COMMUNITY PERCEPTIONS OF THE BEVERLY-QAMANIRJUAQ CARIBOU MANAGEMENT BOARD

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Abstract / Résumé

The role of *ad hoc* co-management in social learning that leads to resource management innovations is relatively unexplored. The trust and learning needed for diverse groups to work collaboratively in the face of the complex and unpredictable ecology of caribou (*Rangifer tarandus*) populations are key to co-management efforts. The Beverly-Qamanirjuaq caribou management board plays a unique role as an interjurisdictional forum enabling the discussion of ecological issues not easily handled by distinct and formal political organizations.

Le rôle de la cogestion *ad hoc* dans le domaine de l'apprentissage social, qui fait naître des innovations en matière de gestion des ressources, demeure peu étudié. La confiance et l'apprentissage dont les différents groupes ont besoin pour travailler ensemble en raison de l'écologie complexe et imprévisible des populations de caribous (*Rangifer tarandus*) sont essentiels aux efforts déployés en cogestion. Le Conseil de gestion du caribou Beverly-Qamanirjuaq joue un rôle unique à titre de cadre intergouvernemental propice à la discussion sur des questions écologiques que des organismes politiques officiels séparés ont de la difficulté à prendre en charge globalement.

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Introduction

Caribou co-management arrangements have focused largely on improving communication between government managers and traditional (historically and geographically-rooted) caribou-using communities. Co-management regimes represent *de facto* (informally realized), as well as *de jure* (legally-ensured) sharing of decision-making authority between state bodies and caribou-using communities. This paper will examine the case of the Beverly-Qamanirjuaq Caribou Management Board (hereafter, "the Board") and the challenges it has tackled perhaps because of, rather than in spite of, its *ad hoc* status.

The Board came into existence as a response to a perceived crisis of declining caribou numbers in the early 1980s. It is not a land claims based co-management arrangement and has no formal status in Canadian law. A distinction is made between claims-based co-management—such as the examples negotiated under the Inuvialuit and Nunavut Final Agreements—and crisis-based co-management, like the Board, by the report of the Royal Commission on Aboriginal Peoples (1996). The report cites the Board as an example of "an *ad hoc*, and possibly temporary, policy response to crisis" (RCAP, 1996:667). However, the Board is often described as one of the most successful and long-standing co-management institutions in northern Canada (Cizek, 1990; Morgan, 1993; Osherenko, 1988; Usher, 1991). In the absence of decision-making authority, the Board has fostered learning and the building of social capital.

Co-management institutions, like the Board, may elucidate the conditions for innovative social learning both by local and state actors and for the building of social capital for cooperation. Social capital is defined here in terms of trust, norms and networks that facilitate coordinated action (Coleman, 1990). Berkes (1997) hypothesizes that trust between actors is one of the critical conditions for successful co-management. This condition of "trust" is explored in terms of learning and the evolution of mechanisms for the transmission of knowledge among all parties to a co-management arrangement. It is the importance of flexible, informal institutions that allow collective learning that is explored in the experience of the Board.

Caribou Co-management

Caribou co-management is a process of cross-cultural learning. Ideally, the knowledge of caribou-hunting communities and government biologists and managers complement each other with the aim of achieving the sustainable use of a culturally and economically important resource. A number of the idealized definitions of co-management are listed below:

Co-management Definitions (modification of Berkes, 1997:6)
"co-management signifies [a] political claim [by local people] to the right to share management power and responsibility with the state." McCay and Acheson (1987:32)
"the sharing of power and responsibility between the government and local resource users." Berkes *et al.* (1991:12)
"the substantial sharing of protected areas management responsibilities and authority among government officials and local people." West and Brechin (1991:25)
"a blending of these two [first nation and government] systems of management in such a way that the advantages of both are optimized, and the domination of one over the other is avoided." Royal Commission on Aboriginal Peoples (1996:665-666)

Co-management may play a part in creating a dialogue between the knowledge of First Nation caribou-hunting communities and government biologists rooted in very different world views. It may also help to synthesize a new resource management science open to participation by resource users rather than as a process for centralized control of local resource management systems.

The ecological knowledge of First Nation communities has been described as an assemblage of empirical, paradigmatic and institutional knowledge (Berkes, 1999). Traditional ecological knowledge (TEK) is a "knowledge-practice-belief complex" where "levels" of knowledge are closely linked and shaped by feedback from one another (Berkes, 1999; Berkes and Folke, 1998). In contrast, formal science, by definition does not include an ethical or belief component (Berkes, 1999:210). However, many academics have challenged the idea that western science is free of a cultural context (Latour, 1998; Longino, 1990; Nadasdy, 1999; Worsley, 1997). The practice of Western science is rooted in a positivist-reductionist paradigm (Pepper, 1984; Evernden, 1985) that perpetuates a human-environment distinction while TEK is rooted in a world view that recognizes a "community-of-beings" (Berkes, 1999; Fienup-Riordan, 1990). As ex-

plained by a hunter from Baker Lake, Nunavut: "All animals inform each other, all things that have breath in them even if they are from different species" (John Killulark, *Caribou News* 13(1):2).

A quick examination of caribou management institutions across North America, reveals a great range of community/government power-sharing arrangements for the management of barren-ground caribou (*Rangifer tarandus*) herds. These arrangements stretch from preliminary signs that Alaska will shortly enter into formal co-management of the Western Arctic Caribou Herd, to the well-established co-management of the Porcupine, Beverly and Qamanirjuaq herds. There are no formal efforts for the species-specific co-management of caribou in Quebec and Labrador, although there are failed and/or dormant efforts to establish a co-management institution for the George River caribou herd ranging between Quebec and Labrador (see Figure 1).

Both the Beverly-Qamanirjuaq and Porcupine Caribou Management Boards have undoubtedly helped to clarify and focus discussion between caribou users and outside interests, but the success of the internal dialogue between caribou users and government managers is much more difficult to assess. Feit (1998) has argued that the academic literature on co-management provides very little evidence that meaningful knowledge sharing and decision making between First Nation wildlife using communities and government wildlife managers is occurring. Academics have noted increasing signs of the political empowerment of communities to manage their wildlife resources, but very little work has looked at the success of co-management institutions in facilitating exchanges between Aboriginal wildlife users and government wildlife managers (exceptions include Feit, 1998; Klein *et al.*, 1999; Kofinas, 1998; Kruse *et al.*, 1998; Singleton, 1998). It is not clear that co-management has led to fundamental or mutually beneficial exchanges between state and Indigenous resource management systems. However, by taking a closer look at one of these co-management systems, insights may be gained about the nature of the dialogue or "conversation" between state and Indigenous resource management systems.

The Beverly-Qamanirjuaq Caribou Management Board

The Board is the first formal caribou co-management institution in Canada. The Board's history illustrates the complexity of the communication involved in attempting to link First Nation and state caribou management systems. The enormity of this task is apparent especially in light of the historical conflict between wildlife biologists and First Nation wildlife users, and the difficulties that come from attempting to match management systems rooted in very different world views.

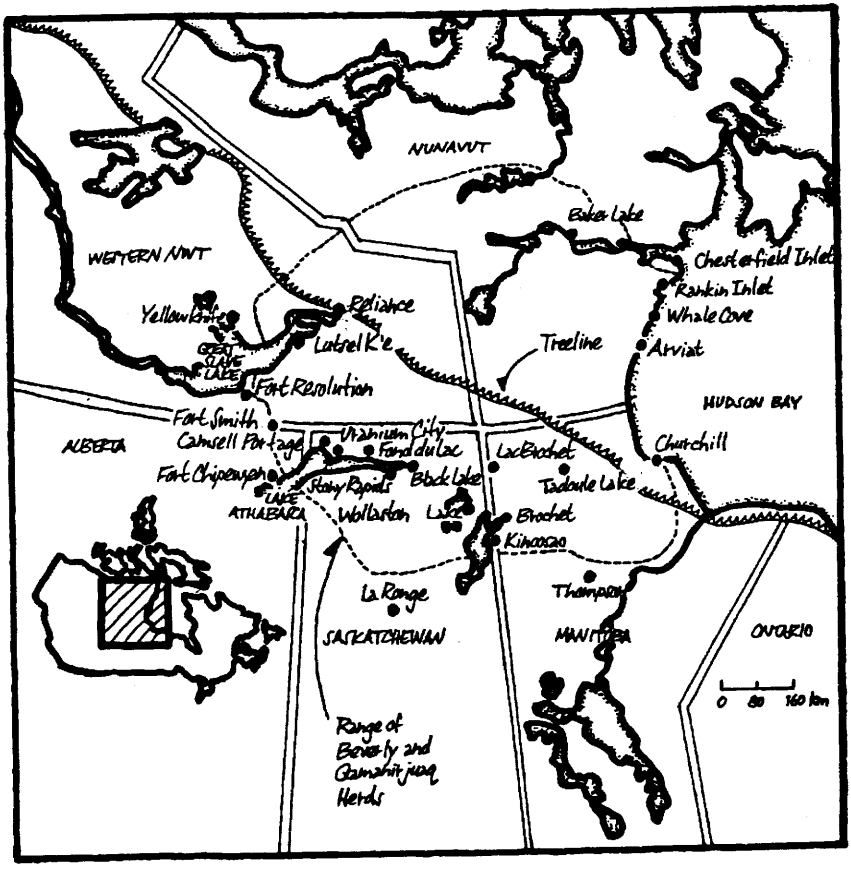

Figure 1: Annual Ranges and Calving Grounds of Barren Ground Caribou in North America
(Modified from Human Role in Reindeer/Caribou Systems: Profile of Herds – North America, http://www.dartmouth.edu/~arctic/rangifer/herds/herdsna.html)

The Board has served as a "single window" (Usher, 1993) for the consultation of outside interests with caribou users for more than 15 years. However, the success of the internal dialogue occurring behind the Board's "window" is less easily discerned. It appears that the Board's internal discussions in large part represent the construction of an "inner window" between government wildlife managers and First Nation wildlife users. However, the fashioning of this window is a slow and difficult process. The

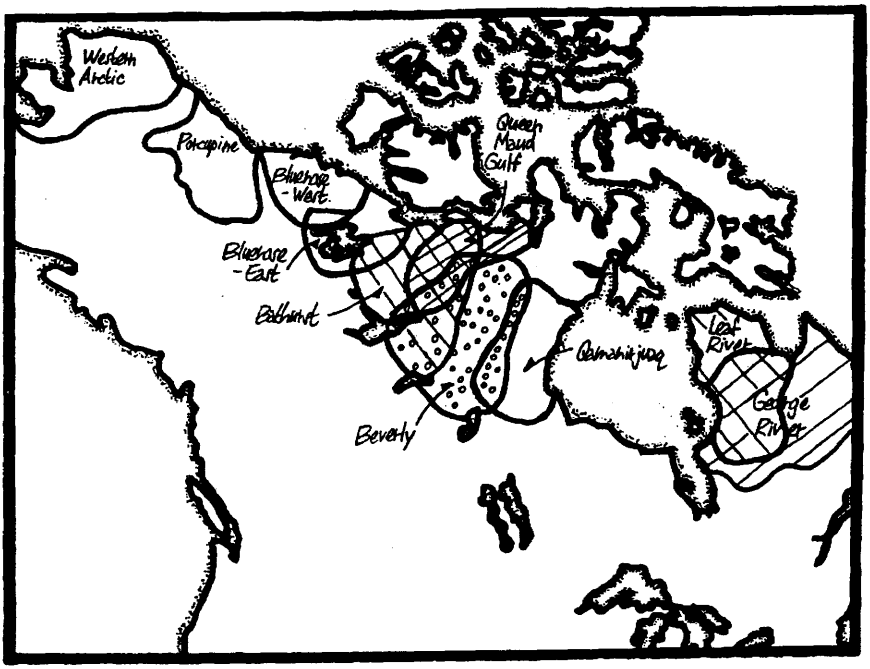

Figure 2: The Beverly-Qamanirjuaq Caribou Ranges and Traditional Caribou Hunting Communities represented on the Board. (Modified from The Beverly Qamanirjuaq Caribou Management Board website, http://www.arctic-caribou.com/range.html)

Board has devoted much of its resources to communicating the knowledge of wildlife managers to caribou-using communities. However, the transmission of knowledge from communities back to government wildlife managers has been slow and veiled by a number of conflicts and differences.

History of the Board

The Board grew out of a conflict that left little doubt that new forms of communication between communities and government managers was needed. The Board is an advisory body made up of eight First Nation members representing 20 Dene, Métis, Cree and Inuit communities and five members appointed by the provincial, territorial and federal governments (Figure 2). The Board provides a setting for the debate and definition of the collective interests of this diversity of communities bound by their cultural and economic dependencies on caribou and therefore, the biologi-

cal survival of two large caribou herds. The Beverly herd numbers close to 300,000 animals and the Qamanirjuaq, close to 500,000 animals according to 1994 population surveys (*Caribou News*, 15(1):1). The overlapping ranges of these two caribou herds stretch westward from the Hudson Bay coast to Great Slave Lake in the Northwest Territories and from the tundra north of the Arctic Circle south to the spruce lichen woodlands of northern Manitoba and Saskatchewan.

The Board was established in 1982, the first example of a formal co-management board for a game animal in Canada (Usher, 1993). The origins of the Board can be traced to 1978, when government biologists formed a Caribou Working Group in order to develop a management plan to combat what appeared to be a dramatic decline in the numbers of the Qamanirjuaq caribou herd. In the winter of 1979-1980, the neighbouring Beverly herd wintered unusually far south. It is estimated that between 15-20,000 animals were killed in northern Saskatchewan during that winter. Federal and provincial governments as well as First Nation communities received heavy national and international criticism for the winter hunt.

In 1981, Dene and Métis communities on the ranges of the Qamanirjuaq and Beverly caribou herds developed a resolution outlining the formation of a user-only board including both non-treaty and treaty Indians as traditional hunters. Users were concerned that participation in a joint user-government board would erode existing Aboriginal and treaty rights and narrow the extent of eligible user membership. However, a joint user-government Board was created despite the tensions involved in linking the government and First Nation-initiated proposals of the preceding years. Such a marriage was an astounding event at a time of perceived crisis for two large caribou herds, when the miscommunication between government wildlife managers and First Nation communities was high.

In recognition of the fundamental effects of wildlife management decisions on Inuit communities, the government predecessor to the Board (the all-government Caribou Management Working Group) initiated the Kaminuriak (an earlier spelling of Qamanirjuaq) Film/Video Project and *Caribou News*, the Board's newsletter. This video project documented the perspectives of government biologists and Inuit hunters working and living on the range of the Qamanirjuaq caribou herd in the late 1970s. The project spurred discussion between biologists and Inuit hunters who were at odds over the causes and even the existence of a decline in the population numbers of the Qamanirjuaq caribou herd by documenting the viewpoints of all sides of the debate. The Board is convinced that the films facilitated communication and helped to change attitudes. Only two to three years previous to the signing of the Caribou Management Agreement (and the

video project) it was not possible to freely discuss topics of caribou management in communities.

Gaining Community Perspectives: Study Area and Methodology

The Board was established at a time when the gap in mutual recognition of the ecological knowledge of wildlife managers and caribou-using communities could not be bridged. This discussion continues with an examination of the Board's progress in bridging the communication gap between managers and caribou users by analyzing the activities of the Board between 1982-1993 (including the minutes of the meetings and the Board's newsletter, *Caribou News*). Local perceptions of the Board are illustrated by interviews carried out in the caribou-using communities of Arviat, Nunavut and Tadoule Lake, Manitoba. Arviat is a primarily Inuit community of 1,300 people on the west coast of Hudson Bay. Tadoule Lake is a Dene community of 350 located in spruce lichen woodland on the shores of a lake in northern Manitoba near the Nunavut border. All subsequent discussion of community perceptions of the Board refer to the author's research (Kendrick, 1994) unless otherwise noted.

The author spent parts of the summer of 1993 and winter of 1994 in Arviat and Tadoule Lake and a year beforehand living in the "neighbouring" community of Churchill. Both Arviat and Tadoule Lake are "fly-in" communities that hunt animals from the Qamanirjuaq caribou herd. However, there are a number of prominent differences between the two communities.

Arviat

Arviat is predominantly an Inuit community with a population of over 1,300 people and the southernmost community in the newly emergent Nunavut territory. The town site is a traditional camping area of the *Paallirmiut* Inuit (Caribou Eskimo). A permanent settlement has existed in the area since the 1920s. However, it was not until 1958 that Inuit families in the area settled year-round in Arviat in order to continue to benefit from social assistance programs contingent on Inuit childrens' attendance at Canadian schools. Arviat is today home to people of *Paallirmiut*, *Harvaqmiut*, *Hauniqturmiut*, *Qairnirmiut*, *Ahialmiut* and *Sallirmiut* backgrounds. While in Arviat the author spoke with 37 men and 14 women about the Board.

Thirty-one of the forty-seven (four were conducted with married couples) interviews were carried out with the help of a translator. The community houses an extensive institutionalized wildlife management infrastructure including local and regional government offices and local and regional hunters and trappers organizations.

Table 1: Outline of Arviat Interviewees

Number of Interviewees:	Female	Male
> 60 years old	8	4
50-60 years old	5	11
30-50 years old	4	13
< 30 years old	1	6

Tadoule Lake

The Sayisi-Dene (easternmost Dene) community of Tadoule Lake is represented by a local Band council that is the only formal infrastructure available to act as a link between hunters and trappers and anyone from outside the community. While in Tadoule the author spoke with 15 men and 5 women.

Seven of the sixteen (4 were conducted with married couples) interviews were carried out with the help of a translator. Tadoule Lake is still grappling with the legacy of a government relocation of the people from their traditional land use area to Churchill on the Hudson Bay coast in the late 1950s. The community moved back to the Sayisi-Dene's traditional territory in the early 1970s, but not before 117 of the 300 people brought to Churchill in the 1950s had died, half of whom died violently (Bussidor and Bilgen-Reinart, 1997:146-147).

Arviat and Tadoule Lake are shaped by markedly contrasting political realities that make their perceptions of the potential and importance of co-management regimes relatively different. Arviat has a secure base from which to express its plans for land use planning (as a community in Nunavut). However, Tadoule Lake is plagued by uncertainties that outside forces will undermine its ability to negotiate its future on its own terms. Both communities expressed similar ideas about the importance of educating young people about human-wildlife relations. Frustrated efforts to incorpo-

Table 2: Outline of Tadoule Lake Interviewees

Number of Interviewees:	Female	Male
> 60 years old	4	6
50-60 years old	0	1
30-50 years old	1	8

rate the knowledge of Elders was also expressed as a common concern in both communities.

Given the depth of the variation among the situations and philosophies of the user communities represented on the Board, Tadoule Lake and Arviat in many ways exemplify the contrasts in the ecological, cultural and political realities of other user communities. The community views expressed in this paper are best represented by the qualitative rather than the quantitative presentation of results. A list of questions was used to guide semi-directed interviews with community members (Table 3).

The questions were designed to bring about discussion of the Board and the issues that people felt most concerned about with respect to their relationships with wildlife officers, biologists and caribou. Interviewees were promised that their comments would be kept confidential so that they felt more comfortable critiquing the Board. For this reason, none of the names of the community members interviewed are included in this discussion. It was not possible to compare directly the perspectives drawn out of the conversations in Tadoule Lake versus Arviat. However, generalized conclusions of the parallels and contrasts in the situations in the two different communities can be made.

The Board's prolonged commitment to communication between government wildlife managers and First Nation caribou-using communities has its origins in a scenario of low trust levels. However, an analysis of the activities of the Board over its first decade of existence shows that more than 80 percent of the Board's decisions were made by consensus. The topics that have most pervaded management discussions are fire control, the effects of development on caribou habitat, harvest studies and caribou monitoring. Slightly more than 20 percent of the Board meetings centred on the discussion of education and contact between the Board and user communities.

The Board serves an important role as a forum for discussion even though it officially functions only in an advisory capacity. The consistent implementation of the Board's recommendations illustrates that the Board has *de facto* decision-making authority (Swerdfager, 1992). Almost all of the Board's first ten years worth of recommendations have been adopted by the governments involved (Usher, 1993).

The role the Board plays is more apparent as the communities represented by the Board become increasingly politically and legally distinct. The Board has committed a large part of its financial resources to communicating scientific knowledge and perspectives to user communities through its Schools Program and its newsletter, *Caribou News*. However, while the Board has focused its efforts on communication, the incorporation of local

Table 3. Questions used to Structure Semi-Directed Interviews

1. Have you heard of the Caribou Management Board (CMB)?
2. Do you believe that the CMB has done a good job of representing your community's concerns?
3. Have you ever talked with the person in your community who is a member of the CMB to express your thoughts or concerns?

4a. Have you sat in on any of the CMBs meetings?

b. If so, did you participate in any way?

5. Do you read *Caribou News*?
6. What are the issues you feel the CMB or biologists should be most concerned about? - e.g. fire management/border restrictions/wolf control/etc.
7. How important do you think community hunts are to the future of caribou hunting in your community?
8. Can you afford to hunt without the financial support of a community hunt?

9a. Do children get enough opportunities to learn skills out on the land?

b. Do kids who drop out of school get involved with trapping/hunting/fishing activities?

10. What is the best way to handle/prevent any waste of meat that may occur? - e.g. crippling losses or rotten/freezer-burned meat.
11. What do you think of caribou population estimates?
12. Would you like to see more of the information biologists collect about where caribou are moving through the year?
13. Do you keep in regular contact with neighbouring communities about caribou movements? How? (i.e. by phone, CB radio)
14. Have you ever been involved with a biologist's research?
15. Do you think there is more need for local participation in research?
16. What do you think of the methods biologists use to monitor caribou (i.e. aerial surveys, radio collars)
17. Discussion of *possible future* scenarios:

a. If caribou were a great distance from town and most hunters were unable to afford the time or the money to hunt, how would you feel about a programme set up to fly hunters out to areas where caribou are located?

b. If caribou numbers decreased so much that most people could not get as much meat as they needed, how would you react if someone brought reindeer to this area?

18. What kind of information do you feel is important for the community to share with wildlife managers?
19. Do you have any comments you would like to share with people in other caribou-using communities or to the CMB?

perspectives into Board discussions could arguably be stronger. This is undoubtedly due in large part to limited funding and the inability to dedicate more time to strengthening communication between wildlife scientists and communities. But what are the barriers hindering this communication?

Recognizing Barriers to Dialogue: The Beverly-Qamanirjuaq Experience

The hindrances to a balanced and open dialogue may be explained on at least four different fronts. The Board has been slowly working to dissolve or at least acknowledge these obstacles; the curtains that prevent the development of a transparent window between government wildlife managers and caribou-using communities:

1) Historical Conflicts between Caribou Users and Managers,
2) Respect of the Differences in Cross-cultural Ecological Knowledge,
3) Jurisdictional Differences between Communities, and
4) Level of Community Identification with the Board.

The rest of this discussion will expand on these headings, emphasizing the time involved in negotiating these barriers, barriers in essence to trust building, one of Berkes' (1997) preconditions for successful co-management. These barriers are discussed in the light of the local perspectives gained from interviews carried out in Tadoule Lake and Arviat.

Historical Conflicts between Caribou Users and Managers

First Nation caribou-using communities still exhibit a significant level of mistrust of government wildlife management bodies. This is not surprising or unusual (Ames, 1979; Freeman, 1989; Freeman *et al.,* 1992; McCandless, 1985; Swerdfager, 1992). Wildlife management and research has profound implications for communities living nearby or within caribou ranges. Academics have expressed the:

> ...long-standing and largely unaddressed need to critique the current and past use of archaeology and historical anthropological studies by wildlife scientists in order to confront the roots of the historical conflict between wildlife biologists and aboriginal users (Drolet *et al.,* 1987).

The need to address this conflict is as alive today as it was when Drolet and his colleagues addressed it more than ten years ago. Recent findings of a

comparative study of the Western Arctic Caribou Herd management system in Alaska and the Beverly-Qamanirjuaq management system illustrate the persistence of this historically-based conflict (Klein *et al.*, 1999; Kruse *et al.*, 1998). For instance, while 87 percent of the Board's managers feel that the Board has increased traditional caribou users' "sense of control over their lives," only 27 percent of users feel the same way (Kruse *et al.*, 1998:456).

The community of Tadoule Lake illustrates the depth and nature of this conflict. Tadoule still grapples with the legacy of the relocation of the Sayisi-Dene off the land in the late 1950s to the northern Manitoba town of Churchill. The community relocated itself back on the land in the early 1970s. Nevertheless, as mentioned earlier, it is vital to recognize that the Sayisi-Dene were socially and economically devastated by the original relocation (Bussidor and Bilgen-Reinart, 1997; Treeline Productions, 1992). The community of Tadoule Lake is wary of government in general, while the older people the author spoke with feel that wildlife biologists and game wardens helped to justify the government's assimilationist policies in the 1950s by asserting that the Dene were over-hunting caribou in northern Manitoba and should therefore be moved into a settlement. The Sayisi-Dene, who survived on a caribou-based economy before government relocation to Churchill, are still recovering from the legacy of a policy that destroyed their ability to hunt caribou and denied them their self-sufficiency.

Wildlife Management: A "Land-Cropping Art"?

Some Sayisi-Dene Elders expressed their dismay with wildlife management decisions and research methods. One Elder described caribou monitoring methods as an invasion or attack of agricultural peoples' ideas on Dene culture, explaining that in contrast, she would never presume to travel south and tag animals or place limits on the killing of cattle. When explained from this Elder's perspective, wildlife management seems an entirely intrusive and one-sided proposition. Indeed, one of the fathers of modern conservation, Aldo Leopold, wrote that:

> Its [game management's] nature is best understood by comparing it with the other land-cropping arts, and by viewing its present ideas and practices against a background of their own history (1933:3).

The differences in user communities' relationship with caribou and the thinking of government managers and biologists is at times a profound contrast. Co-management structures like the Board are coping day-to-day with the difficulty of linking communities originating from hunting-based societies and wildlife management institutions originating in agriculturally-

based societies. There is a profound alienation felt by many First Nation Elders toward wildlife management decision-makers. The continued reverberations in communities' memories of the consequences of early game laws written by southern legislators and geared to suit the needs of sport hunters rather than those who hunted as a way of life should not be forgotten. Leopold's writing epitomizes the biases of early game management:

> Hunting for sport is an improvement over hunting for food in that there has been added to the test of skill an ethical code, which the hunter formulates for himself, and must live up to without the moral support of bystanders (1933:391).

Caribou: A Frontier or Homeland of Thought?

Thomas Berger's (1988) discussion of the paradox of non-Aboriginal concepts of a "wilderness frontier" and Aboriginal concepts of their land use areas as "homelands" has obvious parallels in the growing pains of wildlife management. Poole (1981) describes examples of wildlife research in the Canadian north that failed to consult Aboriginal communities and often disregarded the concerns of these communities. The increased sensitivity of caribou researchers to the knowledge of caribou-using communities is the result of a dialogue between those who see caribou research as an exciting and wide "frontier" of research possibilities and those who see caribou as an animal of profound and long-standing cultural importance, a "homeland" of thought.

Many community members still feel extremely uncomfortable with research methods that require the handling of wild animals. As a result the Board has spent a great deal of time and money consulting with communities specifically about satellite collaring programmes. While the author was conducting interviews in Tadoule Lake in 1993, Band council members asked her not to talk about satellite collaring unless the interviewee mentioned collaring him/herself.

A number of Tadoule Lake Elders did comment on satellite collaring in any case. One Elder recounted a Dene legend that describes a girl who marks a caribou with a cloth ribbon. The girl's action leads to the subsequent deterioration of the relationship of trust between the caribou and Dene people (*Caribou News*, April 1983 2(6):15). Tadoule Lake Elders spoke of the anger the community felt when researchers first began tagging caribou in the 1950s. Caribou were first tagged in northern Manitoba from canoes as they swam across river crossings; crossings considered to be sacred sites. The primary location used to tag caribou was the Duck Lake site from which the Sayisi-Dene were relocated to Churchill in the late 1950s (Miller

and Robertson, 1967). This is also the site where photos of caribou carcasses were taken, and distributed by government employees to southern newspapers as evidence of the "slaughter" of caribou by Native peoples in northern Manitoba (Treeline Productions, 1992).

In contrast to depictions of the "wanton slaughter" of caribou (see Kelsall, 1968) anthropologists have extensively documented the historical adherence of Aboriginal communities to behavioural standards of human interactions with animals in both a physical and spiritual context (Brody, 1987; Feit, 1973; Fienup-Riordan, 1990; Tanner, 1973; Ridington, 1988). Although still regarded with trepidation, satellite collaring has been accepted by many Beverly-Qamanirjuaq communities with preconditions because the Board helped to facilitate consultation between wildlife biologists and communities. The Board explained the methods used to collar animals and insists upon the prior consultation of communities before the use of collars in monitoring studies.

The Cost of Doing Research: From a Community Perspective

The examples listed above describe the depth of intrusion many community members (especially Elders) feel that wildlife management actions have made upon their personal lives. Many circumpolar peoples consider the relationship between humans and animals as one of collaborative reciprocity where "the animals [give] themselves to the hunter in response to the hunter's respectful treatment of them as 'persons' in their own right" (Fienup-Riordan, 1990:167). This relationship of reciprocity is very different from Western concepts of the use of natural resources. It is not possible to work toward mutual discussions of resource management without understanding the traditional view of many circumpolar people that animals are non-human persons. Contemporary resource management in the North struggles to acknowledge that traditional hunting and gathering peoples "were more directly affected than others by colonialism and its consequences and an awareness that struggles over allocation of resources today must be waged on non-Indigenous terms and using the discourses and legalities of the more powerful parties" (Hamilton, 1982:242). As a result, the "price" of power-sharing within current caribou co-management regimes is often quite costly to caribou-using communities (see Kofinas, 1998).

Respect of the Differences in Cross-Cultural Ecological Knowledge

The Board has invested a great deal of resources to communicate the principles of western scientific caribou research to the Board communities.

Through Board meetings and the publication of its newsletter *Caribou News*, the Board has attempted to explain the methodologies and rationales behind tagging and collaring programmes, census techniques and statistical uncertainty. The Board has always been anxious to encourage user participation in caribou movement and distribution research in order to validate the information derived from the research of caribou biologists to user communities.

Unfortunately, there are acknowledged problems with this communication. Some of these problems are exacerbated by the Board's limited financial resources. For instance, population surveys are presented primarily in English and in a written format. There are obvious difficulties in affording translation into Dene and Inuktitut syllabics that accommodate the varied dialects present in each language. The jargon of scientific studies is also difficult to translate conceptually into languages that do not recognize human-environment, subject-object and cause-effect relationships in the same way that the English language does. In addition, the challenge involved in representing the results of population surveys in a manner that recognizes the written literacy and numeracy rates of non-scientists cannot be overemphasized. Two surveys in particular required a significant amount of explanation.

The results of the first photo aerial surveys (caribou counts estimated from photographs of the caribou range taken from the air) released in 1984 showed that the earlier visual aerial surveys (counts made by human observers flying overhead) recorded half the number of animals that the photos revealed. Furthermore, in 1989, biologists were at a loss to explain why herd population levels were stable when recruitment levels (the number of calves surviving beyond the first year of life) indicated numbers should be rising. Finally, a 1993 survey of the Beverly herd estimated that the herds' numbers had fallen below the Board's "crisis point" of 150,000. Faced with a situation that indicated a possible dramatic decline in the number of Beverly animals, the Board helped to finance a survey of the herd the following year (surveys are very expensive and not generally carried out within a year of each other) that approximated the herd's size at over three times the number indicated by the previous year's survey (*Caribou News* 15(1):1).

The Board has struggled with community mistrust of the credibility of scientific information given these examples of dramatic differences in population sizes from survey to survey and the large confidence limits of population data. However, the Board has remained consistently open in its acknowledgment of the uncertainties involved in the collection and interpretation of survey data. The research of caribou population dynamics may

never equip the Board with the tools to predict a maximum sustained yield or harvest of animals. In fact, the legitimacy of "maximum sustainable yield" harvesting has been challenged within the scientific community for many years (Costanza *et al.,* 1997; Dale, 1989; Gunderson *et al.,* 1995; Maser, 1999). Furthermore, caribou ecology is extremely complex; the variation in the behaviour and movements of caribou populations is high (Klein, 1991; Klein *et al.,* 1999).

However, the Board will continue to struggle with questions of user access to caribou and sustainable use despite the uncertainty involved in interpreting population dynamics. Is it necessary to develop precise population information in order to successfully co-manage caribou (Urquhart, 1996)? The Porcupine Caribou Management Board in the Yukon has successfully challenged this assumption by fostering research incorporating local perspectives that provides answers that will translate into management actions:

> Thus the initial question should not be: "Why is the herd declining?" but, "Are there aspects of the herd's decline that can be mitigated?" If factors such as overharvesting, disturbance and predation can be ruled out through appropriate research, then the causes of the herd's decline become more or less academic since nothing can be done to influence it (Urquhart, 1996:268).

Caribou research is an expensive proposition. Partially in recognition of this reality, the Board recognizes that co-management efforts will be most effective once the knowledge of traditional caribou-using communities and wildlife scientists is synergized. As discussed by Berkes (1999), Johnson (1992) and Mailhot (1993) "each" knowledge system has its limitations and its strengths. One of Tadoule Lake's Elders hopes that in the future the Board will priorize its consultation with communities over the collection of "high tech" information (census data), especially when budget cuts lower the funds available to the Board and government wildlife management agencies. The findings of the comparative study of the Beverly-Qamanirjuaq and Western Arctic caribou management systems echo the same sentiment:

> User-management boards do not appear to be a substitute for a frequent and continued presence of biologists in traditional user communities when it comes to establishing trust in management information and supporting traditional community-based decision making (Kruse *et al.*, 1998:447).

The skepticism found among caribou-using communities when presented with the findings of scientific studies (see Klein *et al.*, 1999; Nadasdy,

1999) is also present among government wildlife managers attempting to understand local ecological knowledge (Ames, 1979; Freeman and Carbyn, 1988; Gunn *et al.*, 1988; Kruse *et al.*, 1998). Dene and Inuit communities may be equally skeptical: Wildlife biologists have misapplied arguments about the sustainability of current Aboriginal harvesting practices with questions about the applicability of Aboriginal knowledge to management efforts in the past (Freeman, 1985:266-269). The differences between western concepts of conservation and historically-based First Nation controls on hunting behaviour are profound (Fienup-Riordan, 1990, 1999; Nelson, 1982). However, this discussion will limit exploration of these differences to an acknowledgement that such contrasts have a large bearing on local versus state perceptions of harvesting practices and wildlife research methodologies and practices (see Klein *et al.*, 1999; Kruse *et al.*, 1998).

Biologists are now recognizing the need for an interdisciplinary approach to the management and conservation of wildlife (Gunn *et al.*, 1988; Knudtson and Suzuki, 1992; Stirling, 1990). Thomas and Schaefer (1991) have acknowledged the significant growth and changes in the attitudes of government and user members toward each other through the Board's development. The social learning inherent in the Board's history and the nature of co-management as a learning process rather than a "quick-fix formula" for cooperation between caribou-using communities and government managers, is evident in the changes seen in the Board over time.

Building Social Capital

Administrative changes, including questions of adequate user representation, as well as the continued minimal linguistic translation available at Board meetings are elements of some of the more obvious gaps in social capital the Board recognizes as problematic. User members have suggested that the reasons communities do not provide more feedback to the Board is because most users do not have the technical experience to communicate with the Board in the language used by managers. Community members the author interviewed emphasized that the Board misses the viewpoints of Elders because user representatives must speak English in order to participate effectively in Board meetings.

The Board holds public meetings in user communities when possible, and usually in conjunction with regular Board meetings held in user communities. It has not been possible, however, for the Board to visit all communities on the caribou ranges given logistical and financial constraints. Twenty-three of the thirty-nine Board meetings held between 1981 and 1993 were held outside of the communities represented by the Board.

Half of the communities represented on the Board have never hosted a Board meeting. This means that the concerns of user communities lacking direct representatives on the Board are very difficult to address.

Addressing Caribou User Concerns

The following examples illustrate the time involved in translating user concerns to real policy changes and are discussed below in the context of the social learning gained through the Board's lifetime. User members have always been anxious for the Board's management plan to reflect the issues of utmost concern to users. For instance, user members worried in the early 1980s that the draft management plan did not include the perspectives of users on trapping, logging, fishing and the effects of fire on traditional lifestyles, but only included issues of the protection of caribou winter feeding grounds. Users also felt that the plan's discussion of wolf control did not address the questions of communities; it only addressed the questions of biologists. There was decided pressure on the Board from users not to become yet another bureaucratic institution which glossed over users' primary concerns.

Fire control has been a matter of grave concern to user members in the provinces of the Mackenzie district of the Northwest Territories for many years. User members certainly made it clear that fire suppression is considered one of the primary management issues of communities. Board members agreed that although caribou may survive as a species without a valid program of fire suppression, they would not necessarily survive as a resource. The Board determined to encourage the protection of older forest areas of greater importance as productive caribou feeding grounds.

However, the Board's early attempts to communicate with government ministers about fire control went unheeded. User members worried that if fires continued to burn along the territorial-provincial border, there might be a time when caribou no longer travelled into the provinces. The Board initially encouraged fire managers to consult with user communities in order to place priorities on protecting unburned corridors between burns important as routes for caribou migration and as winter feeding grounds. The Northwest Territories' fire management committee made it clear, however, that it was up to the Board to identify critical areas on the range in need of protection.

Initially, the Board's government members felt that little was known about the effects of fire on caribou movements and the ability of burns to support caribou. However, a user member stated that such a statement was ludicrous given the extent of users' knowledge of the effects of fire. User members successfully argued that it was more important for the Board to

identify critical areas for fire suppression than to support further fire research studies.

In 1988, the Board established a Fire Mapping Working Group and by 1991 the group began identifying caribou migration corridors, older forest areas, and "green areas" for user communities. The following year (1992), the Board's Fire Management Committee was established with four user representatives and four government representatives. The Board and the Government of the Northwest Territories were well on their way to incorporating values-at-risk, fire history and critical corridor data into a geographical information system to be used as a management tool. This was an incredible achievement given that before the development of the final Board Fire Management Plan, governments had refused to spend their fire suppression budgets on anything other than areas of merchantable timber.

In recent years the Board has funded an extensive "Important Habitats Project" identifying areas of critical importance to the Beverly and Qamanirjuaq caribou herds. The development of a series of maps illustrate where caribou have travelled at different times of the year over a 30 year period. The project is designed to give the Board the tools it needs to protect critical areas in the face of mining and other industrial developments on the caribou ranges. A traditional knowledge study may eventually include all the Board communities, while the results of traditional mapping already underway in Keewatin communities will be included in the project as soon as the data is available. The Board hopes to use the digital maps to increase its effectiveness in the environmental impact assessment of development activities on the caribou range. By identifying land use activities that could potentially affect caribou and their habitat, the Board plans to develop a classification system for development proposals, and to prepare guidelines for assessing the potential impacts of activities. Such guidelines will be used in conjunction with seasonal range maps and databases.

The time involved to begin to address the concerns of user communities is often lengthy. In the case of fire management it took more than a decade for the concerns of communities to reach the ears of policy-makers and to begin to affect the allocation of fire suppression efforts toward critical caribou habitats. However, the fire management issue is also an example of the contrasting jurisdictional realities of user communities. Communities dependent upon the same resource may face very different political worlds. The next section explores the consequences of these differences and the Board's role in addressing jurisdictional differences.

Jurisdictional Differences Between Communities

There are decided regional differences between the political realities of provincial and territorial communities. Provincial economies regard caribou largely as an externality while the Northwest Territories and Nunavut acknowledge the cultural and economic importance of caribou within government policy and legislation. For instance, although the Board's fire management plan received support from the Northwest Territories' government and eventually helped to shape the Northwest Territories' fire suppression activities, Saskatchewan would not provide funding for fire studies in areas where there is no commercial timber and Manitoba does not have a budget for fire suppression in the north of the province.

In addition, imbalances exist in the application of the Board's priority caribou user categories. This inflames questions of accessibility and definitions of commercial use in the provinces versus the territories. The discussion of commercial use has been one of the most controversial issues discussed at Board meetings. The Board established a list of user priorities, allocating domestic use by traditional users the highest priority of use and export use for commercial purposes the lowest priority. The Board risked a fundamental divide between users when it voted after two previous rejections to support a request for a commercial quota for a territorial community while provincial users still had limited access to caribou. The Board supported Manitoba users' long-standing request for access to caribou in the Northwest Territories, but only after the Board supported an Alberta community's request (a community not represented by the Board) for access to caribou in the Northwest Territories. Communities such as Tadoule Lake worry about the effects of commercial quotas on traditional access to caribou meat. For example, will Baffin Islanders end up with indirect access to Qamanirjuaq caribou through a meat processing centre in Rankin Inlet? Should Dene and Inuit communities living near the Beverly caribou range also have access to Qamanirjuaq caribou? Arviat Elders also worry about the implications of the centralization of meat processing out of their home communities.

Level of Community Identification with the Board

Interviews in Arviat and Tadoule Lake revealed that less than half of interviewees distinguish the Board from a government management body. Few community members have spoken with their community representatives about the Board or their concerns about caribou research or harvesting practices. However, the Board was described as a "safeguard" despite general mistrust of outside influences on community life. For

example, one Arviat Elder described his dislike of the wildlife officers who regulated hunting activity while he was a teenager and his feelings that conditions had improved tremendously with the organization of the Hunters and Trappers' Association and the hiring of Native wildlife officers in recent years.

In contrast, Tadoule Lake is a much smaller provincial community without government wildlife offices, and is much more guarded in its reception of wildlife management activities. Interviewees in Tadoule Lake feel that their thoughts are unlikely to reach expression in policy-making. They do not have a large sense of membership in the Board and its potential to influence government actions. The Board is strongly associated with government and is spoken of in the same context as outside influences such as Manitoba Hydro's plans for future hydro-development of northern rivers. Many individuals clearly continue to consider the Board one of many government and outside interests external to the community.

Many interviewees knew very little about the current activities of the Board or referred to wildlife management agencies as one homogenous force. Community members discussed a range of issues including the importance of community hunts, land skills instruction, the potential for hunting waste and thoughts on caribou monitoring methods. These topics are obviously uppermost in community thinking despite a seeming lack of connection between community members and the Board.

At its 1986 user assembly, the Board was very concerned that most users were uninformed of the Board's goals. Unlike the Board's government members, user members do not have salaries, budgets or programmes to support their representation of the Board to their home communities and the neighbouring communities they represent. In order to address these issues, the Board made adjustments to its organization, establishing an independent user-only meeting to take place in conjunction with each Board meeting and according funds to cover the travel and telephone costs for user members' consultation with communities.

The Beverly-Qamanirjuaq Caribou Management Board in the Broader Scheme

> The lesson is not that the BQCMB needs to do a better job; rather, the lesson is that the job is bigger than anyone expected (Kruse *et al.*, 1998:456).

The lessons learned from the frame-shifts evident in other co-management systems (Dale, 1989) are also apparent in the Beverly-Qamanirjuaq caribou management system. The complexities of these systems are

enormous, from increasing understanding by caribou biologists that caribou ecology is far more variable than anyone imagined 50 years ago, to rising pressures to respond to the impacts of industrial developments on caribou habitat.

The Board had a unique birth in comparison to most other co-management arrangements. Co-management regimes are often categorized as "claims-based" or "crisis-based" (RCAP, 1996). The "crisis" of "crisis-based" wildlife co-management is usually centred on the loss of habitat due to human activities. In the case of the Board, the initial crisis was conceptual; managers worried that caribou numbers were dwindling perhaps due to over-hunting, while many user communities questioned the existence of a decline and certainly questioned the existence of over-harvesting. Without the unity brought about by an identifiable crisis commonly perceived by both users and managers, the Board's growth has been very different from that of the Porcupine Caribou Management Board, a co-management system that has always had a rallying point: the threat of oil and gas development in the herd's calving grounds.

The Board is a unique example of an institution that manages to strengthen the co-management of a resource, without legal definition within a land claims agreement or a clear and undisputed management goal. Is "the sharing of power and responsibility between government and local resource users," (Berkes *et al.*, 1991:12) possible without the legal transfer of political power and responsibility? The Board's creation reflects a recognition that the complexity of human-caribou systems is beyond the capacity of previous management institutions to handle. As phrased by Dale (1989), describing fisheries management, the Board is wrestling with a new kind of social problem, the negotiation of "meta-problems" (complex problems that deal with the whole environment and are impervious to specialized knowledge) "distinguished by such characteristics as difficulty of consensual definition of the problem" (Dale, 1989:50).

The Board's history may illustrate that many of the conditions necessary to strengthen and mature the dialogue between government biologists and user communities are forums that allow innovative collective learning, and that this learning is as vital as the political empowerment of user communities for successful co-management. For instance, the Board's role in changing fire suppression priorities in the Northwest Territories, defending traditional caribou-using communities' access to caribou and in identifying and protecting critical caribou habitat are the result of collective learning in a complicated interjurisdictional context.

In general, co-management systems are seen to function as forums for cross-cultural education and communication (Osherenko, 1988; Usher,

1993). These regimes work to promulgate the social systems that combine socio-economic interests and ecological principles. Co-management systems promise to recognize customary Indigenous infrastructures of resource management and to replace infrastructures of resource management that place restrictive controls on individual common property resource users with "voluntary collective actions" (Feeny *et al.*, 1990:11). However, there is a sea of conflicts and miscommunications to wade through before co-management systems can deliver on such a promise.

The Board has continually addressed fundamental questions about the applicability of Aboriginal and non-Aboriginal value systems to the survival of caribou. The Board attempts to secure a balance of interests to ensure the success of a communal property regime. The Board does serve as a forum for the continual reconciliation of community and government approaches to wildlife management. This lengthy and continuous commitment encompasses profound change; a cross-cultural dialogue that shares and recognizes a variety of knowledge rather than battling to realize the dominance of one body of knowledge over another. The cross-cultural learning involved in this process is often slow. Moreover, it is not clear that "the community" and "the state" equally share the costs of this process, which in many ways is still in a transformative state.

The history of the Beverly-Qamanirjuaq Caribou Management Board illustrates that co-management in practise is the process of securing a balance of interests in a common resource and should not be regarded as the definition of this balance. Co-management is a conceptualization, perhaps comparable with sustainable development, to the extent that it is a process and not a final state, a goal that may never be reached, but that is important to strive toward (Holling *et al.*, 1998:353).

Kofinas (1998), in his analysis of the Porcupine Caribou Management Board, evaluated the transaction costs accumulating to Aboriginal communities participating in the co-management processes. Kofinas' work shows that First Nation communities are taxed by the need to defray the political costs incurred by participation in co-management, in order to benefit from the increased social capital (learning) brought about by co-management participation. Most co-management analyses have implicitly or explicitly assumed that communities represent the lowest cost and most effective fora for communication (Lélé, 1998). However, the concept of "community" is far more "elusive and complex" than previously imagined and even "well-knit" communities (displaying many interdependencies among their members) are complicated by the effects of colonialistic policies and globalizing economies (Lélé, 1998; Nadasdy, 1999). Kruse *et al.* (1998) illustrate that caribou management systems (in this case those established

for the Western Arctic and Beverly-Qamanirjuaq caribou herds) have not found effective mechanisms to incorporate users' knowledge into decision-making processes. Government managers comment that user observations are often difficult to interpret and that a divergence of user and manager views often stifles efficient management action. Interestingly, however, Kruse and his colleagues do show that the value government managers place in traditional knowledge has shifted significantly in the last two decades. For example one manager stated:

> I've come to realize that there is a very different method of storing this knowledge and of examining what's going on with the caribou that's not related in the numerical sense or in written words (Canadian government manager quoted in Kruse *et al.*, 1998:452).

Increased communication between users and managers may be leading to improved trust and knowledge exchange between government managers and traditional users. The flow of communication between managers and users remains problematic not because of a lack of effort, but perhaps because it is not always effective. This is probably true for the same reasons that most of the lay public is flummoxed by technical scientific language *as well as* the fundamental linguistic and ideological differences between users and government managers (see Fienup-Riordan, 1990; Kofinas, 1998; Roberts, 1996). As expressed by Forester:

> ...public and articulated acknowledgement of conflicting and pressing values does not solve a problem: it works ritualistically to re-build relationships and to prepare the social basis for future practical action (quoted in Meppem and Bourke, 1999:401).

State management knows very little about the manner in which caribou users currently share knowledge, as well as the ways in which users shared knowledge before permanent settlement patterns. It is possible that the hesitancy of communities to accept the methods and techniques of caribou population surveys is also related to the way that such research may undermine local information exchange systems. Caribou management systems displaying increasingly sophisticated monitoring techniques are not necessarily showing increased wisdom about how to limit access or harm to caribou ranges or answering fundamental problems with respect to the access of traditional caribou-using communities to animals that may not move close to permanent settlements for years at a time.

There are important cultural differences about the rules of knowledge and information use. The control of specific knowledge about resources is a form of resource management (operating through restricting access to

resources) recognized by common property theory (Weinstein, 1996:3). It is not evident that current co-management institutions house mechanisms that recognize this information management. However, global restructuring and government budget cuts may provide opportunities for changes in co-management processes significant for both the state and communities (Feit, 1998). This window for innovative change may provide the conditions for the kind of social learning not possible twenty years ago.

Conclusions

The Board, an *ad hoc* co-management institution, has served as a forum where social learning has created the conditions to expand beyond a purely *consultative* framework to push *conceptual* boundaries. Beyond the important political questions of equitable and fair procedures for the management of wildlife vital to northern communities, the Board is showing signs that it is a structure which can and will recognize community knowledge as a *process* of thinking about human-environment relations.

This discussion has examined the cross-cultural dialogue between government wildlife managers and Aboriginal wildlife users behind the "single window" the Board provides between outside parties and caribou users. The Board is a forum that is developing the mechanisms to work through significant obstacles to communication. Perhaps it is time to recognize that the "curtains" shading the "window" to two-way communication will involve constant negotiation, not removal. The mechanisms needed to negotiate these hurdles are not just the tools of political empowerment. The Board may yet illustrate that the slow and complex process of linking local and state resource management systems is best achieved in a flexible forum, where the underlying conflicts between biologists and hunters can be salved through learning exchanges such as the Board's fire history mapping project, the negotiation of the "caribou crisis" impasse, and the gradual understanding of the pitfalls and benefits of wildlife research.

Co-optation and domination have overwhelmingly marked cross-cultural exchanges in the recent past. Caribou co-management in many ways defines a direct challenge to such historical precedence. No matter what the political and ideological differences between caribou-using communities may be, it is clear that the existence of a forum like the Board has enabled the discussion of diversified interests to grow and the building of trust and social capital. Jurisdictional boundaries may create artificial separations between user groups, but the ecological realities that unite them (shared dependence on caribou) represent a fundamental and shared base that cannot be ignored. An Inuit Elder the author spoke with several years ago, participant in many land claim and wildlife management meet-

ings, emphasized his hope that wildlife management discussions revolve around questions of *how to share* the land *rather than the control* of the land. In essence, his is a profound definition of co-management; the process of learning how to share and protect rather than to control knowledge and resources.

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