar material (Marshall & Rossman, 2010). Bryman, Teevan, and Bell (2009) note that value positions in the form of ideologies, beliefs and principles can also be revealed in content analysis. A quantitative aspect is also possible, by counting the occurrence of certain words related to the research questions.

In this case, I used both a qualitative analysis to identify values associated with place and a quantified (word count) approach (Bryman et al., 2009) to determine the aspects of place used in presentations to the BHI members and municipal councilors. Themes, categories and patterns among these messages were identified using the constant comparative approach for analysis of interview data (Patton, 2002). The Executive Director of the BHI provided 28 presentations (PowerPoint format) developed by members of the BHI for internal (Board) and external (municipalities and professional conferences) audiences. Presentations extended over a continuous period from 2004 to 2010, with one to 8 presentations for each year. All presentations from 2008-2010 were for external audiences. I selected two presentations for each year (when available), and analyzed the internal and external presentations separately to accommodate differences in messaging styles.

Using a total of 12 presentations (8 external and 4 internal), I identified words and phrases repeatedly used to describe the moraine and counted the number of presentations in which each word or phrase appeared (presence/absence approach). The terminology reflected certain themes that allowed grouping of the descriptive terms (e.g., ecology, threats to place), such that analysis of the frequency of use of certain terms within each theme was possible (see below).

Marshall and Rossman (2010) caution that the inference of meanings from content analysis of documents and other materials must be corroborated with other methods of data collection. Meanings are not necessarily transparent in such materials and inferences can insert too much of the researcher into the interpretation. Caution was potentially necessary in this case because I was involved in some of the presentations and prepared some material included in the Power Point presentations. Regardless, others contributed to the final presentations, and each

final product reflected the knowledge, strategy and people relevant at the time. Fortunately, the number of presentations available avoided need to draw on many of my own presentations. Only one presentation (the only one documenting the Land Management Framework project) was used in the analysis. The potential conflict of interest in reviewing my own work was minimized by low representation in the overall sample, and by cross-checking the conclusions drawn from content analysis of these materials to interviews with BHI members. Peer debriefing (see Reflexive Statement section below) with another consultant involved with the BHI provided additional protection from personal bias.

Data analysis.

Data collected from review of documents, literature and BHI material was compiled to outline the socio-political context of central Alberta, the ecological value and conservation history of the moraine and the philosophical approach to land use and land management at the time of the three projects. These data helped to establish the setting in which the three BHI initiatives developed and served as an external reference for influences mentioned by the participants in their interviews, including those captured within coding categories. The BHI material was also used to construct a timeline of key events in the group's development during the study period and in particular, the progress on the initiatives. The timeline provided a context in which to situate milestones identified by participants as turning points or moments of particular challenge.

The overall composition and tone of the presentations reflected a general strategic approach that could be analyzed for place-making. Some presentations had embedded tactics (e.g., a consistent description of the moraine indicated place-making). Qualitative analysis of presentation materials for evidence of use of place-making (and strategic use of social capital, where possible) followed the deductive-inductive sequence for case studies (Amis, 2005; Charmaz, 2006). In the deductive stage, key themes were identified in an initial coding review, based on a list of initial codes developed from the literature review and the research questions (e.g., key actors, use of place-making) (Amis, 2005). Additional codes were developed to capture any newly emerging themes (the inductive stage). Coding data was entered into and managed by a software program (NVivo 10).

The quantitative analysis of the terminology used to describe the moraine provided key descriptors used to identify it as a significant place, from the perspective of the BHI. Specific

aspects of the moraine consistently used to describe the landscape demonstrated place-making and were interpreted in terms of their potential to motivate cooperation and action. Specifically, this quantitative approach allowed me to identify common messages regarding each theme, the frequency of their use over time, and differences in structuring internal and external messaging. Discourse analysis has been similarly used to demonstrate place-making using "motivational place-frames" to mobilize neighborhood residents based on new understandings of a shared place, although this past approach was qualitative only (Martin, 2003). In the case of the BHI, I was able to assess the place-frame used over time, tracking quantitative and qualitative change and emphasis in the messaging. This approach allowed analysis of the motivational effect of specific elements emphasized by the BHI in the constructed place identity, based on comparison to the attachments and meanings that individual participants had developed about the moraine.

Ethics Considerations

Potential concerns.

As a consultant external to the BHI, rather than a member, I have a degree of independence from the organization that allows freedom to pursue my own research interests. The research questions and methodology proposed here represent an academic curiosity, not questions arising from the BHI itself. Regardless, research ethics and my existing relationship demanded sensitivity to the welfare and reputation of the BHI during the conduct of this study.

The BHI operates from a basis of trust, among its members, its member agencies and its external contacts. The member municipal councils are particularly sensitive to the possible misperception of sustainable management in the broader community and its impact on the diverse interests of their ratepayers. The BHI has consistently maintained a policy of open communication and informed consent with its member organizations, and sought support before undertaking any major initiative to avoid potential conflict. Similarly, the goodwill generated by the BHI's past work with other government and ENGO agencies in the region is a valuable asset that the group has an interest in protecting.

This study describes the means by which the BHI formed a functional, voluntary organization and facilitated adoption of a sustainable management approach at a regional level. As the sole focus of the study, the BHI will be linked unavoidably to the study's findings and conclusions. The study highlights the positive aspects of the group: how it developed respectful relationships among its partners and collaborated to promote adoption of sustainable policies.

However, more sensitive points are also discussed: The road has not always been smooth and negative aspects also emerged from the data. The way the BHI overcame challenges will be of most interest to other researchers and practitioners. But discussion of the strategies and tactical approaches used to develop the organization and further its interests could harm relationships within the BHI and its broader network of partners. All findings were supported by data so even negative aspects of collaboration could be outlined as challenges that confront collaborative initiatives. Where applicable, solutions used by the group were described to identify means to deal with such circumstances.

Protection of participants.

Before starting this study, clear disclosure of its purpose and confirmation of support from the BHI Board were critical, to maintain trusting relationships built among the Board, its member organizations, and also, with me, as a consultant hired by the BHI from time to time. An introductory presentation to the Board to clarify the motivations for the study, the proposed approach and the end use and distribution of its results helped assure the group and individual members that their interests would be protected. It also allowed the Board to inform and, if necessary, seek support from the member agencies (and particularly, the municipalities). Lastly, support provided access to potential participants through the executive director of the BHI, a consideration discussed in the preceding section regarding study participants.

The BHI has a strong tradition of communication with the broader research and professional community about the initiative and its approach to sustainable management. Representatives from the BHI have made presentations about the BHI at conferences across Canada. The group has co-hosted a conference and often offers guided bus tours of the moraine to those interested in its approach to sustainable management. One of the members has also published scientific articles featuring the BHI and its approach to land management. Although sensitive to potential misperceptions, the BHI and its member agencies are not adverse to external communications about the organization and its approach to sustainable management. I received full support from the board and enthusiastic cooperation of all participants, many of whom are proud of the accomplishments of the BHI and were eager to contribute to a broader understanding of the factors contributing to its success.

Reciprocity.

Ethically, qualitative researchers are reminded to provide participants with some benefit from the research in which they were involved (Marshall & Rossman, 2010). This study offers two potential benefits to the BHI and study participants. After an initial emphasis on research describing the natural resources of the moraine, the BHI is now encouraging social research within the moraine. This project is in keeping with that objective, and also complements the objectives of the UNESCO Biosphere Reserve program, a designation the BHI is currently pursuing. I have invited the BHI members to presentations about this research and have also presented it with the BHI in other venues, which allowed BHI members to follow developments as they have emerged. I will provide the BHI with a copy of my completed thesis and give the Board a short presentation summarizing its results and conclusions, which they can share with other similar organizations, should they chose. This information may be particularly valuable as the group continues its pursuit of Biosphere Reserve designation.

On a more personal note, the interview provided participants with an opportunity to explore their initial responses to the research questions and perhaps gain further insight regarding their 'sense of place', their definition of sustainable management, the influence of these worldviews on their individual contributions to the BHI and the outcomes they experienced through their involvement with the BHI. The photo-elicitation method offered a similar opportunity to examine personal attachments to the moraine (or natural environments more generally) as a special place. In this sense, each participant could receive some benefit through the experience of contributing to the study.

Ethical procedures.

As part of the participant recruitment process, an introductory letter describing the objectives and procedures of the study was provided to each potential participant (Appendix D). Ethics considerations were also outlined in this package and participants were asked to sign a form acknowledging informed consent for participation (Appendix D). Considerations outlined included assurance regarding confidentiality and a clear statement regarding the voluntary nature of participation, and the ability of participants to withdraw from the study. All information collected during interviews and by photo-elicitation was treated confidentially. Names and affiliations will not be included in any material quoted directly in the completed thesis or other

subsequent publications or presentations from this study, unless specifically requested by participants.

As a quality measure, participants were asked to review transcripts prepared from their interview, to confirm the accuracy of the transcription. It also provided an opportunity for participants to request that quotations be altered to correct misinterpretations or incorrect information, or removed, if they felt uncomfortable with its inclusion in the study. While some people did correct names or times in the transcriptions, no one requested withdrawal from the study.

Ethics considerations of specific methods.

Ethical issues related to content analysis depend mainly on whether the materials are publically available and whether interpretations drawn from them may somehow harm the organization or individuals associated with it (Marshall & Rossman, 2010). Brenda Wispinski, the Executive Director of the BHI, maintains the library of presentations made by the BHI members and provided unrestricted access to these materials, now considered public documents. Regardless, any direct quotes from the material were used only with permission from the BHI, through Ms. Wispinski.

Barry (1996) and others have outlined some practical and ethical considerations for photo-elicitation studies. The approach uses photos or other sensory imagery to challenge symbolic definitions of a concept (Barry, 1996). Discussion of the meanings of the symbols amongst individuals or a group can create a better understanding of what the symbol is thought to convey, and perhaps draw out meanings that the participants were unaware that they possessed (and so enrich participants and researchers). Such challenges to a general concept can sometimes be uncomfortable, since the process questions a 'known' and renders it unfamiliar in order to develop a new understanding. Participants must be forewarned of this reaction to manage possible discomfort (Barry, 1996). This potential reaction was mentioned when providing instructions for the exercise, but framed in the context of a challenging, but positive experience in which a landscape is viewed with a deliberate, documentary eye. Most researchers who have used this approach have noted a positive response by participants at its conclusion (Beckley et al., 2007; Beilin, 2005; Stedman et al., 2004). Most BHI participants also appeared to enjoy the process of describing 'their moraine' through pictures.

Reflexive Statement

Triangulation, through use of a variety of sources, is recommended by Patton (2002) to allow validation and cross-checking, and ensure that data collection can provide a comprehensive answer to the research question. Triangulation was particularly important in this study, because of my involvement and familiarity with the BHI. Steps to ensure collection of quality data and clear depiction of participants' experience are discussed below.

As an environmental consultant engaged by the BHI to assist in projects spanning practical purpose to the strategic, I have had the opportunity to work closely with members of the BHI during some critical stages of its development. I was first involved with the group in 2004, and then continued to work with them to develop the Land Management Principles, the Land Management Framework and the BHI's GIS (Geographic Information Systems) natural resource datasets and landscape models. Currently, I am assisting the BHI in the preparation of its application for Biosphere Reserve status through UNESCO's Man in the Biosphere Program. As a result, I have an understanding of the history of the growth and maturation of the BHI as an organization, plus the socio-political and environmental management context in which that development occurred. While this experience is an advantage for this study, it also introduces a potential bias in the description of events and outcomes.

To ensure meaningful and deep descriptions that accurately reflect the perceptions of the study participants, I used triangulation through multiple data sources, participant review and peer debriefing (Amis, 2005; Marshall & Rossman, 2010; Patton, 2002). Transparency in the data collection process (e.g., audit trails for coding and analysis of interviews, Marshall & Rossman, 2010) aided the validation process, particularly in cross-checking among different data sources.

Triangulation with other data sources must be incorporated into data collection to provide assurance of credible qualitative findings (Amis, 2005; Marshall & Rossman, 2010; Patton, 2002). Data from participant interviews, photo-elicitation, contextual review and content analysis were used to build a comprehensive interpretation of the role of place, selection of tactics and strategies and contributions of social capital to the development of the BHI. Specifically, the following data sources were used to cross check findings:

- *Timeline, socio-political context and key events of organizational development:* participant interviews, participant review, contextual review (including BHI documents, academic reviews, and media reports) and peer review.

- *Role of social capital in the BHI projects:* participant interviews, participant review, and peer-review.
- *Role of place in the BHI projects:* participant interviews, participant review and photo-elicitation.

Triangulation of social capital findings relied in part on the embedded design of the study. The experience of each participant (the unit of analysis) could be compared, during each project (the subunit of analysis) to validate findings about the broader unit under investigation (Yin, 2009). The social capital factors identified by each participant in their interviews were compared to determine (qualitatively) the level of trust and norms of reciprocation established within the group over the course of each project and the types of networks and resources the group was able to access during each project. Participant review and peer review allowed additional validation of findings.

Participant review included two forms: check of interview data and confirmation of analytical interpretations during presentations of study findings. Amis (2005) suggests that data interpretation begins in the field, as observations are selectively filtered and connections begin to appear between the theoretical concepts under study and the data. To ensure credibility and legitimacy of the interview process, each interview concluded with a few closing observations to the participant that summarized key points arising from the interview (Kvale, 1996). Clarifications were made within field notes, if required. Once completed, the interview transcript was returned to each participant to be checked for accuracy (Amis, 2005; Marshall & Rossman, 2010). Similarly, the participants reviewed the interpretations of their interviews in the draft presentations of study findings (Amis, 2005). Soon after analysis was completed, I was asked to present my initial findings to the BHI, which provided an opportunity to confirm the interpretation of the analysis with study participants during the presentation and in subsequent discussion. Presentations with members of the BHI to other external agencies allowed another, unplanned opportunity to confirm interpretations from the data. Such sessions were an unexpected, but important means of ensuring that my interpretations reflected their experience. Members of the BHI who have heard these presentations provided valuable feedback that confirmed the accuracy of interpretations, or noted gaps for additional analysis. Finally, a draft version of the timeline of the BHI's development was shared with the BHI's Executive Director, who was able to confirm various details.

Amis (2005) also notes that triangulation can also be accomplished through different researcher interpretations ('peer debriefing', Marshall & Rossman, 2010). Members of my thesis committee and my supervisor provided invaluable checks on my presentation of study findings and analysis. Dr. Ian Montgomerie, a public consultation and management colleague, also provided peer review. He witnessed the development of the BHI as an external advisor, and later, its interactions with external agencies such as the Land Use Framework Secretariat and Alberta Water Council, as a facilitator for the development of the Land Use Framework and Draft Wetland Policy respectively. Drawing from those experiences, he could comment on the role of social capital and the tactics and strategies used to further each of the three projects presented in this study.

Results – Macro and Meso-level Social Variables

The ANT process of translation includes an important role for context. The interactions within the social and natural environment and the social constructs that arise from interpretation of that context define the power structure confronting a new collaboration (Latour, 2005). The current socio-political conditions define the boundaries of possibilities available to a group (the community field, Flora & Flora 2013), whether framed as a Political Opportunity Structure (Eisenger, 1973; Tarrow, 1994) or in terms of the political, cultural or initial social capital (trust) held by the group (Flora & Flora 2013) (Figure 3). The natural character of a specific place (its natural capital, Flora & Flora 2013) and the meanings linked to that place by humans (Williams et al., 2013) can also define possibilities and motivate concern. This context effectively gives meaning to the barriers and opportunities conceptualized within the moment of agreement in the ANT translation process. Thus context could inform the "intentionality" (Lockie, 2004, p. 50) of the human and non-human actors within the actor network, or in terms of motivational psychology, allow the individual (or an organization) to assess a task in terms of its level of difficulty and their capacity to affect change (Thomas & Velthouse, 1990). Context would also influence the selection of tactics used to promote cooperation during translation.

As participants outlined the development of the BHI over the past decade, they described key points regarding its formation and initiation of the two Land Management projects. Their interviews suggested important aspects of the natural and socio-political context that participants had acknowledged as macro and meso-structural barriers or opportunities. To evaluate these contextual factors more fully, I compiled a policy overview based on the factors mentioned by participants (Appendix E). This chapter reviews the timeline of development of the BHI, and then summarizes these contextual barriers and opportunities. It closes by summarizing how the human, natural, cultural and social capital elements within that context contributed to a policy window favoring but not necessarily guaranteeing collaboration.

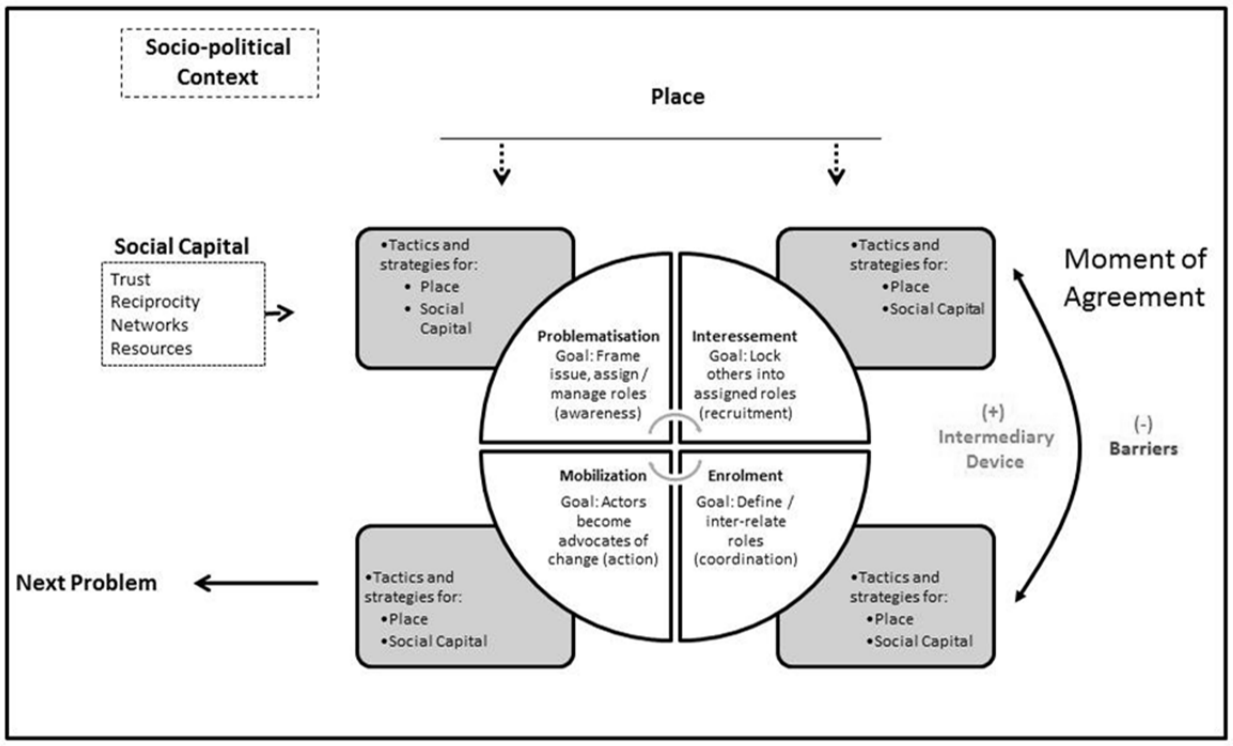

Figure 3. The translation process, situated within a context comprising socio-political aspects, social capital and understandings of place that could influence perception by potential partners of barriers and opportunities for collaboration.

Development of the Beaver Hills Initiative

The BHI established its current organizational structure, objectives and governance system (Appendix F) incrementally, developing a more formal management structure as it took on increasingly challenging projects. Participants identified key points in that timeline (Appendix G), which they felt had contributed to the establishment of the BHI and adoption of the Land Management Principles and Framework by partner municipalities. An overview of those key steps follows below.

The Beaver Hills Initiative (BHI) arose from discussions about regional, cooperative, sustainable management between Elk Island National Park (Parks Canada) and Strathcona County over 2000-2002 (Swinnerton & Otway, 2004). Most participants attributed the initial formation of the BHI to the efforts of key actors from those organizations to raise awareness of the risk to quality of life in the moraine from urban growth in Edmonton's Capital Region.

Those key actors credited the broader shift to landscape scale conservation based on ecological integrity for their own realization of the cumulative effect of increasing rural residential development and prior impacts of agricultural, rural residential and oil and gas activity on the moraine. Protected areas in the moraine were surrounded by private lands with various types and intensities of human use (Figure 4). Additional development would fragment remaining natural habitat in those adjacent lands, threatening ecological integrity of parks and the natural character of the moraine valued by area residents. Most of the affected municipalities had previously recognized the moraine landscape as a valued place in their development policies, following the new provincial interest in biodiversity conservation, but limits to development in those lands were missing or contradictory in land use policy among the five municipalities (Spencer Environmental Management Services Ltd., 2006). Degradation of the natural character of the moraine was fast becoming a regional management concern and for organizations closer to Edmonton, notably Strathcona County, a political issue.

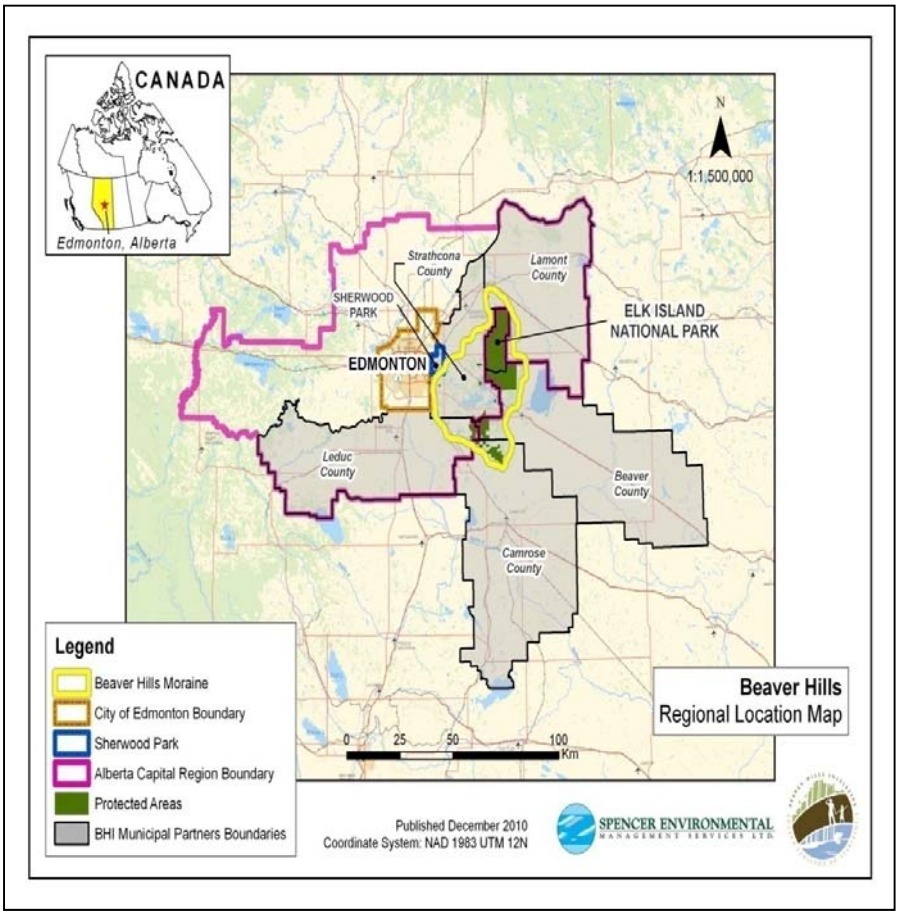

Figure 4. The Beaver Hills Moraine in East-central Alberta

The original Beaver Hills Committee formed in September 2002, during a meeting with parties representing all land management interests in the moraine. The minutes from this initial meeting list all land management agencies and institutions active in the moraine at the time: five municipalities, government agencies (e.g., EINP, Agriculture Canada, Alberta Agriculture and Rural Development, Alberta Parks), the University of Alberta and environmental non-government organizations (ENGOs, Ducks Unlimited Canada, Nature Conservancy of Canada, Sherwood Park Fish and Game Association) as partners. Industry representatives from the Industrial Heartland were later invited to join the group and did have a representative participating in the BHI through its early years. They have since become inactive participants. As of 2013, the group included 28 different organizations involved in conservation and land management within the moraine (Appendix F).

Over the course of its now ten year history, the BHI grew from a single Board comprising all members, to its current structure (Figure 5; Beaver Hills Initiative, 2010b, 2012). Members were diverse in background, but generally represented professionals involved in land management within the moraine: politicians, academics, and non-governmental organization and government staff and managers (e.g., land use planners, biologists, park managers). The original Board has been retained and key decisions are still made at this level. Projects are developed and implemented through various Working Groups that address functional management areas relevant to the partners (e.g., the Land Use Planners Working Group) and the political realities of municipal government (the Councilors Working Group). The Working Groups occasionally work together on various initiatives, but interact mainly at the Board level. The Board is supported in decision-making by an Executive Committee comprising the Chairs of each Working Group (Beaver Hills Initiative, 2010b, 2012). An Executive Director was added in 2005 to coordinate the activities of the Working Groups and manage internal and external communications. The BHI is not a legal entity and Strathcona County serves as the fiscal agent for the group, under a Memorandum of Understanding with the other municipalities.

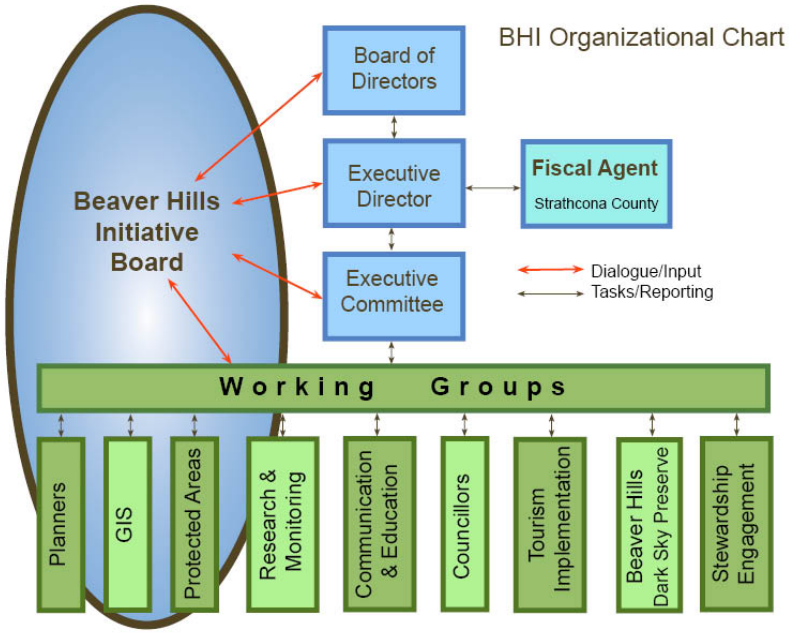

Figure 5. The organizational structure of the BHI

Funding now comes from a modest 'membership due' from each municipality based on the area of moraine under their jurisdiction (average $10,000), grants and significant in-kind support, including the time of the BHI representatives[3]. Through the early years the BHI survived mainly on in-kind support. Strathcona County has consistently provided a significant proportion of that support, including meeting facilities, support staff for communications and Geographic Information Systems (GIS) mapping and after 2005, a secondment to the Executive Director position (Beaver Hills Initiative, 2010b, 2012). Funding from Parks Canada's Ecological Integrity program and two provincial Municipal Affairs Grants in 2004 and 2006 provided critical start-up funds for larger projects including development of the Land Management Principles and Framework (Heap, Swinnerton, & Otway, 2005).

Despite occasional membership changes, including three municipal elections that replaced member councilors, the BHI has persisted as a cohesive group focused on its goal of coordinated management within the moraine, through science-based decision-making. The BHI's success in collaboration was recognized with a Partnership Award for Municipal Excellence from Alberta Municipal Affairs in 2005 (Beaver Hills Initiative, 2009b). The BHI's

[3] Between 2002 and 2010, the BHI had accrued more than $3 million in-kind support and $1.5 million from grants and support from all three governments (Beaver Hills Initiative, 2010b).

work to incorporate the Land Management Principles and Framework in municipal land use policy led to selection as a finalist in the Government Institutions category for the Alberta Emerald Awards in 2007 (Beaver Hills Initiative, 2010a). The nomination specifically recognized the adoption of the Land Management Framework into Strathcona's updated Municipal Development Plan (MDP, 2007) and Beaver County's Draft MDP (2007). The BHI is currently pursuing designation as a UNESCO Biosphere Reserve, based on its collaborative approach to sustainable land management at the landscape level (Beaver Hills Initiative, 2012).

The original group, with the assistance of a professional facilitator (Equus Consulting Ltd.), formed as the Beaver Hills Committee and developed a Terms of Reference in 2002 with a vision and mission that still guides the group today (Beaver Hills Initiative, 2009a; Appendix F). In 2006, the BHI realized that it required assistance to complete the Land Management Framework, the guidelines for coordinated regional management of the moraine. With consultants from IMI Strategics and Spencer Environmental Management Services Ltd, the BHI Board developed the Land Management Principles (Beaver Hills Initiative, 2009a), which were sanctioned by all member councils (except Camrose County) in early 2006. This step lent momentum to the group, and led to development of a comprehensive strategy to protect key resources in the moraine. The first phase of the Land Management Framework, completed in the summer of 2006 (Spencer Environmental Management Services Ltd., 2006), set out the changes required to create comparable municipal policies for sustainable land development and land management in the moraine. It provided an assessment of the land use planning tools, policies and principles missing from existing municipal policies, and areas in which policy could be made more consistent. It also outlined an implementation plan leading to adoption of a common statutory policy (e.g., an Inter-municipal Development Plan, IDP).

This first phase explicitly outlined the commitment required of the municipal partners to implement regional land management. The second phase of the Land Management Framework provided additional, specific guidance for sustainable land development and management, in the form of Best Management Practices (Spencer Environmental Management Services Ltd., 2007). By this point, all municipalities had the tools necessary to move toward sustainable land management, but with a particular focus on sustainable development.

As of 2012, most municipalities had incorporated applicable aspects of the Framework into policy (statutory and/or non-statutory[4]), each working within their own political and policy planning constraints. Strathcona County has led this effort. Its updated 2007 MDP expanded the previous moraine Policy Area to protect the 'spine of the moraine' in the western third of the county (Strathcona County, 2007). They also created various non-statutory guidance documents, including a Wetland Policy and policy for new development that requires an environmental assessment based on the Landscape Management Areas map (the 'Yellow and Blue map')[5] developed for Phase 1 of the BHI Land Management Framework (Strathcona County, 2013). Beaver and Lamont counties have incorporated protective guidelines for moraine development into various statutory documents (MDP and Land Use Bylaw, respectively; Lamont County, 2008; Beaver County, 2008). Camrose County, despite declining full partnership in the BHI, used the BHI information to create the Miquelon Growth Management Plan (Camrose County, 2011). Leduc updated its Land Use Bylaw in 2007 and although it used BHI environmental data in the review, it did not incorporate the Framework's policy recommendations. It has adopted the Land Management Planning Checklist, a non-statutory guideline for developers based on the Land Management Framework and developed by the Land Use Planners Working Group.

The slow adoption of the Framework into policy resulted from the BHI's governance, which also allowed informal data-sharing and staff participation by Camrose County. The BHI is a voluntary partnership; voluntary participation is a central principle (Beaver Hills Initiative 2010b, 2012). It has no power to direct or enforce action on any of its partners, a unique respect for local autonomy emphasized by almost all study participants. The BHI instead encouraged and supported municipal partners to modify their policies through social learning, by providing a forum for discussion and learning about new approaches to land management.

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[4] Statutory documents (MDP, Land Use Plan and Area Structure Plans) are planning tools (bylaws) provided by the *MGA*. Renewed at five year intervals, they guide all aspects of municipal management. Non-statutory documents may occasionally be created by municipal departments to guide land use planning, but do not carry any force of law.

[5] This 'Yellow and Blue' map was a planning tool requested by the BHI land use planners to highlight areas with moderate (yellow) and high (blue) abundance of valued natural resources.

Macro – level: Natural and Socio-political Setting

The BHI developed in a complex natural and socio-political context that presented both opportunities and challenges to the BHI's proponents (Appendix E). This context included the physical character of the moraine, which had fostered a strong tradition of conservation interest and due to increased development pressure, public perception of inadequate protection of the environment within and beyond the moraine. A societal shift to sustainable management at a landscape level and an era of government deficit reduction encouraged regional management and partnerships crossing traditional sectoral boundaries (e.g., among government, industry, ENGOs and universities). Yet engaging in such partnerships was constrained by the past relationships among federal, provincial and municipal governments in Alberta and in the moraine area. Those experiences had helped to create a conservative identity, an aversion to regionalism, and jurisdictional uncertainty regarding environmental management by municipalities. The sections below summarize that context in more detail.

Natural context.

The Beaver Hills – Cooking Lake Moraine is a distinct geomorphological feature immediately east of Edmonton (Figure 4). Formed after the last glaciation of the Alberta plains, it is a rugged 1,596 km^2 landscape comprising steep rolling hills, deep depressions, rocky soils and abundant water (Beaver Hills Initiative, 2012). The difficult terrain and an early interest in conserving forest resources limited early settlement, agricultural clearing and timber extraction, such that much of the landscape remains relatively undisturbed boreal forest (Beaver Hills Initiative, 2012).

Recognized provincially as a disjunct island of Dry Mixedwood Boreal Natural Subregion (Natural Regions Committee, 2006), it is surrounded by flat agricultural plains of the Aspen Parkland Natural Subregion. That edge effect contributes to high biodiversity with species from both subregions. Elk Island National Park (EINP) has played a key role in conserving species at risk within this landscape, including plains bison (*Bison bison bison*), wood bison (*Bos bison athabascae*) and trumpeter swan (*Cygnus buccinators*; EINP, 2011). [6]

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[6] Plains bison are listed provincially as Extirpated and federally as Threatened. Wood bison are At Risk/Endangered provincially and Threatened federally. Trumpeter swan were once near extinction and are currently Threatened provincially and Not At Risk federally.

The abundant natural resources have long attracted people to this landscape although it was not until European settlement that land use conflicts began to occur, stimulating early interest in conservation (MacDonald, 2009). The first drive for settlement in the 1870s brought many homesteaders to the Edmonton area (MacDonald, 2009) and created high demand for timber from the moraine's forests (Husby & Fast, 2004). Extensive forest fires around 1895 triggered establishment of the Cooking Lake Timber Reserve to protect timber resources (Husby & Fast, 2004). Over time, public attitudes shifted to value other resources and smaller federal and provincial parks were created from the original reserve. Today, about 28% of the moraine is protected from development (Figure 4, Beaver Hills Initiative, 2012).

Regional attitudes toward the moraine's resources again shifted in the 1980s, this time toward rural residential development. Located within one of Canada's fastest growing metropolitan areas (the Alberta Capital Region) and 10 km from the City of Edmonton (Figure 4; Statistics Canada, 2011), the moraine offers a refuge from urban life. Rural residential developments spread through Strathcona County in the late 1980s and 1990s, coinciding with emergence of sustainable development and new conservation efforts aimed at natural areas. The threat to the moraine's natural resources attracted attention of conservation NGOs. DUC, Nature Conservancy of Canada and Sherwood Park Fish and Game Association established land acquisition and conservation easements programs in the moraine through the late 1990s. Currently, seven NGOs own conservation lands or hold easements in the moraine, protecting about 1.8% (2,873 km^2) of the moraine (Beaver Hills Initiative, 2012). Many of these NGOs also promoted sustainable land management through voluntary stewardship programs, as did government agencies like Agriculture Canada and Alberta Agriculture (Beaver Hills Initiative, 2012). Most of these programs relied on voluntary participation, which limited the scale of the conservation effort and required significant resources to identify interested landowners.

Strathcona's rural residential residents were mainly educated professionals with strong interest in conservation (Graham & McFarland, 2001). By the late 1990s several local environmental organizations had formed to promote a comprehensive municipal approach to conserve the moraine. Canadian municipalities have often been hampered in developing sustainable development policy by jurisdictional confusion, emphasis on property rights and resource use, and limitations on public involvement (Atkins, 2009; Boyd, 2003). Alberta's *Municipal Government Act* (1996) delegates explicit land development responsibilities to

municipalities, but is vague on environmental issues, weakening municipal interest in sustainable development policies (Mallet, 2005). In municipalities like Strathcona County, sustainable development became a key political theme through the early 2000s, prompting development of innovative municipal land use policies (Strathcona County, 2009).

The federal and provincial shift to adopt sustainable development policies through the late 1980s provided municipalities with new management alternatives, if they were willing to pursue development of sustainable development policy (Appendix E). Provincially, the *Municipal Government Act* (1996) provided municipalities with conservation easements, legislative means to protect valued natural areas[7]. Strathcona County was an early adopter of such tools, setting a regional and provincial example. The County pioneered use of conservation easements in the land use planning process (Greenway, 2003) with its *Prioritized Landscape Ecology Assessment*, prepared in 1997 with Ducks Unlimited Canada (DUC) (Geowest Environmental Consultants, 1997). Its 1998 Municipal Development Plan (MDP) created a policy area to limit development in the least disturbed part of the moraine (Griffiths, 1992). Strathcona County remains strongly committed to sustainability and has added social, economic and environmental goals to its current MDP (Strathcona County, 2007) and its corporate Strategic Plan (Strathcona County, 2009). In contrast, other rural areas not yet exposed to urban growth pressures had added only generalized environmental protection policies by the mid-2000s (Spencer Environmental Management Ltd., 2006).

Municipal land development context.

Control over land development in Alberta is complex and nuanced with issues related to local autonomy, control over economic development, urbanization and a provincial political dynasty based on a strong conservative identity. The conflict over local autonomy and independence from government control began soon after the province was established in 1905 and has since dominated federal, provincial and municipal relations (Elton, 1979; LeSage and McMillan, 2008, 2010; Masson, 1994). It has also restricted debate on issues concerning the economic well-being of the province, including land and resource management concerns (Barrie, 2005). For a collaborative initiative promoting regional land management and sustainable

[7] The Alberta *Land Stewardship Act*, which introduced a new regional planning approach (the Land Use Framework) and additional conservation tools was not proclaimed until 2009, well after the BHI was established and near the end of the timeframe of this study.

development, largely through municipal leadership, intergovernmental relations and their effects on regional cooperation were critical contextual factors.

Originally a territory under the Canadian constitution (1867), Alberta became a province in 1905 (MacDonald, 2009). From 1867 through the early 1900s, federal policies encouraged rapid settlement in the West, and municipal government developed largely through persistent demands for local autonomy by growing communities (Elton, 1979). This conflict and historical marketing of the West as a land of freedom and opportunity (MacDonald, 2009) fostered strong local resentment of regulation by higher government (Barrie, 2006; Gibbins, 1992; von Heyking, 2006). Resentment shifted to a feeling of western alienation after conflict with the federal government over provincial control of natural resources through the 1970s and 1980s (Elton, 1979; Gibbins, 1992). Barrie (2006) suggests that this resentment of government control became a provincial 'conservative identity' through efforts of successive decades of Conservative governments to ensure political dominance. By painting the province as under siege from outside interests seeking economic gain from provincial resources and limiting dialogue to their defensive efforts to sustain the provincial economy, Conservative governments have maintained economic and thus, political control. This has also stifled significant debate about management of resource use within the province, particularly regarding energy resources (Barrie, 2006).

Rapid urbanization created other persistent conflicts regarding government relations and indirectly, land development, with lasting impact on perceptions of regional cooperation by municipal governments. Growing urban areas required significantly higher investment in infrastructure than land taxation could provide, triggering demands for additional provincial support. Rural areas began to suffer as the population (and their tax base) shifted to urban areas, a gap widened after the shift to a petroleum-based economy in the 1950s (Masson, 1994). The larger urban populations could assert more political influence than the dispersed, rural population, adding to rural-urban tensions (LeSage & McMillan, 2008, 2010; Masson, 1994). The province has typically tried to contain the conflict and urban political power using its legislative power to regulate urban growth and prioritize funding programs (Masson, 1994). Regional planning commissions, established by the province in the late 1970s and abolished in 1994, generated significant resentment among rural municipalities in particular. Both controls have only acerbated rural-urban tensions (particularly in the Edmonton Capital Region), creating

a deep-seated resentment of regional management, a fierce desire for local autonomy and a municipal dependence on land development for revenue (Appendix E).

After the province imposed its zero-deficit budget policy in the 1990s, with significant cuts to municipal funding, it began downloading provincial responsibility for health and social programs onto municipalities. Concern rose among all municipal governments about long- term sustainability of municipal governments (AUMA, 2007, 2009; LeSage & McMillan, 2008, 2010). The province began to encourage voluntary regional partnerships to use local resources more efficiently and address regional concerns, but the effort has been hampered by distrust of regional initiatives and unclear definition of qualifying initiatives (LeSage & McMillan, 2008, 2010). It has, however, provided funding to initiate municipal regional partnerships, including grants that funded the two Land Management projects.

Change in parks management.

Through the 1990s, the federal and provincial parks were facing their own issues regarding sustainability. Canada was among the first to sign the *Convention on Biological Diversity* (1992) and the *International Biodiversity Treaty* (1993), the international response to the Brundtland Commission's (1987) concerns about global biodiversity (Supply and Services Canada, 1995). These treaties shifted attention from species-specific management approaches to a broader ecosystem level to protect biodiversity and public access to its benefits, but with differential effect at the federal and provincial parks agency level, in terms of potential barriers and opportunities for collaborative, regional management.

New treaty requirements and subsequent changes to the federal *National Parks Act* (1992) added a new focus on ecological integrity to the federal park mandate. This shift in focus challenged federal parks to develop new skills and partnerships to manage at the landscape level, rather than focusing on 'parks as islands' (Dearden, 2010). Inter-disciplinarity and landscape ecology were still emerging approaches and few parks staff had experience with them (Appendix E). Concurrent federal deficit and debt reduction programs led to overall funding reductions and structural change to Parks Canada (Dearden, 2010; Wright & Rollins, 2009). Federal parks were to adopt their new mandate under tight fiscal constraints, but funding was available to help develop internal capacity (Wright & Rollins, 2009). Partnerships were encouraged and incented by Ecological Integrity funding for research and development of regional land management initiatives like the BHI (Appendix E).

International treaty requirements also stimulated a period of significant expansion of federal and provincial parks to meet international targets, which in Alberta brought the provincial protected areas program into direct conflict with the Alberta energy industry (Appendix E). The Special Areas 2000 program resulted in the targeted expansion, but at the expense of the provincial profile of the protected areas, its funding and the government's relationship with environmental NGOs (Appendix E).

In terms of context, federal park managers were faced with the challenge to innovate, with few models on which to base a regional land management partnership, a low profile of protected areas in the province and limited knowledge. They did have funding to attract partners, however, and departmental support for an initiative, conditions favoring collaboration.

Organizational (Meso-level) Barriers and Opportunities

Context can influence motivation of both individuals and organizations to cooperate, through two means: (1) awareness of a problem and its implications and (2) willingness to cooperate with specific partners on its solution (Ostrom, 1990, 1998). The preceding section identified aspects of the macro-structural context, which presented initial forms of natural, cultural, human and social capital that influenced the awareness of a problem and willingness of representatives to participate in the BHI. At the regional level, participants also recognized various meso-structural barriers and opportunities related to organizational relationships that had affected both the awareness and willingness of partner organizations to cooperate in the initiative. These factors comprise cultural capital that can influence perceptions of feasibility of proposed changes, and the willingness to participate (Flora & Flora 2013).

In the context of ANT translation, success at the moment of agreement depends on the framing of the problem and the solution in terms meaningful to potential partners (Callon, 1986). Although individual representatives might support the BHI, their home organizations ultimately decided whether to join the initiative. While many organizations were open to the BHI proposal, some were not. The recruitment of partner organizations thus depended on the ability of the BHI proponents to frame the initiative in a way that addressed contextual barriers and opportunities relevant to organizations.

Awareness of the level of trust and expectation of reciprocity (initial social capital) shared among potential collaborators can reduce the transactional costs of cooperation or inform strategies to build and mobilize of a collaborative group (Diani, 1997; Lambright et al., 2010;

Ostrom, 1990, 1998; Pretty & Smith, 2004). In cases where distrust or weak trust existed among partner organizations or their representatives, proponents would need to emphasize trustworthiness, as well as the benefits and feasibility of their proposal. Analysis of the strategic approaches used by BHI proponents to promote collaboration thus requires confirmation that the proponents understood perceptions of barriers and opportunities among partner organizations. Summarized below are the participants' understandings of the organizational barriers and opportunities confronting the BHI.

Organizational Level Opportunities

Cleavages among elites - shift to 'smart growth'.

As the previous sections explained, municipalities are highly focused on development as an economic opportunity and a property right of their residents, and for municipal revenue through taxation. Prior to the formation of the BHI, its proponents were becoming aware that the hidden costs of development, including loss of natural areas in the moraine, were exceeding economic benefits. This awareness, and local and societal demand for sustainable development, created a policy window for 'smart growth', sustainable land use planning.

The policy window first opened in Strathcona County, and the example they set demonstrated to others that sustainability was politically and economically feasible. The adoption of a sustainability agenda by Strathcona County, in response to public concern about the moraine's resources through the late 1990s, created the opening for change within the county. Experience with sustainable development over that time gave their staff and politicians credibility to promote regional sustainability. By the time that Strathcona County and EINP began to talk of regional cooperation in 2000, Strathcona County had experience and a network of knowledgeable professionals and partner agencies that could help 'sell' the benefits of smart growth to political leaders. Strathcona's environmental planners had discovered that tradeoffs on development could achieve environmental goals without direct conflict to economic interests and its politicians could speak to realistic costs and benefits of rural residential development.

However, the window was not without challenge from rural residential developers and landowners, who had an interest in retaining development options on these lands. This put considerable pressure on municipal politicians. A rural politician summarized the economic focus that competed with the BHI's long-term vision regarding the moraine's natural resources:

> when that [the BHI] gets in then they [rural councilors] say, well we have a hard time dealing with our people [residents], telling them well this is what you should do, when financially we're not getting a benefit out of that and they weren't the only ones. I had the same difficulty with the county that I represented for the simple reason that, if we don't see the dollar bills, forget it. [municipal politician]

Development as a property right became a related political issue and an important barrier for the BHI that threatened this policy window (discussed below). Regardless, Strathcona County's experience and EINP's new interest in regional management created a shift in municipal land management that challenged the status quo, and assumptions about the benefits of development.

Open policy window - shift to multidisciplinarity.

The shift to multi-disciplinary and landscape ecology approaches to environmental management through the 1990s opened another window for change in land management coincident with the formation of the BHI. The previous siloed approach to resource and land use management had a utilitarian focus that was increasingly recognized as inadequate for the new goals of sustainability and ecological integrity. The science-based land management approach proposed by EINP and Strathcona County required multidisciplinary problem-solving involving natural and social science disciplines. Although an approach unfamiliar to most of the municipal partners (and provincial parks to some degree), EINP and Strathcona County had both recently incorporated multidisciplinary approaches into their operations and could lead others through this change in approach.

A science-based land management differed in two ways from the status quo. First, it involved all relevant disciplines and land managers in the policy development process. Second it considered ecological function and human resource use as goals relevant in all landscapes. For most participants, the multidisciplinary approach presented the simultaneous challenges of learning about other disciplines, synthesizing that information and implementing it within their organizational context. EINP had experienced this paradigm shift prior to the formation of the BHI, when they added social scientists to their Scientific Advisory Committee (SAC). As the academic participant explained in his interview, the addition initially created some tension, as committee members learned to work with each other's knowledge and Parks Canada's new ecological integrity mandate. Reminders of the benefits of a broadened social, economic and environmental approach eventually helped the SAC members to adjust, a lesson he and EINP

later transferred to the BHI. He also noted the value of local examples of demonstrated benefits. Although relevant examples existed for locations beyond Alberta, those comparisons would generate resistance or distrust for those with a strong conservative identity.

Strathcona County's environmental planner had experienced similar difficulties in applying ecological restoration principles in land use planning projects. He described a project completed during the 1990s that had given him the confidence to support the multidisciplinary approach proposed by EINP. With an innovative land developer and a team of landscape architects, hydrologists and environmental consultants (and advice from former university instructors), he was able to add an innovative, constructed wetland to a planned subdivision in the urban fringe lands. The new wetland set a standard for land use planning in the county, but also demonstrated the potential in multi-disciplinary approach. When presented with questions related to the multidisciplinary process, EINP and Strathcona County could draw on past positive experience to demonstrate the potential in the proposed change.

Many partner municipalities lacked familiarity with the emerging environmental assessment process[8] , cumulative effects and the expertise already available to implement 'smart growth'. The first BHI presentation introduced municipal staff to these concepts, supported by the experience of EINP and Strathcona County, which inspired a new sense of the need for change, and its feasibility. Municipal staff and councilors suddenly became aware that "You, you may lose the very future that you are advertising [as a community asset]" [municipal environmental planner]. The early proponents of the BHI were sensitive to exceeding comfort levels with innovative solutions. Accordingly, they initially focused on benefits based on familiar environmental science (e.g., clean air, clean water) to maintain the open policy window they had created until they could build confidence in this new approach.

Positive past interactions.

Most organizations had worked together with others in their sector in the past (e.g., government, parks, ENGO), which established both direct and third-hand reputations for trustworthiness. All three levels of government had previously worked together, and continued to do so after the group formed. Parks Canada and Alberta Parks had long cooperated in

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[8] Environmental impact assessment was instituted across Canada only in the early 1990s, under the *Canadian Environmental Assessment Act* (1990) and the Alberta *Environmental Protection and Enhancement Act* (1993).

managing boundary issues between EINP and the adjacent Provincial Recreation Area. The conservation ENGOs had been active in the moraine landscape for many years and they were another known entity, and occasional partner with some municipalities in projects. Academic researchers from the University of Alberta also had a long history of teaching and research within the moraine, mostly in EINP and in the Ministik Bird Sanctuary. Immediately before the BHI was formed, some of these scientists were providing advice to EINP through its Scientific Advisory Committee (SAC).

Lambright et al. (2010) found that both trust and a reputation for trustworthiness (through referrals of others) could be established by frequent and positive interaction. The Strathcona County, EINP, ENGOs and the academic participants explicitly mentioned the role of past positive working relationships in building a network of trusted allies. Those past relationships facilitated the initial discussions among key actors from EINP, Strathcona County and the University of Alberta about cooperative regional management. It also provided access to a range of potential partners on which to build the BHI and initiate later projects. For example, an ENGO with a past working relationship with Strathcona County saw in the BHI the opportunity to engage more closely with the municipalities, on projects "that could support conservation at another [landscape] level" [ENGO biologist].

Yet this same ENGO recognized that the trust developed with Strathcona County was not shared by all municipalities, in part due to perceptions of conservation and the conservation ENGOs. Their representative was well aware of the suspicions their participation might raise among the moraine partners and also recognized that these attitudes were complex and not easily changed:

> "Across the municipalities, they are quite different in their degree of value in conservation, from very high to very low, and sometimes there was a function of the county and the culture of the county and sometimes it was umm, you know, the individual. And so there was always some interplay there and as representatives by county changed, the sort of tone around this topic, whether it was even of interest or not, would vary a lot. So everybody, everybody at the table sort of had to prove their worth and bring something to the table but eventually that did happen. And yeah, that was a major accomplishment of the first few formative years." [ENGO biologist]

As this participant suggested, although most of the potential partners were familiar to each other, this did not necessarily guarantee a trusting relationship. Past positive relationships established a level of trust that allowed respectful discussion of future partnerships, but not all organizations had this experience. Barriers posed by distrust are discussed in the next section.

Organizational Level Barriers

Participants could identify many more barriers than opportunities as potential influences on the development of the BHI. Power relationships that defended certain interest groups or ways of approaching land management created barriers of differing strength. The partners varied in capacity, creating a power imbalance based on the resources each could bring to the table. As implied above, distrust of regionalism was a strong influence and in some cases, partner organizations perceived that cooperation contradicted self-interest. Within some organizations, politicians were less accessible to the administrative staff, which limited the internal influence of supportive representatives. Lastly, once the BHI had become established, it faced common internal organizational issues: personnel change, internal communication, and complacency. As with other innovative organizations, it was also challenged to meet the expectations of its members for substantive and timely action. The sections below summarize these barriers.

Power issues.

Interest of higher government for sustainability policy.

Regional coordination on environmental concerns ventured into federal and provincial jurisdiction, risking contradiction of government priorities. BHI proponents within the federal and provincial government, as well as municipal politicians were well aware of their vulnerability to the dynamic nature of policy direction. Priorities had, at times, changed swiftly and unpredictably, with significant impact on departmental operations (e.g., the downloading of new responsibilities to municipalities through the 1990s, or the sharp budget cuts to Alberta Parks in 2000-2001). Striking out independently to pursue a sustainable development agenda that could be perceived to impact federal, provincial or regional priorities negatively would pose a significant risk to partner organizations.

Those BHI proponents with political connections, including municipal politicians and senior managers within parks, realized the need to ensure support of higher government, or at least consistency with policy direction. For example, a federal park manager clearly recognized the need to understand the current mood of government before beginning a new initiative, “we

have to be respectful of [those in power] and you have to know who to contact and you have to be patient in the timing" [park manager].

Public support could also justify perceived departures from the priorities of higher government. Municipal politicians, unlike their federal and provincial politicians will often receive more complaints from the public, a situation that demands more political accountability (Boyd, 2003). Strathcona County had substantial public support for sustainability. County politicians were aware of this support, and the importance of taking "care of the people at home" [municipal politician]. In contrast, the rural counties in the moraine had had little public demand for sustainability and thus, their experience with environmental initiatives was limited. Further, they were more financially dependent on the province for funding. Municipal politicians were sensitive to the risks of repercussions, from the province or from disappointed ratepayers, for investment in an unpopular innovation, as explained by this rural politician:

> I think politically - because I belong to several other organizations, and if there's some degree of difficulty where the minister may not think that's a good idea or something like that, you're done. I hate being that rude, but that's it. [municipal politician]

Ensuring political support was in place was obviously important to all government agencies. Representatives needed to understand their own political realities before entering into collaboration, "so that you don't go out on a limb" [park manager].

Energy interests.

Oil and gas development within the moraine, the issue that originally sparked interest in regional, cooperative land management, is an area on which the BHI has had little impact over its 10 year history. Energy development in the province is handled by Alberta Energy and the Energy and Resource Conservation Board. Municipalities can be interveners in their decision-making process, but decision-making authority is retained solely by those departments. Neither provincial agency has become part of the initiative, despite strong support for the BHI from the province[9] and knowledge of oil and gas exploration as the initial spark for the Initiative.

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[9] Alberta Municipal Affairs contributed $250,000 in municipal partnership grants to the BHI in its early development. The BHI was also awarded the Partnership Award for Municipal Excellence from Alberta Municipal Affairs in 2005 and the provincial Land Use Framework

Provincial energy agencies remain outside of the Initiative, and thus prevent discussions regarding regional development of energy resources.

The BHI, for its part, has actively tried to establish a relationship with the local energy industry organizations. Recognizing the importance of Alberta's Industrial Heartland, a large energy industry complex adjacent to the moraine, the BHI established contact with the Fort Air Partnership and Alberta's Industrial Heartland Association soon after its formation. The two organizations initially sat on the BHI Board, but they have gradually reduced their participation. Representatives have not attended meetings for several years and no industry representatives belong to any Working Groups. One municipal politician who initially represented these organizations at the BHI described it as a fear-based reaction: "I think some of them are afraid to be part of that [the BHI], not realizing that - I don't think they're looking at an opportunity." The deliberate distancing of the industrial and government energy sectors suggests another reason.

Ignoring the concerns of affected stakeholders is a subtle tactic in power relationships, effective because it avoids open debate or conflict about the concern (Lukes, 1974). By ignoring the BHI or participating, at best as a loosely affiliated partner, the government and industry associations have managed to keep potential reforms to the oil and gas development process off the regional agenda. The BHI appears to have accepted the closure of this debate. Despite consistently and openly acknowledging the oil and gas concern that initiated the partnership, it has not actively pursued controls on oil and gas development in the moraine. It keeps the industry associations informed of activities (e.g., through quarterly newsletters and Board updates) and lists both organizations as partners in their presentations and communications, but no longer seeks active participation from them.

Property rights.

Within municipalities, both councilors and administrations experience significant political pressure for subdivision and development. Much of this pressure is based on public assumption of development as a property right. One municipal politician understood well his

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Secretariat was following the BHI's development to inform their regional planning process. Various other ministries are part of the BHI, including Alberta Agriculture, Municipal Affairs, Parks and Environment and Sustainable Resource Development.

legislative obligation regarding land subdivision, and the result of political pressure on his colleagues:

> You know people come to them [municipalities] and "I have to subdivide because I'm retiring or I got a divorce and I need the money, you know, or my father died and left us the land and we want to subdivide it for my kids." Show me in the *Municipal Government Act* where it says we do estate planning? Show me where it says I'm there to guarantee you a certain amount of money at the end of the day? Where does it say that? That's not our job. But if more politicians would do this, we would be better off, but instead they all cave in. [municipal politician]

Atkins (2009) contends that a protective stance to property rights is due to neo-liberal prioritization of economic interests, which have institutionalized such 'rights' in environmental legislation. Property rights were recognized as an important issue by the early proponents of the BHI, but did not become an impassable barrier. As the municipal politician noted above, property rights are not protected by the *MGA*. The legislation instead requires municipalities to plan land use that will develop and maintain safe and viable communities (Part 1, Division 1, Section 3), a subtle but important difference that the BHI promoted to their advantage.

Municipal politicians all receive training in the requirements of the *MGA*, including the rules for subdivision. Yet the commonly held perception of subdivision as a property right was often supported by some municipal politicians for political advantage. A municipal land use planner explained the political view of sustainability in his organization, a view prevalent even in 2010: "Environment, the environment doesn't vote in [our] county." The political stance was based in part on perception of public focus on economic sustainability, particularly when the BHI first formed. A municipal politician described his frustration with this perception when developing Strathcona County's sustainability agenda in the 1990s:

> And we all talk about sustainability, sustainable community. Sustainable, all it is, a mayor I had here when I first started used to use "that's sustainable." I asked him one day, I said XXX, what is sustainable to you? Sustained continued growth and money coming in. Well, that was sustainable. So what the hell does sustainable mean? You know…because his idea of sustainability and mine were two different things. [municipal politician]

Key actors within the BHI recognized this tension within municipal land use planning, but had also seen the potential in the Strathcona County's 'smart growth' approach through the late 1990s. As two participants recalled, Strathcona County did not stop all development, but instead redirected it to areas better able to absorb impacts. The approach offered a potential win-win scenario: municipalities could gain a positive environmental reputation by allowing development to less sensitive areas while conserving more critical areas. Many of the participants were hopeful about the potential for tradeoffs to overcome political pressure for development. A politician recalled being inspired by a land donation that had been offered to the BHI by supportive landowners, in its initial years. The BHI could not accommodate the offer, as it had no means to acquire or manage lands. The landowner was disillusioned and questioned the value of the BHI, but the participant was encouraged by the offer. If one landowner could support the BHI's approach to sustainability, others might follow.

Accordingly, the BHI avoided directly confronting the issue of property rights initially. Property rights were the sole socio-economic factor acknowledged in its Land Management Principles (Appendix F). The current version is not as explicit (the BHI supports "an appropriate mix of development in areas of lower environmental sensitivity"), which suggests a change in political perception of property rights within the BHI and a reminder that barriers can shift over time (e.g., with societal influence).

Bureaucratic silos.

The lack of coordination among government departments was an institutional barrier that participants hoped the BHI could eliminate. These participants understood the driver behind compartmentalization: the efficiency of working on a simpler, narrow part of a management problem. But they also recognized that those efficiencies were often lost when dealing with environmental issues. As a parks manager observed: "Complexity is an unfortunate reality of our world so I'd rather embrace it than deny it."

Participants were generally optimistic about the potential for the BHI to overcome siloing and foster cooperation:

> Well I mean it [*the BHI*] is an interesting group in that, you know, you have a blending of multiple levels of government organizations coming together, and non-government organizations, and special interests groups all at the same table discussing interests that are common to them and working together and I think

> that that's rare…the ability to have everybody in the same room and working together, and able to leverage their individual strengths to help the cause go forward I think is a great thing. [Municipal land use planner]
>
> So my personal philosophy is that we need to look at everything in the landscape level. And in [*my agency*] I think that's been realized on and off but it is now pretty much understood that we have to work together. But it's always been my philosophy, so that was really enjoyable to see that there is an entity that we can work through, this initiative. We can actually achieve more through synergy. [park biologist]

They also recognized the challenge of overcoming the traditional boundaries separating that compartmentalized environmental management. Several participants noted the continual effort required to clarify for decision-makers within their home organization the value of the integrated and unique approach proposed by the BHI. The experience of this participant was echoed by participants from municipal and other government agencies:

> The BHI was always a little bit different and I always had to explain to my management, my powers that be, that the BHI wasn't one of these watershed groups [sponsored by the department]. That it was focusing on regional planning, a bio-regional approach to landscape planning / conservation…So trying to make that distinction. [agricultural agency scientist]

Consistent reinforcement by BHI members to their own and partner organizations of what the BHI meant by cooperative, regional land use planning was critical to the eventual acceptance of the BHI as an influential actor within the region. As described below, where the home organization was not supportive, this approach had some risk and required careful timing.

Unequal capacity among partners.

When the BHI was formed in the early 2000s, capacity to support a shift to a sustainable land management model varied among the BHI members. Strathcona County and EINP had top-down support to adjust their operations as required and had actively developed in-house expertise through the late 1990s. When the BHI formed, they had added staff, established links with external experts, and developed practical policy experience. On the other extreme, the rural municipalities had fewer staff and limited experience to contribute to the initiative, a situation

that created a power imbalance among the partners. That imbalance in some cases became an enduring barrier to trusting organizational relationships.

Capacity extended along a continuum between these extremes at the BHI's formation. Provincial parks, ENGOs and agricultural support agencies had also begun to transition toward new land management approaches through the late 1990s and had experience with the new concepts. The rural municipalities, in contrast, had not yet developed such capacity or for some, an awareness of its need. Development pressures and impacts were most evident in areas close to Edmonton (Strathcona, Beaver and Lamont counties). In rural municipalities, planning focused on agricultural land use and the environmental responsibilities identified by the *MGA* (stormwater, waste management, geotechnical constraints). As a result, councils and staff were often unfamiliar with and unprepared to adopt the new approach promoted by the BHI, even in municipalities facing imminent growth pressures.

Where distrust existed between partners (e.g., in the resistant municipalities described in the next section), the imbalance only added to fears of loss of autonomy and regionalism. Strathcona County's approach to the BHI contributed to this fear: "Strathcona County has always had that wisdom to try to be in front, and, and they pride themselves in kind of leading the way" [municipal environmental planner]. In municipalities distrusting of the county's motivations, their generous support of the BHI was interpreted as outside intervention. Such suspicions were mainly at the political level and stemmed from resistant individuals (see below). Administrative participants recognized the need for new approaches in the changing planning context, but identified this distrust as a significant barrier to capitalizing on the BHI's resources.

Land use planners were central to the BHI approach, as they were expected to promote the Land Management Framework within their municipality. However, resistant councilors or a lack of access to council (see below) prevented such internal promotion. Further, meaningful knowledge transfer of the BHI concepts was not always achieved due to the lack of shared background, hampering their ability to absorb or pass on such information:

> we were talking with the researchers about some work that they had been doing on wetlands and those types of things. I think some of the planners including myself at a couple of points were like "what"? The eyes glaze right over, right, so again it just comes down to making sure that we're talking the same language when we're in the same room. [municipal land use planner]

In some cases, the BHI's focus on innovative approaches and communicating new knowledge actually contributed to the distrust of the BHI's objectives. One land use planner described the reaction of a resistant councilor to recent research projects pursued by the BHI (post-Land Management Framework). In this case, the BHI's efforts were perceived as experiments, innovation for the sake of generating new knowledge rather than the intended message, an improvement on current practice for the benefit of local residents:

> Yeah, again, I'll refer to the County representative, the new one. She said many times in the last year that, ahh, the academics control the BHI. Umm, it doesn't respond to people. It's all about academics and their academic machinations and their academic interests and pursuits and goals. [municipal land use planner]

This reaction may have been based partly in fear of loss of autonomy (see below), but it highlighted the need for effective and accessible communication of the BHI's work.

Finally, even in supportive organizations, capacity limitations could slow the incorporation of BHI information into policy, widening the gaps among municipal partners. The BHI's policy of voluntary adoption required translation of the BHI products into locally relevant form by each municipality. By 2010, Strathcona County had developed a variety of planning policies intended to conserve natural features throughout the county. A rural land use planner from a supportive county recognized that gap in implementation of the Land Management Framework, and its cause:

> Yeah and Strathcona County has been fortunate to have the resources and the interest to do that translation on its own… whereas, all of the other counties that have far fewer resources, haven't been able to do any of that. [municipal land use planner]

Capacity limitations were particularly frustrating for some of the key actors within the BHI. For them, the BHI was one of a series of attempts at environmental policy change, and failures numbered as high as (or greater than) successes. A municipal politician, frustrated with resistant personalities and attitudes seen over decades of environmental activism, wondered if his blunt approach was helping or hindering the BHI. For these individuals, also long-time residents of the moraine, the irrational opposition to change was almost unbearable.

Access to influence within home organization.

Participants within resistant organizations identified political support as a significant internal barrier to adoption of the new information created by the BHI. Municipal buy-in required a champion willing to solicit support from other councilors. Where the councilor representative did not fully support the BHI, support failed or became unpredictable. Access to the political level of their organization could help to correct misperceptions, but in rural municipalities, this access was not always available.

Alberta's municipalities all officially separate council from administrative staff, with a Chief Administrative Officer (CAO) as a liaison between the two, but interaction does still occur. Strathcona County had a relatively open corporate culture and participants noted that councilors and staff could interact directly. But as one rural municipal land use planner explained, the rural municipalities enforced strict reporting lines between administration and council to avoid political interference in these smaller and more informal organizations. In most municipalities, the CAO was a gatekeeper between council and administration, but this link was even more critical in the smaller rural municipalities.

In resistant municipalities, participants found communication with council about the BHI was blocked by their senior administrators and CAO, apparently enforcing council's will. For example, a municipal land use planner described several incidents of stonewalling in his home organization after assignment to the BHI, including innuendo about the "untested" nature of the Land Management Framework by a senior manager and an informal ban on use of BHI data, particularly at council. An example of the reception to his attempts to report to council on BHI activities suggests passive blocking by a power interest at the council level:

> …once I got seconded, partially, to the BHI, I felt responsible that I had to report back to my administration about what I was doing, but nobody ever asked me to. So once a year, at Christmas time, I would put together a report to the Director and the CAO of my activities at the BHI and then put together a report to council, in case the CAO felt it was appropriate to bring to council on what I was doing or what was happening at the BHI, because again, with the old councilor, there was ahh, there was great suspicion and it's probably true, that he wasn't reporting anything back to council. Ahh, so I offered to do that but again, was never put

> onto a council workshop [council agenda] to actually sit down and talk about it. [municipal land use planner]

A planner from another resistant municipality had similar restrictions on the use of BHI information, and had also been directly questioned on loyalty to the organization for active internal promotion of the BHI. The political structure was clearly not open to change in these municipalities, making the BHI's expectation of representatives to promote the BHI within their home organization unrealistic. Such community power structures have been reported as an important barrier to collective change (Flora & Flora 2013) and to transfer of democratic norms through normative socialization (Beichelt, 2012).

Trust relationships among partners.

Participants from resistant organizations, and those who worked most closely with them (politicians, environmental planners) identified distrust of regionalism and a fear of losing autonomy as a key barrier affecting the relationships of the BHI with some of its rural municipal partners. This issue masked other, less obvious concerns including urban-rural tensions and misperceptions about the tax benefits of development in rural municipalities. The sections below summarize the influence of these factors on the development of the BHI as a regional collaboration.

Resistance to regional government.

The distaste for regional planning created by past experiences in the province (noted above) was particularly strong among the BHI's rural municipal partners, a sensitivity recognized by the early proponents of the BHI:

> it was the death by stoning if you said anything about regional planning in public. And so it was an interesting concept for me because you were hearing below the radar that there was a need for regional planning but everybody was afraid to actually say it. [Agricultural agency scientist]

Land use planners could understand the sensitivity to outside interference on land use policies and development opportunities based on historical interventions; however, they were also aware of the need for coordination. As one municipal land use planner noted, coordination to manage effects that often crossed boundaries (transportation, water, air impacts) was good for area residents, and could, therefore provide a political argument for coordination, if politicians and

governments were open to it, “Instead of you know, lining the battlements around your own physical boundary and looking inward” [municipal land use planner].

A shared interest could spark regional cooperation, and had in the past, for example in creation of an Inter-municipal Development Plan for Alberta’s Industrial Heartland by Lamont, Sturgeon and Strathcona counties, an example highlighted by a few participants. But the moraine was simply not on the political agenda in some counties, a factor recognized by proponents within the BHI:

> I think the problem here right from the beginning has always been that the public and the politicians never, it was never an issue for them. For me and for some of my residents and for our county, it was an issue. And that’s why we believe in it and we do it. The others, it’s not an issue. It’s not like they’ve got a groundswell of people banging on the door in every council meeting, when are you going to protect this area? [Municipal politician]

EINP and Strathcona County both recognized the potential dangers of taking a strong leadership role in promoting the BHI, given the apparent lack of widespread public support for conservation in the moraine and the political sensitivities about regionalism. As one manager within Parks Canada noted, “I don’t think any of the smaller counties want to be told what to do by Strathcona County or certainly not by a federal park.” Within Alberta, any perception of intervention by the federal government was an automatic political trigger. Participants from one resistant municipality believed the sensitivity to leadership by Strathcona County was based in jealousies due to regional inequities. To illustrate the depth of urban-rural tensions, one provided the example of the conflicts among municipalities that stalled the initial implementation of the Municipal Sustainability Initiative funding, due to its requirement for regional cooperation. The past bitter conflict within the Capital Region over the distribution of regional costs between rural and urban municipalities and the response of Leduc County to the regional plan imposed by the Capital Region Board (Appendix E) provide other examples of resentments about regional inequity. Regional cooperation was definitely a sensitive area, particularly if regionalism appeared to give an organization advantage over another.

Contrary self-interest.

The resistant organizations were also concerned with the potential for smart growth to limit their options for future development, while benefiting their neighbors' land tax income. This concern was based on overly optimistic views of the local development market as well as the suspicions of Strathcona County's motives noted above. Smart growth directs development to locations with fewer potential economic, social and environmental impacts. Resistant municipal politicians interpreted this as a complete ban on development within the moraine that would limit their options for economic and community sustainability, while improving Strathcona County's tax revenues. Together, these factors contributed to distrust based on perceptions of contrary self-interest.

Suspicion was fuelled in part by a misunderstanding of rural development value. Land use planners were aware that market demand was highest within about one hour driving distance of Edmonton, but councilors from one county in particular had a misplaced belief in the market potential of their share of the moraine. The other resistant county had higher market value for such properties, but both councils ignored the hidden servicing costs, maintaining "a mentality that residential development pays for itself" [municipal land use planner] despite the evidence provided by Strathcona and their own land use planners. Further, these councils also believed that conserving their part of the moraine could raise property value (and land taxes) for existing rural residential properties in Strathcona County. A municipal land use planner explained a resistant council's suspicions of Strathcona's 'real' motivation:

> so they've already got the benefit of all the country residential housing that takes up the vast majority of the BHI area. But if they can convince their neighbouring partners to protect all of that [other moraine] land, they benefit from the wildlife corridors and the nature and all of that but they also benefit from the fact that their neighbours can't take away stuff which puts a premium on the price of their land. [municipal land use planner]

Strathcona County does contain much more of the moraine landscape than the other municipalities (Table 3), and had allowed considerable rural residential development in the past. In contrast, most of the land base of rural counties was outside the moraine and dominated by cleared agricultural land. Some early BHI proponents and land use planner participants linked the resistance of Camrose and Leduc to their small areal 'stake' in the moraine (<4% and 7% of

the moraine respectively, Table 3). In addition, protected areas already conserved much of the natural landscape in these municipalities. Participants from Camrose County, for example, noted that most of their share of the moraine was already protected in Miquelon Lake Provincial Park and the Miquelon and Ministik Game Bird Sanctuaries.

Table 3. Moraine Lands Held by Land Agencies, relative to overall land holdings.

Land Management Agency	Proportion of Moraine within Jurisdiction	Proportion of Land Holdings within Moraine
Strathcona County	43.2%	55.2%
Federal, Provincial, Municipal and ENGO Protected Areas	26.6%	N/A
Beaver County	11.1%	8.7%
Lamont County	8.5%	5.3%
Leduc County	6.8%	4.6%
Camrose County	3.8%	3.4%
Total	**100.00%**	

Proponents in the BHI believed the issue was a reductionist view of sustainable development as a choice between development and conservation. The land use planners within resistant municipalities instead noted the different sustainability issues confronting their councils, concerns that the BHI proponents considered only as other "broader schemes of issues" [academic participant]. In the resistant counties, their councils were concerned with social sustainability: school closures, dissolution of village governments and the added cost of hamlet administration, due to declining populations in rural communities and in their council's view, declining regional economic opportunity. As one of these land use planners explained, councils saw a solution in attracting, not preventing development in their municipalities:

> they [councilors] want to see residential development to try and save rural schools and those kinds of things … even if you're subsidizing those developments, if you

> can keep schools and businesses open because of it, maybe it does [make sense]. [municipal land use planner]

With its emphasis on subdivision as a risk to the moraine and a strong environmental focus, the BHI appeared to be promoting conservation over development, while ignoring economic needs of the rural municipalities. And in the absence of strong public concern demanding conservation of their share of the moraine, resistant politicians would be understandably reluctant to change land management to disadvantage their residents. Interestingly, when the BHI was invited to present its information to moraine residents, most residents (including those from resistant counties) were supportive of the concept of regional conservation of the moraine (personal observation and past comments from the BHI Executive Director). The choice of the BHI to postpone public consultation until they had gained full support of municipal governments excluded these potential supporters, a frustration of those in the BHI involved in public outreach (e.g., land use planners and participants from government agriculture agencies).

Conservative identity and fear of loss of autonomy.

Political representatives to the BHI acknowledged the pervasiveness of the provincial conservative identity and the associated implications for an environmental agenda, particularly where it involved change. For example, one municipal politician and early BHI proponent described his past experiences with the rural political response to change and innovation:

> And so often in rural Alberta, it's like this red neck thing I talked about earlier. We still seem to think that we're smart because we want to be stupid backwoods idiots. It's like we want to promote this. We don't need to learn anything because we know everything. Because we're paranoid of everything, because of course the liberals are going to take everything over, you know, I mean it just goes on and on with the paranoid bullshit. [municipal politician]

Key actors in the BHI realized that linking the more urban Strathcona County too strongly to the BHI agenda in such communities would create additional resistance. Change would be nearly impossible if the BHI was perceived to promote urban values.

A municipal politician from a resistant municipality described the opposition in his council as a stubborn independence: "this group's telling us what we can do, this group's telling

me as a farmer, I can't do this and I can't do that in terms of subdividing something out." The diversity of interests at the table was central to resistance, because they introduced ideas not rooted in the local context. This participant provided additional insight to their resistance:

> It's just, they think it's Big Brother and then they think it's, you know, UofA and all these other research people who don't really understand, live in our area, telling us what to do. [municipal politician]

Such attitudes became attached to the reputation of the resistant organization, but often they stemmed from key individuals. For example, politician participants knew that certain council representatives had a reputation for resenting perceived interference in the management of their county. In positions of influence, they could block full support of their municipality, to the annoyance of others in their organization who understood the benefits, and the reason for the resistance (see personalities barrier below).

The resistant municipalities were not above using their concerns about autonomy as leverage for more control within the BHI. As an example, a participant explained how the structure of the BHI Board of Directors was changed to address objections of a resistant municipality to the BHI's original consensus-based decision-making process that provided one vote to each partner organization. The municipality felt that the five municipalities could be outnumbered by 'environmental interest groups' (ENGOs, parks, university) and "would end up doing things that the municipalities and councils didn't necessarily 100% agree with" [municipal land use planner]. Despite such concessions[10], resistant councils remained weak partners, frustrating proponents of the BHI with their stubborn resistance and the effort it required to correct the misperceptions they created in other supportive organizations. However, they did raise concerns that forced the BHI to reconsider their projects from a broader perspective, leading to more robust presentations and outcomes.

Organizational issues within the BHI.

Once the BHI became established as a formal organization, it began to interact with other organizations at the meso level as well. As an organization, it could request resources from its

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[10] Later voting was done through a system that addressed this perception: each municipality had a vote, while the sectoral groups parks, ENGOs, Alberta Government, university) had only one vote per group.

partners, and in turn was held accountable for the use of those resources. To sustain the initiative over the long-term, the group was also responsible for maintaining its relevance to its partners. The sections below review the barriers related to the BHI's interaction with its partners.

Personnel change.

Once established, the BHI was vulnerable to personnel turnover and the associated loss of project history and support. The knowledge, skills and abilities possessed by a community (Flora & Flora 2013) or by innovative organizations (Chapman, Soosay & Kandampally, 2002; Drucker, 1993) can determine capacity to adapt to change. Within an innovative organization like the BHI, the accumulated knowledge, network connections and contextual understandings underlying past decisions (project history) were important to sustain momentum on long-term initiatives like the Land Management projects. Participants identified several types of personnel change that were potential barriers to the BHI's long-term survival.

Every three years, the councillor representative might be replaced, introducing a potentially destabilizing element into the collaboration. Further, sitting municipal councils were reluctant to raise controversial issues before an election, slowing progress on some projects. A long-term member of the BHI explained the impact on the BHI, observed after several election cycles, "Every three years the BHI almost had to take, you know, almost three steps back for every step forward…because, oh it's an election year. Don't rock the, you know, don't make waves" [agriculture support agency scientist]. As noted above, municipal support depended on the councillor representative, so capturing the interest and backing of new councillors was essential to sustain the initiative. The process meant repeated confrontation with the various barriers outlined in preceding sections and the possibility for resistant organizations to gain more support.

Small shifts in management direction or staff turnover also occurred within partner organizations, but did not substantially affect support of the BHI, particularly with supportive organizations (e.g., EINP, ENGOs). Progress on BHI projects slowed at such times, but work still proceeded. However, two newer participants reported facing a steep learning curve to become familiar with the BHI's approach to sustainability and the multidisciplinary knowledge underlying its projects. As these participants explained, the BHI lacked the resources to provide a thorough orientation, leaving them to a self-directed process that took several months and risked creating misunderstandings or worse, confusion.

Loss of key actors also occurred over the BHI's decade of operation. Key actors in the BHI possessed knowledge, experience, a trusted reputation within a network offering required resources, and passion. Losing a key actor could be a significant blow to the organization in terms of human, political and social capital. For example, illness prevented one key municipal member from participating in the BHI during the Land Management Framework project, leaving direction of the project in question. In this case, Strathcona County seconded a staff person who had been supporting the BHI to serve as its Executive Director, providing the BHI with much needed full-time support. Loss of several key actors from EINP due to staff turnover led to an important gap in representation from that agency in later years of the BHI's history.

Slow progress.

The BHI's reliance on volunteer members meant that a dedicated workforce was not available to carry out the projects envisioned by the BHI. Partner organizations 'donated' the time of representatives to the BHI and most representatives described a flexible arrangement with the BHI and their own organization that allowed them to regulate their own involvement. Again, this exposed the BHI to risks associated with the community power structure (Flora & Flora 2013), since competing work demands might not entirely be within the individual's control. For example, changes in the superintendent position at EINP reduced participation of park personnel in the BHI, when staff assignments to the initiative were adjusted to suit new park management priorities.

This situation was particularly frustrating for supportive representatives within government, who were unused to implementation of work initiatives through volunteerism. Although these participants understood the practical reasons for slow progress – lack of funding, conflicting time demands on representatives – they also realized that slow progress threatened the demonstration of results vital to the long-term viability of the BHI, and its goal of coordinated regional land management.

Slow implementation could also follow if the resulting product did not meet expectations. An academic participant noted a critique of the Land Management Framework and other, similar policy guidance documents subsequently developed by the BHI, "it doesn't provide us with an easy solution to the problem." In this case, part of this problem lay in the accessibility of the multidisciplinary information compiled by the BHI, but it also highlighted the importance of clarifying expectations about final outcomes with key decision-makers. A key actor and

proponent of the Land Management Framework acknowledged the difficulty in tempering expectations for an 'easy fix' in sustainable land use policy, "The people don't realize that there's a whole series of stages from that broad strategic plan to, you know, directives that planners can use" [academic participant].

Complacency.

Sustaining motivation within an organization relies in part on defining an inspiring objective or vision (Bass, 1997). From the beginning, the intended duration of the BHI 'project' was not clear and the original BHI proponents noted that some members had assumed an end point after policy was created and adopted (e.g., adoption of the Land Management Principles). In contrast, most participants saw in the BHI an organization that could promote innovative land management on a long-term basis. Complacency, a feeling of achieving the original goals set by the organization, was a continual risk to the BHI as an on-going collaboration, particularly from government partners.

An agricultural agency scientist summarized a fear expressed by academic and municipal administrative colleagues:

> One of the fears I have is, one of the criticisms, and you probably get this too, is you know, "you've done this work with them for this period of time, enough, it is over, it is done." The work is done, you're done. And you kind of go well no, we are evolving and there's new research and there's this new project…and every year you have to you know, keep justifying more and more and more of why it is important that you participate. [agricultural agency scientist]

Sustaining the momentum of the group was a challenge recognized by some Board members. An ENGO biologist and veteran organizer of conservation initiatives stated the risk well:

> I naively thought that that stuff happened automatically, before being responsible for one of these groups. And I see now, it takes a lot of energy and foresight and, and umm wisdom, some of which you can tap into your board or whatever to keep that going. It's very easy for those groups after the initial excitement of forming and some easy projects is past, to just kind of sit back into reporting and updating and so on and so on. [ENGO biologist]

As this participant and others with similar organizational experience observed, the challenge in maintaining the BHI as a long-term initiative was in ensuring continual relevance among the BHI members and their home organizations.

Contextual Influences on Collaboration

The socio-political and natural context at the time of the BHI's formation offered both opportunities and constraints to the proponents of the initiative. The moraine had a strong conservation history on which to build. Some organizations had worked together previously on conservation projects, and were open to partnering again. A shift in focus to sustainability had created openings for regional partnerships and inter-disciplinarity. Yet the group initially faced some key barriers, including past negative experience with regional management, urban-rural tensions and distrust among some partner organizations. Once established, the group faced issues common to many organizations, but also had to manage its relationship with other organizations. The proponents of the BHI had identified these concerns and were prepared to address them in order to advance the initiative and the group. Regardless, some were persistent barriers that required on-going attention to sustain the momentum and cohesion of the group over the long-term.

Maloney et al. (2000) suggested that the overall context of opportunities and barriers, the Political Opportunity Structure (POS), could determine the potential for social capital (especially trust, but also reciprocity norms) to contribute to collective action. Specifically he included the components of a POS identified by Eisinger (1971) and Tarrow (1994): open or closed political structure, availability of influential allies, tolerance for protest amongst elites and cleavages among elites. Thin trust established by openings in the political structure could provide the basis for a collaboration promoting innovation. Yet in the case of the BHI, factors other than the POS had also created openings for the proposed regional management approach. The natural and cultural capital associated with the moraine contributed to a policy window, through an Ecological or Place-based Opportunity Structure.

First, the distinct boundaries formed by the moraine clearly identified the organizations needed to contribute to its sustainable management. Boundaries that define membership in the collective group are one of Ostrom's (1990) pre-requisites for collective pool resource management. Second, the historical importance of conservation action in the moraine (its cultural capital) meant that the various organizations already valued the moraine for its

recreational and ecological contributions. Further, the experience of Strathcona County and the ENGOs had demonstrated that conservation was possible today, and in a way that did not compromise economic opportunity within the moraine. While this might be considered to be the availability of an influential ally, experienced partners do not necessarily imply influence. Rather, as Flora and Flora (2013) propose, this seems related to the filtering role of cultural capital, which can present (or obscure) alternative solutions to collective problems.

Viewed within the process of translation, the BHI partners and proponents assessed the natural and cultural capital in the Ecological and Political Opportunity Structure before deciding to form the group and to create the Land Management Principles and the Framework. As Della Porta and Diani (1999) point out in their critique of the use of POS in analysis of collective action, structural contextual variables may not be sufficient to describe the relational interactions among the actors within the group itself.

The collaboration required recruitment of organizations, often gained by strategic attempts by the BHI's proponents to eliminate, avoid or minimize the influence of barriers and capitalize on opportunity. A premise central to the relational process of translation (Callon, 1986) is that barriers are not impermeable, static conditions. Some barriers may be overcome through selection of appropriate strategic approaches by actors and potentially, the use of social capital (trust, networks, resources) available to the new actor network. Recruitment to the BHI thus depended on the assessment by the organization (and its individual representatives) of the strength and interaction of the broader context and the social capital available within the newly forming actor network. Figure 6 illustrates the interactions among initially available natural, cultural and social capital within the ANT translation framework, which comprised a field of macro and meso-level barriers and opportunities. Ultimately, it was the interpretation of that contextual field by the individual representatives that determined the success of the BHI as a long-term collaboration. The next chapter explores the perceptions of the individual participants about that contextual field, in terms of their attitudes and motivations regarding regional, sustainable development, and the barriers presented by differences in perceptions among individuals.

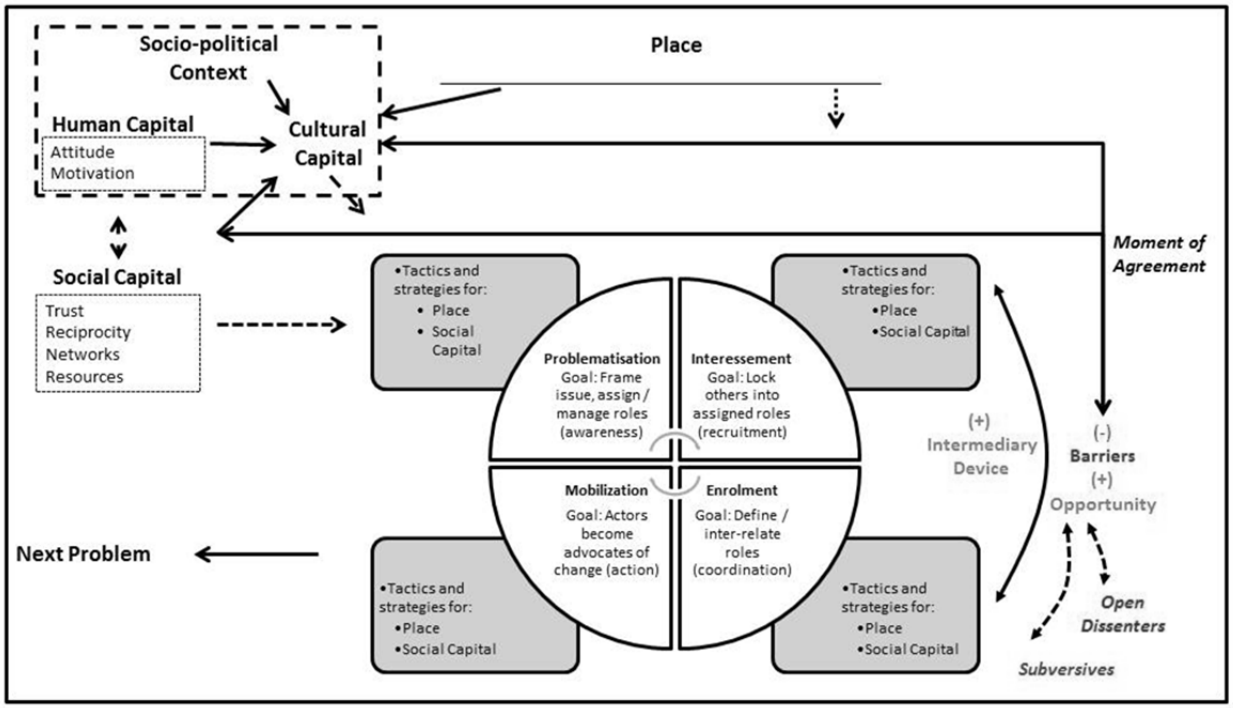

Figure 6. Influence of attitudes and motivation possessed by human capital on barriers and opportunities in the ANT translation process, through cultural and social capitals.

Results – Individual Level Variables

Part of the challenge of collaboration lies in uniting diverse interests (Latour, 2005; Law, 1992). Similar attitudes and motivations about a management concern could help lower resistance to formation and mobilization of a group to address a social issue. Attitudes and motivations develop under influence of social constructs[11], factors that also contribute to formation of personal identity (Bamberg & Moser, 2007). Attitudes and motivations can provide an indication of the perception of control over a situation, and the social and identity influences guiding behavioral decisions, including the decision to cooperate.

In their interviews, participants reflected on their attitudes and motivations about sustainability, development and collaboration, providing insight into constraints and opportunities confronting the BHI at the individual level. Participants' attitudes about sustainability, landscape level management and nature indicated clear understandings of the need for sustainable management, while their attitudes toward collaboration revealed limited experience with such an approach. Many were motivated by a strong personal ethic that supported sustainability, but also by obligations to their professions and home organizations that in some cases conflicted with the BHI's objectives. Together, the participants' attitudes and motivations described the individual level factors that influenced both the decision to participate and the level of commitment to the initiative.

Attitudes.

When asked what influenced their participation in the BHI and about sustainability more generally, study participants described a variety of attitudes about sustainable development (and land management), landscape level management, nature and collaborative partnerships. Their attitudes were complex. While all recognized that the moraine was worthy of protection and, thus the need for regional land management and 'smart growth', their personal vision of sustainability and how it might be achieved within the moraine was more varied. Few respondents had past experience with long-term collaboration prior to involvement in the BHI, and more experienced individuals each associated different factors with effective collaboration.

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[11] Social and moral norms and cognitive, affective and evaluative understandings of a situation.

As described below, most participants entered the collaboration, hopeful of positive outcomes but with few expectations of process or structure.

Attitudes toward sustainability.

The BHI promoted sustainable development and sustainable land management, both of which required adjustments to traditional approaches by partners, but particularly municipal partners. Sustainable development ('smart growth') implied making better development choices with consideration of social, economic and environmental trade-offs. Sustainable land management required consideration of ecological thresholds to minimize environmental degradation. Although the study participants all generally acknowledged the need for sustainable land management and the link between healthy ecosystems and quality of life, they were not as consistent about sustainable development. Their differences centered around three criteria: what type of development, what elements of the moraine should be protected and the means of protection.

Most participants felt that development should still be allowed in the moraine, but "the right type of growth or the right type of activities" [municipal politician]. Their focus was on conservation of natural features; appropriate development would conserve the natural character of the moraine. Few participants mentioned the social aspects of the moraine and those that did described it simply as a rural landscape. Most of these participants were in professions involving natural resource management (e.g., parks staff, environmental planners, ENGO biologist), and some of the politicians and land use planners also had past environmental training or interests. The natural resources of the moraine were obvious assets to this group.

A subset of participants justified sustainable development as a more efficient use of economic resources, citing specific examples of poor decisions based solely on short-term economic gain that resulted in unanticipated long-term economic and ecological costs. Interestingly, various professionals (e.g., politician, park manager, environmental planner) used this justification, but land use planners less so. For example, a park manager and a municipal politician both realized that municipal servicing costs for scattered, low density communities far exceeded the taxation income often used to justify development.

All participants acknowledged urban expansion as a key threat to the moraine, but opinion diverged on the resources at risk. Most participants identified the naturally vegetated areas of the moraine as conservation priorities, based on perceived scarcity and vulnerability of

natural lands outside of the protected areas[12]. Again, this perception crossed professional boundaries. Only those with a farming or agricultural background also prioritized protection of agricultural land, although development also threatened this characteristic feature.

Participants also shared a belief that sustainable land management required behavioral change, fostered through awareness campaigns and new policy. Those with more direct policy experience recognized potential challenges in this process. Politicians, environmental planners and the academic participant felt that sustainable development must be entrenched in land use policy to ensure long-term protection of the moraine's natural resources. Land use planners recognized two key limitations in developing such policy: (1) it must consider social, economic and environmental factors defining sustainability for the community, and (2) one common policy across the moraine was unlikely to gain support because the definition of 'sustainability' varies with each community's values.

Politicians were also aware of the need for community consensus, but recognized that active intervention might be required to develop policy for the common good. One politician summarized his experience with sustainable development policy: "Then of course you had your residents that, you know secretly would say, yeah this is good stuff. We should protect this area, as long as it doesn't affect me." The difference in their approach to consensus-building reflects their position within the development bureaucracy. Planners design communities that incorporate sound planning practice and public preference. They can advocate for best practices, but they cannot promote specific value positions. Politicians can play a more influential role in building consensus within the community, if they chose, and often will champion a specific policy vision when a broader common good is evident (and supported by the majority).

Lastly, all participants realized that sustainable land management would require regional cooperation and an adaptive approach based on scientific understanding of ecological health. Sharing of resources to tackle problems at the landscape scale only made sense to them, particularly municipal staff who often lacked access to environmental information specific to their municipality.

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[12] Natural areas are relatively scarce in the moraine: forested and wetland areas comprise 36% of the moraine, and cleared and agricultural areas represent 61% of the land base. About 28% of the moraine is protected under federal, provincial, municipal or ENGO jurisdiction.

Attitudes about landscape management.

At the time of the BHI's formation, most members had had limited experience with landscape level management; only a few had applied landscape ecology in their work. That small base of professionals had educational training and/or practical experience gained by experimentation with land development projects. These 'sustainability experts' came from various sectors (land use and environmental planning, agricultural outreach, federal and provincial parks and academia), which gave the BHI diverse applied experience. Most of the councilors involved in the BHI over the study period also had an agricultural background that made them either aware of or open to sustainable land management[13]. Sustainability experts became key actors during the formation of the BHI, and their interviews highlighted the lack of understanding of landscape management approaches among most members at that time. Other participants discussed the changes in their own awareness of the implications of landscape level management gained through experience with the BHI.

Sustainability experts found that the key challenge was to encourage members to look beyond the geographic, disciplinary and jurisdictional boundaries created by traditional environmental management. A park biologist now considered an integrated approach to be a professional responsibility, an opinion now shared by most participants, but one that developed as they began to see people as an integral part of the ecosystem, and an important part of sustainable solutions. Some environmental professionals recognized that an inclusive approach required them to shift their role from expert-manager to inter-disciplinary team member, a timely and necessary shift "because there's so many things we are powerless to do. We can't change the world on our own" [park manager]. Parks professionals, environmental planners and the academic participant reported a new appreciation of social science as the means to engage this diverse community and build sufficient support for sustainable management approaches.

Lastly, members newly exposed to sustainability reacted in various ways. Most environmental professionals became highly aware of cumulative effects at the landscape level and of their own ecological footprint, both through the BHI and through other experiences. Some of these individuals adjusted their lifestyles to reduce their impact and to model the change

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[13] ENGOs had been promoting land stewardship programs to farmers within the moraine through the late 1990s and early 2000s (see Appendix E regarding conservation in the moraine). A politician participant provided several examples of sustainability planning promoted by agricultural support agencies through this period.

they promoted professionally. Their personal sustainability efforts gave them confidence in the feasibility of change and an awareness of public resistance to sustainability. Others realized that their efforts in the BHI had the potential to "set this example [of sustainability]; they could use this around the world" [municipal politician]. These participants recognized regional management as a challenge, but one that could be overcome with the group's committed effort. Land use planners and some municipal politicians were also hopeful, but were very aware of the barriers posed by municipal resistance to regionalism.

Attitudes to nature.

Although the participants shared concern about the change to the natural character of the moraine, they differed in their definitions of 'nature' and opinions about acceptable use of natural lands. Those participants with an environmental background (parks managers and biologists, environmental planners, an agricultural agency scientist) had a deep and intimate connection to nature. They had a clear vision of conservation objectives and their role in protecting the moraine, often as an advocate or an intermediary between nature and people. Their aim was to maintain ecological health, through habitat conservation where possible, or restoration where necessary. They also realized that in some cases, ecological conditions were so impaired that intervention would be ineffective. Part of the attraction of working in the moraine was in dealing with a landscape where ecological health was still attainable.

Land use planners and some politicians, in contrast, envisioned a lived-in landscape, one balancing 'acceptable' levels of development and retention of natural values. For this group, the natural parts of the moraine required protection, but mainly for human enjoyment and appreciation. Like environmental professionals, protection was seen as a responsibility of society, and for land use planners, also a professional obligation. A few individuals fell between these extremes (the academic participant, one government scientist, one land use planner, one politician), supporting both preservation of ecological function and balanced development.

The natural aspects each member desired to protect might vary, but the need for protection was clearly apparent to the participants. For some of these participants, an introduction to the moraine through the BHI had helped change the way that they saw the moraine and motivated their support for the BHI.

Attitudes about collaborative partnerships.

At the time that the BHI began, examples of regional collaboration were few. Most BHI members had participated in short-term collaborations, such as working groups, but very few people had experience with long-term collaboration (> 2 years), and even fewer with successful collaborations. Among the small group with more collaboration experience, each had different perceptions of factors contributing to successful collaboration (development and implementation of a joint initiative). Interestingly, a shared understanding of factors leading to effective collaboration had not developed among the members of the BHI, even after long-term participation in the BHI.

A politician with policy consulting experience thought of collaboration as a partnership whose effectiveness was limited mainly by personalities. For him, breaking down positions to expose fundamental concerns was critical, a process that could only succeed if the personalities around the table were open to debate and focused on a common goal. A municipal land use planner whose councilor was not supportive of the BHI believed that effective multi-agency collaboration was related to political support: "if you don't have that strong connection to council you're going to have the fear, you're going to have the lack of interest in funding, you know, those kinds of things" [municipal land use planner]. Municipal participants (politicians and land use planners) felt public interest was necessary to gain political support, a topic on which participants differed considerably. Many within the BHI felt that the need for sustainable land management was self-evident, or could be easily shown to be in the public interest, giving councils the mandate to participate in the BHI without extensive public consultation. Participants from resistant municipalities reported that such a mandate was not clear for their councils, creating a reluctance to fully commit to the BHI.

Leadership within the group was another potential problem area recognized by those with collaboration experience. Two such participants noted the potential for strong, directive leadership by a partner to raise suspicions of self-serving interests. They had purposefully maintained focus on a common goal and cooperation, rather than their own organization's interests, and instead promoted their interests through suggestion and persuasion. Similarly, many participants recognized that given past regional experiences and sensitivities about environmental protection, the BHI had to appear neutral and be respectful of the autonomy of all member organizations.

Most of the participants also understood the need to satisfy interests of others in the collaboration. "Low hanging fruit" (immediately achievable and useful results) was important so that "people could see that there were benefits coming from this" [academic participant] and to build "capacity through results" [park manager]. The academic participant realized that diverse membership was the key to the chief long-term benefit of the collaboration, capacity to adapt to future change. Lastly, the BHI's proponents realized that timing and patience were critical to voluntary collaboration: the first, to seize obvious opportunities for cooperation and regional approaches, and the second, to allow potential supporters to realize its benefits in their own time.

Motivations.

Motivations differ from attitudes in that motivations relate directly to the intent to act. Motivations are informed by attitudes, as well as awareness of and sense of responsibility for a problem, a sense of control over the outcome and social and moral norms (Azjem, 1991; Bamberg & Moser, 2007; Schwartz, 1977). Moral and social norms can particularly powerful motivators, as they are imposed by social groups associated with the individual's social identity (Clayton & Myers, 2009).

Participants reported a mixture of personal and organizational motivations for their participation in the BHI. All participants supported the BHI as a worthy cause ('the right thing to do'), but that personal ethic was also influenced by expectations of the BHI, their home organization, and their professional responsibilities. For most, sanction by their home organization reduced the potential conflict between personal ethics and employment obligations and allowed them to participate in a way consistent with their personal ethic. In a few situations where the home organization was not supportive, participants were forced to choose between the expectations of the social groups comprising their social identity. As a result, these participants were forced to modify their behavior to be situationally appropriate. Personal ethics also provided much of the passion behind the support to the BHI, as did place attachment for a few residents. Examination of the various motivations driving participation in the BHI helped identify sources of social conflict and passion that influenced the support of individual representatives to the BHI and the dynamics of their relationships within the BHI.

Individual.

Ultimately, personal motivations were most critical to the formation and sustained action of the BHI. The BHI pursued its projects based on efforts of the individual representatives, and their personal commitment was essential to the success of the initiative. Most participants had sanction to participate in the BHI through the expectations of their profession and the support of their home organization, but their enthusiasm for the BHI was based mainly in a personal interest in protecting the moraine. All of the study participants identified a strong personal ethic related to sustainability that drove their support of the BHI. Unfortunately, less supportive representatives (dissenters) declined to participate in the study, so that this sample reflects only the motivations of the supportive members. The conflict that arose for participants who personally supported the BHI concept, but were prevented from full participation by dissenting individuals in their home organization, provides insight on the effect of conflicting social and moral norms on collaboration.

All participants were also motivated to some degree by a shared identity about the moraine as a special place, which developed from place-making activities of the BHI. Because this developed as a result of BHI activities, it was not a contextual element and the influence of shared place identity will be discussed in the place chapter. A few moraine residents were also intrinsically motivated by a connection to place formed through personal experience with the moraine. That form of place identity was contextual and is discussed here, because it explains their passionate drive for the BHI, from its inception through its ten year history.

Personal ethics.

For individuals from supportive home organizations, participation in the BHI gave them immense satisfaction, because they could act in a manner consistent with their personal ethics. Fifteen of the 17 participants identified some form of environmental ethic as the main motivation for their support of the BHI (the other two acted to support their organization). For most of them, this ethic had developed from past environmental experience, consistent with development of an environmental identity (an affinity for nature developed through experience with natural spaces, Clayton & Myers, 2009). That identity inspired passion for change, and once presented with the opportunity through the BHI, fueled dedicated service to the BHI.

The sources of their environmental ethic varied, but those differences did not appear to pose a barrier to cooperation. For example the rural councilors that helped form the BHI were farmers to whom sustainable land management was obvious. Many of the study participants had

professional backgrounds in the environmental field: environmental planners, park staff and managers, government scientists plus two councilors and one land use planner. The academic participant had witnessed the rapid degradation of the landscape due to coal development during his childhood, driving home the "vulnerability of the landscape, to change very quickly" and awareness of the need to "act accordingly ahead of that tide." Regardless of the source of their environmental identity, they shared a belief in a need for wise resource management.

Some of these participants had a strong protective response sometimes associated with an environmental identity (Clayton, 2003, 2008). Clayton and Myers (2009) citing work by various authors (e.g., DeCremer & Van Vugt, 1999; Kramer & Brewer, 1984), suggest that an environmental identity may encourage a sense of oneself as part of a collective and a personal responsibility for a broader society outcome. For these participants, sustainability was fundamental, a core belief: "I mean, this stuff is just like breathing air or drinking water…I mean, you know, it's just a way of life" [municipal politician]. A park biologist felt that speaking for nature, "a silent stakeholder", was both a professional and personal responsibility. A park manager spoke of the BHI as a project that would have "meaningful results that fit with my dream, what I want to see, the kind of impact I want to have in my job and in most avenues I've got no hope of having that impact."

A feeling of urgency, a need to find a solution to an obvious, global problem, was shared among participants, regardless of profession. Politicians, the ENGO biologist, parks managers and government scientists all expressed concern about the cumulative impacts of rapid growth: pollution, rapid loss of natural resources, explosive development, downloading of costs onto municipalities, and a seeming lack of coordination amongst government regulators, within and beyond the moraine. For some of these participants, the lack of action on cumulative environmental issues was extremely frustrating, given an obvious need for change, as with this participant: "I mean it just, when does this nonsense end?" [municipal politician].

The global interest in sustainability lent a stamp of moral approval that justified personal support to the BHI – the moraine was worth saving and someone needed to do something. Participants each expressed a drive "to make a difference, to make it different than what it [land management] used to be" [agricultural agency scientist]. Framing the BHI as a cooperative team of experts working to solve a global problem gave participants a feeling of control. The interest of external organizations (e.g., Alberta Municipal Affairs) certainly helped bolster the feeling of

being part of something special, and the demonstration value of the BHI. A park manager summarized the feeling of possibility among participants: "there could be a better way of working together."

On the other extreme, the few dissenting representatives were equally motivated to mount a sustained opposition to the BHI within their home organizations and within the BHI. Opposition by these politicians prevented two municipalities from fully cooperating with the BHI, despite support of others within the organization. Unfortunately, none of these dissenting members agreed to participate in this study, and their motivations for resistance remain a question.

Place.

A few moraine residents explained their dedication to the BHI in terms of a strong, emotional connection to the moraine. A politician and long-time moraine resident expressed his motivation in terms of love, a deep, emotional expression of place attachment:

> Yeah, just, you love the place and you want to see that it's protected and safe and that it's going to be there and then other people can love it too and appreciate it. [municipal politician]

Other moraine residents had similar emotional connections (although intensity varied) that motivated their support of the BHI. One land use planner had recently moved into the moraine, attracted by a physical environment that reminded him of a former home and brought feelings of peace. A municipal environmental planner reported a sense of wonder about the moraine's natural character, a new awareness triggered in part by involvement in the BHI.

Place identity linked to affective forms of place attachment can evoke action to defend an important aspect of self (Clayton & Myers, 2009; Payton et al., 2005). Emotional place attachment has also been found to be a strong motivator for collective action (Payton et al., 2005). Long-term residents like the councilor above and a municipal environmental planner (who had since moved away from the moraine) expressed their place attachment as a strong, protective feeling indicative of place identity. In the environmental planner's case, he recognized that the BHI work involved trading off the aspects of the moraine that he valued highly, which came at an emotional cost because "my heart was always in that area." He recalled of his role in negotiating such trade-offs, "do I want the pain of doing this, is it worth the reward?" His motivation was not based mainly in rationalized action, but a feeling of

"protecting my home place." A close personal connection to the moraine clearly fostered a strong commitment to the BHI; this was not just part of the job for these participants, both key actors in forming the BHI.

Organizational motivations.

Despite personal support of the BHI's approach to land management, most participants were also required to act within the expectations of their home organization, the BHI and their profession. For many, expectations of the BHI, their home organization and their profession aligned and they were able act in a manner consistent with personal ethics. The balance struck by individuals placed in positions of conflicting expectations from their profession or home organization helps demonstrate the societal influences under which the BHI developed, a balance they framed in terms of organizational benefits.

Benefit from the BHI.

All study participants expressed a desire to further the goals of the BHI, suggesting a strong personal buy-in to coordinated, sustainable land management. For example, a park biologist likened the BHI concept to starting a fire: "once I got the spark, well I keep it burning, because I really enjoy the group and I believe in the cause." Participants often expressed their personal dedication to the BHI in terms of it being a 'worthwhile' project, one for which they could see value, to themselves, to their home organization or to the region. They truly wished the BHI to be successful because of its potential to generate change, in tangible or more abstract terms.

Participants saw different potential benefits within the BHI that motivated their own and they assumed, others' participation. A municipal environmental planner believed that key municipal decision-makers originally became supporters because they saw value to their home organization in the tools the BHI had offered to produce. A park biologist thought that researchers were attracted by the potential for their research to be applied to practical purpose, to demonstrate the possibilities in sustainable land management. A politician was similarly focused on the long-term potential of the BHI to set an example within the moraine and beyond.

Highly motivated individuals dedicated considerable effort to the BHI, contributing their skills and talents when and where they could, often beyond the expectations of their employer or the BHI. For example, some participants pursued additional training to support their efforts. Others voluntarily gave presentations to BHI partners and other organizations to help promote

the organization and its progress. A few recruited new members through their personal networks and nurtured those relationships to ensure retention. These participants had the support of their home organization, but the level of contribution given to the BHI was their choice and appeared to be driven by some potential seen in the BHI.

A parks manager believed that the enthusiasm of members was based on a feeling discontent and powerlessness with the current approach to development, and hope inspired by the BHI's potential to make a difference. When asked why he and others in the BHI had not given up, despite the hard work involved in becoming established, he explained:

> it is the most promising project or endeavor [among] everything I do in my work. Though in many respects I'm not instrumental because I'm one tiny cog in that big wheel, but I'm part of something that's going to lead to exciting outcomes and get the best chance of making positive change in the world. A lot of the rest of my job isn't. [park manager]

This empowering aspect to the BHI was often expressed by other participants as well, typically as a sense of an opportunity to make change. The level of enthusiasm ranged from highly optimistic views of the BHI's potential to a more subdued sense of possibility for change, but all participants justified their participation with statements about the potential to demonstrate sustainability through the BHI and 'doing the right thing'.

Organizational benefit.

Twelve of the 17 participants specifically noted that recognition of the potential for their agency to benefit from participation in the BHI had facilitated support for their participation. This support allowed the individual representatives to contribute to the BHI largely without concern about potential conflict between the BHI and their own organization's goals. A few respondents were in positions of conflict because their belief in potential benefits to their organization was not shared by their organization. These individuals did still support the BHI, but not openly. Collectively, these responses illustrate the effect of supportive social influences on participants and the barriers the BHI faced in promoting and implementing change.

For most participants, the BHI's goals matched those of their home agency, so their participation in the BHI and open cooperation with other partner agencies was fully supported. For example, the need for EINP to cooperate was obvious, given the ecological integrity mandate: "a little tiny park that's surrounded by a fence and surrounded by agriculture - you

need to work with your neighbours" [park manager]. For one ENGO participant the BHI allowed opportunity to maintain his agency's long history of conservation work in the moraine. Other key organizations (Alberta Parks, University of Alberta) could also see the alignment of their corporate objectives with those of the BHI and in some cases adopted the BHI's objectives as their own. For Strathcona County, the BHI's land management approach became "a corporate value" [municipal environmental planner].

Some participants (mostly those with an environmental background) felt that informed decision-making and landscape level management were the 'hook', ideas that could not fail to motivate corporate support, "because it's, it's the right thing, it's finally the correction factor" [park manager]. For a few organizations however, the attraction was strategic. For example, a land use planner noted that his municipal council could see the advantage of working with other municipalities to establish the BHI's regional plan (developed with their input) before the province imposed its Land Use Framework regional planning process. Other participants noted the effect on member councils of provincial government recognition of the BHI as a progressive model of regional cooperation.

For some participants though, BHI projects countered the interests of their home organization, placing them in a complicated position of weighing their professional and personal ethics against expectations of the BHI and their employer. Often professional ethics superseded corporate loyalties in these cases, suggesting influence of yet another social group, the professional community (discussed below). For example, two land use planners secretly worked around their council's resistance to use BHI tools and information that would facilitate good planning decisions for their communities. Planning practice increasingly emphasized environmental sustainability. Meeting this professional requirement was a challenge in thinly staffed rural municipalities, where environmental information was lacking. The BHI information offered a logical solution and these individuals made a particular effort to promote the BHI within their home organizations to reduce the conflict, sometimes risking censure in the unsupportive corporate climate.

Conflicting loyalties between the home organization and the BHI earlier in the BHI's development suggested that trust in partner organizations was as important as alignment of goals. For example, one municipal land use planner active in the BHI during its early years found that sharing of knowledge and the use of other municipal colleagues as a sounding board did not

happen as often as the BHI expected. An ENGO biologist, on the other hand, acknowledged "a bit of tripping over each other" in those early days, which was resolved by recognizing that "we need to work this out." The ENGOs were the first sector to develop a plan for cooperative efforts in the moraine after the Land Management Principles were established, based in part on trust in each other and recognition of shared interests. Trust in the motivations of other municipalities, and particularly Strathcona County, needed more time to develop. Distrust of regional initiatives and fear of loss of autonomy, even among supportive municipalities limited the level of trust their representatives were willing to extend during the BHI's early years.

Professional responsibility.

While most of the study participants saw the BHI as an opportunity to 'make a difference' within the scope of their job, others, such as the 'subversive' land use planners mentioned above based their support of the BHI on professional ethics. Although personally they might also be interested in sustainability, they were primarily motivated to support the BHI because it could help their home organization meet current professional standards.

The land use planners in the few unsupportive (dissenting) organizations reported feeling torn between professional alignment with the BHI's vision and obligations to their employer. For example, a land use planner wanted "to get to know [the Land Management Framework] inside and out" because it fit within his scope of work at the county, and because he "saw this as an opportunity to work with a document and go where the [BHI Working] Group wanted me to go with it." Yet this same planner was directed by his Subdivision Authority to "don't ever talk about that [the Land Management Framework], ever, in here." Contributing fully to the BHI meant risking career advancement: a land use planner was questioned about her allegiance to the municipality because of her support of the BHI. In the opinion of one park manager, and an original proponent of the BHI, the courage to counter organizational dictates required a skill important in collaboration, "a willingness to think laterally and to think about what's right rather than just fulfilling government duties." Their support of the BHI implied that these subversive planners had that open-mindedness, motivated by a sense of obligation to professional ethics.

Individual Level Barriers

ANT is based on a relational view of society; a central premise is that agency, or "action, intentionality, consciousness, subjectivity and morality all derive from relations between entities" (Lockie, 2004, p. 50). Unlike structural views of collective action then, the attitude and

motivation of the individual could have an influence on cooperation and through interactions with others, on formation of a collaborative group. The preceding chapter suggested an active role of resistant personalities in creating organizational barriers within some municipalities. Awareness of environmental concerns in the moraine and the perceptual barrier of scale could also affect individual understandings of the need for and the feasibility of the solutions proposed by the BHI.

Personalities.

Some of the early members of the BHI recognized the role of personalities in fostering cooperation and in group function. For one municipal politician participant who had experience in facilitating collaborative partnerships, the key to successful partnerships lay in personalities. This same participant recalled that a few key individuals in positions of influence had helped to bring the BHI together initially, by "saying, "hey" to our council, "there's something that's going on here that involves us and we should be part of it" [municipal politician]. However, as implied in the previous section, some participants believed that the two resistant municipalities were influenced by a few municipal politicians resistant to the BHI. Although contacted, these individuals did not respond to the invitation to participate in the study and the basis of their concern could not be confirmed directly. Other participants did, however, describe the depth, form and effect of resistance from these individuals, factors characterizing this critical individual level barrier to collaboration.

Distrust and fear of other organizations, regional government and loss of autonomy appeared to be the basis of the resistance for one such dissenting individual, a long-term politician well known for his stubborn attitudes. These feelings were deeply held and emerged early in the formation of the BHI. A municipal environmental planner involved in the first all-council presentation meeting recalled a passionate outburst from this councilor:

> this guy came out and he was just like a raving lunatic, he was pointing at [a councilor from another county] going "I know what you're trying to do, I know what you're trying to do" and it was hilarious … we had some, ahh you know, the very basic presentation and stuff like that on Elk Island at that time, so we, you know sort of showed that and then we had a discussion period, but this guy just went ballistic [municipal environmental planner]

Regardless of the apparent concern of this councilor at the time, all five municipal councils signed a letter of support for the formation of the BHI. In an ironic twist, the resistant individual later became this county's representative to the BHI Board after a change in the elected council. Council support for the BHI was withdrawn shortly afterward and this was the only municipality to refuse to adopt the Land Management Principles. The BHI has encouraged their participation and the councilor and staff have occasionally attended BHI Board and Working Group meetings, but the county has consistently declined partnership. Despite council's formal position, other councilors appear to give their tacit approval to the BHI by largely ignoring their staff's occasional participation, although they have reprimanded them for overt internal promotion of the BHI.

In the case of the other resistant municipality, although seemingly supportive, council and senior administrators would actively discourage internal implementation of the BHI's recommendations (e.g., see the examples above of a land use planner's experiences). In this case, resistance appeared to stem from the councilor representatives (two held the position over the study period), whose concerns were rarely openly expressed within the BHI, but reportedly reflected concern for positions contrary or irrelevant to their residents.

Various BHI members speculated on possible causes of resistance from these individuals during interviews, but a land use planner from a resistant organization provided the most likely explanation ('Environment doesn't vote'). Certainly, attitudes toward conservation, development and the moraine did vary amongst the interviewed participants but the determined, and sometimes passionate response of these resistant personalities suggested a deeply held, fundamental concern. The token external resistance shown by these two councils, in contrast, suggests that the cache of participating in the BHI offered some value and councils wished mainly to avoid potential conflict with a resistant councilor.

Whether open or duplicitous, resistant behavior frustrated the supportive individuals within the home organizations, who recognized personalities as the main, and somewhat irrational, obstacle. A municipal politician's reaction to his organization's stance captured the powerlessness felt by these individuals:

> Like this whole thing with the BHI is a lack of common sense, a lack of understanding. And it wouldn't matter now, they're so… until the personalities

> that are up there now change, it isn't going to change in terms how we're involved. [municipal politician]

Understandings of the moraine as 'special place'.

Pro-environmental behavior depends to some degree on the environmental identity of the individual (Clayton & Myers, 2009). A shared place identity can form when the place is a social construct Cheng et al., 2003); pro-environmental behavior in this case becomes associated with membership in the community linked to the construct (Clayton & Myers, 2009). In the case of the BHI, a shared understanding of the significance of the moraine as a special place could encourage pro-environmental behavior to maintain status as a member of that community. The barrier facing the proponents of the BHI initially was the lack of broad recognition of the moraine as a special place.

The moraine was, and remains, a lived-in landscape, not a pristine wilderness area. To some, the idea of conserving and protecting such areas countered their perceptions of the types of landscapes that might be considered as candidates for conservation. An academic participant explained the challenge this way:

> And this is the problem with the Beaver Hills, it's not the dramatic landscapes of the Banff and Jasper. Yes, we've got some charismatic wildlife in Elk Island and so forth, but people don't seem to appreciate that, you know…it's not that it's necessarily spectacular or unique or anything else like that. [academic participant]

The threats to that special place were also not universally shared. The preceding sections highlighted differences in the awareness among organizations of the risks of urban growth, including the emerging scientific basis for concern, as well as potential management solutions. Creating an understanding of the risks to the moraine's unique character remains a significant barrier for those representatives in areas beyond rapid urban growth. Some participants believed that this change in awareness might require a shift in world view, and so, would not come quickly. But the slowness of the paradigm shift still frustrated those who valued the moraine and understood the benefits of its sustainable management. The impatience of 'the converted' with 'the resistant' became an increasing tension over time.

Perceptual barriers.

Lastly, two perceptual barriers linked to place hampered the BHI's attempts to raise support for sustainable land management for the moraine landscape: temporal and spatial scale. The moraine is a large landscape and many of the BHI's representatives were familiar with only a small part of it, the areas in which they worked and in some cases, lived. Several participants had not explored beyond familiar lands until exposed to the BHI. As one founding member of the BHI, observed about the moraine, "people just tend to see it like in isolation and in fragmented bits" [academic participant]. Another participant considered the conceptual difficulty of conceptualizing change, and dramatic human intervention, at such scale to be a limitation of human perception.

Considering cumulative impact at the landscape scale is a challenge for most people, and even more so when evaluating the effect of incremental change over time (Kaltenborn, 1998). Even those with strong place attachment do not always notice incremental degradation (Kaltenborn, 1998; Trentelman, 2011). Disturbances affect complex ecological systems that may show noticeable effects only long afterward or may not be detectable due to synergistic interaction with other factors (Baker & Rapaport, 2005). This applies to positive and negative change: sustainable land management practices may improve ecological condition over a long time frame (e.g., increased biodiversity through wetland conservation), or in other locations (e.g., downstream water quality), obscuring an individual's contribution to landscape level health. Further, those familiar with ecological process are more likely to understand the benefits of adjusted land practice without physical proof.

Several participants remarked on the impact of this perceptual barrier for the BHI, in terms of defining success in promoting sustainability. This has been difficult to express, which these participants believed has led to a lack of clear goals and questions from some members "What is the ultimate goal? How will we know when we are done or will we be done?" [municipal land use planner]. The search for effective measures of improvement to demonstrate to partners continues, and as yet, has not been effectively resolved.

Individual Level Influences on Collaboration

At least among the participants in this study, members were open to a shift to regional land management and in some cases, highly motivated to contribute to the effort. Although the level of awareness of the risk to the moraine posed by development pressures may not have been

shared among all participants initially, they generally recognized sustainable development as a valid approach to land and resource management. In contrast, resistant personalities played a critical role as a foil throughout the development of the BHI. As discussed in the next chapter, their resistance to sustainable development helped unify the BHI members and establish norms of collective behavior and land management.

Personality characteristics were beyond the scope of this study and the dissenters declined to be interviewed. But, reports from other participants suggested that their resistance was rooted in a worldview focused on economic development (e.g., tax benefits of development and the landowners' right to subdivide). Further, their reported reaction to the BHI ('telling them what to do on their own land') suggested low agreeableness and openness to experience. Past research has indicated that these characteristics of personality (and conscientiousness) may influence stewardship attitudes and behavior (Milfont & Sibley, 2012) and team effectiveness (Peeters et al., 2006). The effect of personality on the development of trust and expectations of reciprocity on collaboration has been suggested in previous studies (e.g., Peterson et al., 2006; Ostrom, 1998), but not yet explicitly investigated, a gap in our understanding of collaboration.

The strength of the barriers and opportunities confronting the BHI at the individual level reflects an interaction between the human capital in the initiative (based on their skills, experience and attitudes/motivations) and the cultural capital presented in the context. As Flora and Flora (2013) note, cultural capital can create barriers that can result in rational and non-rational choices by the individuals involved in collective action. In the context of ANT translation, the strength of the barriers at the moment of agreement seems to depend on macro-structural, meso-structural and individual level factors.

The BHI had initial levels of trust, reciprocity norms, resources and networks (social capital) that helped to present their ability to successfully overcome such potential challenges. The strategic application of the social capital initially available to the BHI, and the means by which the group generated additional social capital as it formed and then began the two Land Management projects is reviewed in the next chapter.

Results - Social Capital Findings

Collaboration hinges on fostering the agreement to cooperate for a common objective (Callon, 1991; Law, 1992). Thin trust has been suggested to be a sufficient basis for early stages of cooperation (Ostrom, 1998) and conceptually, strategic use of initial social capital could build the trust and resources necessary to organize and mobilize to solve a recognized problem (Figure 7). Sustained collaboration implies need for active development of new social capital (e.g., trust, and norms and rules related to governance and operations). Thus social capital could be a mechanism for both group formation and stabilization, and once trust in the innovation is established, transfer of innovation to a broader community. Participants identified a process by which initially available social capital was strategically applied and developed, to produce new forms of social capital that facilitated sustained collaboration, and the diffusion of new skills and knowledge beyond the BHI.

In this analysis I systematically assessed the initial social capital (resources, trust and reciprocity and network structure) available to the group, the strategic application of that capital and the outcomes of its use, as recommended by Glanville and Bienenstock (2009). This approach allowed me to track the outcomes of use of social capital through time, including the development of new social capital useful for subsequent projects initiated by the BHI and the establishment of norms of governance and operation.

Participants described the trust, resources and networks initially available to the BHI during its formation, and during the subsequent Land Management projects undertaken by the BHI. They also shared the various strategies used by individual and organizational actors to grow or enhance that capital and to promote change in land management. Those actions helped foster additional capacity, resources, governance, and legitimacy that ultimately contributed to the stability of the organization and the confidence to take on more complex projects. The outcomes resulting from that process close the chapter and provide insight into the role of trust in promoting innovation and the potential for transformative experience to develop during collaboration.

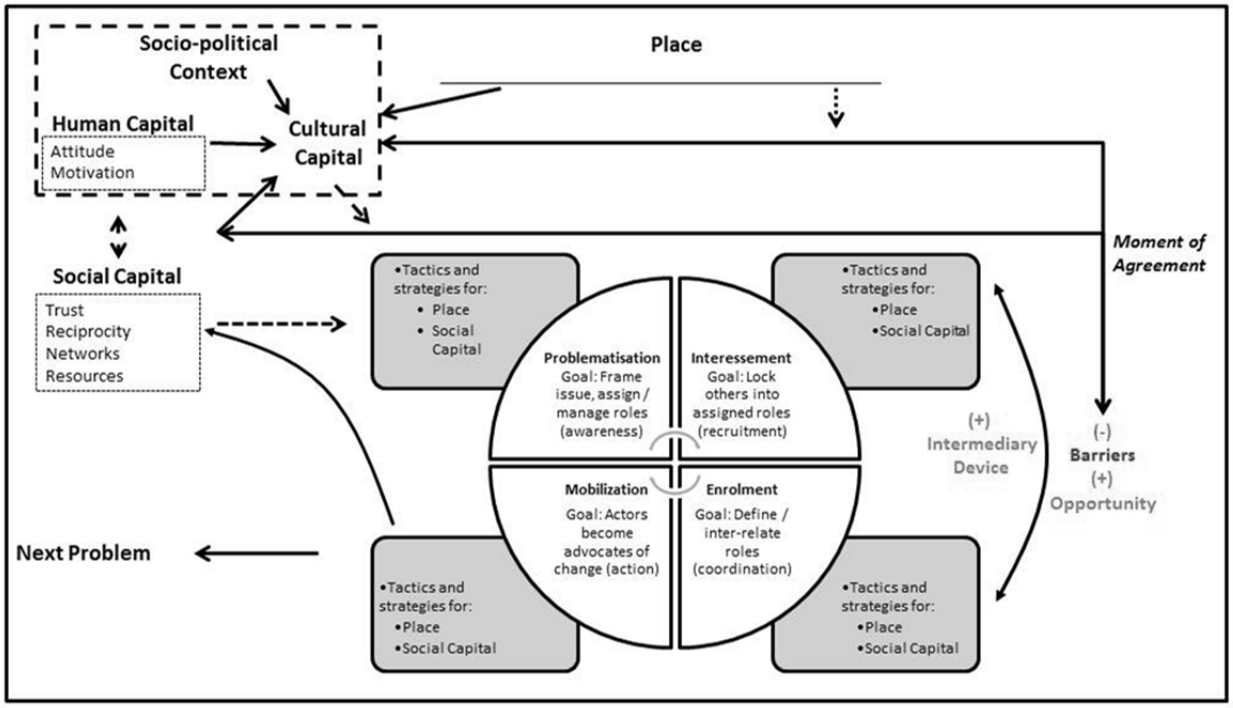

Figure 7. Social capital influences on the ANT translation process, and interactions with human and cultural capital

Initial Social Capital

In describing the development of the three BHI projects, interview participants identified various resources, network characteristics and feelings of trust and reciprocity that comprised the initial capacity available to the BHI. Successful past partnerships among some individuals and organizations had established the trustworthiness of these partners (Lambright et al., 2010), and facilitated access to resources available through the social network of each partner (Inkpen & Tsang, 2005). As summarized below, the depth and breadth of resources available was extensive, and established a credible base to support the initiative.

Trust and reciprocation.

Many of the groups initially involved with the BHI had had some previous experience with each other (see previous chapters). As suggested in past work, frequent positive contact had resulted in trusting relationships (Lambright et al., 2010; Ostrom, 1998). Further, as Lambright et al. (2010) proposed in their model of trust development, past personal (or organizational)

experience and third party referrals helped establish trust, or explained distrust and resistance among the partnering organizations.

Organizations fell into three categories of initial trust. Participants from organizations that had successfully worked with each other in the past (Strathcona County, EINP, ENGOs, University of Alberta) spoke of trusting relationships at the personal and corporate level. In contrast, participants from resistant municipalities reported that their councils were suspicious of Strathcona County's motives for cooperation (see organizational barriers discussion earlier), distrust based in part on the reputation developed during regional interactions within the Capital Region Alliance (third party referral, Lambright et al., 2010). Such past experiences resulted in difficult and tenuous relationships between the BHI and the resistant organizations' representatives. A last group of organizations (municipalities) was more concerned about the innovative nature of the initiative. They had no significant objections to the other partners but required evidence of the need for and benefits of a change to science-based regional management.

For organizations and individuals that had worked together previously, the decision to collaborate was easy, as an ENGO biologist explained: "a working relationship, and trust and common interests, ahh yeah, made launching it to something larger, more structured like the Beaver Hills initiative very simple." For those concerned about the proposal, rather than other partners, more justification of the need for regional management of the moraine was necessary and usually, good evidence would convince them. A municipal politician initially received many questions from his council about the plans of the "dreamers" in the BHI. In his view, being able to justify the need for action with evidence was "the only thing that saved us." Demonstrating why conservation of the moraine mattered and providing examples of other successful regional approaches satisfied their demands to "show me. Show me what's important about it" [municipal politician].

Trust becomes critical in evaluating differing knowledge claims, particularly when the need to manage an environmental issue is not yet evident (Holmes, 2010). Strathcona County and EINP had already built the case for 'smart growth' and sustainability in their own organizations (see opportunities discussion earlier). Their past experience with landscape conservation in land use planning and within the EINP Scientific Advisory Committee provided concrete examples that the BHI's proponents could use to counter skepticism of their peers. Peer

endorsements (transfer of trust through third parties; Lambright et al., 2010) also helped bolster confidence in the BHI's proposal for regional cooperation. For example, the strong support of the then mayor and council of Strathcona County for the initial proposal to form the BHI helped to convince a municipal politician's colleagues of the feasibility of the BHI proposal.

Municipalities leery of regionalism required a clear outline of what the BHI would do as a regional coordinator. Conveying that message was much easier in respectful trusting environments. An agricultural agency scientist felt that mutual respect and assurances of autonomy helped give new project proposals like the Land Management projects a fair hearing within the BHI: "because it's all voluntary they know there's not going to be repercussions. BHI is not making any of the decisions…so the municipalities still have the autonomy" [agricultural agency scientist].

Organizations that did not trust the regional management approach or other partners involved in the BHI were consistently weak supporters of the initiative, despite considerable effort by the BHI to allay concerns and build trust. As noted previously, several participants believed resistant personalities to be the main cause of the distrust, rather than past negative organizational experiences. Such individuals were suspicious of the motivations of Strathcona County in particular, but were also reportedly resistant to outside influences on their municipality. The stubborn resistance of distrustful organizations (and individuals) to the arguments that had won over other partners was a source of frustration for the BHI proponents. As one municipal politician observed about the process of recruiting support, "it helps to be a visionary. And it's frustrating when your colleagues are not."

Network structure and connections.

The existing networks and connections formed by trusting partners in the BHI played an important role in the early formation of the BHI, by providing access to essential resources. As one of the four original proponents acknowledged, a regional initiative like the BHI relied on a diverse team, in terms of perspective as well as technical skill:

> Ah, you need those sort of broad long term thinkers. You need the short term, hands on, get down and do it…and I think too that you get often spokespersons who come out of the woodwork and become strong advocates on certain things… You've got a number of other people like that. [academic participant]

Building the team happened slowly and purposefully for each BHI project, drawing on connections established through other previous projects in the moraine. One of the original proponents, a highly motivated moraine resident, listed a number of initiatives preceding the BHI through which he was able to develop professional relationships and expand his personal network. The Beaver Hills Moraine Duck Tunnel project, ConservAction, Strathcona County's Outdoor Recreation Master Plan – each of those projects had opened doors to new people and organizations. He actively cultivated that network for later potential opportunities, accumulating skills, expertise and other connections that could be useful in the future: "you know you plant ideas as you go along and you're putting this person with this person and pretty soon you start getting a whole bunch of people together." This institutional entrepreneur (Rosen & Olsson, 2013) only needed opportunity; he was well prepared to bring the appropriate team to the initiative, recognizing that "one person can't do it unto themselves." The catalyst for the BHI was the chance meeting of this actor, a Strathcona County councilor, the Chief Park Warden of EINP and the academic participant (described earlier). Their discussion effectively created a node that connected the networks (and experience and resources) of these four early proponents of the BHI.

Each of the four proponents had access to similarly extensive networks comprising dense, homogenous connections and bridging links that crossed group boundaries (Glanville & Bienenstock, 2009). The new members recruited to the initial Beaverhills Committee had mainly homogenous networks. The mixture of different network structures offered a range of essential resources, including access to scientific expertise developed through university studies by various actors, connections to other environmental organizations (corporate and NGOs) working in the moraine area, and landscape conservation expertise within their own organizations (e.g., Parks Canada's Steven Woodley in Ottawa). The councilors and senior administrators had access to political connections within their municipalities and vertical connections to provincial politicians. Bridging networks facilitated information flow and access to power and influence; dense, homogenous networks helped support proposed projects (Lin, 2001). The expertise, funding and political support available within these networks were critical to the BHI and accessing such resources was a strategic goal of the proponents (see Strategies section below).

Access to a cumulative network of knowledgeable resources was an important benefit of belonging to the BHI, one that appealed to many BHI members. A municipal environmental planner first exposed to this diverse environmental community at the September 2002 all-stakeholders meeting reflects well the reaction of participants unfamiliar with the emerging landscape level approach to land management:

> You know you go to a conference and you see everybody, and you know everybody, right…and I just never believed that in this industry, eventually it would become the same way, that you would start to see these same people. I had no scope at that point. So I sat through that workshop in total mesmerized, just, the whole day was just such a feel-good thing for me. [municipal environmental planner]

Awareness of this extensive network stimulated thought about organizational benefit, thus fostering support of the BHI. For example, the municipal environmental planner could think of many potential benefits to her home organization "because of the collaboration of specialists and expertise that we had." According to this environmental planner, the rural municipal officials at that meeting had a similar reaction, realizing that a whole community of professionals and organizations existed that could help to address the emerging concerns about the moraine. Lacking "a little bit of confidence" on how to implement change, this planner believed the new awareness of the diverse, skilled pool of expertise available through the BHI had inspired optimism among municipal partners. A rural municipal politician confirmed that access to technical experts was critical to securing council support in his municipality.

Networks also helped recruit new potential partners. Word of mouth, sometimes with direction for follow-up by senior managers generated initial interest in the BHI concept. An agricultural agency scientist was referred to an EINP manager by others in her network to find out more about the program. A park biologist was informed of the BHI by a supervisor who suggested, "it's worth it just to get in and try to understand what's going on." And as described in the preceding chapter, once introduced to the BHI, most people stayed involved, contributing passion, knowledge and new contacts to build the initiative. As this park biologist explained,

> my gut feeling is that 80% of projects get done not because necessarily of direct expertise that you bring to the table, but extreme willingness of people to actually

> do what they believe in, even if it's not within their, if it's their broad expertise, but they'll put lots of effort into this. [park biologist]

The vision communicated by the original BHI proponents, and adopted by the BHI members proved a convincing enticement to participate in the BHI, building momentum through personal or professional networks. One of the original four proponents likened the attraction effect to a hurricane: "as it gathers strength everything starts going in towards the center… it's sucked into the center and then it sort of shot out the top of it."

Resources.

When the BHI proponents initially conceptualized formation of a regional management committee, they had access to various relevant resources (information, expertise) to support the approach. The four early proponents and the ENGO partners had considerable experience in landscape ecology, sustainable development and practical experience with conservation tools, within and beyond the moraine. The proponents were familiar with the moraine's resources and the threats to its existence, a sensitivity to context that can help convince others to act (Taylor et al., 2012). Other members recruited to the initiative had direct experience in public outreach and collaboration (ENGO partners, agricultural agency scientists) or were aware of other collaborative regional programs that could be used as supportive examples (federal parks). Finally, some of the proponents and recruited members had access to and experience with government programs that could provide essential grant funding. Their efforts secured the financial and human resources required to complete the two Land Management projects.

A park biologist felt that having the "right people" involved in the initiative was essential, that the BHI had attracted a creative and diverse team with "huge potential" to tackle sustainable land management in the moraine. Getting to that point involved some luck and timing. As an early proponent noted, "a whole bunch of things came together to sort of initiate that thing [the BHI], between the parks, public pressure, we had politicians that were starting to, you know, had an environmental concern" [municipal environmental planner]. Yet it was the credibility, experience and knowledge within the new group that helped convince key partners of the need for regional cooperation and feasibility of sustainable development as a solution.

Again, the experience and network connections of the BHI's four early proponents proved integral to the initiative. As outlined in a previous chapter, Strathcona County had already begun to implement a sustainability agenda through the late 1990s. The

environmentally-minded county councilor behind this shift had built a base of political support on council for the change and experience in promoting the benefits of sustainability at the political level. Strathcona created its first environmental planning position at that time, a position taken by another early proponent of the BHI. While pursuing a degree in conservation science from the University of Alberta to support his new position, he gained access to a broad network of experts in this innovative field. His experiments with new conservation tools, supported by his network, allowed him to pioneer new approaches to land use planning and natural area conservation.

The proponent from Parks Canada had met the academic participant during his own studies at the University of Alberta. The academic had extensive international knowledge of landscape scale approaches for protected areas and resource management and had served on multi-disciplinary planning committees addressing development pressures (e.g., Banff-Bow Valley Study). The addition of the academic to EINP's Scientific Advisory Committee (SAC) provided these two actors opportunity to integrate social science and landscape level conservation with traditional resource management approaches, and experience in effective promotion of innovation. Together, the knowledge, connections and influence held by these four key individuals gave the BHI a strong base from which to build a collaboration, and confidence in its potential. Their ability to recognize and capitalize on opportunity was particularly important to the formation of the BHI.

The initial recruitment phase brought considerable new capacity to the initiative, including experience in regional municipal partnerships and municipal grants. Councilors and senior administration staff from each of the moraine's municipalities developed the original Terms of Reference for the "Beaver Hills Committee", working with ENGO, parks and other government agency representatives, and the original four proponents. EINP successfully secured seed funding from the federal Ecological Integrity program, and the BHI later acquired Municipal Affairs funding. These efforts established the terms for cooperation and secured the financial resources to proceed with the Land Management Principles and Framework projects.

Additional consultant resources helped guide the BHI during formation and the two Land Management projects and contributed to the group's governance and shared vision. The professional facilitator hired for the first all-stakeholders meeting helped the group agree to form the Beaver Hills Committee and establish norms of consensus-based decision-making and open

dialogue. Participants felt the facilitator's ability to foster open and balanced discussion had played a key role in developing this consensus to form the group (e.g., Innes & Booher, 1999; Schusler et al., 2003). A neutral third party, he could prevent factions from dominating the session by managing the flow of discussion. Participants also acknowledged the ability of the first BHI Chair to reinforce norms of balanced discussion, respectful conflict resolution and open communication within the group. These ground rules for respectful and open dialogue and consensus-based decision-making were incorporated into original Terms of Reference and have remained central in the group's governance approach (Beaver Hills Initiative, 2012).

The two other consultants that assisted in the development of the two Land Management projects guided the group through a strategic planning process to identify the Principles, based in part on an inventory of key environmental resources (the 'Blue and Yellow Map'). This map, the first landscape level assessment of the moraine, highlighted the extent and sensitivity of natural resources remaining within the moraine's private lands. It and the later Ecological Function Zone maps were featured in BHI presentations to the partner organizations to establish the need for a Framework to protect those resources (i.e., they became ANT intermediaries as in Selman & Wragg, 1999a).

ANT proposes that it is the relationships within the actor network that determine the agreement to cooperate, which implies that collaboration may develop through the dynamic among actors, rather than specific qualities of the actors (Law, 1992, Latour, 1996). The BHI proponents initially recruited a community of actors whose resources (knowledge, network links to influential actors and credibility) could establish a regional management system. The group subsequently attracted additional human capital necessary to support to the initiative, building on the initial trust within the group and the reputation it developed in the broader community. Although past studies of collaborative groups have emphasized efforts of centrally placed actors to recruit and organize a collaborative group (e.g.., Bell, 2007; Whitelaw et al., 2008), as discussed below, the contributions and interplay among these actors were critical to forming, organizing and sustaining the initiative.

Key actors.

The sections above highlighted the role of the early proponents in positioning the BHI as a feasible solution to a regional problem, often by drawing into the initiative other actors whose social capital could benefit the proposal. Participants identified other actors that had also

contributed to advancement of the BHI's projects, data that revealed a typology of important functional roles taken up by various individuals over the course of building and mobilizing the initiative. These other key actors were initially attracted by the trust and reciprocity held within the group, but then added new social capital (e.g., reputation, knowledge, extensive social connections), contributing to the "synergy" of the group [park biologist]. While the early proponents certainly played a critical role in recruiting support to the BHI, its cohesion and longevity relied on the social capital developed by this broader suite of actors. These key actors are described below, in terms of their distinct contributions to the initiative and its social capital.

The play-maker.

Almost all participants attributed the success of the BHI to a small pool of individuals whose extensive networks, knowledge, and leadership, diplomatic and political skills helped guide the BHI through its early formation and the subsequent Land Management projects. The four original proponents discussed in the preceding section were included in this category, as well as other managers within EINP. These actors were similar to institutional entrepreneurs (Rosen &Olsson, 2013), in that they were able to work together to mobilize support by strategically maneuvering past barriers to change and recognizing contextual opportunity. Their access to diverse networks provided access to the resources or influence that made this possible.

Participants described playmakers as "a foundational resource" [agricultural support scientist] and "instrumental" [academic participant]. As noted above, they were well-connected, with bonding (within peer group), bridging (across peer groups) and linking (vertical access to power, influence and resources) connections (Woolcock, 2001). They were able to draw from their networks what one of these original proponents described as essential to a collaborative initiative: a strong and resourceful team with broad vision, a "nimble" group equipped to react to opportunity and able "to be continually looking ahead" [park manager]. This same participant also noted the importance of team players, people interested in results, rather than those looking "to make a name for themselves and ride the coattails of something they think will get them somewhere." Playmakers themselves were often open to mentorship, and sought out others who had knowledge or skills useful to them and the initiative.

They also recognized the power of a compelling vision to motivate others, and could communicate that vision effectively to a range of audiences. Each used leadership and passion, where appropriate, to guide the group toward that vision, demonstrating good judgment and an

understanding of the mood and needs of the people around them. Playmakers were familiar with local land use issues and would actively use their experience to build rapport and establish common ground. A municipal politician admitted he would use his farming background to lower resistance of rural municipal partners. Recognizing that a rational, science-based focus for protecting the moraine would have "lost them right away" [academic participant], the playmakers instead focused on quality of life and the vulnerability of the moraine to development. This was "not just talking about the birds and the bees" [academic participant].

Their approach was sensitive to the need for partners to realize the need for change on their own, to allow participants a sense of control. A park manager described the playmakers as having a "tactful, strategic understanding about human change and learning". As one of the playmakers observed, "you have to be so careful that you don't get too far ahead [of others]" [municipal politician]. An agricultural agency scientist with collaboration experience described the balance as "equality for all" while still allowing those with "the where-with-all to make it happen" to lead.

Accordingly, patience was a hallmark of playmakers. As one of the original proponents observed, "The Beaver Hills started small. It didn't try to do everything overnight and it didn't try to force anybody" [park manager]. Yet slow process was wearing on highly motivated playmakers, particularly moraine residents. Balancing "your war chief and your peace chief" [municipal politician] took continual effort. One playmaker and former moraine resident who had since left the BHI realized his passion had driven him "too far" and that he'd let the work become "too personal" [municipal environmental planner]. In contrast, an objective perspective helped the two other proponents sustain passion for a desired outcome, and cope with the frustrations of the slow process of change. As noted by Rosen and Olsson (2013), strategic insight, long-term vision and the ability to sense emerging opportunities characterized the BHI playmakers. The ability to recognize and seize opportunities, coupled with passion, patience and good judgment, ultimately contributed to the success of playmakers in recruiting support and team members.

The convincers

The champion.

The political nature of regional sustainable land management was clearly recognized by the BHI's proponents, as was the need for champions that could support the BHI in partner

organizations. The BHI playmakers actively recruited political support and established a direct communication link to the political level of each municipality. This arrangement maintained a critical link with higher political levels, and access to information that could aid the collaboration (Rosen & Olsson, 2013). Internal champions that could provide leadership within the initiative were also important and were allowed to emerge voluntarily from the group, to manage projects relevant to their expertise or interests. Such collective leadership played an important role in completing project work effectively, and also enhanced participants' commitment to the BHI. Examples from the participant interviews will help demonstrate the differences between political and internal champions.

The all-stakeholders presentation in September 2002, for example, succeeded in securing the full support of the politicians in the room. Playmakers noted that universal agreement had been built on recruitment of political champions from each council during prior meetings. Those councilors helped to identify potential concerns and to design a strategic, persuasive presentation for that first official request for cooperation. Councilors were generally representative of their constituents. If it was possible to satisfy the concerns of a traditional, rural councilor, "that was a fairly good indicator that we captured the majority" (park manager). Supportive councilors continued to provide insight into political challenges facing the BHI as the Land Management projects were developed and submitted to councils for approval.

Internal champions, on the other hand, were allowed to emerge spontaneously from within the BHI, contributing where interest, skills and time allowed. As this participant explained, individual representatives were encouraged to contribute what they could, when they could, including leadership in areas of expertise:

> "Well, I mean it is an open forum and everybody is able to pitch their own idea for sure, but the fact that everybody there comes from a very specialized area means that they're all going to be their own champions, you know?" [municipal land use planner]

This form of collective leadership was consistent with the voluntary cooperation principle of the BHI and helped reinforce loyalty to the BHI. Because they could contribute to the initiative in a way that respected their skills and time, many of the individual representatives expressed a sense of satisfaction and ownership about the BHI. Participants exhibited considerable judgment in their approach to this laissez-faire approach to leadership, which helped develop a feeling of

community. For example, each of the various representatives that chaired the Working Groups over the study period deliberately maintained focus on initiatives rather than adopting a directive leadership style. For example, an academic participant observed that the EINP participants in this role "have purposely not sort of blown their trumpets too, too loud." As Friedrich et al. (2009) suggested, collective leadership and the ownership it fosters can strengthen support and commitment to the initiative. Several participants noted the sense of dedication to a shared goal of these internal champions and "a remarkable willingness for people to contribute as best they can" [agricultural agency scientist]. The sense of empowerment resulting from this collective leadership approach is discussed blow regarding social capital outcomes.

The expert.

The expert played a key role during the formation of the BHI and initiation of the Landscape Management projects, by validating process and inspiring confidence in outcomes. For example, university researchers were perceived by many of the participants to be somewhat neutral ('the objective expert'). Open support from such experts fostered confidence in the initiative during presentations to councils and at the BHI Board level. Strathcona County also deliberately positioned itself as a regional sustainability expert (see barriers chapter), a form of leader-follower strategy. Lastly, experts played a key role in the participatory, social learning approach within the Board and in the Working Groups, which fostered promoted in innovation.

Experts can foster better understanding of the uncertainty associated with environmental management through direct interaction and open discussion with other stakeholders (Bijlsma et al., 2011). Within the BHI, experts possessed both knowledge and external credibility in relevant fields and were perceived by some to be a neutral third party. In a few cases, they were deeply involved in the strategic positioning of the initiative, and realized that they could use their perceived objectivity to add support to the BHI's proposals. In fact, in some cases individuals were both playmakers and experts, switching roles as the situation required. Despite this conflict of interest, their advice was invaluable to the group, and they were often helpful in setting realistic expectations regarding the direction of the BHI.

As an example, experts like the academic participant played a critical role in building confidence in landscape conservation and regional management. Participants described him as an advisor and a steadying influence, "the rudder over the years to this big ship we call the BHI" [agricultural agency scientist]. The municipal environmental planner had a similar level of

respect within the group, based on his experience with municipal conservation tools, and his observations on policy tools could influence the debate about feasible alternatives. Consultants also added a stamp of credibility to the BHI's proposals. Each of these examples suggests application of social capital (reputation, expertise) to increase trust in innovation, thereby establishing new cultural capital (definition of possible alternatives) through the interaction suggested by the multiple capitals model (Flora & Flora 2013).

Experts were aware that they were working within a "political arena" [academic participant] and that they were sometimes presented strategically as 'neutral third-parties', to endorse the proposals of the BHI. For example, the decision of who would present the BHI proposal at the all-stakeholders meeting considered both the message and its political impact on the attendees:

> I know [the EINP superintendent] said to me prior to the meeting, well sometime prior to the meeting, he said if Parks Canada goes in and does the presentation, um you know, there's going to be this perception that "oh, Elk Island is trying to just extend its boundary", and it's going to flounder and so on. Um, so, basically I did the presentation, and we purposely did not use terms like protected landscapes, or Biosphere Reserves or anything else like that. Anything could have a loaded connotation. It was, you know, these are some of the issues. We need to work together to address them. Um, there are advantages in doing so. I remember I used examples from various parts of the world just to illustrate the approach but without labeling them as, you know Biosphere Reserves or protected landscapes. [academic participant]

The careful crafting of the original proposal to form the BHI acknowledged its innovative nature, and the cultural barriers the BHI proponents were confronting. Promoting protection of a lived-in landscape was "an anathema" in the planning context at the time [academic participant]. The experts used their 'objective' knowledge to inspire trust and confidence in innovation, and align the group to the BHI's goals.

The translator.

As suggested above, some potential partners were unsure of the science behind the management approach proposed by the BHI, a fear that the BHI attempted to address through a participatory, social learning approach to its projects. Through a series of presentations, the

experts outlined underlying science of BHI projects and its implications for land management. The relevance of some projects was not immediately evident to those without environmental background. Further, the experts were not always able to communicate effectively with the lay Board members. Translators within the BHI recognized that the information was a barrier to the support of some of their colleagues; they intervened to clarify concepts and build support for the various projects.

Municipal land use planners most often commented on the challenging material provided by the BHI, for example, describing the Land Management Framework as "kind of cumbersomely written, a little bit confusing unless someone is guiding you through the process" [municipal land use planner]. This situation reflects a limitation to the social learning approach to overcome trust barriers to innovation, the capacity of participants to synthesize information (Bardsley & Sweeney, 2010). For example, a land use planner described the reaction of his and other councilors to BHI science-based presentations:

> They [new councilors] don't understand what we're talking about and I need to go back sometimes and have a chat over coffee with them and explain what it was they just saw, and talk them down off the ledge a little bit because they don't understand what we're talking about half the time. [municipal land use planner]

This planner and his colleagues would often serve translators, although other members would also try to clarify information during working meetings (Patriquin, personal observation). Translators could often understand and rephrase broad concepts in an approachable manner, which required some base level of knowledge and good communication skills. They also had, or could establish, a trusting relationship with their councilors. Fostering understanding and trust in innovation, so critical to knowledge synthesis and application (Bloom, 1956) and dealing with uncertainty associated with sustainability planning (Leys & Vanclay, 2011), was effectively left to volunteer translators, in contrast to the more deliberate, strategic communication by experts. More interesting perhaps, is the spontaneous contribution of the translators to group goals, which speaks to the motivational power of the BHI.

The organizers.

The coordinator.

Rosen and Olsson (2013) point out the importance of organizing the group promoting policy change, a step that in their case helped legitimize the group. They found that strategically positioning a group promoting policy change at key events (e.g., national or international meetings) better aligned the group with governments involved in the policy process. Presenting a united face to those governments also drove the group to control its internal environment, which in their case resulted in a shift from an exclusive, informal group to an inclusive and more formalized organization. The BHI followed a similar pattern of development, with similar outcomes, aided by the coordination of its Executive Director.

The BHI Executive Director serves as a liaison among the Board members, Working Groups, member organizations and external agencies and a gatekeeper to the information compiled by the group. The Executive Director ensures that the various BHI initiatives are highlighted at important meetings and events, to promote the BHI and its projects. Finally, the Executive Director keeps the collaboration organized, resourced and focused on the overall objectives of the BHI, relying on extensive networks and organizational, negotiation and diplomacy skills. Over half the participants acknowledged the Executive Director in the BHI's success in implementing change in land use policy. As one participant observed, generating ideas through the Board was good, but implementing those ideas required organization and coordination. A park biologist attributed the regional recognition of the BHI to the work of the Executive Director and the BHI proponents.

The BHI aimed to facilitate change in land management policy and practice through basic and applied research. The ability to access information, research and expertise not available within one's home organization was one of the chief benefits promoted by the BHI and acknowledged by participants. As the gatekeeper to that information, the Executive Director helped inform and involve all partners in project activities, building trust and an inclusive group.

Ravindra (2004) emphasized the importance of coordination in her review of successful Canadian biosphere reserves: coordination built capacity for management solutions, regional influence and sharing of information and solutions. Coordination also reinforces a system of governance (Ostrom, 1998) and consistent messaging about the organization that can help build trust in the partners and the organization. Organizing as a group suggests coordination must be necessary, yet this important function is often missing from the place-based collaboration

literature (e.g., Bell, 2007; Wakefield et al., 2001; Whitelaw et al., 2008). The work by Rosen and Olsson (2013) and this study suggest that the coordinator plays a key role in the legitimization of the group, in part by managing communication within and beyond the group.

The recruiter.

Recruiters were another informal role, arising spontaneously within the group based on the motivational power of the BHI, and the potential represented by the cohesive, diverse group. They differed from playmakers in that their efforts were more opportunistic and helped sustain the BHI, rather than direct its projects. Recruiters recognized that the momentum of the group depended in part on sustaining a membership of similarly minded individuals: "you have to basically work on that core group" [park biologist]. Motivated by their passion about conservation and sustainability, they recruited individuals with suitable skills, knowledge and enthusiasm to sustain the initiative, drawing on their networks of environmental and conservation professionals. Recruiters relied on trust among others in their network to attract them to the initiative, but they believed recruits became involved based on the potential in the BHI to achieve shared conservation goals. A park biologist likened this potential to a flame, which once ignited drew others into the initiative: "Because you can sense when you talk to people that they have interests and passion that we could use and…then they look into how they can make it part of their work" [park biologist].

The spontaneous emergence of this role from the membership speaks to the motivational power of the vision of the initiative as well as the reputation established by the BHI. The opportunity to create significant, meaningful change motivated both the recruiters and recruited, a self-reinforcing outcome from trust-building within and legitimization of the collaboration. Like the coordinator role, recruiters have not been explicitly identified in either social capital or integrated resource management literature. Authors such as Dale et al. (2008) note the importance of actors able to attract additional resources to an initiative, but do not differentiate recruitment by playmakers (often for influence) from that by supportive members using their networks to add resources. This emergent property of a positive collaboration is important to sustaining an inclusive and diverse group, and, its ability to maintain relevance and energy.

The workhorse.

Several participants recognized the success of the BHI was based on the committed efforts of a diverse group, from its early formation through each of the Land Management

projects. Although some original members contributed significant effort to the BHI, all members dedicated considerable time to the initiative. The vision promoted by the BHI and norms of open communication helped build trust among the members and in the BHI (see below) and fostered the often voluntary effort of most members.

Over half of the participants commented on the contributions provided by BHI members and were amazed at those efforts, "a remarkable willingness for people to contribute as best they can" [agricultural scientist]. One participant felt "that 80% of projects get done not because necessarily of direct expertise that you bring to the table, but extreme willingness of people to actually do what they believe in" [park biologist]. A few participants commented on the role of a shared vision in building the cohesive, diverse group necessary to achieve the BHI's goals. The Executive Director of the BHI attributed the BHI's success to "the unity of all of that [group] working together... it's like a little ecosystem. If one species was gone, we just collapse." Another participant recognized that unity was based in a common vision, "I realize I'm essential to them and all that really matters is that we're on the same page with our driving core values" [park manager].

Although voluntary participation sometimes slowed momentum, the group never stalled completely. Projects would resume, largely because the group could discuss the problems and find alternative solutions ("When we have issues, we discuss them" [park biologist]), including recruitment of a new "core team" to sustain the initiative. This capacity also suggests development of trust and expectations of reciprocity within the group. Participants confirmed that volunteerism had become an expectation, that "there would be no BHI, if folks didn't step up and take on that volunteer aspect" [municipal environmental planner]. The motivation prompting such dedicated service developed from the common vision promoted by the BHI, as discussed in the strategies section below, and in the place chapter.

The dissenter.

The BHI proposed regional dialogue as a means to coordinate land management, a dialogue intended, in part, "to make sure that everybody falls into place and understands what you're doing" [municipal politician]. The BHI aimed to achieve consensus on *how* to approach regional management, based on the initial agreement that they *should* conserve the moraine. This led to an interesting dynamic, with dissenters emerging in response to the land management approach introduced by the BHI.

Two types of dissenters emerged within the BHI, open dissenters and subversives. Open dissenters were clear about their opposition to the BHI's objectives (e.g., council representatives from resistant municipalities). Dissenters were useful to the BHI because they served as a "bell-weather' [park manager] of broader public and political acceptance. Playmakers, in particular, noted that open dissenters helped the BHI build a compelling, persuasive vision of shared and individual benefits. As this park manager explained, "There's probably a few there thinking the same as him, XXX just said what they were probably thinking anyway so, you know, it was worth the effort to try and convince him" [park manager]. Those discussions were "difficult" [municipal politician], and although dissenters were rarely convinced by the BHI's arguments, the discussion reinforced the commitment of others. Dissenters often opposed regional management objectives for self-interest, which identified the boundaries of acceptable dissent for the group. Such boundaries were further reinforced by the BHI through various tactics (see section below).

Although most participants felt open discussion was well supported, the boundaries of accepted debate were clear to several participants. An ENGO participant recalled the BHI decision-making as a process of "group think", implying a subtle form of coercion and some control on debate. Others had sometimes felt the pressure to support the BHI in open debates. For example, a land use planner who became "pretty adamant" at a BHI Board meeting in discussion of a proposal for BHI review of development proposals still felt guilty about voicing a professional concern that put her in conflict with colleagues supportive of the BHI. Another participant felt that her organization's concerns were not always welcome, but still important for healthy debate:

> you know we're kind of the odd ones out again because we tend to be that negative voice. And you know as much as I like to play devil's advocate some days, it does get frustrating that everybody thinks that I'm you know, the outsider. But at the same time I think that that voice needs to be heard and it needs to be heard…because if you're just inviting your friends, your friends are going to tell you you're doing wonderful things [land use planner]

Such conflict speaks to the strength of the in-group effect fostered by managed dissent, and the importance of the skills, attitudes, self-confidence and self-respect of group members in sustaining open debate (Schusler et al., 2003; Sparkes, 2003).

Subversives emerged in resistant municipalities, again spontaneously. While personally quite supportive, subversives were required to support their organization's opposition to the BHI. They would actively find ways to promote change within their home organizations, but publically remained consistent with the position of their home organization. This group included land use planners for the most part (but also some parks staff); individuals who understood the benefits of regional cooperation, but could not actively use BHI information due to organizational resistance. Instead, they would exploit opportunities to promote the information's benefits and the BHI within their home organization. For some, their support placed them in a position of some risk. For example, councilors questioned the loyalty of a land use planner for her promotion of the BHI, while another land use planner was told to "never say that word [Land Management Framework] in here, ever."

The perseverance of the subversives in their support the BHI suggests a highly motivational drive for cooperation, a motivation linked in part the strategic development of a common vision. These and other strategic actions by key actors, the BHI, other organizations and individuals that helped to promote collaboration and the implementation of the Land Management projects, strategies are discussed in more detail below.

Strategies Used By Actors

Participants identified a variety of strategic actions used by key actors, the BHI, partner organizations and individuals to build trust in the BHI and its objectives. Like previously studied collaborations, the BHI used a variety of strategies to form and mobilize the group. Unlike previous studies though, the BHI also used strategies to establish and maintain an equitable system of internal governance and operation. This difference relates to the short-term nature of the collaborations assessed in these past studies, and often, the top-down direction for their formation. Regardless, the BHI's governance and operational system incorporated deliberative strategies reported as building trust in other studies (e.g., open communication, social learning, conflict resolution), while also introducing new items (e.g., managing power conflict).

Although many of these tactics had been previously reported in the literature, rarely were they attributed to specific actors. Key actors and the BHI had a relatively diverse repertoire of tactics. Partner organizations and individuals used fewer, but distinct tactics. The qualitative aspects of these strategies are discussed below.

Action by Key Actors.

Key actors, mostly playmakers and political champions, used various strategies to encourage potential partners to enroll in the BHI and support its proposals. While many strategies were direct and transparent attempts to foster trust, some were coercive, intended to control potential development of distrust (e.g., manipulating political context or isolating dissenters). The sections below describe each set of strategies in more detail.

Marketing benefits.

Municipalities were the critical piece in the BHI collaboration; without effective land use controls, the moraine's natural resources and associated quality of life would remain at risk. Playmakers and political champions had dispersed networks that crossed group boundaries, which placed them in a position to understand the political context well. They also had skills and knowledge that helped them portray the BHI as positive, innovative, and attractive to various partners. They applied these resources to a marketing and image management campaign intended to convince the municipalities to join the initiative and maintain their support.

Sensitive to context, these actors emphasized the practical benefits of cooperating (e.g., access to expert knowledge, funding, and research) and political advantages of cooperation (i.e., association with a progressive, regional partnership). Their ability to use their networks to recruit a diverse and talented team added credibility to their proposals. Several playmakers described the alignment of their messaging to the needs of partners, to build on similar interests and forge a mutually beneficial relationship. The playmakers, political champions and coordinators also actively worked to lower potential resistance to their message. Those with political awareness (and sometimes a position of influence) used diplomacy to promote the BHI and to identify potential concerns. The playmakers and coordinator were particularly adept about positioning the BHI within regional politics, supported by advice from political champions. The BHI Executive (playmakers, coordinator and political champions) would frame the BHI proposals in a light appropriate to the audience (e.g., emphasizing the role of tradeoffs in 'smart development' and adopting a non-directive tone). Effectively, they developed win-win scenarios that would lower resistance to the proposals.

Arguably, the municipalities did not always see the value of these benefits (e.g., "elected officials don't really seem to appreciate the benefit of the information that we get from the BHI" [academic participant]). But as the municipalities began to experience growth pressures, the need for informed management became clearer. Perception of resource condition has motivated

cooperative environmental stewardship (Emery & Franks, 2012; Gilmour et al., 2011); particularly if management processes were perceived to be fair and leaders could effectively communicate benefits of cooperation (Gilmour, Dwyer, & Day, 2013). Leaders who could also position the initiative as a moral imperative ('the right thing to do') were particularly effective in recruiting support (Stephenson, 2011). Distrustful partners were difficult to convince for political reasons, and required a more manipulative approach.

Managing political support.

Together with playmakers, political champions used their knowledge of the political context to actively manage the political perception of the BHI (Bell, 2007; Wakefield et al., 2001). This included deliberate manoeuvers to position the BHI in a favorable light and a dedicated lobbying effort to secure and maintain the support of key partners.

Local awareness helped to avoid potential pitfalls in presenting the BHI (Whitelaw et al., 2008; Taylor et al., 2012). For example, selection of spokespersons for the BHI carefully matched the presenter to the audience. A strong environmental proponent noted that he did not always have the necessary clout with some partners: "if somebody has tipped them off to…what my values are, then you can see the wall just goes up and they are very polite but…" [municipal politician]. The academic participant instead took the forefront, "because [he] is not threatening" [municipal politician]. Similarly, ensuring alignment with the provincial agenda for regional management and provincial support fell to the political champions, critical insurance based on their past experience: "if there's some degree of difficulty where the minister may not think that's a good idea or something like that, you're done" [municipal politician].

Appropriate timing for public involvement has been a sensitive issue within the BHI. Ostensibly, direct presentation to the public in another municipality by the BHI could have been viewed as an attempt to interfere with local autonomy, the rationale provided by several BHI participants. A focus on municipal councils also limited discussion to a smaller field of decision-makers, which can be an advantage when trying to build trust (Gilmour et al., 2013; Ostrom, 1998). This choice created conflict with some members of the BHI, who felt that grassroots support was the only means for broader acceptance of sustainable land management. Yet the focus on municipalities arguably addressed the immediate threat to the moraine, land development, and capitalized on the political and social capital possessed by these key actors.

Manipulating dissent.

Playmakers realized that a political balance was critical to the BHI's ability to make change. Finding benefit for all meant finding "how can we make this work and make it work for everyone" [municipal politician]. Yet satisfying the concerns of political representatives of resistant municipalities was not possible without compromising group goals. Here, playmakers and political champions resorted to coercion, through isolation of dissenters and leader-follower strategies, to recruit support without compromising gains with other partners.

As Stephenson (2011) suggested, a proposal with moral, cognitive, aesthetic and affective elements was helpful in generating support. It also helped marginalize open dissenters with extremist views, a process actively encouraged by the playmakers. As this park manager described, dissenters could be easily discredited with clear rationale for the need for the BHI:

> Yeah if they're not in the majority they either can learn to come around or be marginalized and that's through the agenda, the right things to do for the right reasons with enough people to keep that going (park manager)

In part, keeping focus on the agenda required strategic communication to control the message (Bell, 2007). Open dissenters were understood to be blocking the transfer of accurate information to their home organization. In these cases, playmakers and champions would ensure other, more receptive contacts (e.g., a CAO or planner) were regularly updated on BHI activities, "to keep the pots simmering in between different councils" [park manager]. Leader-follower strategies, such as the presentation of regional management by experts as progressive and the political and financial backing of the BHI by Strathcona County also challenged dissenters to conform to the majority interest. The lack of cooperation by dissenters appeared regressive in comparison, validating the exclusion of their concerns.

Peterson et al. (2006) found exclusion of dissenting voices had increased distrust among key actors and contributed to a failed collaborative policy development process. But in the case of the BHI, isolation of self-interested concerns did not necessarily remove dissenters from the dialogue. It did, however set a social norm for 'acceptable' debate and accepted group goals (Gilmour et al., 2013).

Build capacity.

As Flora and Flora (2013) observed, community initiatives require human capital with appropriate skills and knowledge to implement the vision. The BHI required research and

development of new tools to aid in sustainable management. As noted above, both playmakers and recruiters actively sought out necessary champions, funding, and specialist help. Playmakers used their connections to bring specific organizations to the table, especially during the formation stage of the BHI (e.g., bringing ENGO partners into the initial group discussions). Once the BHI formed, the recruiters sought out new specialists to contribute to the BHI's projects. Both playmakers and recruiters had the extensive, open networks essential to build capacity (Inkpen & Tsang, 2005; Lin, 2001; Taylor et al., 2012).

As noted earlier, the BHI vision also often played a central role in recruitment efforts of these actors. Yet with some representatives sent by partner organizations, the vision communicated by these actors was not sufficient. Some individuals would drop out of the BHI, "because they don't see anything in it for them" [park manager]. Leaders may reach many people with an inspiring vision (Stephenson, 2011; Taylor et al., 2012), but some individuals may not see the new possibilities, for a variety of reasons (e.g., sense of its impact, meaningfulness; Thomas & Velthouse, 1990).

Promote change.

The benefits of regional, science-based management were a central part of the BHI's messaging (e.g., shared costs and sound decision-making), but adopting this approach also required substantive change from partners. Playmakers recognized that in large part, the success of the BHI relied on "sort of an almost shift in their mental map of how they look at the world" [academic participant]. As one land use planner recalled of the release of the Land Management Framework, it met with particular resistance because it meant putting action behind words:

> yeah, aren't we a good progressive municipality, we are part of this really unique initiative in, in you know, north central Alberta and you know, pat, pat, pat, on the back. We're award-winning, but that is as far as they wanted to go. [municipal land use planner]

Policy change involving non-technical participants can be challenging due to low tolerance of participants for uncertainty (Bardsley & Sweeney, 2010; Biljsma et al., 2011). Persuasive, voluntary approaches such as social learning can help actors to assess and evaluate new information based on ccommunicative rationality (Biljsma et al., 2011; Beichelt, 2012; Innes & Booher, 1999). In part, this process hinges on trust developed within the group, such

that participants can express concerns and request clarifications (Bardsley & Sweeney, 2010). It also helps build comfort with the information, to reduce uncertainty (Biljsma et al., 2011).

As Whitelaw et al. (2008) observed and the previous sections suggested, key actors (experts, translators and playmakers) each played a role in promoting change, through social learning approaches, expert endorsement and translation of technical concepts. The playmakers also recognized the persuasive value of demonstrated results and actively worked to maintain a balance of short-term and long-term benefits in the projects pursued by the BHI. The result was an open environment that supported questioning and learning in developing and evaluating value of the new approaches:

> sometimes, the stuff is controversial but it's an open forum where people can ask questions, can learn, can raise their concerns, debate, discuss, whatever. And because it's all voluntary they know there's not going to be repercussions…the municipalities still have the autonomy. [agricultural agency scientist]

Facilitated social learning with experts and translators actively built confidence in and familiarity with the underlying science (Leys & Vanclay, 2011), particularly during the Land Management projects. Presentations helped introduce new concepts, but actively working with the concepts in a local context allowed BHI members to develop a deeper understanding of its potential utility and validity (Bardlsey & Sweeney, 2010; Leys & Vanclay, 2011; Rodella, 2011). An assessment of new understandings arising from social learning was beyond the scope of this study; however, it did not convince resistant partners of the Framework's benefits. The social learning process was intended mainly to foster an open-minded attitude to sustainable land management and for many participants, it succeeded. Bardsley and Sweeney (2010) note that while specific understandings of complex science are unlikely to result from participatory policy development, an understanding of factors influencing decisions is feasible and may be more beneficial to resource management. The voluntary inclusion of relevant aspects of the Land Management Framework into each municipalities land use policies suggests such an outcome here.

BHI organizational strategies.

Once the BHI became an established organization, it could promote trust, build its reputation and expand its influence through external networks. The original Terms of Reference

crafted by representatives created a vision for the BHI that motivated cooperation. It also established a system of governance and norms of cooperative behavior. Demonstration projects proved the benefits of sustainable land management. Lastly, the BHI built trust and empowered representatives through its management approach. The sections below describe these strategies.

Create a vision.

The BHI collaboration began as a "pilot project", in the words of one municipal politician, an initiative without a template on which to model. The newness of regional sustainability and the limited examples on which to base the initiative meant the group needed to create its own definition of regional, sustainable land management. Cooperation means giving up some autonomy, to pursue joint goals rather than self-interest (Callon, 1991; Diekert, 2012). Forming and sustaining the BHI required a rationale that was sufficiently convincing to suspend self-interest and encourage voluntary participation. The process of developing that vision involved several steps of refinement and trust-building.

An ENGO participant described the visioning process as a series of necessary steps, moving "from awareness to knowledge then action." Internal and external presentations used place-making to establish the uniqueness and vulnerability of the moraine and the need for its conservation (see next chapter). Group presentations also allowed forward-thinking individuals to emerge, a show of peer support that fostered trust in the approach among other members (Lambright et al., 2010). The impression of the participant below reflects the impact of such presentations on Board members:

> and I had learned a lot, when we went through the studies and that… and I'll tell you, it was pretty quiet when they made their presentations because I think, most of them [the other representatives] were in awe saying "really, this is what's happening out there or this is what could happen?" [municipal politician]

Once engaged to participate, the BHI representatives developed a vision statement in the Terms of Reference for cooperation, later reaffirmed in the Land Management Principles. Many participants acknowledged this as the more difficult stage of the process, a shift to action that demanded more attention to development of trust. As an ENGO participant explained, "on the human side there is a whole bunch of other things happening. There is trust developing. There's credibility developing" [ENGO biologist]. He recognized that the group needed to work through that period before engaging in more substantive work. These first two years were described by a

municipal environmental planner as "big coffee and donut meetings", with discussion of broader goals for the initiative, but little progress toward a plan for coordinated land management. "People would ebb and weave with their interest" [municipal environmental planner]. Fear of losing partners with slow progress led the Executive Committee to hire the consultant team to complete the Land Management Principles and Framework. The consultant team helped the group maneuverer through the more difficult, values-based discussion to identify specific goals for the group, but as the participant above noted, this step would only have been possible after trust had been established within the group.

The Land Management projects relied on more science-based discussion, but the resulting Principles for conservation captured values important to the each partner organization. By including both scientific and value-based aspects of the moraine in the vision, the BHI avoided a technical bias that can exclude some interests and foster distrust (Giddens, 1979; Jamal & Eyre, 2003). As this participant explained, the resulting vision summarized shared interests: "I think it [the BHI vision] just sums up - the people see value in the region… it's an incredible, unique area" [agricultural agency scientist]. The group came to consensus the vision through open dialogue and constructive conflict management (Innes & Booher, 1999). The consensus process built trust in the partners (Ostrom, 1998), which reinforced consensus-building as a norm (Rudd, 2000).

The visioning process also leads to a base level commitment to each other and links additional subjective value (e.g., status, honor) to cooperation (Ostrom, 1998). Ostrom (1998) suggested that such subjective values can foster additional trust, expectations of reciprocation, group identity and norms related to the goal. Similarly, Stephenson (2011) proposed that a leader with aesthetic, moral, cognitive and affective imagination could create an enabling environment in which to determine new possibilities for change. Both outcomes depend on open and inclusive communication.

Foster open and inclusive communication.

Consensus decision-making makes open communication a necessity (Innes & Booher, 1999; Schusler et al., 2003), but with a voluntary group, openness was even more critical. Dealing with dissent and opposing opinions in a constructive way would help built trust and ensure the survival of the group; ignoring it might lead to its demise (Peterson et al., 2006). Participants noted the rare opportunity for this diverse group to discuss regional issues and the

openness with which such discussion happened. Some attributed this effect to the BHI's unusual mandate, to share, compile and provide information to others, rather than make regional management decisions. These participants felt the voluntary mandate allowed a relaxed atmosphere, where participants could:

> see the power, maybe not right away, but over time there's those little wins, those little understanding moments, those little ah ha's and whatever, and people kind of go, we should be able to talk about this, this is really important, you know. Just to find out that they're either not the only municipality or the only agency having to deal with this kind of thing, but to find out how others have dealt with stuff in the past and or, you know, whatever, share that information. [agricultural agency scientist]

Other participants acknowledged that the process was actively negotiated and credited the facilitator of the initial stakeholder meeting, the BHI's first chair and others for norms of open and balanced discussion. The facilitator created an inclusive forum for discussion at the BHI's first meeting, confronting what one participant described as "the first hurdle, because everybody wants to be heard" [municipal politician]. Others described that meeting as setting the norm for open dialogue and credited the first Board Chair for his ability to maintain that culture of inclusiveness. Facilitation during the two Land Management projects also emphasized consensus-based decision-making and respectful conflict resolution. Successive Board and Working Group chairs maintained these norms, which speaks to their strength.

Generally, most participants appreciated the opportunity and benefits of open debate. Participants noted the effect of a relaxed mood in meetings, and the ability of the group to discuss conflictual issues respectfully. Previous sections mentioned situations in which participants felt comfortable enough to raise concerns and engage in open debate within the Board and Working Groups. The reduced relational transaction cost created by open, two-way communication and reinforced as collective goals are realized allows knowledge to be pooled; trust, reciprocity and reputation to develop; and rules of communication to be standardized (Rudd, 2000). Ostrom (1998) attributed such development of social capital to structural variables, including small group size, symmetry of interests, face-to-face discussion, availability of information and long duration of interaction. Similarly, Lambright et al. (2010) noted the impact of frequency of successful cooperation events on trust. Small Working Groups with

monthly meeting schedules likely helped facilitate open communication, contributing to the development of trust and reciprocity reported by participants.

Yet for at least one participant, sharing in group settings was uncomfortable. Silence may have created an impression of openness that perhaps did not exist. In part discomfort related to personality, but also to the structure of the open forum, with its emphasis on social learning:

> I never talk at a board meeting. I'm the one who talks at coffee break and in between, (laugh), because that's just my personality, right…But it's one of those things that you know, if you're in a large group of people it's harder to say you know, for one it's harder for the ego to say I have no idea what you're talking about, right? [municipal land use planner]

Such comments hint at the other social factors that can confound inclusive communication, including individual attitudes, skills and self-confidence (Sparkes, 2003), and technocratic dialogue (Jamal & Eyre, 2003).

The consensus-based process leading to formation of the BHI and decisions regarding the two Land Management projects was sometimes conflictual, but open discussion allowed the group to learn more about the scientific basis for the BHI's approach to regional management, and each other. Several participants recognized the opportunity to learn through the BHI as a personal benefit. As Innes and Booher (1999) and Jamal and Eyre (2003) suggested, the consensus process produced new ideas, understandings and relationships, in part because members were allowed to voice technical, practical and value-based concerns. It also exposed dissent based on self-interest; information key actors could use to isolate potential detractors (see below).

Demonstrate results.

Past, positive experience with cooperative projects can help build confidence in future collaborative efforts (Emery & Franks, 2012; Gilmour et al., 2011). Several participants noted the importance of "low-hanging fruit" [academic participant], smaller, achievable and meaningful projects that could demonstrate the value in regional cooperation. The BHI attempted a variety of smaller applied research and management projects in the early years of the initiative, including the fire management study and an invasive weed control project. Not all of

these were completed due to insufficient funding and manpower, but each attempted project built trust in collaboration, and awareness of the potential in cooperative effort.

Representatives required clear demonstration of meaningful results of their contributions to sustain their own motivation, and the support of their senior management. Short-term results could have dramatic effect on participation in the Working Groups, as this participant explained:

> actually I think people to see that we need some products that are functional, functional products that are actually making a difference, to keep them going. Otherwise not only that our personal motivation will go down, it's also support from our agencies will be lower to spend time on this. And there is only so much energy to do this on your own time. [park biologist]

Meaning of results varied among participants. For some, their commitment to the group faded once their own organization's needs had been met, "because, you know, what we were trying to achieve was a solid foundation for policy and regulatory documents that… were there for decision makers. I had achieved that" [municipal land use planner]. For most others, the smaller successes proved future value; their motivation came from a belief in the potential to achieve significant, broad-based results. This participant summarized the optimism expressed by several others about the projects to which they could now aspire:

> Well if you don't believe in what we are providing - and not what we are providing as much as what's the potential. I think we're still at the potential stage… because now we are starting to see documents and we are starting to see a clear direction not at this level [gesturing high], we actually got down to that level [gesturing low]. We are much lower now, much closer to actually hitting the ground. We are kind of driving but little motorcycles. We want to actually drive a tank. [park biologist]

Sharing results also demonstrated commitment to cooperation. The BHI provided its land management tools and information to all partners as they were developed, even to partners only weakly supportive of the initiative, and with no obligation. This open sharing approach helped to reinforce trust by fulfilling a commitment, which can foster expectations of reciprocation (Friedrich et al., 2009; Inkpen & Tsang, 2005; Schusler et al., 2003). Yet, the lack of enforcement for cooperation allowed free-riders to emerge (Inkpen & Tsang, 2005; Gilmour et

al., 2013; Ostrom, 1998). Participants from organizations with weak commitment realized that the exchange was not reciprocated and were very aware of the risk of perception as a free rider.

Short-term results created a positive feedback loop similar to that observed by Gilmour et al. (2013) where trust in a self-managed fishery organization was developed through small, successful projects, over time. Effectively, the BHI's short-term results helped sustain the momentum of the group, and enhanced its progressive image of heading in 'the right direction'. Success can also foster competing demands; new struggles over resources, procedures and authority (Rosen & Olsson, 2013). Several participants expressed concern about the potential to drift away from practical, relevant projects into a research-driven agenda that could weaken the commitment of the municipalities.

Separation of vision of the 'management' layer of the maturing organization from its membership is a risk when a vertical hierarchy forms within the organization (Routledge, Cumbers, & Nativel, 2007). A participant familiar with such organizational dynamics had feared that the BHI might begin to follow this bureaucratic trajectory and lose momentum, as he had "sensed a little bit of loss there, where to go next" [ENGO biologist]. The group instead maintained connection to the membership through the open forum for project review at the Board level, and through creation of the Working Groups. This approach avoided the potential for power imbalance (Routledge et al., 2007) and as explained below, helped sustain motivation by transferring authority for project development to BHI representatives.

Empower members.

When participants spoke of the BHI, they would often comment on their relationships with others, highlighting their casual friendships and their enjoyment in working with the group. This too was facilitated by the BHI, first by inspiring voluntary participation, then by allowing representatives control of the Working Groups. Establishing a management style for these groups that allowed them control helped create the synergy and cohesiveness identified by participants, and over time, empowered them to undertake sustainability projects independently.

The Working Groups offered the opportunity for individual representatives to interact in smaller groups, a situation conducive to development of trust (Ostrom, 1998). It also allowed the members to express their organization's particular perspectives and constraints, creating shared and deeper awareness of the land management problem (Bijlsma et al., 2011; Schusler et al., 2003). Allowing the Working Groups to identify and solve problems through their own

approach gave members a feeling of control, which in turn promoted an open-minded approach to problem-solving.

A playmaker described the intent behind this approach. To him, sustainable land management required members to see the problem at the ecosystem level. Allowing the individual representatives to come to the realization themselves would ensure the cooperation needed to conserve this unique place. Patient leadership was critical (Gilmour et al., 2013; Rosen & Olsson, 2013; Schusler et al., 2005), as the playmakers could only provide information to the Board representatives, describe benefits attractive to partners, and wait to see if the representatives would respond. This participant clearly had faith in the power of a strong vision and an understanding of the time required for a team to form voluntarily:

> I think there is a recognition, that if you're looking for perfection, this is not a good field to work within, because it's messy, it's protracted and it ebbs and flows. But ah, but so do people. And so if there's individual councilors at a juncture that's an impediment that doesn't mean they will be in the future. People move on and good ideas, if they persist, will be picked up by others. [park manager]

Once the representatives were engaged by the vision, providing them control demonstrated the "integrity" behind the voluntary initiative, and "not just ah, government window dressing, just to tick off a box" [park manager].

From the participants' perspective, finding their own solutions also meant finding ways to work together. Having the freedom to experiment and to take on leadership within the group helped create a relaxed and inclusive atmosphere, where individuals could begin to focus on the talents they and their team might bring to the initiative, and to enjoy each other as colleagues. Motivated and entrusted with control, most participants realized this situation was unique and reciprocated by giving their best to the group, and the initiative:

> I think accountability is present without being forced. That everybody is doing their best and it's understood. It's just, it's rare, yeah, it's rare. Like usually you would, in other organizations, you will feel that there is a lack of accountability, if things go wrong. Here, things don't go really wrong. I would say there are challenges but you deal with them the best you can. [park biologist]

The voluntary nature of the initiative left members in control of their time, able to contribute to Working Groups when able. The management of the Working Groups allowed for flexible participation; different groups emerged to tackle the tasks at hand, fitting their skills to the current objective. Working with flexible staffing could be frustrating, yet in hindsight, most participants thought that it had been effective: "So you would have one core group one year and then it will be another core group next year, so in the long run, it works" [park biologist].

Effectively, the BHI Executive Committee established a transformational management system at the Board level and a laissez-faire management system within its Working Groups. Although the Working Group chairs reported and were coordinated through the Board and the Executive Committee, the Working Groups had complete control over their projects. The transformational management at the Board level inspired with a broad vision, allowing others to 'catch the spark', rather than demanding participation. That vision set a clear and unifying goal toward which the Working Group could contribute, without need for direct oversight.

Transformational systems inspire team members to perform beyond self-interest, to pursue a goal that is good or right (Bass, 1997). Laissez-faire systems are characterized by the hands-off leader, who abstains from decision-making process and direction of the group (Bass, 1997). Loose management control can leave group members feeling without direction at times, but also empowered by the control over their time and actions (Bass, 1997). The BHI seemed to minimize the negative aspects of laissez-faire systems by coordinating activities through the Executive Committee and the Board, and so, empowered its members to develop tools and information supportive of the overall goal with a minimum of centralized control.

Promote consistent communication.

Although trust can facilitate information flow (Lin, 2001), it does not necessarily ensure the accuracy of shared information. Management of misinformation is critical to organize for a shared purpose (Ravindra, 2004). Early in its development, the BHI adopted a role as a centralized information distributer and a sounding board for regional issues, through its presentations to municipal councils and other partner organizations. Later, the BHI began to present its approach to organizations beyond the moraine, establishing a broader reputation as an innovative regional management organization. Consistent communication of the BHI vision and benefits of cooperation, to both internal and external audiences, was critical to avoid misperception and to secure and maintain the support of its partner organizations.

The Executive Director, the BHI Executive and Working Group Chairs all contributed to BHI messaging, in presentations given to municipal councils, at open houses or at academic or industry conferences. A consistent message about the purpose of the BHI was included in each presentation mainly to address resistant organizations who continued to look for proof of a self-serving agenda. BHI presenters became extremely diligent in their description of the BHI to avoid inadvertently confirming suspicions: "every presentation I do, is to say, we are not a decision making tool, we are providing information, it's then at your discretion as to how you use it" [academic participant].

The BHI also organized bus tours hosted by its representatives to highlight the features of the moraine, and management projects undertaken by the BHI and its partner organizations. The tours attracted individuals from the partner organizations as well as external organizations. The tours allowed representatives to discuss the BHI's projects, their observations of the moraine, or simply get to know other organizational representatives, breaking down personal barriers to the BHI through informal exposure (Lambright et al., 2010). A playmaker considered the bus tours an important tool, a marketing effort that "really helped sell" [park manager] the BHI approach. A personal tour of the moraine, followed by long discussions with one of the BHI proponents had helped convince one municipal politician of the need for the BHI, despite having "just a fraction" of the moraine in his county.

The BHI's external communications did not target the public, however, creating an on-going tension within the BHI regarding public awareness (as mentioned previously). Limiting communication with the public was a means of controlling the conversation, to avoid creating misperceptions based in fear and misunderstanding of sustainable land management (Ravindra, 2004). It also had an unintended effect of creating frustration for participants who believed public support was essential to successful change in land management.

Partner organization support.

The BHI received strong support from the federal and provincial parks agencies, Strathcona County and ENGOs, particularly during early formation. EINP, Strathcona County and the ENGOs had to strategize carefully how to contribute to the initiative, given the sensitivities of some partner organizations to overt leadership by these organizations. Each chose different strategies, based on their position within the political landscape.

For EINP, strong leadership risked misperception by the municipalities, many of whom recalled an old proposal to 'buffer' the park with less intensive land use ("this perception that oh Elk Island is trying to just extend its boundary" [academic participant]). Similarly, the ENGOs and Alberta Parks chose to support rather than overtly lead. Representatives from these organizations sat on relevant Working Groups, but typically as a team member. ENGOs often adopted this approach to collaboration, but for federal parks staff, the choice to support, not lead, was a dramatic change. As one park manager explained, partnership meant relinquishing control, something government staff were not used to:

> and you have to be comfortable, working in an environment where you're not in charge all the time, because that's not the measure of effectiveness, of being in charge, and we really don't train our people to do that. [park manager]

Instead EINP staff assisted on Working Groups, contributing to essential functions such as the search for funding, but always as part of the BHI team, not as a vocal leader. This was still leadership, a park manager noted, but a more patient form that allowed others to arrive at the same conclusions in their own time: "It's having influence with ideas, ideas and energy and coming up with potential solutions to offer people and let them accept it, that's leadership" [park manager]. For this participant, demonstrating respect to others had other benefits in terms of motivating others, including showing that "you're doing it for the right reasons and not just because you want somebody to pat you on the back" [park manager].

Strathcona County had already established itself as an innovative leader, and they were not afraid to position themselves in front of the initiative, if it could be helpful. As previous sections described, they had already redirected their entire organization toward the new sustainability approach. Their past experience put them in a leadership role within the group and they chose to follow a transactional (coercive) leadership model (Bass, 1997) to incite municipal cooperation. A participant recalled the reaction of the other municipalities to Strathcona's approach at the initial stakeholder meeting in 2002, "the other municipalities that are in the moraine, saw Strathcona County stepping in and not being scared... so maybe it's not such a bad idea" [municipal environmental planner]. EINP, Alberta Parks and the ENGOs provided additional backing at this meeting, but Strathcona was able to speak to the other municipalities as a peer, issuing a leader-follower challenge. Offering access to their resources and experience

was an important concession, since it acknowledged the discrepancy in financial resources between Strathcona County and the rural municipalities.

Internally, Strathcona County implemented a strong directive approach to ensure its corporate culture was consistent with the principles of the BHI and maintain its leadership position. Resistant personnel were fired, new positions were created and staff were "inundated" with messages presenting the BHI as the model for the new sustainability agenda [municipal environmental planner]. As a result, the County emerged as an early adopter of the BHI's information and tools, particularly with its updated Municipal Development Plan (2007). The new plan greatly expanded a previous protective land use zone within the moraine (the Beaver Hills Policy Area) and instituted conservation standards for sensitive resources identified in a new County-wide "Yellow and Blue" map. The plan effectively demonstrated to the other municipalities how the BHI's Land Management Framework could be used, and that an environmental agenda could be implemented with public support.

Individual contributions to social capital development.

Various participants recognized the role of the motivated individual in the operation of the BHI. As suggested by ANT theorists, the functionality of the BHI was ultimately determined by the interactions among individuals (e.g., Callon, 1991), in turn influenced by the individual's motivations, skills, passion and integrity (Lambright et. al., 2010; Parkins & Davidson, 2008; Sparks, 2003). Many participants were motivated by a deep passion for the moraine, for conservation, or for the potential in the BHI's version of sustainable management. Participants also described the close bond developed from teamwork, which caused them to put their trust in others and to prioritize the moraine among their own or their organizational interests. But membership also created potential for internal conflict among the goals of BHI, personal interests and home organization objectives. Each participant adopted their own personal balance of 'the greater good' and self-interest, a motivational stance that influenced the working relationships in the BHI.

Trusting relationships depend in part on the personal characteristics of representatives (e.g., self-confidence and self-respect, integrity, attitudes and competencies) within collaborative groups (Lambright et al., 2010; Sparkes, 2003). One park manager described the role of integrity in terms of balancing short-term personal needs against long-term societal benefits. For him, this was an essential skill for collaborative work that some could manage better than others. The

particular balance between short-term and long-term benefits struck by each individual determined their personal actions to support (or not support) the BHI, and potentially, the perceptions of their integrity by others.

For some individuals, the requirements of professional ethics and corporate loyalty superseded commitment to the BHI, but this did not preclude participation, just their perspectives on issues under discussion. For example, one participant declared, "I wasn't a BHI board member, I was first and foremost an employee of XXX County, then a BHI board member" [municipal land use planner]. In contrast, another participant could consider others' perspectives within the context of his employment, "Yeah, it, like this is not our normal job, but we feel it's important to step outside our park boundaries and to work with everybody [park manger]. For the subversives, the BHI aligned well with their professional and personal interests, but conflicted with their home organization's position. The previous sections discussed the conflict created within their home organization and in the BHI by their surreptitious actions to support the BHI.

The open dissenters, "people who aren't necessarily committed to the BHI but are committed to what the BHI is up to" [municipal environmental planner], were reportedly aligned to a more traditional view of land management and uncertain of the initiative. They would not openly share their concerns, but instead would: "play along because…because he didn't want to be left out, he wanted to make sure that he knew what was going on because he was the watch dog" [municipal politician]. Dissenters used coercive tactics within their home organization to block communication and participation, and as noted above, could be disruptive within the BHI. The open dissenters lost status within the group because of their approach and were viewed with suspicion, or used as a litmus test to strengthen the BHI's products and presentations.

The open communication fostered within the BHI allowed each person to contribute from their individual perspective, which most participants recognized as a strength of the organization. An earlier description of a participant who took on the constructive dissenter role to defend her professional opinion on a proposal provides an example of the positive outcome of open debate. Her "adamant" position on the proposal generated heated debate among all members (personal observation), and eventually, a sound proposal that mitigated the risk to all municipal partners. However, as the previous example suggests, open communication alone could not bring all individuals to consensus. Personality characteristics, including propensity to trust, affected the

ability of some representatives to present concerns relative to their organization, professional obligations or personal ethics in an effective way.

Yet suppression of self-interest had a personal cost for some participants. In an extreme example, one moraine resident felt constrained and unable to represent his supporters as effectively as he wanted to within the BHI:

> I sold out, because I don't want to rock the boat right now, because I'm trying to keep this BHI thing afloat…we're trying to get this Biosphere Reserve going. So the last thing I need is for me to go out there and start insulting everyone, because that's not going to do any good. Trust me, will I feel good? I'll feel damn good when I go home, because I'll feel like that's what should have been said. But now I've got to play this silly little game. [municipal politician]

The BHI stabilized as an organization by negotiating a balance between the self-interests of each representative and those of the group. Although the BHI Executive Committee and the playmakers helped establish norms for operation as a group, this balance was effectively established by the individual representatives, who worked to promote or exclude specific interests, based on their commitment and skill in working cooperatively.

Outcomes

Glanville & Bienenstock (2009) suggest that separating social capital inputs from the outcomes of its use during analysis can help avoid conflation. Dale (2005) suggested that the outcomes of social capital use in collaboration could include empowerment, trust, confidence in both the process and the people involved in the group, collective norms, diffusion of knowledge and awareness of a shared future. Further, the perceptions of participants about collaboration, in terms of its practical outcomes and the process itself, could potentially be a self-reinforcing outcome, if a positive experience fostered trust in the approach or in the people involved in the group (Borrini-Feyerabend & Borrini, 1996; Dale, 2005; Gilmour et al., 2013).

During the interviews, participants described perceived successes and failures in the BHI collaboration. As a concluding question, participants were also asked to describe the way the BHI worked. Their responses typically summarized their perceptions of collaboration gained from experience with the BHI. Many had mixed feelings about the BHI's attempt at regional management: they recognized that collaboration had happened, but through an imperfect process.

Yet despite these mixed feelings, most identified benefits of collaboration to their own organization and indirectly, themselves. Three themes summarized these outcomes. Two were tangible results: adoption of new land management skills by member organizations and the formation of a self-sustaining organization dedicated to promotion of sustainability. The third was intangible, a sense of hopeful optimism linked to the demonstration value of the collaboration. Participants' descriptions of these outcomes are outlined below.

Applying land management skills.

Reflecting on the work of the BHI over the past decade, most recognized the contributions of the information and tools developed and promoted by the BHI to a regional paradigm shift in management approach. A broad cross-section of respondents identified a new openness to sustainable land management practices within their home organizations, based on demonstrated value of these tools. The foundation built by the BHI had helped them incorporate a cooperative approach to sustainability into their jobs descriptions more readily. The experiences of these participants involved in land use and regional planning reflects this change in perception:

> Interviewer: do you think it would have been easier to do it [include sustainable development in land use policy] now or pre BHI?
>
> Participant: No, now, now. Pre-BHI was back when we, you know pre-BHI in those days we'd allowed development anywhere. Someone would come in and want to put thirty lots out in a country residential area and we'd say sure. Yeah, involvement with the BHI was one of the triggers that really started us thinking along the lines of sustainability planning, you know. [municipal land use planner]
>
> Absolutely, yes. The initiative brought those municipalities together, got them to the same level of awareness and got them thinking about [sustainability]…then that led to knowledge and information and data and when you're working together it's easier to network out and find that information and then once you have it, to share it. And then ultimately collaborative action or consistent action, or both. [ENGO biologist]

Others built on their experience with the BHI to innovate within their own home organizations. This land use planner was happy to correct the interviewer, who mistakenly

identified as the BHI the first to propose a Transfer of Development Credit[14] scheme in the moraine area:

> But our little scheme that I like to cook up, and you know, I mean it's not as complicated as the multijurisdictional schemes that Strathcona has been working on and the Beaver Hills has been heavily involved in and you and I have had feedback on and input into, not by any stretch, but you know, so, but it's been enough to get our foot in the door and get invited into some of these groups and give our two cents worth and help out and things like that. But, yeah, no, I just wanted to correct you on that and, no we came first actually [municipal land use planner]

Gaining the support of his council was much easier with access to the information provided through the BHI, a factor he gratefully acknowledged. The understanding of the moraine as a special resource by his council was central to their support for a TDC program: "this could be potentially be looked at as another Banff, in terms of being special. They just think that's great" [municipal land use planner].

In one instance, a participant had used the collaboration skills learned from the BHI in her own work. Providing the BHI data to a land-owner group struck to review a new and controversial development plan was a risk, but the results left a positive impression:

> This is sound, scientific data, that we're using to base the plan on and then getting the landowners on board, like I was really impressed with our [local review] people because I thought oh my God, we've got a developer, we've got a farmer who's like just grumpy all the time at everything, and you know a couple of acreage owners, we're going to just sit and fight and we never had that. It was, you know they all got along and they all said, you know what, let's tweak a few things here and there and we came up with policies that I think, it will be interesting to see on the 22nd what happens, but ultimately I think we've got buy-in. [municipal land use planner]

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[14] Transfer of Development Credit was an economic tool incenting land development away from sensitive lands provided to municipalities under the Alberta Land Stewardship Act (2009).

Interestingly, the participant acknowledged availability of data, but not the social learning process of sharing the information as originating from the BHI, suggesting that this new process knowledge was more subtly absorbed.

Establishing regional influence.

The adoption of parts of the Land Management Framework by each municipality helped establish the BHI as a regional influence. The land use policy changes adopted by Strathcona County in its MDP in 2007, notably the designation of the moraine area as a distinct planning zone, led to other changes in land use policy of the other municipalities. Their activities generated interest from the provincial government, who were in the process of their own regional planning initiative (the Land Use Framework), a positive in the view of land use planners:

> I've always felt that our [provincial Land Use Framework] regional plan isn't going to be a lot different from everybody else's, in that there's going to be a set of guiding principles or best practice statements that each municipality has to demonstrate that they follow or begin some way, and I think this is not going to be any different in our area. That's why I said before that involvement in an organization such as the BHI and demonstrated policies in your Municipal Development Plan are promoting conservation of environmentally sensitive areas, wetland areas, farm land, you know, other things, would just put you right on track as far as the goals of the framework are concerned…So in that regard, unless the BHI thinks that maybe they're going to have direct input into determining these nodes, which is I don't think that they do, then I think that they probably are fairly well positioned with respect to the regional plan and having their voices heard. [municipal land use planner]

Even the federal government had begun to take interest, looking to the BHI as a model for regional cooperation:

> But I know from some of the recent years, well probably the last 5 or 6 years…it's been very much ah kind of a model project. [My department] is always saying well, what's new with BHI? Or you know, what are we learning from the BHI? [agricultural agency scientist]

The external recognition of the BHI's work attracted new projects that helped build the regional influence of the BHI. For example, Ducks Unlimited Canada argued for the moraine to be included in their provincial wetland inventory pilot project, based on the BHI's past accomplishments and the potential for the data to help in their future efforts. In such cases, participants believed outside parties were attracted by the potential in the combination of the landscape and the cooperation of the partners, seeing it as a "pilot area for various policies" because "There is a really good synergy... It's [the moraine is] big enough yet it's contained [park biologist].

After its decade of work, the group had established a level of regional influence that opened the door to new possibilities for the partners, a reputation that could leverage significant resources. The trust implicit in that reputation was an asset recognized by many of the participants as a positive outcome of collaboration.

Hope.

Outside parties were not the only ones to take note of the potential within the BHI. Several participants within the BHI also recognized the potential within this group to serve as a demonstration project, of sustainable management, regional cooperation and collaboration. They had a hopeful outlook for future land management efforts because of their experience in the BHI. This perspective was shared across professions and motivational interests. For example, consider comments from a park manager and a land use planner, two very different participants in the BHI:

> I usually articulate in the form of saying why I think the BHI is the most promising Biosphere Reserve…If this is the BHI, it's a microcosm of the world. You've got heavy industry, you've got urban, you've got suburban, you've got farming, you've got ranching, you've got parks, you've got watershed, and it's all kind of jumbled, as opposed to, here's the park and then a radical transformation to agriculture around it… if the diversity there, diversity and complexity again, in your Biosphere Reserve, doesn't match the diversity and complexity of the planet, what kind of sustainability experiment is it? If you're in your own little naive bubble right?…I think that's one of the strengths, is that messiness, yet complete inclusiveness, of what's in the BHI, the diversity of their activities, and that the parks aren't such an overwhelming piece of it. [park manager]

> I mean the organization's got a tremendous potential and it's actually been incredibly successful, ahh at - not so much at its mission, which was to preserve and conserve the Beaver Hills - but to promote and attract research and dollars to do, fund research, interesting projects and theoretical exercises like the Transfer Development Credits Model and the Marxan Model[15]. It's been incredibly successful and being able to harness the stuff that's going on out there and focus it on the Beaver Hills, so. And then its other major successes I would think, is to maintain this inter-municipal dialogue, focused on the environment of all things…which doesn't vote, for ten years. [municipal land use planner]

Perhaps the most poignant example of the impact of the BHI's potential on a participant came from a park manager. For him, the trust, resources and synergy within the BHI offered him the opportunity to act on a personal motivation that was not available in his own organization:

> Why am I professionally interested in participating in the BHI and why I'm so fascinated, because it's, out of all the tasks I might have in my job, my responsibility, that's the one that I see leading to light. That's the project that's going to have results, meaningful results that fit with my dream, what I want to see, the kind of impact I want to have in my job and in most avenues I've got no hope of having that impact. Get involved, invest in the BHI, it's going there. [park manager]

While this comment reflected a deeper, more personally relevant outcome, other participants also seemed changed by the experience, noting the friendships they had developed with others, or the skills they had learned. Collaboration, in this voluntary context, had a lasting and personally relevant impact on participants, lessons that many of them applied elsewhere in their professional and personal lives.

Social Capital in Collaboration

When it initially formed, the BHI had initial social capital in terms of resources, diverse connections available through bonding and bridging networks (as defined by Flora & Flora 2013) and in some cases, trust and expectations of reciprocation developed through past working

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[15] A landscape model that identified critical areas of natural habitat within the moraine.

relationships. The initial social capital was not sufficient to organize and mobilize the group over the long term; a variety of actors and tactics were required to bring the partnership together and successfully implement an agenda for sustainable land management. This included persuasion by actors able to communicate an inspiring vision (Stephenson, 2011) that could change cultural definitions of possibility (Flora & Flora 2013). Those strategies were applied at key points that correspond to the ANT moments of translation. Trust, in partners, representatives and the innovative approaches the BHI proposed required active nurturing to ensure cooperation. The strategic development of social capital also resulted in outcomes theorized to aid in the sustainable management of common pool resources, including empowerment.

In the context of ANT, the various actors within the BHI used available social capital at strategic points that correspond to the ANT translation process (Callon, 1986). These strategies built trust, established expectations of reciprocity, grew the BHI network and provided access to new resources at key points, new social capital that was applied to current projects (Figure 8). After each of the three key projects, the partner organizations and their representatives had deeper trust in each other and in the new land management approach, which aided in adoption of this innovation and in establishing the BHI as a regional influence.

Skills and knowledge (including collaboration skills) gained by participation in each project helped individuals transfer the innovative approach to new projects within and beyond the BHI. The BHI gained external recognition with each completed project (including several provincial awards) that attracted new actors. Successful completion of each project thus generated new social capital (trust, expectations of reciprocity, resources and broadened networks) that could be applied to new projects, allowing the new approach to spread beyond the original actor network. Yet cooperation still required a shared goal. Concern for the moraine, developed through place-making, established a strong motivation to contribute to its conservation, as described in the next chapter.

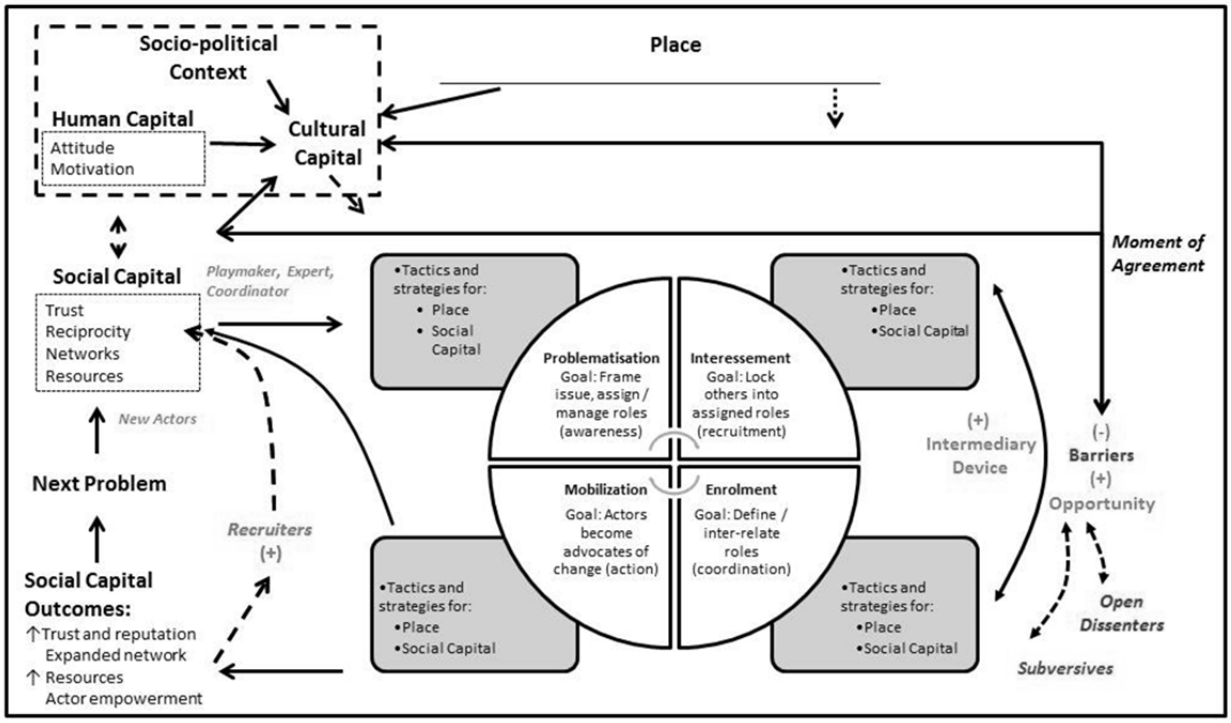

Figure 8. Influence of key actors in developing social capital within the ANT translation process.

Results - Place

Collaboration requires a shared problem to initiate discussion about organizing for a collective solution (Callon, 1986; Diekert, 2012). The literature suggests place attachment could motivate civic action to defend a valued place through place-based collaboration (Cheng et al., 2003; Lewicka, 2005; Pollack, 2004). A perceived threat to a valued place can also motivate organized conservation efforts among concerned organizations or individuals (Devine-Wright, 2009; Williams, 2002). As noted in the previous chapter, the BHI and key actors were both active in building awareness of the moraine as a unique place. Such social construction of place can ascribe new meanings that create a shared place identity (Cheng et al., 2003) through place-making (Martin, 2003; Tobias & Muller Wahl, 2013). Because those meanings can be incorporated into the personal sense of place associated with that setting (Stedman, 2002), place-making can be used to assert power and authority over place for broader social interests, including conservation (Williams et al., 2013). This chapter examines how strategic place-making efforts by the BHI motivated collaboration among the BHI representatives and, through them, their organizations (Figure 8).

Successful place-making depends in part on the 'fit' of the new definition with the individual's sense of place. Meanings that challenge how people define their existing relationship with their environment require a renegotiation of meaning (Grieder & Garkovich, 1994; Williams, 2002). A version of place too different from existing understandings of a particular location might not be easily adopted, particularly if the new version conflicts with existing place-identities (Grieder & Garkovich, 1994; Williams, 2002), does not match understandings of the physical character of the setting (Freudenburg, Frickel, & Gramling, 1995), or has been imposed from 'outside' (Williams, 2002). Contested definitions of place can cause conflict; redefined places can create opportunity for change and adaptation (Williams, 2002; Vaccaro & Beltran, 2007). Place-making can also foster awareness of threats to place, which can motivate action because the threat of change challenges self-identity (Devine-Wright, 2009; Kottak & Costa, 1993; Williams, 2002). Accordingly, this chapter examines (1) the means by which the BHI defined the moraine as a special place through place-making to create a shared place identity, (2) how participants incorporated the place meanings generated by place-making efforts with (3) their existing personal place meanings and attachments, and (4) the extent to which the brand was assimilated as a new personal place meaning that motivated collaboration.

Content analysis of presentations given by the BHI confirmed the strategic use of place-making to create a shared place identity. Interview and photo-elicitation data demonstrated how participants had merged this constructed definition of place with their own meanings and attachments about the moraine, and created social and moral norms that motivated their participation in the BHI. Some participants had also developed new meanings that imbued the moraine with the potential they saw in the BHI. This symbolic image of the moraine was a powerful motivator to these participants, and contributed to the hopeful optimism discussed in previous chapters. The sections below summarize these results and their role in translating the BHI's proposal for collaboration into meaningful action.

Place-making

Gieryn (2000) observed that place-making is an exercise of power: redefining place gives an element of control over its future. For example, Taylor (1999) showed through three historical examples that political territory can be controlled by place-making as well as policy. His work showed that control over political and economic territory involves a tension between who defines space (top-down imposition of political boundaries) versus place (a bottom-up definition of cultural and social landscapes). Vaccaro and Beltran (2007) provided another example of this process in their case study of a mountain region re-imagined and marketed by policy makers as a leisure area. The formerly isolated region re-established connections to the broader economic network based on a marketable, idealized version of its natural and cultural history. Place-making can create a shared image of place that facilitates broader social objectives, provided the image can overcome other political barriers and interests, including constructed meanings that conflict with the self-identity of other stakeholders (Williams, 2002).

Place-making motivates action by linking a re-defined place with a desired behavior. Both the character and meaningfulness of place are important in producing positive motivational effect. Tobias and Muller Wahl (2013) found place-branding (a form of place-making) motivated conservation more effectively in rural than urban landscapes and only in those rural landscapes that were unique, abundant (extensive) and clearly linked to quality of life. Deliberate framing of place characteristics (motivational frames), problems facing that place (diagnostic frames) and solutions to the problems (collective-action frames) has motivated community activism (Martin, 2003). As described below, the BHI used a similar construction of

place to create a shared place identity, which when combined with personal place attachments and meanings clearly compelled participants to contribute to the BHI's objectives.

Place-making – constructing the Beaver Hills Moraine.

The BHI's presentations consistently described the moraine as a special, threatened place, deserving of protection best provided through cooperation. The BHI included a description of the moraine in each of the 12 presentations analyzed from the examples provided for 2004 to 2010. No examples were available for the period between 2002 and 2004. Four presentations were for internal audiences (two rural municipal open houses, one report to the BHI Board and one report to Strathcona County Council). No internal presentations were available after 2007 (after the Land Management Framework document was completed). The eight other presentations were for external audiences (outside the BHI at a given point in time), and included all years but 2004 and 2007.

External audiences included professional associations (e.g., Canadian Institute of Planners conference) and potential partner organizations (e.g., North Saskatchewan Watershed Alliance, NSWA). Both internal and external presentations were used to promote the group to gain support for its work, but external presentations gave a comprehensive view of the moraine already sanctioned by the BHI Board members. Internal messaging might be altered over time as audiences became more familiar with the moraine, but external presentations would reflect the image the BHI wished to project at a particular point in time. Comparison of the two sets allowed differentiation of essential elements of place-framing.

Each presentation included four consistent themes, regardless of the audience: (1) a description of the moraine ecosystem and its ecological values, (2) a description of aspects of the moraine valued by regional residents, (3) a general landscape description and (4) a description of the threats to the moraine and its values (Table 4). A similar combination of themes was observed in place-making for municipal greenspace conservation programs (Tobias & Muller Wahl, 2013) and in organizing neighborhood activist groups (Martin, 2003). Such 'motivating' and 'diagnostic' frames were thought to bridge diverse groups and unite interest in a shared place (Martin, 2003); as the subsequent section describes, these messages had similar effect with the BHI participants.

Table 4. Count of use of key descriptors of the moraine from PowerPoint presentations given by the BHI from 2004 to 2010 to external audiences (municipalities and conferences, n=8) and internal (BHI Board, n=4).

Descriptor	External		Internal		Total	
ECOLOGICAL DESCRIPTORS	**# presentations**	**% presentations**	**# presentations**	**% presentations**	**# presentations**	**% presentations**
Distinct ecology / rich biodiversity /boreal isolate	8	100	2	50	**10**	**83**
Yellow and Blue Map	6	75	3	75	**9**	**75**
Ecological Function Zone maps	5	63	0	0	**7**	**58**
Precipitation / abundant water /big gravel sponge	6	75	1	25	**7**	**58**
Species of concern	5	63	1	25	**6**	**50**
Rich in wetlands	5	63	1	25	**6**	**50**
Water / Water quality	3	38	2	50	**5**	**42**
Clean air	3	38	2	50	**5**	**42**
Island ecosystems are threatened ecosystems	3	38	0	0	**3**	**25**
Ecological linkages / wildlife corridors	3	38	1	1	**4**	**33**
LANDSCAPE DESCRIPTORS						
Unique landscape (with map of /moraine in regional context)	7	88	2	50	**9**	**75**
Mixed use / lived in landscape	7	88	3	75	**10**	**83**
Extensive treed upland	7	88	2	50	**9**	**75**
Knob & kettle terrain / distinct geophysical feature	6	75	1	25	**7**	**58**
Size of area	6	75	1	25	**7**	**58**
HUMAN VALUE DESCRIPTORS						
Quality of life	8	100	3	75	**11**	**92**
Biosphere Reserve	4	88	0	0	**4**	**33**
Sense of place	3	25	1	25	**4**	**33**
Provincially recognized landscape NCC Masterpiece Landscape/Provincial ESA	3	38	0	0	**3**	**25**

Descriptor	External		Internal		Total	
Conservation history / stakeholders in stewardship	3	38	0	0	**3**	**25**
Essential character of moraine	2	25	1	25	**3**	**25**
Respect for property rights	2	25	1	25	**3**	**25**
Vision of appropriate mix of land use	2	25	0	0	**2**	**17**
Cultural history	2	25	0	0	**2**	**17**
Tourism value	2	25	0	0	**2**	**17**
Stakeholders in BHI	2	25	2	50	**4**	**33**
THREAT TOTAL DESCRIPTORS						
Land development threat (loss / fragmentation)	8	100	3	75	**11**	**92**
Competing land uses within small space	7	88	2	50	**9**	**75**
Extent of public vs. private land	2	25	0	0	**2**	**17**
Impact of growth on land value	0	0	1	25	**1**	**8**

External presentations had richer description than did internal ones. The two internal reporting presentations were less detailed than those for open houses, presumably because the audience was more familiar with the moraine. Yet only a few key phrases or words from each theme were consistently repeated across these presentations: the distinct ecology of the moraine, the Yellow and Blue map, the unique landscape, quality of life and land development threats (Table 4). This description was often used to set the context for the presentation, typically a proposal or description of cooperative projects currently underway (e.g., the Land Management Framework projects). A similar 'collective action frame' was used in the neighborhood activism study noted above (Martin, 2003).

Maps were often used to summarize the ecological values and portray the scale of the moraine landscape. The 'Yellow and Blue Map' of environmental sensitivities created during the Land Management Principles project in 2005 was included in 75% of all presentations (Table 4). Ecological Function Zone maps from the Land Management Framework were also often included in presentations after completion of that project in 2007 (63% external, 58% internal presentations).

In terms of the ecology theme, the moraine's distinct features were mentioned in all external presentations, and in the two internal (open house) presentations (Table 4). This characterization described the moraine as an island of boreal forest, surrounded by prairie-parkland habitat, which resulted in rich diversity of species and habitats. The Yellow and Blue Map, included in presentations after 2005, identified locations with abundant environmental resources (rare species, sensitive groundwater locations, native vegetation), dramatically portraying the extensive natural resources of value remaining outside the protected areas of the moraine and thus at risk. The Ecological Function Zone maps completed in 2007 supplemented the Yellow and Blue Map and highlighted the vital ecological functions still provided by the moraine (e.g., surface and groundwater contamination risk maps, wildlife connectivity).

The landscape was typically described as unique, lived-in and extensively treed in external presentations (88 to 75% of presentations, Table 4). These features were included in all internal open house presentations as well, but less often in the council reports (50-75% of presentations). Later external presentations (2006 to 2010) highlighted the large size of the landscape and the rugged "knob and kettle" morainal terrain (88% and 75% respectively),

features rarely noted explicitly in internal presentations (25% for both). This change corresponded to the completion of the Land Management Framework project, and may reflect the new information available after that project.

Human values of the moraine consistently included quality of life in the moraine (100% of external presentations, 75% of internal presentations, Table 4). Early presentations included more abstract or emotive statements (e.g., "sense of place", "essential character") and politically astute statements ("conservation history", "respect for property rights", "stakeholders in the BHI"). A vision of a landscape with an "appropriate" mix of land use was also used to describe a future moraine conserved through regional coordination. Those phrases were mentioned first in internal presentations (2004-2006), timing that corresponded with the period of deliberation on the Land Management Principles and Framework. They did not appear in external presentations until 2008-2009, after the municipalities had adopted the Principles and begun to incorporate the Framework into policy.

Later external presentations (2010) replaced these abstract terms with more tangible statements that recognized a role for people in the moraine (e.g., "stakeholders in stewardship", "cultural history", "tourism value"). The long-time recognition of the moraine as a special place by other agencies (e.g., the Masterpiece Landscape designation by Nature Conservancy of Canada, provincial Environmentally Significant Area designation) was not acknowledged until this time. Similarly, the term "Biosphere Reserve" did not appear until 2008, and only in external presentations. Several participants noted the politically sensitivity of this particular term in the rural municipalities, due to a misinterpretation of the designation to include management by an external agency (UNESCO) when it was used as example of regional management approaches during BHI formation period (2002 to 2004).

Lastly, presentations consistently described the threat to the moraine from land development, for both internal and external audiences (75 % and 100% respectively, Table 4). Often the threat was demonstrated visually, using aerial photography to show the rapid extent of urban growth and the potential for fragmentation of natural lands, and by extension, loss of natural character. Of the four themes, this one was least descriptive. An inventory of land uses competing for space or resources in the moraine clarified the source of the threat in most external presentations (88%) but only the two internal (open house) presentations. Generally, the threat descriptions were framed as something manageable through human intervention. A few later

external presentations (2009-2010) explicitly reinforced the role of municipal partners in land management by highlighting the proportion of private and public land in the moraine. Benefit to landowners was used only once, to highlight the impact of a degraded moraine on land values in an open house presentation in a resistant municipality in 2004.

The consistent description of the moraine over this period as a unique landscape with significant ecological values and a distinctive quality of life valued by moraine residents suggests deliberate effort to create a shared place identity (Cheng et al., 2003). Prior to 2002, the moraine was known mainly for its abundant waterbodies and was described as the Cooking Lake or Blackfoot Moraine locally and in planning documents. For example, Strathcona County's 1998 Municipal Development Plan identified the more natural part of the moraine as the Lakes District. Research reports referred to it as the Cooking Lake Moraine (e.g., see Beaver Hills Initiative, 2012). EINP, on the other hand, referred to the Beaver Hills / Cooking Lake moraine in its 1996 Management Plan, a reference to the aboriginal name for the moraine (*a-misk wa-chi,* "place rich in beaver"; MacDonald, 2009). Place-making by the BHI included the name change to the Beaver Hills Moraine, a name consistent with the EINP reference, but a distinct departure from past local reference. Today, most partners use the new term, in discussion and in policy (e.g., Strathcona's 2007 MDP renamed the Lakes District the Beaver Hills Policy Area).

Participants did not specifically mention the intent of this name change in their interviews, but such re-branding is consistent with the aim to bring new meaning to what many considered a lived-in landscape. Place branding often aims to increase place attachment of residents (Tobias & Muller Wahl, 2013), who are presumably familiar with the landscape. As one early proponent observed, the perception of landscape value in North America "has been very much historically focused on the pristine…so that if there is any tarnishing of the landscape done by what people have done on it, then you dismiss it" [academic participant]. The name change may have inspired in others curiosity to explore new meanings about a familiar place.

After the Land Management Principles and Framework were completed in 2007, place-branding became more nuanced, with acknowledgement of more specific ecological functions and human values provided by the moraine. But the initial emphasis was evocative: the moraine was a special place under a threat that could be controlled through cooperation of all stakeholders.

Place-making strategy.

During interviews, 12 of the 17 participants commented on the efforts of the BHI to establish the Beaver Hills moraine as a distinct place. The message resonated with others within the participants' home organization as well: one land use planner considered the message "an easy sell" to his councilors, because "council gets the idea that there's something in the west end we're trying to protect." Interview data highlighted key aspects of the place-making approach developed by the BHI and means by which those elements stimulated adoption of a shared place identity.

Key actors were very open about the decisions actively taken to construct a new shared place identity for the moraine. The academic participant confirmed the deliberate messaging in these presentations identified in the content analysis, and the particular emphasis on the "vulnerability" of this "unique" and "distinctive" landscape [academic participant]. The goal was to develop an appreciation of the need to conserve lived-in natural landscapes as well as pristine natural areas. The emphasis on quality of life was based on an understanding of the interests of municipal politicians; quality of life would better justify the hard decisions required of regional land management than scientific justifications for conservation of the moraine:

> I would look at what's in it for them? Why would they be interested in listening to that? Well arguably people pay good money to live in areas where there is quality of life. So to me it's about quality of life, if you want to live with your family in an area that has attributes like that, well they come at a social decision-making cost. [park manager]

This approach acknowledged the challenges of forming self-identity in a globalized age. Mobility, and its associated access to new cultures and ideas, allows people to form multiple identities, including shared and personal place identities (Williams, 2002, based on Giddens, 1991). As Williams explains, individuals now can choose to adopt identities from a range of options, far beyond those traditionally dictated by local culture. Choice can paralyze as well as liberate, so while some might welcome the opportunity, others might avoid it, particularly if the choice requires action beyond the status quo. Explanation of 'what's in it for them', the personal and community benefits of recognizing the moraine as a special place, provided a much stronger incentive than the intellectual rationale provided by science.

The BHI also used direct experience, facilitated by knowledgeable peers, to foster appreciation of the moraine's special character. Direct experience with place can foster new place meanings, particularly when guided by respected others (Chawla, 1999; Grieder & Garkovich, 1994). Several participants recalled the effect of a full-day bus tour through the moraine, held in 2004. Stops at protected areas, sustainable agriculture demonstration projects and ENGO conservation areas allowed the BHI members to experience the landscape directly and from each other's perspectives. Even for someone familiar with parts of the moraine, the trip was eye-opening: "I guess I ski-dooed through Islet [Lake] once on the Birkenbiener [ski race] when I was sweep, but otherwise I had never driven into Islet before. Like, wow, this is really nice" [park manager]. The bus tour helped demonstrate the value of this ordinary landscape promoted by the BHI, and the need for active management to conserve that value.

The bus tour also allowed participants to conceptualize the scale of the landscape the BHI proposed to manage, and thus the need for regional cooperation. Tuan (1974) observed that the physical world is defined within the scale of human perception. As one participant noted, the moraine fit "the limits of human perception…you need to be able to really grasp it in your head and the fact, as you said, that you can pretty much scoot around it in one day, it's probably near the threshold of [that] ability" [park manager]. Scalar perception of space seems linked to cognitive recognition of distinctive elements of place. Tuan's suggestion that attachment forms more readily in geographically and cognitively defined spaces has been supported by findings of stronger attachment at the local and landscape scale than intermediate scales (Lewicka, 2011). Beckley (2003) hypothesized that local place attachment is linked to the scale of personal networks. At the landscape scale, place exceeds the extent of social networks and ecological characteristics become more important. The moraine overlapped several political boundaries (parks, counties), but few of the representatives to the BHI interacted on a daily basis with individuals beyond adjacent jurisdictions. The moraine had a detectable physical boundary, which supported the unique landscape image promoted by the BHI, and allowed people to see it as a distinct ecological space despite its large size.

Lastly, framing regional cooperation as a unique opportunity "to showcase how you can deal with a, a planning problem of an environmentally significant area" [academic participant] issued a clear challenge to the partnering organizations to act. Although the academic participant

wondered if the tactic had been successful, this observation from a municipal land use planner suggested that the message had the desired effect:

> I think the first thing you need is a common goal, a mandate, a reason to exist. You know, what would be the issue? In our case it was the Beaver Hills moraine and a desire to keep development from encroaching too close to Elk Island National Park, which got the whole ball of wax rolling. Then it kind of went from there. [municipal land use planner]

The shared identity established through these efforts had distinct similarities to the imagery presented by the BHI. As the section below explains, it served its intended purpose, to unite the diverse interests across the moraine, by establishing social and moral norms to conserve it as a special place.

Shared place identity.

Participants typically described the moraine using terms from the BHI presentations (a 'unique' or 'special place' with 'high ecological value' under 'threat from increasing development pressure'), suggesting that place-making had successfully established a shared place identity (Cheng et al., 2003). Place identity can be based on the affective bonds with a particular place (place attachment) as well as the symbolic aspects (meanings) that an individual might associate with place (Clayton & Myers, 2009; Stedman, 2002). Both can motivate defense of a valued place, particularly if the threat is obvious (Kottak & Costa, 1993; Stedman, 2002). Participants held other place attachments and meanings about the moraine that merged with the shared place identity to produce different intensities of motivation (see subsequent sections). All understood the moraine to be a special place though, and justified their contributions to the BHI based on a sense of responsibility to protect such special places for future generations.

The shared definition of place and associated expectations about its management suggests embedding, a process by which meanings and values associated with place are transferred from a social group to individuals (Eisenhauer et al., 2000). As a shared place identity forms about a socially constructed place, the expectations of the group about appropriate behaviors in that place (norms) are also shared (Cheng et al., 2003; Clayton & Myers, 2009; Twigger-Ross & Uzzell, 1996). Supportive behavior can be activated by attitudes, norms, and a sense of control over outcomes (Azjen's, 1991 Theory of Planned Behavior), but moral norms, more specifically, can

be an important driver for behavior (the Norm Activation Model, Schwartz, 1977). Moral norms form from feelings of guilt arising from problem awareness, social norms and a sense of personal attribution for the harmful action and can provide strong motivation to supportive action (Bamberg & Moser, 2007). In this case, supportive behavior toward the moraine was influenced first by a social norm to protect special places, which when combined with awareness of threats to the moraine and a sense of personal attribution for the problem (due to professional responsibility), engendered feelings of guilt. Guilt fostered a sense of moral responsibility (the moraine *should* be protected). The sense of responsibility to protect the moraine described by participants suggests a moral obligation derived from social norms associated with 'special natural places'.

Participants also justified their commitment to protect the moraine based on broader, philosophical reasons, past connections to other special landscapes or a personal place identity linked to the moraine. This feeling reflects place attachment, another conceptualization of place that also motivated BHI participants, but in more personally relevant ways.

Place Attachment

Place attachment is a multi-dimensional concept that has been defined in various ways. Scannell and Gifford (2010a) merged those various aspects within a three-dimensional analytical framework that separated the place, the person and the (psychological) process. Within their definition, place attachment can form at the individual or group level, based on physical qualities of and social associations with that place (e.g., links to others within a neighborhood, symbolic links to culture or history). Lastly, the attachment can be formed (and described) through three processes: affective (emotional), cognitive (meanings, beliefs and knowledge) and behavioral (demonstrative actions) aspects. Place attachment provided means to assess other affective or cognitive connection to the moraine that was linked to participation in the BHI.

During their interviews, participants were asked to explain what the moraine meant to them. Thirteen of the 17 participants responded with a description of their relationship to the moraine in affective or cognitive terms. Often, this led to a spontaneous discussion of its motivational influence for them with respect to the BHI. Three types of place attachment emerged from their descriptions, differing in their affective, cognitive and motivational aspects.

Most of these participants had had some previous experience in the moraine, including professional work, occasional recreational use and long-term residency. The attachment that past

experience evoked varied in intensity and focus. Some participants had a more cognitive relationship with the moraine and described it in objective, professional terms (Type 1). In the moraine they saw opportunity to apply their professional knowledge to conserve a unique place (motivation by a norm), but they were not necessarily motivated by some deeper, more personal feeling toward it. Others had developed a cognitive and emotional connection based on their experiences in the moraine or in similar landscapes and were motivated to protect that aspect of self-identity as well as by a moral (professional) norm (Type 2). Lastly, a few expressed a deep emotional attachment to the moraine and acknowledged it as a strong motivational force, a motivation rooted in place identity (Type 3).

These three types of place attachment reflect the progression in intensity of sense of place identified by Shamai (1991): belonging to place, attachment to place and commitment to place. Furthermore, as suggested by Kaltenborn (1998) and Shamai (1991), the intensity of sense of place that participants held for the moraine was reflected in their attitudes, behaviors and actions regarding the moraine, and the BHI. The specific differences among the three types are described below.

Type 1-professional attachment.

For four Type 1 participants, the moraine was seen mainly through an objective, professional lens. These participants had past recreational or work experience in the moraine, which sparked a creative professional interest - a sense of the potential to help protect a special place, but not necessarily a place especially significant to them. They described the area in objective terms reflecting the shared identity described above (e.g., “an interesting landscape” [academic participant], “visually dramatic” [park manager] or “special and unique place” [municipal land use planner]), and envisioned its future relative to their training and experience. Having the opportunity to ensure “that the essential qualities at the moraine are protected” gave the academic participant satisfaction. A land use planner wished to see recreational, residential and agricultural uses in balance with protection of certain landscapes. An agricultural agency scientist appreciated the opportunity to apply a regional planning approach with others of similar mind on a familiar and appreciated landscape. Their personal experiences with the moraine combined with the shared version of place and viewed through a professional lens, motivated them to protect the potential in the landscape, rather than personally relevant aspects.

Type 2 – social attachment.

For the five Type 2 participants, the landscape reminded them of significant past experiences and important parts of their self-identity (Owens, 2003; Stedman, 2002; Williams, 2002). Sometimes that past was another place, and living and working in the moraine kept that link alive. Consider the examples from two land use planners below, a resident and non-resident.

> Well I think it's a special place. It's a beautiful country. It's a really special place to live because it reminds me a lot of eastern Canada where I'm from. In fact it reminds me of all the places I've lived in Alberta, which have been three. It reminds me the most of where I'm from, so that was part of the initial attraction. And also the wildlife, the abundance of wildlife, and the trees and vegetation and stuff. It's just the whole mix, I really like it. [resident]

> I always relate it back, and you've already noticed that, to the Oak Ridges moraine in Ontario, because I spent 17 years in Toronto. I've only been here for 3½. So in Toronto, umm, I didn't have a car, so I never got to go out to, or very rarely got to go out to the countryside. And when I did, umm, I, you know, ahhhhh big sigh of relief. I love it out here, wish I could be here all the time. And what's the first, big, piece of countryside you see, once you leave the city of Toronto ex-urbs, is the Oak Ridges moraine. So in a lot of ways that colours what the Beaver Hills means to me. [non-resident]

Others recalled experiences within the moraine that reinforced their appreciation of the moraine as a special place. Those experiences, whether personally relevant or shared with significant others, had been an important part of their lives:

> I still see it as incredible value. Um, to the Edmonton Capital Region, um, you know, we're four hours to the mountains. Well, what's nearby? Well, we've got the river valley system which is an incredible resource and now just to the east of Edmonton too, we've got the moraine, which is another incredible resource. It's just that little further to travel but it's still like, for me, 20 minutes to Blackfoot and I'm hiking and may not see another person. Wonderful. [park manager]

> The other thing is that when we came to Alberta, we drove across the country, we came in on Highway 16 to Edmonton from Saskatoon, and the very first glimpse

> of Edmonton's skyline I had was in the Beaver Hills… so when I started to become involved with the Beaver Hills moraine and all that kind of stuff and drive in those areas again, I was like wow! This is the entrance gateway feature from the east to Edmonton…And then we had some friends visit from out east, who had some kids. We took them to Elk Island and had a picnic and there's the playground up at Astotin Lake there, and a couple of buffalo just roamed right in and crossed and scared the crap out of the kids, and we just thought, holy moley, that's unbelievable. [municipal land use planner]

Regardless of the source of connection, that personal experience motivated them to protect this particular place. For example, a park manager linked his understanding of the moraine's value and his professional understanding of the need to conserve such lands, "So, I think it's an incredibly valuable resource…it's impossible to restore something. It's only possible to preserve it, while you have the chance" [park manager]

For a subset of these participants, their work with the BHI helped to preserve a part of the moraine that they felt was important to society, as well as themselves. They hoped to pass on to others something they had realized had broader value, based on their experiences in the moraine:

> this moraine is the escape. It is for me and lots of people a remnant of the nature that we need to keep. So keeping it sustainable, and it does have also, a big component is nature-oriented recreation, so you can't keep it without nature…Edmonton people run on streets, they can run in buildings. This is different, opportunities that it provides are of different nature and we all need them. So, and to see wildlife and all of this, and recreation for people, it's all, it is different in that way, it wouldn't be the same [without nature]. [park biologist]

> Yeah, you know what, it's, how do I describe that to you, I think it's a great thing because if you lived in the big city, how can I say, if you lived in the big city, you wouldn't have a clue… we're getting back to a little fish pond that goes down there or if you see the little coyote or fox that goes through there, you're not going to see them down Jasper Avenue or down Main Street in New York City. And if you take all that away, you'll have no idea how the environment should look. How things should be. You'll have no idea. And there's nobody to be able to

> show you that if you don't have that background or you don't have that area to show them "hey, this is the way things are, nature is that way." [municipal politician, near-moraine resident]

Type 3 – attachment to home.

The last group of three residents had developed a strong connection to the moraine as home, personal place identity (Type 3 attachment). Higher levels of place identity correlate with sensitivity to change in environmental and social conditions associated with place (Kyle, Graefe, Manning, & Bacon, 2004). The moraine was now integral to their definition of self, and they were motivated to protect it as an extension of themselves (Stedman, 2002; Williams, 2002). Two of these residents had grown up in the moraine; the third had moved into the moraine more recently. They appreciated the moraine as a special place, but also had a deeper connection. As an example, two residents explained what the moraine meant to them:

> I knew it was special, but as a kid I didn't know why it was special. I just loved it. It was just so neat to live here, because you could do everything and it was just, and it was wild you know. There was a lot of big space and really even today there is still a lot of big space. We're slowly encroaching and I guess that gets into the, you know the Beaver Hills thing and the initiative and council and things like that trying to make those changes but, no, to me it was special. It was, yeah, it was the home place and I just couldn't think of living anywhere else. It had everything. [municipal politician]

> Home, where I belong, my church, my playground, my backyard, my wonder, my amazement, my blessing, my connection to something bigger, my school, my comfort zone, my happy place, my sanctuary, my recreation, my hobby, my ethic, my values, and it also is my confusion, my reality check that not all land management decisions are good ones, my tears, my sadness, my overwhelming moments, my anger, my disappointment, my helplessness, my frustration, my panic, my fear of losing it but most of all my hope, particularly in Spring when I see fox kits, baby birds leaving the nest and goslings on the water following mamma. (municipal environmental planner)

Each of these residents characterized this attachment as a love for the land, a deep, emotional connection, which motivated differing levels of commitment to the BHI. A politician and long-time moraine resident expressed his feelings for the moraine in terms of a deep, emotional connection to the land:

> Yeah, just, you love the place and you want to see that it's protected and safe and that it's going to be there and then other people can love it too and appreciate it. That's I guess what I meant by love. [municipal politician]

One of these participants had recently moved away from the moraine, which brought new perspective on his work with the BHI and the intense motivation inspired by his close personal relationship with the moraine:

> Because to me, you become so narrowly focused, and actually that's one of the things, it became where I had basically personalized the moraine as you know, something of mine, even though it wasn't, and I didn't want to see it develop, I didn't want to see it change. And you know, and I think that's probably the possessiveness of you know, of that home place, that you don't want to see what makes it then change…And you know, I think that was one of the things, that I needed to step back, because I'd gone too far, where it had become too personal. [municipal environmental planner]

For him, place attachment had moved into a form of territoriality or NIMBYism, a behavior based in a sense of ownership and control (Scannell & Gifford, 2010a). Although this protective response can be a potentially constructive contribution to the decision-making discourse, (Devine-Wright, 2009), this participant's reflections suggest the potential for strong attachment to block <u>any</u> change, including positive influences. Such limitations of place attachment have been previously described (e.g., Pretty, Chipuer, & Bramston, 2003), a reminder that strong place attachment may not always have beneficial outcomes.

Now in a new place, he had begun to feel more attached to it than the moraine, a switch that struck him as strange, considering the passion he had previously held for the moraine:

> To me my whole motivation was that the Beaver Hills was and that's when you think of Rowe's [book] "Home Place", you know that strikes me as that I'm protecting my home place. Now that I'm gone from it I don't care what happens

> to it though. What I care about now is what happens around me here…but you know it's, it's, it's funny that you know, having left that situation now, that I look back and you can sort of see the, you know as time grew on the Beaver Hills, the more possessive I became of it. So it's interesting, but I think that's the thing that anybody who grew up in there wants it preserved in that state, once they're gone, they don't have, they won't have, they won't be cut or hurt by effects on that sort of thing, you know? [municipal environmental planner]

The need for this participant to reside in place to sustain his motivation was intriguing, particularly given passion he had formerly held for its protection. Although not generalizable due to limited sample size, it does suggest an alternative type of place attachment than observed in long term residents (Kaltenborn, 1998; Lewicka, 2005; Trentelman, 2011; Walker & Ryan, 2008), second home owners (Stedman, 2006; van Patten & Williams, 2008) and displaced residents (Bell, 2007).

A place identity linked to affective forms of place attachment can evoke action to defend an important aspect of self (Clayton & Myers, 2009; Payton et al., 2005). Emotional place attachment has also been found to be a strong motivator for collective action (Payton et al., 2005). In the case of the BHI, the mixture of socially constructed, functional attachments and emotional attachments resulted in nuanced levels of motivation. At one extreme, a land use planner's work in the BHI gave him "a personal satisfaction, and bragging rights", a reflection of combined emotional and functional benefits. Long-term residents like the councilor above and a municipal environmental planner (and former moraine resident) expressed their place attachment as a strong, protective feeling indicative of defense of self-identity. In the environmental planner's case, he recognized that the BHI work involved trading off the aspects of the moraine that he valued highly, which came at an emotional cost because "my heart was always in that area." He questioned, "do I want the pain of doing this, is it worth the reward?" His motivation was not based mainly in rationalized action to maintain status within a group, but a feeling of "protecting my home place."

The challenge to the BHI was in coordinating the varied motivations of these participants (and the other representatives) to engage in collaborative action. Both socially constructed meanings, such as shared place identity (Cheng et al., 2003) and the meanings related to self-identity can motivate place-based collaborative action (Cheng et al., 2003; Devine-Wright,

2009). Successful collaboration depended in part on the successful integration of the socially constructed meanings about the moraine with the meanings related to the personal place attachments held by its members. The place meanings held by participants can thus help assess the potential 'alignment' or shared purpose.

Place Meanings

Place meanings have been used to document sense of place, typically in qualitative terms that describe cognitive and / or affective aspects of place. The photo-elicitation exercise assessed place meanings, the particular aspects of the moraine valued by each participant, through a combination of self-produced pictures and text descriptions. Instructions to participants asked them to photograph and describe in a short narrative the types of features that they felt were important to the quality of life within the Beaver Hills / Cooking Lake Moraine. Further, they could show positive (what you like) or negative examples (what you want to avoid).

Only ten participants (including 4 moraine or near moraine residents) completed this exercise, a response rate of 59%. Three of the participants were no longer living in the moraine, and had neither access to the moraine to take new images or other suitable photographs on hand. One of them (the former resident mentioned in the previous section) had volunteered to provide the text descriptions, but later admitted defeat, because "My new "homeplace" seems to outshine my old "homeplace" to the point I rarely even think of it" [municipal environmental planner]. Another current resident found it hard to describe in photographs or words his most meaningful aspects of the moraine. Of the remaining three participants, one moved during the study and had neither time nor access to complete the exercise. The other two participants did not respond to the initial or two follow-up email requests, and were simply marked as incomplete (unknown reason).

Coding the descriptive paragraphs revealed multiple meanings within any given photograph, such that the photographs could not be classed within a single category. In addition, some participants contributed more than the requested 10 photographs (average of 12.8 photos/person, ranging from 10 to 22) and despite a follow-up request to narrow their selection to 10, they found they could not. All data were included and despite over-representation of material from a few respondents, a relatively narrow set of qualitative themes emerged.

The meanings participants used to describe the scenes in their images fell into five themes: (1) the moraine as a demonstration landscape, (2) personal or cultural history, (3) nature appreciation, (4) the sustainability community within the moraine, and (5) a place for experiences. The meanings often represented a blending of the BHI's place-making imagery and the personal meanings held by each participant, suggesting that most people had incorporated the new symbolism introduced by the BHI. Although a few participants focused on only a few themes, most participants held diverse meanings for the moraine. None of the themes were exclusive to any professional group or dependant on residency in the moraine. The themes described by participants included aspects of both place identity and place dependency, which has implications regarding motivation to protect the moraine. Threats to a place considered part of self-identity provoke a stronger reaction (Devine-Wright, 2002; Stedman, 2002) than those to locations linked to place dependence (Kyle et al., 2004). The meanings captured by these thematic categories are explained further in the sections below.

Demonstration landscape.

Most participants (seven of ten) who completed the exercise recognized that the moraine today was a place in which nature and people co-existed in a more or less sustainable manner. Interestingly, mainly non-residents had photographs in this theme; only two near-moraine residents described the moraine in these terms. The changes they wished to see in land management emphasized protection of the existing quality of life, not restoration to some former, better state. Further, they saw the BHI and people more generally as an integral part of the moraine: in them lay the potential to demonstrate the balance possible through sustainable land management. Such development of community identity can form as a coping mechanism to deal with external threats (Dalby & Mackenzie, 1997; Devine-Wright, 2009; Stedman, 2006; Wheaton, 2007), but in this case appears to be a response to past cooperative action. Satisfactory experience in conservation activities has produced similar reinforcement of pro-environmental attitudes in other work (Lee & Moscardo, 2005).

These participants identified dimensions of the existing landscape and means by which they hoped they could be protected (e.g., balanced land use, active conservation, environmental education and stewardship by individuals). Only one participant (a near moraine resident) saw natural areas as protected landscapes, separated from intensive development by a buffer of less intensive land use or development. The unique terrain, abundant wetlands, extensive forest

cover and the moraine's distinctive form relative to the surrounding agricultural plains were repeatedly mentioned in these descriptions. The future landscape would continue to provide recreational, economic and development opportunities, while still maintaining the distinctive, attractive and biodiverse landscape that exists today. A few also described aspects of a more integrated landscape, through examples illustrating co-existence of people and nature (e.g., ENGO stewardship signs indicating environmental management by individual landowners, beaver management device installation, Plate 1).

These descriptions often emphasized place dependence (Scannell & Gifford, 2010a), an irreplaceable experience tied to this landscape. Many highlighted the recreation value of the moraine's natural lands and its wildlife viewing opportunities. They provided photographs of the bison at EINP, forested landscapes and wetlands, and wrote of the "wildness" in some of the protected areas. Some described the restorative aspects of the environment they appreciated about the area, such as "solitude" [park biologist] (Plate 2), or the insightful experience of "peeking" into the natural world [agricultural agency scientist]. Recreating with others, a social aspect of place, was also often mentioned by this group (e.g., the EINP Cuboree, camping with family, serving as a Natural Area Steward with a family member). Three non-residents also recognized the economic and development opportunity in the moraine, in terms of an existing and future landscape, a different aspect of place dependence. This group hoped for a balance of agricultural, tourism opportunities, and country residential development that would not compromise the moraine's natural values. Conversely, some participants also chose to highlight the human-induced risks to the landscape in their text descriptions, for example using the low lake levels in a photograph as evidence of potential effects of climate change, or mentioning the attraction of a natural landscape for country residential development.

Plate 1. Beaver management device installed at culvert location was used as an example of human-nature partnership in conservation.

Plate 2. Example of solitude and natural experience depicted in a participant's photograph

Pride in past conservation efforts was also evident, an aspect of self, or possibly community-identity. Pictures of the EINP bison and lake and wetland habitats were linked to conservation success stories such as the recovered populations of trumpeter swans and the bison, both species of concern in Canada, or stories of restored wetland habitats. A restored warden cabin in EINP signified the long history of conservation within this landscape for one participant. In some cases, participants had been involved in the conservation effort, in other cases participants were proud beneficiaries of its result (reflecting self and community identity respectively); in both cases, the satisfaction of achievement was evident.

Human intervention was not the only means of protection identified by this group. The ecological capacity of the moraine to sustain natural features was also highlighted by these seven participants, reflecting an understanding of natural process as a silent partner in this community. They recognized the moraine's current ecological integrity and that the land itself could play an important role in sustaining biodiversity (wildlife and plants), water, and general ecological health of the region (e.g., through hydrological functions). One participant also showed both its vulnerability, for example to drought and climate change, and the resilience demonstrated by areas with pastoral (less intensive) forms of agriculture. While most focused on the diversity of species and habitats as evidence of the moraine's potential resilience, some also included evidence of healthy ecological functions (e.g., large animals as indicators of habitat connectivity;

complexity in habitat). Several participants also highlighted the role of beaver (e.g., Plate 1) and fire in managing this landscape through natural processes, and the potential for people to work with nature to manage sustainably.

Nature appreciation.

All ten participants appreciated the natural world available to them in the moraine, and to other residents and visitors. Studies have found that long-term residents tend to value both the social ties and natural character of place (Hidalgo & Hernandez, 2001; Stedman, 2006), with less awareness of impacts and degradation (Kaltenborn, 1998; Trentelman, 2011). Here too, residents of the moraine highlighted very specific natural elements representative of 'their' moraine, features that brought them satisfaction, such as wildflowers, woodland trails, local scenery and sunsets. The shifting mood of familiar places with change in season and time of day featured prominently in their photography and their descriptions, reflective of an intimate relationship with this landscape:

> Longest day of the year sunset: Every sunset like a snow flake looks different to me, this one kept me away until the last glimmer... longest day of the year, owls were my choir. [municipal environmental planner]

> Fall scene in September: I'm not sure if this is an old woods road or larger game trail as it was covered in fresh moose and deer tracks, but lovely Fall scene. [municipal land use planner]

Non-residents also appreciated the opportunity to interact with nature, emphasizing the richness of biodiversity. A few participants valued the opportunity to share moments of discovery of the moraine's "hidden treasures" with others (social aspect of place), because "They make us smile, they make our hearts pump harder, and they bring our families together" [park biologist]. Such positive associations derived from shared social experience in place have been found among more occasional, recreational users of natural areas (e.g., Eisenhauer et al., 2000; Farber & Hall, 2007).

Again, most of the comments regarding nature appreciation reflected place dependence. The psychological effects of an open natural space so close to an urban area were highlighted by both resident and non-resident participants. For many, the moraine's natural areas offered the opportunity for restoration, self-directed exploration and discovery, psychological benefits

related to self-actualization (Hammitt, 2004). These participants pointed out the "sense of remoteness, solitude, and tranquility" [academic participant] in a scene (Plate 3), the "relaxing" effect of the sight of spring flowers [park biologist] or the opportunity for reflection on self, life or one's place in the broader world. A near-moraine resident alluded to an element of escape in the landscape he was trying to describe in a photograph, "it's easy to image you're not in Central AB" [ENGO biologist]. Others recognized space as something symbolic, a reminder of possibility:

> And it always a window of opportunity for us, really it represents opportunity and sky is the limit for us. For creativity, for everything. [agricultural agency scientist]
>
> Infinity: This struck me in the fall driving home one day... could go on forever…I was so happy to know my little house is at the end of the road. [municipal environmental planner]

Lastly, a few participants noted a closeness to the land gained from unique personal experiences in the moraine (e.g., sounds of geese and cranes in fall, evidence of large predators, rare vegetation communities). One participant found particular inspiration in the moraine's varied landscapes and its plants, wildlife and naturalness; his photographs represented "the limitlessness of our thinking and our ability", our "uniqueness and individuality" and our connection to "the bigger picture" [agricultural agency scientist].

Plate 3. Solitude experienced in the moraine's natural areas

History.

Six non-residents, a near-moraine resident and a moraine resident provided various examples of the history of human use in the moraine landscape, which to them demonstrated a long-standing cultural value of this landscape. Such cultural elements can be linked to self- or community-identity (Vaccaro & Beltran, 2007; Williams, 2002). Examples included historical sites and old structures marking early settlement in the moraine (Plate 4), parks established in the early 20th century for recreation and conservation, historical re-enactments of fur trading activity, and restored fire watch towers (and remnant stands of spruce) from the moraine's early history as a Dominion forest reserve. For one participant, these historical links reminded him of a time with a lighter ecological footprint, and a different (and perhaps better) way of looking at the land (Plate 5). For others, the history of the area documented a long-standing tradition of respect for the landscape and a connection to the past.

Plate 4. A historic marker for a former school site within the Beaver Hills Moraine linked place with past patterns of human use of the moraine.

Plate 5. An abandoned farm outbuilding that reminded a participant of his grandparents' homestead, and the small ecological footprint of those former residents.

Community.

The same seven participants who noted the demonstration potential of the moraine also reflected on the conservation community already established in the moraine, and being created now through the BHI (five non-residents, two near-moraine residents). As noted above, this

meaning represents an aspect of community identity formed from past cooperative management efforts. The description provided with a photograph of a meeting with councillors summarizes this meaning:

> It sort of means that it's up to people and the values, partners, it's a partnership…It's truly part of the values, minds and people who believe in the same cause. It is up to the people, at the end of the day. Besides, nature is going to take its own course. You don't know what course people will take. [agricultural agency scientist]

These participants included photographs with examples of landowners that had adopted sustainable practices, including participation in ENGO stewardship programs, retention of natural vegetation and features. They also used pictures from the rural communities within the moraine (present and past) to describe their hopes that the BHI's work would also sustain the moraine's socio-cultural features. For some, sustainability specifically included history, the historical links to those who had worked to establish a home in the moraine or to conserve its natural values.

The concept of community also extended to the researchers active in the moraine. Some participants included examples of past collaborations on the landscape (e.g., fire management, wetland restoration projects) to illustrate the potential in such partnerships. The opportunities for collaboration on applied management studies gave participants hope for future informed decisions on land management. This concept of a harmonious community connected through science, culture and nature resonated with many of these participants. The explanation provided with a bison photograph (Plate 6) captures the sentiment well:

> The image of the bison carries a lot of positive baggage for me in the Beaver Hills. Living history, human AND natural living history is a very important element of the BHI today for me. It symbolizes that we dug deep enough to care to save such a majestic animal and to provide it a sanctuary in the Beaver Hills. Issues aside with captive wildlife management, I like the idea of the bison conservation symbolizing us actively rooting ourselves in the earth's natural heritage and history; saving it and striving to integrate and carry it forward into our modern lives. Continuity with the past is critical to me, especially continuity

with the land and its past. It shows a desire to move along without losing or destroying pieces of the natural world with which we co-evolved. [park manager]

Similarly, the meaning associated with a photograph of a small frog resting on the thumb of a colleague (Plate 7) highlighted for this participant the role the BHI could play in fostering a more integrative relationship with the natural landscape:

> Because as I said earlier, many of us go there for one purpose, for horseback riding, for the walking, for the skiing, but we never try to peek through other windows that exist in that area. And this is the one window to me, and again it shows the complexity. I think sometimes in BHI, room is full of windows, but many of us open one or two without realizing that there is dozens and dozens. [agricultural agency scientist]

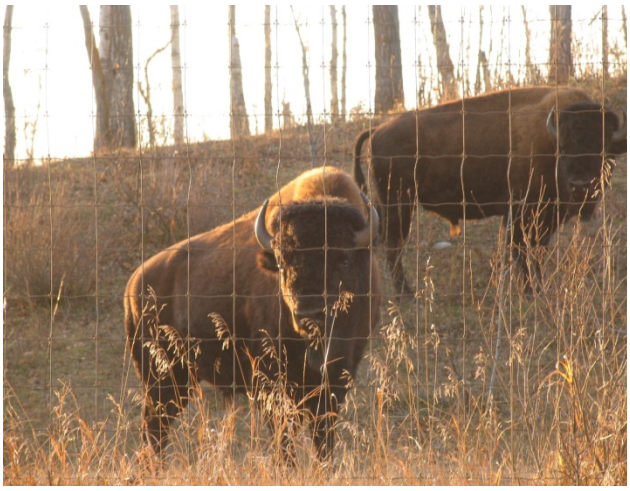

Plate 6. Bison photograph that illustrated results of a dedicated conservation community in the Beaver Hills moraine.

Plate 7. This photograph of a small frog illustrated the ideal human-nature relationship a participant hoped that the Beaver Hills Initiative could promote.

Place for experiences.

Lastly, all ten participants described the moraine as a place for experiences, emphasizing its accessibility, the opportunity for discovery or refuge, and memories of shared experiences with friends and family. This theme incorporated self-actualization (Hammitt, 2004) as well as social aspects of place, in terms of memories of past shared activities. The proximity of the moraine to urban areas and the mix of private and public lands contributed to the accessibility of

this landscape, as did the integration of people and nature in a lived-in landscape. The moraine offered experiences not replicable elsewhere in the region.

Participants had developed a better understanding of themselves, nature, or connection to the land (e.g., an appreciation of food production through agriculture) through their experiences of living, working, or recreating in the moraine. Five of the participants (two residents, one near-moraine resident, two non-residents) included photographs and descriptions of shared experience with friends and family. Most of these experiences were outdoor activities in natural settings (e.g., stargazing by campfires, dog walks, bird-watching, Plate 8).

Natural and pastoral landscapes contributed to the experiences of participants. Both residents and non-residents described the natural parts of the moraine as a refuge from a busy life or from urban distractions. The moraine was part of a personal quality of life for these participants, offering space for relaxation, reflection and revitalization, meanings similar to those expressed by second home owners (Stedman, 2002; van Patten & Williams, 2008). The pastoral landscapes reminded some of their own family background, or could be relaxing in their own way, as examples of a less intensive use of the land. These descriptions differed from the other themes in that they expressed a current, personal benefit derived from the experience of being in the moraine, rather than a future societal benefit.

Plate 8. This site reminded a participant of his godson's first deer hunt.

Role of Place in Collaboration

The BHI used place-making to create a shared identity among its individual members and member organizations, constructing a new image of the moraine in motivational, diagnostic and collective action frames (Martin, 2003). The shared identity became associated with norms related to conservation of special natural areas, providing additional motivation for supportive action, but also merged with existing place attachments held by participants to create new place meanings with strong motivational power. In the context of ANT translation, such a mechanism strengthens the rational arguments for cooperation, by triggering positive emotional responses to the problem, thus "winning the hearts and minds" of participants [park manager].

The message was structured to inspire supportive action. To convey the value of the landscape, motivational frames (Martin, 2003) emphasized the ecological uniqueness and size of the moraine, and its contribution to the quality of life of both residents and visitors to the area (Tobias &Muller Wahl, 2013). The focus on its ecological and physical uniqueness established it as a special natural area and linked it with social and moral norms for conservation management. This linkage tapped into two strong motivational forces: social and moral norms and place identity (Bamberg & Moser, 2007; Devine-Wright, 2009; Kyle et al., 2004; Stedman, 2002). Including a description of the threats to that character provided diagnostic framing (Martin, 2003) that exploited the sensitivity of individuals of a threat to a valued place (Devine-Wright, 2009; Kottak & Costa, 1993; Williams, 2002), and justified the solution proposed by the BHI (collective action framing, Martin, 2003). Consistent presentation of this image (Bell, 2007, Dale et al., 2008; Whitelaw et al., 2008) helped establish this new understanding across the partner organizations, and externally. The distinct boundary formed by the moraine landform may have helped participants conceptualize the scale of the moraine (Beckley, 2003; Tobias & Muller-Wahl, 2013), but bus tours and interpretations provided by members familiar with the moraine helped build an appreciation for the landscape through direct experience (Chawla, 1999; Grieder & Garkovich, 1994). Like other examples from the literature, place-making attempted to associate new meanings with the moraine by emphasizing aspects relevant to the target audience, gaining support by enhancing existing place meanings (Bell, 2007; Taylor, 1999; Vaccaro & Beltran, 2007; Whitelaw et al., 2008).

The shared place identity motivated a certain base level of support that combined with participants' other place attachments to the moraine to foster different intensities of motivation.

The types of place attachments described by participants corresponded to the three phases of attachment identified by Shamai (1991): belonging to a place, attachment to a place and commitment to a place. As Shamai (1991) also proposed, the level of intensity of place attachment corresponded to the individual's level of engagement in place-based activity. For example, the more objective, professional explanations of their motivations to participate in the BHI of Type 1 attached participants contrasted dramatically with the sometimes territorial reactions to the moraine held by the strongly committed Type 3 residents.

The discourse involving place can be conflictual or unifying, depending on the understandings of place by those involved (van Patten & Williams, 2006; Williams, 2002; Williams et al., 2013). As suggested by Cheng et al. (2003), creation of a shared identity about place that allowed room for different self-identities involving that place helped to minimize conflict and facilitate collaboration. A shared view of the moraine helped reinforce commitment to the shared goals for this place (an 'in-group effect', Cheng et al., 2003), such that even given varying levels of engagement in the BHI, all participants were committed to the goal of sustainable land management. The similarities in motivations of this group suggest that the shared identity was close enough to self-identity to avoid conflict and formation of an 'out-group' (Cheng et al., 2003; Owens, 2003), at least among study participants. The emergence of dissenter and subversive actors within the BHI suggests some differences in opinion about management of the moraine and a possible 'out-group' effect. Although the dissenters and subversives were not completely excluded from the group and were still allowed to participate in the regional management dialogue, some of the subversives reported feeling like they were "the outsider" [municipal land use planner] because of their contrary views. Unfortunately, none of the dissenters consented to participate in the study, leaving the dynamic of dissenting views of place as a gap in this analysis.

In a recent review of progress in place attachment research, Lewicka (2011) noted that of the person-place-process framework for assessment of place attachment proposed by Scannell and Gifford (2010a), the Process aspect remains least well-understood. The BHI case study identified three process aspects of place attachment, which suggest additional avenues of research in this area. First, the collaborative outcome resulting from creation of shared place meanings and identity and a threat to place supports the motivational link established by past empirical work (Bell, 2007; Dalby & Mackenzie, 1997; Payton et al., 2005; Whitelaw et al.,

2008). These findings also expand on the processes by which indirect mediation of place modeled by others could work with social capital to foster action (Lewicka, 2005; Pollack, 2004; Ravindra, 2004; Stoecker, 2003). Place-making through discourse and by direct experience helped create new place meanings (Chawla, 1999; Grieder & Garkovich, 1994) through emotional and cognitive messaging (Martin, 2003; Wheaton, 2007). The consistent description of a threatened special place in BHI presentations helped raise awareness of the issue and establish social and moral norms that promoted regional collaboration as a reasonable solution (Bamberg & Moser, 2007; Owens, 2003). This shared understanding of the problem and solution established a thin trust (Payton et al., 2005) on which to base cooperative management (Ostrom, 1998). Thin trust was leveraged through social capital strategies (see previous chapter) to enhance trust, establish expectations of reciprocity, add resources and expand networks facilitating collaboration, which ultimately facilitated enrollment and mobilization of individual representatives and their home organizations within the BHI network.

The successful negotiation of a shared identity through place-making appears based on matching of the new identity with that of individual participants, an integrative outcome predicted by Williams (2002) and observed by others (Edge and McAllister, 2009; Vaccaro & Beltran, 2007). It also fostered development of a community identity among those individuals who linked the natural elements of place with the potential in the united resources of individuals and organizations involved in the collaborative initiative. The confidence inspired in these participants by this collective identity fostered an open attitude toward new challenges, creating the empowering feedback loop noted in the previous chapter. Brehm et al. (2006) found similar development of community identity from natural and social aspects of place, but did not observe the positive feedback loop, perhaps due to the limited timeframe of their study. These outcomes of place-making suggest complex psychological processes driven by place attachment and self-identity that were beyond the scope of this current study. Other empirical studies of place-making have been similarly focused on description of the process rather than facilitating conditions (e.g., Edge & McAllister, 2009; Vaccaro & Beltran, 2007). Controlled experiments that assess self and place-identity, attachment and meaning before and after place-making, similar to those investigating pro-environmental behavior (e.g., Lee & Moscardo, 2005) would help determine the capacity of place-making to facilitate collaboration.

Lastly, the shift in place attachment by the one long-term resident who had moved away from the moraine suggests a place attachment process that lacks explanation in the literature. His experience contrasts with strong emotional and social connections to place shown by people displaced from a former home (e.g., Bell, 2007; Lewicka, 2011) or which discourage movement away from areas with declining quality of life (Kaltenborn, 1998; Pretty et al., 2003), but is consistent with findings of lesser place bonding in second home owners (Nielsen-Pincus, Hall, Force, & Wulfhorst, 2010; Stedman, 2002). This participant described a process of exploration that had helped him develop familiarity with his new place, a process that Lewicka (2011) and Morgan (2010) observed could build attachment to new places. Perhaps the process of connecting to a new home that one has chosen alters the strength of past attachments, a case of proximity driving the tightness of the bond. The experience of this participant suggests a capacity to detach as well as attach, a phenomenon not well explored in the place literature (Lewicka, 2011).

Viewed in terms of the ANT translation process (Callon, 1986); place-making gave the moraine a central role in motivating action (Figure 9). The shared identity created by the key actors of the BHI helped to construct the problem during problematization and visualize the solution, in terms of a sustainable moraine, during interessement. Further, the various map products produced by the BHI during the Land Management projects served to facilitate enrollment at the moment of agreement as material ("interessement") objects, as observed by others (Callon, 1986; Selman & Wragg, 1999a, 1999b). Specifically, in this case, these maps helped define the BHI community by illustrating the spatial boundaries that defined jurisdictional overlap within the moraine. The maps also delineated the ecological boundaries of the moraine landscape and the natural elements implicitly included in the partnership – the natural landscapes, plant and wildlife species and ecological processes (e.g., wildlife corridors) that comprised the natural capital of the moraine. Through these devices, the moraine gained agency, by inspiring in others a "will to connect" (Ritzer, 2008 p. 520) that "drives networks to incorporate and fold around actants" (Brown & Capdevila, 1999),

The shared identity strategically created by the BHI combined with the individual's version of place to give each person (and their home organization) a slightly varied interpretation of a 'protected' moraine consistent with their previous attitudes toward environmental management and the moraine. In some cases, participants had incorporated new knowledge of

that place gained from place-making and their understandings of the social capital within the BHI to imagine a community of sustainable practice that was a source of the empowerment noted in the previous chapter. These interactions, combined with those identified in previous chapters, provide a comprehensive view of the potential roles of place and social capital within the ANT translation process (Figure 9). The next chapter discusses these results to identify new insights on theory arising from this case study.

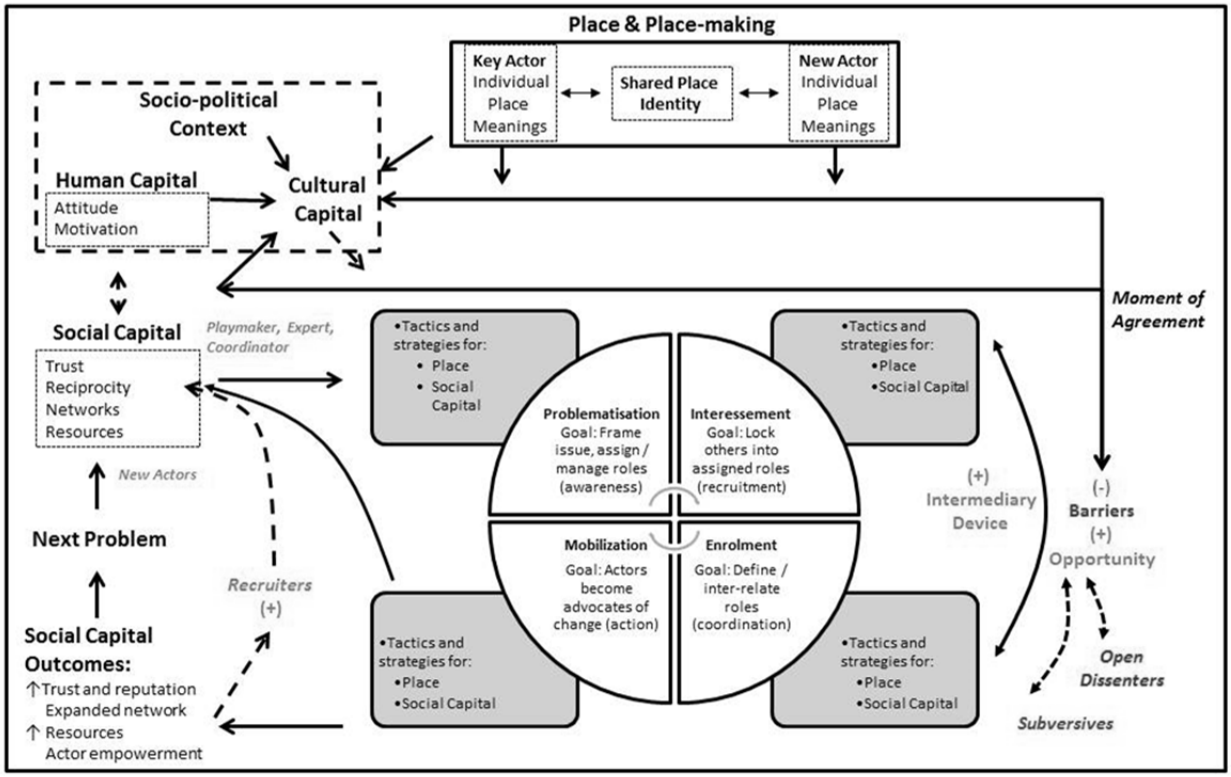

Figure 9. Influence of place and place-making on the ANT process of translation

Discussion

Actor Network Theory (ANT) suggests that societal change can occur through the translation of an innovative concept into action. Individuals are actively recruited, enrolled and mobilized within a new actor network united in support of the innovation (Callon, 1986, 1991). Past study of social capital and place suggested that the former may provide the human elements necessary to form and mobilize the network, while the latter could motivate actors within the network to act in a predictable, supportive way. The multiple capitals model expanded this view to differentiate the resources typically identified within social capital as forms of political, human, cultural and financial capital and suggests that the interactions of those and natural and built forms of capital contribute to the creativity of groups and their adaptability to change (Flora & Flora 2013). While this case study supports the interactions conceptualized within multiple capitals theory, it also describes those interactions within the context of ANT translation, suggesting a blend of the two models may best describe the process of societal change through innovation.

In this case study, social capital and place both played a role in fostering an innovative, collaborative approach to sustainable land management, working within a context offering other forms of capital, but notably, human, cultural and political capital. Translation has thus far focused on the social processes that contribute to formation of the new actor network (i.e., the processes contributing to the moment of agreement and group stabilization). The BHI case study has confirmed the role of those processes in this collaboration and expanded on the conceptual mechanisms proposed by ANT theorists to drive those processes. One of those mechanisms, the psychological processes facilitating cooperative behavior, introduces another analytical level implied but not yet explored within ANT. Discussed below are the specific mechanisms contributing to effective collaboration in this case, and their implications for ANT translation.

Building an Effective Collaboration

The BHI has managed to sustain a voluntary collaboration for over a decade, and has mobilized its membership to complete projects that have required increased trust and commitment among the partners. It actively built trust, in partners and in new approaches, using a variety of means. The BHI fostered relationships by building trust during frequent and often face-to-face meetings (Ostrom, 1998), and by consistently respecting the principle of voluntary

participation and the autonomy of all partners. They used a social learning approach to explore new management alternatives and to dispel misunderstandings about their scientific basis (Bardsley & Sweeney, 2010; Pretty & Smith, 2004). Finally, they sustained participation by demonstrating results and relevance to the partners through smaller, meaningful projects, which over time, built confidence and trust in the partners and in the benefits of cooperation (Emery & Franks, 2011; Gilmour et al., 2010; Ostrom, 1998). Ultimately though, the BHI built an effective collaboration by empowering individuals and organizations, based on a compelling, shared vision conveyed by a suite of actors possessing critical skills and a collective form of leadership.

Context, persuasion, trust development and dissent each had an important influence on the development and sustained operation of the BHI, and its overall effectiveness as a collaboration. The role of these factors in the building the BHI into an effective collaboration is discussed below.

Context

The socio-political context played a role in the development of the BHI, as did attitudes and motivations of participants and the natural context, but these factors were not sufficient to initiate or sustain collaboration. A Political Opportunity Structure (POS; Della Porta & Diani, 1999; Eisinger, 1973; Maloney et al., 2000) existed at the time of the BHI's formation, in terms of rising interest in sustainable management in the counties closer to the City, the switch to ecological integrity agenda in Parks Canada, and the province's support for regional partnerships. The unique character of the moraine landscape (including its distinctive boundary), its long conservation history, and increasing urban growth pressures also offered an Ecological Opportunity Structure to those interested in its conservation. These factors made it easier to propose cooperation, but acceptance depended on the interpretation of those same opportunities by each partner organization.

Awareness of the POS has been found to aid in successful organization and mobilization of collective action (Della Porta & Diani, 1999; Eisinger, 1973) and collaboration efforts (Wakefield et al, 2001; Whitelaw et al, 2008; Wilson & Wiber, 2009). The POS considers specific structural factors contributing to collective action: open or closed political structure, availability of influential allies, tolerance for protest amongst elites and cleavages among elites (Della Porta & Diani 1999; Eisinger, 1971; Tarrow, 1994; Mahoney et al, 2000). The openness of the political structure depends on power relationships and thus determines the opportunity for

open communication (Flora & Flora 2013, Pollack, 2004) and the need for strategic positioning of the initiative (Bell, 2007; Dale et al, 2008; Whitelaw et al., 2008). Open communication and organizational openness to change have both been consistently identified as factors contributing to the development of self-managed resource governance (Ostrom, 1998, 2000, 2009) and the diffusion of innovative practice (e.g., democraticratization, Beichelt, 2012). Although not explicitly identified in ANT theory, the ability to engage in deliberative dialogue about collaborative proposals would be an important precondition of successful translation.

Participants had interpreted this context in terms of opportunities and barriers. The barriers imposed by cultural capital included certain areas of dialogue that were not open to discussion or change, specifically issues related to the provincial economy and the energy industry in particular. Yet, despite these 'no-go zones' in the provincial discourse about sustainability, EINP and Strathcona County were able to convince their neighbors to join forces in the BHI. Further, the BHI was able to persuade each of the municipal partners to adopt, voluntarily, land use planning approaches that required new controls on growth. The ability of the BHI to achieve these outcomes despite the constraints on the dialogue around sustainability suggests that factors other than context encouraged cooperation.

ANT (Latour, 2005; Law, 1992), but also collective action and social capital theories based on rational choice (Coleman, 1988; Lin, 2001; Ostrom, 1990, 1998, 2009), assume that the decision to cooperate lies with the individual actor, with consideration of contextual variables. The multiple capitals theory also suggests that personal interpretation of context (including assessment of available cultural, political, social and natural capital) can influence collaboration (Flora & Flora 2013). ANT goes further, to suggest that the agreement to cooperate is actively negotiated by individuals and specifically, through meanings established by the human and non-human actors within the forming network (Latour, 2005; Law, 1992). Participants explained their motivation to work with the BHI based on their interpretation of the BHI within the cultural context, and its consistency with their own attitudes and motivations. This finding suggests that a psychological process based on self-identity may also play a role in fostering cooperation.

Self-identity can be constructed based on norms established through interactions in a variety of social groups (Anderson, 2004; Bamberg & Moser, 2007; Owens, 2003), as well as place (Anderson, 2004; Stedman, 2002). Further, the resulting self-identity is complex and represents different aspects that can be applied according to the social context (Owens, 2003) or

in the appropriate place (Anderson, 2004). The support of the various actors involved in forming and mobilizing the BHI can be explained in part by alignment of the proposal with the motivations and self-identity of the actors. Agreement was relatively easily negotiated with those with strong environmental identities, shared place identity, or emotional place attachment (including a personal place identity related to the moraine). For dissenters and subversives cooperation was situational, based on the aspects of identity and social affiliations most relevant at the time. For example, some dissenters appeared to support the BHI during Board activities, yet actively worked against the BHI within their home organizations, presumably to satisfy a self-identity conflicting with the BHI's objectives. Subversives presented the concerns and reservations of their home organizations at the Board level, but actively promoted the BHI, where and when possible within their home organizations, choosing their professional affiliations and the BHI over their duties as an employee. The ability of the BHI to align its purpose to the identity of a broad range of potential partners played an important role in recruiting support, especially during formation of the group.

Discovery of shared values can establish common ground on which to identify collective goals and interests (Samuleson, Peterson, & Putnam, 2003). Framing of the BHI's objectives to be consistent with those of potential partner organizations helped avoid conflict among social identities of individual representatives and thereby establish a basis of trust with potential partner organizations. This consistency was achieved strategically, through social capital tactics and place-making, and depended highly on the persuasive powers of the BHI's proponents.

Persuasion

The BHI actively worked to convince all partners to participate, but municipalities in particular, by creating a common concern using place-making about the moraine. The shared place identity emphasized the natural values of the moraine and through that, its contribution to quality of life in the region, but more importantly, it created an awareness of threat to the moraine and the need for regional cooperative management as a solution. Yet even in those organizations where this concern was already shared and a POS existed, political maneuvering was necessary to position regional cooperation in a non-threatening way (e.g., by emphasizing the benefits and advantages of 'smart growth' to the municipality). This required political and social capital in terms of trusted, credible proponents, but also human capital in terms of persuasive powers and skills.

The literature has often highlighted the contributions of the skills, knowledge and connections held by key actors in facilitating collaboration (Bell, 2007; Dale et al., 2008; Whitelaw et al., 2008). Influential actors (playmakers, institutional entrepreneurs) may be better framed in terms of their leadership ability, and the role of persuasion in setting new directions. The ability of leaders to 'challenge the possible' by inspiring the imagination of others has been theorized to shift the cultural limitations to adaptive change thought to impede resilience and adaptability (Flora & Flora 2013; Parkins, 2011) and in a few cases, has been shown generate the community support to try new approaches (Stephenson, 2011). Within the BHI, the playmakers were able to inspire support for alternatives to land management through a marketing approach that resonated with a broad audience at the aesthetic, moral, cognitive and affective level, as Stephenson (2011) suggested. Through successive short-term projects, they were able to prove the concept and thus expand the boundaries of possibility for existing and new partners. This in turn empowered the partners to apply new approaches in their own organizations or within the BHI. These results suggest that the personal leadership ability of 'key actors', their ability to inspire the cooperation needed to attempt collective goals, may be their most critical skill.

The shared place identity fostered by BHI proponents created an awareness of an important, shared problem that became the common driver for cooperation among most participants. The potential for shared identity to foster cooperation toward shared purpose has been theorized by others (Cheng et al., 2003) and observed in cases of place making (e.g., Tobias & Muller, 2013; Vaccaro & Beltran, 2008), but the psychological process involved in creating shared identity and shared purpose has not been well explained (Lewicka, 2011). As suggested in the place literature (Devine Wright, 2009) and in collaborative management literature (Emery & Franks, 2011; Gilmour et al., 2011, 2013), awareness of a threat (in this case constructed within the BHI's presentations) prompted the BHI partners to cooperate. Whether by design or chance, the shared identity also built on existing place identities held by individuals and organizations, which avoided creating conflict by introducing a dramatically different definition of place (Williams, 2002). The BHI emphasized the moraine as a special place, which most organizations had already recognized, but then expanded on that definition to frame a need to conserve this particular place as unique and deserving of protection.

This approach allowed the new shared place identity to develop readily from existing individual place meanings, and then associated that identity with expectations of conservation

behavior to build a social norm. In doing so, they established a new feeling of value for lived-in landscapes and more importantly, a sense of responsibility to maintain a generational legacy. This shared place identity instilled a sense of conservation of the moraine as 'the right thing to do', a moral norm arising from the messaging about the moraine. Many participants developed a sense of belonging to the BHI, making it part of their social identity, and their decisions to support the group within their home organization arose from a sense of obligation to the group and the moraine.

This case study suggests a mechanism for collaboration based in the psychological processes associated with place-making (Cheng et al, 2003). Supportive behavior can be motivated by changing the environmental context (removing perceived barriers) (Thomas & Velthouse, 1990) or by fostering awareness of the problem (Bamberg & Moser, 2007). Place-making here fostered a new respect for the moraine and a sense of responsibility for its conservation by decision-makers. This awareness of responsibility contributed to a social and for some, a moral norm, which can be a powerful behavioral motivator (Azjen, 1991; Bamberg & Moser, 2007; Schwatrz, 1977).

The shared place identity also proposed regional cooperation as a means to sustain the moraine, presented in the context of various practical benefits to the partner organizations (e.g., leveraging resources to achieve regional goals, data sharing). This point leads to the question of what benefits motivate cooperation. Evidence here and elsewhere (Emery & Franks, 2011; Gilmour et al., 2012, 2013) suggests that people chose to cooperate when they see relevant benefits and a need to cooperate. Flora & Flora (2013) suggest that better decisions consider all aspects of sustainability, and development of other types of capital – not just natural or financial. If people do not necessarily understand how their current decision-making could be improved with more balance (i.e., they are not seeing relevant benefits), active intervention may be needed to help participants see the situation and the potential benefits in a new light.

Social learning has been shown to facilitate such awareness (Rodela, 2011). The BHI did use both social learning and demonstration (a means of normative socialization) to promote its innovative approaches to partner and external organizations. Social learning and normative socialization depend on initial and built trust among the partnering individuals or organizations (Beichelt, 2012; Pretty & Smith, 2004; Rodella, 2011). Open communication and organizational openness have also been associated with successful adoption of innovative approaches through

social learning (Beichelt, 2012; Pretty & Smith, 2004) and normative socialization (Beichelt, 2012). As discussed below, the BHI established a management structure that facilitated open communication and actively managed relationships to build trust, yet this still does not address the initial hook that captured the attention of potential partners in regional land management approaches.

Such interest, in this case was inspired by a persuasive vision of the importance of the natural character of the moraine to the quality of life valued within the region, a description that allowed partners to imagine new possibilities. Social capital research has emphasized the credibility and knowledge held by key actors in convincing others to cooperate (Bell, 2007; Dale et al., 2008). Existing trust among the BHI participants certainly helped to create the initial opening for dialogue, as seen in other examples of collaboration (Ostrom, 1998, 2009; Peterson et al, 2006; Pretty & Smith, 2004), but persuasion requires a leader that can inspire by conveying cognitive, aesthetic, moral and affective aspects of a vision (Rosen & Olsson, 2013; Stephenson 2011; Taylor et al., 2012).

The participants' personalities can also play a role in collaboration, a factor well illustrated by the dissenters within the BHI. Their resistance to the BHI appeared to be based more on their own ability to trust, in new ideas and in other partners. Adoption of innovative approaches can be affected by feelings about the credibility of knowledge claims, including trust in or likeability of the messenger (Holmes, 2010; Pretty & Smith, 2004). Propensity to trust was also identified by Lambright et al. (2010), in their model of the development of trust in professional networks. Personality aspects such as agreeableness, conscientiousness and openness to new ideas have been linked to effective teams (Peeters et al, 2006), because such characteristics foster group cohesion, compliance with group goals and creativity. Similar links have been associated with pro-environmental behavior (Milfont & Sibley, 2012). The influence of personality in determining openness to new ideas, and thus the potential to cooperate in innovative approaches, appears to offer new ground for research on collaboration in sustainable management.

Trust/social capital

Social capital research has suggested that trust, network structure and resources can facilitate the objectives of a group or an individual (Glanville & Bienenstock, 2009). The capacity of social capital to be enhanced (or reduced) by its application has resulted in the

conflation of social capital inputs with its outcomes (Glanville & Bienenstock, 2009). Based on such work, social capital inputs were analyzed separately from outcomes in this case. This approach helped to explore the role of strategic application of initially available social capital and its outcomes on collaboration. One outcome in particular, the development of a self-reinforcing cycle of trust-building empowered participants and increased trust in the partners and in regional land management. This cycle helps to explain the longevity of BHI collaboration and its progressive capacity to coordinate projects that required more partner commitment. Distrust among some partners created barriers to collaboration that the BHI addressed through various strategies. It also generated a sustained dissent, based on personality, which, as discussed in the next section, actually benefited the BHI.

Initial social capital.

Initial levels of social capital existed in terms of (1) trust among partner organizations (and individuals) that had worked together in the past and had established expectations of reciprocity; (2) distrust among other organizations (and individuals) suspicious of other organizations motives; (3) the deep horizontal and vertical network of the BHI proponents, which provided access to other resources (people, financial support, political support), and (4) the personal experience of 'sustainability experts' to establish credibility (feasibility) of regional cooperation. Past positive interactions enhance the trustworthiness of others, and thus the propensity to trust (Lambright et al., 2010). Existing levels of trust have been shown to facilitate cooperation, in part due to a confidence in the collaboration to work effectively and in partners to support the collective goal (Emery & Franks, 2012; Gilmour et al., 2011).

Conversely, distrust within a collaborative group involves suspicion of others to engage in free-riding (cheating to gain benefits accrued from others' supportive action), a risk associated with self-managed resource governance (Ostrom, 1990, 1998). Gilmour et al. (2013) found that those who distrusted in the fisher cooperatives in his study had no previous experience in such cooperatives and were concerned that their colleagues would eventually break the rules of a self-managed fishery without threat of outside enforcement. Ostrom (1998) suggested that only threat of sanction could prevent the destabilizing effect of free-riding on cooperative management. Yet the BHI has been able to succeed in their collaborative initiative without the use of sanctions, other than shaming of self-interested partners.

Emery & Franks (2012) also found distrust of unfamiliar partners had prevented participation of some farmers in an agricultural cooperative, but suggested that the lack of opportunity to discuss the proposal as a group had contributed the fear of free-riders. Ostrom (1998, 2000) emphasized the need for face-to-face communication to build initial trust and basic levels of reciprocity among new partners in self-managed governance systems. The BHI had provided ample opportunity for the dissenters to discuss the BHI proposals over the decade of its existence and demonstrated the benefit of shared investment and collaboration. Instead, the distrust of the dissenters appeared to be based on an assumption of self-interested motivations of other partners (e.g., urban municipalities seeking to grow taxation benefits; ENGOs pushing environmental agendas), rather than past or present negative experience with those partners, or a lack of dialogue. Resistant personalities, rather than lack of opportunity to develop trust were the primary block.

Again, this suggests a new area for research on collaboration. Intuitively, if collaboration is an arrangement based on human relations as suggested in ANT (Callon, 1986; Law, 1992; Latour, 2005), personality characteristics such as openness to new ideas and agreeableness of individuals could play a central role in the development of sustained, effective collaborations. The ability of the group to work together and evaluate new proposals fairly must play a role in effective collaboration. Yet in this case, dissenting personalities played an essential role in establishing the governance of the BHI collaboration, as discussed the section on dissent below. This finding suggests that the management of dissent within collaboration deserves more attention, from a social relational and psychological perspective, as suggested by Diani (1997)

Strategic use of social capital.

The various actors within the BHI used available social capital at strategic points to further the BHI's objectives, developing additional social capital that could be applied to new projects, both within and beyond the BHI. Those strategies enhanced the relationships among the partner organizations and their representatives, by building trust in each other and in the new land management approach, which aided in adoption of the innovative approaches promoted by the BHI.

Different strategies were applied to build trust and establish expectations of reciprocity, grow the BHI network and access new resources at key points within the ANT translation process. Rosen and Olsson (2013) also found that support of a variety of other actors enabled

institutional entrepreneurs to negotiate new international policy. The various individuals and organizations within the BHI used available social capital at strategic points to further the BHI's objectives, developing additional social capital that could be applied to new projects, both within and beyond the BHI. Those strategies enhanced the relationships among the partner organizations and their representatives, by building trust in each other and in the new land management approach, which aided in adoption of this innovation. Successful completion of each project thus generated new social capital (trust, expectations of reciprocity, resources and broadened networks), including a reputation as a regional leader, that could be applied to new projects. Implementation of new techniques by BHI members within their home organization also allowed diffusion of innovative approaches beyond the original actor network.

Self-organization by the BHI Board during its early years contributed additional social capital in two ways: (1) creating a form of governance that built trust in the BHI, the partner organizations and the concept of regional, cooperative land management; and (2) negotiating roles for participating partners within the organization (inclusion). Sufficient trust appears to have been built within the BHI to establish most of the elements of a self-managed system for management of common pool resources (Ostrom, 1990), including conflict resolution mechanisms and a decision-making process. The BHI helped develop relationships among members through its small Working Groups, social learning opportunities involving member and non-member organizations (e.g., working meetings, bus tours), and the conflict resolution and open communication fostered internally. The norms established for respectful and open dialogue and consensus based decision-making help foster trusting relationships (Ostrom, 1998; Peterson et al., 2006; Pretty & Smith, 2004; Schusler et al., 2003). The organizational structure of small Working Groups allowed frequent, intimate contact that facilitated learning about new information and other members, which also promoted trust in others and in innovative approaches (Lambright et al., 2010; Ostrom, 1998).

As noted above, the BHI relied heavily on social learning to build the capacity of individuals and their home organizations. Network-centric social learning, experiential learning targeting specific sectoral groups, can facilitate transformative change across broad social groups (Rodella, 2011). A social learning approach to each project did establish a common understanding of science-based decision-making, landscape ecology and regional management, as well as collaboration. The experience of working with the data, tools, and trade-offs involved

in landscape management also built a sense of confidence with the language, concepts and process, and each completed project proved the potential in the approach. Yet for the BHI, social learning had mixed success. On one hand, the group was able to engage in balanced discourse on environmental issues, achieving one objective of science-based, deliberative democratic decision-making (Dale, 2005; Parkins, 2011). Yet, distrust of the new information by some partners, at both the individual and organizational level, remained a significant barrier that prevented full adoption of the new regional management approaches provided in the Land Management Framework. This exposes a limitation of social learning, based on openness to change at both the organizational and individual level.

Group management and leadership.

ANT suggests that the moment of agreement is fundamentally a negotiation about power, a struggle for new players and ideas to gain influence and credibility (Callon, 1991; Law, 1992). The empirical collaboration literature does not explicitly address the impact of management style on team members and the influence of power and control on participation in the group. Past empirical work has examined the differences in outcomes between top-down (authoritarian) systems (e.g., Peterson et al., 2006; Wilson & Wiber, 2008) and voluntary collaborations (e.g., Bell, 2008; Dale et al., 2008), but not the specific effect of management style on participants. The BHI, once established, developed its internal management structure to suit both its members and its partnering organizations. The BHI adopted different leadership styles to manage relationships at the individual and inter-organization level. The different styles were intended to encourage both voluntary participation and adoption of innovation, with consideration of the constraints and needs of the partner organizations and individual representatives. While adoption of innovation was slow to develop, the combined approach help encourage the enthusiastic voluntary participation of many participants.

The BHI adopted a collective leadership model (Friedrich et al., 2009) that combined transformational and laissez-faire management styles at the Board and Working Group levels (respectively). This contrasted deeply with the more authoritarian, command and control approach of most of its partners (government in particular), which a playmaker noted provided freedom and respect less common in member's home organizations. The laissez-faire management style in the Working Groups allowed leaders to emerge and contribute as their skills to the design and implementation of useful projects as appropriate. At the board level, the

transformative management approach also allowed participants flexibility to contribute time and knowledge to the discussion as appropriate. In both cases, a consistent focus on the broader objectives of cooperative regional land management meant contributions were assessed on group performance, rather than individual effort, which reduced inter-personal competition. Freedom to contribute meant no one organization could dominate discourse or decision-making, which minimized perceptions of potential power imbalance and concerns about autonomy. Most importantly, the lack of directive management allowed individual representatives a feeling of control, which can influence intrinsic motivation (Thomas & Velthouse, 1990). The management structure maximized creativity, built cohesion, enhanced consensus and empowered members of the Working Groups, all documented advantages of transformational business management (but interestingly, not of laissez-faire systems, Bass, 1997; Flood, Hanan, Smith, West, & Dawson, 2000).

Yet the influence of power was not entirely avoided in the BHI. The strategic leadership used by Strathcona County to promote change to a sustainability agenda internally and among its organizational partners was intended to achieve regional goals through exercise of power. Within the BHI, the County emphasized the benefits of cooperation and reinforced that promise by openly sharing their resources, information and expertise (a transactional leadership style, Bass, 1997). Internally, they pushed their staff to adopt sustainable management practices, including adoption of the BHI Land Management Framework (an authoritative leadership style, Bass, 1997), in part to model the sustainability approach to its regional neighbors. Both leadership styles were part of a leader-follower strategy that relied on a game of incentives to incent transfer of new practice to other municipal partners. This conditionality mechanism is a more direct approach based on implied punishment and reward, which aims to 'push' adoption of new practice on the follower. It contrasts dramatically with the persuasive and socialization techniques used by the BHI, which rely on social learning to foster longer term, normative change (Beichelt, 2012). Yet it helped demonstrate to more reluctant partners the feasibility of the BHI's approaches, countering the negative influence of dissenting organizations and individuals. The effect of this combination of social mechanisms suggests simultaneous action at the individual and organization level may be necessary to foster change by collaboration.

Outcomes

The BHI approach to collaboration had several outcomes related to the function of the group, previously documented in the social capital and place-based governance literature. It also resulted in two outcomes related to the potential for innovative aspects of the BHI approach to diffuse to other networks (propagate innovation). The first set of outcomes reflects factors that in this case contributed to the stability of the collaboration and its ability to achieve its objectives. The second group demonstrates the potential for collaboration to transfer innovation from the micro to macro-scale, providing empirical evidence for the relationship predicted by ANT theorists (Callon, 1991, Law, 1992).

Over time, the BHI developed aspects of social capital previously associated with an effective collaboration: (1) increased trust among different sectoral groups (e.g., across parks, municipalities, ENGOs and researchers), (2) various norms of governance (expectations for participation, like 2-way communication, flexibility for volunteer time contributions, respectful conflict resolution), (3) an expectation of reciprocity among partners, and (4) access to new resources through personal networks of the BHI representatives and from legitimization of the BHI as an organization with regional influence (Dale, 2005; Ostrom, 1990, 1998; Pretty & Smith, 2004). Together, these factors are thought to facilitate the level of cooperation necessary for self-managed governance (Ostrom, 1990, 1998) and tap the creativity necessary to adapt to 'wicked' environmental problems (Crona & Parker, 2012; Franks, 2010; Parkins, 2011).

The BHI also developed two other forms of social capital that determined its potential to have an influence beyond the group: (5) empowerment of BHI representatives to apply innovative collaboration and sustainability practices elsewhere, and (6) legitimization of BHI as an innovative regional sustainable management actor and through that, legitimization and broader adoption of regional collaboration and sustainable management. These outcomes have been conceptualized to result from effective collaboration (Dale, 2005, Flora & Flora 2013), but documented only rarely, perhaps due to the lack of longitudinal studies.

While key actors expressed their hopes to affect change through increased awareness and comfort with regional cooperation and sustainable development, the enthusiastic and dedicated response of its members was a fortuitous, rather than a planned outcome. Participatory approaches that offer a sense of control (e.g., through social learning and knowledge transfer) have empowered participants to apply new knowledge for their own objectives (e.g., Sobels et

al., 2001), but they do not necessarily guarantee independent, well-aligned contributions to group goals (Thomas & Velthouse, 1990). The individual's interpretations of the task at hand and of their own capacity to contribute, deal with setbacks and envision success can also empower or disempower (Thomas & Velthouse, 1990). This type of empowerment is based on cognitive aspects (sense of impact, competence, meaningfulness and choice) developed through personal interpretation of environmental context during 'task' experiences (Thomas & Velthouse, 1990). This assessment of feasibility is dynamic and can be influenced by change in environment, including interventions by others. Socially-mediated experiences such as social learning can either change the environment context (by adding knowledge or skills) or the individual's interpretation of that context (e.g., recognition of other external or internal factors that can better control outcomes).

The enthusiastic response of some participants to the sense of community and demonstration potential in the BHI suggests that their perceptions of the context of sustainable management had dramatically changed through experiences in the BHI. For these participants, proof of concept and awareness of the creativity and potential held by the BHI became a strong motivational force that inspired promotion of the BHI's approach to regional management to others. The hope generated by this empowerment also created positive feedback that fed subsequent cycles of the translation process, as new projects were proposed and implemented by the BHI.

In part, empowerment was due to visionary leaders who could promote and demonstrate the feasibility of and need for new alternatives (Stephenson, 2011; Taylor et al, 2012). Social learning was also important. But proving the concept through demonstration of results was critical: those who saw the potential in those results took up the new tools, information and approaches and adopted it into practice as soon as possible. For some, opportunity arose quickly. Strathcona County land use planners immediately used the Land Management Framework to develop their MDP. For others, opportunity took longer to realize, but the participant was still able and willing to apply the techniques (e.g., a land use planner successfully applied a collaborative, science-based approach to defuse conflict in a citizen advisory group several years after exposure to the Framework). The delayed application of this experience speaks to the degree of empowerment achieved by the BHI.

Yet not all outcomes were positive. The dynamic created among the personalities within the BHI had an important influence on receptivity to new ideas, and thus, the diffusion of innovative ideas and approaches at both the individual and inter-organizational level. For BHI representatives open to the BHI or to sustainability, social learning did result in transformative experiences, as noted above. But in a few cases, feelings about the credibility of knowledge claims, including trust in or likeability of the messenger (Holmes, 2010; Pretty & Smith, 2004) limited acceptance of the BHI's information and management tools at the individual and subsequently, the organizational level. For example, sustainability experts and academic researchers were received openly by some organizations and their representatives, and distrusted in others. In the latter case, the distrust held by dissenters contributed to perceptions of ulterior motives or control of the BHI by academic or dominant municipal interests. Again, openness to new ideas at the individual level can have an important influence on the adoption of innovation.

Legitimization of the BHI resulted from trust built in the organization and sustainable development. Developing that trust involved an exercise of power to encourage constructive dissent and discourage destabilizing dissent based in self-interest (see following section). Once smaller projects began to demonstrate results, BHI members and external organizations began to develop trust in the concepts being promoted which reinforced the commitment of existing partners, attracted new partners and stimulated or sustained other more complicated projects. Managing dissent until the concept could prove itself was critical.

The 'community' and 'demonstration landscape' place meanings that became associated with the moraine for those members strongly committed to environmental management arose from the alignment of shared place identity and personal identity, and evidence provided by short-term results. The dedicated service of these individuals often went beyond the expectations of the BHI and other participants. The BHI's constructed message about the moraine demanded proactive management to respond to the threat to the moraine that aligned well with the environmental identity of these participants. When combined with the demonstrated results of smaller projects, the shared place identity became transformative, and spurred additional, dedicated efforts to support the BHI within the home organization and in the BHI. Effectively, the results reinforced and inspired the personal and collective imagination regarding sustainability. As Stephenson (2011) found in his study of transformative community leaders, the new social imaginary tapped into a suppressed desire for change, producing a strong

synergistic effect on cooperation. This fostered the additional passion and confidence (human capital) needed to realize some of the larger and more ambitious projects of the BHI, and sustain the initiative.

Dissent

Dealing with conflict in a respectful way was critical to establishing the level of trust seen among cooperative partners and the individual representatives, and in helping to legitimize the BHI. Ostrom (1998) and Beichelt (2012) both emphasize the role of open communication in the establishment of cooperative groups. Ostrom (1998) showed that through open communication, norms of reciprocation could be established, the beginnings of social capital. Beichelt (2012) also noted the need for openness of the organization in the successful adoption of concepts such as democratic principles through persuasion and normative socialization. Ultimately, the ability to deliberate on the necessary economic, social and environmental trade-offs of development is essential to inclusive, broadly-supported decisions about resource management problems (Dale, 2005).

Conflict resolution within the BHI was mainly through debate, including conflicts with the dissenters. Where a respectful consensus could not be reached (one in which parties agree to disagree, but still support the resolution of the group), the playmakers within the BHI resorted to other tactics to isolate and minimize the effect of dissent on the stability of the group. This combination of tactics maintained the balance between inclusion and exclusion considered important to deliberative approaches to sustainability (Flora & Flora 2013), by creating boundaries of acceptable dissent within the group.

Proposals were discussed within the Board and Working Groups in a consensus process that allowed for a form of dialogue consistent with Habermas's cognitive interests theory. Representatives could raise concerns from a technical standpoint, practical standpoint or values-basis, leading to a more balanced evaluation of proposals. For example, a land use planner's objection to review of development plans by the BHI was based on power interests (potential for a county to exert power over another's planning process) and values (professional ethics). Discussion involved all stakeholders (including dissenters) in the debate of alternatives, and did not rely solely on expert-opinion to resolve concerns with uncertainty, which led to stronger support from stakeholders (Biljsma et al., 2011; Jamal & Eyre, 2003). Social learning and translation of technical concepts by more approachable members of the BHI (translators) also

helped break down barriers related to understanding (Cottle & Howard, 2011; Leys & Vanclay, 2011). Lack of resonance with those counties concerned more with social sustainability issues (e.g., school closures) suggests that the BHI did not do as well with social interests. Yet the commitment of the individual representatives and organizations to the BHI over time and the eventual adoption of BHI concepts by all five municipalities suggest that such open dialogue was sufficiently inclusive to sustain their long-term involvement.

Although the dissenters could not be convinced to cooperate through these approaches, their concerns served another important role in establishing governance of the group. The BHI's mission and vision very clearly articulated their goals of sustaining the quality of life within the moraine through cooperative means, and that principle was consistently emphasized by all participants in this study. This consistent focus on a common goal allowed the group members separate self-interest from supportive community-minded motivations and exclude dissenters whose concerns were clearly based in self-interest. This clarity also justified the active isolation of dissenters by the playmakers. Shunning established a boundary defining 'acceptable' dissent and so, maintained a balance between the more fluid and informal "space of negotiation" favoring deliberative dialogue and the more normative "space of prescription" required to deal with non-conformity (Murdock, 1998, p. 358). Thus, the BHI has been able to function without the sanctions thought essential to long-term collaborative initiatives (Ostrom, 1998). The behavior of subversive actors, secretly promoting the BHI within the dissenting organizations, clearly indicates awareness of non-conformity with a social norm. Their behavior ultimately helped reinforce standards for acceptable behavior by highlighting the in-crowd within the BHI. The cooperation of the subversives speaks to the capacity of imagination to motivate, particularly if the vision is consistent with critical aspects of personal identity.

This dynamic has not been previously identified in empirical studies of the ANT process, and it helps to illustrate the means by which power is gained within the translation, a process discussed in more detail in the next section.

Collaboration and ANT

ANT evolved from a 'project' designed to explore the modern experience of science-based decision-making (Asdal, Brenna, & Moser, 2007; Latour, 2005) to become a theoretical framework for analysis of the process of social organization. It has been applied in a variety of fields (e.g., organizational theory, health care, knowledge transfer and environmental sociology;

Asdal et al., 2007; Czarniawska & Hernes, 2005; Lee & Hassard, 1999; Murdock, 1997, 1998, 2001), primarily because it offers an explanation of how heterogenous actors can be enrolled in a single network. ANT's analytical focus is on the relational strategies for overcoming resistance to cooperation and for binding actors together into an actor network (Callon, 1991; Latour, 2005; Law, 1992). Empirical analysis has focused on the processes contributing to convergence and irreversibility of the actor network through the process of translation - factors contributing to a stable network, universally accepted innovative constructions of relationships between human and non-human entities, and human agency (Asdal et al., 2007; Callon, 1991; Latour, 2005; Law, 1992; Murdock, 1998, 2001). To be useful in environmental sociology, Murdock (2001) argues that the co-constructionist elements of ANT, the ways by which humans define their relationship with nature, must be understood as well as the social processes affecting agreement. The BHI case study has contributed to this aspect of ANT.

In the BHI case, place-making and social capital strategies encouraged long-term cooperative behavior by establishing social and moral norms related to place and cooperation (a social process). Those tactics also constructed a shared place identity, then motivated cooperative behavior by raising awareness of threats to that identity (a psychological process). Lastly, the BHI was able sustain the collaboration by empowering participants through motivational tactics that suited the range of individuals, organizations and personalities that comprised the group (a mix of social and psychological processes). It also fostered in some participants a community identity based on a construction of place and human capacity to affect change. The influence of these psychological reactions to constructed descriptions of place on the process of translation suggests a new level of ANT analysis seldom explored empirically, but increasingly considered important in collective action research (Diani & McAdam, 2003). The sections below integrate the findings about the role of context (including socio-political conditions and the attitudes of potential collaborators), place, and social capital in the ANT translation process, and discuss their implications on our understanding of the translation process and the relationship between place, social capital and collaboration.

Translation 2.0

The actor network was originally conceived to arise from social interactions that would define the relationships among human and non-humans, a shared definition that would become the basis of organization (Callon, 1991; Latour, 1987, 1993, 1996, 1999, 2005; Law, 1992).

Translation provided a versatile explanation of that process, based on the ability of human and non-human actors to construct both a problem and a feasible solution to an environmental problem (Callon, 1986). Although the four moments of the process have been confirmed by studies of other environmental initiatives (Lockie, 2004; Selman & Wragg, 1999a, 1999b), the specific means by which co-construction of the human-nature relation might facilitate the critical moment of agreement has not been examined empirically or theoretically.

The BHI case illustrates several new aspects of translation, including : (1) a mechanism for diffusion of innovation, based on social capital development; (2) a deeper explanation of dissent as a barrier to the moment of agreement; and (3) a broadened view of the relational aspects of translation that includes the psychological process of recruiting and sustaining support. ANT theorists have proposed that repeated cycles of translation of an innovative concept could facilitate the network stabilization and spread innovation to a broader social network (Callon, 1991; Law, 1992). The BHI case suggests that strategic use and development of social capital may facilitate this process. The cumulative social capital from each successive major BHI project facilitated pursuit of increasingly ambitious projects and helped legitimize regional sustainable land management as a viable alternative. Completion of each project built trust in the partnership and a hopeful optimism among representatives about regional, sustainable management. The BHI gained in reputation with each completed project, and could attract additional resources that the enrolled and mobilized actors could apply to more challenging initiatives. For example, the attention gained from a Municipal Affairs Award for municipal partnership and selection as a provincial Emerald Award finalist at the end of the Land Management Principles project coincided with an increase in new partners to the BHI, including a major provincial ENGO (Alberta Conservation Association). Similarly, the provincial research agency (Alberta Innovates Technology Futures) joined after the Land Management Framework began to be implemented by local municipalities. As a result, successive projects within and beyond the BHI began more easily, allowing the sustainable land management concepts to spread to other networks, a step of micro-to-macro translation proposed in ANT, but not yet demonstrated empirically.

Lastly, the role of strategic use and development of social capital in uniting and mobilizing the BHI as a collaborative group supports the importance of relationships in the process of translation. Theorists have emphasized the relational aspects of ANT as a key

differentiator from other social theory addressing social change through collective behavior. How relationships form, are maintained and cultivated to achieve collaborative purpose are central to ANT. Yet the means by which inter-personal or inter-organizational relations might be managed to facilitate collaboration have thus far been only broadly conceptualized (Callon, 1991; Law, 1992). Although elements of social capital such as trust, reciprocity, networks and resources were implied, explicit means by which social capital could affect translation of innovation were missing. In the case of the BHI, social capital developed from efforts to establish governance norms, trusting relationships and capacity and through leadership and agency of a variety of 'key actors', which became self-reinforcing outcomes of collaboration.

Callon (1991) and Law (1992) have developed a comprehensive explanation of the social interactions involved in translation that provides a context with which to interpret the BHI findings. Intermediaries play a critical role in the description and formation of an actor network. They include four types: texts, technical artifacts (relatively stable and structured groups of non-human entities and peripheral humans that play a role in sustaining technology), human beings defined by context, and money in its various forms (Callon, 1991). An actor is any entity able to associate these intermediaries to define and build "a world filled with other entities with histories, identities and interrelationships of their own" (Callon, 1991, p. 140). An intermediary can also be an actor, if it puts other intermediaries into circulation. Networks include all groups, actors and intermediaries and the relationships between them, such that an actor network is a dynamic entity that can transform itself over time (Callon, 1991; Law, 1992). The transformative process is what Callon (1986) described as translation and it can produce stable networks described in terms of their level of convergence and irreversibility (Callon, 1991; Law, 1992).

ANT theorists recognize that convergence and irreversibility are never completely achieved, because translation is continually negotiated by the actors and intermediaries within them (Callon, 1991; Law, 1992). Convergence through translation involves alignment of definitions of the translated concepts, which creates a shared space of negotiation (or prescription depending on members) (Callon, 1991; Murdock, 1998) and coordination of actors and intermediaries in the network through rules that establish predictable behavior (Callon, 1991; Law, 1992). Irreversibility depends on the universality of the translated concept, described in terms of durability (Callon, 1991; Ritzer, 2008).

The BHI study confirmed the use of specific strategies, adapted to the objectives identified in the translation process, to (1) frame the problem (problemitization), (2) generate interest in a potential solution (interessement), (3) enroll actors into specific roles (enrollment) and (4) mobilize the group toward collective action (mobilization, Figure 10). Enrollment was facilitated by an interessement device, the image presented by the BHI of the moraine as a threatened, special place deserving protection through regional, sustainable land management. This image was constructed through discourse promoted by the BHI, which fostered a new relationship between human actors and the moraine that could enroll and mobilize the various individuals and their home agencies.

New aspects of translation (translation 2.0, Figure 10) include:

- A role for place and context within translation and, through analysis of their influence, an explanation of the mechanisms by which intermediaries can unify and motivate.
- Roles through which key actors can facilitate translation by managing power imbalances and dissent, thereby establishing an effective organization, and affecting social change through sustained cycles of translation.
- Means by which innovative practice might spread to other networks, including empowerment of network members.

The sections below discuss the influence of these aspects on the process of translation, and the implications of these findings for ANT and place-based governance.

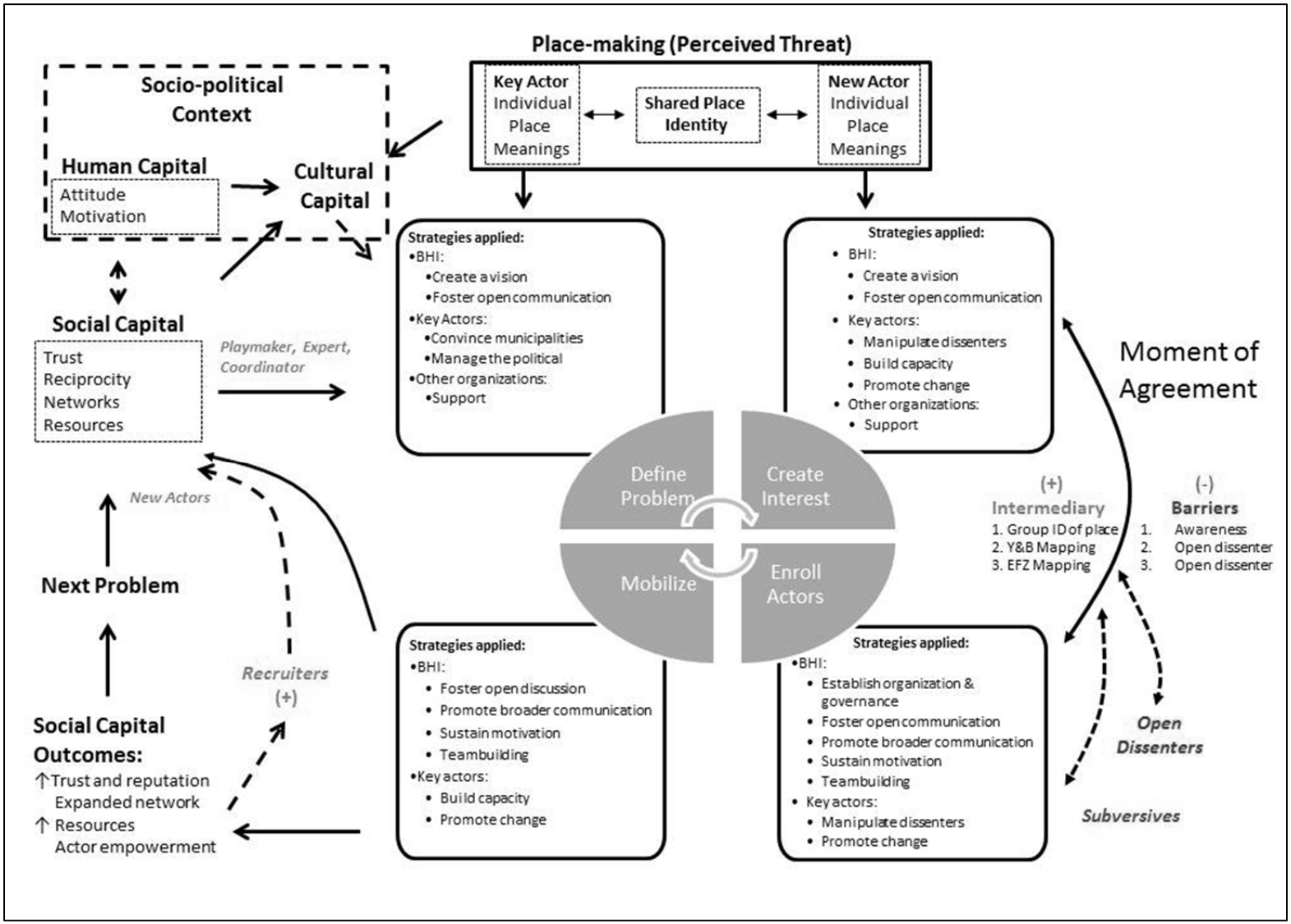

Figure 10. Revised translation process based on Callon (1986) and the Beaver Hills Initiative case study.

Socio-political context as an intermediary.

Intermediaries can include both human and non-human (material) entities, notably other human beings, a specific place and financial resources (Callon, 1991). Actors can establish relationships between humans and intermediaries that could motivate collaboration within an actor network (Callon, 1991). This capability implies that actors must be aware of the contextual environment and its potential to aid or detract from the actor's intention to build such a network. In this case, the initial socio-political context in which the BHI proponents were situated provided social, human, cultural and natural capital that determined the starting conditions, including opportunities and barriers, for potential collaboration. Place played a particular role in translation, in terms of its material aspects (natural capital) and meanings for BHI members, and will be discussed separately.

Elements of social capital (trust and expectations of reciprocity, or distrust) defined the initial relationship among potential partners, and the potential to access the resources (knowledge, skills, funding) and networks held by those partners. Human capital has also been defined as knowledge and skills (Flora & Flora 2013), but here, I have added attitude and motivation as intrinsic characteristics of actors (individuals or organizations) that could aid or block cooperation in forming the initiative. Cultural capital, the self-imposed limits on collective imagination (Flora & Flora 2013), includes the "social imaginaries" that define the possible future alternatives available to communities (Stephenson, 2011; Taylor, 2004). Flora & Flora (2013) suggested that bridging and bonding forms of social capital could create an Entrepreneurial Social Infrastructure (EIS) that could foster adaptive, inclusive communities. The BHI results suggest that an awareness of this context is also important, because it informs efforts to build trust and establish expectations of reciprocity that open access to the resources and networks comprising the EIS.

For example, an awareness of the nature and malleability of the barriers confronting each successive project initiated by the BHI (the Political Opportunity Structure, Eisinger, 1973; and Ecological Opportunity Structure) helped the BHI proponents assess the openness of the political structure for change. The availability of influential allies, tolerance for protest amongst elites and cleavages among elites presented opportunities favoring collective action (Della Porta & Diani 1999; Eisinger, 1973; Maloney et al., 2000; Tarrow, 1994). Further, an understanding of

place-based context and political power structure (Flora & Flora 2013) helps recognize the relational dynamics that affect development of a collaboration (Francis, 1988; Pollack, 2004). ANT theorists consider such awareness to be necessary for determining the boundaries of potential partnership (differentiation of sympathetic allies from detractors, Latour, 1999, 2005; Law, 1992).

This information in turn informed the development of strategies to capitalize on the openness of BHI partner organizations to change and the potential for open communication about issues. These factors have also been identified as preconditions for development of collective resource management systems (Ostrom, 1998, 2000, 2009). Such openings can facilitate uptake of innovative approaches through social learning (Beichelt, 2012; Pretty & Smith, 2004) and normative socialization (Beichelt, 2012). Both tactics were used by the BHI to build trust in the innovative aspects of each project and in the partner organizations. An understanding of the relationship terrain also identified meaningful benefits of collaboration and the appropriate spokespersons of the group with which to market the BHI proposals. Such measures minimized potential suspicion based on past interaction (e.g., the key presentation role of the academic participant, the background role of Parks Canada).

Lastly, awareness of the socio-political context helped differentiate socio-political and organizational concerns from personality-based barriers. Parkins and Davidson (2008) observed that the quality of participant can affect deliberative processes as much as process. Initial discussions with potential partners allowed proponents to assess key obstacles to possible process adaptations where possible. The BHI and the playmaker actors in particular, used this information to create strategies designed to address concerns at the appropriate interactional level. For example, non-negotiable issues (e.g., energy development) were largely ignored when discussing land management alternatives, while municipal land use planning, a more negotiable issue, became a main focus. Strategies to encourage open and deliberative discussion, commitment, diversity of opinion, stakeholder involvement and delegated leadership, factors contributing to a healthy, cooperative decision-making system (Dale, 2005), helped alleviate distrust caused by suspicions of a hidden agenda of organizational partners. Some of the individual-level barriers were cognitive (e.g., lack of awareness of the unique character of the moraine, perceptual difficulty associated with landscape scale). Place-making and direct experience with the moraine helped address these obstacles to cooperation. Most participants

had supportive attitudes toward the moraine and environmental management, which created another opening for regional dialogue and cooperation (Diekert, 2012; Samuelson et al., 2003). Dealing with resistant personalities required socially-mediated interventions to identify self-interested concerns and establish the boundaries of the ANT network without completely excluding dissenters (Callon, 1991; Law, 1992; Star, 1991). An awareness of socio-political context provided information valuable for determining subsequent action, which suggests that actors must be able to recognize structural opportunity and have the skills to manipulate that context to their advantage (Bell, 2007; Wakefield et al., 2001; Whitelaw et al., 2008).

Cultural capital is a social attitude about possible directions of change (Flora & Flora 2013), and can influence the evaluation of barrier strength and self-efficacy to challenge those barriers (Bamberg & Moser, 2007; Devine-Wright, 2009). The attitudes and motivations of the proponents become a relevant aspect of context in this sense, because their passion, as well as their knowledge, skills and influence helped 'challenge the possible', and shift cultural limitations to adaptive change (Flora & Flora 2013; Stephenson, 2011; Parkins, 2011). The ability of key actors in the BHI to develop and deliver a vision of cooperative regional management with resonance at the aesthetic, moral, cognitive and affective level helped construct a new, enticing image of a sustainable future, rather than confirming past preconceptions (Stephenson, 2011). Also, the dynamic created among the personalities within the BHI had an important influence on receptivity to new ideas. The diffusion of innovative ideas and approaches at both the individual and organizational levels depended on establishing credibility of knowledge claims, and trust in the messenger (Holmes, 2010; Pretty & Smith, 2004). Awareness and sensitivity to the needs, fears and hopes of potential partners was an essential part of this particular strategy (Stephenson, 2011).

ANT allows for other human actors to be intermediaries that can facilitate (or impede) translation (Callon, 1991; Law, 1992). An understanding of the range of intermediaries (other organizations, individuals and past relationships) in the BHI's context did influence the assessment of power structures, cultural barriers and interactional opportunities relevant to a given proposal. But as McAdam et al. (1996) observed in their work with social movements, emergence and development of collective action groups requires not only political opportunity, but framing of motivating issues and mobilizing structures through which the group can act. Organization of an effective mobilizing structure took other efforts by key actors. The framing

of the moraine as a special, threatened place certainly played a role in motivating cooperation, an example of place used as an ANT intermediary.

Place as an intermediary.

Diekert (2012) suggested that sustainable development through collaboration is complicated because actors may share some but not all interests, such that cooperation is not a clear choice. ANT suggests that the translation process makes the need for cooperation evident by creating a power imbalance that favors cooperation to solve the problem (Callon, 1986). In this case, the shared place identity constructed by the BHI appears to have facilitated the moment of agreement both by creating the power imbalance suggested by Callon (1986) and the psychological effect of a threat to self-identity (Devine-Wright, 2009; Kottak & Costa, 1993; Stedman, 2002; Williams, 2002) and contradiction of a social norm (Bamberg & Moser, 2007).

Place-making constructed a power imbalance among the potential partners in its description of ex-urban development as a controllable threat to quality of life in the moraine. The presentations by the BHI emphasized both the impact of 'uncontrolled' development on the quality of life of municipal residents, and the availability of a solution (regional cooperation and 'smart' development). Participants also observed that their councils were quite aware of the implications of 'acting now' to reduce the possibility of provincial control being imposed on the municipalities through the Land Use Framework process. The threat of development carried with it a threat of repercussion from displeased voters, thus favoring adoption of a cooperative solution. Awareness of the current social context and attitudes about the Beaver Hills moraine and environmental management helped frame a compelling message. Passionate delivery of that message inspired a sense of urgency in others, bringing them together to address an immediate problem. The framing of the message then, played an important role in establishing the need for cooperation.

Underlying this imbalance was a social norm favoring conservation. Place-making also established the moraine as a 'special place', a category of protected area that carries with it broader social expectations of protective management action by relevant government agencies. Establishing this social norm appears to have set up a motivational reaction similar to that described by Bamberg & Moser (2007). Awareness of a social norm can foster guilt that in turn creates a moral norm. The image of a threatened special place and associated expectations of conservation management, plus certainty about the cause of past loss of such special areas (self-

attribution) fostered feelings of responsibility (guilt). Lastly, the BHI's sustainability experts provided convincing evidence of the ability of partner organizations to conserve the moraine through politically viable, balanced trade-offs, a perception of control that in combination with a moral norm and sympathetic attitude, helps form behavioral intentions and action. This combination of motivational tactics helped establish the power imbalance favoring the moment of agreement in each of the three BHI projects.

The threat imagery conveyed through the BHI presentations also helped establish both the vulnerability of the moraine and the legitimacy of the BHI as a means to conserve it. Such discursive techniques have been reported by others as effective factors in promoting environmental behavior (Kottak & Costa, 1993) and in enhancing credibility for organizations around environmental issues (Wheaton, 2007). Although BHI participants had various levels of place attachment, which manifested as place dependence, place identity or a mixture of the two, the shared identity (a stronger motivator of place-defensive behavior, Kyle et al., 2004) was sufficient to motivate supportive behavior. Furthermore, the shared identity was similar enough to the original, personal meanings held by most individuals to facilitate its adoption, thereby minimizing potential conflict that can arise with divergent descriptions of place (Williams, 2002) and possible disruption of the nascent network. Careful selection of resonant terms (e.g., 'quality of life') helped develop a message that was meaningful to the broad range of potential BHI partner organizations and their representatives.

The shared definition of the moraine established a thin trust among the representatives and their home organizations (Payton et al., 2005) on which collaborative management strategies could be developed (Ostrom, 1998). Social capital strategies applied by playmakers, champions and other key actors to develop trust and expectations of reciprocity helped build suitable conditions for cooperation to form, but the 'moraine-as-special-place' image (reinforced by the two key map products in BHI presentations) provided the reason for cooperation (Diekert, 2012). Once the moment of agreement was successfully achieved, social capital strategies applied by the BHI (and other key actors) focused more on organization and mobilization by using strategies that acknowledged the capacity and leadership potential inherent within the group. The different types of key actor roles in this process are discussed more below. Here, their collective ability to create a shared identity and then capitalize on the trust it fostered helps explain the process of alignment of diverse interests at the moment of agreement.

Because of its ability to coordinate others, place identity here represented an intermediary device that could unite diverse interests (Brown & Capdevila, 1999; Callon, 1986, 1991). Yet the relationship between humans and place required facilitation to be effective. The moraine was a distinct landscape, at a scale within the limits of human perception of its ecological character (Beckley, 2003). Direct experience facilitated by the BHI helped build a familiarity with both the moraine and the BHI (Chawla, 1999; Grieder & Garkovich, 1994) through which participants developed emotional and cognitive attachments to the moraine. Place-making that involved both discursive methods and social interaction were important in the construction of a highly motivational image of place, particularly during the early formation stage of the BHI.

Later, the two map products became material interessement devices facilitating agreement during the subsequent Land Management projects. The 'Yellow and Blue Map' of Land Management Areas highlighted the distribution of high quality resources across privately held areas of the moraine; the Ecological Function Zone maps documented the state of critical ecological functions in those same lands. These material objects inspired cooperation in a process of network expansion similar to that described by Selman and Wragg (1999a). Champions, experts and organizational decision-makers, once convinced of the risk facing critical aspects of the moraine, became committed members of the initiative. Adoption of each Land Management project by BHI municipalities proved the concept to organizations within the BHI network, thus reaffirming their commitment to the innovative approach symbolized by each interessement device. Neither the mapping nor the proof of concept was sufficient to convince the dissenters. Because they declined to participate in the study, it is unclear if this was due to a lack of connection to the image promoted by the BHI, or some other worldview about the resources of the moraine (e.g., a utilitarian view of environment; Bell, 2009).

Callon (1991), Latour (1996, 2005) and Law (1992) asserted that the unique aspect of ANT was the conceptualization of heterogeneous networks comprising actors and material aspects (money, resources, places), organized for common purpose. Material intermediaries can play a critical role in forming the network, because of the meanings that people attach to them. A material object, given the right meaning, could motivate action, and set into place a patterned interaction between actors and intermediaries that becomes social structure (Law, 1992). In the case of the BHI, the definition of the moraine as a threatened special place helped motivate cooperative, regional management for all study participants (but not necessarily all BHI

members). The group that organized around that cause became the BHI, a new entity in regional land management.

The shared definition of the moraine promoted by key actors and the BHI initially motivated cooperation. The talented individuals attracted to the initiative helped associate the moraine landscape with the concept of demonstration potential, a community identity that helped motivate more participation in the BHI through a positive feedback loop. The dynamic capacity of intermediaries has been discussed in the literature in terms of negative consequences. For example, when the intermediary loses its meaning for enrolled actors, the network could collapse (Callon, 1986; Selman & Wragg, 1999b). The potential for the relationship between actors and the intermediary to be redefined in more positive terms, to heighten motivation as in this case, suggests a positive aspect of the 'space of negotiation' created by the shared definition (Murdock, 1998).

Key actors.

Previous work examining collective action in environmental management situations has highlighted the role of key actors (Bell, 2007; Dale et al., 2008; Whitelaw et al., 2008), individuals whose skills, connections and experience have played a central role in organizing and mobilizing a group. Within the BHI, key actors also filled that role and were able to establish sufficient trust among the partners and in the concept to gain access to other resources critical to the initiative. As ANT theorists have suggested, these actors were able to navigate the power structure imposed by context (Callon, 1991; Law, 1992) to achieve the moment of agreement. Yet in this case (and as in Rosen & Olsson, 2013), they also relied on a suite of other actors to achieve the group's objectives (i.e., individuals who helped in forming, organizing, mobilizing and growing the group). This broader group also helped build the trust and expectations of reciprocity that allowed access to critical resources and network connections (Pretty & Smith, 2004; Glanville & Bienenstock, 2009) and helped organize and mobilize the group toward collective goal (McAdam et al., 1996).

Playmakers, experts and a coordinator used their social capital (trust, reputation, networks and resources) to bring together a group of diverse partners for initial discussions about collaboration and regional sustainable land management (Pretty & Smith, 2004; Whitelaw et al., 2008). Playmakers, experts and champions used various tactical moves to gain power and influence and, by default, also established these actors as the spokespersons for the group. This

step, theorized by Callon (1991), is important because it helps coordinate the network through "translation regimes" (p. 146), which includes rules about the definition and interpretation of the innovative approach. "Authorship" (Callon, 1991, p. 146) of the intermediaries identifies who can speak about the innovation, and about appropriate use and interpretation of intermediaries. Ultimately, this step controls the messaging around the innovation, which helps to coordinate the network, (i.e., helps to stabilize the network).

These tactics did attempt to shift control of the dialogue about sustainability and collaborative regional management. During the problemitization step of translation, key actors focused on convincing the municipalities (key partners) of the benefits of cooperation, while also managing the political face of the BHI and each proposal. Both of these tactics relied on knowledge of the social and scientific context in which the group was operating, and trust and expectations of reciprocation established by their reputations as experts or political leaders. Their attitudes toward the moraine and to environmental management added passion to presentations, which as noted above, could in itself be compelling, especially when appealing to others in their personal networks. As one participant noted about his political colleagues during the formation of the BHI, because a respectful attitude had been established in their council, passion could gain attention for a proposal ("because you care, I care").

During interessement, the playmakers, experts and coordinator again relied on their political acumen and reputation as experts to manipulate dissenters and promote change. Other supportive organizations used similar social capital to help convince reluctant partners. Strathcona County was particularly dominant in this effort. The leader-follower challenge to other municipalities to adopt regional land management depended on the reputation and expertise of the experts and on Strathcona County as a regional leader. It also clearly identified dissenters and the barriers that prevented them from enrolling in the BHI. The successful countering of their arguments by the experts and playmakers, supported by evidence-based intermediaries, helped to convince other weakly committed actors at the moment of agreement.

Yet other actors emerged in later stages of translation and played important roles in sustaining and growing trust, recruiting additional resources and sustaining the coordinated action of the group over the long-term. Translators and champions helped inspire trust in the group and its objectives by providing peer support for the BHI's proposals. The coordinator and the BHI Executive established a system of governance consistent with voluntary collaboration

and enforced its norms of cooperation and reciprocity among its membership (Maloney et al., 2000; Pollack, 2004; Rudd, 2000). Without the effort of workhorses and recruiters, the actual work required to realize proposed initiatives (and demonstrate results so important to sustaining cooperation) would have been impossible to achieve. Lastly, dissenters and subversives provided valuable feedback to the BHI and its proponents, which allowed them to address political, cultural and personality barriers through both inclusive and exclusive means (Flora & Flora 2013; Jamal & Eyre, 2003; Ostrom, 1998; Parkins, 2011). Their specific contributions to effective collaboration are discussed in subsequent sections, but the importance of their roles suggests that analysis of translation would benefit from examination of organizational dynamics as well as the influence of power.

The organizational and mobilization stages of ANT have generally received less attention theoretically and empirically (e.g., Callon, 1991; Law, 1992; Lockie, 2004; Selman & Wragg, 1999a, 1999b). ANT's analytical focus on both structural prescription and deconstruction of process allowed researchers to examine where and for whom boundaries are produced and used (Lee & Hassard, 1999). This has led to exclusive focus on formation, and a relative silence on organizational structure and mobilization issues. A lack of longitudinal studies has also hampered such investigations. The contribution of key actors to social capital development in this case has highlighted new areas of research regarding mechanisms driving network stability and associated steps of normalization and punctualization (see discussion below). These results also suggest that collective action can be implemented through actions of a variety of actors, who can recruit support by framing innovation in terms of self-benefit (Coleman, 1988), social gain and broader possibility (Parkins, 2011; Stephenson, 2011) as well as organize and manage the group to achieve those goals.

Power and dissent.

Star (1991) notes that enrollment is the point at which dissenters are excluded, a process based in power - "Power is about whose metaphor brings worlds together, and holds them there" (p. 52). Stable networks thus have boundaries that locate disruptive elements outside the network (Callon, 1991; Law, 1992; Star, 1991). Yet, others suggest that management of dissent, rather than its exclusion can produce more inclusive, adaptive and resilient communities (Flora & Flora 2013; Parkins, 2011) better able to deal with 'wicked', complex problems (Crona & Parker, 2012; Franks, 2010; Parkins, 2011). Furthermore, development of institutions that allow

for balanced discussion of concerns can avoid dominance by traditional interests (Jamal & Eyre, 2003; Parkins, 2011) that can limit the creativity necessary for adaptive management approaches (Bardsley & Sweeney, 2011; Flora & Flora 2013).

Establishing norms of open communication, consensus-based decision-making and respectful conflict resolution fostered trusting relationships among members (Peterson et al., 2006; Pretty & Smith, 2004; Ostrom, 1998; Schusler et al., 2003). Those norms also facilitated inclusive and balanced debate of members' practical, technical and personal concerns within the BHI (Jamal & Eyre, 2003; Ostrom, 1998; Parkins & Davidson, 2008) to mobilize the collective will of the group (Flora & Flora 2013). Open debate allowed the group to evaluate concerns for their relevance to group interests and determine the boundaries of resolvable issues. Marginalization of dissenters whose concerns were mainly based in self-interest (including personality-based issues) was thus implicitly supported by the boundaries set by the group. This approach balanced inclusion against exclusion (Flora & Flora 2013), and resolved Mouffe's democratic paradox by valuing collective good over self-interest (Peterson et al., 2006). Through these efforts, the group established the boundaries of their interests that carefully placed dissenters and subversives beyond those limits, such that it could operate within a discrete area of influence. It also established rules for cooperation for the group.

The debate about exclusion of dissenters in ANT relates directly to the need to stabilize the group. According to Callon (1991) the enrolled group can focus on the process of organization and network stabilization better if dissenters are excluded. Murdock (1998) countered that dissenters are never completely excluded. Co-existence of spaces of prescription and negotiation allows for fluidity in the network and the flexibility to adapt to new information, the advantages noted by the authors above. The continued lobbying of dissenters by the BHI and key actors helped discover concerns with regional land management that were likely also held by others. That information allowed the BHI to adapt its message accordingly, and negotiate new boundaries within which to explore innovation with committed partners.

The BHI also excluded the public from direct participation, mainly to limit the diversity of interests to what key actors considered a manageable field. Politicians, the BHI has argued, provided a link to their constituents that compensated for the lack of direct involvement. Municipal politicians do generally have a more direct relationship with the public (Boyd, 2003). This action did not hinder their success in collaborative outcomes, unlike the scenario

documented by Peterson et al. (2006), in which exclusion of a government agency led to a failed management planning process. In that case, other participants had excluded a key agency with direct control over the management problem; with the BHI, neither the public nor the dissenters held sufficient influence to subvert regional coordination. Limiting the field to a smaller group of interests has advantages in developing collective management approaches, including face-to-face communication. That in turn can foster cooperation by aiding information sharing, supporting exchange of mutual commitment, increasing trust, and establishing expectations of predictable behavior (Ostrom, 1998). It also helps identify additional subjective benefits of cooperation, reinforce normative values and develop a group identity.

Dissenters and subversives revealed an interesting power dynamic between the promotional and resistant forces within the BHI network. Callon (1991) postulated that a group that could exclude dissenters would develop into an efficient and stable network, because it could control the message about innovation. As Callon's (1986) study pointed out, resistant actors pose a risk to new networks in particular. The rebellion of the scallops in his study, which refused to colonize artificial breeding pylons in the French alternative fishery scheme, exposed a fatal flaw in the innovative proposal to which the proponents could not respond. Star (1991), in describing the experience of being excluded from a network, observed that enrollment requires some subversion of personal interest. For those unwilling to submit, the choice is to refuse to participate in the network, or to actively work against it to protect self-interest.

In the case of the BHI, dissenting municipal politicians remained within the network and actively resisted proposed innovations. However, the playmakers used their concerns to create persuasive proposals that exposed self-interest at the expense of common good, which established boundaries on the prescribed and negotiated space (Murdock, 1998). In contrast, the oil and gas industry has effectively excluded itself from the network, which has closed debate on management alternatives related to petroleum development. Although loosely committed initially, industry representatives have now become inactive members of the BHI ('abstainers'). These industries have considerable self-interest in maintaining uncontrolled access to resource deposits within the moraine (and indeed, the rest of the province). Abstaining from participation removes that sector from discussion of land use controls, and thus, from action by the group, an example of controlling debate to maintain power over others (Lukes, 1974). Exclusion initiated by the proponents of innovation may control the message by direct confrontation of opposing

views, but self-excluded abstainers can avoid such confrontation and thereby block change if they hold sufficient power.

The subversives illustrate one last power dynamic within translation, the influence of existing networks on a new actor network. Within the BHI network, individual representatives were expected to promote innovation within their home organization, which took some representatives into an arena in which open dissenters held considerable power. Subversives did not have sufficient influence in an unsupportive home organization to promote the innovative science provided by the BHI. Unlike playmakers and experts, they did not have the vertical linkages that provided access to power within their own organizations. Neither did they have sufficient reputation within their home organizations to convincingly portray the threat to the moraine from development, or promote regional land management as a mutually beneficial option. Working secretly within the organization to promote the BHI's ideas was their only option, if they supported the concept. The subversive is a new element, not previously conceived within ANT that can help maintain relationships with opposing networks. Perhaps, with time, subversives could help bring the opposing networks into alignment and grow the new actor network as ANT theorists have predicted (Callon, 1991; Law, 1992).

The actions of the dissenters, abstainers and subversives speak to the possibilities available to actors to act within the network, as well as the complexity of relationships and influences on actors in a given network. Specifically, these examples suggest a stronger role for dissent in network formation than previously proposed in ANT, and particularly about the use of power and influence within the network and between it and other networks. The open dissenters and the abstainers behaved as Star (1991) predicted, by using their level of participation to protect their self-interest. The outcomes of their dissent had dramatically different effect on the dialogue within network though, and on its capacity to promote social change through interaction and discourse, due to the differences in their reach of influence.

Network organization and network stability.

Although ANT theorists have identified the need for the actor network to be stable and well organized before it could mobilize effectively (e.g., Callon, 1991), as noted above, most empirical and theoretical work has focused on the formation of the network (i.e., the moment of agreement) rather than mobilization. Yet as social movement researchers have noted, mobilization for collective purpose also requires coordination and trust (Diani, 1997; McAdam et

al., 1996). Research on environmental collaboration has noted the importance of trust-building on group cohesion, coordination and subsequent action (Bell, 2007; Dale et al., 2008; Peterson et al., 2006), which suggests that mechanisms that can sustain trust in the group may be important. In this case, establishment of group governance that reinforced voluntary participation, respectful conflict resolution and open communication helped build trust, cohesion and commitment of group members. These measures helped stabilize the group and aided in the adoption of their innovative land management approaches by other partner organizations (networks), as ANT proposes (Callon, 1991; Law, 1992). It also contributed to empowerment of the BHI members.

In the ANT's definition of stability, a stable network has a universally accepted, innovative construction of the relationships between human and non-human entities and human agency (Asdal et al., 2007; Callon, 1991; Latour, 2005; Law, 1992; Murdock, 1998, 2001). Further, a stable network has aligned member interests by creating shared space for dialogue (Callon, 1991; Murdock, 1998) and coordinated the group using "translation regimes." These stable networks establish rules for collaborative regional management that include designated spokespersons and expectations applications of the innovation (Callon, 1991). The shared place identity, community identity and system of governance established by the BHI satisfy this definition and help explain the means by which social capital and place contributed to stabilizing and mobilizing the group.

The BHI established as an organization after the first moment of agreement, and the Executive and Executive Director drove the organization and mobilization of the group through subsequent steps and cycles of translation. Additional trust-building, established through face-to-face and frequent communication as the group worked on various organizational issues (securing funding, developing a Terms of Reference), helped establish norms of reciprocation that facilitated cooperation and self-organization (Ostrom, 1990, 1998). Sufficient trust appears to have been built within the BHI to establish most of the institutions of a self-managed system for management of common-pool resources (Ostrom, 1990). That system of governance, including management of the dissenters, appears to have bonded the group more tightly to cooperative management (Ostrom, 1998) and helped them form a group identity (Ostrom 1998; 2009). The place-making activities of the BHI also helped to foster a community identity based on place and the capacity of the BHI membership to affect change (supported by demonstrated results of cooperation). These two group identities fostered confidence in the potential for

collaboration that appears to have helped sustain the group over time. Group identity has effectively contributed to the stability of the network, which in turn helped to legitimize the BHI as an actor in regional land management decision-making.

Callon (1991) also suggests that network coordination can be weak or strong, based on the degree of alignment and coordination (convergence), which in turn determine the effectiveness of the relationships among partnered actors (and the intermediaries). Weakly convergent networks have on-going conflict that makes it difficult to mobilize the group. Strongly convergent networks, in contrast, exhibit higher levels of cooperation among actors and clear differentiation of who is an actor within the network. The BHI satisfies this later definition and supports the hypotheses of Callon (1991) and Ostrom (1990, 1998) regarding factors contributing to stability (long investment, intense effort and attention to coordination).

As Diani (1997) noted, linkage to other networks with political or cultural credibility could help stabilize a collective action group, but only if the other networks are seen as legitimate within the existing political context. The credibility of sustainability proposals lent by the provincial land use planning community, as well as the experts (and their associated scientific or practitioner networks) within the BHI had considerable weight in many municipalities. Yet neither external network could overcome resistant power structures inside the home organization controlled by the dissenters. As one participant noted though, this is a temporal effect that could change with personnel and political changes in those organizations. The dialogue pursued by the BHI and subversives with dissenting organizations may yet generate support, especially once resistant individuals are no longer involved. The effect of trust and reciprocity established between interacting networks on the stability of actor networks, the process of network expansion (punctualization) and the capacity for micro to macro-level translation (Callon, 1991; Law, 1992) is an area that deserves further attention in ANT research.

The experience of the subversives suggests that although networks may develop from interpersonal relations, those relations are not necessarily equal (Routledge et al., 2007). Organizationally, the structure of the BHI was horizontal and non-hierarchical. Playmakers and experts retained ‘authorship’ (Callon, 1991) of the network though, which has been disruptive to internal power dynamics in other cases, particularly in organizations with non-hierarchical structure. Routledge et al. (2007) found internal power imbalance can disrupt stability as much as new ideas or concepts. In their assessment of a grassroots collaborative in SE Asia, they

examined the tensions involved in maintaining a horizontal organizational structure. In this case, playmakers ('imagineers' in that study) were often positioned to consolidate power because of their more extensive resources (expertise, connections, etc.). By staying grounded in local context (i.e., remaining in touch with local capacities and constraints), they could continue to motivate and empower other actors within the network, or those considering entry, thereby maintaining network stability. By delegating decision-making control for project development and implementation to Working Groups, the BHI has maintained a flat structure, ensured inclusive decision-making and maintained 'on-the-ground' input to projects. Thus, the BHI has largely avoided elevating playmakers and experts to a management position. As the BHI continues, it will be interesting to see how its structure evolves and whether it can maintain the current internal distribution of power.

Lastly, the absence of sanctions for behavior contradictory to the BHI's Landscape Management Principles has, as others have found, created the potential for free-riding that could then destabilize the group (Gilmour et al., 2013; Ostrom, 1998). The BHI is exploring implementation of both monitoring and sanctions, accountability measures that can help reinforce group identity (Ostrom, 1990, 1998) and network boundaries (Callon, 1991; Law, 1992; Murdock, 1998; Star, 1991). Again, follow-up would be necessary to confirm the outcome of such interventions on group stability and cohesion.

Empowerment.

As other authors have noted, results were critical to encourage actors to remain bonded to the network (Emery & Franks, 2012; Gilmour et al., 2013; Selman and Wragg, 1999a). For the BHI, demonstrating benefits of collaboration provided the return on investment necessary to sustain membership; most participants could provide examples of benefits that justified regional cooperation. In the case of the BHI, empowerment of members also played an important role in retaining members, an effect not specifically identified in ANT translation theory (Callon, 1991; Law, 1992), but reported as an important outcome of collaboration in at least one previous ANT-based investigation (Sobels et al., 2001).

Kanter (1977) defined empowerment as a process that allows people to control conditions that make their actions possible. Encouraging a laissez-faire management structure in the Working Groups and promoting ideas through social learning approaches in Working Groups and at the Board level provided representatives with knowledge, skills and access to expertise.

These outcomes of social capital development played an important role in the potential to spread innovation beyond the BHI. In particular, recruiters, empowered actors emerging from the mobilization step of translation, were motivated to find additional actors who could contribute to subsequent cycles of translation, thus linking new networks to the initiative. A few other participants reported using science-based or collaborative decision-making within their home agencies, another example of linkage. Latour (2005) proposed that the new knowledge of the world emerging from translation could facilitate social change at a broader level, but did not specifically identify the means of diffusion of that knowledge beyond the network. Empowerment was documented in the ANT study of Australian Land Care networks by Sobels et al. (2001), but they did not observe transfer of skills and knowledge to other spheres of influence. The BHI example illustrates how empowerment might be fostered, and potentially transfer innovation beyond a given actor network.

Place-making contributed to development of shared place identity and community identity; the latter comprised meanings associated with hope for the BHI to demonstrate the potential in sustainable land management. Those participants, after finding a "home for community" (Sobels et al., 2001, p. 274) in the BHI, contributed their resources, connections and knowledge, producing an infectious, positive feedback loop and for some a hopeful enthusiasm. Whether this path was premeditated or fortuitous, the synergy derived from collaboration of actors with similar motivation, particularly those denied opportunity to act according to their attitudes in their normal work, certainly aided both network stability and transfer of innovative concepts beyond the BHI.

Creed, DeJordy, and Lok (2010) observed a similar outcome of empowerment in a situation where existing institutions contradicted emerging societal messages, which left progressive individuals within the institution feeling marginalized. Individuals reconciled the contradiction by redefining themselves as agents of change, able to change the institution from within. Gaining perspective, being able to step back from the situation to identify the source of contradiction, was a critical turning point in the reconciliation process. With new perspective, they were able to identify a role through which they could help align the institution with the emerging societal trend. Surrounded by others of like mind within the BHI, those feeling marginalized within organizations slow to adopt a sustainability agenda may have gained the perspective needed to reconcile the contradiction and create a new role for themselves as agents

of change. Latour (2005) refers to this within the ANT translation process as individuals gaining renewed agency through new perspectives on nature and society. While Creed et al. (2010) suggested this was an individual experience, the BHI case suggests that social interaction, a dialogue with others of like mind, plays an important role in redefining personal agency.

Latour (2005) suggested that through the process of translation, new perspectives about the world unfold, which give people the fresh insight to reconstruct a different circumstance, and a new view of the place of humans within it. Knowledge grows and evolves, as do the social constructs we use to organize this view. At its heart, ANT is a political view of the world that examines how groups determine whether they can fit together in some new collective to address new problems or situations (Latour, 2005). The hope inspired by successful enrollment and mobilization of the BHI network supports Latour's (2005) proposition.

The confidence achieved after successful mobilization of the social and other capitals aligned within the BHI network helped build support for the collaboration process as well as the concept of sustainability, the "result-based recruitment" process referenced by one participant. The use of new skills in subsequent BHI projects or elsewhere in their home organizations helped spread innovation, the summation effect of agency suggested by Latour (2005). The reputation established by the BHI earned the group a place in regional dialogue about land management, and able to promote innovation by becoming an actor in a broader network, the ultimate form of normalization envisioned by Callon (1991). In this case, hope appears to be a by-product of a stabilized network, the realization of a new political entity that could affect desired change.

The emergence of hope through this network and its motivational effect on participants validate Lockie's (2004) characterization of the problem of agency. He asserted that other social theory reduced the motivation for social change to either a reaction to inadequate social structure, or the creativity of a highly motivated key actor. ANT, in contrast, allowed a means for human and non-human actors to inspire action. In this case, the shared identity of the moraine as a special place under threat motivated cooperation; however that image evolved into a more complex symbol that captured the imagined potential resulting from this synergy of actors. A stabilized actor network may be able to generate more than just confidence in innovation. The empowerment fostered by providing a "home for community" of similar

minded individuals (Sobels et al., 2001, p. 274) can do much to propagate change across various networks.

Social Change through Sustained Collaboration

The BHI case is unique in that it is an example of long-term collaboration that has achieved stability and acceptance as an influential actor in land management. Callon (1991) considers this broader acceptance to mark the transfer of the innovation from micro-society to macro-society: when the actor network is accepted into broader networks and its innovation is considered normal, and the innovation can diffuse to other networks. This case study thus offers a rare example of a process only theorized within ANT.

Callon (1991) proposed that normalization would arise from the process of network stabilization. Stronger alignment and coordination clarified the roles of actors and intermediaries, thus reducing the need for strategic defense of the concept (Callon, 1991). Irreversibility and ultimately, normalization of the translated concept and supporting network occurred once actors no longer questioned the validity of the concept or the other actors involved in the network. Law (1992) called this step 'punctualization', the point at which actors and intermediaries are no longer distinguishable from the actor network (it is viewed as a cohesive unit). At this point, the network could become an actor in a broader network and expand its influence by exchange of intermediaries with external actor networks, which helps subsequent cycles of translation, and propagation of innovation into macro-social levels.

Both Callon (1991) and Law (1992) suggested the stabilized network would still be susceptible to challenge from external influences, yet according to Callon (1991), a completely stabilized network should no longer require strategic effort to defend the concept of innovation, or to prove the concept through repeated phases of translation. It would also not be possible to grow from within because the norms adopted by the network, including norms of understanding about the innovation, would constrain change. Growth (or adaptation) would only be possible if the concept was challenged from outside the network. As noted above, this is based on an assumption of the need to exclude dissent from the network (Law, 1992; Star, 1992), which means external opponents are always available to challenge the stability of the network.

Yet the BHI case contradicts several of these assumptions. First, strategic actions by the group have not ended, but instead switched to focus on new challenges. Regional land management has been adopted by partner organizations, and partners are now independently

pursuing new forms of innovation (e.g., Beaver County's Transfer of Development Credits program). This evidence suggests network stabilization and normalization of innovation in the sense implied by Callon (1991) and Law (1992), but the group has continued to promote new ideas, including a Biosphere Reserve nomination. The nomination was promoted from within the network, and has required the same types of strategic effort to gain acceptance through another round of translation (e.g., by managing political response, convincing partners, strategic communication). The process has added new actors to the group, including new NGOs, experts and communities beyond the moraine. This phase of the BHI's development suggests that network growth is not necessarily constrained by stabilization and norms of behavior and that growth and diffusion are possible by adding new actors through new projects (and rounds of translation) as well as 'normalization' of innovative practice.

Second, the experience with the dissenters and subversives suggest that interaction with other networks is negotiated at the time of network formation and during subsequent phases of translation. Exchange of intermediaries occurred through the formation project and the subsequent Land Management projects, before and after the BHI was recognized as a regional influence. Neither of these factors was able to overcome the personality-based barriers blocking diffusion of innovation to other organizations. On the other hand, empowered members of the BHI, including subversives within the non-aligned networks were able to apply the BHI's innovative approaches to sustainable land management and collaborative decision-making. The role of psychological factors associated with openness to change, personality, attitude and identity and the influence of social and moral norms (Bamberg & Moser, 2007; Owens, 2003; Thomas & Velthouse, 1990) in facilitating supportive behavior and adoption of new approaches suggests another mechanism for punctualization and diffusion of innovation.

Latour (1987) suggested that scale is irrelevant within ANT because the path of the network, its direction and interests, are what influence its geographic sphere of influence, rather than the connection or adhesion of other networks. The broader the net of inclusion a single actor network creates over time, the broader its influence. So the method of diffusion becomes a question of whether a stable concept spreads through nodes to other networks (Law, 1992), or by adding new actors to the actor network, which then redefines the spaces of prescription and negotiation (Latour, 1987; Murdock, 1998). Latour (2005) later proposed that diffusion could occur through both methods, a proposition that my results support. In the case of the BHI, the

actor network has continued to grow by adding new actors through new applications of innovation, and it has also extended influence into other networks by attaching as a node onto other networks.

The continued cycling through translation as new projects emerged within the BHI suggests that 'stability' may be an illusion. Yet whether the network remains stable or not is in some ways irrelevant – knowing that humans can adapt to their natural world in this way can inspire hope in the ability for groups to affect change. Bell (2009) refers to this process as constructing an 'ecological dialogue', through which society structures the debate on natural resources, and incorporates fresh views on issues into a more generally accepted 'common sense' of how to deal with those issues. The success or failure of that process determines the nature and direction of the debate.

Flora & Flora (2013) clearly link social capital to that dialogue; trust and good bridging and bonding networks can foster the creativity needed to imagine new possibilities. My results support that proposition, but also Stephenson's (2011) findings, in which leaders able to articulate new alternatives based on aesthetic, cognitive, affective and moral imagination could expand the boundaries of possibility to create new 'social imaginaries' (Taylor, 2004). Lastly, the open, respectful and balanced communication and consensus decision-making approach were essential to 'unlock' the full creative potential in this group. Trust and reciprocity generated from such interactions facilitated cooperation (Peterson et al., 2006; Pretty & Smith, 2004; Sobels et al., 2001), while the incorporation of those norms into group governance helped minimize power imbalances that could enforce traditional management approaches (Parkins, 2011). As Parkins & Davidson (2008) note, the quality of the individual participant can also influence this process. Although few, some participants did not feel comfortable engaging in open debate, and thus, not all concerns and opinions were voiced equally.

Lastly, social learning and patience played a key role in the success of the BHI and highlight the importance of knowledge synthesis in productive deliberative dialogue (Bardsley & Sweeney, 2011; Beichelt, 2012; Crona & Hubacek, 2010; Pretty & Smith, 2004; Schusler et al., 2003). Although representatives did not necessarily develop expertise in the new science promoted by the group, they did develop a base understanding that facilitated later adoption of the Land Management Framework by the partners. Repeated exposure and opportunity for experimentation allowed key individuals within partner organizations to become familiar with

the underlying science, and develop an appreciation for its utility. This was a slow process, in which proponents had little control over the form or timing of implementation of solutions. The patience on the part of the BHI and key actors to allow for voluntary adoption through open debate, translation and learning within the BHI and each home organization was critical to the adoption of the new land management approach. Although collaboration through this process may have great benefit, including empowerment, it may not be appropriate for all natural resource problems, given the investment of time required and the lack of control over the solution.

Conclusions

The BHI case is interesting in that it is an example of long-term collaboration, with repeated evidence of successful cooperation. Its ten year history, access to original parties involved in its formation and on-going operation provided opportunity for a longitudinal study currently lacking in the place (Devine-Wright, 2009; Lewicka, 2011), social capital (Glanville & Bienenstock, 2009) and ANT literature (Callon, 1991). Analysis of the influence of place and social capital on collaboration has generated findings in each of these areas, with scholarly and practical implications. Key findings, their implications in terms of our current understandings and future research possibilities and methodological insights gained from this study are discussed below.

Key Findings

In this case study, I have documented contributions of social capital and place to the alignment, coordination and stabilization of diverse interests within a cohesive group. The mere presence of these factors was insufficient to inspire cooperation, given barriers imposed by context, let alone coordinate the actions of the group toward a common goal. Strategic use of persuasion and place-making by a suite of key actors helped overcome barriers at the organizational and individual level. Nurturing tactics intended to sustain cohesion, maintain focus on shared purpose and enable the BHI members to accomplish the tasks required to achieve common goals were equally important, and supported by a distinct group of key actors previously undocumented in the literature. The increased social capital arising from each cycle of translation (at the completion of each successful project), was reinvested into new, more challenging projects within the BHI and in home organizations, suggesting a means of propagating innovation from the micro-social to the macro-social level, a scalar process still debated among ANT theorists. Specifically, key findings from this study include:

- The strategic development of social capital and use of place-making to change perception of contextual barriers and to create an “enabling environment” (Stephenson, 2011; Taylor, 1999) that allows participants to recognize the need to cooperate, aided by contextual and place-based intermediaries and persuasive actors.

- The use of careful management of dissent to negotiate group consensus on a context-specific boundary between common good and self-interest, thereby establishing rules for cooperation and maintaining group cohesion based on inclusive dialogue.
- The need for nurturing tactics to maintain group cohesion over the long-term, including an approach to group management that encouraged individual empowerment, which resulted in a positive feedback loop of reinvestment in and diffusion of innovation.
- Strategic use of place-making to motivate collaboration in a way that (1) accommodated existing place identity of individuals (thereby minimizing conflict); (2) promoted supportive behavior through two separate pathways (creation of shared place identity and development of moral norms associated with place); and (3) fostered various intensities of commitment, including a sense of community identity based on the potential within the group (contributing to passion, commitment and empowerment).

Scholarly Implications and Future Research Opportunities

Social capital research suggests that factors such as trust and trust-building can play a key role in collaboration and adoption of innovation (Peterson et al., 2006; Pretty & Smith, 2004; Rudd, 2000). The means by which social capital was recruited and deployed during the BHI's development provided insight into its role in the collaboration process and in promotion of innovation, in this case, science-based land management. The incorporation of dissenting opinions into the collaboration offers particular insight on the use of collaboration as a form of ecological dialogue (Bell, 2009), with implications for community resilience and deliberative democratic processes (Flora & Flora 2013; Parkins, 2011; Stephenson, 2011).

Sustainable management decisions can also be influenced by attitudes and values about the environment and awareness of threats to that environment (Clayton & Myers, 2009; Dalby & Mackenzie, 1997; Devine-Wright, 2009; Scannell & Gifford, 2010b). Place-based governance research has examined mechanisms by which geographic locations with resources or aesthetic qualities valued by people could motivate management action (e.g., Dale et al., 2008; Pollack, 2004). The social negotiations involved in that process were framed within ANT (Murdock, 1998; Pollack, 2004) and specifically through the process of translation (Callon, 1986). Trust

and place were implied to facilitate translation in some studies (Callon, 1986; Selman & Wragg, 1999a), but empirical evidence was lacking. The BHI case study provides evidence of strategic use of social capital and place attachment in the ANT translation process, and the social and psychological mechanisms by which they were successful in facilitating collaboration. These findings open new possibilities in collaboration research, which has thus far focused on the social processes facilitating cooperation, rather than behavioral aspects.

The role of dissenters and leadership within the translation process provided particular insight into the management of power dynamics within a long-term collaborative initiative. Arriving at consensus about acceptable approaches to sustainable development required resolution of Mouffe's democratic paradox, a negotiation of the boundary between collective good and self-interest. As Peterson et al. (2006) found, the experience of developing consensus can influence the support of the negotiated outcome as much as the outcome itself. Furthermore, the BHI case illustrates the value of respectful management of dissent in sustaining and promoting collaboration. The process by which new alternatives were promoted by the BHI, including a commitment to open discussion and respectful conflict resolution, helped to incorporate constructive dissent, build consensus and inspire the social imagination of the group (Flora & Flora 2013; Parkins, 2011; Stephenson, 2011).

Although the BHI may not have been fully inclusive of all affected stakeholders, the collective leadership model to group management (Friedrich et al., 2009) and consensus-based decision-making helped ensure that all parties were allowed to contribute to group decisions, if they chose. The combination of transformational and laissez-faire management styles (Bass, 1997) encouraged participation of all BHI members in discussion and creativity in problem-solving (e.g., Taylor et al., 2012). The patience of key actors (e.g., playmakers) with open debate on the technical, practical and value-based concerns with new approaches allowed the group, rather than BHI proponents to determine the boundary between common interest and self-interest (Jamal & Eyre, 2003). Finally, commitment to consensus-based decision-making helped identify an appropriate means to deal with self-interest within the group. Although key actors actively isolated dissenters, the group would not have sustained such exclusion if they had not already established rules for cooperation, including a clear definition of the boundaries of common interest. Such an approach helped foster group identity, reinforce common goals and define rules of cooperation that could enhance trust and reciprocation.

While the BHI excluded certain interests, notably the public, in developing its collaborative approaches to land management problems, it still managed to gain broad support for its proposals through this approach. For example, policy changes implemented by each municipality during the Land Management Framework project required public support before councils would approve them. The public has been largely positive and supportive of the policy changes each municipality elected to incorporate from the Land Management Framework, and so the BHI succeeded also in providing land management tools that could build consensus within each municipality, based on a community-specific definition of 'common good'. Such results suggest that the manner in which dissent is managed in the collaborative process can help to facilitate both a cooperative and democratic approach to natural resource management. Additional research is necessary to better understand the conditions under which constructive dissent might be developed, and the potential for unanticipated outcomes.

The social and psychological mechanisms underlying the success of place-making and trust-building in this case, explained in the context of ANT, offer alternative explanations for theoretical inconsistencies related to non-rational cooperative behavior identified in the commons governance literature (e.g., Ostrom, 1990,1998; 2009). The commons governance literature is rooted in rational choice theory and game theory, but rational choice does not adequately address the formation of cooperative behaviors among strangers (e.g., see discussion in Ostrom, 1998, 2000). Exploration of the role of trust, social norms and shared goals in fostering collaboration can help explain the non-rational reactions that have sometimes resulted from policy implementation, for example (Hajer, 2003). ANT allows the analyst to focus on the process of cooperation through social interactions, without presupposed theoretical constraints on individual behavior (Latour, 1996) and may provide a better framework for explanation of non-rationalized cooperation. In particular, the capacity of human and non-material entities to motivate action, based on the meanings human actors assign to them, implies an emotional or normative reaction that may not necessarily be in an individual's self-interest. It also suggests, as this case study found, that such interactions could be manipulated to promote cooperative behavior. Additional empirical work could expand on this theoretical explanation to enhance both the collective governance and ANT fields.

The various meanings and motivations resulting from the integration of the shared place identity and the individual's own place attachments suggest intriguing potential in place-making.

Individuals became attached to the version of the moraine constructed through the BHI's efforts, and as others have observed, responded to the threat to that place identified by the BHI (Devine-Wright, 2009; Kottak & Costa, 1993; Williams, 2002). Cooperation appears to have been motivated by social norms associated with the constructed image (moraine as a special place), but additional and more nuanced commitment to cooperation arose from new place meanings developed integration of shared and personal place meanings , including meanings related to the capacity for change held within the BHI community. This suggests an interaction between social capital, and in particular trust, reciprocation and access to critical resources, and place, to stimulate the 'social imagination' of at least some participants regarding future conservation action. Such interaction does not appear to have been documented in either the place or social capital literature, although the interaction has been suggested to result in such outcomes in the multiple capitals literature (Flora & Flora, 2013).

ANT proposes that when the collaborative innovation process 'works' (i.e., stakeholders generate solutions as a group and implement them), another outcome may be the transformation of the individual participants through shared experience (Latour, 1996, 2005). Attitudes, priorities and understandings may shift as the solution is developed and implemented, particularly if the initiative produced the desired result. Latour suggested that knowledge and skills gained from such experience could be applied to future projects, thus diffusing the innovation through society. Indeed, knowledge transfer through a network is thought to be a benefit of membership and social capital (specifically, trust, network structure, shared goals and culture) has been suggested to facilitate the acquisition of knowledge (Chiffoleau, 2005; Inkpen & Tsang, 2005; Sheate & Partidario, 2010). Although this outcome has been documented in the social capital (e.g., Schusler et al., 2003), new social movement (e.g., Diani, 1997) and knowledge transfer literature (e.g., Chiffoleau, 2005; Sheate & Partidario, 2010), the implication of knowledge acquisition and social capital development had not yet been examined with respect to the translation process proposed in ANT. The empowerment experienced by some members as the BHI pursued increasingly difficult projects provides evidence of Latour's (1996, 2005) proposition regarding diffusion of innovation through successive experience and a possible psychological mechanism that should be tested through other empirical work.

Practical Implications

As Walker (2012) observed, "resilience is not about not changing' (p. 29). Uncertainty about change and adaptation can block exploration of the adaptive approaches needed to address 'wicked' problems in environmental and other areas and thus reinforce traditional approaches (Crona & Parker, 2012; Franks, 2010). Yet adopting collaborative approaches demands skills under-utilized in past management paradigms that relied heavily on expert-based or technocratic decision systems (Franks, 2010; Jamal & Eyre, 2008; Parkins & Davidson, 2008) or 'common sense' derived from personal experience (Sutherland, Pullin, Dolman, & Knight, 2004). Based on my results and previous work on management of 'wicked' issues, collaboration can develop a variety of skills, including an approach that fosters inclusive, creative and critical participation and discussion and the confidence (trust) in collaboration. The process of learning new skills while dealing with such issues demands sensitivity to uncertainty, in terms of management of personal experience with collaboration and collaboration outcomes.

Collaboration is a promising approach to manage complicated environmental problems, because it can increase comfort with uncertainty, particularly if done through a 'results-based' approach that demonstrates potential through short-term objectives (Emery & Franks, 2012; Gilmour et al., 2013). Building new knowledge through social learning can also help participants understand the problem and evaluate potential solutions, which can then reduce uncertainty about management outcomes (Biljsma et al., 2011). But effective collaboration depends on other factors that speak to the quality of a collaboration experience – open communication, flexibility in when and how things are done, the form of the final product, and an inclusive environment allowing balanced discussion of diverse opinions and perspectives (Beichelt, 2012; Flora & Flora 2013; Parkins & Davidson, 2008; Parkins, 2011). Social learning, through persuasive and normative socialization processes, can help develop the coordination and participation skills needed to foster such a deliberative democratic governance approach (Crona & Hubacek, 2010; Beichelt, 2012), but as this study has shown, such processes take time and do not necessarily reduce uncertainty about collaboration outcomes. Although the BHI participants were generally satisfied with the outcome of collaboration in the long-term, they also described the process in less flattering terms (e.g., dysfunctional, imperfect). This frustration with process suggests the need to pair social learning with demonstrated results of collaboration, as in this

case, to reinforce confidence in the possible benefits of joint problem solving, as well as its tangible benefits.

The patient approach to developing a collaboration initiative seen with the BHI seems equally important. Negotiation about the direction, speed and type of change we wish to see in our communities and natural systems demands a shift to a long-term focus in decision-making, broadened imagination of possibility and capacity for inclusive discussion among all affected stakeholders (Bardsley & Sweeney, 2010; Parkins 2011; Parkins & Davidson, 2008; Stephenson, 2011). By fostering knowledge-based dialogue and considering consequences of potential decisions from various perspectives, the decision-making process automatically slows down, so focus can shift from short-term, expedient decisions to longer-term outcomes (Flora & Flora 2013). As shown in this case, a slower, more deliberative approach can also manage dissent in such a way as to help define and resolve the values-based aspects of concern, as well as technical issues. The deliberation process can be protracted; however, and certainly less expedient than traditional management approaches, factors that can contribute to perceptions of an 'imperfect' process. Short-term results that show the potential benefits of the process will be particularly important to sustain commitment to the process, particularly for initiatives that require long timeframes for development and implementation, such as the BHI's Land Management Framework.

Sustainable development can be achieved through collaborations formed from top-down direction (Selman & Wragg, 1999a; Wilson & Wiber, 2009), but voluntary collaborations can also arise from partners who recognize a shared concern (Borrini-Feyerabend & Borrini, 1996; Dunmade, 2012). Voluntary collaborations are by definition a more tenuous arrangement, highly dependent on the ability of the group to meet the needs of the partners (Borrini-Feyerabend & Borrini, 1996, Dunmade, 2012). A long-term, voluntary collaboration must be responsive to change, accountable to its partners and yet non-directive in its management approach to retain members, which demands a different conflict resolution techniques, leadership style and management approach than used in top-down systems. The collective leadership approach used by the BHI helped avoid the de-motivational influence of authoritative, power-based approaches on enrollment and participation in the group and suggests another skill required for effective collaborative initiatives. Creation of a shared goal, and periodic renewal to confirm its relevance to group members, can also help sustain motivation and commitment to the group.

Despite the challenges of adopting a new style of resource governance, the experience left a lasting and mostly positive impression on many participants. Many participants had used the collaboration skills learned within the BHI on subsequent projects, and expressed satisfaction with the results of those episodes and the response of other participants. Their experience suggests that one of the most important outcomes of effective collaboration may be the adoption of new skills for facilitating cooperation and open dialogue that can be applied elsewhere and thus, transferred to others.

Methodological Insights

The single case study can offer rich detail but has limitations in terms of its generalizability; limitations that can be overcome through various methodological strategies (Yin, 2009). In this study, I included alternative explanations in the analysis (e.g., political opportunity structure) to assess other factors contributing to successful formation and mobilization of the BHI collaborative. I also compared the results and observations from the BHI to other empirical studies and theoretical explanations of the use of social capital and place in motivating collaboration. Lastly, the embedded design, in which three successive projects could be evaluated to assess consistencies in the approach used by this particular group suggested aspects of collaboration that might be generalizable to other situations. This analytical approach allowed comparison to the broad range of disciplines used to explain collaboration, to identify generalizable mechanisms and aspects with future research or management potential.

ANT is an analytical framework based in semiotics, and thus it focusses on process without presupposing causation (Latour, 1996). Furthermore, it accommodates for co-construction of relationships between the natural environment and humans (Murdoch, 2001). Both features offered advantages to the analysis of collaboration in this case, since I was able to draw from a variety of research disciplines to explain collaborative behavior at the individual and organizational level. For example, this approach allowed analysis of the psychological motivation processes involved in place-making, as well as the social processes involved in negotiating power dynamics during translation. Miettinen (1999) suggested that context, the historical relationships and competencies of human (and possibly non-human) actors, must be excluded from ANT analysis because of its emphasis on symmetrical mediation of power dynamics. Latour (1996) had earlier attempted to clarify such interpretations, which he believed result from a misunderstanding of the basic properties of networks and their analysis. The intent

of ANT is not to detect pre-determined forms of relationships (e.g., based in rational choice), but to describe network forming activity. The ability to simultaneously consider relationship development in terms of the contextual political and organizational history, as well as attitudinal approaches to other actors, the moraine and the management problem, allowed me to integrate social and psychological processes within the analysis, a more realistic description of co-construction (Murdock, 2001).

Qualitative approaches offer the advantage of describing process from the participant's point of view (Patton, 2002). I used interviews, document analysis and, to some extent, participant observation based on past work with the BHI. Interviews provide direct description of participant experiences with process, including their opinions, feelings, and knowledge gained from the experience (Patton, 2002). Observation helps describe activities and behaviors of people and organizations, and informed some of my follow-up questioning during interviews. Lastly, document analysis can confirm details of sequence, agreement and action. Using these methods I was able to differentiate initial levels of trust, reciprocity norms, resources and networks from participants' descriptions of the BHI's development path. Separation of social capital inputs and outcomes, as suggested by Glanville and Bienenstock (2009) also helped differentiate the strategies and processes used to develop and manipulate social capital over the course of the translation cycle from their resulting outcomes. Development and outcomes of place-making strategies were readily discerned from content analysis of BHI presentations, responses to interview questions about place, and the photo-elicitation exercise.

Social capital strategies in this case emphasized trust-building, which others have observed builds norms of reciprocity and opens access to resources and networks possessed by collaborators (Brewster, 1998; Fukyama, 1995; Ostrom, 1998, 2009; Putnam, 1995, 2000). Improved access to resources (knowledge, financing, political influence) through participants' networks was readily confirmed through the interview data as an outcome of trust-building. Outcomes of increased trust and reciprocity were less easily described (in terms of extent and as separate outcomes) using qualitative data, due to their abstract nature. For example, participants described improved trust and reciprocity in terms of ease of working together or reduced suspicion, with conflates trust and reciprocity, and describes improvement in only general terms. Glanville & Bienenstock (2009) also note the difficulty in measuring these two factors, but the

fact that process (the main focus of this study) was still detectable validates the use of a qualitative approach.

Because none of the 'open dissenters' consented to participate in this study, perspectives might be skewed to the cooperative members of the BHI. Participants shared their own insights regarding the motivations and perspectives of the dissenters, gained through their interactions with them, which did help to identify some of the dissenters' potential concerns about regional land management and collaborations. But, an understanding of their motivations, including place meanings and attachments for the moraine would have been helpful in better understanding those concerns and their influence on the decision to cooperate, particularly in light of the role of dissenters in the ANT translation process.

Lastly, the member-employed photo-elicitation exercise provided a rich description of place meanings, fulfilling the promise suggested by others for this method (Beilin, 2005; Harper, 2002; Stedman et al., 2004). However, the 59% response rate in this study was much lower than previous studies using resident-employed photography. For example, Stedman et al. (2004) reported a 98% response rate in a high-amenity location using resident-employed photography. Beilin (2005) did not report a response rate, but implied that all of her 18 interview participants had completed the follow-up photography assignment as requested.

The low response rate to the photo-elicitation exercise suggests that this method may be difficult for certain participants, or in certain situations. Photography was used intentionally in this exercise, for its capacity to evoke information, feelings and memories (Harper, 2002). Sharing such personal information involves risk and trust. The process is intended to "catalyze alternative knowings of conscious, tacit, and non-conscious beliefs and feelings" in the researcher and the participant (Barry, 1996, p. 411). In this situation, I was concerned that my prior relationship working as a consultant with the participants might create barrier to open sharing of such personal information. However, the prior two-year relationship established during the interview phase of her project did not affect the response rate for Beilin (2005). Those who did participate in the photo-elicitation part of this exercise often shared deep emotional meanings in their responses, which suggests prior relationship was not an issue.

Several of the participants cited the time and access required for photography in the moraine as a barrier to participation. The size of the moraine required a dedicated effort or frequent access to obtain photographs. For those now located far from the site, access would

have required considerable effort, if photographs were not already available. Beilin (2005) and Stedman et al. (2004), in contrast, had asked residents to photograph meaningful sites around their homes, areas to which they had easy access. For a few participants, the "representational crises" (Barry, p. 416) photo-elicitation is intended to introduce may also have been too uncomfortable (e.g., the current and former residents who found they could not complete the exercise). As suggested by Harper (2002), I did frame the exercise as an activity that might challenge taken-for-granted views of the moraine, but ultimately could facilitate a better understanding of their relationship to the moraine. The difficulties experienced by some moraine residents in completing the exercise, despite desire and access suggest this technique may reveal more of the self than participants may be comfortable sharing, or at least sharing in this format. Despite the low response rate, participant-employed photography ultimately provided richer descriptions of sense of place than I was able to elicit during interviews. This exercise revealed many talented photographers who provided either existing or new photographs from within and outside the moraine, supplemented with articulate and emotionally revealing descriptions within a few weeks of our interview.

Conclusion

This study approach provided insight into the negotiations required to establish a voluntary collaborative initiative, and the types of relationships and benefits that can arise from such efforts. Although qualitative data do not allow quantification and thus analysis of correlation, the rich description of process, its antecedents and outcomes allowed deeper investigation of the nuances involved in this case (Patton, 2002; Yin, 2009). Although perhaps not appropriate for all natural resource and sustainability decisions given the time required to form a trusting, functional group, these findings suggest voluntary collaboration offers significant benefit to individuals and organizations, the landscapes they intend to protect and broader public, who have been demanding more transparent and sustainable resource management. These findings have provided insights applicable to social capital, place and collaborative behavior research, which will ultimately help advance our understanding of effective means to address modern concerns about sustainability.

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Appendix A.

Social Capital and Place Tactics

Table A1. The tactical toolbox – tactics and strategies documented in the literature regarding mobilization of social capital and promotion of place

Factor	Tactic/Strategy	Study
Place	Place-making	Bell (2007), Whitelaw et al. (2008), Dale et al. (2008)
Social Capital	Social learning	Schusler et al. (2003), Pretty & Smith (2004), Dale (2005)
	Knowledge sharing (as practice and culture)	Schusler et al. (2003), Pretty & Smith (2004), Dale (2005); Bell (2007), Friedrich et al., 2009, Inkpen & Tsang (2005)
	Open communication, dialogue	Schusler et al. (2003), Pretty & Smith (2004), Dale (2005); Bell (2007), Friedrich et al., 2009, Inkpen & Tsang (2005)
	Constructive conflict resolution	Schusler et al. (2003)
	Diverse participation/networks, inclusive participation	Schusler et al. (2003), Pretty & Smith (2004), Dale (2005), Peterson et al. (2006), Bell (2007), Inkpen &Tsang (2005)
	Adaptable/collective leadership (includes delegation)	Whitelaw et al. (2008); Friedrich et al. (2009)
	Tactic switching	Whitelaw et al. (2008)
	Political awareness & alignment (Political Opportunity Structure)	Wakefield et al. (2001), Maloney et al. (2000), Wilson & Wiber (2009)
	Shared vision	Rudd (2000), Inkpen & Tsang (2005)
	Frequent contact	Lambright et al. (2010), Inkpen & Tsang (2005)
	Patience (wait for opportunity / work through solutions)	Schusler et al. (2005), Whitelaw et al. (2008)

Appendix B.

Study Quality Criteria Assessment

(Based on Yin, 2009)

The strength of a case study hinges on the logic of the conclusions drawn from the data in term of causation or description of process, depending on the nature of the study. Yin (2009) recommends assessing the case study methodology proposed for a study against quality criteria to confirm the logic and robustness of the approach. The points below review the results of a quality review used to test the methodology for this study.

1. Construct validity checks

Does the research design use correct operational measures for the concepts studied? Do the variables make sense? Are they well-defined and measurable?

Objectives: Investigate various factors (role of place, trust, external policy context) and motivations involved in developing consensus about and voluntary adoption of innovative regional policy.

Construct checks (methods in parentheses):

Place

- Physical or social characteristics of the place in question (description from published sources)
- Sense of place (place attachment and place meanings) held by individual organizational representatives (open-ended interview/photo elicitation)

Attitudes toward sustainable management

- Value ranking of 'what is important to you' in the moraine (photo-elicitation)
- Original motivation/change in motivation(open-ended interview)

Social capital

- Aspects of social capital identified in literature review [trust and reciprocity, resources, network structure] and use in organizational steps [governance and decision-making, trust-building, leadership, engagement and empowerment]. (open-ended interview)
- Strategies or tactics used to achieve consensus using social capital (open-ended interview)

External context

- Policy overview to determine context regarding provincial, federal government and municipalities approach to land use, land development and sustainability (policy overview)

Personal/organizational motivations

- Explanation for original involvement (open-ended interviews)
- Organizational versus personal motivation (open-ended interviews)
- Change in motivation (open-ended interviews)

2. Internal validity checks

Does the study have a logical sequence of steps to explain causation (if applicable)? Evaluate based on rival explanations identifying other factors with influence.

Basic theoretical question regarding ANT: What mechanisms facilitate recruitment of support for innovation during the translation steps of Problemitization and Interessement?

Other explanations:

- Application of 'right' social capital helps convince participants and decision-makers to support proposal. Use of inappropriate resource might fail to generate trust.
- Emotional connection to 'place' motivates support, but not action.
- Political context is the 'right' time for change to be accepted (topic acceptable, champions open to proposal, less resistance).
- Other motivations/interests could attract participants, in order to protect their interests, but not necessarily to solve the problem (introduces power relations to the process).

Issues:

- How to evaluate 'right' social capital and Political Opportunity Structure (POS)? Note: In this case study, the initiatives each succeeded to recruit support, so the situation of a failed initiative is not available. Some partners took longer to adopt the Framework guidelines though, and assessment of their participation may provide insight on area of reluctant commitment. (open-ended interview)
- How to identify other motivations/interests of participants? (open-ended interviews)
- Do motivations change over time, such that commitment strengthens (to the BHI, to the initiative)? (Open-ended interviews – ask what originally motivated joining BHI, supporting the initiative – did anything change during each of the 3 initiative processes?)

Conclusion: Keeping the study as an exploratory approach meant that demonstrating causation was not as critical as a full description of all factors potentially involved in the phenomenon. These issues needed to be addressed in the data, but demonstration of full causation was not an objective.

3. External validity checks

The series of questions and responses listed below address external validity checks for the study.

Is there a domain to which study findings can be generalized?

Yes – the literature review highlighted theoretical gaps in the ANT, social capital and place literature and empirical examples available for comparison.

A single case study must use analytical generalization to generalize one's results to broader theory, by analytical comparisons among rival theories. How will this be achieved here?

The study design identified various rival theories, and ensured data was collected to evaluate these alternative explanations.

A single case study also needs sound justification, because opportunity for comparison to other cases within same study will not exist. How will justification be achieved?

The embedded design allowed for comparison of the approach used by the BHI to garner support to several different initiatives. Other studies identified in the literature review for this project allowed for a comparison of factors involved in gaining approval for sustainable management proposals, in both longitudinal and single event cases (Whitelaw et al., 2005; Selman & Wragg, 2009).

Define case study characteristics that justify its value for study.

This research project was a **critical** case (in that it meets the theoretical conditions of ANT). It was also **unique** (in that the group has accomplished its goals in several instances), **representative** (of other government partnerships attempted in integrated management scenarios), and **longitudinal** (allows examination over relatively long time).

4. Reliability

Could your data be collected by others with same results?

Reliability can be ensured through transparency in data collection, analysis and reporting. This issue was addressed in the study design by adopting methodologies and analyses with clear linkage to the research question. Reliability was further ensured through a clear reporting style and triangulation checks on reflexivity (e.g., peer debriefing, participant review of transcripts, analysis and report, multiple analysts within PhD committee; Patton, 2002; Yin, 2009).

Appendix C.

Interview Guide, Photo-elicitation Exercise Instructions and Interview Analysis Framework

Open-ended Interview Guide (First Interview) – BHI Collaboration Study

Information for the PER-ALES-NS Ethics Review Committee: Organization and Use of Guide

The questions below focus on three initiatives that the BHI pursued to achieve consistent sustainable management approaches in land use policy among the BHI municipal partners:

1. Recruiting municipalities into the BHI in 2002-04
2. Adoption of the Land Management Principles
3. Adoption of the Land Management Framework

Each of the questions below addresses the means by which the BHI (1) brought representatives of groups together to collaborate on policy alternatives, (2) developed consensus around each strategy within the BHI and, (3) recruited support from municipal councils for each proposal. The questions are in a suggested format only and can be adapted to the specific participant. Follow-up probes are indicated in parentheses () and associated study variables are in square brackets [] after each question. Examples of interview questions will be supplied to study participants prior to the interview in an email message that confirms the interview date, time and location. See example below, after the interview introduction script and questions sections.

This guide outlines the general sequence of inquiry to be followed during the interview, but the interviewer can adapt to capture points out of sequence should conversation provide an opening. For all questions, the interviewer should attempt to draw out descriptive responses by asking for concrete examples or specific instances.

Coverage of Topics

The questions below outline all topics ideally addressed during the interview, but will depend on the recollections and willingness of the participants to divulge information. In some instances, participants may have a deep knowledge of the topics, and may be able to provide more information than can be accommodated during the interview. The interviewer should use judgment in pursuing each topic, and probe to confirm the depth of knowledge, pass over topics of less relevance, and explore those of interest as deeply as possible within the constraints of time and comfort of the participant. In some cases, discussion on particular topics might have to be cut short to accommodate time constraints; such situations should be recorded in field notes. If the participant is willing to extend the interview, these discussions might be resumed at the end of the main interview. Alternatively, a follow-up interview might be scheduled, with consent of the participant.

Interview Introduction Script

The BHI has provided an interesting alternative to regional sustainable management, emphasizing science-based management, cooperation and voluntary participation. Some recognize that this style of collaboration offers new possibilities, particularly for issues that cross traditional government boundaries. I am interested in the early days of the BHI, when the group came together and developed an agenda for regional management. Specifically, I am interested in the three initiatives that the BHI pursued regarding consistent sustainable management approaches in land use policy among the BHI municipal partners:

1. Recruiting municipalities into the BHI in 2002-04
2. Adoption of the Land Management Principles (2004-2005)
3. Adoption of the Land Management Framework (2005-2006)

In our discussion today, I'd like to hear your thoughts on how the BHI formed and how it pursued these three initiatives.

Interview Questions (probes are listed in round parentheses, variables in square brackets)

- **What factors influenced your participation in the BHI?** (probes: Have those factors changed during your involvement with the BHI? In what way?) [*individual or organizational attitude / motivation, transformation; description of consensus building process & outcomes / social capital processes*]
- **What does sustainable management mean to you?** (probes: Has that definition changed during your time in the BHI? In what way? Why?) [*attitudes toward sustainable management, transformation; description of consensus building process & outcomes / social capital processes*]
- **What does the moraine mean to you?** (probes: Did you have much experience with the moraine before working with the BHI? Have your feelings about the moraine changed during your time in the BHI? In what way? Why?) [*place attachment, attitude toward sustainable management, transformation; description of consensus building process & outcomes / social capital processes*]
- **How do proposals like these initiatives develop within the BHI?** (probes: Are there any specific people consistently involved? Who decides to pursue projects and how does that process work?) [*key actors / human capital, confirming consensus process, trust]*
- Please provide three words/phrases to describe the way in which the BHI works together to develop initiatives like these three specific examples. (probes: Why are these words or phrases good descriptors? What do these words mean to you?) [*trust, confirming consensus process, attitude toward sustainable management, attitude toward science-based management, attitude toward partnerships*]
- **What do you think of the way the BHI approached these specific initiatives?** (Probes: what worked? What didn't? Why?) [specific factors, possibly including place, social capital, human capital; attitudes toward sustainable management; attitudes toward science-based management]
- Municipal support / uptake of these specific initiatives seemed critical to defining the BHI's mandate for future work. Referring to these initiatives in particular, how did the group gain that support? (probes: Were there any specific challenges? What worked/didn't work? Were any particular members of the BHI critical to gaining support?) [*specific facilitation factors, possibly including place, social capital or human capital; confirmation of consensus process*]

EMAIL MESSAGE USED TO CONFIRM PARTICIPATION IN FIRST INTERVIEW AND PREPARE PARTICIPANTS WITH THE TYPE OF QUESTIONS THAT WILL BE ASKED.

Thank you for agreeing to participate in an interview with me on [INSERT DATE] at [INSERT PLACE]. I have listed below some examples of the type of questions I hope to ask you when we meet.

- What factors influenced your participation in the BHI?
- What does sustainable management mean to you?
- What does the moraine mean to you?
- How do proposals like these initiatives develop within the BHI?
- Please provide three words/phrases to describe the way in which the BHI works together to develop initiatives like the Land Management Principles and Land Management Framework.
- What do you think of the way the BHI approached these specific initiatives?
- Municipal support / uptake of these specific initiatives seemed critical to defining the BHI's mandate for future work. Referring to these initiatives in particular, how did the group gain that support?

Thank you again for agreeing to participate in this study. I look forward to our meeting and discussions.

Best wishes,

D.L. (Dee) Patriquin
Ph.D. Candidate, Faculty of Physical Education and Recreation

Cell: (780) 718-6733

Email: dpatriquin@ualberta.ca

Photo-Elicitation Instructions

The Contribution of Place and Social Factors to Collaborative Sustainable Management

Dear Member of the Beaver Hills Initiative:

You have agreed to participate in a photo-elicitation study as part of a Ph.D. study of the BHI's approach to collaboration in developing sustainable land management policy. For the assignment, you will photograph (or provide your own photographs) of location(s) or aspect(s) of the Beaver Hills moraine that you find particularly important or personally relevant (total of 10 photographs). You will also write a short description (one paragraph) of what about the aspects of the moraine shown in each of the ten photographs represents to you. You will have two weeks to take the required photographs, and another two weeks to prepare the written descriptions once I return the developed prints to you. As a follow-up to the photography exercise, you will be asked to participate in a second interview (45 minutes to one hour) that will allow me to discuss further with you the influence of the moraine, people/organizations and strategies on the efforts of the BHI, based on the initial interview and your photography assignment.

The specific instructions for the photo-elicitation study are outlined in the attached sheet.

I appreciate your assistance with this study. If you have any questions, please contact me at 780-718-6733 (cell) or by email (dpatriquin@ualberta.ca), or my supervisor, Dr. Elizabeth Halpenny (780-492-5702, or by email, elizabeth.halpenny@ualberta.ca).

Thank you,

D.L. (Dee) Patriquin
Ph.D. Candidate, Faculty of Physical Education and Recreation

Photo-Elicitation Instructions

STEP 1

With the camera provided, please take pictures of places within the moraine that you feel are important within the context of the work of the BHI in sustainable land management. These photographs should focus on the types of features that you feel are important to the quality of life within the Beaver Hills / Cooking Lake Moraine and could show positive (what you like) or negative examples (what you want to avoid). The places should reflect *your views* about the moraine. The photos can be of a place with which you are very familiar, or an area more generally representative of something you value about the area. If you have pictures of your own that you would like to use instead of using the camera provided (e.g., for a site best shown in another season or currently inaccessible), please provide the photo (digital or paper format) when you return your camera for developing. Aim for a total of 10 photographs. The film provided will allow for 24 exposures, so that you can take additional photographs if needed (e.g., if the camera does not seem to work properly or you want to try different angles or views). You will have an opportunity to select from the set of 24, the 10 pictures you wish to submit.

STEP 2

Once you finish taking your photographs, please contact me so I can collect the camera. I will develop the film and provide you with copies of the photographs.

STEP 3

After you receive the photographs, please take a few moments to review them and select the 10 photographs you feel best capture your feelings about the quality of life in the moraine. For each of those photographs, describe in a short paragraph what aspect of quality of life within the moraine is shown and why you feel it is important. I will arrange with you a time to collect your selected photographs and the written descriptions, and a time for a follow-up interview when we can discuss the features you documented and their relationship to the work undertaken by the BHI.

STEP 4

An interview that explores the content and meaning of the photos you captured will be conducted at the time and place that works best for you. The interview would be 45 minutes to 1 hour. We will also explore aspects of the consensus-based process that the BHI used during its formation and subsequent development of the Land Management Principles and Land Management Framework.

Table B1. Analysis of place-based collaboration within the ANT framework (based on Callon, 1986)

Factor	**Strategies/Tactics**	**Potential Interview / Analysis Questions** **(theoretical link in parentheses)**	**Comparator in Literature**
1. Problematisation – frame the issue and assign/manage roles (2002-2004 formation period)			
Place:	Place- making Affirming place attachment (*politizing place)*	How did people feel about the moraine personally at this time? How does that match the description popularized by the BHI at this stage of development from presentations and 'constitution'? (match of self-place identify to group place identity)	Whitelaw et al. (2008) Vaccaro & Beltran (2007) Dale et al. (2008) Scannell & Gifford (2010-in press)
Social Capital:	Expanding network Gathering resources Establishing reciprocity	Who was asked to participate initially? (Homogenous or diverse network)	Pretty & Smith (2004)
Social Capital Processes:	Trust-building Establishing leadership	Who lead the initiative initially? (leadership model) How were decisions made? (governance model) What kinds of decisions were made? (level of challenge for governance, and opportunity for trust-building)	Whitelaw et al. (2008) Lockie (2004)

Factor	Strategies/Tactics	Potential Interview / Analysis Questions (theoretical link in parentheses)	Comparator in Literature
2. Interessement – Process to lock others into assigned roles (2004 – 2005 Land Management Area Principles Developed and Accepted by Councils; recognition with Alberta Municipal Excellence Award & Emerald Award finalist)			
Place:	Reinforcing group place identity	How did people feel about the moraine personally at this time? How does that match the place presented by the BHI at this stage? (match of self-place identify to group place identity)	Whitelaw et al. (2008) Vaccaro & Beltran (2007) Dale et al. (2008) Scannell & Gifford (2010-in press)
Social Capital:	Identifying strengths Designating resources to specific roles	How was the LMA project initiated? Who were key players? How did the process of seeking Council approval proceed? Were there areas of resistance? Who led counter resistance and how was it approached? (Trust/reciprocity, network use to solve problem) As the BHI began to tackle this project, how did the Board get it organized and done? Where did the manpower come from? (Key resources, recruitment of new resources) As the BHI began to expand the partnership, did groups approach the BHI, or did the BHI solicit/recruit new members? (expansion of network)	Whitelaw et al. (2008) Pretty & Smith (2004) Maloney et al. (2000) Dale et al. (2008)

Factor	Strategies/Tactics	Potential Interview / Analysis Questions (theoretical link in parentheses)	Comparator in Literature
Social Capital Processes:	Trust-building Establishing leadership Establishing governance Empowering agents within group	When did a formal governance structure (Board) develop in the BHI? Who held authority for decision-making? Who lead the initiative within the new governance structure? (Collective leadership emerging?) How did that person lead? What qualities did they bring to it that made it work? (Leadership aspects) How were decisions made? (governance model, leadership style/approach) What sort of decisions (e.g., for projects) were made? (level of challenge for governance, and opportunity for trust-building)	Pretty & Smith (2004) Friedrich et al. (2009)
3. Enrolment – strategies to define and inter-relate the roles to each other (organize) (2005-2006 Land Management Framework (LMF) process with Planners Working Group)			
Place:	Place- making Affirming group place identity	The BHI was invited & sought opportunities to present to external agencies and at conferences to discuss their success with the LMA process– how was the moraine presented in these presentations? The moraine was also featured in the Land Management Framework process – how was it presented? (place-making, self-vs. group identity)	Whitelaw et al. (2008) Vaccaro & Beltran (2007) Dale et al. (2008) Scannell & Gifford (2010-in press)

Factor	Strategies/Tactics	Potential Interview / Analysis Questions (theoretical link in parentheses)	Comparator in Literature
Social Capital:	Expanding network Gathering additional resources Establishing reciprocity	During the LMF project, new planners, new projects and public concerns helped and hindered the acceptance of the framework product. How did the new actors and context facilitate support for the LMF project? (network structure/change in structure) Some councils began to resist the LMA commitments in their opposition to the LMF – who helped counter this resistance and how? If cooperation couldn't be re-established, what happened? (trust & reciprocity, network resources deployment, use of power in conflict mgmt.) The BHI also began to gain notice in external planning processes (e.g., Draft Wetland Policy and AB LUF process). Who invited the BHI to participate in external initiatives? Was this linked to a specific level of success / recognition for the BHI? What impact did participation have on BHI members? (means of network growth, trust, power/empowerment)	Whitelaw et al. (2008) Pretty & Smith (2004) Wilson & Wiber (2009) Bell (2007) Halpenny et al. (2004)
Social Capital Processes:	Capitalizing on trust to expand network & gather more resources Confirming/adapting governance and leadership Establishing norms, rules & sanctions	The BHI had a 3rd phase of governance development during the LMF phase– business planning process established. How did that process develop? Who initiated it? A set municipal membership 'fee' was also established then. How was that presented to Councils? Was	Bell (2007) Whitelaw et al. (2008) Lockie (2004) Schusler et al. (2003)

Factor	Strategies/Tactics	Potential Interview / Analysis Questions (theoretical link in parentheses)	Comparator in Literature
	(including funding, business planning accountability) Leveraging trust built up in previous stage for power (seat at the table regionally/internally)	there resistance? From where? (leadership model, governance structure, leadership aspects to manage conflict)	Friedrich et al. (2009)
4. Mobilization – act as advocates of the collaborative (effective organization) (2006-2010 Complex project stage – Golden Ranches purchase, Transfer of Development Credit program)			
Place:	Place- making Reinforcing group place identity	The BHI initiated more complex cooperative projects at this time (e.g., the Golden Ranches project, TDC project). How was the moraine depicted in this phase? External agency/conference presentations also continued, either by invitation or self-initiated) – how was the moraine depicted to external agencies? Did it differ from internal presentations? place-making, self-identify vs. group identity)	Whitelaw et al. (2008) Vaccaro & Beltran (2007) Dale et al. (2008) Scannell & Gifford (2010-in press)
Social Capital:	Expanding network Mobilizing resources as needed Trading on reciprocity	New projects like the TDC and Golden Ranches projects have brought in new partners (ARC, EALT). How were those partners recruited (e.g., approached by Brenda? Other?) Did they have any reluctance? What 'sold' the project to these new partners? (network expansion,	Pretty & Smith (2004) Lockie (2004)

Factor	Strategies/Tactics	Potential Interview / Analysis Questions (theoretical link in parentheses)	Comparator in Literature
		communication tactics, definitions of success)	
Social Capital Processes:	Governance structure establishes leadership & subordinate roles (evidence = independent action of actors); Norms, rules and sanctions well-established and functional (evidenced by successful actions/initiatives)	The Business Planning process is now established – how is project accountability tracked and managed? Have norms/sanctions developed around project initiation and accountability? Who leads this accountability process? How are new projects selected? (development of norms, rules, sanctions; trust-building regarding the group; leadership model)	Schusler et al. (2003) Friedrich et al. (2009)

Appendix D.

Information Letters and Consent Form

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E-419 Van Vliet Centre
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dpatriquin@ualberta.ca
Tel: 780-718-6733
Fax: 780.492.2364

Dissertation Research Project Participation:

The Contribution of Place and Social Factors to Collaborative Sustainable Management

Dear Member of the Beaver Hills Initiative:

As you know, I am undertaking a Ph.D. project in the Faculty of Physical Education and Recreation at the University of Alberta. I invite you to participate in this research project, which will explore the factors contributing to the successful collaboration of the Beaver Hills Initiative on three early initiatives: its formation in 2002, adoption of the Land Management Principles, and adoption of the Land Management Framework. In particular, the study will examine the influence of people's perceptions of the moraine as a special place, the importance to the BHI of support from key people and agencies and the strategies used to promote cooperative, regional sustainable resource management.

Your participation will involve a45 minute to one hour initial interview, a personal assignment and a follow-up interview regarding the assignment. For the assignment, you will photograph (or provide your own photographs) of location(s) or aspect(s) of the Beaver Hills moraine that you find particularly important or personally relevant (total of 10 photographs). You will also write a short (one) paragraph description of what about the moraine each of the ten photographs represents to you. You will have two weeks to take the required photographs, and another two weeks to prepare the written descriptions once I return the developed prints to you. Additional instructions for the assignment will be provided separately. As a follow-up to the photography exercise, you will be asked to participate in a second interview (45 minutes to one hour) that will allow me to discuss further with you the influence of the moraine, people/organizations and strategies on the efforts of the BHI, based on the initial interview and your photography assignment.

Participation is voluntary and any information you provide will be treated confidentially by me. **No personal information will be given out with the study's final results.** You may decline to answer any question during the interview. The study will not directly benefit you nor cause personal risks. It will help other groups that wish to use collaboration to address sustainable resource management concerns. Information you provide will only be handled by me. To ensure confidentiality of the information collected during the interview, data will be secured in a locked cabinet to which only I have access to. Information is normally kept for a period of five years post-publication, after which it will be destroyed.

Confidentiality will extend to publication of study results as well. Particularly illustrative quotes will only be used with your permission and under a pseudonym or anonymously. Photographs you provide may be used in future publications (e.g., journal articles, Ph.D. dissertation) or in presentations (e.g., conference presentations). By providing your photographs, you agree to allow me to use the photographs for these purposes. Should an individual or individuals be

recognizable in a photograph that I would like to use in a paper or presentation, I would seek permission from the individuals to reproduce their image in public communications. In such a circumstance, I would ask you to provide contact information for the individuals to request their permission. If you and I cannot identify the individual(s), or the individual is not comfortable with the proposed use of the photograph, I will not use this photograph in any public communication.

Lastly, you will be asked to review transcripts of your interviews and you can request changes or corrections to ensure accuracy. You have the right to withdraw from the study entirely, or to exclude particular comments or materials from the transcripts from the study, until June 2012. After that time, I will be finalizing the dissertation document and cannot accommodate changes. Upon verbal or written (via email message) request your information will be removed from the study.

The study will be reviewed by my PhD supervisory committee. The results of the study will be published in a final thesis document and possibly journal publications or presentations to academic or professional organizations. I will also present key findings to the BHI, at the conclusion of the study, and will provide a copy of any publications for BHI use.

At the beginning of the interview, once I have re-explained the purpose of this project, I will ask for your verbal consent to use the information you provide during the interview. I will make an audio recording of our discussion. These recordings will only be used to refresh my memory of what was said at the meeting as I write up my research results.

This project has obtained human ethics research approval from the University of Alberta. Please contact Kelvin Jones, Acting Chair of the PER-ALES-NS Research Ethics Board at the University of Alberta at 780-492-0650 with any concerns or questions related to the ethical aspects of this project. Dr. Jones has no direct involvement with this project.

I appreciate your assistance with this study. If you have any questions, please contact me at 780-718-6733 (cell) or by email (dpatriquin@ualberta.ca), or my supervisor, Dr. Elizabeth Halpenny (780-492-5702 or elizabeth.halpenny@ualberta.ca).

Thank you,

D.L. (Dee) Patriquin
Ph.D. Candidate, Faculty of Physical Education and Recreation

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Photo-Elicitation Instructions/Information Letter

The Contribution of Place and Social Factors to Collaborative Sustainable Management

Dear Member of the Beaver Hills Initiative:

You have agreed to participate in a photo-elicitation study as part of a Ph.D. study of the BHI's approach to collaboration in developing sustainable land management policy. For the assignment, you will photograph (or provide your own photographs) of location(s) or aspect(s) of the Beaver Hills moraine that you find particularly important or personally relevant (total of 10 photographs). You will also write a short description (one paragraph) of what about the aspects of the moraine shown in each of the ten photographs represents to you. You will have two weeks to take the required photographs, and another two weeks to prepare the written descriptions once I return the developed prints to you. As a follow-up to the photography exercise, you will be asked to participate in a second interview (45 minutes to one hour) that will allow me to discuss further with you the influence of the moraine, people/organizations and strategies on the efforts of the BHI, based on the initial interview and your photography assignment.

The specific instructions for the photo-elicitation study are outlined in the attached sheet.

As with other parts of this study, participation is voluntary and any information you provide will be treated confidentially by me. **No personal information will be given out with the study's final results.** You may decline to answer any question during the interview. The study will not directly benefit you nor cause personal risks. It will help other groups that wish to use collaboration to address sustainable resource management concerns. Information you provide will only be handled by me. To ensure confidentiality the information collected during the interview, data will be secured in a locked cabinet to which only I have access to. Information is normally kept for a period of five years post-publication, after which it will be destroyed.

Confidentiality will extend to publication of study results as well. Particularly illustrative quotes will only be used with your permission and under a pseudonym or anonymously. Photographs you provide may be used in future publications (e.g., journal articles, Ph.D. dissertation) or in presentations (e.g., conference presentations). By providing your photographs, you agree to allow me to use the photographs for these purposes. Should an individual or individuals be recognizable in a photograph that I would like to use in a paper or presentation, I would seek permission from the individuals to reproduce their image in public communications. In such a circumstance, I would ask you to provide contact information for the individuals to request their permission. If you and I cannot identify the individual(s), or the individual is not comfortable with the proposed use of the photograph, I will not use this photograph in any public communication.

Lastly, you will be asked to review transcripts of your interviews and you can request changes or corrections to ensure accuracy. You have the right to withdraw from the study entirely, or to exclude particular comments or materials from the transcripts from the study, until June 2012. After that time, I will be finalizing the dissertation document and cannot accommodate changes. Upon verbal or written (via email message) request your information will be removed from the study.

The study will be reviewed by my PhD supervisory committee. The results of the study will be published in a final thesis document and possibly journal publications or presentations to academic or professional organizations. I will also present key findings to the BHI, at the conclusion of the study, and will provide a copy of any publications for BHI use.

At the beginning of the interview, once I have re-explained the purpose of this project, I will ask for your verbal consent to use the information you provide during the interview. I will make an audio recording of our discussion. These recordings will only be used to refresh my memory of what was said at the meeting as I write up my research results. I will contact you after you have completed the photography assignment to schedule an interview at your convenience.

This project has obtained human ethics research approval from the University of Alberta. Please contact Kelvin Jones, Acting Chair of the PER-ALES-NS Research Ethics Board at the University of Alberta at 780-492-0650 with any concerns or questions related to the ethical aspects of this project. Dr. Jones has no direct involvement with this project.

I appreciate your assistance with this study. If you have any questions, please contact me at 780-718-6733 (cell) or by email (dpatriquin@ualberta.ca), or my supervisor, Dr. Elizabeth Halpenny (780-492-5702 or elizabeth.halpenny@ualberta.ca).

Thank you,

D.L. (Dee) Patriquin
Ph.D. Candidate, Faculty of Physical Education and Recreation

Photo-Elicitation Instructions

STEP 1

With the camera provided, please take pictures of places within the moraine that you feel are important within the context of the work of the BHI in sustainable land management. These photographs should focus on the types of features that you feel are important to the quality of life within the Beaver Hills / Cooking Lake Moraine and could show positive (what you like) or negative examples (what you want to avoid). The places should reflect *your views* about the moraine. The photos can be of a place with which you are very familiar, or an area more generally representative of something you value about the area. If you have pictures of your own that you would like to use instead of using the camera provided (e.g., for a site best shown in another season or currently inaccessible), please provide the photo (digital or paper format) when you return your camera for developing. Aim for a total of 10 photographs. The film provided will allow for 24 exposures, so that you can take additional photographs if needed (e.g., if the camera does not seem to work properly or you want to try different angles or views). You will have an opportunity to select from the set of 24, the 10 pictures you wish to submit.

STEP 2

Once you finish taking your photographs, please contact me so I can collect the camera. I will develop the film and provide you with copies of the photographs.

STEP 3

After you receive the photographs, please take a few moments to review them and select the 10 photographs you feel best capture your feelings about the quality of life in the moraine. For each of those photographs, describe in a short paragraph what aspect of quality of life within the moraine is shown and why you feel it is important. I will arrange with you a time to collect your selected photographs and the written descriptions, and a time for a follow-up interview when we can discuss the features you documented and their relationship to the work undertaken by the BHI.

STEP 4

An interview that explores the content and meaning of the photos you captured will be conducted at the time and place that works best for you. The interview would be 45 minutes to 1 hour. We will also explore aspects of the consensus-based process that the BHI used during its formation and subsequent development of the Land Management Principles and Land Management Framework.

INFORMED CONSENT FORM FOR BHI COLLABORATION STUDY:

INTERVIEWS AND PHOTO-ELICITATION STUDY

Principal Investigator(s): Dee Patriquin, Ph.D. Candidate, Faculty of Physical Education and Recreation, University of Alberta, tell: 780-718-6733, email: patriqui@ualberta.ca

Do you understand that you have been asked to be in a research study?	Yes	No
Have you read and received a copy of the attached Information Sheet about this project.	Yes	No
Do you understand the benefits and risks involved in taking part in this research study?	Yes	No
Have you had an opportunity to ask questions and discuss this study?	Yes	No
Do you understand that you are free to refuse to participate, or to withdraw from the study at any time, without consequence, and that your information will be withdrawn at your request?	Yes	No
Has the issue of confidentiality been explained to you? Do you understand who will have access to your information?	Yes	No

This study was explained to me by the principal investigator: Dee Patriquin

I agree to take part in this study:

Signature of Research Participant Date

_____

Printed Name

I believe that the person signing this form understands what is involved in the study and voluntarily agrees to participate.

Signature of Principal Investigator Date

Appendix E.

Policy Overview

Environmental Management in Municipalities

Primacy of the market over the social is a critical issue affecting environmental management in neo-liberal political systems, including that in Canada (Atkins, 2009). Legal institutions in such systems reinforce the means of production, including private-property rights and market efficiency, and reduce the opportunities for meaningful public inputs into decision-making (Boyd, 2003; Atkins, 2009). The bias toward economic interests embedded in Canadian environmental legislation has been an increasing frustration for the public, particularly in light of mounting evidence of impacts of unsustainable management (Boyd, 2003). Municipal politicians, more accessible than federal or provincial counterparts, became a target for demands from the public for more stringent environmental management, creating a political issue of sustainability in some places. Within Strathcona County in particular, public interest – and concern – about sustainable land management in the moraine had become a municipal political issue by the early 2000s, driven in part by perceived gaps in federal and provincial enforcement.

Boyd's (2003) review of systemic weaknesses in Canadian environmental law at the beginning of the 21st century well describes sustainable management in the moraine in the early 2000s. Some legislation, including the Alberta *Environmental Protection and Enhancement Act* (1992), the *Canadian Environmental Assessment Act* (1992), the *Canadian Environmental Protection Act* (1999) and the *Canada National Parks Act* (2000), had begun to incorporate new science regarding ecological management, such as the concepts of ecological integrity and the precautionary principle (Boyd, 2003). Enforcement and implementation has consistently lagged behind due to a lack of political will generated by complaints by the business sector of competitive disadvantage. As a result, enforcement has been weakened by insufficient financial support, downloading of responsibilities to the provinces and a reliance on voluntary initiatives, rather than regulatory measures. Without significant incentives (including credible threat of enforcement), voluntary initiatives have generally not been successful (Boyd, 2003). This situation resulted in reduced political accountability for environmental health, and credibility of both governments in environmental management. Concurrent exclusion of public concerns from environmental decisions brewed discontent (Boyd, 2003; Atkins, 2009). Despite acknowledged benefits of a better and fairer decision-making process, legislated opportunities for public involvement were generally limited to notification of decisions, public access to information and requests to comment on decisions.

Overall, environmental jurisdiction remained divided between federal and provincial governments based on the *Constitution Act* (amended 1982) and the Alberta *Transfer of Natural Resources Act* (1930). The division created jurisdictional overlap for some resources, which further complicated the general understanding of environmental management responsibilities (Boyd, 2003; Environmental Law Centre, 2003). The original resource management laws were developed from a utilitarian perspective that emphasized sustainable economic benefit. The mix of a more modern sustainability and utilitarian focus on resource management for human use contributed to other contradictions in resource management (Boyd, 2003). Despite the updates noted above, laws addressing specific resources (e.g., water, forests, wildlife, fish) still had objectives of maintaining resources for human use, rather than a broader ecological role. Legislation for creation and management of parks and protected areas emphasized conservation objectives, and in the mind of some (particularly ENGOs), a preservationist approach to management of those landscapes (Fluker, 2010).

The Municipal Political Environment

Alberta is a relatively young province, yet in its short history, tensions and conflicts had already developed between federal, provincial and municipal governments and amongst municipal governments as well. These relationships created a conservative identity characterized by independence from government control that affected attitudes toward regional cooperation and environmental management by municipalities across the province. These attitudes caused considerable tension after the province imposed strict fiscal restraint in the 1990s and began to encourage regional partnerships for more efficient local government. The sections below describe the historical development of these intergovernmental attitudes and the resulting impact on municipal-provincial relations and environmental management jurisdictions through the BHI's early years.

An independent spirit – early government relations in Alberta.

European settlement of western Canada began as a corporate expansion. The potential of the fur trade led to the ceding of much of western and northern Canada to the Hudson Bay Company by Charles II in 1670 (Newman, 1985). Western Canada developed through the fur trade and missionary work and these few interests controlled the western frontier until its transfer to Britain in 1867 (MacDonald, 2009). The transfer expanded the Canadian colonial lands west and ushered in a new phase of settlement (MacDonald, 2009). It also instituted a new system of

governance, British colonial government, which had an important effect on local and provincial governance (Alberta Municipal Affairs, 2011).

Originally a territory added to the newly formed Canadian government, Alberta became a province in 1905 (Alberta Municipal Affairs, 2011). Before joining Confederation, municipalities were regulated under territorial law based on land use (the *Northwest Municipal Ordinance,* 1883). Rapid settlement through the late 1880s generated a succession of municipal governments, from herd districts in 1883, to fire districts in 1886, school districts in 1885 and statute districts in 1887. Change was driven by local residents frustrated by the disregard by the federal government of their economic and other concerns in the push for western settlement (Elton, 1979). Growth required infrastructure and costs of roads, bridges, schools and other transportation facilities had made Alberta a debtor region. Requests for additional funding from the territorial and Canadian government to support settlement had gone unfulfilled. Perceptions of unfair shipping costs, a fragmented approach to railway land grants that disrupted local communities and inadequate storage and shipping of grain products led to pursuit of self-governance, first through representation to the territorial government, then provincial status.

MacDonald (2009) notes another important influence behind the drive for stronger local representation in the West, the effect of private land ownership. Eastern Canada was originally settled as a British colony and retained the private land-owning privilege common in England, in which local elites had preferred access to land during settlement and additional land tenure privileges. When the *British North American Act* consolidated eastern and western Canada in 1867, it restricted such land owner privilege and improved access to land ownership for the common man. Western Canada was largely settled after Confederation, with offers of private land ownership at low cost to any person willing to homestead. Settlers had the "sweet knowledge that once land had been "proved up" by their sweat and paid for, any corporate landlord would be out of his hair" (MacDonald, 2009, p. 76). The frontier image of the West was reinforced by the absence of significant corporate interests. For many years large landowners in the West were limited to the Canadian Pacific Railway, the remaining fur trading posts and missions. Resentment of the corporate interests and other institutions that had denied them or their ancestors economic opportunity united old and new settlers in a strong drive for self-governance.

Later battles between the new Alberta government and Ottawa challenged constitutional jurisdiction over natural resources, provincial debt, trade policies and other issues (Elton, 1979)

with a goal of either enhancement of provincial jurisdiction or reform of federal institutions (Gibbins, 1992). Western alienation has been an enduring theme with considerable traction provincially (Gibbins, 1992). Control over natural resources provides an example. Although Alberta became a province in 1905, it did not receive control over its natural resources until 1930, after prolonged dispute over compensation for resource revenue collected by Ottawa after the province was established (Elton, 1979). Conflict gradually declined after the 1950s, when Alberta benefited from revenues generated by petroleum resource development. Nonetheless, conflict erupted again, after implementation of the Trudeau Government's National Energy Policy (NEP) in 1980, interpreted by the province as attempt to 'grab' natural resource revenue (Gibbins, 1992).

Ensuring economic security through control of resources and access international markets for those resources has been an underlying motivation of these constitutional debates, from the 1890s till today (Elton, 1979; Gibbins, 1992). Using the conflict for political gain is not uncommon though; painting the federal government as the villain has successfully furthered political agendas in Alberta since the 1930s (Elton, 1979; Gibbins, 1992; Barrie, 2006). The major recession of the 1980s that resulted from the NEP created considerable resentment toward federal government and renewed the drive for control of provincial resources and revenues. This particular incident still resonates in Alberta, and federal intervention remains a sensitive topic.

Thus, freedom from external, corporate control, including centralized government, has been an enduring characteristic of the provincial identity, deliberately encouraged and reinforced by provincial institutions to support political goals (Barrie, 2006). For example, von Heyking (2006) notes the shift in emphasis in school curricula from 1095 to the 1980s that increasingly emphasized the 'provincial' values of freedom, individualism, persistence and initiative and their contributions to economic transition of Alberta from a "have-not" to a "have" province. By the 1980s new political forces, including federal intervention in energy and resource markets, became the villain attempting to hold Alberta back from economic prosperity (von Heyking, 2006). Barrie (2006) contends that reinforcement of this conservative Albertan image has been used to sustain rule of the provincial Conservative party over the past four decades (Barrie, 2006). Little wonder that independence from government control has become a key driver in western politics, including the politics of local municipalities.

Municipal and provincial relations.

From the start, Alberta's provincial governments have governed within this context of independent pioneering spirit and so it is not surprising that the need to balance local autonomy against provincial control has been an important political theme. The persistence of this dynamic in the relationship between municipalities and the province speaks to the strength of the conservative cultural identity. Urban growth, the rise in influence of urban municipalities, rural and urban tensions and questions of sustainability challenged the relationships between municipalities and the province and set the context of their relationship through the 2000s.

Masson (1994) notes that although the Canadian, provincial and municipal governments are often discussed as distinct layers, they are constantly interacting, such that intergovernmental relations are complex and multidimensional. This is most apparent in provincial-municipal relationships and thus, this section first provides background on the nature of the Alberta – municipal relationship. Two subsections address specific issues (regionalism and urban –rural conflict) related more directly to the BHI.

Under the federal *Constitution Act* (1982), the provinces were delegated responsibility for regulating and funding local government (Masson, 1994). The province established the structure and powers of municipal government through the provincial *Municipal Government Act* (MGA, 1994), which outlines municipal powers regarding taxation, annexation and land use planning and development. The provincial government ensures consistency with its vision through controls over municipal revenues (e.g., initiatives promoted by grant programs, controls on borrowing and taxation privileges, Masson, 1992, 1994). As a result, the municipality is legally subordinate to and operationally dependant on the province.

Growth of urban municipalities gave them an increasing influence in provincial politics and a position from which to challenge provincial policy direction (Masson, 1992). Their growth also contributed to conflict between rural and urban municipalities, such as that in the Edmonton Capital Region. By 1986 almost 80% of the provincial population lived in the larger urban centers, with just more than half in Edmonton and Calgary (Masson, 1992). By 2010, two thirds of the provincial population lived in cities, and half of the population was in Edmonton or Calgary (LeSage & McMillan, 2010). The 2002 census reported that the Edmonton – Calgary corridor was one of the fastest growing regions in Canada, overtaking the greater Toronto metropolitan area (Statistics Canada, 2002). That trend continued through the next two census periods (Statistics Canada, 2011). Today Calgary, Edmonton and Strathcona County are the

three largest municipalities in the province, with growth rates around 12% between the 2006 and 2011 census period (Statistics Canada, 2011). To maintain public support, the provincial government must carefully balance the concerns of urban and rural populations.

Urban concerns were often financial. The Alberta *MGA* (1994) allows municipalities to raise operating funds only through land and business taxes and limited borrowing privileges. Urban growth in the developing province led to more complex administrative systems, higher expenditures and regional conflicts (Masson, 1992). Through the mid 20th century, the rise in expenses exceeded urban population growth and, thus income from property taxes. Rural areas, in contrast, suffered from declining populations (drawn to industry jobs near cities) and a reduced tax base. Metropolitan areas suffered most, because urban servicing supported both rural and urban residents. Provincial financial support became essential to most municipal budgets, which allowed the province to maintain control over urban and rural municipalities, at least until the 1980s recession (Masson, 1992).

Despite the urban concentration of the provincial population through the 1970s and 1980s, the rural areas still held a majority of provincial seats, and thus, rural areas also held considerable political power (Masson, 1992). In 1985, there were 50 rural municipalities in the province (and 64 in 2010, LeSage & McMillan, 2010), in contrast to 16 cities (Alberta Municipal Affairs, 2011). Some provincial governments, particularly the Lougheed Conservatives (1971-1986), recognized the potential for urbanization to deprive rural constituencies of economic opportunity (Masson, 1992). To better encourage growth across the province, the government created various controls to constrain urban growth, which were maintained through much of the later part of the 20th century. The aggressive response by some urban governments to those controls (e.g., the City of Edmonton) added to regional tensions between urban and rural metropolitan neighbors (Masson, 1992), an influence on inter-municipal cooperation that continues today (see urban–rural tensions subsection).

Prior to the 1980s recession, the province was able to satisfy, for the most part, the financial needs of the municipalities[17], and the municipalities generally accepted the associated limits on their political power (Masson, 1992). When funding was reduced due to financial constraints of the recession, relationships became strained, but did not break. In part, this was

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[17] Federal grants to municipalities were generally small and variable (LeSage, & McMillan, 2010). Between 1988 and 2007, they contributed only $6.42 and $21.76 to total per capita municipal revenues of $1,311 and $2,376 respectively.

due to relaxation on conditions tied to funding through the 1980s and increased autonomy on spending within the municipality (Masson, 1994; LeSage & McMillan, 2005). Avoidance of extreme cuts in provincial funding (provincial grants were reduced by only 4% in 1988, Masson, 1994), likely also helped minimize funding impact to municipalities.

Progressive diversion of all provincial resource revenues to general revenues, rather than savings, and gradual recovery of oil prices held off budget deficits and deep funding cuts until 1986 (Kneebone, 2005). The collapse of oil prices in 1986 and a drop in resource revenues to 38% of the previous year's value led to a deficit budget for 1987 and nine subsequent years, creating substantial provincial debt (Kneebone, 2005). The election of Klein's Progressive Conservatives in 1993 on a promise of 20% reduction in spending permanently changed the provincial approach to budgeting and the relationship with municipalities. Zero deficit budgets, debt reduction and other spending and budgeting controls became of the new legislated standards (Kneebone, 2005) and municipal funding never returned to pre-recession levels (LeSage & McMillan, 2010). By 2000, municipalities were "freer, but, unevenly, poorer" (LeSage & McMillan, 2010, p. 3). This was particularly true of rural municipalities. In 2004-2005, a total of 18 of 64 Alberta's rural municipalities (28%) qualified for a one-time unconditional financial support programme, yet others had considerable wealth (LeSage & McMillan, 2010). For example, among the BHI municipalities, Strathcona County's general revenue in 2005 was $87,473,329, compared to $21,147,658 in Leduc, $9,440,709 in Camrose, $7,211,111 in Beaver, and $6,682,292 in Lamont counties (Alberta Municipal Affairs, 2012).

With increasing responsibility due to the Klein Government's reduction of quasi-governmental responsibilities in the 1990s and new expectations to address sustainability (economic, social and environmental) imposed by higher governments and the public, the urban municipalities began to question the future of local governance (AUMA, 2009). Rural and urban municipalities had been able to sustain their programs, reduce their own debt and address some infrastructure concerns by increasing property taxes (LeSage & McMillan, 2010), but this measure had an obvious, political limit. In 2001, the Minister's Provincial/Municipal Council on Roles and Responsibilities initiated the first of two discussions between the province and the municipalities regarding the '3Rs' (roles, responsibility and resource issues, LeSage & McMillan, 2010). Although the council acknowledged an infrastructure deficit in municipalities, which led to increased funding, the only other outcome was further dialogue through the Minister's Council on Municipal Sustainability.

About this time, Alberta Municipal Affairs began to promote cooperative municipal partnerships. Structurally, these partnerships had vague definition – the *MGA* (1994) had created a new regional organization for municipalities, the Municipal Services Commissions (with a broad definition of services). Municipal Affairs encouraged formation of inter-municipal subdivision and appeal boards (LeSage & McMillan, 2010), but otherwise provided no formal guidance on regional partnering. As a result, most regional initiatives formed under other more specific legislation (e.g., regional airport authorities, health authorities, school authorities, irrigation districts, LeSage & McMillan, 2010). Yet Municipal Affairs was providing funding and moral support for new partnering initiatives, including a $75,000 grant to the BHI in 2004 that facilitated development of the Land Management Principles and additional, later funding. Municipal Affairs also awarded the BHI a Minister's Award of Excellence in the Partnership Category in 2005, citing its achievements in municipal partnership: "This project offers a model for others seeking to achieve similar goals on regional, national and international stages" (Beaver Hills Initiative, 2009b). Municipal Affairs continues to support the initiative; two counties received funds from the Municipal Sustainability Initiative for their BHI membership dues in 2008 and one in 2009 (Alberta Municipal Affairs, 2010a; 2010b).

Premier Ed Stelmach inherited the new Council on Municipal Sustainability and accepted some of its recommendations in 2007, including changes to land use planning (LeSage & McMillan, 2010). A recommendation to create a new regional planning agency in the Edmonton metropolitan area addressed the conflict arising from the province's stance on regional planning after 1994 (see urban-rural tension subsection below). The province also accepted the recommendation for more provincial funding to address the infrastructure deficit. The Municipal Sustainability Initiative committed to $11 billion of funding over 10 years. Other concerns remained, however, including the cumulative effects of a slowing economy, an increasingly urban society, fiscal distress, downloading of responsibilities, and a resulting "new face for governance/leadership" (AUMA, 2009, p. 1).

Despite on-going concerns, the strong financial dependence between municipalities and the province has limited organized protest. Unlike other provinces, calls for reform have been largely absent on the provincial political agenda (LeSage and McMillan, 2010) or perhaps more accurately, ignored by the province. For example, the Alberta Urban Municipalities Association opened their analysis of the Municipal Sustainability Initiative with enthusiastic praise for the "unprecedented $400 million in new investment" in the program's first year (AUMA, 2007,

p. 1), before offering suggestions for improvement including additional funding. Those same concerns remained in a subsequent analysis of local governance (AUMA, 2009). Municipalities instead turned to other revenue streams to compensate for deficient provincial transfers. Self-generated revenues grew by 26% between 2004 and 2007, after a period of steady growth beginning in 1988 (LeSage & McMillan, 2010). Most of this growth came from land taxes (rising 7% between 1988 and 2004), the only means of revenue under direct municipal control.

Concerns about sustainability, of communities, economies and environment, had somewhat overshadowed the past concerns about local autonomy by the 21st century (but did not entirely displace them, as discussed below). From 1990 to 2009, 55 communities considered dissolution across the province (AUMA, 2009). In the moraine, the Village of New Sarepta was dissolved and amalgamated into Leduc County as a hamlet in 2010. Two other villages in Camrose County were considering similar action in 2013. At the time the BHI was forming, sustainability was on the radar of many of the moraine's municipalities and concern for the future of their communities, and their quality of life, was mounting. The province had not made any substantial changes to municipal governance since 1994, and as the outcomes of the two municipal sustainability councils demonstrated, they were interested more in economic efficiencies than in significant structural reform. Instead, evolution of municipal institutions was happening outside of the traditional avenues (LeSage & McMillan, 2010), through experimentation with regional partnerships by groups like the BHI, supported at least nominally by the provincial government.

Aversion to regionalism.

Experimentation by municipalities with regional partnerships was a tentative exercise in the early 2000s, due to the distrust of government intervention instilled by ruling provincial parties (Barrie, 2006) and past negative experience. Regional government has been compared to a provincial sales tax in terms of its political palatability in Alberta (LeSage & McMillan, 2008). Although regional cooperation is accepted in certain circumstances, past experiences with regional governance, including that in the Edmonton Capital Region (described in the next subsection), have left negative impressions. Regional planning commissions had been used in the province since the early 1900s, but mainly as advisors to local governments, to ensure consistency with provincial policy (Masson, 1994). The regional planning commissions established as part of the 1977 revision to the *Planning Act* perhaps explain best the current distaste for regionalism in Alberta.

The Act established the Alberta Planning Board to oversee ten regional commissions, whose primary responsibility was to develop regional plans to which all municipalities would adhere (Masson, 1994). They also served as the subdivision approval authority for member municipalities. The Alberta Planning Board ratified all regional plans, ensuring conformance with provincial policy. It also ratified all amendments and served as the appeal board for subdivision decisions. Initially formed of senior bureaucrats representing departments with land use planning interests, the province shifted to appoint Board members representing local and often political concerns. Ultimately, the Act gave the province more direct control over regional and municipal planning and operationally, created significant delays in the local planning process. For example, in 1984, the board overturned 11 of 20 subdivision decisions made by the Calgary Regional Planning Commission (Masson, 1994).

Political posturing and tension occurred in most regional planning commissions, but those containing an urban centre had more conflict (Masson, 1994). Equitability in tax revenue, struggles to secure industrial development and its higher tax revenues, and conflict between rural and urban values were common issues. Representation was another key issue. Larger urban centres wanted representation based on population, while smaller centres understandably thought it should be based on government units (one vote per government in the region). Rural municipalities were particularly critical of the regional planning commissions because of the transition from an advisory to approving board with significant "teeth" (LeSage & McMillan, 2008, p. 12). Masson (1994, p. 422) repeats a comment of several rural municipalities describing the commissions as "dictatorial", a reference to their ability to force municipalities to conform to planning schemes. Citizens were also unhappy with the centralized decision-making process and wanted subdivision approval authority restored to local governments.

The *Planning Act* (1977) was amended several times, particularly after the 1980s recession, when larger urban municipalities began to expand again (Masson, 1994) and the province began to reduce its quasi-governmental agencies (LeSage & McMillan, 2010). By 1991, the province had transferred some local planning control to municipalities, including more latitude on determining use of municipal Environmental Reserves[18] (subject to the approval of

[18] Lands with environmental sensitivities that would limit development are turned over to the municipality as environmental reserve by a developer during the subdivision process. This process is legislated under the Subdivision regulations of the current *MGA* and equivalent tools in the *Planning Act* (1977).

the Alberta Planning Board). The significant revision of the *MGA* (1994) consolidated legislation for management of municipalities, including the *Planning Act* (Alberta Municipal Affairs, 2011). Changes to the *MGA* in 1994 and 1995 ended the regional planning commissions, and by 1995 land use planning was again in local hands (LeSage & McMillan, 2008). The provincial stance shifted to encourage voluntary regional efforts, initiated by local government to meet local needs, rather than top-down direction (LeSage & McMillan, 2010).

The revisions provided the municipalities with more local autonomy: Regional Service Commissions were the sole regional provision in the Act, but with a new definition of services extending beyond the previous focus on 'hard services' of municipal infrastructure (AUMA, 2009; LeSage & McMillan, 2010). Despite a recognition of their potential to contribute to sustainability of local governance (AUMA, 2009), relatively few examples have been attempted since 1995 (LeSage & McMillan, 2008). The Oldman River Regional Services Commission is an exception notable for its early establishment, inclusive scope and longevity. Evolving from a Regional Planning Commission to a Regional Service Commission in 1996, it now provides regional planning support to over 40 municipalities in southern Alberta (Oldman River Regional Services Commission, n.d.). An absence of the enforcement capacity that had created past resentment of regionalism contributed to its persistence (LeSage & McMillan, 2010). It provided one of the few positive examples of regional governance in the province in the early 2000s.

Urban –rural tensions in the Edmonton Capital Region.

The Edmonton Capital Region, which includes Strathcona, Leduc and Lamont counties, has a long history of urban-rural conflict based on provincial management of urban growth and funding of regional services. Provincial intervention to manage regional concerns in the Capital Region over the past four decades only added to the conflict and concerns about regionalism, in the Capital Region and the adjacent rural municipalities. One event in particular renewed fears of regionalism among the BHI municipalities: creation of the Capital Region Board by the province in 2008. This change coincided with the implementation stage of the BHI's Land Management Framework project in 2007, although rumors of development of a new provincial Land Use Framework had earlier raised municipal concerns. As a result, the critical phase of voluntary adoption of sustainable land use practices coincided with realization of the municipalities' worst fear, the return of provincial control over development. The financial inequity between urban and rural municipalities, and the province's past attempts to manage it

were central to this conflict and provide the context necessary to understand the feelings about urban–rural cooperation among the BHI's municipal partners.

The Edmonton Capital Region comprises 25 urban and rural municipalities and includes Alberta's Industrial Heartland, a key driver of the regional economy and its recent rapid growth. Concerns relate mainly to a problem of economic rent – disparity caused by access of the rural municipalities adjacent the City of Edmonton to exclusive benefit from the lucrative industrial tax base within their jurisdictions and Edmonton's community infrastructure (e.g., recreational facilities). The lack of equitable division of taxation benefits and regional servicing costs created a long-standing conflict between Edmonton, the province and its adjacent rural municipalities.

Masson (1992) provides an excellent review of the historical development of the regional servicing conflict and its effect on the urban-rural relationships in the Capital region (Masson, 1992). The dispute centers on debate over the most efficient means of providing regional services. In the absence of a regional coordinating agency, costs to sustain municipal services used by in residents in a metropolitan area are not shared equally among the rural and urban municipalities. Each municipality retains its own tax revenue (provincial concession to local autonomy) and at least historically, they have resisted calls to share those revenues to support the urban services used by all.

Interest in regional annexation as a solution arose from reports commissioned by the Socred Government and the City of Edmonton in the 1950s (Masson, 1992). Both the provincial McNally Commission and the Edmonton study recommended amalgamation of the municipalities adjacent Edmonton into a single metropolitan area, governed by a regional authority. The Socreds ignored the findings of the Commission, believing funding distribution efficiencies to be the issue, but Edmonton doggedly pursued regional annexation as a solution, based on these recommendations, until the recession of the 1980s stalled urban growth. Their persistent efforts eventually led to a deep animosity with neighboring communities. For example, a 1979 proposal to annex the City of St. Albert, Strathcona County and significant parts of the County of Parkland and Municipal District of Sturgeon caused outrage from those communities and a split in cabinet between the respective MLAs (Masson, 1992). The provincial – urban municipal relationship was further strained by new policies designed to impose direct limitation on urban expansion during the Lougheed years (1971- 1986), which coincided with a consolidation of control by cabinet over annexation approvals (Masson, 1992).

The unresolved problem of regional servicing costs underlies the rural - urban conflict in the Capital Region and a deep-seated resentment of regionalism.

Regional servicing conflict flared again in the Capital Region in the 2000s, fuelled in part by the province's austerity budgets and its disengaged attitude toward municipalities (LeSage & McMillan, 2010). In 2006 Edmonton withdrew from the Alberta Capital Region Alliance (formed in the 1980s to address regional concerns) over renewed disputes about inequitable regional servicing costs (Edmonton Journal, 2007; LeSage & McMillan, 2010). The City filed a complaint with the Municipal Government Board (Municipal Government Board, 2007) and lobbied the province to establish regional cooperative management (Edmonton Journal, 2007; LeSage & McMillan, 2008). Their request coincided with release of the recommendations for a regional planning agency to address the conflicts in the Capital Region from the Minister's Council on Municipal Sustainability in 2007 (LeSage & McMillan, 2010) and the subsequent Radke Report (2007).

The province created the Capital Region Board through the *Capital Region Board Regulation* (AR 49/2008) of the *MGA* in March 2008 (LeSage & McMillan, 2010). Facing an economic boom estimated to include about $46 billion in planned, newly completed or current construction projects in the region, the Stelmach Government recognized the urgency for regional coordination (Edmonton Journal, 2007). The press release from the province firmly asserted the government's intent to move forward to a comprehensive regional plan: "Premier moves decisively to provide Capital region with new planning tools", yet tempered the directive approach by noting "There's only one boss – Capital region residents – and they expect governments to preserve the quality of life they've worked so hard to attain" (Government of Alberta, 2007). Not only was this regionalism, it was top-down regionalism, akin to the much hated regional planning commissions.

The Board, formed with an interim chair appointed by the province and the mayors or reeves of each municipality, was formerly announced in March 2008 (Government of Alberta, 2008). Its immediate mandate was to produce an integrated regional management plan addressing urban growth issues (Capital Region Board Regulation, Section 11), within one year (by March 31, 2009). Decision-making, including approval of the component plans, was to be by consensus or by formal vote with support of at least 17 participating municipalities representing 75% of the regional population (Capital Region Board, 2011).

Many municipalities were suspicious of the comprehensive plan and potential for diminished local control over development. The initial establishment of the Board, selection of its chair, and requirement for final approval of the resulting plans by the province, plus the imposition of the comprehensive plan over future statutory municipal plans renewed fears of top-down regional controls on land use and development by the province. This fear was fueled further by the requirement for Board approval of each municipality's statutory plans. A proposed grandfathering clause to carry forward any statutory plans created before the Comprehensive Plan was complete stimulated a rush to update MDPs and Land Use By-laws within the region. Adoption of the BHI's Land Management Framework practices and principles into statutory policies by Strathcona, Beaver and Lamont County occurred during this period.

The land use plan was accepted in draft form by the Minister on April 2, 2009 (Capital Region Board, 2009) and the Board informed its member municipalities of its intent to approve finalized components of the land use plan on August 26th, 2009 (Pope, 2009). Leduc County Council expressed its concerns publicly, including the potential for the land use plan to restrict its ability to be independently competitive with rural municipalities outside the Capital Region in attracting new development. Examples of concerns expressed by administration and council were quoted in newspaper coverage of the day:

> "At the end of the day, every bylaw and related action around subdivisions and development will have to be consistent with the regional plan." (Phil Newman, Director of Planning and Development quoted by Pope, 2009).
>
> "I just have some real concerns if we approve this without knowing where the end point is going to be." (Councilor John Whaley quoted by Pope, 2009).
>
> "Is the province looking at tying everyone's hands in a similar way?" (Councilor Vern Siemens quoted by Pope, 2009).

Although the Capital Region Board was established at a later stage of the BHI's development, rural - urban conflict and fear of provincially imposed solution of regionalism was a dominant theme throughout its early years. The Land Use Framework, the province's proposed

comprehensive land management strategy (through regional plans) was rumored to be in development throughout the early 2000s[19].

Concerns about municipal sustainability (mainly focused on economic health) have vied with the struggle for local autonomy as persistent themes in Alberta's municipal politics. These fears and tensions set a context for the dialogue regarding regional partnership within the BHI and subsequent relationships among the municipal partners in particular. Leduc, for example, has often been a reluctant member of the BHI, expressing concerns similar to its reaction to the Capital Regional Plan (potential limitations to economic growth posed by BHI land management principles). Faced with over a century of challenge to their economic, social and environmental sustainability, rural municipalities have become sensitized to plays for regional control by their larger urban neighbors, as well as the province. With the rise in power of urban areas in the provincial arena, rural governments became highly suspicious of new policies that could limit their economic opportunities. Special municipalities such as Strathcona County that have the economic and political power to challenge larger urban centers like Edmonton have a unique mix of rural values and urban power. In acknowledging the changing landscape of settlement and industry in the province by creating the new Specialized Municipality classification, the province has also unknowingly introduced a new dynamic in inter-municipal relationships. Strathcona stands out from its rural neighbors with its larger, deeper administration and higher revenues. It can defend its interests against the larger urban governments, and demonstrated that in the unsuccessful challenge to its updated MDP in 2007 by the City of Edmonton (Municipal Government Board, 2007). The Specialized Municipality had become a new and powerful interest in inter-municipal relations, somewhere between the rural and urban positions, and perhaps, provided another example of the future of regional governance. In the case of Strathcona, an acknowledged leader in environmental management (Greenway, 2003), it also highlighted a potential approach to sustainable development for municipalities.

Municipal powers and environmental management.

As mentioned previously, although gaps exist within federal and provincial environmental legislation, municipalities have been unsure of their authority to create policy to address local environmental concerns. The *MGA* (1994) provides only general guidance

[19] The *Alberta Land Stewardship Act*, proclaimed in 2009, outlined its legislative process, but not specific direction and did little to assuage fears of direct provincial control over municipal development.

regarding environmental authority. More accurately, as with partnerships, it provides little specific guidance to municipalities. Overall, the Act allows the municipality to address any issue that may affect the communities it oversees. The breadth of jurisdiction this wording implies has been supported by the Supreme Court, which ruled that legality of a bylaw depends on the municipality's permissible objectives, as established by the province (Mallet, 2005). In the case of the *MGA* (1994), the purposes of the municipality are to provide good government; to provide services, facilities and other things that are necessary or desirable for all or part of the municipality; and to develop and maintain safe and viable communities (Part 1, Division 1, Section 3).

The *MGA* (1994) further specifies the aspects of community management that can be addressed in bylaws (statutory documents), which include controls over public places, nuisances and industrial and other development (Sections 7(a) to 7(i) and Sections 8(c(iii)) and 8(c(iv))). Guidance to define a safe and viable community is limited: Section 9 leaves this interpretation open for each municipal council. Section 12 limits geographic scope for bylaws to the municipal boundaries and clarifies municipal powers relative to provincial and federal laws (subordinate to both). In terms of land use then, municipalities are unable to establish bylaws for provincially or federally held lands or provincially managed resources (e.g., oil and gas) but have considerable leeway to incorporate sustainability, in terms of economic, social and environmental criteria, into land use planning and land management.

In most municipalities, this has resulted in a set of statutory bylaws that define the patterns of future growth of their communities (Municipal Development Plan, MDP) and the system by which such growth will be permitted (Land Use Bylaw, LUB and Area Structure Plans, ASPs). Yet few municipalities have explored options beyond the traditional (and often provincially legislated) areas of environmental services (storm, waste and drinking water services, solid waste) and concerns (e.g., weed control), or the traditional definition of environmental reserve[20]. Only two of the BHI municipalities (Strathcona and Leduc) had policies beyond regarding development around designated Environmentally Significant Areas at the start of the Land Management Framework project in 2005 (Spencer Environmental Management Services Ltd., 2006). Environmental bylaws remain limited in many municipalities

[20] Lands with environmental or engineering constraints for development, such as locations on the 1:100 year floodplain, near steep slopes or unstable lands, or within wetlands or other waterbodies.

today, although the *MGA* (1994) and the *Land Stewardship Act* (2009) offer a variety of tools and means (e.g., conservation easements, land trusts) to incorporate sustainability objectives into land use planning and development.

Mallet (2005) suggests that the land use planning process is a chief cause. The process is political. Strong direction from council can push development and land management toward a specific target, including sustainable growth. In the absence of such vision, most planning departments are unlikely to move beyond the status quo. The utilitarian approach to planning is a strong tradition in Alberta, established in early versions of the provincial *Planning Act* (Masson, 1994), and further reinforced by the limitations on municipal financing. Because municipalities can generate revenues only through taxation or limited borrowing, the *MGA* indirectly incented new development as a means of municipal revenue generation, particularly when provincial funding was reduced. Although industrial land provides higher tax revenue, residential growth also expands the tax base. In rural and suburban areas, where industrial growth opportunities may be limited, residential growth may be critical to the fiscal health of the municipality.

Provincial grants can temper the urge to grow for revenue generation, and governments that were attentive to the needs of rural municipalities helped mitigate financial concerns (e.g., the Lougheed government; Masson, 1992). Cuts during the Klein years, and the zero deficit paradigm under subsequent governments presented a challenge for urban and rural municipal budgets. Alberta municipalities generally responded by focusing on growing their own revenues, in part through raising property taxes (LeSage & McMillan, 2010). Growth was an obvious alternative for urban areas, and far more palatable than increasing property taxes. The City of Edmonton promoted urban development in mayoral campaigns and municipal planning over the past two decades; the costs and benefits of urban sprawl were substantively debated only during the updating of its 2010 Municipal Development Plan.

Annexation and growth options were influenced by land use plans in the adjacent municipalities as well as the province. Strathcona County, with its municipal focus on sustainability, struggled with ‘smart growth’ in the revision of its MDP in 2007. It finally did allow for urban expansion, but only within areas that could be readily serviced (i.e., areas near Sherwood Park and immediately adjacent lands Edmonton had eyed for annexation). Impact on urban revenue generation through growth may have been an underlying cause of the tension between Edmonton and Strathcona County within the Capital Region.

Limiting growth had political ramifications within the municipality as well. Strathcona's updated MDP (2007) expanded the former Lakeland Policy Area to include more of the moraine and imposed new limits on subdivision within the new Beaver Hills Policy Area. This change was not without public challenge and the County was called to justify the changes over a long period of public consultation (2004-2007). The change had a potential economic impact for agricultural landowners now denied access to the development speculation market. The work of the BHI featured prominently in this discussion, and in fact the County commissioned an expanded, county-wide version of the BHI's Land Management Framework analysis (mapping of significant environmental areas and groundwater contamination risk) to support its proposed changes to Policy Areas. The municipal costs of development and urban sprawl (e.g., road maintenance, emergency and police servicing, recreational services), which often outweigh residential tax revenue, were another, important justification in this debate.

So it is possible for municipalities to bring sustainability into land use planning. Indeed, some of the recent regional plans developed for the provincial Land Use Framework have attempted to achieve this balance. It is, however, a challenging, political process, where sustainability is often framed as a zero sum game. Environmental benefits can only come at the expense of broader social and economic gains from growth and the personal financial opportunities of land development, the 'property-rights' argument (Atkins, 2009). As one municipal land use planner phrased it during a BHI workshop for the Land Management Framework, environment was a dirty word in some municipalities. Yet, as discussed further in the next chapter, the economic benefits and impacts of sustainable development are often only perceptions. Land values driven up by speculation within the urban growth zone were alluring to some agricultural landowners in the moraine, and some have come to believe they have a nestegg of similar value. But neither the *MGA* (1994) nor the market guarantees the hoped-for access to profit. Municipal politicians sometimes promote development as a means to increase revenues, without considering the costs that development entails. Perceptions are easily manipulated for political gain, and fears of lost economic opportunity are a reliable means to generate increased votes. The planning process is indeed subject to political influence and particularly regarding environment and land development. Small wonder that sustainable development policy has been pursued by a limited few municipalities. The difference in the case of the BHI was in the timing of a dramatic shift in the park management paradigm for federal and provincial parks.

Parks Management – Ecological Integrity across Landscapes

Through the 2000s, the federal and provincial parks were facing their own issues regarding sustainability. Canada was among the first to sign the *Convention on Biological Diversity* (1992) and the *International Biodiversity Treaty* (1993), the international response to the Brundtland Commission's (1987) concerns about global biodiversity (Supply and Services Canada, 1995). These treaties shifted attention from species-specific management approaches to a broader ecosystem level, recognizing that habitat conservation would best protect biodiversity and public access to its benefits. This forced park managers to consider conservation at a landscape level, a dramatic shift in management focus.

To meet its treaty requirements, Canada's protected areas network required expansion at the national and provincial level, which in Alberta put the provincial parks agency in direct conflict with industrial interests driving the provincial economy. The new mandate to maintain the ecological integrity of those protected landscapes required consideration of the effects of the land use beyond park borders and alternative, integrative management strategies. Managing 'parks as islands' increasingly isolated from each other would not sustain biodiversity at a national scale. New interdisciplinary approaches that considered both ecology and social science offered conceptual management models for landscape level conservation, but few tested approaches. Park managers grappled with both a new mandate and new science. Adopting an ecological integrity mandate demanded innovative techniques, a challenge in the climate of deficit reduction in the late 1990s and early 2000s. Partnerships with organizations outside park boundaries offered the means to address landscape level impacts through pooled resources, an opening that led to formation of the BHI. The sections below summarize these changes in the park management paradigm, their influence on the relationships of federal and provincial park agencies with other organizations in the moraine and their critical role in the formation of the BHI.

Expansion of the protective network.

To meet its biodiversity treaty obligations, Canada developed National Biodiversity Strategies and Action Plans that divided responsibilities between the federal and provincial governments. Canada's strategy, officially released in 1995, was developed in cooperation with the provincial and territorial governments (Supply and Services Canada, 1995). First, the strategy sought to coordinate the existing conservation initiatives of federal and provincial governments, NGOs, industry and public through an ecological management approach.

Federally, Parks Canada committed to two actions, (1) expanding its park network to protect the informal target (12% of the land base) set as an international standard and (2) maintaining or improving the ecological integrity of existing parks (Minister of Canadian Heritage, 2000; Dearden, 2010). Most federal expansion occurred outside of Alberta, since five National Parks (Banff, Jasper, Waterton, Wood Buffalo and Elk Island) already protected large areas of ecosystems representative of the province. Instead Parks Canada focussed on ecological integrity initiatives within these parks, as described in the next section.

The province, however, was tasked mainly with network expansion 2000. The Special Places 2000 campaign was to identify new candidate parks across the province (Alberta Tourism, Parks and Recreation, 2012). Expansion was politically charged, given a natural resource economy only just recovering from the 1980s recession. During this process, Alberta Parks came into direct conflict with a key economic power in the province, the energy development sector. The ensuing conflict with the provincial energy ministry confirmed provincial priorities, diminished the influence of Alberta Parks over provincial land management issues and altered the approach of ENGOs to conservation issues in the province.

In 1995, Alberta announced Special Places 2000, a program to expand the network of protected areas representative of provincial biodiversity by the year 2000 (Alberta Tourism, Parks and Recreation, 2012). The province designated 29 new protected areas in 1995 and Albertans could nominate other Crown lands as part of the program. A multi-stakeholder committee (the Provincial Coordinating Committee) was appointed by the province to recommend candidate sites from over 400 nominations received from the public. The province retained authority to approve all sites (Hryciuk & Struzik, 1999). At the conclusion of the program in 2001, 81 new sites and 13 expansions to existing protected areas were added to Alberta's protected areas network to protect a total 12.5% of the province (Canadian Parks and Wilderness Association, 2008). Overall, expansion had increased the provincial protected areas network by 700% in just six years (Canadian Parks and Wilderness Association, 2008).

Despite significant gains in conserved lands, Special Places 2000 was viewed as a failure by the environmental community, due an accompanying relaxation on land use in provincial protected areas (Francis, n.d.). The concessions were granted in response to concerns from industry about loss of development opportunities (Francis, n.d.; MacDonald, 1999), despite public concern, through the exercise of coercive power. It was this process that reinforced the

primacy of resource development on the provincial agenda, and checked the influence of both Alberta Parks and ENGOs participating in the program.

Bill 15, the *Natural Heritage Act,* the initial bill proposed to implement new land use and park classifications related to the Special Area 2000 program, included land uses contrary to protection goals and maintained existing dispositions for industrial use (MacDonald, 1999). Considerable public and ENGO opposition to the bill caused it to be rescinded (Alberta Wilderness Association, 2000a), and a new version in March 2000 phased out industrial development from most parks and prohibited new development (Struzik, 2000). The policy change was negotiated by an environmental consultant hired to "help resolve an impasse between [Environment Minister] Mar's department and Energy Minister Steve West" (Struzik, 2000, para.5). This intervention hinted at the power interests that had influenced development of new legislation initially, but at least publicly, industry supported better protection rules. The Canadian Association of Petroleum Producers supported the change, which they had been promoting since 1994 to avoid a project-by-project review of proposed developments (Struzik, 2000). The truce was short-lived however and the revised bill was quietly shelved again, when the supposedly resolved dispute between the two Minsters resumed in April 2000 (Alberta Wilderness Association, 2000b).

The policy struggle over resource development within protected areas continued through the summer of 2000. Environmental NGOs attempted to stoke the fire, releasing a leaked memo from the provincial Resource Development department confirming that the province had offered new oil and gas leases inside two established protected areas in May 2000 (Alberta Wilderness Association, 2000c). Other similar reports about new resource dispositions in or near parks kept the issue in the news until the fall of 2000 but regardless, the *Parks Act* was finally proclaimed in 2000, with the *Wilderness Areas, Ecological Reserves, Natural Areas and Heritage Rangelands Act*. The latter Act had largely reverted to its original form. Although it did finally create separate protected areas classifications, it also allowed for industrial dispositions (including timber, minerals and petroleum), under certain conditions. Industrial dispositions were truly prohibited only in wilderness areas. The Minster for Parks could terminate industrial dispositions in other areas only "as far as practicable" (Sec 6(1)). In ecological reserves, the next most strictly protected park category, the Energy Minister was not obligated to terminate petroleum interests and in fact, could actually approve new dispositions in ecological reserves.

Under the new *Act*, dispositions could also be granted, renewed or amended in existing provincial parks, while existing leases would be phased out of new parks.

Although the province had conceded on some points, for example phasing out existing leases within provincial parks, they were clearly not going to concede potential resource development in all protected areas. As in its constitutional battles with Ottawa, the province defended control of its economic health and access to markets, but this time against its own citizens. Environmental NGOs, so vocal through early 2000, were strangely silent on passage of these new pieces of legislation. In fact, the NGO protected areas campaign had switched focus by 2008, lobbying for funding needed by provincial parks and for ecological integrity, now adopted into the provincial protected areas management mandate (e.g., Canadian Parks and Wilderness Association, 2008). Boyd (2003) suggested such contradictions about environmental concerns arise due to Canada's economic reliance on resource consumption. Although Canadians generally support environmental protection, they are generally unwilling to sacrifice their local economy for those goals. Atkins (2009) agrees regarding economic dependence but suggests the cause is neo-liberal governments that have institutionalized the primacy of private ownership and economic development over social concerns and blocked public involvement in environmental decision-making. The province has been a strong proponent for the energy industry, actively opposing potential threats such as the Kyoto Protocol (Davidson & Gismondi, 2011). The tactical shift by ENGOs and lack of further resistance by the Parks Ministry to the inclusion of industrial extraction rights in the new legislation suggests coercion from either a political or industrial interest group (an issue beyond the scope of this study). Regardless, the debate about industrial development in provincial protected areas was over by the early 2000s and both Alberta Parks and ENGOs had apparently moved on to safer ground.

Although open debate about the issue might have quieted, the visceral, public confrontations between ENGOs and the provincial government over the protected areas management had other outcomes important to the BHI. First, the debate likely contributed to a local perception of parks as a choice between environmental protection and economic benefit. For example, a fractious proposal from EINP to the municipalities to establish a buffer of less intense land use around the park in the 1990s still equated landscape management with a challenge to municipal autonomy for some municipal councillors and caused initial resistance to the BHI's landscape level management approach (see barriers discussion in next chapter). More importantly, such past conflict posed a potential barrier to full cooperation between some

governments and ENGO partners in the BHI, particularly where economic interests might be perceived to be affected. Some of the BHI's ENGO partners were quite sensitive to perceptions about their organizations and strategically adjusted their approach to participation (see social capital chapter). Further, the potential power relationship about economic development may help explain the gradual drift of the representatives from Alberta's Industrial Heartland, initial partners in the BHI, into their current, inactive role (see social capital chapter).

Lastly, the Special Areas experience firmly established a dual mandate of protection and resource development within Alberta's protected areas, placing Alberta Parks in a particularly difficult position regarding conservation initiatives that involved industrial interests. Internally, this experience created some barriers to institutional change and adoption of new conservation practice within the agency that contributed to a transformative outcome for some of the BHI participants (see social capital chapter). Externally, it limited the role that Alberta Parks could play as an active proponent for landscape level management in the moraine, a role instead taken up by Parks Canada, because of its new ecological integrity mandate.

Ecological integrity and the end of parks as islands.

Ecological integrity first appeared in national park legislation in 1988, as a mandate to consider, as a first priority, means to maintain or restore ecological integrity in park zoning and visitor management activities (Fluker, 2010). This initiated two key changes in national parks management, a shift from (1) preservation of natural landscapes for human use to preservation for intrinsic value and (2) a park to a landscape management scale. From the perspective of the BHI, it created a policy window for EINP to initiate discussions about regional land management with neighbouring land management agencies.

To fulfill requirements of the *Convention on Biodiversity* (1992), Parks Canada began to report on its progress regarding biodiversity management. It filed its first State of the Parks Report, a legislative requirement under the 1988 amendment of the *National Parks Act*, in 1994 (Parks Canada, 2010). In 1996, the Auditor General's report highlighted the outdated approach to ecosystem management reflected in national park management and monitoring plans and its overall poor performance in managing and reporting on ecological integrity (Dearden, 2010). The general message conveyed by the Auditor General's report, and the Banff-Bow Valley Panel's assessment of the impacts of increased commercial development within Banff National Park (released earlier in 1996), were of "parks in peril" (Dearden, 2010, p. 336). Although a follow-up audit by the Auditor General found some improvements, the stressors on ecological

integrity remained (Dearden, 2010). The report recommended a sweeping range of improvements, including more active management programs, regional integration, public participation and environmental education programs, and creation of partnerships with organizations involved in land management inside and outside parks. It was this top-down directive that set in place a chain of events leading EINP, a small federal park surrounded by a lived-in landscape, to begin discussions with adjacent municipalities regarding potential for cooperative landscape management in the moraine.

In 1998, the then Minister of Cultural Heritage commissioned the Ecological Integrity Panel to address the ecological decline in parks (Parks Canada, 2010). The panel recommended reinforced commitment to ecological integrity, with a clear statement that it be the *main* priority for parks management. The federal government responded by strengthening the *Parks Act* (2000, Sec 2(1)), with the following definition:

> "ecological integrity" means, with respect to a park, a condition that is determined to be characteristic of its natural region and likely to persist, including abiotic components and the composition and abundance of native species and biological communities, rates of change and supporting processes."

The Act (Sec 8) further clarified that the Minster, and the Parks Canada Agency, was responsible for administration of parks lands, and that ecological integrity should be the first priority in exercising those management responsibilities.

The Panel's report also highlighted the lack of an internal 'conservation culture' in Parks Canada, and a need to incorporate science and traditional knowledge in its decision-making (Dearden, 2010). It recommended implementation of 'adaptive active management', which emphasized use of planning to set management goals and monitoring to assess progress toward those goals, as well as developing the science capacity of the department. Lastly, it identified the need for increased cooperation across park boundaries to manage the external impacts affecting ecological integrity. Development of new partnerships was again emphasized, with public and private organizations and other jurisdictional interests. Parks Canada was challenged to incorporate new science and establish new relationships with agencies beyond its boundaries, a change that required extensive development of organizational capacity.

Through the 1990s other events slowly defined how parks and other federal departments might manage ecological integrity through cooperative partnerships. A co-management

agreement between the Haida Nation and the federal government (the Gwaii Haanas Agreement) set a new precedent for parks management (Parks Canada 2010). In 1996, the Banff-Bow Valley Report, followed by the 1998 moratorium on commercial development outside park communities in National Parks set a new standard for ecological management relative to commercial interests. The 2000 federal budget created a capital gains exemption for donation of ecologically sensitive lands and conservation easements (the Ecological Gift Program that sparked a partnership between DUC, NCC and Environment Canada in the moraine). Organizationally, Parks Canada was redefining the nature of its relationships with potential management partners and economic interests within parks. Such partnerships with groups beyond park boundaries would help manage the impacts over which Parks Canada had no control, the effects of changing land use and land management adjacent parks.

Internal capacity development and partnership also required financial resources. The new focus on government deficit reduction through the 1990s and into 2000 had operational impacts on national parks that reduced staffing, but funding for research and management action supporting ecological integrity programs was readily available, particularly after the 1998 Task Force report. This gave Parks Canada significant bargaining power in its search for partnerships, and means to build capacity by accessing the new knowledge and skills necessary to manage ecological integrity. Such partnerships were critical, given the impact of deficit-reduction policies on both staffing and operational mandates.

Parks Canada had suffered a 25% decrease in funding between 1995 and 1999 as the federal government focused on deficit and debt reduction (Wright & Rollins, 2009; Dearden, 2010). During this time, several new parks and park study areas (potential parks assessed for protection value) were established, further diluting the funds available for park operation (Wright & Rollins, 2009). A major reorganization resulted, with associated loss of staff and emphasis on cost-recovery policies (Wright & Rollins, 2009). The creation of the *Parks Canada Agency Act* in 1998 established a separate service agency intended to improve the efficiency of national parks management and expansion (Minister of Canadian Heritage, 2000). The agency was to operate under a corporate model, rather than as a typical government department. They gained greater financial flexibility and responsibility, including a two year rolling budget, reporting requirements and the ability to retain all revenues generated by each park (Dearden, 2010). However, revenue targets were to be set each year, and while excesses would be reallocated, shortfalls would be compensated by reduction in park expenditures (Wright & Rollins, 2009).

So operationally, Parks Canada had entered a new style of financial management that emphasized fiscal responsibility and established a dependence on revenue generation.

Despite these changes in operational funding, the Green Plan (1990-2000) and later Ecological Integrity (2003-2008) specifically provided for park expansion (until 1997) and ecological integrity (Auditor General of Canada, 2005; McNamee, 2009). As a result, through the study timeframe (2002-2010), ecological integrity remained a well-funded management objective in terms of both project-based partnerships and training[21]. The federal government was determined to address the issues identified by the Ecological Integrity Panel and funding provided training programs, including comprehensive ecological integrity training for all employees, new positions (e.g., director general for ecological integrity) and other internal organizational changes (Wright & Rollins, 2009). This included the hiring of Dr. Stephen Woodley, an Ottawa-based landscape ecologist that was a key resource for the EINP managers as they considered how to incorporate ecological integrity into park management. It also provided funding to support consultant assistance for the Land Management Principles and Framework project, from 2004 through 2008, a critical turning point for the BHI. An unsuccessful grant application left the Principles project, begun after initial formation of the BHI in 2002, supported only by time contributed by Board representatives.

Alberta Parks had also faced deep operational budget cuts through this time, but not the reprieve of specific program funding. A natural partner for EINP due to similar a mandate, they were unable to contribute staff, and regardless, they also lacked capacity in new conservation management approaches. Cuts had a significant impact on the department. The zero-deficit standards instituted by the Klein government through the late 1990s and early 2000s created deep cuts in provincial parks staffing and operations. In 1990-91, total annual parks funding was $65 million (operating budget of $47 million) with 731 full-time staff equivalents (FTE, Canadian Parks and Wilderness Society, 2008). In 2001-2002, the year the expansion under Special Places 2000 program was completed, funding actually fell to $38 million (operating budget of $34 million), with 334 FTE positions. The timing of funding cuts corresponded with the conflict

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[21] More recent austerity measures in 2010 have dramatically reduced parks funding. These included deep cuts in 2010 that are planned to continue through 2013[21] (Urquhart, 2010, 2013). This has dramatically affected participation of EINP in the BHI. They can still contribute in terms of staff interaction, but on much long timelines. Other funding for research projects has effectively been removed but the BHI has found other funding sources to sustain its work.

over industrial development in parks. The political agenda was reinforced directly through reduced budgetary controls that limited the ability of parks to act on an ecological integrity mandate. By 2007-2008, the situation had recovered somewhat, with total annual funding of $73 million (operating budget of $53 million) and 432 FTE, but with consideration for cost of living differences, still far from the relative prosperity of the early 1990s. And so, with its provincial parks colleagues preoccupied with its own concerns, EINP was left with few traditional partners with which to pursue its ecological integrity mandate in Alberta. Both new knowledge and new partnerships were essential to manage this park at the expanded landscape scale.

Creating opportunity for knowledge transfer.

The recommendations of the Ecological Integrity Panel in1998for adaptive active management based on current scientific approaches and partnerships beyond park boundaries represented a significant conceptual shift for federal park managers. In particular, the landscape perspective led to a realization of the impact of human activities over the past century, which had left parks as isolated islands surrounded by highly modified landscapes (Woodley, 2009). The ecological integrity mandate also required them to intercede in ecological processes, rather than leaving parks to self-manage through existing, natural processes (Woodley, 2009). After a century of managing the resources and natural ecological systems within parks exclusively, this broader mandate was new and intimidating. Further, the individual parks were largely left to decide how to establish partnerships, for what ecological processes and at what scales and levels of intervention. As the Auditor General had noted, this required new knowledge and skills, including the concepts emerging from a new scientific understanding of the human influence on natural systems.

Landscape ecology, the science of ecological processes and their effects on ecosystems, had begun to highlight the effect of fragmentation due to human activity and the resulting need to manage ecosystems at a far larger scale (Bissonette & Storch, 2003). A multidisciplinary science that combined ecological principles and social sciences to examine the effect of human development patterns, from small to broad scales, landscape ecology offered the perfect lens for analysis of the impacts of human use, both inside and adjacent to the park. The related discipline of conservation biology used the natural sciences (ecology, biogeography, genetics), economics, sociology, anthropology, philosophy and other disciplines to investigate the Earth's biodiversity and means to protect species, habitats and ecosystems from extinction (Meffe & Carroll, 1997). These emerging disciplines offered a potential framework for managing ecosystems at the larger

scale, with consideration of societal needs and expectations of landscapes and resources to support quality of life. Both disciplines were beginning to examine how biologists could move beyond preservation, to conservation of environment and ecological systems (Hunter, 1996).

Both disciplines arose during the 1980s, although their roots extended further (Hunter, 1996; Meffe & Carroll, 1997, Bissonette & Stroch, 2003). Both were multidisciplinary and attempted to synthesize theoretical and applied approaches to natural resource management from various disciplinary perspectives. This was an important shift in conservation, a move away from a utilitarian emphasis on management of species important to humans toward a broader view of sustaining ecosystems for their inherent value and role in supporting human and natural life (Meffe & Carroll, 1997). The truly novel aspect though, was the acknowledgement of the need for social sciences, economics and political science, as well as biology, to manage the impacts of human use on ecosystems (Meffe & Carroll, 1997; Bissonette & Storch, 2003). Past conservation efforts, including park management, had often focused on preserving wilderness and the biodiversity they contained, ignoring the human activities on the adjacent lands. Conservation biology acknowledged the pervasiveness of the human footprint, its effect on ecological systems at the broad landscape level, and the role of humans in management, within and beyond wilderness.

These disciplines emerged in response to concerns about loss of biodiversity and the need for broader views of sustainability, when realization of the capacity of ecological systems to support the "unrelenting demand" for resources hit the scientific community (Haney & Boyce, 1997, p. 1). Research had understandably focussed first on describing biological impacts and theory to explain ecological effects; practical applications of that theory were still developing in the early 2000s (Bissonette & Storch, 2003). A related issue was the lack of integrated solutions. Full integration of social approaches, including the need for compromise between human needs and conservation priorities, lagged somewhat behind biology for two reasons. First, although many recognized the need for an interdisciplinary approach that integrated the knowledge of natural, social and other disciplines (e.g., Meffe & Carroll, 1997; Primack, 1993), integration proved a difficult task. Social and natural sciences approaches were largely developing in

parallel, but separate tracks (Armitage et al., 2007)[22]. Second, the social science approaches were following a pattern of development similar to that of biology – development of solutions relied on an understanding of social dynamics not yet clearly defined. The uncertainty and conflict related to environmental issues received considerable attention through the 1990s and into the mid 2000s, and brought an awareness of the need for better approaches to involve the public in decision-making (Didiuk, 2010). Yet multidisciplinary, participatory processes through which implications and tradeoffs could be openly discussed and resolved were only beginning to be developed by the early 2000s (Armitage et al., 2007; Didiuk, 2010). Approaches that incorporated biological and social knowledge entered the dialogue in the mid-2000s, with exploration of collaborative management and equitable and inclusive decision-making processes (Armitage et al., 2007; Hanna & Slocombe, 2007).

As a result, near the turn of the 21st century, 20 years after these two disciplines had emerged as potential solutions, technical concepts were more advanced than tools, and the ecological problems were better understood than the potential social solutions. Further, the social and biological aspects of each discipline were still somewhat segregated, limiting cross-disciplinary exchange of ideas and knowledge, let alone full integration. Since many parks and protected areas managers and staff were biologists by training, few had training or experience in emerging forms of public engagement, partnerships and collaboration. For example, in his 1993 textbook on conservation biology, Primack focused mainly on biological concepts and practical applications. Legal means of controlling human activities (e.g., international agreements) were the main 'social' tool identified in the text. Other texts of the time followed a similar approach (Hunter, 1996; Meffe & Carroll, 1997). Protected areas management sections of such texts raised the need to work with people, but cited only a few, unique examples of emerging approaches. Federal parks managers might have developed conceptual views of the management action required to achieve ecological integrity objectives, but they had few examples on which to model the necessary partnerships. EINP, required to pursue an ecological integrity mandate that incorporated a landscape approach, actively began to pursue partnerships with scientists at the University of Alberta and other research agencies, first for advice (on the EINP Science

[22] As an example, a Social Science Working Group was added to the Society for Conservation Biology in 2003, and a Human Dimensions Working Group was only recently established within The Wildlife Society in 2012.

Advisory Committee, formed in 1998) and later as partners in promoting the initial proposal for cooperative regional management that helped form the BHI.

Establishing new partnerships.

Although Parks Canada had a few examples of partnership through the late 1990s, including the examples discussed above, a generalized model useful to all parks had not yet emerged. Within Alberta, a few contemporary examples of partnerships between parks and adjacent land managers did exist in the early 2000s. These examples had various mandates and offered various organizational approaches on which to model cooperative land management:

- Waterton Biosphere Reserve, established in 1979 to recognize the cooperative land management approach adopted by Waterton Lakes National Park, the adjacent municipalities and various environmental NGOs active in land conservation in the area (Waterton Biosphere Reserve, 2012).
- The Crown of the Continent Ecosystem Education Consortium (COCEEC) formed in 1993 to promote environmental education, a sense of community and balanced environmental leadership in the Crown of the Continent Ecosystem, the section of the Rocky Mountains straddling the Alberta – Montana border (The Crown of the Continent Ecosystem Education Consortium, n.d.).
- The Crown Managers Partnership, began in 2001 as a transboundary, ecosystem-based collaboration of over twenty agencies in this same area of the Rocky Mountains (Crown Managers Partnership, 2011).
- The Robson Valley Round Table, a collaborative regional land use planning initiative from 1993-1997 that involved the federal government (and Parks Canada, Jasper National Park), provincial and municipal government, industry, and representatives of First Nation and community interests (BC Integrated Land Management Bureau, n.d.).

None of these was a 'tried and true' approach on which to base a program for landscape level management of ecological integrity however. EINP and the Scientific Advisory Committee (SAC), now interested in pursuing a form of regional land management, searched for other examples with more proven records. A 1997 report by Arlene Kwasniuk of the Alberta Environmental Law Centre had reviewed potential approaches to regional land management in the Beaver Hills moraine area and had recommended the UNESCO Biosphere Reserve approach, which provided a framework for voluntary cooperative partnerships comprising land managers

and other stakeholders suitable for distinctive and valued landscapes (Kwasniuk, 1997). The SAC recommended a regional cooperation approach based on this model (Burak & Swinnerton, 1998), which became the basis for the proposal EINP brought to the various municipal partners within the moraine (Swinnerton & Otway, 2002, 2004).

Appendix F.

Development of the Beaver Hills Initiative

Organizational Development

The Beaver Hills Initiative (BHI) was initiated in 2000 by Elk Island National Park (Parks Canada) and Strathcona County, in response to concerns regarding development pressures on the Cooking Lake/Beaver Hills moraine. The location of the moraine within 45 km of the Edmonton metropolitan region, one of Canada's fastest growing urban areas (Statistics Canada 2002), made the moraine attractive for developers, residents and recreationalists. Past development had already begun to fragment important natural areas and strain urban infrastructure budgets. Each of the other four municipalities with jurisdictional control over the moraine shared these concerns, and in 2002, the BHI formed as a partnership federal and municipal land managers. Since then, the Beaver Hills Initiative (BHI) has grown to involve about 28 different organizations (Figure 1, Beaver Hills Initiative, 2009f).

Membership is fluid. As of September 2012, the BHI included three levels of government (federal, provincial and municipal), the University of Alberta (Edmonton and Augustana campuses), and various non-government agencies (NGOs) (see listing of partner agencies at the end of this appendix). Industry associations representing the oil and gas and other industrial interests in Alberta's Industrial Heartland northeast of the moraine were involved in the early phases of the initiative, but are no longer directly participating partners. The Fort Air Partnership, an association of industrial operators from Alberta's Industrial Heartland who jointly manage air quality issues, remains an active partner, representing industrial interests.

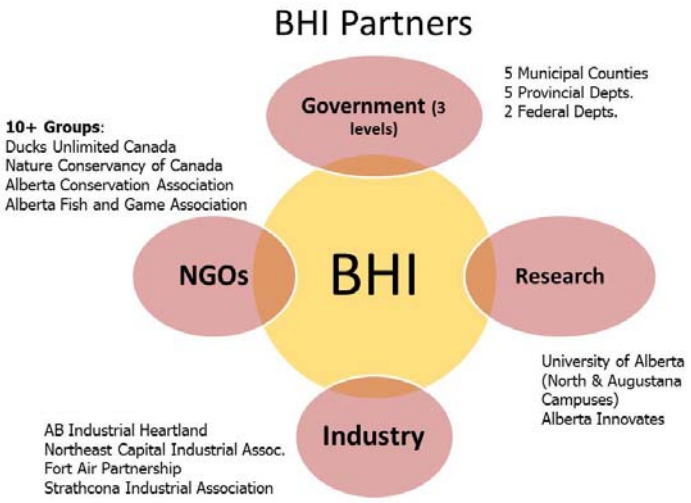

Figure 1. Beaver Hills Initiative Partners, 2012

In keeping with the definition of sustainability as a balance of environmental, economic and social factors (Elkington, 1994), the member organizations represent:

- government agencies and NGOs involved in natural resource management and conservation,
- agriculture,
- municipal government services,
- protected areas management and recreation / tourism interests and
- industry.

All of the partners, and most critically, the five municipalities that have jurisdictional interest in the private lands within moraine, have provided letters of support to the BHI Vision and Land Management Principles, which commits the partners to sustainable management of the moraine through voluntary cooperation (Beaver Hills Initiative, 2009a). The BHI's vision statement best expresses the group's interests in the moraine and its approach to future management:

"The Beaver Hills Initiative values the region for its natural beauty, quality of life, and supports co-operative efforts to sustain quality of water, land, air, natural resources and community development." (Beaver Hills Initiative, 2009c).

The Principles identify sustainable management objectives regarding biophysical aspects of the moraine (biodiversity, water and air quality), land development, and quality of life (see Land Management Principles in the section below). Based on this commitment from its partners, the BHI has sponsored research on the abundance, condition and management of natural resources in the moraine and they intend to expand the effort to social research in the future. More recently, they have undertaken various cooperative management initiatives targeting common concerns of the partner agencies (e.g., moraine-wide natural resource inventories and mapping, development of an economic incentive tool and land use planning tools).

The BHI has grown structurally and functionally over the decade of its existence, from a single board, comprising representatives from partner organizations, to a more mature and complex organization comprising an Executive Committee, the BHI Board and various Working Groups tasked with conducting and managing research and management initiatives of interest to the partner agencies. An Executive Director coordinates and supports the activities of the

organization and she and other Executive Committee members are responsible for internal and external communications at partner municipalities and within other regional planning initiatives. The partner agencies have successfully collaborated on projects such as fire-risk mapping, vegetation mapping and, most recently, a land acquisition project as a conservation initiative. The group was invited to participate in the development phase of the Alberta Land Use Framework from 2007 to 2008, and may also contribute to the pending development of the North Saskatchewan Regional Land Use Plan. It has had similar involvement in watershed planning through the North Saskatchewan Watershed Alliance, a partner ENGO. Lastly, the BHI has been actively promoting its approach to land management at Alberta conferences and workshops on land use planning and conservation.

Successes in Sustainable Land Management

Initially, the BHI's joint initiatives focused on basic data-gathering, interpretation and packaging of information on those resources for partner agencies. The BHI encouraged use of this information in addressing expressed or anticipated management concerns, but there was no expectation of its use. This approach upheld a founding principle of the organization, which was to allow member groups to use and adapt the information and tools provided by the BHI to suit their own circumstances.

The information helped raise awareness about the moraine and the potential risks of increased development in the area, but its broad scale was too general to inform specific management initiatives. Awareness seemed to galvanize the member agencies toward united action, as evidenced by increased effort amongst the municipalities, protected areas agencies and NGOs to coordinate their various planning and management activities. This coordinated effort, in turn, appeared to attract other agencies to the organization: other NGOs and to a lesser degree, other provincial departments began to approach the BHI to present their own initiatives and ask for BHI support or cooperation. This phase of development was characterized by growth of the organization and formalization of its internal operation (e.g., the Working Groups were formed at this time, and a formalized governance approach was established). Through facilitated workshops, the group identified its municipal partners as their primary 'client'. Among the various partners, municipalities could best implement sustainable management across the moraine, with support by the other partner agencies, because of their jurisdictional control over private lands.

In recent years, the group's joint management initiatives have increased in complexity, magnitude and to some degree, expectations, which has tested the commitment of and relationships between the partner agencies. The Golden Ranches project, a land acquisition initiative begun in 2009 and still ongoing, has combined the resources of member NGOs, Strathcona County and an external agency (the Edmonton & Area Land Trust) to raise funds for purchase of several parcels of native pastureland in the heart of the moraine (Nature Conservancy of Canada, 2012). Between 2006 and 2007, the BHI's Land Use Planners Working Group completed the Land Management Framework, a comprehensive guide for sustainable land use planning of the moraine's resources (Spencer Environmental Management Services Ltd., 2006 and 2007). The framework identified a set of management objectives and strategies to conserve the valued natural resources identified in the BHI Land Management Principles. It also provided a set of Best Management Practices that could be used as a reference guide by land use planners to evaluate specific development proposals, with or without incorporation into statutory policy. Lastly, the document expressed the group's expectation that each municipality would adopt relevant protective measures into their land use policies, at their convenience and as appropriate to their internal circumstances.

Two of the member counties quickly took the actions recommended in the Land Management Framework and incorporated the information into development policy and zoning (Beaver County Municipal Development Plan 2006, Strathcona County Municipal Development Plan 2007). Some also created other municipal planning tools based on the Framework (e.g., an Environmental Planning Toolkit was developed by Beaver County for use across their entire County).

These successes demonstrate a level of commitment, trust and cooperation within the BHI that is uncommon in multi-jurisdictional sustainable management initiatives. However, the Land Management Framework project also exposed weak commitments: three of the member counties chose not to incorporate the Land Management Framework into policy, or to include only general statements. One of those counties left the BHI soon after the project was completed. In an interesting turn of events, that county has since rejoined the organization and has used the Land Management Framework on a Growth Management Plan that began in September 2009 and is due to be completed in August 2010. Land use planners from the other two counties have also had a change of heart, after considerable effort by the BHI to raise awareness and clarify

intent of the document and its benefits to municipalities. They too are now using the document to evaluate site-specific development applications.

In the meantime, the BHI been recognized as a successful multi-jurisdictional management organization by several external agencies: it received a Partnership Award for Municipal Excellence from Alberta Municipal Affairs in 2005 (Beaver Hills Initiative, 2009d) and was selected as a provincial Emerald Award finalist in 2007 (Beaver Hills Initiative, 2009e). Less formal recognition has come from their regional stakeholder status. The Executive Director has been invited to participate as a stakeholder agency in regional watershed planning, the new Capital Region Board and the planning and consultation phase of the provincial Land Use Framework strategy and subsequent regional planning process for the North Saskatchewan River region. In these contexts, the BHI has participated as a regional interest as well as providing a model for cooperative land management. The Land Use Framework Secretariat has expressed particular interest in the BHI, in part because of the seeming success of the BHI in bringing multiple agencies together in sustainable land use decision-making.

List of BHI Partner Agencies

Municipal Government

Beaver County

Camrose County

Lamont County

Leduc County

Strathcona County

Provincial Government

Alberta Tourism, Parks and Recreation

Alberta Agriculture and Rural Development

Alberta Municipal Affairs

Alberta Environment

Alberta Sustainable Resource Development

- Fish and Wildlife Division
- Public Lands Division

Federal Government

Elk Island National Park (Parks Canada)

Agriculture and Agri-Food Canada

University

University of Alberta (Edmonton and Augustana Campuses)

- Dr. Guy Swinnerton
- Dr. Glen Hvenegaard

Dr. Glynnis Hood

Dr. Scott Nielsen

Non-governmental Organizations

Alberta Invasive Plants Council

Alberta Fish and Game Association

Alberta Conservation Association

Alberta Lake Management Society

Beaver Hills Dark Sky Preserve

Cosmic Journey

Ducks Unlimited Canada

Fort Air Partnership

Nature Conservancy Canada

North Saskatchewan Watershed Alliance

Royal Astronomical Society of Canada

Industry (no longer active, 2010)

Alberta Industrial Heartland

Northeast Capital Industrial Association

Strathcona Industrial Association

Beaver Hills Initiative: Guiding Principles

(Beaver Hills Initiative, 2009c)

Quality of Life

The unique ***essential character*** of the Beaver Hills will be conserved in its natural beauty.

We will enlist voluntary cooperation from landowners to manage their lands and the resources of the Beaver Hills in a sustainable manner.

Biodiversity

Existing natural ***wetlands*** and their associated riparian upland margins, will be conserved both in regard to their biodiversity and functional aspects

Development will retain ***native upland habitat*** (woodlands and grasslands) prominently featured within the Beaver Hills to maintain the majority of the existing green space and its associated biodiversity. Connectivity of habitat will also be retained so that continuous corridors remain within the Beaver Hills and between it and the surrounding region.

Ensure land use and land management activities will not compromise the ability of ***rare and sensitive species*** or species important for human use now present to persist in the Beaver Hills.

Water

Maintain function of ***local watershed*** to sustain regional surface and ground water systems

Sustain local watersheds to maintain the ***water quality*** of surface and ground water systems

Land

Support an ***appropriate mix*** of agricultural, industrial, recreational, and residential development in areas with lower environmental sensitivity maintaining the character of the distinctive landscape.

Air

Air quality will be monitored ensuring recommendations can be presented to maintain or improve air quality.

Appendix G.

Timeline of the BHI's Development

Timeline of BHI Development

As noted above, the BHI began as a loose collaboration of government, non-governmental organizations and academic researchers active in land management within the moraine, a reaction to rapid urban expansion and the associated potential for change to the moraine landscape. Although the group quickly established purpose and goals for cooperation in a mission and vision statement, creating agreement on the form and means of sustainable development they wished in the moraine was a much longer process.

Moving from the loose commitment of forming a group to address sustainable management of the moraine to a comprehensive agreement for a cooperative sustainable management approach was a critical point in the BHI's development. It was a transition from a generalized goal of collaboration to a more definite statement of what sustainability meant for the regional partners. Voluntary adoption of the Framework's guidelines into policy provided a tangible commitment to sustainability. The steps involved in this achievement, which earned the BHI credibility as an innovative, regional influence in sustainable management, follow below, beginning with some of the early contextual elements that set the stage for collaboration regarding management of the moraine.

Late 1980s – Environmental awareness of the moraine's resources began to be recognized in planning and management documents produced by provincial and municipal agencies:

- *Miquelon Lakes Planning Report* (Battle River Regional Planning Commission, 1973).
- *Cooking Lake Area Study: Planning Report* (Alberta Environment Planning Division, 1977).
- Strathcona County Outdoor Recreation Master Plan (1987).
- Strathcona County Environmentally Significant Areas Inventory (Westworth & Knapik, 1987; Infotech, 1989).
- Strathcona County, *ConservAction Program* (1989/90-1993).

- Strathcona County, Lakes Management Plan: Planning for the Land among the Lakes (1993).
- Leduc County Environmentally Significant Areas Inventory (Brusnyk et al., 1991).

Late 1980s - Parks Canada initiated an unsuccessful discussion about establishing a buffer around Elk Island National Park (EINP) (Swinnerton & Otway, 2004).

1990s – Beaver Hills Ecological Research Network (BHERN) was active in the moraine, with membership including federal and provincial governments, University of Alberta and ENGOs (Swinnerton, 2011). Envisioned as a model of cooperation between protected areas managers and the growing interest in private land conservation initiatives on landscapes facing land development pressures, it focused mainly on the scientific and ecological values of the moraine. Funded by the federal GreenPlan program, it initiated several projects but lapsed in mid-1990s. The Cooking Lake Moraine Conservation Association also formed around this time, with interest in environmental stewardship, cultural heritage and outdoor recreation opportunities (Swinnerton & Otway, 2004). Their goal was to protect the essential character of the moraine and the quality of life for moraine residents, but it too became inactive near the end of the decade.

1994 – 2004 - Locke Girvan completes a B.Sc. in conservation science through University of Alberta.

1996 – Auditor General of Canada report highlights outdated approach to ecosystem management in National Parks, poor performance on maintaining ecological integrity and need to partner with organizations beyond park boundaries to management ecological integrity effectively.

1996 – Senior staff in Parks Canada Ottawa (e.g., Steven Woodley) also began to promote a landscape ecology approach for park management. EINP's new Park Management Plan acknowledged the need for cooperation with neighboring jurisdictions to protect and manage natural resources and processes that contribute to the long-term health of EINP ecosystems. It also recognized the role the park

played in local and regional economies, through its heritage tourism and sustainable land management initiatives. Specific objectives in the plan included promotion of regional integration by (1) working cooperatively with other governments, agencies and private individuals to encourage land use policy and proactive compatible with improving ecological integrity of the ecosystem, (2) establishing a round table on the environment within the Beaver Hills and (3) creating regional plans for ecosystem conservation and regional tourism (Parks Canada, 1996).

1997 – Arlene Kwasniak (1997) of the Environmental Law Centre (Alberta) released *Reconciling Ecosystem and Political Borders: A Legal Map* in which she explored tools for conservation, ecosystem protection and planning and development, using the Beaver Hills Moraine as a demonstration area. She promoted the idea of a cooperative, multijurisdictional approach to ecosystem protection, using geographic information systems (GIS) and modeled after the Biosphere Reserve principles (Swinnerton, 2011). She also recommended pursuit of Biosphere Reserve status as a means to achieve cooperative management in the Beaver Hills.

1998: *Ecological Integrity of Parks Report* (Parks Canada, Ecological Integrity Panel) identified need to focus on ecological integrity as the main priority in parks management.

1998 – Burak and Swinnerton (1998) advocated the Biosphere Reserve model as a means to integrate land use planning and conservation within the Beaver Hills.

1998 – The Science Advisory Committee (SAC) for EINP was formed with membership of park staff and academics and scientists from University of Alberta, Provincial Museum of Alberta and the Alberta Research Council (Swinnerton, 2011). Academic participants represented natural and physical sciences, and archeology, then the main focus of management activities and research work in the park. The objective of the SAC was to advise park managers regarding ecosystem planning and management, based on current science and

supported by research and monitoring programs conducted by the partnering agencies. These management, research and monitoring programs were captured in the Ecosystem Conservation Plan (ECP) developed by the SAC in 1999. The effects of stressors outside the park were noted in the ECP, especially reduced habitat connectivity adjacent to the park due to agriculture, potential atmospheric contamination from petrochemical industry north of the park, changes to hydrological regimes due to road and facility development and invasive plants from adjacent lands. The update to the Park Management Plan (1996) that the SAC helped to prepare also noted the need for regional cooperation with adjacent land managers to meet the park's objective for ecological integrity (Beaver Hills Initiative, 2012).

2000- The lack of control over external stressors on ecological integrity of the park was illustrated by a proposed oil and gas exploration activity on the west boundary of EINP, on which neither Parks Canada nor Strathcona County could effectively intervene through provincial channels (Swinnerton 2011). Parks Canada found limited recourse with Alberta Energy and Utilities Board and identified the need for more coordinated and long-term approach to development in the region more generally (Swinnerton & Otway, 2004).

2000-2002: EINP (Chief Park Warden Steve Otway & Superintendent Rod Blair) began to discuss regional growth issues with Strathcona County (Environmental Planner Locke Girvan and Councilor Glen Lawrence) and the need for joint environmental assessment of energy projects in particular and regional planning within the moraine, more generally (Swinnerton & Otway, 2004). EINP managers began to realize that management must be in coordination with adjacent land managers if the park is to maintain its ecological integrity.

Late 2001: Social science and land use planning expertise from the Canadian Forest Service (Dr. Bonita McFarlane) and University of Alberta (Dr. Guy Swinnerton) were added to the EINP SAC. This was in part to address the human dimensions and planning issues identified in the EINP Park Management Plan (1996). Objectives regarding social science and regional land use planning were

added to the Terms of Reference for the SAC (Swinnerton, 2011). The list of scientific management issues was also expanded to include visitor use and park experience issues and the human dimensions of transboundary planning and management between EINP and the surrounding regional interests.

2001-2002. EINP (Steve Otway, Rod Blair, Murray Heap) with University of Alberta (Dr. Guy Swinnerton) began a round of presentations proposing regional cooperation to Strathcona County Council, each of the other municipal councils, and representatives of ENGOs active in the region (The Alberta Environmental Law Centre, Ducks Unlimited Canada, and The Nature Conservancy; Swinnerton & Otway, 2004; Heap, Swinnerton, & Otway, 2005). The Northeast Capital Industrial Association and Alberta Sustainable Resource Development and Community Development (then housing Alberta Parks & Protected Areas/Cultural Facilities and Historical Resources) were also approached (Swinnerton & Otway, 2004). Potential funding through a Regional Partnerships Exploration Grant was also discussed with Alberta Municipal Affairs. All 5 councils adopted resolutions to support the concept of cooperative management, through the Beaver Hills Initiative (Swinnerton & Otway, 2004).

2002. The Beaver Hills Partnership and collaborative land management first emerged as a formal park objective, in an explicit SAC plan to develop cooperative land management with park neighbors (*Elk Island National Park: Science Advisory Committee – Issue. Human Dimensions of Transboundary Planning and Management: Elk Island National Park and the Beaverhills – Cooking Lake Moraine*. Prepared by Swinnerton and Otway, 2002).

September 2002 - First all-stakeholder meeting at Cooking Lake Hall with facilitator Bill McMillan of Equus Consulting (Swinnerton & Otway, 2004; Heap, Swinnerton & Otway, 2005). All five municipalities expressed support for this initiative and representatives were selected to form and develop a Terms of Reference for a Coordinating Committee (Swinnerton & Otway, 2004). General principles for operation were established, including consensus decision-making on

financial and communication issues and a requirement to share information with their home agencies. The meeting included 38 representatives from:

- All five municipalities and the City of Edmonton.
- Provincial agencies (Agriculture, Food, & Rural Development, Community Development, Environment, Municipal Affairs and Sustainable Development).
- Federal agencies (Parks Canada, Agriculture, & Agri-food Canada).
- NGO's (Alberta Conservation Association, Alberta Fish and Game Association, Ducks Unlimited Canada, Northeast Capital Industrial Association and North Saskatchewan Watershed Alliance).

November 2002 – February 2003 – First formal meetings of the BHI Coordinating Committee on 7 November 2002, 9 January 2003 and 13 February 2003 included councilors and administrative staff (land use and environmental planners) from the five municipalities, EINP, Agriculture and Agri-food Canada, Alberta Municipal Affairs, DUC, and Nature Conservancy of Canada. Focus was to develop the $150,000 Municipal Affairs grant application, finalize the Terms of Reference for the Coordinating Committee and develop a Terms of Reference to hire a consultant to assist with the development of a Regional Plan to coordinate land use decision-making among the member agencies.

- The Coordinating Committee Terms of Reference (ToR) identified the breakdown of managing representatives: one from each of the five municipalities, the province, EINP, Agriculture and Agri-food Canada, industry, and NGOs, who were charged to provide leadership, coordination and guidance; comply with the guiding principles also identified in the ToR; serve as an effective liaison with their home organization; and network with others in their sector.
- The Regional Plan was intended to demonstrate how industry, parks, agriculture and residents could cooperatively develop and implement a plan to sustain a natural landscape for high quality of life and "clean air,

water, wildlife and economic productivity" (Swinnerton & Otway, 2004, p. 7; BHI ToR, p. 2).

Fall 2002 - Failed to secure funding from Municipal Affairs ($150K). Call for consulting contract to develop the regional plan was suspended due to lack of funding. The BHI survived on in-kind contributions of personnel time and office support from EINP, Agriculture and Agri-foods Canada and Strathcona County.

2002-2003: Steve Otway began a M.Sc. and completed a Directed Studies course with Dr. Guy Swinnerton. This involved an annotated literature review on collaborative planning that ended with a presentation to SAMPA 2004 (at Victoria) on the BHI (Swinnerton & Otway, 2004).

2003. EINP Ecosystem Conservation Plan (ECP) was expanded to update the natural science components and add social science initiatives. SAC became inactive, as its members began to take up roles in the early BHI organization (particularly Guy Swinnerton, Steve Otway, and Murray Heap).

February 2004 – EINP received Ecological Integrity Funding through Parks Canada (four years, $290,000, for research projects only) (EINP, 2004)

2005 – Executive Director position created and filled by Brenda Wispinski, after offer from Strathcona County to provide a three year secondment, with possible extension for another 5 years.

2005: BHI obtained Ecological Integrity funding (for research only) through Parks Canada (Heap et al., 2005) and initiated various research projects (a fire management study, air quality and GIS data collection projects) with only arms-length involvement of the BHI. The BHI received a special $75,000 Municipal Affairs Grant (granted after discussion with the then minister, for operational funding), which allowed it to hire IMI Strategics and Spencer Environmental to develop the Land Management Principles and the Framework, Phase 1. This project included: (1) a strategic plan for coordinated regional land management based in part on (2) a database of information regarding the existing land use policies regarding environmental management in the moraine (and opportunities

for coordination), a review of federal and provincial environmental legislation (to clarify municipal opportunities for management) and mapping of existing resources (to identify key sensitivities worthy of conservation). This was an evolved version of the regional plan first envisioned by the BHI Coordinating Committee in 2002. It resulted in the Land Management Principles (LMPs) in January 2006, the founding principles for the BHI's work in the area (derived in part from the guiding principles of the Coordinating Committee's ToR), and the 'Blue and Yellow Map', a map highlighting the distribution of significant environmental resources in the moraine. Once the Phase 1 document was complete in June 2006, it fulfilled several objectives of the SAC transboundary management plan created in 2002 (Swinnerton & Otway, 2002):

- To create visual displays of the moraine's resources in GIS.
- To establish a common framework of principles for land management founded on economic, social and environmental conditions in the area and residents' sense of place
- To assess and establish a system for collaborative decision-making.
- To set the stage for another objective, a comprehensive overview of potential policy options to regulate land use in the moraine (the Phase 2 Land Management Framework project).

January 2006 - LMPs and the "Blue and Yellow Map" were presented at an all-stakeholders meeting at Strathcona County, to introduce a request to endorse the LMPs as a shared approach to land management of the moraine. All municipal councils and other partners subsequently adopted the LMPs through early 2006.

February 2006 – The BHI formalized its current governance structure for the Board, establishing policies for the Board, its Chair, the Executive Director and each Working Group (Beaver Hills Initiative 2010b).

June 2006 – Phase 1 of the Land Management Framework (LMF) was completed.

Fall 2006 – Secured a second Municipal Affairs Grant of $175,000, with matching 25% funding provided by partners. The grant contributed to the

development of Phase 2 of the Land Management Framework and development of a governance document for the group. The funding opportunity led to creation of the Memorandum of Understanding (MOU) among the municipal partners for fiscal agency by Strathcona County and on-going funding by the partners of $10,000 per year.

2006 - Beaver County included the LMPs in its draft Municipal Development Plan and imposed a moratorium on development in its part of the moraine (the West End) until Phase 2 of the BHI's Land Management Framework Project was complete.

April, 2007 – The Phase 2 LMF project was completed with (1) Ecological Function Zone mapping highlighting specific environmental resources and risks (in response to a request for more detailed information from the municipal land use planners), (2) Best Management Practices for land use development at the parcel level, and (3) recommendations for sustainable land use policy changes at the broader municipal level.

September, 2007 – BHI hosted a training session on the LMF, Phase 2, for land use planners of municipal partners.

Summer and fall, 2007 – Several municipal partners began to update various statutory land use planning documents:

- Lamont County completed the update of its Land Use Bylaw and Municipal Development Plan, with some input from the BHI during the inter-jurisdictional review.
- Strathcona County adopted its updated Municipal Development Plan with the Beaver Hills Policy Area, an expanded protective zone for the 'spine of the moraine' (the less developed and more natural part of the moraine in the county). A Rural Residential Policy Area restricted rural residential subdivision to the lands immediately east of Sherwood Park and an Urban Growth area identified lands for future expansion of Sherwood Park. Redistricting was based in part on an expanded version of the BHI

"Yellow and Blue" map from Phase 1 and groundwater risk mapping from Phase 2 of the BHI LMF project, commissioned by the Strathcona County land use planner.

2008 – Other municipalities updated their statutory documents:

- Camrose updated its Land Use Bylaw, with no direct involvement by the BHI or incorporation of BHI information.
- Leduc updated its Land Use Bylaw, with involvement of the BHI in public open houses regarding proposed land use changes.

August, 2009 – BHI sponsored a second training workshop for land use planners of the member municipalities to enhance uptake of the Phase 2 LMF

Fall 2010-spring 2011 – Land Use Planners Working Group developed a standardized subdivision checklist for each municipality that incorporated the Phase 2 LMF planning principles. The checklist is now provided to any developer considering development within any county within the moraine. (Tom S. interview)

2009-2012 – Camrose County commissioned the Miquelon Growth Management Plan, which incorporated the BHI's LMF data and land use recommendations. A Citizen Advisory Group was struck to evaluate the controversial, innovative plan after mixed reaction from the area councilor and some residents. The Advisory Group recommended adoption of the resulting Miquelon Area Structure Plan, with minor modification. Council approved the plan in January 2012.

2012 – Beaver County updated its Land Use Bylaw and Municipal Development Plan and initiated its West End Development Planning process, with support and input from the BHI.