

Science against Modern Science : The Socio-Political Construction of Otherness in Inuit TEK (Traditional Ecological Knowledge)

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Science against Modern Science: The Socio-Political Construction of Otherness in Inuit TEK (Traditional Ecological Knowledge)

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1. INTRODUCTION

Since the 1980s when wildlife co-management regimes in which indigenous people participate in environmental management such as resource management, conservation, development planning and environmental assessment on an equal footing with government were established in the Canadian Arctic, the TEK (Traditional Ecological Knowledge) of Inuit people has attracted considerable attention. TEK has been defined as 'a cumulative body of knowledge, practice and belief, evolving by adaptive processes and handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with the environment' [BERKES 1999: 8; c.f.; BERKES 1993; HUNN 1993; LEWIS 1993; NAKASHIMA 1991].

Until the mid-20th century, although the TEK of the Inuit people was admired as excellent practical knowledge by the dominant Western society, it was regarded as the product of 'primitive' irrational thought, that is, a kind of pre-science or superstition, inferior to modern science. Therefore, Inuit TEK was never taken into account in environmental management. Modern science alone provided the grounds for decision-making in that era. However, since the co-management regime was established in the Canadian Arctic in the 1980s, the application of Inuit TEK to environmental management has been recognized as an important policy. This is because, if the co-management regime, which requires the full participation of Inuit people in environmental management, is to function effectively, not only modern science but also Inuit TEK should be employed in environmental management, (e.g., FREEMAN and CARBYN eds. [1988]; NADASDY [1999]; and WENZEL [1999]).

Moreover, many anthropological studies since the 1970s have shown that Inuit TEK provides deep and precise insights into natural phenomena, although such insights are based on a paradigm different from that of modern science (see e.g. BIELAWSKI [1996]; COLLINGS

[1997]; FERGUSON and MESSIER [1997]; FERGUSON, WILLIAMSON and MESSIER [1998]; FIENUP-RIORDAN [1999]; FREEMAN ed. [1976]; FREEMAN [1984, 1985, 1993]; FREEMAN and CARBYN eds. [1988]; NAKASHIMA [1988, 1991, 1993]; STEVENSON [1996]). While modern science is quantitative, purely rational, analytical, reductionist and based on a dualistic worldview in which nature is regarded as separate from the human realm, Inuit TEK is qualitative, intuitive, holistic and based on monistic worldview in which humans are viewed as part of nature. In short, it has been suggested that Inuit TEK is based on a paradigm that differs from that of modern science, but that is not at all inferior to modern science. Consequently, nowadays, Inuit TEK is regarded as a science comparable to modern science, and complementary to modern science, and thus has the potential to contribute to environmental management and empowerment of Inuit.

In this social and academic climate, one of the most important issues in the field of co-management in the Arctic today is the integration of Inuit TEK with modern science. Nevertheless, attempts to integrate Inuit TEK with modern science have been confronted with difficulties. Although scientists, resource managers, Inuit people and anthropologists have made great efforts to develop a method for integrating Inuit TEK with modern science during the last decade, there has been little progress toward actual achievement [NADASDY 1999], primarily because there is no agreement of how TEK may be effectively used and integrated with modern science. As a result, only opinions based on modern science are accepted in the decision-making process if there are discrepancies between the opinions of Inuit based on TEK and the opinions of scientists and resource managers based on modern science [COLLINGS 1997; MORROW and HENSEL 1992; NADASDY 1999]. Moreover, even when they are accepted, it is held that opinions based on TEK should still be supported by modern science [NADASDY 1999]. In many cases, Inuit TEK at best merely provides raw data for modern science, which still alone provides the grounds for decision-making [COLLINGS 1997; NADASDY 1999].

One of the most crucial factors which have been considered to be an obstacle to integration of Inuit TEK with modern science is the assumption of the essential incommensurability between these two types of knowledge [FREEMAN and CARBYN eds. 1988; NADASDY 1999; STEVENSON 1996; WENZEL 1999]. As noted above, Inuit TEK is essentially different from modern science in representational style and basic paradigm and is, therefore, assumed to be incommensurable with modern science. As a result, this essential incommensurability is assumed to be responsible for the difficulty in integrating Inuit TEK with modern science.

However, is it actually true that Inuit TEK is essentially incommensurable with modern science? Even though it is true that these two types of knowledge are different from each other in many respects, are there any aspects that Inuit TEK and modern science have in common which might make it possible to integrate them? And, if such aspects exist, what hinders attempt to integrate them?

This problem is the focus of this paper. Based partly on my own research in Kugaaruk (Pelly Bay), Nunavut, Canada, and partly on other studies of Inuit TEK, I compare Inuit TEK with modern science in order to examine the possibility of integrating these two knowledge systems. Then, I propose the following: 1) Inuit TEK is guided by the ideology of "tactics" as opposed to the ideology of "strategies" (as defined by Michel de Certeau [1984]) which guides modern science, but both are based on the balanced combination of the "tactical" practice and the "strategic" practice; 2) the difference between Inuit TEK and modern science is the result

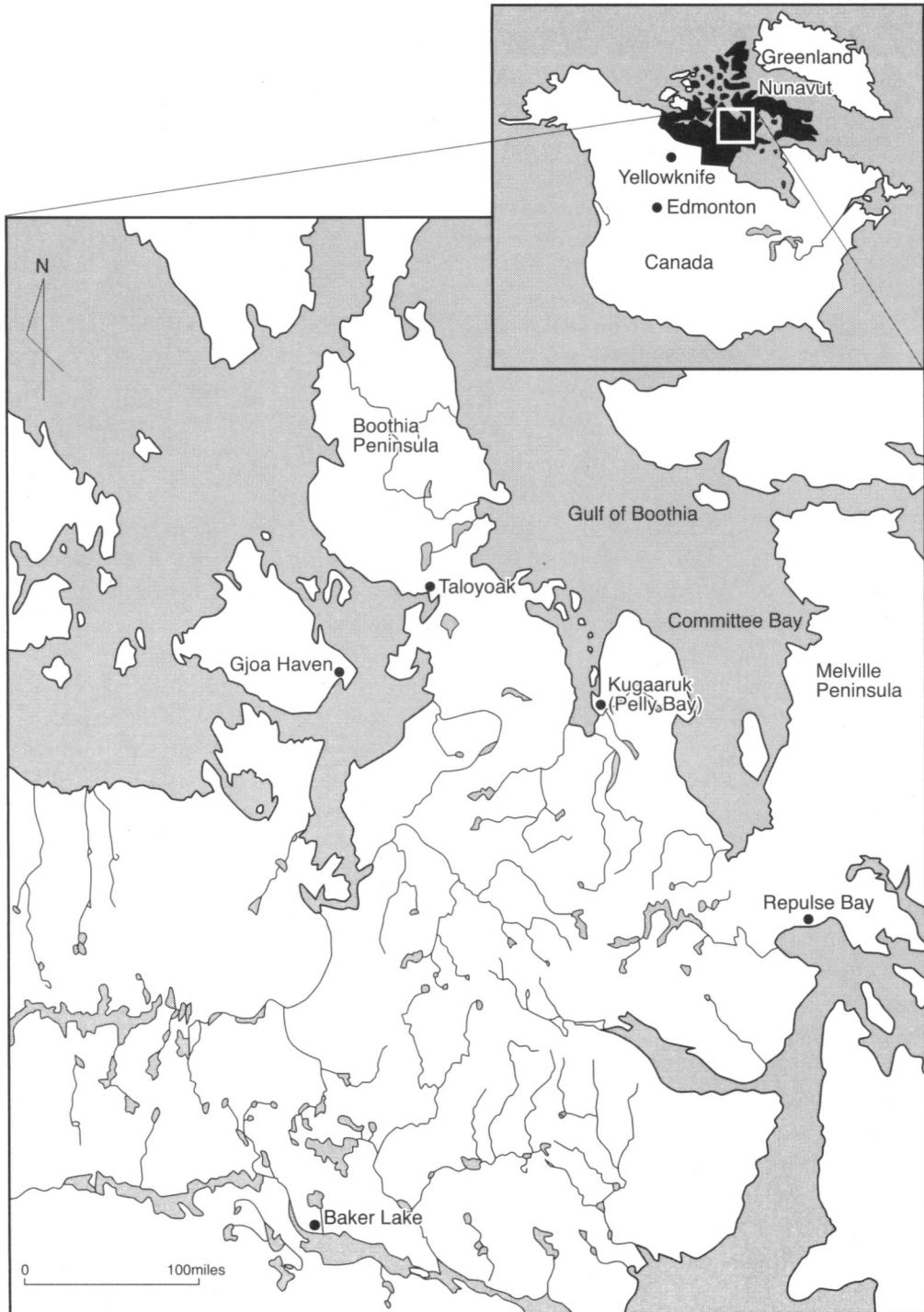
of the socio-political construction of otherness which Inuit people have pursued in order to bolster a positive ethnic identity and resist the hegemony of modern science in the process of assimilation and integration into the nation-state of Canada and the capitalist world-system since sedentarisation in the 1950's; and 3) accordingly, Inuit TEK is not essentially incommensurable and has a common base with modern science, which makes it possible to integrate Inuit TEK with modern science. Then, based on these hypotheses, I propose that we should focus on socio-political conditions which cause amplification of the differences between Inuit TEK and modern science and which hinder attempts to integrate them.

2. UNSUCCESSFUL INTERVIEWS: DENIAL OF GENERALIZATION BY INUIT ELDERS AND HUNTERS

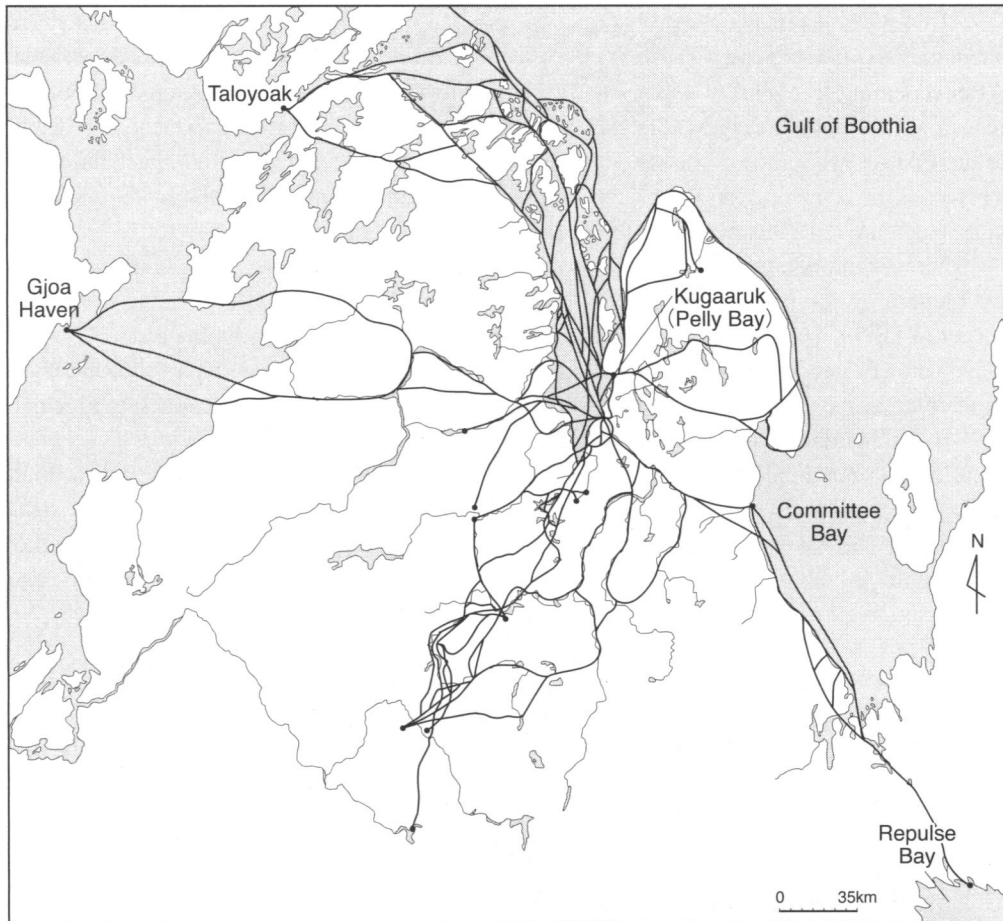
I carried out research on traditional navigational technology of the Inuit of Kugaaruk (Pelly Bay), Nunavut, Canada between 1996 and 1997. Inuit traditional navigational technology is a part of Inuit TEK and is a body of knowledge and skills indispensable for Inuit if they are to travel safely and freely in the Arctic environment in order to practice subsistence activities, trade, visit relatives in neighboring villages, etc. It includes the knowledge and skills needed to grasp the spatial relationship between the present location and destination, and find out the appropriate routes to the destination with due regard to topographical, meteorological and ecological conditions. In order to learn this technology from elders and skillful hunters, I carried out a series of interviews with them as well as a series of participant observations.

At the beginning of this research, I was confronted with a major difficulty: my interviews with Inuit hunters did not go well. This is not because they were unwilling to be interviewed. Rather, by and large they welcomed my interviews because they knew of my great regard for TEK, and they expected that my research would serve to realize their own objective, which is to pass TEK on to the next generation and to introduce TEK into a much wider scope of societies. The problem was that we were talking at cross-purposes. I asked them various questions on the assumption that they have a generalized and systematized knowledge, which is the same kind of knowledge as indigenous navigators in Oceania have been shown to have such as the *etak* system, constellation compass, etc. [e.g., AKIMICHI 1995; GLADWIN 1970]. I tried to extract this kind of generalized and systematized knowledge from them, and this was where the problems arose. My questions were directed toward generalized knowledge and often puzzled and confused the Inuit hunters who tend to avoid easy generalizations.

For example, the following discrepancies often occurred. I would ask them to show me the routes, which they usually or always take to travel from the village to some principal hunting grounds, expecting that they would demonstrate a generalized knowledge concerning the network of routes which link various places in their territory. Contrary to my expectation, however, they were either confused by the question or told me that they can travel to those places by many different routes. This does not mean, of course, that they do not use systematic knowledge of routes for navigation. Indeed, they gave me a full account of routes that they actually took in the past when I made the questions more specific, such as "How did you go there in the summer when you got married?" Then, overlapping all the routes they showed me in a map, it was clear that they use a systematically organized network of routes for navigation and have a thorough



Map 1



Map 2 The network of routes.

knowledge of this network (see Map 2). Actually, they recited to me chains of place names along the routes organized into the network when I asked them to teach me how they remember place names.

Therefore, it seems reasonable to consider that it was the style of my questions that caused initial misunderstandings and made my interviews unsuccessful. My questions were directed at generalized knowledge, and included terms relating to generalizations, such as “always” and “usually,” and seemed to be ambiguous or inaccurate to them. Actually, I was often admonished against simple overgeneralizing when I asked, “Do you usually (always) take this route to go there?” Then, on each occasion, they explained how the route they took at that time was different from a previous route, although these routes are almost the same. It seemed to be inaccurate for them to generalize about the routes without regard for the detailed differences. Indeed, the routes they actually took on each occasion were not quite the same although they also admitted that they traveled along the generally used routes which were more likely to be safe and efficient for travel.

This example was not an unusual case. In general, Inuit hunters were unwilling to generalize about their experiences and tried to give me as complete a picture of their experiences as possible. After repeating this kind of experience, I learned to avoid overgeneralizations and put my questions in a more direct way; that is, I asked them to tell me about their experiences in detail, rather than in generalities. Then they began to talk about their knowledge in anecdotal form. Therefore, it seems reasonable to suppose that they regarded generalizations as inappropriate and inaccurate representations of knowledge and tried to avoid it.

Some anthropologists have already pointed out this negative attitude of Inuit hunters toward overgeneralization (see e.g., BRIGGS [1968, 1970, 1991]; FREEMAN [1976]; GUBSER [1965]; MORROW [1990]). One in particular is Milton Freeman, who conducted the Inuit Land Use and Occupancy Project to determine actual land use by Inuit and their perception of the land in all Inuit communities in Canada's Northwest Territories in the early 1970s. According to Freeman [1976], fieldworkers who attempted to determine hunting territories through interviews often reported that Inuit hunters, when asked to indicate their hunting places on maps, were unwilling to generalize about their hunting areas and tended to limit their hunting ranges to core areas where game abounded or where they frequently and successfully hunted. For example, a fieldworker reported the following discussion on the range of caribou hunting with a hunter whom he had accompanied on a number of hunting trips.

The respondent marked his caribou hunting areas and when asked if that was all, he insisted that it was. The interviewer, however, recalled that on one occasion the two of them had hunted caribou together in an area that was not marked. The following instructive exchange occurred:

HB: But what about here, by the lake. You have not marked that. I remember we hunted caribou there.

A: Yes, we hunted there, but you know that we did not do very well there. That place has never been much good in the winter.

HB: But if you have used it as a hunting place at all you should mark it.

A: I do not want to tell any lies. There are very few caribou there. It is not a really good hunting place for caribou. [FREEMAN 1976: 53-54]

In short, this hunter insisted on the importance of details relating to his hunting areas and avoided generalizing about it. According to Freeman, this is not an exceptional case. He reported that the "tendency to mark only the probably successful locations in some cases extreme, and maps tended to be composed of sites where kills had been made, or where the respondent judged the very core of caribou herds to be located" [FREEMAN 1976: 54].

According to some anthropologists who studied the personality of Inuit and Yup'it (e.g., BRIGGS [1968, 1970, 1991]; FIENUP-RIORDAN [1986, 1990]; MORROW [1990]), this negative attitude of Inuit toward generalization is based on a cultural ideal. Briggs [1968; 1970; 1991] pointed out that above all, this attitude is closely related to "reason" (*ihuma*), which is one of the most important attributes of an ideal personality among Inuit. An ideal person who is regarded as having *ihuma* is an autonomous decision-maker who keeps his or her equanimity in the face of difficulties and frustrations, both social and physical, and voluntarily conforms to approved modes of social behavior [BRIGGS 1968]. This ideal person is highly regarded both for one's

own autonomy and for the autonomy of others, and has a realistic and pragmatic view of the environment without having any preconceived ideas concerning other individuals and environment, nor making any hypothetical inferences and generalizations which are not based on his or her direct experiences.

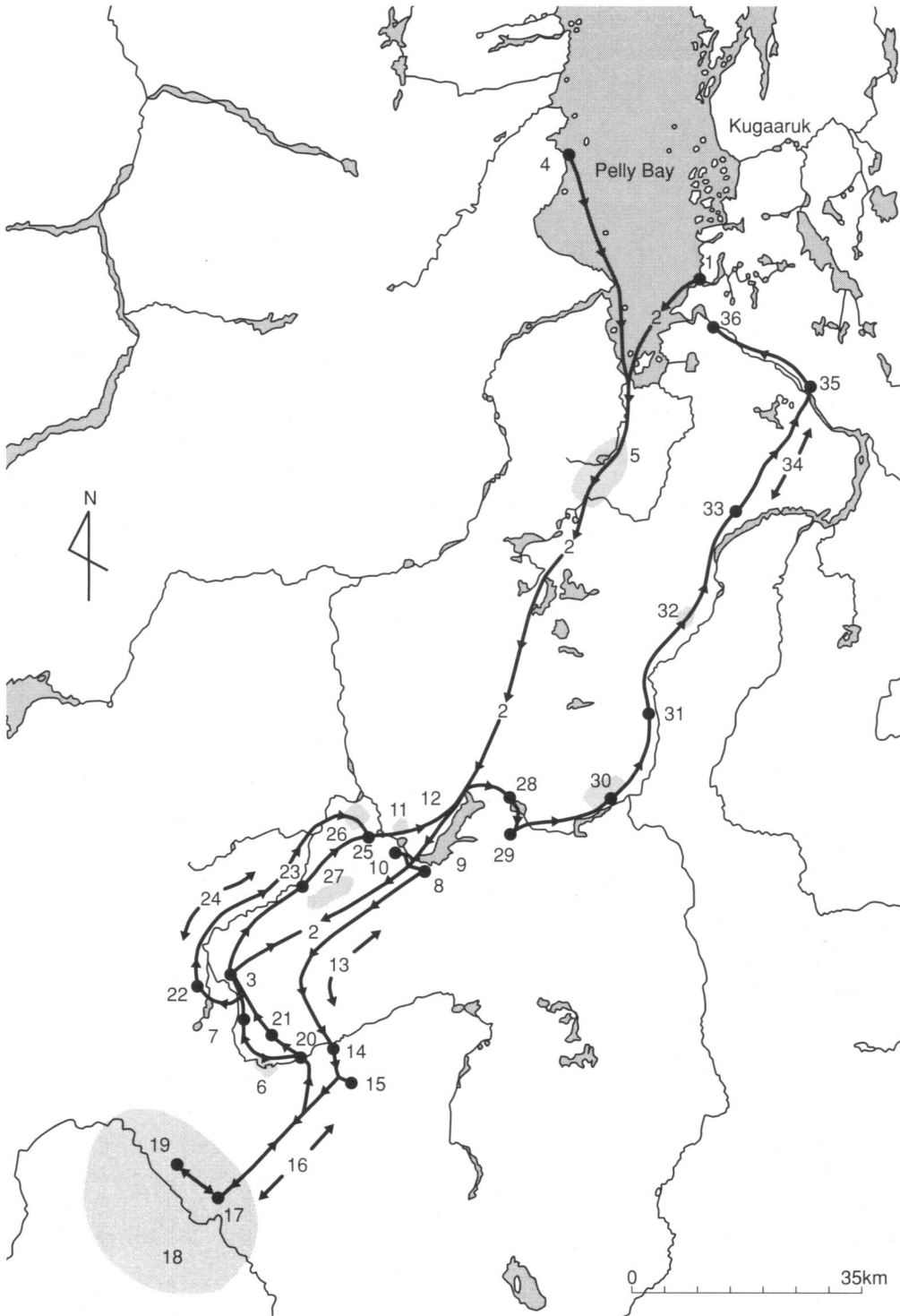
For example, for Inuit, questions about the future are unwelcome and considered ‘childish’, because they require hypothetical inferences and generalizations [BRIGGS 1968]. Predicting future events, even in the immediate future, is considered childish because one may change one’s mind according to the circumstances of the natural environment, which in turn is so changeable that one’s plan may be significantly altered by the change. Moreover, to define or generalize about the nature of others and environments uniformly and rigidly is considered to be a childish way of thinking with little *ihuma* because different individuals have different experiences. Everything that exists is considered to have multiple potentialities, which cannot be reduced to a single rigid definition, but can be utilized as occasion may demand. Actually, Inuit have a “reputation for being able to make anything out of anything” [BRIGGS 1968] by utilizing the multiple potentiality of objects. For example, from the viewpoint of these “adult” Inuit with *ihuma*, “a Primus key can be converted into a gun-sight, the key from a can of dry milk can be made into a needle for sewing a dog harness, and a nail becomes a barbed fishhook” [BRIGGS 1968: 45–46].

In short, the adult with *ihuma* who fits the ideal personality is someone who does not easily generalize about phenomena nor reduce complex phenomena into a simple principle without regard for the detailed context, but is sensitive to and gives careful consideration to the subtle details and contexts of phenomena in order to cope with them. Therefore, it seems reasonable to conclude that Inuit hunters avoided easily generalization in accordance with their cultural ideal.

3. THE IDEOLOGY OF “TACTICS”: THE PRINCIPLE OF INUIT TEK

As a consequence of their negative attitude toward generalizations in accordance with their cultural ideal, Inuit hunters tended to represent their knowledge in anecdotal form rather than in the form of generalized principles or theories. They tried to show not only the diverse attributes of a complex phenomenon under discussion, but also the detailed contexts that bring about its complexity, instead of trying to reduce a complex phenomenon to a simple principle. As a result, moreover, they tended to reconstruct and retrace the process of the phenomenon under discussion in sequence, when demonstrating their knowledge of it. For example, when I asked Inuit hunters to teach me about the routes linking various hunting grounds, they reconstructed and retraced the route, which they actually traveled each year, on a 1:250,000 scale map. They then related vivid stories about their experiences on each trip, using many gestures. The following summary of the story, which one of the elders in Kugaaruk told me, is an example of these stories. This is part of a story about a hunting trip that he actually went on fifty years ago. (The numbers in the following quoted story indicate the locations of camp sites, hunting grounds and so on which are found on Map 3).

My wife, my adopted child and I left Ihuqtuq (1) by a small sled with the my brother-in-law’s



Map 3 The route of the hunting trip which one of elders in Kugaaruk drew while relating the story of that trip.

family in the early spring of the year. We began to travel inland to hunt caribou. Then, we went toward over there (3) along this route (2). In those days, we had to go over there (inland region) to hunt caribou because there were few caribou around here (the region around Pelly Bay). We joined another hunting party that left Ikaaqtalik (4) at this place (5). I think that we continued to travel all day and night without sleeping for two days from Ihuqtuq to this place (3), because I cannot remember the camp site between Ihuktuq and this place. The hunting party from Ikaaqtalik went back toward Arvilingjuaq (Pelly Bay) from this place (3) after we arrived at this place (3). The next day, we traveled along the river and hunted a caribou at this place (6). Then we made *mipkut* (dried meats) and stayed overnight there. The following day, we went toward this lake (7) and we stayed and fished *ishuraagluk* (trout) around this lake (7) for a few days. We made *piphit* (dried fish). I do not know the name of this lake but we caught lots of fish in this lake.

Then, we went back to Qinguklik Lake (8) and made a camp at this place (8). There were lots of *ishuraagluk* in this lake which we caught and we made lots of *piphit* at this camp site (8). Our hands hurt from catching so many fish with our *kakivat* (fish spear) for two days. The next day, we went to this lake (10) and made a camp there. We chased and got a caribou with my brother-in-law around here (11). Then, we came back to this edge of this lake (12). There are shallows that are chest-deep at this place so we waded through the shallows. There were lots of *ishuraagluk* there. My brother-in-law caught a fish with his *kakivat*, but the fish pulled him and he dropped his *kakivat*. The fish got away with his *kakivat*. I had to hold my sides because I was laughing so hard.

In those days, we used to catch lots of *ishuraagluk* in this part of this lake. We carried two fish we caught there at this camp site (10) to that camp site (8). Those fish were so heavy that we were not able to carry any more than two. We used to be able to walk for the same distance with a whole caribou without taking a rest. But we were forced to take some rests because those two fish were so heavy. They were really fat and heavy.

We dried all fish we caught around there and cached the *piphit* in a stone cache at this place (8). Then we traveled along this route (13) and found some big caribou at this place (14). The caribou were in close proximity where we were. But it was so foggy that we couldn't see them. Only our dogs could figure out where they were because dogs have keen noses. With the help of our dogs' keen noses we shot them with a gun. We shot two caribou. But it was so foggy that we could not find the carcasses. Then we stayed overnight at this place (14). The next day, we shot two more caribou there (14) and we pursued a herd of caribou and got two more at this place (15).

After that, we traveled along this route (16) without sleeping and arrived at this place (17) on the Avalituk River. We made a camp there and when we woke up the next morning, we saw lots of caribou around there so we were able to get some of them. We camped there for a long time. We went from this camp site in all directions (18); for example, we went upstream or to the other side of the river to hunt caribou every day. At times we went to over there, far from this camp site to hunt caribou. In those cases, we spent the night there and went back to the camp site the next day. We got a lot of caribou around there (18). We spent a whole summer there and we gathered lots of caribou furs. Then, when fall came and it got cold, we decided to go back to Arvilingjuaq (Pelly Bay). We made a cache of caribou furs with rocks because we got too many furs to carry all of them. We put all the caribou furs into a bag made with two caribou furs and put it into the stone cache in order to keep them from getting wet. We used to cache *piphit* and *mipkut* in the same way.

When we were eating supper in our tent in the evening, the dogs started barking so I went out of the tent to see what had happened. Then I found my relative's family were arriving at this camp site. The following day, we moved to this place (19) with them. We parted from my brother-in-law's family (except for my brother-in-law) at this place (19) and they went back to Ikaaqtalik (4). We

went back to this place (17) to hunt caribou. We got lots of caribou around there and made two more caches of caribou furs. While we camped at this place (17), we went from this camp site in all directions to hunt caribou every day and we got a lot from around there (18). Sometimes we went to over there, far from this camp site, to hunt caribou. At those times, we stayed overnight there and went back to this camp site the following day. It was the first time in my life that I saw so many caribou.

After a while, we went back to Tuluqaat (20) and made camp there. The banks of the river around Tuluqaat (20) are covered with sand. We waded across the river and made camp and stayed overnight at this place (21) because it began to rain and the north wind was getting stronger. The rain turned to snow after a while. The next day, we parted from my relative's family who went back to this place (22) to get the tobacco they had left there, while my family went down the river and made camp at this place (23). I think that the family of my relative traveled along this root (24). The next day, we moved to this place (25) and got lots of caribou around there. My relative's family joined us again at this place (26). Then we hunted caribou there. My relative chases some caribou and shot them at this place (27). I made a cache of caribou at this place (26), while my relative made a cache of caribou at this place (27). My relative came back to this camp site (25) in the evening.

Then we walked through a snowfield to Haviktalik Lake (28) and made camp there. The next day we walked across the frozen lake. We followed the tracks of caribou and got some around there (29). After a while, we saw some caribou at this place (30), but did not hunt them. We went down along the Kuuk River and made camp at Hiillaqtalik (31). We parted from my relative's family here (32). I guess that they were going to chase the herds of caribou or go to the place where they cached their sleds to get it. My brother-in-law went with them. I guess that the tobacco my relative had attracted him. Our family went down along the Kuuk River and made camp at this place (33). The next day, we traveled along this route (34) because the ice on the Kuuk River was too thin to travel. Then we arrived at Quunguarjuk (35) and there are lots of people and lots of tents. I saw lots of people fishing there as it was the fishing season. After we stayed for a few days at Quunguarjuk (35), we went down along the Kuuk River until we arrived at Tuaparjuaq (36) where my parents camped. (Summary of the story recited by an elder on the 20th of August, 1997)

In these stories, the following details of these hunting trips are demonstrated in sequence: all the campsites; all the places where food, tools, sleds and so on were cached; the terms for camping and hunting; all the places where they saw and hunted game; the behavioral patterns of the game; the methods of hunting; the number of game they caught during each hunt; changes in the weather during each trip; various social events; changes in social relations among their relatives, and so on. The elder telling the story also related how they had managed to overcome all the difficulties through flexibility and by taking the proper steps to deal with changes in various situations. In other words, he did not indicate a generalized knowledge about routes, but reconstructed the experiences of a trip he had actually taken in the past, in sequence, as if he actually taking that trip again by means of words.

There have been many anthropological studies that have already pointed out these characteristics of Inuit knowledge (see e.g. ARIMA [1976]; BOAS [1888]; BRIGGS [1968, 1970, 1991]; BRODY [1976]; CARPENTER [1955, 1973]; FERGUSON and MESSIER [1997]; FERGUSON, WILLIAMSON and MESSIER [1998]; FREEMAN [1976]; GUNN, ARLOOKTOO and KAOMAYOK [1988]; NELSON [1969, 1976]). It is well documented that Inuit knowledge is exceedingly precise and detailed, based on careful observation and excellent memory. Maps drawn by Inuit have often

been described as some of the most impressive examples of detailed environmental knowledge [OMURA 1995, 1999; RUNDSTORM 1990; SPINK and MOODIE 1972, 1976]. Indeed, Inuit maps, which have a reputation for elaborately expressing the subtle details of geographical features and are often comparable to modern topographic maps [SPINK and MOODIE 1972, 1976], show that Inuit regard subtle details as vital to their knowledge. Furthermore, it has also been shown that the Inuit knowledge is organized into a personal history or oral narrative format that retains their ancestors' as well as their own experiences. In general, their knowledge does not exactly fit into sets of generalized principles, but rather each individual hunting trip is organized in sequence and its details are remembered. In short, Inuit knowledge is not the expression of generalized principles but the verbal re-execution of practices that have been actually carried out in the past.

Based on the distinction between "strategies" and "tactics" by Michel de Certeau [1984], the characteristics of Inuit knowledge discussed above can be summarized as being based on "tactics" rather than "strategies." This is because Inuit hunters tend to avoid generalities (generalization being one of the most essential characteristics of "strategies") in accordance with a cultural ideal, and because it is the "tactics" that they try to re-execute through oral accounts when they discuss their knowledge.

According to Certeau [1984], strategy is the mode of practice, in which the subject, standing from a viewpoint isolated from and commanding a sweeping view of the environment, controls or manages the environment objectified from that viewpoint; or, in his words:

I call a *strategy* the calculation (or manipulation) of power relationships that becomes possible as soon as a subject with will and power (a business, an army, a city, a scientific institution) can be isolated. It postulates a *place* that can be delimited as its *own* and serve as the base from which relations with an *exteriority* composed of targets or threats (customers or competitors, enemies, the country surrounding the city, objectives and objects of research, etc.) can be managed. As in management, every "strategic" rationalization seeks first of all to distinguish its "own" place, that is, the place of its own power and will, from an "environment." A Cartesian attitude, if you wish: it is an effort to delimit one's own place in a world bewitched by invisible powers of the Other. It is also the typical attitude of modern science, politics, and military strategy. [CERTEAU 1984: 35–36]

It seems reasonable to suggest that it is this "strategy" that Inuit hunters avoid. This is because generalizations that require reduction of complex phenomena into simple principles without regard for the detailed contexts of phenomena only become possible when the subject is isolated from the environment and objectifies it or views it from a strategic perspective. Inuit hunters reject this strategic viewpoint and avoid generalization.

On the other hand, tactics are a mode of practice in which an individual who is embedded in the environment and unable to objectify it, copes with the environment, taking advantage of opportunities according to circumstances without planning general strategies. Again, in Certeau's words:

By contrast with a strategy..., a *tactic* is a calculated action determined by the absence of a proper locus. No delimitation of an exteriority, then, provides it with the condition necessary for autonomy. The space of a tactic is the space of the Other. Thus it must play on and with a terrain imposed on

it and organized by the law of a foreign power. It does not have the means to *keep to itself*, at a distance, in position of withdrawal, foresight, and self-collection: it is a maneuver “within the enemy’s field of vision,” as von Bülow put it, and within enemy territory. It does not, therefore, have the options of planning general strategy and viewing the adversary as a whole within a district, visible, and objectifiable space. It operates in isolated actions, blow by blow. It takes advantage of “opportunities” and depends on them, being without any base where it could stockpile its winnings, build up its own position, and plan raids. What it wins it cannot keep. This nowhere gives a tactic mobility, to be sure, but a mobility that must accept the chance offerings of the moment, and seize on the wing the possibilities that offer themselves at any given moment. It must vigilantly make use of the cracks that particular conjunctions open in the surveillance of the proprietary powers. It poaches in them. It creates surprises in them. It can be where it is least expected. It is a guileful ruse.

[CERTEAU 1984: 36–37]

Many everyday practices (talking, reading, moving about, shopping, cooking, etc.) are tactical in character. And so are, more generally, many “ways of operating”: victories of the “weak” over the “strong” (whether the strength be that of powerful people or violence of things or of an imposed order, etc.), clever tricks, knowing how to get away with things, “hunter’s cunning,” maneuvers, polymorphic simulations, joyful discoveries, poetic as well as warlike. The Greeks called these “ways of operating” *mētis*

[CERTEAU 1984: xix].

It seems reasonable to suggest that it was tactical practice that Inuit hunters tried to reconstruct and re-execute through oral accounts when they instructed me in traditional navigation techniques. They demonstrated how they had managed to overcome all difficulties, taking proper steps to meet changing situations; that is, embedded in environment, they re-executed their tactical practices from a tactical viewpoint.

Therefore, it seems natural that Inuit knowledge retains the detailed contexts of individual phenomenon, because it is the detailed contexts that the tactical mode of practice utilizes in order to take advantage of opportunities. Taking advantage of opportunities that appear unexpectedly requires impromptu and flexible reactions. If we take chess and combative sports, for example, as an illustration of this principal, it is often the case that it is not generalized concepts or abstract rules, but numerous concrete examples of tactical practices that are useful for impromptu and flexible reaction. Just as skilful chess players and master players of judo remember the numerous moves that have already been executed in order to take advantage of opportunities, so Inuit hunters memorize the numerous tactical practices that have already been executed. In short, Inuit knowledge is tactical—“a form of intelligence that is always ‘immersed in practice’ and which combines ‘flair, sagacity, foresight, intellectual flexibility, deception, resourcefulness, vigilant watchfulness, a sense for opportunities, diverse sorts of cleverness, and a great deal of acquired experience’” [CERTEAU 1984: 81]; all of which preclude generalization.

However, this does not mean that Inuit hunters lack a strategic perspective and never behave according to strategic principles when rejecting an overall strategic viewpoint. If they are to travel successfully and acquire knowledge about navigation, which is organized into anecdotal form, they must be well acquainted with strategic knowledge, such as that relating to cardinal directions and networks of place names, which can be grasped only from a viewpoint isolated from the environment—from a strategic viewpoint.

Indeed, the Inuit I interviewed had a clear and accurate grasp of the spatial relationships

of over 300 places, which are organized into a network of place names (Figure 1), based on cardinal directions that are composed of two axes and four directions. They use these reference points to determine their present position whenever they travel on the land. For example, they always made reference to the orientation of snowdrifts, from which they determine the cardinal directions. On this basis, they then attempt to determine their present position and planned destination from a bird's-eye or strategic viewpoint. Moreover, this strategic knowledge is indispensable for understanding information relating to navigation, organized into anecdotal form, because the stories of navigation would be merely chaotic, useless assemblages of events if it were not for the fact that the places where each event occurred are located within a network of place names by which the geographical environment can be grasped from a strategic viewpoint. Indeed, as I have already shown in the previous section, Inuit were able to recite chains of place names along the routes organized into networks when I asked them to teach me how to memorize place names. Moreover, as some anthropologists have reported, Inuit have tongue twisters made up of place names, through which children learn the network of place names (see e.g., CORRELL [1976]).

However, it must be noted that strategic knowledge, such as knowledge of the network of place names, is merely basic knowledge for beginners such as children and non-Inuit such as myself. It was not to other adult Inuit but to me, an outsider, that Inuit hunters demonstrated this strategic knowledge. This kind of strategic knowledge is nothing more than what adult Inuit with reason ought to know, and, therefore, they do not discuss it. As discussed in the previous section, they consider generalization to be childish according to their cultural ideal, and avoided discussions in that context. Instead, the focal point of discussion among Inuit adults centers on how to cope with changeable environments. As a result, their knowledge is made up of the verbal re-execution of tactical practices from a tactical viewpoint. Although Inuit hunters actually execute both strategic and tactical practices, they prefer tactics to strategies according to their cultural ideals when demonstrating their knowledge.

Thus, it can be suggested that Inuit hunters have an ideology in which tactics are appreciated but strategies disregarded. According to this ideology, the strategic viewpoint is rejected as a childish viewpoint, but the tactical viewpoint is appreciated as appropriate for adults.

Therefore, it seems natural that, as has been pointed out by many anthropological studies, Inuit TEK has the characteristics of being qualitative, intuitive, holistic, context bounded and based on a monistic worldview in which humans are viewed as part of nature (see Table 1). This is because tactics constitute a mode of practice that is embedded in and meant to cope with the environment without attempting to objectify and control it. As discussed above, taking advantage of opportunities to cope with the environment requires keen powers of observation and quick judgment, as is often the case in chess and combative sports. One needs to grasp the detailed context and qualitative attributes of the environment and intuitively react to changes therein if one is to take advantage of opportunities afforded by these changes. It is not generalized principles or abstract rules but the numerous concrete examples of tactical practices that are useful for taking advantage of these opportunities. In other words, Inuit TEK is a huge body of memory accumulated in the form of numerous activities that they and their ancestors have executed over time.

Accordingly, from the perspective of Inuit TEK, the environment is never regarded as a

Table 1 Difference between TEK and modern science.
(summarized from Berkes 1993; 1999; Freeman 1985; 1993; Gunn, Arlooktto and Kaomayok 1988; Stevenson 1996)

Traditional Ecological Knowledge	Modern Science
qualitative	quantitative
intuitive	purely rational
holistic (context bounded)	reductionistic (analytical)
mind and matter are considered together	separation of mind and matter
spiritual explanation	mechanistic explanation
moral	supposedly value-free
based on empirical observation and accumulation of facts by trial-and-error	based on experimentation and systematic, deliberate accumulation of facts
based on diachronic data (long time-series on information on one locality)	based on synchronic data (short time-series over a large area)
does not aim to control nature	aims to control nature
is not primarily concerned with principles of general interest and applicability (ie., theory)	concerned with principles of general interest and applicability (ie., theory)

resource which is something that can be objectified, controlled and exploited. Rather, it is human ability that is regarded as a resource, as something which should be developed. The environment is something like a good rival or a good business partner, with which Inuit hunters establish a partnership through subsistence activities. Inuit TEK, guided by the ideology of tactics, stresses control of the human world, which is not separated from natural environment, and tries to harmonize human behavior with natural environmental processes. In other words, Inuit hunters try to develop their own ability through memorizing accumulated wisdom and they try to establish a good partnership with the environment through their practice of subsistence activities, instead of exploiting the environment through managing wildlife, exploiting natural resources, building roads, manipulating the principle of "natural" world and so on.

4. THE SOCIO-POLITICAL CONSTRUCTION OF OTHERNESS

If it is accepted that Inuit knowledge is guided by the ideology of tactics, it may no longer be difficult to understand how Inuit TEK is different from modern science and what causes the differences in interpretation. This is because, as Certeau [1984] pointed out, modern science is guided by the ideology of strategy. So, if modern science is guided by the ideology of strategy in contrast with Inuit TEK which is guided by the ideology of tactics, the difference between Inuit TEK and modern science, as indicated by many anthropological studies (see Table 1), can be considered to be the result of this ideological difference.

A strategy is a mode of practice in which the subject, standing from a viewpoint isolated from the environment, controls or manages it. It is strategies upon which modern science is based, and as Certeau [1984: xix] points out, "political, economic, and scientific rationality has

been constructed on this strategic model.” For example, generalization, reduction, and quantification, the most essential characteristics of modern science, become possible when the subject is isolated from the environment and objectifies it from a strategic viewpoint. Modern science tries to reduce complex phenomena into simple, quantifiable elements without regard for the detailed qualitative differences. Then it attempts to identify the generalized principles that govern the complex natural phenomenon and thereby construct theoretical models, by which the whole picture of the complex natural phenomenon can be grasped. Thus, modern science regards the natural environment as separate from humans and objectifies it from a strategic viewpoint, making it possible to control and manage the natural environment. Therefore, modern concepts concerning exploitation of the natural environment and modern development programs which aim to manage and manipulate the natural environment may be considered to be an extension of this strategic viewpoint of modern science.

However, this does not mean that modern scientists lack a tactical point of view in all circumstances and never execute tactical practices. As Certeau [1984: xxiii] points out, both “the spectacle of overall strategies and the opaque reality of local tactics” coexist in the field of scientific practice, such as research laboratories. For example, scientists may have to exert their ingenuity in planning the procedures for experiments or fieldwork and assembling experimental devices. They may likewise have to cope with the changeable situations of experiments and fieldwork, taking advantage of opportunities. As Certeau [1984: xxiii] accurately states, “tactical practices, that is actual everyday practices (practices of the same order as the art of cooking)” are executed in the field of scientific practices. However, only the products of strategic practices are presented as the final outcome of these practices, whereas the numerous tactical practices are hidden from public eye.

This discrepancy between the realities of scientific practices and the results presented as the final products of science is exactly the mirror image of the discrepancy between the realities of practices and discourses of Inuit hunters. Although Inuit hunters execute both strategic and tactical practices, they show only the re-execution of their tactical practices but are unwilling to demonstrate their strategic knowledge. By contrast, modern scientists present only the products of strategic practices such as theoretical models and generalized principles in the form of theses, but do not demonstrate their tactical practices. Therefore, it seems reasonable to conclude that the difference between Inuit TEK and modern science is not an essential difference but an apparent difference caused by the ideological differences between them, because both are based on a balanced combination of “tactical” and “strategic” practices.

Moreover, it is very possible that the difference between Inuit TEK and modern science is also a result of the socio-political conditions of Inuit societies. This is because the ideology of tactics that guides Inuit TEK influences every aspects of Inuit life and is one of the principal ethnic markers that have been developed in order to enhance a positive ethnic identity against the hegemony of the dominant Canadian society [OMURA 1998; 2002].

Canadian Inuit societies have experienced great socio-cultural changes in the process of assimilation and integration into the nation-state of Canada and the capitalist world system since sedentarisation in the 1950's. They have been integrated through school education, medical services, welfare, legislation, and currency systems. Fur trading, the sale of carvings and wage labor have also promoted dependency on the capitalist world system. Moreover, the influence

of Western culture through mass media has significantly changed their culture. As a result of these socio-cultural changes, on the surface it may appear difficult to find 'traditional' cultural elements in their modern way of life. The stereotypes derived from ethnographies and documentary films, such as the image of the autonomous hunter-gatherer who leads a seasonally migratory life, is one farthest from their present condition. Today, "Inuit society is, in many respects, as modern as its Euro-American counterpart" [DORAIS 1997:3].

However, as many anthropologists (e.g., DORAIS [1997]; KISHIGAMI [1996, 1998]; KISHIGAMI and STEWART [1994]; STEWART [1992, 1995]; WENZEL [1991]) have pointed out, Inuit societies have coped with assimilation and integration by preserving some "traditional" characteristics of their socio-cultural systems such as principles of social organization, language, intimate relationships with their "land" (*nuna*) through subsistence activities, and worldview. Furthermore, Inuit people preserve their ethnic identity through priding themselves on being "Inuit" [DORAIS 1997; OMURA 1998, 2002; STEWART 1995].

One key factor of their identity which plays an important symbolic role in contemporary Canadian socio-political discourse is an idealized self-image; that is, *inuinnaqtun* (the real Inuit way; *inummarittit* in other dialects). *Inuinnaqtun* refers to the Inuit language in a narrow sense, but it also, in a broader sense refers to the Inuit ways of perceiving, thinking, acting, speaking etc.; that is, the "true" Inuit way of life, in contrast to the "white people's way of life" (*qaplunaaqtun*) [BRODY 1975]. Accordingly, the various ethnic markers discussed below are included in *inuinnaqtun* [BRIGGS 1997; OMURA 1998; 2002].

First of all, behaviors and customs that are strongly value-laden, and considered to have been preserved since pre-sedentarisation times, tend to become *inuinnaqtun*. Furthermore, Inuit often regard as *inuinnaqtun* even behaviors and customs which originally resulted from contact with Western societies. These include, for example, jig dancing which was originally learned from Scottish whalers, the custom of drinking tea, the various trapping techniques introduced in the 19th century, and Christianity, to which they converted in the 20th century. Moreover, it can be suggested that even the behaviors and customs which were introduced as a result of assimilation and integration into dominant Canadian society can become *inuinnaqtun*, if practiced in the "Inuit way." These include, for example, the "Inuit way" of operating snowmobiles and motor boats, the "Inuit way" of working for wages, the "Inuit way" of celebrating Canada Day, etc. Such behaviors and customs certainly originated through contact with the dominant Canadian society, but they can be converted into Inuit cultural traits if practiced in an "Inuit way."

Accordingly, self-images represented in everyday Inuit life are proliferating because almost all behaviors and customs conducted in contemporary Inuit societies have the potential of becoming *inuinnaqtun*. As some anthropologists have suggested (e.g., BRIGGS [1997]; BRODY [1975]; OMURA [1998, 2002]), Inuit conduct almost all daily activities, even repairing snowmobiles, using electric saws, hammering nails, etc, in the "Inuit way," in contrast to the "way of white people." For example, while the "way of white people" to repair a snowmobile is to substitute new parts for broken ones according to a manual or plan, the "Inuit way" is to substitute the parts similar to the broken ones without consulting any manuals. Thus, in general, the "Inuit way" relies on flexibility in taking advantage of opportunities according to circumstances and without making plans or having stringent goals. In short, the "Inuit way" or *inuinnaqtun* is the tactical way of operating. So, when a machine that a white person was unable to repair in

the “way of the white people” is successfully repaired by an Inuit, Inuit often say: “White people know nothing” (*qaplunaat qaulimangittut*). Thus, conducting these daily activities in the tactical “Inuit way,” Inuit continually reproduce and confirm a positive ethnic identity.

Therefore, it seems reasonable to conclude that the characteristics of Inuit TEK, which are based on the ideology of the tactics, is one aspect of *inuinnaqtun*, which Inuit people have socio-politically constructed to bolster a positive ethnic identity against the hegemony of the dominant Canadian society. The difference between Inuit TEK and modern science, which results from ideological differences, can be considered not as an essential difference, but rather as a socio-political construction which is the result of the interaction between the two societies.

There is, of course, the possibility that Inuit TEK was based on and guided by the tactical ideology before Inuit societies began to interact closely with the dominant Canadian society in the early 20th century. It may well be true that the ideology of tactics, which has been reproduced among Inuit societies, has been amplified by interaction with Canadian dominant society since that interaction began. However, in any case, it cannot be denied that Inuit TEK, which anthropologists are investigating at the present time, is based on the ideology of the tactics; an ideology socio-politically constructed and reproduced in the process of interaction between the two societies.

5. CONCLUSION: SCIENCE AGAINST MODERN SCIENCE

In this paper, I have compared Inuit TEK with modern science, based partly on my own research and partly on some studies by other researchers. Then, I have suggested that Inuit TEK is guided by the ideology of “tactics,” as opposed to the ideology of “strategy,” which guides modern science. As a result, Inuit TEK, guided by the ideology of “tactics,” stresses control of the human world, which is not separate from the natural environment, and tries to harmonize human behavior with the natural environment, while modern science, guided by the ideology of “strategy,” tries to manipulate and control the natural environment as separate from the human world. In other words, Inuit people regard the environment as a good partner with whom to establish a partnership, while modern scientists and resource managers regard it as a physical resource that should be exploited for human use.

However, I have also emphasized that Inuit TEK is not essentially incommensurable with modern science, because they share a common base in that both are based on the balanced combination of tactical practices and strategic practices. The difference between them is not an essential difference but an apparent difference caused by ideology. Moreover, I have pointed out the possibility that the difference between these two knowledge systems is a result of the socio-political construction of Otherness, which Inuit people have pursued in order to construct a positive ethnic identity in the process of assimilation and integration into the nation-state of Canada and capitalist world-system since sedentarisation in the 1950’s.

Thus, it can be suggested that Inuit TEK, guided by the ideology of tactics, not only differs from modern science, but also refuses to become modern science for the following two reasons. First, the strategy that modern science is based on is what Inuit hunters perceive as childish thought and practice according to their ideology of tactics. Second, the persistence of the ideology

of tactics as opposed to the ideology of strategies leads to resistance against the hegemony of modern science. Inuit TEK is neither pre-science nor primitive science, which has failed to develop into modern science, nor an alternative science which is essentially incommensurable with modern science. Instead it is the "science against modern science," which shares a common base with modern science but refuses to become modern science in order to resist its hegemony.

Therefore, it seems reasonable to conclude that it may be difficult but not impossible to find a way to integrate Inuit TEK with modern science, because Inuit TEK is neither essentially different from nor incommensurable with modern science. Rather, the difference between them is only an apparent difference which has been socio-politically constructed and reproduced in the process of interaction between Inuit society and the dominant Canadian society. Both stem from a common foundation of human intelligence, but have developed in different directions as a result of the interaction between the two societies. In other words, the difference between Inuit TEK and modern science can be seen as reflecting not a cognitive or epistemological difference, but rather, the unequal socio-political relationships between these two societies. Thus, in order to derive methods for integrating Inuit TEK and modern science, it is necessary to reconsider what the relationship between Inuit society and Canadian dominant society ought to be. We need to focus on the socio-political conditions amplifying the differences between Inuit TEK and modern science in order to find a common ground of understanding between them.

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REFERENCES

AKIMICHI, Tomoya

1995 *Maritime Peoples of the Pacific: An Anthropological Study*. Tokyo: University of Tokyo Press. (in Japanese)

ARIMA, Eugene Y.

1976 An Assessment of the Reliability of Informant Recall. In M. M. R. Freeman (ed.), *Report: Inuit Land Use and Occupancy Project* Vol. 2, pp. 31-38. Ottawa: Department of Indian and

Northern Affairs.

BERKES, Fikret

1993 Traditional Ecological Knowledge in Perspective. In Julian T. Inglis (ed.), *Traditional Ecological Knowledge: Concepts and Cases*, pp. 1–10. Ottawa: International Program on Traditional Ecological Knowledge, International Development Research Center, Canadian Museum of Nature.

1999 *Sacred Ecology: Traditional Ecological Knowledge and Resource Management*. Philadelphia: Taylor and Francis.

BIELAWSKI, Ellen

1996 Inuit Indigenous Knowledge and Science in the Arctic. In L. Nader (ed.) *Naked Science: Anthropological Inquiry into Boundaries, Powers, and Knowledge*, pp. 216–227. New York and London: Routledge.

BOAS, Franz

1888 *The Central Eskimo* (reprinted in 1964). London: University of Nebraska Press.

BRIGGS, Jean L.

1968 *Ukuhikhalingmiut Eskimo Emotional Expression*. Ottawa: Department of Indian Affairs and Northern Development, Northern Science Research Group.

1970 *Never in Anger: Portrait of an Eskimo Family*. Cambridge: Harvard University Press.

1991 Expecting the Unexpected: Canadian Inuit Training for an Experimental Lifestyle. *Ethos (Journal of the Society for Psychological Anthropology)* 19(3): 259–287.

1997 From Trait to Emblem and Back: Living and Representing Culture in Everyday Life. *Arctic Anthropology* 34(1): 227–235.

BRODY, Hugh

1975 *The People's Land: Whites and the Eastern Arctic*. Penguin Books.

1976 Land Occupancy: Inuit Perceptions. In M. M. R. Freeman (ed.), *Report: Inuit Land Use and Occupancy Project* Vol. 1, pp. 185–242. Ottawa: Department of Indian and Northern Affairs.

CARPENTER, Edmund

1955 Space Concepts of the Aivilik Eskimos. *Explorations* 5: 131–145.

1973 *Eskimo Realities*. New York: Holt, Rinehart and Winston.

CERTEAU, Michel de

1984 *The Practice of Everyday Life*. (Translated by S. F. Rendall) Berkeley, Los Angeles and London: University of California Press. (L'Invention du quotidien, 1, Art de Faire. Paris: Union Generale d'Editions. 1980)

COLLINGS, Peter

1997 Subsistence Hunting and Wildlife Management in the Central Canadian Arctic. *Arctic Anthropology* 34(1): 41–56.

CORRELL, Thomas C.

1976 Language and Location in Traditional Inuit Societies. In M. M. R. Freeman (ed.), *Report: Inuit Land Use and Occupancy Project* Vol. 2, pp. 173–186. Ottawa: Department of Indian and Northern Affairs.

DORAIS, Louis-Jacques

1997 *Quaqtaq: Modernity and Identity in an Inuit Community*. Toronto: University of Toronto Press.

FERGUSON, Michael and Francois MESSIER

1997 Collection and Analysis of Traditional Ecological Knowledge about a Population of Arctic

- Tundra Caribou. *Arctic* 50(1): 17-28.
- FERGUSON, Michael, Robert WILLIAMSON and Francois MESSIER
 1998 Inuit Knowledge of Long-term Changes in a Population of Arctic Tundra Caribou. *Arctic* 51(3): 201-219.
- FIENUP-RIORDAN, Ann
 1986 The Real People: The Concept of Personhood Among the Yup'ik Eskimos of Western Alaska. *Etudes/Inuit/Studies* 10 (1-2): 261-270.
 1990 *Eskimo Essays: Yup'ik Lives and How We See Them*. New Brunswick: Rutgers University Press.
 1999 Yaqulget Qaillun Pilartat (What the Birds Do): Yup'ik Eskimo Understanding of Geese and Those Who Study Them. *Arctic* 52(1): 1-22.
- FREEMAN, Milton M. R. (ed.)
 1976 *Report: Inuit Land Use and Occupancy Project* (3 vols.). Ottawa: Department of Indian and Northern Affairs.
- FREEMAN, Milton M. R.
 1976 Fieldwork Methodology: Rationale and Assessment. In M. M. R. Freeman (ed.), *Report: Inuit Land Use and Occupancy Project* Vol. 2, pp. 47-60. Ottawa: Department of Indian and Northern Affairs.
 1984 Contemporary Inuit Exploitation of the Sea-ice Environment. In P. Wilkinson (ed.) *Sikumiut: The People Who Use the Sea Ice*, pp. 73-79. Ottawa: Canadian Arctic Resources Committee.
 1985 Appeal to Tradition: Different Perspectives on Arctic Wildlife Management. In J. Brosted, J. Dahl, A. Gray, H. C. Gullov, G. Henriksen, J. B. Jorgensen and I. Kleivan (eds.) *Native Power: The Quest for Autonomy and Nationhood of Indigenous Peoples*, pp. 265-281. Bergen, Oslo, Stavanger, Tromso: Universitetsforlaget as.
 1993 Traditional Land Users as a Legitimate Source of Environmental Expertise. In Nancy Williams and Graham Baines (eds.) *Traditional Ecological Knowledge: Wisdom for Sustainable Development*, pp. 153-161. Canberra: Center for Resource and Environmental Studies, Australian National University.
- FREEMAN, M. M. R. and L. N. CARBYN (eds.)
 1988 *Traditional Knowledge and Renewable Resource Management in Northern Regions*. Edmonton: Boreal Institute for Northern Studies, The University of Alberta.
- GLADWIN, Thomas
 1970 *East Is a Big Bird: Navigation and Logic on Puluwat Atoll*. Cambridge: Harvard University Press.
- GUBSER, Nicholas
 1965 *The Nunamiut Eskimos: Hunters of Caribou*. New Haven: Yale University Press.
- GUNN, Anne, Goo ARLOOKTOO and David KAOMAYOK
 1988 The Contribution of the Ecological Knowledge of Inuit to Wildlife Management in the Northwest Territories. In M. M. R. Freeman and Ludwig N. Carbyn (eds.) *Traditional Knowledge and Renewable Resource Management in Northern Regions*, pp. 22-30. Edmonton: Boreal Institute for Northern Studies.
- HUNN, Eugene
 1993 What is Traditional Ecological Knowledge? In Nancy Williams and Graham Baines (eds.) *Traditional Environmental Knowledge: Wisdom for Sustainable Development*, pp. 13-15. Canberra: Center for Resource and Environmental Studies, Australian National University.

KISHIGAMI, Nobuhiro

- 1996 On a Characteristic of the Social Changes in Canadian Inuit Societies. In H. Stewart (ed.) *Contemporary Hunters and Gatherers: Change and Regenesis of Subsistence Cultures*, pp. 13–52. Tokyo: Genso-sha. (in Japanese)
- 1998 *The Arctic People, Inuit of Canada*. Tokyo: Koubun-dou. (in Japanese)

KISHIGAMI, Nobuhiro and Henry STEWART

- 1994 Indigenous Social Relations in a Contemporary Canadian Inuit Society: A Case Study from Pelly Bay, Northwest Territories, Canada. *Bulletin of the National Museum of Ethnology* 19(3): 405–448. (in Japanese)

LEWIS, Henry T.

- 1993 Traditional Ecological Knowledge: Some Definitions. In Nancy Williams and Graham Baines (eds.) *Traditional Ecological Knowledge: Wisdom for Sustainable Development*, pp. 8–12. Canberra: Center for Resource and Environmental Studies, Australian National University.

MORROW, Phyllis

- 1990 Symbolic Actions, Indirect Expressions: Limits to Interpretations of Yupik Society. *Etudes/Inuit/Studies* 14 (1–2): 141–158.

MORROW, P. and C. HENSEL

- 1992 Hidden Dissension: Minority-Majority Relationships and the Use of Contested Terminology. *Arctic Anthropology* 29(1): 38–53.

NADASDY, Paul

- 1999 The Politics of TEK: Power and the ‘Integration’ of Knowledge. *Arctic Anthropology* 36(1–2): 1–18.

NAKASHIMA, Douglas

- 1988 Eider Ecology from Inuit Hunters. In D. Nakashima and D. Murray (eds.) *The Common Eider of Eastern Hudson Bay: A Survey of Nest Colonies and Inuit Ecological Knowledge* (Environmental Studies Revolving Funds Report no. 102), pp. 112–169. Ottawa.
- 1991 *The Ecological Knowledge of Belcher Island Inuit: A Traditional Basis for Contemporary Wildlife Co-Management*. Ph.D. Dissertation, Montreal: Department of Geography, McGill University.
- 1993 Astute Observers on the Sea Ice Edge: Inuit Knowledge as a Basis for Arctic Co-Management. In J. T. Inglis (ed.) *Traditional Ecological Knowledge: Concepts and Cases*, pp. 99–110. Ottawa: International Program on Traditional Ecological Knowledge, International Development Research Center, Canadian Museum of Nature.

NELSON, Richard K.

- 1969 *Hunters of the Northern Ice*. Chicago: The University of Chicago Press.
- 1976 The Inuk as a Hunter. In M. M. R. Freeman (ed.) *Report: Inuit Land Use and Occupancy Project Vol. 2*, pp. 203–206. Ottawa: Department of Indian and Northern Affairs.

OMURA, Keiichi

- 1995 Topographical Acumen and Subsistence in Netsilik Inuit Society. *The Proceedings of the 13th International Abashiri Symposium*, pp. 69–90. Abashiri: Association for the Promotion of Northern Cultures. (in Japanese)
- 1998 Self-image and Everyday Practices in Canadian Inuit Society: The Tactics of *Inuinnaqtun* (the Inuit Way). *The Japanese Journal of Ethnology* 63(2): 160–170. (in Japanese)
- 1999 The Concept of ‘Resource’ and ‘Nuna’ (the Land) in Modern Inuit Society. *Development and Environment in the North: The Proceedings of the 13th International Abashiri Symposium*, pp. 13–28. Abashiri: Association for the Promotion of Northern Cultures. (in Japanese)

- 2002 Construction of *Inuinnaqtun* (Real Inuit-way): Self-image and Everyday Practices in Inuit Society. In H. Stewart, A. Barnard and K. Omura (eds.) *Self- and Other-Images of Hunter-Gatherers* (Senri Ethnological Studies 60), pp. 101–111. Osaka: National Museum of Ethnology.
- RUNDSTORM, Robert A
1990 A Cultural Interpretation of Inuit Map Accuracy. *Geographical Review* 80(2): 155–168.
- SPINK, John and D. W. MOODIE
1972 Eskimo Maps: From the Canadian Eastern Arctic. *Cartographica Monograph* 5. Toronto: University of Toronto Press.
1976 Inuit Maps from the Canadian Eastern Arctic. In M. M. R. Freeman (ed.) *Report: Inuit Land Use and Occupancy Project* Vol. 2, pp. 39–46. Ottawa: Department of Indian and Northern Affairs.
- STEVENSON, Marc
1996 Indigenous Knowledge in Environmental Assessment. *Arctic* 49(3): 278–291.
- STEWART, Henry
1992 Sedentarism and Subsistence Activities: Continuity and Change of Traditional Netsilik Inuit Subsistence Patterns and Foodways. *Proceedings, The 6th International Abashiri Symposium*, pp. 75–87. Abashiri: Association for the Promotion of Northern Cultures. (in Japanese)
1995 Subsistence Activities in Contemporary Netsilik Inuit Society: Physical Survival, Cultural Survival. *Proceedings, The Ninth International Abashiri Symposium*, pp. 37–68. Abashiri: Association for the Promotion of Northern Cultures. (in Japanese)
- WENZEL, George
1991 *Animal Rights, Human Rights: Ecology, Economy and Ideology in the Canadian Arctic*. Toronto: University of Toronto Press.
1999 Traditional Ecological Knowledge and Inuit: Reflections on TEK Research and Ethics. *Arctic* 52(2): 113–124.