

Aboriginal “Traditional Knowledge” and Canadian Public Policy: Ten Years of Listening to the Silence

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In November 1996 we published an article in the journal *Policy Options* criticizing the incorporation of aboriginal peoples’ “traditional knowledge” (often referred to as TK) into the environmental assessment process.¹ Traditional knowledge had been defined as “knowledge and values which have been acquired through experience, observation, from the land or from spiritual teachings, and handed down from one generation to another”. In the Northwest Territories, traditional knowledge was being recognized as a “valid and essential source of information” by governments,² and it was being used in a number of policy areas, including the environmental assessment of a proposed diamond mine.

The article argued that traditional knowledge, because of its spiritual component and unscientific reasoning, was a threat to environmental assessment wherever it was applied. We maintained that the incorporation of traditional knowledge into public policy more generally results in incorrect assumptions since spiritual beliefs cannot be challenged or verified. The acceptance of spiritual beliefs as “knowledge” by governments was dangerous because it could be used to justify any activity, including actions that were environmentally destructive such as the overharvesting of resources.

The article provoked a nation-wide debate on the role of traditional knowledge in the environmental assessment process, as well as in public policy more generally. Two articles responded to our original piece in *Policy Options*, which resulted in another exchange.³ The debate was then featured in *The Globe and Mail*, bringing the issue to a wider national audience.⁴

¹ Albert Howard and Frances Widdowson, “Traditional Knowledge Threatens Environmental Assessment”, *Policy Options*, November 1996, pp. 34-36.

²The Government of the Northwest Territories, “Policy: Traditional Knowledge”, pp.1-3.

³ Marc G. Stevenson, “Ignorance and Prejudice Threaten Environmental Assessment”, *Policy Options*, March 1997, pp. 25-28; Fikret Berkes and Thomas Henley, “Co-management and Traditional Knowledge: Threat of Opportunity?”, *Policy Options*, March 1997, pp. 29-31; Albert Howard and Frances Widdowson, “Traditional Knowledge Advocates Weave a Tangled Web”, *Policy Options*, April 1997, 46-48; and Fikret Berkes and Thomas Henley, “The Usefulness of Traditional Knowledge: Myth or Reality?”, *Policy Options*, May 1997, pp. 55-56.

⁴ Brian Laghi, “Getting into the spirit of things”, *The Globe and Mail*, August 9, 1997, pp. D1-2; “Aboriginal perspectives on reality”, *The Globe and Mail*, August 16, 1997; Peter F. Dawson, “The wisdom of the elders?”, *The Globe and Mail*, August 19, 1997, p. A10. For other articles examining the debate, see Frances Abele, “Traditional Knowledge in Practice”, *Arctic*, December 1997, pp.iii-iv; Terry Fenge, “Ecological knowledge in the Hudson Bay bioregion”, *Northern Perspectives*, 25(1), Summer 1997; and Roy C. Dudgeon and Fikret Berkes, “Local Understandings of the Land: Traditional Ecological Knowledge

Since this debate, there has been an enormous literature produced on traditional knowledge.⁵ This literature, however, has not really responded to our criticisms. Our arguments have been either ignored, or dismissed as a “racist diatribe” or a “right wing polemic”.⁶ As a result, the promotion of traditional knowledge has continued as if the debate never existed.⁷

This paper explains why traditional knowledge studies continue to proliferate despite the absence of evidence of their contribution to scientific research. The main reason is the abundance of political or economic interests in promoting traditional knowledge. More specifically, traditional knowledge is used to extract funding from governments and to facilitate unsustainable resource development in Canada, and internationally. In addition, traditional knowledge finds support among disinterested parties who are sympathetic to what they perceive as aboriginal aspirations. Such unconditional support, however, is detrimental to the objective interests of aboriginal peoples. It disguises the educational deficiencies in native communities under the supposition of “another way of knowing”, keeping the aboriginal population isolated, dependent and marginalized.

Is there a there, there?

Though there are abundant assertions about its importance, it is difficult to pin down what traditional knowledge actually is. Some commentators say that it is a “kind of science”,⁸ while others maintain that it is fundamentally different from science.⁹ A common argument is that it cannot be separated from its “cultural context”, but government researchers insist that they can incorporate traditional knowledge into

and Indigenous Knowledge”, in H. Selin (ed), *Nature Across Cultures* (Great Britain: Kluwer Academic Publishers, 2003), pp. 80-81.

⁵ For a thorough overview of this literature see Fikret Berkes, *Sacred Ecology: Traditional Ecological Knowledge and Resource Management* (New York: Routledge, 1999). Between March 1997 and June 2002, 16 articles appeared in *Arctic* that were specifically about the benefits of documenting traditional knowledge. There were also 22 others that discussed incorporating traditional knowledge into scientific studies.

⁶ See, for example, Paul Nadasdy, “The anti-politics of TEK”, *Anthropologica* 47(2), 2005, note 7; and Richie Howitt, “Social Impact Assessment: An Annotated Bibliography”, www.es.mq.edu.au/~rhowitt/SIABIB.htm.

⁷ At a recent conference at the Centre for Canadian Studies at the University of Edinburgh, for example, a number of papers were presented on the importance of traditional knowledge, but there was no mention of the debate that had taken place on the subject. Graham White even commented when questioned that he did not think that the debate was relevant, despite the fact that his paper was discussing the difficulties of reconciling traditional knowledge with western bureaucratic principles (including the separation of church and state). Graham White, “Culture Clash: Traditional Knowledge and EuroCanadian Governance Processes in Northern Claims Boards”, paper presented at the “First Nations, First Thoughts” Conference, Centre of Canadian Studies, University of Edinburgh, May 2005, pp., 13-20.

⁸ The Royal Commission on Aboriginal Peoples, for example, refers to traditional knowledge as “Native science”. It notes that bodies of “Native science” are being documented in “virtually every aspect of human life, including knowledge about physical, mental and spiritual health, science and technology, navigation, and all forms of production from the land and waters”. *Final Report*, 4, pp. 454-8.

⁹ For a discussion of these differing perspectives see Deborah McGregor, “Traditional Ecological Knowledge: Anishnabe Woman’s Perspective”, *Atlantis* 29(2), 2005, pp. 2-3.

scientific studies. A number of articles have written down the ways in which traditional knowledge supposedly differs from scientific research, such as its "holistic-embedded-particularistic" character and "non-instrumentalist approach to nature".¹⁰ There are even assertions that no definition of traditional knowledge is possible since it means different things to different aboriginal groups, and it is up to the "traditional knowledge holders" to determine what it is.¹¹

The impenetrable character of traditional knowledge is compounded by the tendency of aboriginal peoples to communicate their ideas through stories or myths, whereby traditional knowledge is equated with such things as "listening to the river".¹² The confusion is intensified by claims that traditional knowledge concepts cannot be translated into other languages,¹³ that it takes a lifetime to understand the knowledge, or that it can only be possessed by a person of aboriginal ancestry who does not drink, gamble or "mess around on his wife".¹⁴ Some aboriginal groups are even reluctant to state what traditional knowledge consists of "for fear that it will be used in ways contrary to their interests and wishes", or because "deeply held ethical codes may proscribe any discussion of certain matters with anyone not in the community".¹⁵

These uncertainties mean that any traditional knowledge study begins with a survey of the field, where researchers weigh the merits of various definitions.¹⁶ The result is never satisfactory since the definition decided upon is either tautological (traditional knowledge is a "way of knowing", "different knowledge system", etc.), or it acts to include a vast array of elements that are distinct from knowledge, such as values, beliefs and practices. Beliefs are the unverifiable assumptions of aboriginal elders about the existence of supernatural forces in the universe; they cannot be described as "knowledge" since they are justified by faith, not evidence. The values and practices referred to in various definitions also have nothing to do with knowledge *per se*. The former concerns normative judgements about the way things should be, not what they are, while a practice refers to how people act, not what is known. Although knowledge, or an understanding of natural processes, may inform values and practices, values and practices do not constitute knowledge.¹⁷

¹⁰ Fikret Berkes, *Sacred Ecology*, p.10.

¹¹ Lorraine F. Brooke, *The Participation of Indigenous Peoples and the Application of their Environmental and Ecological Knowledge in the Arctic Environmental Strategy* (Ottawa: Inuit Circumpolar Conference 1993).

¹² White, "Culture Clash", pp. 14-15.

¹³ White, "Culture Clash", p. 10.

¹⁴ These assertions were made by François Paulette, leader of the Treaty 8 Indians. Federal Environmental Assessment Panel Review of BHP Diamonds Inc. Northwest Territories Diamonds Project, Yellowknife, Northwest Territories, February 13, 1996, Unedited Transcripts, pp.52-3.

¹⁵ White, "Culture Clash", p. 9.

¹⁶ See, for example, Alan Reid et al., "Traditional ecological knowledge for learning with sustainability in mind", *The Trumpeter* 18(1), 2002, pp. 1-27.

¹⁷ Take for example, the recommendation of Christian holy men that people gather in prayer (a practice) to combat the plague that was spreading throughout Europe in the Middle Ages. At the time, a belief in "God" led to the opinion that prayer would somehow reduce the death toll that was ravaging the population. Although prayers were encouraged because the clergy thought it was important to save as many lives as possible (a value), the church's directive actually had the opposite effect to what was intended. This was

Once all the elements that are superfluous to knowledge - i.e. beliefs, values and practices – are removed from a definition only "observations" remain. Observations are obviously an important component of knowledge regardless of culture; it is only through our senses that we can verify an assumption about how the world works. But if the observations of aboriginal peoples are the only aspect of traditional knowledge that can be considered knowledge, how are they different from the observations in scientific research? For if traditional observations were the same as scientific ones, why would separate traditional knowledge components be necessary? Why can't traditional knowledge data be directly integrated with scientific findings?

When traditional knowledge studies are examined, it is apparent that the observations used differ considerably from those comprising scientific research. This "difference", however, would not enable traditional knowledge to make a contribution to scientific research, as there is no methodology for determining the accuracy of observations. Traditional knowledge research merely consists of conducting interviews with elders and asking them where the caribou migrate, whether particular animal species are increasing or decreasing in numbers, and what plants are effective in curing various ailments.¹⁸ While some of these observations may be consistent with reality, others may not. More objective methods of selecting information, therefore, are required to ensure that the data used to make inferences is sufficiently consistent and precise.

Science provides just such a methodology. Scientific methods have developed because day-to-day observations are subject to interpretation, and can result in misunderstanding natural processes. The sun appears to revolve around the earth, flies seem to "spontaneously generate" out of fruit, and heated water was thought to "transmute" into mysterious substances.¹⁹ Although these conclusions were drawn from human observations, it was not until specific measurements and controlled experiments were undertaken by scientists like Galileo, Redi and Lavoisier that they were shown to be false. This is because science is an approach designed "to exclude or at least minimize the chance of being misled by an observation".²⁰ By enabling us to discard those observations that do not stand up to repeated testing, the scientific method increases our understanding of the universe over time.

because the church did not have an understanding (knowledge) of the material causes of the plague. Gathering in prayer actually increased the death toll because it brought people into close contact with others carrying the disease. For a further discussion of this case see Bertrand Russell, *Why I am not a Christian* (New York: Touchstone, 1957), p. 56.

¹⁸ Often these results are "compiled" by having many pages of maps documenting where the elders think various species of plants and animals are located. The most extensive TK research using this approach was a report produced for the Northern River Basins Study. See L. Flett et al., *A Report of Wisdom Synthesized from the Traditional Knowledge Component Studies*, Synthesis Report No. 12 (Edmonton: Northern River Basins Study, 1996).

¹⁹ For a discussion of these cases, see Boyce Rensberger, *How the World Works* (New York: William Morrow & Company, 1986), pp. 154-157, 222-225, 325.

²⁰ Rensberger, *How the World Works*, p.14.

The inconsistent and imprecise character of traditional knowledge observations can be illustrated by a number of examples. The first is a study prepared on the Liard River Basin in northern Canada for the Department of Indian Affairs and Northern Development. In this study, there are tables referring to traditional knowledge data concerning the types and numbers of fish, waterfowl and game species in different areas of the basin.²¹ All the information that the study can provide, however, is that these species are "Present" and that their abundance is "High", "Medium" or "Low" in different areas. These observations are very different from the concrete measurements that would be used in a scientific study of the area, which would include representative samples of different species (which would then be used as the basis for extrapolating total populations), as well as specific information about weights, ages and so on. This data, in fact, would not be scientifically useful in determining what changes had occurred in the area because 1) there is no way of evaluating how the elders came to these conclusions; and 2) it would be impossible to know exactly what was meant by the subjective terms "High", "Medium" or "Low". Science requires specific measurements so that data can be used and evaluated. Traditional knowledge, on the other hand, is impossible to judge even on its own terms.

Aside from the vagueness of the data, elders' opinions are also contradictory. When elders are asked whether or not they think that species are increasing or decreasing, they have different impressions of the local ecology because their experiences "on the land" often diverge and they rely on memory rather than written records. It is noted in the Liard River Basin Study, for example, that "there was a difference of opinion among participants on many of the responses, making it was difficult to summarize these data [sic]".²² There is, in fact, no way to summarize traditional knowledge findings because they are only a compilation of subjective impressions. "Traditional knowledge holders" do not have a methodology to accurately measure the flora and fauna of the area. If they did, they would be using scientific methods, not traditional knowledge.

A second example concerns a recent study attempting to use traditional knowledge to understand the environmental impact of climate change. The methodology of this study involved conducting interviews with "16 community members and elders considered to be local experts on sea ice".²³ Although it is maintained that these "observations were remarkably consistent in providing evidence of local change in such variables as multiyear ice distribution, first-year ice thickness, and ice breakup dates", the observations – provided in the form of a few quotations throughout the article - are so vague that they would not be useful in a scientific study on this subject. Quotations from elders such as "[Ice] goes out quicker now...It is different" (Edith Haogak and Sarah Kuptana), "Freeze-up is way later. Less [multiyear ice] doesn't make the water as cold (Roger Kuptana)", and "[The weather nowadays is] sometimes cold, but sometimes hot too...[but at the] wrong time. Way different now (Edith Haogak)" are provided to support

²¹ MacDonald Environmental Sciences Ltd., *Acquisition of Traditional Environmental Knowledge in the Lower Liard River Basin* (Indian and Northern Affairs Canada, May 1995), Tables 1-6.

²² MacDonald Environmental Sciences Ltd., *Acquisition of Traditional Environmental Knowledge...*, p.15.

²³ Theresa Nichols et al., "Climate Change and Sea Ice: Local Observations from the Canadian Western Arctic", *Arctic* March 2004 57(1), pp. 68-80.

the assertion that traditional knowledge can be used to “provide a baseline against which to measure change”.

But it would be impossible to incorporate recollections such as these into scientific research. How would a researcher determine what is meant by “quicker”, “way later”, “cold” or “hot” to use as a baseline? In fact, the only reason why “these observations were remarkably consistent” is because the statements are so nebulous that that can encompass a wide variety of observations. This is in contrast to much more detailed and systematic information that already exists - ironically mentioned in the above study - such as the dates barges can access northern communities each year, thirty years of documented ice draft measurements from submarine expeditions, and data from satellites.

The two other examples concern the largest traditional knowledge studies that were conducted for the West Kitikmeot Slave Study – a multimillion dollar research project to monitor the impacts of diamond mining activity in the Northwest Territories. The first research study documented the names that the Dogrib people use to describe various places in their territory under the assumption that they reveal sophisticated knowledge about northern ecosystems. It was argued that this information could help scientific researchers form base-line data for the animals, vegetation, water and soil that comprised the area. When we look at this project’s findings, however, they are so indefinite that they cannot possibly be considered useful in determining a base-line. This is because translations of these place names include identifications like the following: "there are lots of jackfish here",²⁴ "little spot where fish swim in a circle" or "good spot for net fishing".²⁵ It is this kind of information that is used to show that "place names are important as indicators of bio-geographical knowledge"²⁶ and "patterns associated with place names are starting to emerge that will eventually assist environmental monitors".²⁷

The second study concerned caribou migration and behaviour, and was equally problematic. This study’s conclusions are based on the unsubstantiated opinions of a number of elders. These elders are selected on the assumption that the older they are, the more "wisdom" they will have. Hours and hours of tapes of interviews with elders are made, and then various quotes are presented in an unsystematic fashion with no explanation of why one particular piece of "data" was selected while other opinions were omitted. One of the study's conclusions, for example, is that the caribou always follow a leader that is the mother of a large bull, but it is not shown how the elders could determine this.²⁸ There are also a number of self-evident observations like "wherever

²⁴ Dogrib Treaty 11 Tribal Council (Alicia Legat, Project Director), *Habitat of Dogrib Traditional Territory: Place Names as Indicators of Bio-Geographical Knowledge - Annual Report*, May 2000, p.5. All West Kitikmeot Slave Study reports are available on their website - www.wkss.nt.ca (accessed May 15, 2006).

²⁵ Dogrib Treaty 11 Tribal Council, *Habitat of Dogrib Traditional Territory* (2000), p. 43.

²⁶ Dogrib Treaty 11 Tribal Council, *Habitat of Dogrib Traditional Territory* (2000), p.18.

²⁷ Dogrib Treaty 11, Tribal Council, *Habitat of Dogrib Traditional Territory* (1998), p.46.

²⁸ It is interesting to speculate what would have to be documented before this could be verified. First of all, does this assertion mean that the cow is the mother of a large male calf or the mother of a male calf that grows up to be a large bull? In the case of the latter, there would have to be some way of identifying which cows gave birth to calves that became large bulls. This would mean tagging all the caribou and their calves

there is good lichen, that is where [the caribou] roam" and "the caribou herded to there to eat their food from that area",²⁹ hypothesises that could be guessed by anyone with a cursory understanding of northern wildlife. This is in contrast to scientific studies of caribou, which are based on tracking radio-collared animals by satellite and using a detailed understanding of evolutionary principles to understand caribou behaviour.

As well as simplistic hypotheses, vague and unsubstantiated opinions and unsystematic data, there are a number of other unacceptable, unscientific premises. As noted before, aboriginal peoples use spiritual beliefs to explain natural phenomena. With respect to caribou behaviour, for example, it is claimed that "caribou migrate to people who live well and behave properly". Behaving properly includes using all parts of the animal, not hitting them with sticks³⁰ and knowing Dogrib caribou terminology.³¹ These assertions, based on unverifiable beliefs in the supernatural, have not been derived from any observations, no matter how unsystematic or vague.

In spite of the unscientific character of these findings and their dubious value, they were lauded by the West Kitimeot Slave Study Office, government departments and the northern media at the time. A press release from the West Kitikmeot Study Office asserted that its traditional knowledge research was "being recognized and accepted as important on a global level". The release then went on to offer a quote from the Project Director of the two studies discussed above, who stated that "from what we've been told internationally, the NWT is further ahead than most in the traditional knowledge business...people we present to internationally are very excited by our work. We've been able to establish a level of detail in the information we're collecting that is quite exceptional".³² The Study Office and northern newspapers also were proud to point out that these traditional knowledge findings "confirmed" scientific research.³³

Even more problematic than studies that provide vague recollections in the form of unsystematic quotations are those that merely offer "interpretations" of what the person compiling the traditional research claims to have observed. As a result, it is common to hear statements like: "the research team watched and listened to an elder explain in as much detail as any scientist, the effects of permafrost and drainage on the composition and condition of two neighbouring plant communities".³⁴ Substantiation of the "detailed explanation", however, never emerges. These claims about traditional knowledge's "precision", in fact, are often contradicted in the same article. The geographer and

and then determining which of the calves born turned out to be large bulls, and then cross-referencing these bulls with the caribou leading the herd. With the former, one would still have to determine what calves were large males, if the leader of a herd was always a cow, and if this cow had a large male calf.

²⁹ Dogrib Renewable Resources Committee, Dogrib Treaty 11 Council (Alice Legat, Project Director), *Caribou Migration and the State of the Habitat - Annual Report*, May 1998, p.6, www.wkss.nt.ca (accessed May 15, 2006).

³⁰ Dogrib Renewable Resources Committee, *Caribou Migration and the State of the Habitat* (1998), p.18.

³¹ Dogrib Treaty 11 Council, *Caribou Migration and the State of their Habitat*, April 1999, p.20.

³² "Traditional knowledge research receiving international attention", January 19, 2001, www.wkss.nt.ca.

³³ "NWT Studies show Traditional Knowledge and Western Science Work Together", *News/North*, October 16, 1997; Ian Elliot, "Elders know where caribou go", *News/North*, October 20, 1997, p.A6.

³⁴ Martha Johnson and Robert A. Ruttan, *Traditional Dene Environmental Knowledge* (Hay River, NWT: Dene Cultural Institute, 1993), p.169.

consultant Peter Usher, for example, explains on one page that "in TEK [Traditional Ecological Knowledge], factual observations may be very precise and recalled in extraordinary detail".³⁵ No examples are given in support of this qualified generalization, but Usher goes on to claim soon after that traditional knowledge "tends to be localized and restricted to personal, uninstrumented observations, with little concern for precision in measurement, and it is normally unrecorded".

Despite the vague and unsystematic character of the observations provided by traditional knowledge studies, almost all discussions maintain that it has "valuable insights" that cannot be obtained through scientific research alone. Aboriginal observations are valuable to modern research, it is claimed, because they have been made over generations, instead of in the short period of time used in scientific experiments. It is pointed out that scientists collect data during a few field trips instead of "living on the land" for the whole year.³⁶ Also mentioned is the fact that scientific research has been only conducted over a number of decades, while aboriginal peoples have been "intimately connected" to their environment "for thousands of years". Peter Usher, for example, maintains that traditional knowledge

has a substantial time-depth, ranging from 'living memory' (personal experience), to the memory of several generations, preserved as oral history. It thus provides a diachronic or 'natural history' perspective, rather than synchronic perspective. Hence a 'baseline' is not conceived as a static, snapshot phenomenon but as a more fluid and evolving one that offers a clearer perspective on deviations from 'normal' conditions. TEK can thus contribute to environmental assessment by providing a broader and deeper understanding of baseline conditions and a fuller understanding of local environmental processes, at a finer and more detailed geographical scale, than conventional scientific knowledge can offer.³⁷

But scientific data is not "static", as Usher asserts. It is by taking a "snapshot" of animals, vegetation, water and soil at regular intervals, in fact, that scientists are able to systematize the collection of data. In this way, they are able to provide a definite benchmark that can be directly compared with data that is collected under similar conditions at a later date. Traditional knowledge observations, on the other hand, are not systematic; they are acquired when elders are hunting – conditions that are highly variable from day to day and place to place – and are recalled from memory. Although it is beyond the scope of this paper to review the scientific literature on the accuracy of memory, Usher makes the implausible claim that the "memory of several generations" can be "preserved" to offer "a broader and deeper understanding of baseline conditions" than scientific records. Are we to believe that aboriginal peoples collected information on "baseline conditions" so that it could be used in future scientific studies? And given

³⁵Peter J.Usher, "Traditional ecological knowledge in environmental assessment and management", *Arctic*, 53(2) June, 2000 pp. 183-193.

³⁶ For a discussion of this point, see John Sallenave, "Giving Traditional Knowledge Its Rightful Place in Environmental Impact Assessment", *Northern Perspectives* 22(1), Spring 1994.

³⁷Usher, "Traditional ecological knowledge in environmental assessment and management", pp. 183-193.

that the “memory of several generations” is passed down in the form of myths and stories, how accurate could the data possibly be?

Fikret Berkes, a Professor of Natural Resources at the University of Manitoba, goes even further in asserting the "precision" of traditional knowledge observations. In his recent book, *Sacred Ecology*, Berkes attempts to refute the claim that traditional knowledge findings lack quantitative measures. To support his case he refers to a study by "Barnston (1861)", which "was based on a field survey that indicated that the Cree Indians of James Bay killed some 74,000 geese per year, and an elders' rule of thumb that 'for every goose killed, 20 must leave the Bay'". Based upon these two figures, Berkes notes that Barnston maintained that there were 1.2 million geese in the region – a figure he argues is “entirely plausible” and “well within modern population counts, which give a range of one to two million geese that use James Bay as a flyway...”.³⁸

Berkes' example, however, does not show that traditional knowledge holders use quantitative measures. It was Barnston, after all, not the "traditional knowledge holders", who came up with the estimate of 74,000 geese per year being killed (presumably through a scientific survey). The elders' "rule of thumb" seems to be just an opinion, since how would they know this was the case unless they had some kind of method for counting the geese and determining that 20 times the number killed "must leave the Bay"? Finally, Berkes uses a modern population count (derived from biologists using scientific methodology) to justify the guesswork of the elders that was supposedly made over a hundred years ago. How does Berkes know that the numbers of geese in 1861 are comparable to those using James Bay as a flyway today?

Similar misleading interpretations arise in one of the West Kitikmeot Slave Study's reports on caribou movements and behaviour. It is asserted that, according to the elders, the caribou were in poor shape in 1922, 1929, 1934, 1955, and 1956.³⁹ While the dates provided appear to be reasonably precise, the following question must be asked: how could the elders possibly know this when they did not have written records? If one tries to remember what weather trends were like even a few years ago, for example, it is difficult to recall if it was 1996 or 1995 that one experienced a terrible heat wave or snow storm. Imagine the difficulties in trying to remember something 45, 65, or even 75 years ago with this level of detail. But when the study is examined more closely, it appears that the elders did not provide specific dates. Instead, they said "I was about the size of ----", or "I was about the age of my nephew----". The age that the elder was at this time is then deduced by the researcher who essentially makes up a date to coincide with the vague reminiscence of the elder.⁴⁰

As well as arguing that traditional knowledge can be quantitative, Berkes claims that "some traditional knowledge systems are based on synchronic [simultaneously observed] data collected over large areas, rather than merely *diachronic* data, or a long time-series

³⁸ Berkes, *Sacred Ecology*, p.10.

³⁹ Dogrib Treaty 11 Council, *Caribou Migration and the State of their Habitat*, April 1999, pp.28-30.

⁴⁰ Dogrib Treaty 11 Council, *Caribou Migration and the State of their Habitat*, April 1999, p.24.

of local information".⁴¹ The example that he maintains will show this is the "Dene Indian system of monitoring caribou movements over a broad front across the subarctic region of Canada".⁴² But Berkes presents no evidence that the Dene collected "synchronic data". Ironically, the data that is presented is from two scientific studies that used aerial surveys and tagging studies with radio collars as part of their research.⁴³ Berkes tells us that Dene caribou knowledge is "rich" and that they are "among the great experts on caribou", but all he provides as evidence is the opinion of "Smith 1978" that the Dene's occupation of the area "may be viewed as strategically situated reconnaissance patrols for collecting information on caribou movements and intentions".⁴⁴ From this one unsubstantiated "interpretation", Berkes goes on to conclude that the "summer excursions to the north of the tree line kept the Dene well-informed of caribou distributions. According to the archaeological record, this spatial arrangement had considerable time depth, allowing hunters to accumulate a great many generations of data".⁴⁵ Exactly what this "data" was, or how it "accumulated", is never specified.

Use of the words "quantitative" and "synchronic" in association with traditional knowledge research, therefore, inflates its capacities far beyond what is merited. The same applies for references to traditional knowledge's "classification systems". It is now claimed that a number of "ecological insights" can be gained through the study of "folk taxonomies", but this is not apparent from a review of these systems. There are again assertions about "complexity" and "sophistication", but very little of substance is provided. When an actual "classification system" is identified, it turns out to be completely irrelevant to modern research.⁴⁶ The Royal Commission on Aboriginal

⁴¹ Berkes, *Sacred Ecology*, p. 10.

⁴² Berkes, *Sacred Ecology*, p. 10.

⁴³ Berkes, *Sacred Ecology*, pp.97-8.

⁴⁴ Cited in Berkes, *Sacred Ecology*, p.100.

⁴⁵ Berkes, *Sacred Ecology*, p.100.

⁴⁶ One such example is the Kalam of New Guinea, who separate animals into three categories: 1) those that are not hunted; 2) those that are hunted by men; and 3) those that are hunted by women and children. Berkes, *Sacred Ecology*, pp.42-3. The same kinds of assertions are made concerning the much lauded Dogrib "classification system". At the beginning of the study, it is claimed that place names will be translated and maps made "with the goal of producing a joint habitat classification" with scientific studies. But while scientific researchers would classify the habitat in terms of the types of flora and fauna that are present due to the combination of precipitation, temperature and soil dampness, the Dogrib do not appear to have any classification system at all. Legat's study merely informs us that the Dogrib identify the following four different areas of the territory: 1) a plateau; 2) a forested area; 3) the area just below the treeline; and 4) the barrenlands. It is only with the plateau that there is any attempt to explain why the territory is "classified" in this way. The plateau is seen as being a separate category, we are told, because this is where caribou are hunted, small animals are trapped, and medicinal plants are gathered. Any rationale for the other three areas is omitted. But one can see from the explanation provided for the plateau that "classification" is again being made according to use, not to the material properties of the environment. This is a misuse of the word "classification", so such a "system" will add nothing to scientific studies. Dogrib Treaty 11 Tribal Council, *Habitat of Dogrib Traditional Territory*, May 1999, p.38. Scientific researchers, in fact, classify the Dogrib Territory into two general types, each reflecting a dramatically different ecosystem - taiga or boreal forests (needle-leaved forests, mostly evergreen, of cool temperate climates) and arctic tundra (treeless vegetation of cold climates north of the taiga, formed by varied combinations of lichen and moss, grass and sedges, and dwarf shrubs).

⁴⁶ Dogrib Treaty 11 Tribal Council, *Habitat of Dogrib Traditional Territory*, March 1998, pp.29-30.

Peoples, for example, claims that "the skills to observe and the expertise to describe reality in ecological terms constitute part of the knowledge that elders possess to an exceptional degree and that has begun to find a place in the classification systems of western science only recently".⁴⁷ To substantiate this claim, the Royal Commission refers to only one source, a 1990 environmental impact study prepared for the Canadian Environmental Assessment Research Council. The study, written by Douglas J. Nakashima, maintains that unlike the "Western scientific tradition", ecological classification "has long been a fundamental organizing principle for the traditional Inuit taxonomy". Nakashima then argues that it "reveals a strong ecological logic and reflects a dichotomy of land and sea which is a central theme in traditional Inuit mythology and world-view."⁴⁸ This "ecological logic" is explained by the Royal Commission as follows:

Inuit in the southeastern Hudson Bay region divide animals – *umajuit* – into six main subdivisions. *Puijiit* are 'those that rise to the surface' (such as seals, whales and walrus); *pisutiit*, or 'those that walk', include polar bear, caribou and foxes; *timmiaq* are the large birds, including loons, swans, hawks and ptarmigans; *qupauak* are the songbirds, shorebirds and other small birds; *iqaluit* includes large motile fish such as Arctic char, brook char, lake char and whitefish; and *irqamiutait*, a diverse group of bottom-dwelling marine organisms, that includes fish, clams, sea urchins and seaweeds.

Although Nakashima touts this classification system as having the ability to "...advance our understanding of arctic ecosystems...", it is hard to understand how this will be the case. What is to be gained by classifying animals according to whether or not they "rise to the surface" or if they are "those that walk"? "Walking" is a characteristic of a large number of animals, and if we classified them according to this attribute we would have a nebulous category of thousands of organisms with diverse characteristics. Even more problematic is the last category - "bottom-dwelling marine organisms, that includes fish, clams, sea urchins and seaweeds". "Seaweeds" and "fish" are extremely far apart from each other in the evolution of life, yet they are placed in the same category. How will "our understanding of arctic ecosystems" be advanced by using this kind of system? These categorizations, in fact, are obviously only useful for Inuit subsistence. Animals that "rise to the surface" would be perceived differently than "those that walk", since the hunting methods for each would differ considerably.⁴⁹

⁴⁷Royal Commission on Aboriginal Peoples, *Report of the Royal Commission on Aboriginal Peoples [Final Report]*, 1, p. 640.

⁴⁸Douglas J. Nakashima, *Application of Native Knowledge in EIA: Inuit, Eiders and Hudson Bay Oil* (Montreal: Canadian Environmental Assessment Research Council, 1990, p.5), cited in *Final Report*, 4, pp. 139-40.

⁴⁹Keith Windschuttle makes a similar point with respect to the "classification system" of the Chewa people of Malawi who do not put domestic ducks in the same category as other birds and wild ducks. According to Windschuttle, "different uses generate different classifications. There is nothing surprising about a Malawi tribe that puts domestic ducks and wild ducks into different categories. We make exactly the same distinction in Western culture ourselves, else we would have little use for the words 'domestic' and wild'. Under Western legal systems, the gross taxonomy of domestic and wild animals has been unchanged since Roman law. Indeed, when we classify animals and plants for our own consumption we use groupings not dissimilar to those of the Chewa. The big difference between our culture and theirs is that we *also* have a method of classification derived from the science of biology. In this case we classify creatures not from

It is also amazing that the Royal Commission accepts Nakashima's claim that classification has occurred only recently in the "Western scientific tradition". Classification has been occurring in the "west" as long as writing has existed, drawing into question the Inuit's ability to classify anything before contact. Aristotle, for example, developed a system of categorizing plants and animals thousands of years ago. This system was supplanted in the 18th Century when scientific developments revealed its limitation (providing evidence of the progressive nature of the scientific method).⁵⁰

All of these attempts to show the "exceptional" and "advanced" nature of traditional knowledge only act to create false expectations about what can actually be gained from listening to aboriginal elders. We both have sat through a number of traditional knowledge "scoping sessions", where various "traditional knowledge holders" make presentations. When one actually observes elders providing traditional knowledge, however, one is surprised at the lack of information that is forthcoming. For example, the following is an unedited transcript of the remarks made by one "traditional knowledge holder" during a presentation concerning traditional knowledge during an assessment of the BHP Diamonds project:

Louie Abel: (Translation) I'm from Lutsel K'e. There are a lot of people thinking about the mine development. Many people are worried. The Dene people live off the land and the wildlife. What is going to happen if they spoil all the wildlife. The white people and Dene people don't live the same way. What about the future of our children? The caribou may all be destroyed. How are they going to help us? We respect the wildlife, the white people don't. If we cut down a tree

our own interest but from the relations we find in nature. In fact, biology is the most obvious example of a science that adopts classifications that derive objectively from nature, despite the claims of postmodernists that such a thing is impossible. Our scientific taxonomies of species are in no way human-inspired or arbitrary but, rather, correspond precisely to the patterns of reproduction we find in nature. If animals or plants do not reproduce with each other they do not constitute a species. This is a taxonomy that exists in nature and did so eons before the emergence of Western science; indeed, it would still have existed even if human beings had never evolved to discover it". Keith Windschuttle, *The Killing of History* (San Francisco: Encounter Books, 1996), pp. 279-283.

⁵⁰ Aside from such technological developments as the microscope, Aristotle's system became obsolete because it could not cope with the huge number of plants and animals that were being discovered by European naturalists. The need for a more scientific classification system was met by Carl Linnaeus in the 18th Century. Linnaeus' system was a breakthrough because it used binomial nomenclature - the descriptive term for each species using one word to designate the genus and another for a differential characteristic (e.g. Homo Sapiens - from the genus Homo + Sapiens denoting the differential characteristic "sapient" or "wise"). Such a system was necessary because it enabled large numbers of species to be organized coherently. This system also ranks organisms from the general to the specific (the most general category being kingdom to the most specific being species) and has evolved to classify organisms according to their most fundamental or "natural" characteristics (i.e. vertebrate versus invertebrate animals; flowering versus non-flowering plants) as opposed to superficial or "key" ones (i.e. colour, shape or form of locomotion). Scientific systems also attempt to classify organisms based on the number of characteristics that they share, as opposed to relying on one criterion (mostly used by humans). As a result, Linnaeus' scheme is essential for aiding our understanding of evolution, genetics, ecology, behaviour and comparative physiology. It is especially significant with respect to helping us to understand the evolutionary process because it identifies the fundamental divisions of life and its progression from the simple to the complex. For a further discussion of this classification system see Rensberger, *How the World Works*, pp. 234-235.

we use it for something. We use the trees for medicine. I had cancer three years ago. They told me if I didn't have an operation I would be in serious trouble. I used traditional medicine and I'm alright. I still trap and hunt. They don't believe what we tell them. When we try to say something to them they feel that they know more than us. They have paper and that is all they follow. The Dene people don't have any paper. Elders have lived off the land. They've talked about how they used to live. They don't have to follow books. Our scientists are the elders. We must listen to the elders. We will keep talking about the development. I'm not trying to say you shouldn't put in a mine. I want to be able to respect the land and wildlife. They should try to respect the wildlife and small game. If we get sick from the mine, are they going to be able to compensate us? The white man way and the Dene way are different. The doctor asked me to take him trapping for a month, he couldn't handle it, he was always cold. He can't eat and hunt like me. He stayed for two weeks then I had to bring him back. I have a grade 2 education. In the bush I would be at a grade 12 level. The white people can't live like us. If they can understand our ways and help each other maybe they can respect us. I'm 62 years old. The white people can't be like us and we can't be like them. A lot of the land is being spoiled in our area and we've never been compensated. In Stark Lake, the water has been spoiled. There's a lot of cancer. There used to be a uranium mine there. Nobody came to help us. There's something wrong over there. What if our land is spoiled? What is going to happen to the caribou? Will they get diseased? How are they going to help us? Who is going to monitor it? Are we going to be able to get caribou every winter? Are they going to research them every year? Are the fish going to be monitored every year? I am happy to see some elders at the meeting.⁵¹

This is the kind of “data” that is obtained from elders. It is then up to the researcher conducting the interview to “interpret” it.

Instead of providing additional insights to modern research, the observational component of traditional knowledge is actually what John E. Dodes, the president of the New York Chapter of the National Council Against Health Fraud, has referred to as “junk science”. According to Dodes, “junk science results when conclusions are drawn using low-quality data such as testimonials, anecdotes, and case reports rather than from randomized, controlled clinical experiments”. Although Dodes is largely concerned with exploring the negative effects of junk science on health care in the United States, he maintains that new regulations in American courts have made this form of “evidence” increasingly common. Dodes notes that junk science is generally used “in support of a political or legislative agenda”. This agenda is driven by interested parties who, like the “faith healing” lobby, stand to gain financially from suppressing reliable scientific evidence.⁵²

Such an agenda is causing exaggerated claims about the importance of traditional knowledge. As we discovered in the Northwest Territories, the promotion of traditional

⁵¹ Federal Environmental Assessment Panel Review of BHP Diamonds Inc. Northwest Territories Diamonds Project, Yellowknife, Northwest Territories, February 13, 1996, Unedited Transcripts, pp.32-3.

⁵² John E. Dodes, “Junk Science and the Law”, *Skeptical Inquirer*, July/August 2001, p.31.

knowledge is not due to its value vis-à-vis scientific research, but because of various political pressures. Political expediency, in fact, underlies all traditional knowledge research.

The Political Character of Traditional Knowledge Research

Until about twenty years ago, no one had heard about "traditional knowledge". Now it is everywhere. It is sought after by governments, studied in universities around the world, used in environmental assessment processes, and promoted by international protocols for environmental protection and third world development. How did traditional knowledge suddenly become such a hot commodity?

Traditional knowledge, in fact, is to some extent an invention of consultants who benefit from developing research to document it. In the Northwest Territories, for example, pressure for incorporating traditional knowledge in government policy began in the early 1980s, when various departments were asked to comment about what role the government could play in promoting this knowledge. The Science Institute of the Northwest Territories and the Department of Culture and Communications developed an "ad hoc working group" on traditional knowledge at this time, and then correspondence was initiated by Aalice Legat, the Assistant Deputy Minister of Culture and Communications to make this group more official. Legat then suggested that it "would be appropriate" for a member of her department "to chair and co-ordinate the Traditional Knowledge Working Group"⁵³ – a task that she, herself, took on after leaving the government and becoming a consultant.

This working group recommended additional bureaucratic and legal developments, including new legislation, the hiring of departmental "traditional knowledge co-ordinators", the establishment of a Territorial Elders Council, an education and promotion campaign, annual awards for recognizing traditional knowledge holders, the establishment of a Traditional Knowledge Co-ordinating Committee, and sponsoring an independent study of the current and potential use of traditional knowledge within the Northwest Territories, as well as the "financial resources to support these initiatives". It also argued that "career paths, opportunities for promotion, job evaluations and professional development must place tangible value on attitudes, skills experience and work records which demonstrate traditional knowledge awareness and appropriate use".⁵⁴ As a result of this report, the Government of the Northwest Territories developed a "Traditional Knowledge Policy" recognizing the importance of traditional knowledge and directing that it be "incorporate[d]...into Government decisions and actions where appropriate".⁵⁵

To this day, many of the people encouraging the recognition and incorporation of traditional knowledge become consultants who obtain contracts to undertake the research.

⁵³All of this correspondence is in the authors' possession.

⁵⁴ Legat, *Report of the Traditional Knowledge Working Group*, pp. 24, .33.

⁵⁵ Department of Renewable Resources, Government of the Northwest Territories, *Response by the Government of the Northwest Territories to the Report of the Traditional Knowledge Working Group*.

The two major traditional knowledge studies commissioned by the West Kitikmeot Slave Study, for example, were being overseen by Alice Legat, one of traditional knowledge's early promoters.⁵⁶ The financial benefits that can be obtained explain why assertions about traditional knowledge's importance are usually accompanied by appeals for more funding. As a report prepared by the consultant Aggie Brockman points out, "many elders are open to the documentation of their knowledge, but it is a time-consuming and therefore expensive process. Financial resources are rarely made available for the kind of traditional knowledge research which is both appropriate for First Nations and Inuit communities and rigorous enough to earn credibility among western scientists and policy makers".⁵⁷ This also explains why there is an increasing preoccupation with "intellectual property rights" with respect to traditional knowledge, even though its value has not been demonstrated.

In addition to pressure from those who benefit financially from traditional knowledge research, its increasing popularity is part of a larger movement advocating aboriginal rights. This movement promotes a vision referred to by Alan Cairns as "parallelism",⁵⁸ which assumes that aboriginal cultures and the wider Canadian society can exist separately from one another, and continuously reproduce distinctive economies, political systems and "world views".⁵⁹ The promotion of traditional knowledge is necessary for this vision, because it provides the rationale behind the separate institutions proposed for the native population. The pursuit of land claims and self-government is justified by the claim that aboriginal peoples have a different "world-view" that necessitates the development of "culturally sensitive" programs and services. Aboriginal peoples, parallelist arguments maintain, should have a separate land base and an ethnically based political system, where justice, child welfare, health, education and environmental management reflect aboriginal standards, ensuring that their special knowledge and values can be recognized and protected. Traditional knowledge research is inseparable from the wider project of preserving aboriginal culture, and so it is not surprising that its "validation" has become a major part of aboriginal rights advocacy.

Pressure to promote traditional knowledge in the Northwest Territories also has coincided with developments occurring at the international level.⁶⁰ This has been noted by Fikret Berkes, who points out that the growth of traditional research over the past two decades

⁵⁶ "WKSS approves first research projects", www.wkss.nt.ca, May 22, 1996.

⁵⁷ Aggie Brockman et al., "When All Peoples Have the Same Story, Humans Will Cease to Exist": *Protecting and Conserving Traditional Knowledge*, A Report for the Biodiversity Convention Office, September 1997, p. 7.

⁵⁸ Alan C. Cairns, *Citizens Plus* (Vancouver: UBC Press, 2000), pp. 70-3, 117, 132.

⁵⁹ In a review of Cairns' book *Citizens Plus*, Michael Murphy notes that parallelism's "primary metaphor of a nation-to-nation relationship governed by treaties conjures up the image of a mini-international system of separate communities whose paths never converge". Michael Murphy, *Canadian Review of Sociology* 25(4), Fall 2000, p. 517.

⁶⁰ This was first shown during the 30th annual meeting of the Canadian Commission for the United Nations Educational Scientific and Cultural Organization (UNESCO) in 1988, when the Northwest Territories' Government Leader, Dennis Patterson, claimed that there was a "wide spectrum of areas where traditional knowledge may have an influence on government policy and programs". Cited in Alice Legat (ed), *Report of the Traditional Knowledge Working Group* (Northwest Territories: Culture and Communications, 1991), p.1.

has been due to "the presence of a dedicated group of core scholars producing not only academic material but also feeding information into international policy circles".⁶¹ These "international policy circles" largely involve the area of "sustainable development", where environmental, third world development and human rights organizations all envision the promotion of "cultural diversity" as part of their mandate.

The United Nations' first mention of the importance of traditional knowledge occurred in the 1987 World Commission on Environment and Development's report, *Our Common Future* (also known as the Brundtland Report), and these sentiments have become even more prominent in documents such as the 1992 Convention on Biological Diversity, Agenda 21 and the Rio Declaration. The Rio Declaration, for example, refers to traditional knowledge in seventeen chapters and argues that "Indigenous peoples and their communities...have a vital role in environmental management and development because their identity, culture and interest enable their effective participation in the achievement of sustainable development".⁶² In addition to Agenda 21, where there is a complete chapter examining indigenous peoples' potential contribution to sustainable development, the United Nations Convention on Biological Diversity, the United Nations Convention to Combat Desertification, the Intergovernmental Panel on Forests, the Food and Agriculture Organization, programs of UNESCO in biodiversity science, the Man and Biosphere Programme and the World Heritage Programme all have traditional knowledge components.⁶³ There is also Convention No. 169 of the International Labour Organization, which recommends "the implementation of studies to evaluate the impact - social, spiritual, cultural and environmental - of development plans on indigenous peoples, in cooperation with them"⁶⁴ and the World Health Organization's "attempt to promote respect for, and preservation of, the knowledge, remedies and medical traditions of indigenous peoples".⁶⁵ Even the World Bank now has "a programme of small grants aimed at supporting modest projects of environmental management and preservation of traditional knowledge in the areas of the environment, nutrition, health, agro-industrial development".⁶⁶

The assumption that traditional knowledge is important for protecting the environment has also led the federal government to become interested in this area. The federal government's "Aboriginal Canada Portal" on Environment and Resources, for example, has a "Traditional Ecological Knowledge" section, which includes information from Environment Canada on "Aboriginal Traditional Knowledge and Environmental Management" and "Water and Canada's Aboriginal Peoples – Water and Canadian Identity". The Government of Canada, as well, maintains that it attempts to incorporate traditional knowledge in its Committee on the Status of Endangered Wildlife in Canada

⁶¹ Berkes, *Sacred Ecology*, p. 17.

⁶² Cited in IUCN Inter-Commission Task Force on Indigenous Peoples, *Indigenous Peoples and Sustainability* (The Netherlands: International Books, 1997), pp.42-3.

⁶³ Lola Garcia-Alix, *The Permanent Forum for Indigenous Peoples*, Document No. 91 (International Work Group for Indigenous Affairs, 1999), pp.50-1.

⁶⁴ Florencia Roulet, *Human Rights and Indigenous Peoples*, Document No. 92, (International Work Group for Indigenous Affairs, 1999), p.113.

⁶⁵ Roulet, *Human Rights and Indigenous Peoples* p.124.

⁶⁶ Roulet, *Human Rights and Indigenous Peoples*, p.125.

(COSEWIC) through an Aboriginal Traditional Knowledge Subcommittee. “Other Sources of Information” are also provided on the website, including research being undertaken by the Arctic Borderlands Ecological Knowledge Co-op and Inuit Tapiriit Kanatami.

When one looks at the substance of this information, however, all that is provided is aboriginal spiritual beliefs, unsystematic forms of data collection, and examples of actual scientific research.⁶⁷ Environment Canada even states, in a section of its website pertaining to “Water and Canada’s Aboriginal peoples”, that “at the beginning of time, the Creator gave instructions to Aboriginal peoples to respect water, air, and the earth by keeping it pure. These original instructions are reflected in Aboriginal culture, beliefs and values”.⁶⁸

Although not listed on the “Aboriginal Canada Portal”, another area of the federal government that has expressed interest in traditional knowledge is the Canadian International Development Agency (CIDA). At a Plenary Session on Global Knowledge and Local Culture in 1997, Hugette Labelle, a past president of the Agency, stated that “...indigenous peoples embody knowledge, even wisdom, that we may have lost or never had. Their loss would impoverish us, just as the world needs genetic diversity of species, it needs diversity of knowledge systems...”.⁶⁹ Peter Croal, a Senior Environmental Specialist with CIDA, concurs, noting that “underpinning [Labelle’s] statement are a broad range of national and international policies, conventions, laws and agreements which require that traditional knowledge systems be respected and applied, where appropriate in development planning”.⁷⁰

Assertions about the importance of cultural diversity for protecting biological diversity are common in the traditional knowledge literature.⁷¹ But the importance of genetic diversity of species is not evidence that diversity of knowledge systems is also valid. Knowledge is accumulated through understanding the material forces that shape the universe, and this, in turn, enables us to make informed decisions about how to protect

⁶⁷ In the case of the Arctic Borderlands Ecological Knowledge Co-op”, for example, two projects are referred to. One, the Old Crow Plant Project, uses scientific methods by setting up systematic monitoring plots to measure vegetative patterns and soil temperatures. The second study, the Loche Liver Project, on the other hand, uses the unsystematic approach of interviewing fishers as to their perceptions of the health of Loche livers (their texture, size, colour, etc.). Although fishers are encouraged to save the livers of the fish they catch so that the livers can be tested in a laboratory for contaminants, any information obtained will be from scientific tests, not traditional knowledge. For a further discussion of these projects see www.taiga.net/coop/projects.

⁶⁸ www.ec.gc.ca/water/en/culture/ident/e_first.htm (accessed May 12, 2006).

⁶⁹ Peter Croal, *Traditional Ecological Knowledge (TEK) and Its Integration into CIDA Programs*, www.greenstar.org/butterflies/CIDA-knowledge.htm (accessed May 15, 2006).

⁷⁰ Croal, *Traditional Ecological Knowledge and Its Integration into CIDA Program*.

⁷¹ A paper prepared for the Biodiversity Convention Office even is titled that “When All Peoples Have The Same Story, Humans Will Cease To Exist”. The paper claims that “biological diversity is increasingly recognized as interdependent with cultural diversity, which in turn relies on traditional knowledge, the cornerstone for the cultural identity of indigenous peoples”. Aggie Brockman, “When All Peoples Have The Same Story, Humans Will Cease To Exist: Protecting and Conserving Traditional Knowledge”, A Report for the Biodiversity Convention Office, September 1997, p. 2.

biodiversity. References to a “diversity of knowledge systems”, on the other hand, indicates that distortions of fact and erroneous conclusions are being celebrated, not discarded, inhibiting our ability to understand the causes of species extinction and to effectively address the problem.

Arguments conflating biological diversity with a “diversity of knowledge systems” are related to the more general assumption that aboriginal peoples, because of their culture, intentionally tried to prevent the widespread extinction of species.⁷² They assume that because more biological diversity existed in North America before contact, this must be due to aboriginal peoples’ attempts to consciously maintain it. But there is no evidence that this is the case. Instead, it is much more plausible that aboriginal practices with respect to the environment were developed unconsciously over a long period of time because it ensured the survival of the group. This is actually what happens in nature without any conscious effort. A pack of wolves does not “plan” to conserve the population of its prey; but when stocks are depleted, wolf reproduction is correspondingly reduced. The result will be a population increase in the wolves’ prey. “Conservation” occurs just by being part of the natural cycle.

Claims about traditional “conservation practices” often occur in more general discussions about aboriginal peoples’ relationship to the environment.⁷³ It is argued that since aboriginal peoples did not impact the environment significantly before contact, it must be due to the fact that they possessed some kind of innate environmental consciousness. What is not considered, however, is that the Neolithic technology and subsistence economy of aboriginal groups prevented them from having the *capacity* to have the same impact as peoples with much larger and productive economies and societies.

Historical accounts, in fact, show that aboriginal peoples also were environmentally destructive when they obtained modern technology and began participating in a market economy. Before the 1970s, government scientists noted that “Native hunting was wasteful” since it was “marked by careless slaughter” and “wounding without killing”. According to these scientists, “native hunters...had little capacity for conservation, or even awareness of the need for conservation” and “faced with highly variable wildlife populations, hunters were opportunistic, killing wildlife wherever encountered. No restraint would evolve under conditions in which survival depended on a variable food source, and hence conservation and sustained yield were foreign concepts in Native hunters”.⁷⁴ While this view is generally contested in literature that regards aboriginal peoples as “natural stewards” of the environment, it is still argued that “management” of wildlife is an alien concept. Aboriginal peoples, it is maintained, perceive themselves as being part of nature, not “superior” to it, and thus do not think environmental

⁷² See, for example, L. Clarkson et al., *Our Responsibility to the Seventh Generation: Indigenous Peoples and Sustainable Development* (Winnipeg: International Institute for Sustainable Development, 1992).

⁷³ *Final Report*, 1, pp. 86-7, 658.

⁷⁴ Stephen Bocking, “Scientists and Evolving Perceptions of Indigenous Knowledge in Northern Canada”, in Ute Lischke and David T. McNab (eds), *Walking a Tightrope* (Waterloo: Wilfrid Laurier Press, 2005), p. 221. The scientists who had this view were A.H. Lawrie, John P. Kelsall, D.C. Thomas, F.L. Miller, E. Broughton, D.M. Dickinson, T.B. Herman, George W. Calef, Lorraine Allison, A.H. Macpherson and John B. Theberge.

management is possible.⁷⁵ But “Eurocentric” perceptions about nature are related to the development of much more efficient technology. Now that aboriginal peoples also use this technology to hunt and fish, they too will have to “manage” their relationship to the environment in order to ensure sustainability. Aboriginal demands for unrestricted harvesting rights exemplifies the contradiction of rejuvenating subsistence cultural characteristics in the context of late capitalist imperatives.

Dubious assumptions about aboriginal peoples’ innate ecological consciousness actually work to justify environmental deterioration rather than the reverse. There are two reasons for this. The first is the fact that many aboriginal people are actually in a conflict of interest with respect to environmental management. Aboriginal peoples often occupy the position of “productive interests” in society – i.e. they obtain material benefits from the extraction of resources - and there are numerous examples of aboriginal groups supporting unsustainable environmental practices when it is in their economic interest to do so.⁷⁶ These interests, in fact, could result in the unconscious distortion of information in traditional knowledge studies. Quotas with respect to polar bear harvesting, for example, were recently raised because aboriginal elders maintained that polar bear numbers were increasing. But these opinions contradicted the data from scientific studies, leading to concerns that the collection of traditional knowledge data had been flawed.⁷⁷ Wildlife biologists argued that increased sightings of bears by elders did not necessarily mean that the bear populations were growing; it could be due to the fact that they were being displaced from their habitat because of climate change, moving them closer to human populations. What was not mentioned is that Inuit hunters have sole discretion to sell their tags to sport hunters, who can pay up to \$30,000 (US) for a polar bear “trophy”.⁷⁸ This would give Inuit “traditional knowledge holders” an economic interest in increasing the quotas, perhaps influencing the reliability of their observations.

In addition to the possibility of traditional knowledge holders’ impressions being shaped by their material interests, it is also important to recognize that the purchase of traditional knowledge is often used by governments and industry as an incentive to allow development to proceed. This was the case with the attempts of BHP to proceed with the diamond mine in the Northwest Territories. Although BHP declared that it did not know what traditional knowledge was or how it could contribute to the environmental assessment of the mining development, it agreed to pay for the research that was being undertaken. The assumption that aboriginal peoples are “natural stewards” of the environment, therefore, could give projects that have been vetted by traditional knowledge findings an artificial legitimacy.

⁷⁵ White, “Culture Clash”, p. 17. White cites Stella Spak, “Canadian Resource Co-Management Boards and their Relationship to Indigenous Knowledge: Two Case Studies”, PhD thesis, Department of Anthropology, University of Toronto, pp. 5, 14-15 to support this view.

⁷⁶ See, for example, Greg Poelzer, “Aboriginal Peoples and Environmental Policy in Canada: No Longer at the Margins”, pp. 87-106.

⁷⁷ “Polar bear quotas: Did the GN Screw up?”, *Nunatsiaq News*, July 15, 2005.

⁷⁸ Naomi A. Rose, “Hitting Polar Bears When They Are Down”, February 16, 2006, www.hsus.org/marine_mammals (accessed May 15, 2006).

Similar types of incentives are associated with the promotion of traditional knowledge at the international level. Entities such as CIDA and the World Bank are closely connected to imperialist economic interests, and funding traditional knowledge studies in developing countries can help to overcome resistance to development. This circumstance is one explanation for the United Nations' creation of a Global Intellectual Property Issues Division, which has "the aim of exploring and investigating the needs and expectations of the new potential beneficiaries of intellectual property, the most important being indigenous peoples".⁷⁹ To fulfill this mandate, it is conducting "survey missions in the field in various places around the world inhabited by indigenous people", and developing "pilot projects for documenting how traditional knowledge is formed, as well as how to apply information technology progress to the protection and conservation of the said knowledge".⁸⁰ A book entitled *Intellectual Property Rights for Indigenous Peoples: A Sourcebook* also shows the financial benefits that are perceived to accrue from traditional knowledge studies. Although lip service is paid to "preserv[ing] meaning and due honor for elements of cultural knowledge and to insure that these traditional universes, and their peoples, maintain their vitality", the main focus is "to manage the degree and process by which parts of that cultural knowledge are shared with outsiders and, in some instances, to be justly compensated for it".⁸¹

The claims of these international organizations that traditional knowledge is necessary to ensure "sustainable development", in fact, is a distraction from recognizing the economic basis of environmental deterioration. Throughout much of the literature advocating the recognition and incorporation of traditional knowledge into various policies, one finds statements about how science has been "inadequate" in its ability to address the environmental crisis.⁸² When we probe more deeply into these assertions, however, what emerges is not a failure of scientific methodology, but reluctance to use it. Promoting the use of traditional knowledge alongside science, as a remedy for the environmental crisis, obscures that it is the economic interests suppressing scientific methods, not science itself, which is at the heart of the problem.⁸³

Despite these problems with promoting the use of traditional knowledge in modern research, there is virtually no criticism of this circumstance. This is because a number of social scientists and media commentators see support for traditional knowledge as a way of righting past wrongs. It is maintained that promoting traditional knowledge will help to raise the self-esteem of the native population, thus giving aboriginal peoples the psychological confidence to overcome their marginalization and dependency.⁸⁴

⁷⁹Roulet, *Human Rights and Indigenous Peoples*, p.129.

⁸⁰Roulet, *Human Rights and Indigenous Peoples*, p.129.

⁸¹Tom Greaves (ed), *Intellectual Property Rights for Indigenous Peoples: A Sourcebook* (Oklahoma City: Society for Applied Anthropology, 1994), p.ix.

⁸² See, for example, Deborah McGregor, "Traditional Ecological Knowledge", pp. 2-3.

⁸³ For discussions of the suppression of scientific findings by various economic interests, see Stephen Bocking, "Bush League Science", *Alternatives Journal* 30(1), 2004, pp. 32-33; and David Michaels, "Doubt is their product", *Scientific American* 292(6), June 2005.

⁸⁴ This idea is found in what has been called the "identity politics" approach. This approach is prominent in the works of the philosopher Charles Taylor, and its assumptions permeate the analysis of the Royal Commission on Aboriginal Peoples. For an example of this see *Final Report*, 1, p. 681.

What has not been considered, however, is the extent to which the promotion of traditional knowledge actually contributes to aboriginal dependency and marginalization. As will be shown below, traditional knowledge cannot restore the self-esteem of aboriginal peoples because it is actually contrary to science, thereby preventing aboriginal peoples from participating effectively in wider economic and social processes. Assumptions about the value of traditional knowledge, in fact, have led to the development of a parallel educational system, which effectively disguises the educational deficiencies that exist within the native population.

You Can't Get There From Here

The promotion of traditional knowledge is based upon the idea that aboriginal peoples have a culturally significant “world view” that is different from science. But what does it mean for one particular segment of a society to understand the world differently than another? If it is so important for aboriginal peoples to embrace this distinct “way of knowing”, why wouldn't it also be beneficial for non-natives?

When one understands the actual substance of this “way of knowing”, it is clear that its promotion is not beneficial to anyone, aboriginal or non-aboriginal. Although it is maintained in the literature that traditional knowledge can make an important “contribution” to modern research methods, this assertion ignores how traditional knowledge actually conflicts with science. Traditional knowledge involves repeating ancestral patterns, binding its “holders” to the erroneous observations and mythology of the past. As a result, it remains shackled by tradition, unlike science, which changes when new evidence is presented.

This assertion is contested in the literature, which maintains that traditional knowledge is “adaptable”.⁸⁵ But if traditional knowledge changes when new information is made available, what is meant by comments about elders being “custodians of traditional knowledge” or that traditional knowledge “is passed down from one generation to another”? It would not make sense to say that there are “custodians of science” or that scientific theories are “passed down” through the generations, since these theories only gain acceptance if they are consistent with the available evidence. Once a theory is refuted by evidence, it is abandoned by the scientific community.

The static character of traditional knowledge is illustrated by the fact that it is supposed to be “held” by people with revered qualities, usually elders, who are not supposed to be questioned. With respect to northern aboriginal peoples, for example, the political scientist Graham White notes that “the wisdom of elders is accepted without question”. In contrast to what he characterizes as “the aggressive, adversarial approach to expressing disagreement or challenging assertions” that exists in “EuroCanadian” systems, White cites an aboriginal participant at a workshop who maintains that “questioning TK is

⁸⁵ Brockman, “When All Peoples Have the Same Story...”, p. 1; Usher, “Traditional Ecological Knowledge...”, pp. 85-86; Abele, “Traditional Knowledge in Practice, p.iii.

attacking the integrity of the elders...which is the most disrespectful thing you can do".⁸⁶ Accusations of "disrespect", in fact, meet any attempt to even ask questions about the methodology of traditional knowledge,⁸⁷ and public "information sessions" about traditional knowledge are structured to prevent critical questions from being raised.⁸⁸ Stephen Kawfki, the minister of the department responsible for implementing the Traditional Knowledge Policy in the Northwest Territories, for example, expressed a reluctance to publish additional information clarifying the methodology of traditional knowledge since it would enable "skeptics [to] jump onto this publication and chew it up without engaging in a discussion with the aboriginal peoples...". According to Kakfwi, "the intent [of the government] is to try to find why to see how we can better respect traditional knowledge [sic]. How we can help it find more acceptance and understanding amongst the public, including ourselves and our staff, how to set up a system providing for the future".⁸⁹ So, for Kakfwi, it is not necessary to explain what traditional knowledge is before it becomes government policy.

While listening to elders was important in all hunting and gathering societies, the circumstances that existed at this time were very different from those that are present today. Initially, changes in technology and increases in the division of labour occurred very slowly, so much so that the past was not discernibly different from what succeeded it. People survived in this relatively static state by observing their kin and engaging in the same pursuits that had sustained them over generations. What is commonly referred to as education in the preliterate, pre-contact period was, in fact, enculturation - the process of molding the child to become a good member of the tribe, and to control cultural deviation. There were no formal processes developed to instruct the young; children learned through empathy, identification and imitation.⁹⁰

⁸⁶White, "Culture Clash", p. 18.

⁸⁷ This is a circumstance that we experienced first hand while living and working in the Northwest Territories. While attending a number of meetings in Yellowknife while working as a senior policy analyst, one of us (Widdowson) encountered constant hostility when asking questions about the methodology of traditional knowledge and how it differed from science. As the Policy and Planning Division's representative of the Department of Renewable Resources in 1996, Widdowson attended two workshops and one roundtable. At these meetings, Widdowson asked a number of probing questions to try to unravel the nebulous claims that were being made. These questions were met with hostility by the organizers of these events, who maintained that Widdowson was acting in an aggressive, "impatient" and "culturally inappropriate" manner and that she should "go and live in the bush for five years" if she wanted to find out answers to her questions.

⁸⁸ This occurred at a public meeting held on February 12, 1997, which invited "All Concerned Northerners" to attend "an evening of information about research being done in Slave Geological Province". Although the meeting was billed as providing an opportunity to "find out more about WKSS funded research projects" and to "question researchers about their findings", the presentation of traditional knowledge projects was actually structured to stop such public involvement. First, the project director, Alice Legat, filled part of the presentation with two researchers giving a speech in Dogrib (without a translation) so that few people in the audience could understand it. Then, after a brief presentation, Legat declared that there would be no questions taken from the floor, stating that those with questions could speak informally with the researchers during the coffee break. This disappointed a number of people in the audience (including ourselves) who wished to publicly question the research and the funding being allocated to it.

⁸⁹ *NWT Hansard*, February 26, 1997.

⁹⁰The anthropologist Margaret Mead made the distinction between education and enculturation in *Continuities in Cultural Evolution* (New Haven: Yale University Press, 1964). More recently, somewhat different terminology is used. The Royal Commission refers to this as "teaching by modelling rather than

In times of rapid technological and cultural change, however, "traditional ways" often come to be incompatible with the requirements of a more complex social order. The scientist Carl Sagan identifies the uneasy co-existence between looking to the past and preparing for future upheavals when he explains that

...the traditionalism of societies in a static state is generally adaptive: the cultural forms have been evolved painfully over many generations and are known to serve well. Like mutations, any random change is apt to serve less well. But also like mutations, changes are necessary if adaptation to new environmental circumstances is to be achieved. The tension between these two tendencies marks much of the political conflict of our age.⁹¹

Sagan then argues that while both our ancestors' acceptance of, and resistance to, change has come out of the development of the human brain, it appears that we are irreversibly set on the path of what he calls our current "high technology culture". Human survival today is dependent upon becoming more adaptive to the changes occurring in the world. Following in the footsteps of our ancestors, on the other hand, is becoming less useful because we live in an increasingly complex world, which cannot be negotiated by repeating the patterns of the past. This changing world, in fact, can only be understood by the accumulation of controlled experimentation and the gradual development of logically consistent theories and laws – i.e. through the scientific method.

Despite its conflicts with the scientific method, traditional knowledge research continues to thrive largely because of the momentum that it has built up over the last twenty years. A huge infrastructure of scholarly studies, peer reviewed journals, government programs, and "institutes" have emerged, giving legitimacy to the idea of traditional knowledge. As a result, it is often asserted in an offhand manner that the value of traditional knowledge has already been determined, so it does not need to be discussed. This is the approach taken by Peter Usher in an article that he wrote for the journal *Arctic*. Although Usher cites both of our articles and the debate that they sparked, he introduces his own piece on traditional knowledge as follows: "my purpose is not simply to advocate the use of TEK. That case has already been made, and the appropriate institutional framework has already undergone significant change. My objective is rather to address the problem of implementation".⁹² Usher, like Kakfwi, brushes off significant challenges to traditional knowledge, and advocates its continual funding without having to show how it makes a contribution to science. A similar viewpoint is expressed by Mary Simon, Canada's ambassador for Circumpolar Affairs and to the Kingdom of Denmark. Simon assumes that there is already "acceptance that indigenous knowledge has value, and that it can be

shaping (direct instruction)". *Final Report*, 1, p.350, 653. C.C. Brant, a Mohawk psychologist, explains that this is known as the "ethic of non-interference" that is common in aboriginal culture. Brant, "Native Ethics and rules of behaviour", *Canadian Journal of Psychiatry* 35(6), August 1990, pp. 534-47. The historian J.R. Miller, explains that rather than reading, writing and arithmetic, aboriginal children are educated according to the "3 L's" – "looking, listening and learning". *Shingwauk's Vision: A History of Native Residential Schools* (Toronto: University of Toronto Press, 1997).

⁹¹ Carl Sagan, *The Dragons of Eden*, pp.201-2.

⁹² Usher, "Traditional ecological knowledge in environmental assessment and management".

used in conjunction with information derived from western science to provide a basis for improved problem-solving and decision-making”. Because of this assumption, she believes that “we would be taking a step backwards if we fell into the debate again of what indigenous knowledge is and does it or does it not have value”.⁹³

But it is exactly the idea that “traditional knowledge does...have value” that has not been substantiated. In spite of the voluminous literature, the case about the benefits of incorporating traditional knowledge is very weak, often relying on fabrications and obfuscation; what occurs is a tendency for people to *want to believe* that traditional knowledge has value. This tendency is related to the sympathy for aboriginal peoples that understandably exists and the assumption that unconditionally “recognizing” and “respecting” all aspects of aboriginal culture will have a beneficial effect. The political scientist Alan Cairns, for example, discusses the need for “people who have been demeaned, humiliated and stigmatized” throughout history to “construct arguments and reinterpret the past in ways that enhance their dignity”. He maintains that such constructions and reinterpretations provide a “psychic gratification” that is “immensely valuable to their believers” by providing “comforting respectability and emotional support”.⁹⁴

But there is no evidence that a reinterpretation of the past contributes to the “dignity” of aboriginal peoples, or that the current romanticization of aboriginal cultures offers the native population “psychic gratification”. Rather, this conception is fueled by non-aboriginal condescension that actually results in the undignified stereotyping of aboriginal cultures that constrains native development. In the case of traditional knowledge, for example, the belief that aboriginal peoples have a spiritually different “knowledge system” that offers “valuable insights” acts to mystify the low level of education that actually exists in the native population. And since traditional knowledge looks to the past for answers and is opposed to skepticism and critical analysis, it alienates aboriginal people from science and inhibits their educational achievement and participation in the wider society.

One of the major ways in which traditional knowledge alienates aboriginal peoples from science is its focus on spiritual, as opposed to materialist, explanations for natural processes. As the Royal Commission on Aboriginal Peoples points out,

the fundamental feature of Aboriginal world view was, and continues to be, that all of life is a manifestation of spiritual reality. We come from spirit; we live and move surrounded by spirit; and when we leave this life we return to a spirit world. All perceptions are conditioned by spiritual forces, and all actions have repercussions in a spiritual reality. Actions initiated in a spiritual realm affect physical reality; conversely, human actions set off consequences in a spiritual realm. These consequences in turn become manifest in the physical realm. All these interactions

⁹³ “Understanding Inuit Knowledge”, Traditional Knowledge, www.itk.ca.

⁹⁴ Alan Cairns and Tom Flanagan, “An exchange”, *Inroads* 10, p. 109.

must be taken into account as surely as considerations of what to eat or how to keep warm in winter.⁹⁵

This aspect of traditional knowledge has justified the incorporation of “spirituality” into all facets of aboriginal school programs.⁹⁶ Sharilyn Calliou, for example, explains that one of the major aspects of native education programs is “promoting acceptance that spiritual teachings are legitimate in the public sphere...”. She applauds the Dene Kede Curriculum in the Northwest Territories that “seeks to replace Eurocentric programs of study with a curriculum based on spiritual teachings”. According to Calliou, “the goal is not to produce citizens with critical thinking skills who are able to participate in the global economy”, but to socialize children as “‘citizens’ in a sacred relationship with self, the traditional territory (a home, a mother), and other people. Such open spirituality challenges the highly secularized late twentieth century world”.⁹⁷

In addition to using spiritual explanations in education, traditional knowledge also has resulted in curriculum differences because it is perceived as “holistic” rather than “reductionist”.⁹⁸ Milton M.R. Freeman, for example, maintains that while scientists “seek to understand organisms or nature by studying the smallest or simplest manageable part or sub-system in essential isolation”, traditional knowledge “eschews reductionism, placing little emphasis on studying small parts of the ecological system in isolation...”.⁹⁹ This difference has led to native educational processes whereby

...parents and elders maintain the integration of knowledge as they teach younger people by sharing experiences with them, by not isolating the knowledge and skills required by certain disciplines. Each skill has a social economic, spiritual, and historical context. Children participate in the daily activities of adults, instead of practising in an artificial setting like a classroom... There is, in effect, only one, all-encompassing subject and one, lifelong lesson.¹⁰⁰

The “holistic” character of traditional knowledge has also led to proposals for educational programs to be practical and “hands on”. Aboriginal students are encouraged to “apply” abstract concepts, instead of completing assignments involving “number-based

⁹⁵ *Final Report*, 1, p.628.

⁹⁶ See, for example, Celia Haig-Brown et al., *Making the Spirit Dance Within* (Toronto: James Lorimar & Company, 1997), p.33-43; and Brenda Tsioniaon LaFrance, “Culturally Negotiated Education in First nation Communities, Empowering Ourselves for Future Generations”, *For Seven Generations* (Ottawa: Libraxis, 1997).

⁹⁷ Sharilyn Calliou, “Activism and Self-Determination in Education”, in Hylton (ed), *Aboriginal Self-Government in Canada*, pp. 179-180.

⁹⁸ Cecil King, “The State of Aboriginal Education in Southern Canada”, *For Seven Generations [CD-ROM]* (Ottawa: Libraxis, 1997); Sheila Watt Cloutier, “Honouring Our Past, Creating Our Future”, *For Seven Generations*; and Geoff Howell et al., “The Ashkui Project: Using Cultural Landscapes to Link Labrador Innu Knowledge and Western Science”.

⁹⁹ Milton M.R. Freeman, “The Nature and Utility of Traditional Ecological Knowledge”, *Northern Perspectives* 20/1 (Summer 1992), pp. 9-10, cited in *Final Report*, 4, p. 115.

¹⁰⁰ Robert Leavitt, “Language and Cultural Content in Native Education”, in Marie Battiste and Jean Barman (eds), *First Nations Education in Canada: The Circle Unfold* (Seattle: University of Washington Press, 1995), p.132.

mathematics”.¹⁰¹ It is also argued that there should be more opportunities for aboriginal students to participate in “outdoor educational programs”. This will ensure that they can watch knowledge being “applied” – a circumstance consistent with traditional teaching methods.¹⁰²

But these discussions of aboriginal educational differences ignore the important distinction between enculturation and formal education. A far greater level of abstraction is required for the development of critical thinking skills that is a feature of formal education. The amount and complexity of the information involved requires it to be increasingly specialized in accordance with abstract and concrete organizational principles governed by logic. Without specialization, there would be a mass of undifferentiated data with no general principles to indicate how different pieces of information are related to the material workings of the universe. In comparison, the enculturation process is to ensure that children grow to be socially and functionally similar to the previous generation.

Furthermore, the characterization of science as “reductionist” is simplistic. While the scientific method does rely on notions of “cause and effect” and studies “parts in isolation”, it also has developed our conceptualization of ecosystems as the result of several causes interacting in a complex fashion. In addition, science has a number of overarching theories – most notably theories pertaining to evolution and the “big bang” – that attempt to link all the “parts” with one another. Our understanding of the “whole” (i.e. the universe) is only possible, in fact, because of the detailed understanding of the “parts” made possible by scientific methodology. Without an understanding of the parts, theories of the whole are just guesswork.

Although changing the curriculum in aboriginal educational systems may increase the proportion of the native population that is able to graduate from high school, it will require withholding the necessary knowledge and skills that aboriginal students will need to participate in the wider society. In the Canadian educational system, in fact, native students’ performance indicates that they are not being well served. Those studies that are available show that native students are in the lowest strata of the population; particularly in the sciences.¹⁰³ The promotion of traditional knowledge, with its intrinsic elements of spiritualism and a lack of rigorous methodology, contributes to this situation.

¹⁰¹One example given is that if students are unable to complete a geometry assignment, they can reproduce a miniature replica of a dogsled that shows their knowledge of the principles involved. Leavitt, “Language and Cultural Content...”, p. 130.

¹⁰² The Royal Commission maintains that “for [aboriginal] youth to become mature adults” they will need “opportunities to experience cultural practices in ceremonies and life on the land”. *Final Report*, 3, p. 49. See also *Final Report*, 1, p. 622, and 4, 159, for a further discussion about the need of aboriginal youth to be involved with elders “on the land”. For other arguments promoting a land-based education, see Verna Kirkness, *First Nations and Schools: Triumphs and Struggles*, p. 41.

¹⁰³ For a discussion of the low level of educational achievement within the aboriginal population see *Final Report*, 2(1), p. 7; 2(2), p. 794 and 4, pp. 436-438.

One result of the lower standards, brought about by incorporating traditional knowledge in aboriginal education, is the many undergraduate programs that are now specifically designed to accommodate aboriginal students. An example of such a circumstance is the various "teacher education programs" that have sprung up around the country. In these programs, curriculum has been revised to "reflect the cultural aspirations" of aboriginal groups. The Northern Professional Access Program in Saskatchewan, for example, has made "Cree and Dene languages, northern essential learnings, Aboriginal pedagogy, and field trips such as trapping school or cultural camp...part of the curriculum".¹⁰⁴

The tendency toward lower standards can be seen clearly in Nunavut. One of the initial concerns in Nunavut was the fact that many Inuit people did not have the educational qualifications to fill the various professional positions needed to run the territory. As a result of this deficiency, a number of special educational programs are being offered that are not available to non-Inuit. One such program is the new Akitsiraq Law School, developed in association with the University of Victoria, which is designed to train Inuit lawyers. But like the aboriginal teacher, nursing and social work programs, a native law program like Akitsiraq gives degrees to students who have not met the requirements expected from non-aboriginals. As a result, graduates will have to spend their careers dealing with matters pertaining to Inuit affairs, such as interpreting the Nunavut land claims agreement or working in the burgeoning bureaucracy.¹⁰⁵

Another significant development in aboriginal education is the emergence of "Native Studies" programs, where scholarship is sacrificed to the appearance of accomplishment. In Canada, pressure for these programs began in the late 1960s, under the auspices of making universities "more relevant to the histories and needs of Native people".¹⁰⁶ Today, Native Studies departments are present in eight Canadian universities and one college. In these departments, "the focus tends to be on Aboriginal peoples described from the cultural 'inside'", which involves "showing a new respect for the thought of Aboriginal cultural, spiritual, artistic, and political leaders. This new respect has multiple functions, not least of which is providing a greater legitimacy in academic settings for the teachings of those leaders".¹⁰⁷

What is implied in such a statement is that all of these teachings should be respected regardless of whether or not they are logical and consistent with existing knowledge, since the very notion of there being any kind of objective standard for verifying data is rejected. One of these teachings is the politically motivated belief that aboriginal peoples were given North America by "The Creator". In one Native Studies text, it is lamented that, in the past, books on aboriginal culture have paid

¹⁰⁴ For further discussion of these programs see the *Final Report*, 3, pp. 490-98.

¹⁰⁵ To be accepted into the law school, for example, students did not have to take an entrance exam or have the academic credentials expected from other students. For a further discussion see "Nunavut opens law school in bid to develop Inuit leadership and expertise", *Canadian Press NewsWire*, April 1, 2001; "At Nunavut U, it's come as you are: north's unconventional new law school will accept even high-school dropouts", *The Globe and Mail*, March 2, 2001, p. A1; *Toronto Star*, March 20, 2001, p. A25.

¹⁰⁶ Brizinski, *Knots in a String*, p.1.

¹⁰⁷ Kulchyski et al, *In the Words of the Elders*, p. xi.

...more attention to the theory that early ancestors of Aboriginal peoples came to this continent by crossing the Beringia land mass (now Bering Strait) than to Aboriginal people's rich heritage of stories relating to how and when they were created and placed on Turtle Island (North America)... We wanted to produce something different, something that listened to creation stories in a respectful way, without holding a so-called Bering Strait 'truth' in the back (or fore) ground.¹⁰⁸

But if we are expected to accept such "stories" as being just as close to the "truth" as scientific theories supported by evidence, how many other myths will be entertained in the educational system? Should it be taught that thunder is caused by an angry Zeus, out of respect for "tradition"? Or what about the belief that the sun revolves around the earth? How many other groups will be patronized under the auspices of "respect for culture"? None, apparently, since only aboriginal cultures are singled out for this treatment. So while the rest of the world's cultures have gone through the process of understanding myth as a way of explaining the world before the development of science, Native Studies programs advocate preserving aboriginal cultures as specimens, not evolving, but held intact for perpetual observation.

Separate aboriginal educational processes have now taken the final step with the creation of the First Nations University of Canada (FNUC). This type of institution was promoted by the Royal Commission on Aboriginal Peoples, which maintained that an "Aboriginal Peoples' International University" could be a "twenty-first century mechanism to promote traditional knowledge and scholarship, undertake applied research related to Aboriginal self-government, and disseminate information necessary to the achievement of broad Aboriginal development goals".¹⁰⁹ Because of its focus on "promot[ing] traditional knowledge and scholarship", in fact, ten out of eleven of the program areas offered concern learning special "aboriginal" content so that students will work in native communities. Only one area, "Science", has any general applicability. This program, however, also provides "Aboriginal content and traditional knowledge in science courses where appropriate".¹¹⁰

As a result of these "aboriginal" programs, degrees and institutions, the native graduates will not be able to work in positions requiring the qualifications provided in mainstream institutions. The extension of this masquerade is contrived employment. Sinecures, sometimes thinly disguised, but often blatant, absorb native people ground out by the system. Government departments concerned with aboriginal affairs, as well as the whole political system in the territories, are prominent repositories for educated aboriginals. Of course, aboriginal organizations are virtual welfare outlets for powerful or privileged native individuals, always with the obligatory non-aboriginal "consultants" hovering nearby. There are also various opportunities in law offices and banks where token native

¹⁰⁸Kulchyski et al., *In the Words of the Elders*, pp. xii-xiii.

¹⁰⁹*Final Report*, 3, Chapter 5, Section 8.1.

¹¹⁰For more detail on the university's programs, see www.firstnationsuniversity.ca (accessed May 15, 2006).

people are appointed as a means of securing business from aboriginal organizations enriched by land claims.¹¹¹

Although this will bolster employment rates in aboriginal communities, it will not do anything to solve what is at the heart of the problem- the lower level of educational development existing within the aboriginal population. This developmental deficit continues in part because traditional knowledge, not science, plays a prominent role in the education of aboriginal peoples. Arguments that traditional knowledge is just another “way of knowing”, only disguise the fact that aboriginal traditions are less capable of understanding the universe than the rigour and discipline of scientific methods. There is, in fact, no such thing as different “knowledge systems”. Knowledge is what all people acquire when they understand the nature of matter. There is only one kind of knowledge. It is a universal concept of reality - reality supported by unequivocal evidence. We cannot “know” that the earth is flat, and it would be unthinkable to insist that the proposition be respected.

What are we afraid of?

Having "listened" to the claims made about traditional knowledge for a decade, we can only conclude that there is nothing to be heard. Traditional knowledge research continues despite the paucity of its findings because it is being produced by advocates to satisfy particular political interests. What is needed is a scientific evaluation of this body of research that actually examines the methodology that is being employed. This would require a degree of skepticism, and a willingness to entertain the possibility that traditional knowledge is without value to modern research, if the conclusions of the investigation are to be objectively determined.

There is, however, a widespread reluctance to reserve judgement on the value of traditional knowledge. People want to believe that traditional knowledge has much to offer. Behind this lies the fear that the conclusion that traditional knowledge cannot contribute to scientific research somehow is equivalent to a racist devaluing of aboriginal peoples as “inferior”. While this view is patently false, its complete rejection requires that the concept of race be separated from culture. While peoples with different ancestral or biological characteristics can all obtain the highest levels of educational excellence and offer valuable contributions to humanity, cultures can be deprived of academic achievement when their learned (and therefore changeable) practices, values and “ways of knowing” inhibit their understanding of the universe.¹¹²

¹¹¹ Ron Jamieson, for instance, was hired by the Bank of Montreal as the "Senior Vice-President of Aboriginal Banking" in July 1996. Because he is in charge of "Aboriginal Banking", Jamieson does not need to have the education or experience of other Vice-Presidents at the bank. It is obvious from the vague credentials provided in his biography that his position exists so that the bank can legitimize its efforts to provide banking services to aboriginal communities. "Biography", Bank of Montreal - Public Affairs, July 1996.

¹¹² Keith Windschuttle makes a similar point when he argues that “in the postcolonial era it has seemed natural to many brought up on liberal principles to go one step further than simple individual egalitarianism and to argue that it is not just all people that are equal but all cultures or meanings systems as

This is certainly the case with respect to a number of aboriginal cultural features. The very practices, values and ideas that are promoted as "aboriginal traditional knowledge" are actually detrimental to education because they are unscientific, undisciplined and do not instill the levels of abstraction needed to participate in a much more complex economy and society. Promoting these cultural aspects, in fact, results in an entrenched resistance to education in aboriginal communities. Education is much more than just children sitting in desks listening to a teacher. It involves disciplined attitudes towards learning itself and a recognition of the material nature of the universe. Both these things are lacking in aboriginal culture, because only enculturation, not education, existed before contact.

Of all the obfuscation that is going on in the promotion of traditional knowledge, the last - i.e. the rejection of science itself - is the most destructive. By saying that there are "other ways of knowing", there is an encouragement to forego the intellectual development that comes with the understanding of scientific methods. As the anthropologist George Wenzel points out in his citation of a study by Kemp and Brooke, "deep suspicions about the relevance of science still exists [in aboriginal communities] and there is a legacy of doubt about the ability of science to work in the interest of anybody other than scientists and southern institutions". According to Wenzel, it is "precisely these concerns [that] are at the heart of more contemporary Inuit critiques of southern scientific practice regarding TEK...".¹¹³

But science is the way out of the current mess we are in, and this applies for all of humanity, including aboriginal peoples. It is our understanding of, and ability to, control nature that accounts for the success of the human species. And since science is the only way that has been shown to improve our understanding of the material world, isolation from it results in ignorance and confusion. This leaves aboriginal peoples open to manipulation from those who benefit from their marginalization and dependency.

well...However, this extension of the argument should be recognised as illegitimate. The liberal democratic notion that all people are equal means equal in a legal and political sense...It has never meant that all people have equality of knowledge, ability or understanding. Similarly, all cultures or meanings systems are demonstrably not equal in terms of knowledge and ability. The inference drawn by ideologues...that the political liberation of colonial peoples should be accompanied by their epistemological liberation, does not follow. Indeed, those former colonies who want to expel Western thought in the way that they expelled Western imperialism should recognise that they would be throwing away the most valuable intellectual tools available to them". Windschuttle, *The Killing of History*, p. 280.

¹¹³ George Wenzel, "Traditional ecological knowledge and Inuit: reflections on TEK research and ethics". *Arctic* 52(2), 1999, pp. 113-124. The two studies that Wenzel cites in putting forward these arguments are W. Kemp and L. Brooke, "A new approach to northern science", *The Northern Raven*, 2(4), 1983, p. 1 and M. Flaherty, "freedom of expression or freedom of exploitation", *Northern Review*, 14, 1995, pp. 187-185.