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Resource Management for the Next Generation : Co-Management of Fishery Resources in the Western Canadian Arctic Region

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Resource Management for the Next Generation: Co-Management of Fishery Resources in the Western Canadian Arctic Region¹⁾

Masami Iwasaki-Goodman
Hokkai Gakuen University

It is important for us to learn this (Co-Management) because we are the next generation. We have to be prepared to take over the management of our renewable resources.

High school student at the Beaufort Sea 2000
(FJMC 1999: 14)

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1. INTRODUCTION

Inuvialuit in the Western Canadian Arctic region have maintained a tradition of hunting and fishing, of harvesting wildlife for their daily food. Since 1984 when the Inuvialuit Final Agreement was signed, they have been managing local renewable resources²⁾ in cooperation with the Government of the Northwest Territories and the Canadian federal government. Recently, co-management systems in which aboriginal people and both levels of government work together to manage resources has become accepted as an alternative to government-centered management systems. Inuvialuit have practiced co-management for almost twenty years and their case has been viewed as one of the most successful. Furthermore, they have been active in sharing their experiences with other aboriginal peoples and government agents. Many researchers have discussed the problems associated with resource management systems in which governments and the international organizations play a central role [PINKERTON 1989; DESOMBRE 2001; IWASAKI-GOODMAN 2002] and various attempts have been made to shift the responsibility of resource management from the central government to the local resource users. Consequently,

co-management systems and community-based management systems have been undertaken and proven to be workable [BERKES 1987, 1989; BERKES et al. 1989; MCCAY and ACHESON 1987; WEINSTEIN 1999; AKIMICHI 2002].

It is indispensable for aboriginal peoples to properly manage renewable resources in order to maintain their hunting and fishing traditions in contemporary society. Through an examination of the process leading to the development and implementation of co-management and the current situation of the co-management system involving the Inuvialuit and the governments, the problems associated with the effort to maintain a tradition of hunting and fishing, and possible ways to overcome these problems, will become clear. In this paper, first, theoretical issues relating to co-management will be reviewed. Second, issues concerning land rights and aboriginal rights will be examined. They are the core of the problems facing Canadian aboriginal peoples and also serve as the legal frame-work of the co-management system in the Inuvialuit case. Third, based on field-work data gathered since 1998, the Fisheries Joint Management Committee, one of the resource management committees in the Inuvialuit region, will be examined in order to understand how this co-management system functions.

2. TRANSITION FROM THE GOVERNMENT MANAGEMENT SYSTEM TO THE CO-MANAGEMENT SYSTEM

To begin the discussion on the use and management of renewable resources such as fish and other wildlife, it is important to understand their characteristics. Generally, fish and wildlife are considered common property, whose owners cannot be easily identified. These resources are available to various kinds of users, in contrast to private property such as domesticated animals, whose owners are usually identifiable. Furthermore, migratory species such as salmon and whales are subject to hunting by various resource users as they migrate. Hardin [1968] discusses the difficulty involved in management of such common property in his well-known paper, "The Tragedy of the Commons". According to Hardin, common property belongs to all people who have access to it. Therefore, if there is excessive competition over a certain resource, that resource may ultimately become depleted, since there is not sufficient power to control access. For many years, "The Tragedy of the Commons" served as an important reference in the management of fisheries, forestry, and other areas as a possible scenario of over-use of renewable resources, leading to depletion and environmental destruction. It also had a great influence on government policy in resource management, providing a justification for government interference [MCCAY and ACHESON 1987; OSTROM 1990].

For Canadian aboriginal people's use of resources, there are many cases where Hardin's theory cannot be applied. For example, the aboriginal people of the Northwest Coast of Canada managed and utilized salmon resources as a part of their traditional social and cultural system. The recent decline of the salmon resources in this region is the result of the government management system which replaced the aboriginal management system [MEGGS 1991; NEWELL 1993; IWASAKI-GOODMAN 1999, 2002]. Furthermore, Weinstein [1994] argues that the aboriginals had a clear notion of ownership with regard to the fishery resources. Therefore, fisheries were traditionally not considered common property. In addition, Newell [1993] denies the applicability of Hardin's theory to Canadian aboriginal situations, arguing that common property is a European

notion. Many other researchers who have conducted research in the Canadian aboriginal communities also deny the applicability of the commons theory and state that resource management systems are incorporated in, and are not separable from, traditional aboriginal social and cultural systems, and worldview [BERKES 1987; PINKERTON 1990; FEENY et al. 1990; FREEMAN 1993]. Akimichi [1997] further points out that the notion of the commons itself is a reflection of nationalistic western ideology and that it has limited application in non-western societies. These researchers agree that what is needed in the management of resources in aboriginal communities is not the involvement of the government, but rather that aboriginal groups be urged to re-evaluate the effectiveness of traditional resource management systems, and attempt to employ them in a modern context.

Numerous studies were conducted leading up to the implementation of renewable resource co-management systems in Canadian aboriginal communities. These studies helped to identify the social and cultural significance of hunting and fishing to aboriginal peoples. In the 1970s, the Inuit Land Use and Occupancy Project was undertaken in order to identify areas Inuit traditionally used for hunting, fishing and residence [FREEMAN 1976]. In addition, in the Mackenzie Valley Pipeline Inquiry, the effects of construction and use of the pipeline on wildlife and aboriginal societies were examined [BERGER 1977]. These studies played an important role in defining the principle elements that are crucial in considering effective resource management by aboriginal communities. These elements are: 1) resource use in aboriginal communities is important in the social, cultural and economic spheres, rather than just the commercial and recreational as is the view in non-aboriginal Canadian communities; 2) resource use is the basis of ethnic identity for the aboriginal peoples; and 3) the land provides the core of their subsistence activities, and the natural environment produces the resources. Moreover, Berger [1977] clearly stated that, in order to ensure the maintenance of traditional resource use in aboriginal communities, it is critical to recognize self-determination for the aboriginal people. This understanding was later incorporated as one of the principles in the development of resource management systems for aboriginal people, resulting in the establishment of co-management systems. In 1975, the James Bay and Northern Quebec Agreement, the first land claim agreement for the Inuit, was signed. This was the first agreement in which the legal framework necessary for co-management was agreed upon between an aboriginal group and the Canadian government.

In the 1980s, aboriginal groups began to take a more active role in resource management in the Canadian Arctic. In 1981, the Symposium on Renewable Resources and Economy in the North [FREEMAN 1981] was held, chaired by Milton M.R. Freeman. In this symposium, the participants discussed how to effectively involve aboriginal people, and their experience and knowledge in the management of resources. In the report of this symposium, exchanges of opinion on different aspects of resource management are recorded. Among these is a point made by Usher, who stated that serious consideration should be given to the traditional practices of the aboriginal peoples and that, instead of these practices being ignored, they should be incorporated into the legal framework of the Canadian Constitution. This symposium was one of the earlier expressions of the need for alternative management systems. Gradually, consideration of co-management systems for renewable resources has become common.

In the Canadian Arctic, the effectiveness of traditional resource management systems that

the aboriginal peoples developed over time has been recognized, and co-management systems in which aboriginal groups and the governments work together have been formalized. Following the signing of the James Bay and the Northern Quebec Agreement in 1975, the Inuvialuit Final Agreement was signed in 1984, and the Nunavut Agreement in 1993. Although these agreements differ in detail, there are some common crucial elements [GOODMAN 1997]. Berkes et al. [1991] states that co-management integrates regional-level management and nation-level management systems, and stresses that co-management means sharing the policy making power and responsibility between communities and the national government. Resource management in the Canadian Western Arctic region was traditionally undertaken primarily by the Canadian government. Management decisions regarding resource use were made by the government, after which the aboriginal communities would be informed. Berkes notes that co-management brought changes in which resource users such as aboriginal hunters became involved in the process of policy making. Berkes and other researchers who have defined co-management [FEIT 1988; PINKERTON 1989] differ in use of terms such as “self-management and state-management” [FEIT 1988], “aboriginal system” and “state system” [RETTING et al. 1989], but have the common understanding that in a co-management system, resource users and the government share power and responsibility in management decisions and their implementation and enforcement.

Pinkerton [1989] further examines the mechanism of co-management systems by identifying seven functions:

- (1) data collection in order to understand the condition of the resource;
- (2) decision making as to where and when hunting and fishing should take place;
- (3) decision making as to who should harvest how much resource;
- (4) conservation of the natural environment to maintain the resources;
- (5) enforcement of regulations to maintain the system;
- (6) consideration of long-term plans for resource use and management, and
- (7) drawing up comprehensive policies for resource management.

Pinkerton stresses that in a co-management system, resource users and the government must work together in all seven functions and fulfill their respective responsibilities. Co-management systems make it possible to maintain aboriginal use of land and resources in modern society by meeting the needs that Freeman and Berger identified in the 1970s.

3. HISTORICAL SUMMARY OF ABORIGINAL ISSUES IN CANADA³: CHANGES LEADING UP TO THE INUVIALUIT FINAL AGREEMENT

Co-management of renewable resources by the governments and the aboriginal peoples cannot be properly examined without a discussion of the history of land claim negotiations. In this section, changes in government policy concerning aboriginal issues over time will be examined, with a focus on policy concerning resource management.

Aboriginal peoples had their first contact with Europeans in the 16th century, when the Europeans traveled to Canada to trade for furs [WILSON and URION 1995; STEWART 1998]. As more people moved to Canada from Europe and the conflict between England and France over the territory in Canada intensified, there was a greater need for the immigrants to form alliances with aboriginal peoples in the region. The treaties signed between the aboriginal groups and

the immigrants during this early period were for military alliances and to ensure the immigrants access to certain resources [WILSON and URION 1995; MCKEE 1996; COATES 2000]. During the 1700s, several treaties were signed for these purposes⁴.

After 1763 when France had lost the war against England, the government of England began to colonize Canada. A Royal Proclamation issued by King George III of England asserted that the aboriginal peoples of North America had existing rights (native titles) and established the system of surrendering those rights by treaty [WILSON and URION 1995; MCKEE 1996; COATES 2000]. This Proclamation now serves as a legal basis for aboriginal people to negotiate their rights to lands. In the resulting treaties, England secured access to resources such as minerals in the region, and the aboriginal groups were given financial compensation and guaranteed rights to maintain a traditional hunting and fishing life way [COATES 2000]. Obviously, the treaties during this period aimed at establishing a peaceful relationship between aboriginal groups and the European settlers by securing the rights of both.

In terms of land claim negotiations with the government, Inuit have gone through different experiences than other aboriginal peoples in Canada. The Inuvialuit of the western Canadian Arctic are thought to be the descendents of two aboriginal groups: the North Alaskan Eskimo and the Mackenzie Eskimos [USHER 1971; AQUILINA 1981]. Records of the early explorers in the mid-1800s suggest that the ancestors in the Mackenzie Eskimo had developed a rich sea-oriented culture, hunting fish and whales, beside hunting terrestrial mammals such as caribou. Drastic changes in the life of aboriginal peoples in the region were caused by the American whalers who started their whaling operations in the Canadian waters in the late 1800s. As a result of extensive whaling operations in the Arctic Ocean, whale resources were severely depleted, and the well-being of the local people was seriously threatened. Most serious of all were epidemics, which took the lives of many people. The population of the aboriginal people drastically declined in a short time. Although the Inuit in the Arctic region continued to be subjected to various changes effected by the extensive fur trade and the expansion of Christianity, they managed to maintain their traditional way of life with minimal interference from the Canadian government. This situation continued until the mid 1950s when the Canadian government began to implement a settlement policy for the Inuit.

In 1867, Canada became independent and established its federal government regime under the British North American Act. It also began to establish new relationships with the aboriginal peoples [WILSON and URION 1995; MCKEE 1996]. As the Canadian government carried out various projects to modernize the nation, its policies toward aboriginal groups shifted toward assimilation into Canadian society. In 1876, the Indian Act was passed, and the Department of Indian Affairs was established in 1880. At that time, the Canadian government did not recognize Inuit and Métis as aboriginal peoples and they were not eligible for any benefits granted other aboriginal peoples. Benefits were subsequently granted to them in 1939, when the Indian Act was revised [WILSON and URION 1995; KISHIGAMI 1998].

Beginning in 1867, as various development projects such as the construction of railroads were being carried out, there was an increasing need to deal with the rights of aboriginal peoples in order to secure land for such projects [WILSON and URION 1995; COATES 2000]. Between 1870 and 1920, the Canadian government signed 11 treaties with various aboriginal groups. These treaties covered most of central Canada. In these treaties, which differ in minor detail,

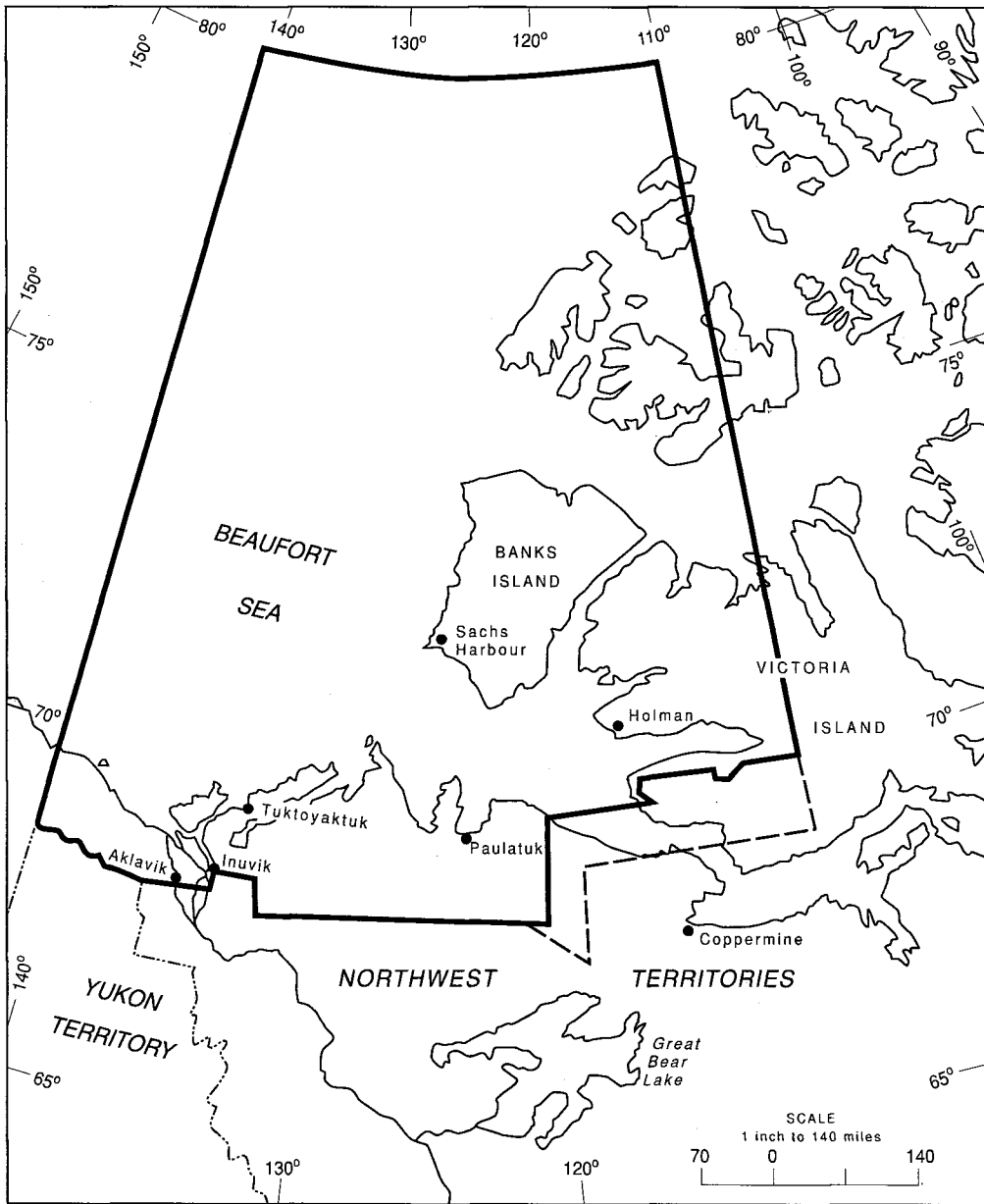
the Canadian government provided the aboriginal groups with reserves, financial compensation and various products such as farming implements. Unlike the 18th century treaties, these were designed to assimilate the aboriginal people into the non-aboriginal majority society, by denying a traditional hunting and gathering lifeway and instead, introducing farming.

In 1969, the Canadian government issued a White Paper, in which it stated its policy of treating all Canadians including aboriginals equally, and to abolish the system in which aboriginal peoples were granted special status within the nation [SMITH 1995; MCKEE 1996; CULHANE 1998; STEWART 1998]. Opposition to this policy by aboriginal peoples was so strong that the government had no choice but to change it. Furthermore, in 1973, the Supreme Court of Canada ruled in the "Calder Case" that aboriginal titles may still be in effect in current Canadian society. Aboriginal groups became more organized in their efforts to have their rights recognized. Finally, in 1982, aboriginal rights became legally recognized and were incorporated into the Canadian Constitution. However, this only meant that the legal basis for discussing aboriginal rights was complete. Since 1982, intensive efforts have been made to define aboriginal rights.

Recent changes in the Arctic are closely related to the political and economic interests of the government of Canada and the development the rich mineral resources in the Canadian Arctic. In order to effectively deal with the government, Inuit groups in the Arctic formed an organization called the Committee for the Original People's Entitlement (COPE) in 1969. This was the first attempt by Inuit groups in the Arctic to initiate land claim negotiations with the Canadian Government, which in turn lead to the signing of the Inuvialuit Final Agreement in 1984.

4. THE CASE OF THE INUVIALUIT

Inuvialuit are the Inuit who live around the Mackenzie Delta in the western Canadian Arctic region (see Map 1). According to explorers' records from the 1800s, Inuit in this region had developed a marine-oriented way of life, hunting primarily fish and marine mammals, along with some terrestrial mammals such as caribou [USHER 1971]. It was also recorded that there were a total of 2000 to 4000 Mackenzie Inuit living in the region. The period of fur trade with the Hudson's Bay Company in the 1800s had a limited effect on local economic activity. However, in the late 1800s, American whaling operations in the western Arctic brought changes to the region, and the life of Inuit in the Mackenzie Delta was seriously affected. The presence of the American whalers resulted in epidemics, the introduction of liquor, and various related social problems. It also resulted in the immigration of other newcomers, such as the Alaskan Eskimos [USHER 1971; HAMILTON 1994; KISHIGAMI 1998]. The epidemics and liquor were the cause of massive mortality among the local people, with the population declining drastically in a very short period of time. According to Usher [1971], by the winter of 1909-10, there were only 260 people, including both the Mackenzie Inuit and Alaskan Eskimo, living in the Mackenzie Delta. Around 1907, whaling operations in the Arctic Ocean came to an end and the American whaling ships left the Mackenzie Delta. In the 1920s, there was a second migration of Alaskan Eskimos into the region, as the fur trade boomed. Aklavik became the center for trapping and a major Hudson's Bay Company trading post, and other trading companies set up posts to buy white fox, muskrat, mink and other furs from the trappers [USHER 1971].



ADJUSTED BOUNDARY ———
ORIGINAL BOUNDARY - - - - -

Map 1 Inuvialuit Settlement Region

The modern era in the Mackenzie Delta region witnessed the establishment of the Distant Early Warning sites in 1955–57, the construction of the town of Inuvik in 1955, and oil and gas exploration in the 1960s [USHER 1971; AQUILINA 1981; HAMILTON 1994; SMITH 1994]. These new developments provided the local Inuit with jobs, resulting in a greater dependence on a cash economy. These changes accelerated the general decline of hunting and trapping among the Inuit, and thus, a diminished traditional way of life. In order to effectively deal with the government, the Inuit groups in the Arctic, as noted above, formed COPE in 1969. While COPE was a western Arctic initiative, it originally did have a pan-Arctic scope with 300 members in the central and eastern Arctic. With the formation of the Inuit Tapirisat in 1971 and subsequent events, COPE reverted to being a regional organization. COPE originally was to serve as a united front for all Inuit groups in Canada in land claim negotiations with the government. However, this was not realized so the Inuvialuit separately negotiated a land claim which would assure their rights to manage their own homeland. On June 5, 1984, Inuvialuit and the Canadian government signed the Inuvialuit Final Agreement (IFA).

Various social and economic aspects of Canadian society affected the negotiation process of the IFA. One major aspect was the development of the Arctic, including exploration for mineral resources in the Arctic Ocean. The primary development pressure during the time of the IFA negotiations was hydrocarbon exploration which brought an influx of men and equipment. The other major aspect was the increasing awareness and recognition of aboriginal rights. The principles of the IFA are a reflection of these social and economic issues, and state:

The basic goals expressed by the Inuvialuit and recognized by Canada in concluding this Agreement are: to preserve Inuvialuit cultural identity and values within a changing northern society; to enable Inuvialuit to be equal and meaningful participants in the northern and national economy and society; and to protect and preserve the Arctic wildlife, environment and biological productivity.

[INDIAN AND NORTHERN AFFAIRS CANADA 1984]

Thus, the IFA was signed so that Inuvialuit would be able to maintain their cultural identity, to become full members of the Canadian economy and society, and to preserve the natural environment in the Arctic region [DOUBLEDAY 1989]. In order to achieve its goals, the government recognized Inuvialuit rights to maintain hunting and fishing, their right to participate in wildlife management utilizing their experience and knowledge, and their right to financial compensation.

The IFA spells out five principles concerning the use and management of wildlife. The most important of these is the sharing of responsibility for the management of wildlife resources between the Inuvialuit and the Government of Northwest Territories and the Canadian government⁵⁾. This kind of co-management system has been practiced not only in Canada, but in other areas such as Alaska, Greenland and India [NEVE 1981; WHEELER 1988; FREEMAN 1989; CAULFIELD 1993; KURIEN 1995]. Within the Canadian Arctic region, there are differences with regard to the patterns of shared management responsibility between aboriginal groups and the government [BERKES 1989; DOUBLEDAY 1989; GOODMAN 1997]. Inuvialuit have proven, through 20 years of experience, that co-management is a workable system both for aboriginal groups and the government [ROBINSON and BINDER 1992; SMITH 1994; BAILEY et al. 1995]⁶⁾.

The IFA identifies the Inuvialuit Settlement Region (ISR) as the land owned by Inuvialuit, covering six communities: Aklavik, Inuvik, Tuktoyaktuk, Paulatuk, Sachs Harbor, and Holman. Inuvialuit have used this land for residence, hunting, fishing and other subsistence activities. The IFA created two primary structures to manage Inuvialuit affairs; the Inuvialuit Game Council to represent the Inuvialuit interest in wildlife, including fish and marine mammals, and the Inuvialuit Regional Corporation to deal with administration of private land, enrollment of beneficiaries, business interests and the implementation of social programs. In addition to these institutions, the IFA required the ISR to set up 5 committees responsible for the use and management of wildlife:

- (1) The Fisheries Joint Management Committee (FJMC)
- (2) The Wildlife Management Advisory Council, Northwest Territories
- (3) The Wildlife Management Advisory Council, North Slope
- (4) The Environmental Impact Screening Committee
- (5) The Environmental Impact Review Board

Under the IFA, the Government of Canada owns the wildlife resources and has the ultimate management responsibility. However, the IFA requires Inuvialuit participation through these five committees in policy-making processes and decisions on the utilization of those resources. Each committee is made up of members representing both Inuvialuit and the various levels of government. The Inuvialuit Game Council (IGC) was formed with the participation of representatives of the Hunters and Trappers Committees from the six communities and plays an important role in resource management. The representatives of the IGC are members of the five committees established by the IFA, and thus the Inuvialuit hunters' voices are reflected in decisions concerning wildlife management.

5. ORGANIZATION AND FUNCTIONS OF THE FISHERIES JOINT MANAGEMENT COMMITTEE (FJMC)

To further understand the mechanism of co-management, the organizations and functions FJMC will be closely examined, based on fieldwork data collected since 1998. As stipulated in the IFA, the FJMC is a committee established in 1986 in order to provide advice to the Inuvialuit and to the Minister of the Department of Fisheries and Oceans (DFO) on fishery management and related issues in the ISR. There are five members at the FJMC; two Inuvialuit, two non-Inuvialuit Canadians appointed by the Governor General on the recommendation of the Minister of Fisheries and Oceans, and the Chair, who is elected by the four other members. A representative from the DFO also comes to all meetings and participates in the discussions, even though he or she is not a member of the FJMC. The non-Inuvialuit Canadian members do not represent DFO, though they do have past experience working with the DFO, but instead represent the people of Canada. Since its establishment, the FJMC has been working to meet three responsibilities:

- (1) Assisting Canada and the Inuvialuit in administering the rights and obligations related to fisheries under IFA;
- (2) Assisting the Minister in carrying out his responsibilities for the management of fisheries under the IFA; and

(3) Advising the Minister on all matters relating to Inuvialuit and ISR fisheries.

[FJMC ANNUAL REPORT 1992-3/1993-4/1994-5; 1994-5.1995-6]

The FJMC holds five meetings a year to discuss various issues on fisheries in the ISR. Once a year, all members of the FJMC visit the six communities in the ISR to hold meetings⁷⁾, so that the voice of the local hunters will be reflected in the activities of the FJMC. In addition, the FJMC holds approximately six teleconferences a year in conducting its business. The FJMC also conducts numerous workshops on issues in resource management in which the aboriginal groups participate. The FJMC also operates programs relating to a) the monitoring of the effects of various regulations and Acts, and the discussion of these matters with the Ministry of Environment, HTC, IGC and DFO, and b) the regulation of fishing activities in ISR. For example, Inuit in Aklavik requested government support to harvest one bowhead whale, which was successfully harvested in 1991. Throughout the process, the FJMC played a central role⁸⁾. In addition, people in Aklavik, Inuvik, and Tuktoyaktuk have traditionally hunted belugas. The FJMC completed the Beaufort Sea Beluga Management Plan in 1991, and is working to modify the plan according to changes since the original plan was completed.

The FJMC also reviews research plans concerning wildlife resources and the natural environment and gives advice to the DFO. In some cases, the FJMC helps to fund much of the DFO research from its budget. Furthermore, the FJMC works with the DFO and the HTC to encourage local people to get involved in various stages of fishery management, and assists communities in conducting research on resource conditions, in regulating fishing operations, and in developing training programs to promote interest in resource management issues among the younger people.

Finally, one of the most important programs that the FJMC has been involved in is the Inuvialuit Harvest Study covering 5 species of marine mammals, 18 species of terrestrial mammals, 13 species of fish, and 3 species of birds, all of which are harvested in ISR. The FJMC, along with the Government of Northwest Territories and the North Slope Borough of Alaska contributed to a common Inuvialuit Harvest Study that recorded the wildlife harvests of all beneficiaries for a period of approximately ten years. Hunters keep records of their use of wildlife and of every hunting/fishing trip undertaken. The FJMC is involved in training the local people to conduct interviews with the hunters. Once the training is complete, the local people engage in collecting data on the hunts every month, which are then compiled by the FJMC [FABIJAN 1991].

The author has been an observer at FJMC meetings since 1998 and analyzed interactions during these meetings. As a result, some of the characteristics of the FJMC became apparent. Members of the FJMC make the great efforts to carry out their difficult task while respecting the different experiences and values of other members. First, members of the FJMC follow meeting procedures that are typically seen in government office meetings. They sit across the table from each other, and follow an agenda that was prepared in advance. When decisions have to be made, they seek consensus. Decision making based on consensus is common among the Inuvialuit.

Second, FJMC members make an effort to respect differences of opinion among the members. When an Inuvialuit member reported a complaint from the hunters that there were too many regulations to follow, the DFO representatives answered that when a certain regulation

is decided, it is done in response to a certain problem. The Inuvialuit member then agreed to explain the response by the DFO representatives and tell local hunters that regulations are necessary to deal with existing problems. On another occasion, an Inuvialuit member stressed his concern over the treatment of animals, and stated that according to the Inuvialuit view of animal and human relationships, treating animals without respect is considered harassment. Other members listened with interest and nodded to express their approval.

Third, FJMC members are aware of an improvement in the relationship between the local people and the governments since the formation of FJMC. They recognize the important role that FJMC plays in resolving the conflicts in resource management between hunters and the government.

Fourth, most FJMC members have become friends through the process that has occurred at the meeting table. Most did not know each other prior to their appointments. One of the keys is the fact that the members are prepared to respect one another's opinions, even though they may not always agree with them. Thus, they have developed a strong sense of alliance and respect for each other.

Finally, the goal of resource management at the FJMC is not short term but long term, in that the goal of the FJMC members is to conserve the resources for future generations. While they maintain an interest in future commercial use of the resources, they regard subsistence as their priority in resource management.

The FJMC has identified seven principles that are significant in resource management, and expressed them as a vision statement which provides guidelines for their management policies:

- (1) Respect for humans and animals;
- (2) Recognition of the economic importance of resources;
- (3) Preservation of Inuvialuit culture by effective utilization of Traditional Ecological Knowledge in resource management;
- (4) Effective resource management;
- (5) Effective communications;
- (6) Effective understanding; and
- (7) Making resource management the goal of ISR

As seen in the vision statement, the FJMC aims to have the Inuvialuit and the government share the decision making power, and to have FJMC manage resources to ensure conservation, with consideration for possible economic opportunity, while preserving Inuvialuit culture.

6. DIFFERENT MODES OF KNOWLEDGE: TEK AND SEK

Co-management necessarily requires the integration of two distinct modes of knowledge. One is the traditional ecological knowledge (TEK) that the resource users have gained from their long experience, and the other is the scientific ecological knowledge (SEK) based on the accumulation of scientific data. The successful integration of these two modes of knowledge is indispensable as a basis for the development of effective management strategies and implementation of policies. Berkes et al. [1991] compared the effectiveness of state-level and local-level resource management systems. They define state-level resource management systems

as those based on scientific data, and local-level systems as based on local knowledge such as customary practices, cultural tradition and local knowledge regarding animal resources. Freeman [1985] notes that scientific knowledge is quantitative, while hunters' knowledge is based on qualitative observations. Omura [2002] analyzes TEK and SEK and concludes that TEK is the kind of knowledge that hunters use in response to a given situation and relates to "tactics", while SEK is the kind of knowledge designed to control the environment, and relates to "strategy". Furthermore, Berkes et al. [1991] make the point that the underlying conflict between these two modes is not simply a philosophical difference, but a fundamental challenge for mutual respect between those who have opposing views of nature. The crucial issue in effectiveness of co-management is whether these two distinct modes of knowledge can be sufficiently utilized in resource management.

"The principles of this co-management system are stated in the article 14 (5) of the IFA: The relevant knowledge and experience of both the Inuvialuit and the scientific communities should be employed in order to achieve conservation." [INDIAN AND NORTHERN AFFAIRS, CANADA 1984]

How does the FJMC utilize the traditional knowledge of the Inuvialuit and the scientific knowledge in their practice of co-management? During my interviews, FJMC members gave the following cases as examples of effective integration of TEK and SEK.

- (1) When scientists arrive at the field for their research, they begin their work by asking local hunters what they (the hunters) know.
- (2) It has only been in the last 10 years that TEK has been recognized. In the past, scientists visited Inuvialuit communities and told the people what to do. Since the FJMC was formed, the situation has improved.
- (3) At the time the FJMC was established, the government scientists were of the opinion that the beluga stock had declined, while the local hunters strongly opposed this view. The scientific research, which was conducted later, revealed that the local hunters were right. This is a case where SEK has proven that TEK was right.
- (4) In order for co-management to work, it is important to have Inuvialuit take a leading role in developing regulations and for the FJMC to modify these as required. When local people take a greater responsibility in developing regulations, they tend to have greater respect for these regulations. The regulations concerning hunting beluga and polar bears were made by the people in the communities, and thus there is no need for enforcement. In my opinion, it is just natural for the people to follow rules that they themselves have made.
- (5) For research on beluga, several animals had to be captured. When the scientists attempted to capture them, they caught only a few. In the following year, when they had the Inuvialuit catch belugas, they had no problem in catching the number they needed.
- (6) The first stage of resource management is to determine past harvest levels. The FJMC uses this information in the initial management stage. Later, as they acquire more information about the resource population levels, they adjust the management policy accordingly. Since the FJMC uses past harvest levels as a basis for management, the Inuvialuit do not have serious complaints. There are some cases, such as for white fish,

where the FJMC has not developed a management plan because the present harvest level is lower than that of past levels.

- (7) Inuvialuit do not want catch quotas. When the Hunter and Trappers Committee was formed, the government suggested catch quotas. However, the hunters strongly opposed that idea. They prefer management based on harvest levels, rather than catch quota.
- (8) In oceanographic research on ice formation, the long-term observation of ice by Inuvialuit elders was incorporated. This is an example of research in which both Inuvialuit knowledge based on experience and SEK were utilized.
- (9) As one of the FJMC research projects, Freeman and others have conducted research to quantify TEK on broad whitefish [FREEMAN et al. 1995].
- (10) There has been a discussion of how to introduce TEK into the high school curriculum.
- (11) There has not been sufficient effort made to inform the people in the communities of the results of scientific research. Simply summarizing the results in meetings is not sufficient.
- (12) The FJMC manages people, not the natural environment. It is necessary to have an understanding of both TEK and SEK in order to effectively manage people.

An analysis of the cases that the FJMC members presented reveals patterns in how TEK and SEK are viewed. First, TEK is viewed as the knowledge and behavior that Inuvialuit hold or generate based on past experience, while SEK is the knowledge and behavior that government and scientists hold or generate. As can be seen in (5), Inuvialuit were better at capturing beluga than the scientists. Also in (1) and (3), the knowledge of the Inuvialuit based on their past experience is treated in contrast to the scientific knowledge, whereas in (8), it was considered complementary. Example (7) is interesting in that Inuvialuit preferred a harvest level based on past harvest levels, and opposed quota systems that are typical in government systems. This demonstrates that Inuvialuit rely more on harvest levels which are based on the accumulation of past experience.

Another point is that SEK and TEK are typically viewed as opposing modes of knowledge. Example (2) shows how SEK was viewed as superior to TEK in the past and that the FJMC contributed to a better understanding of the effectiveness of TEK. Example (3) also demonstrates how TEK and SEK disagreed in the population estimates of beluga. Example (7) demonstrates the fundamental differences in the treatment of harvest quotas in TEK and SEK. Furthermore, (11) is a case that demonstrates how SEK is foreign to the local people, and that it is difficult to explain the results of SEK research to them.

TEK and SEK are viewed differently, in that TEK is characterized as being quantitative, while SEK is qualitative. In (7), (8), (9) and (10), characteristics of SEK are viewed as quantitative, while TEK is viewed as intuitive knowledge based on hunters' experiences. Example (10) introduces the effort to teach quantitative knowledge, SEK, in the school system. Also, (8) is the kind of research in which the SEK-based research helped to explain the scientific dynamics of Inuvialuit experience, by quantifying the qualitative knowledge. Furthermore, (9) is about research by Freeman and others who attempted not only to quantify TEK, but to integrate local Inuvialuit in conducting the research. This kind of research collaboration between scientists and the local hunters is a common component of the co-management system. Freeman and

others conducted the research, upon the request of the FJMC, to gather data on the harvest of broad whitefish (*Coregonus Nautilus*) in the past. First, anthropologists with sufficient experience in this area developed a research plan, and the anthropologists and the local Hunters and Trappers Association jointly coordinated the conduct of the research. Some of the local Inuvialuit were trained to conduct interviews, and the data was analyzed by the anthropologists, who then compiled it into a report. Through this research, TEK was translated into SEK, which was then used as a basis for FJMC policy decisions.

These 12 examples demonstrate that SEK and TEK are different modes of knowledge, and that while they are often viewed as standing in opposition to each other, they have been viewed as complimentary by the FJMC in operating its co-management system. Moreover, one reason the FJMC has been effective is that they have treated TEK as the basis for making management decisions. Example (4) demonstrates how the FJMC respects the Inuvialuit for taking an active role in making a management decision. Furthermore, (6) shows that the FJMC establishes current management policies based on past harvest levels and uses SEK to make adjustments as required. Example (12) shows that the FJMC regards the management of resources more as the management of how people use resources, and that effective management can only be accomplished if the Inuvialuit and the government respect each other and accept both modes of knowledge.

7. SIGNIFICANCE OF CO-MANAGEMENT SYSTEMS FOR RENEWABLE RESOURCES

Recent conflicts concerning resource use in Canadian aboriginal communities are complex and varied, and co-management systems are seen as one way to resolve such conflicts [RICHARD and PIKE 1993; BAILEY et al. 1995; CAMPBELL 1996]. One aspect of these conflicts relates to the diversity of resource users and increasing competition among them. Even within the aboriginal group, there are those who use certain resources for food, and those who use the same resources for tourism. For whales, there are those who use this resource for political reasons, and those who use it for commercial purposes. Such conflicts are not limited to certain regions or countries, but can occur on an international level. Another aspect of conflicts lies between resource managers and resource users. The most common conflict in Canada is between the government and the aboriginal resource users. In cases where the resource managers include provincial government, federal government, and an international management organization, the confrontation can become more political. Such political confrontations, in some cases, become irreversibly complex and cannot be resolved [WENZEL 1978; MEGGS 1991; FREEMAN 1993; NEWELL 1993]. However, it is necessary for Canadian aboriginal people to resolve these conflicts in order for them to manage resources and to maintain their aboriginal culture.

In 1995, Inuvialuit groups organized a conference on resource management, "Circumpolar Aboriginal People and Co-management Practice" in Inuvik [FJMC 1995]. Aboriginal peoples, government representatives and scientists from Russia, the US, Greenland and other northern regions, totaling 240 people, gathered and shared their experiences. One of the issues discussed during the conference was the principle elements for effective co-management. Participants listed various requirements for effective co-management. These included, among others, (1)

sharing responsibility, (2) balancing power, (3) cooperation, (4) participation, (5) discussion, (6) education and sharing of information, (7) communication, (8) consensus, (9) flexibility, and (10) the use of TEK and SEK. These are the necessary conditions for various culture and values to co-exist. Furthermore, in terms of the benefits of co-management, they indicated “cooperation between government and local resource users”, “new partnership”, “communication”, “trust”, and “resolving confrontation”. These requirements and benefits indicate that co-management systems provide a mechanism in which new relationships between the government and Inuvialuit may be fostered. It is a system in which government and resource users share power on an equal basis in research and policy development. Co-management is an attempt to create and manage the kind of relationship where aboriginal groups and the government can work together to manage resources. It is a symbol of a new relationship between the government and local people, aiming to function as a new way to manage resources and management organizations. For Canadian aboriginal people to maintain their ethnic identity and become full members of Canadian society, it is crucial that they participate in the use and management of their resources, which in turn represent the foundation upon which traditional hunting, fishing and gathering activities are based.

Co-management, in both principle and practice, means the establishment of a new relationship between aboriginal resource users and the government, with elements such as “respect, cooperation, communication” as the lubrication necessary for the smooth operation of the system. One important aspect in co-management is that, as in the case of the IFA, it is legally binding. Recently, laws and legal statements have included statements encouraging the participation of aboriginal groups in resource management. In the Ramsar Convention and the United Nations Conference on the Environment, aboriginal people were encouraged to take an active role in resource management [SONOHARA 2001]. The participation of aboriginal resource users in resource management is becoming an international norm. In this context, the situation in Canada can provide useful examples. Co-management in Canadian aboriginal communities demonstrates potential for a future Canadian society where aboriginal and non-aboriginal societies co-exist.

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NOTES

- 1) This paper was originally published in Japanese: *An Anthropological Study of Indigenous Use and Management of Marine Resources* (SER 46), ed by N. Kishigami, 2003.
- 2) Unlike resources such as minerals that cannot be renewed, fish and marine mammals, and terrestrial animals and plants that are renewable are called renewable resources.

- 3) Stewart [1998] has written in detail about the legal aspects of aboriginal rights.
- 4) One of the treaties that were signed in the 1700s was the treaty between the Micmac and England in 1760. This treaty became the legal basis for the recent "Marshall Case" in which aboriginal fishing rights were recognized for the Micmac.
- 5) The Government of the Northwest Territories is also involved in wildlife management. For example, polar bears are managed by the Territorial Government. Fish and marine mammals were generally the responsibility of the federal government, although the Territorial government does license sport fishermen.
- 6) One reason may be due to the fact that there are no major conflicting commercial fisheries in the region, and thus the economic issues are not as important.
- 7) Due to fiscal constraints, the FJMC only visits three communities each year, so it takes two years to visit every community. However, the FJMC has recently applied for funding for the next five years so that each community can be visited every year.
- 8) The Inuvialuit maintain that the IFA gives them the right to harvest whales, subject only to considerations of conservation. Thus, in 1991 they requested that the government determine whether there were conservation concerns, and if not, to support them in their hunt.

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