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Joseph R. Antone  
UWO, jantone3@uwo.ca

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**The Use of Traditional Ecological Knowledge in Contemporary Environmental Policy**

**Joe Antone**

As the shortcomings of Western resource management and conservation begin to magnify, the emergence of Traditional Ecological Knowledge (TEK) as a means of a possible remedy to this have come to the forefront of contemporary environmental policy. It has been met with some resistance on both sides. Some of the issues at hand include mistrust, political and power struggles, not to mention semantic problems that are inherent in the application of TEK into a Western style of environmental management. This paper argues that the use of TEK together with Western science can be mutually beneficial to the propagation of the Indigenous subsistence culture and to the needs and mandates of Western civilization.

To begin, a description of TEK will be offered. The description will focus on it from an Indigenous perspective so as to not take the holistic nature of TEK out of context, which we will see is a huge stumbling block in the process of combining it with Western science. Next, a brief summary of the Western resource management and conservation ideology will be provided. These two descriptions and their inherent differences will allow for an accurate appraisal of just how difficult it is to combine these systems and still have both sides represented fairly and to have achieved their desired outcomes. Lastly, this essay will provide two specific examples of successful outcomes of the amalgamating of these two knowledge systems: first, a study of polar bear habitat management; and second, an undertaking of forest management using TEK and Western science. Both are good examples of fair representation on both sides and also of both sides achieving their goals.

Aboriginal scholar and a pioneer in the reconciling of Indigenous knowledge into a Western academic setting, Gregory Cajete (1999) puts fourth that, "Native cultures have indeed amassed an enormous knowledge base related to the natural characteristics and processes of their lands through direct experience and participation". The words "processes" and "participation"

are key in that TEK is action oriented, and fluid in nature. He is alluding to the fact that TEK is very much a living organism, something that is ever moving, always changing and involves direct participation within a given environment over a period of time.

TEK is based on the belief that Indigenous people are in a reciprocal process of shared relationships with everything around them, including the plants and animals, trees, rocks, etc. Every entity has life energy and its own way of expressing it. As Cajete (1999) puts it, “Indigenous peoples encoded this understanding into a philosophical orientation that helped individuals live with their environment in a holistic way”. This nature-centred viewpoint of cyclical reciprocity allows for a relationship with one’s environment that promotes wellness for all things.

Within the makeup of TEK there exist thousands of years of accumulated knowledge that serves as a guideline to the way Aboriginal People conduct themselves within their environments. They understand that it is okay to take from your environment, knowing that other entities will be taking from them. In this way they have been able to co-exist with their environment with relative ease for millennia. This process of co-existence involves a mutual respect that is pervasive from the tiniest piece of soil to the largest animal as is evidence in the Anishinaabe re-creation story. McGregor (2004) explains the story this way:

... there has been a great flood and most of life on Earth has perished, except for bird and water creatures. Sky-woman survives and comes to rest on the back of a great turtle. She asks the water creatures to bring her soil from the bottom of the waters so that she may use it to make new land. The water animals (the beaver, the marten, the loon) all try to help her and fail. Finally, the muskrat volunteers, much to the scorn of the other water creatures that failed. Muskrat, the most humble of the water creatures, is ridiculed, but he is determined to help; he dives down into the water and the animals and Sky-woman wait. They waited for the muskrat to emerge as empty handed as they had done. Time passed. Smiles turned to worried frowns. The small hope that each had nurtured for the success of the muskrat turned into despair. When the waiting creatures had given up, the

muskrat floated to the surface more dead than alive, but he clutched in his paws a small morsel of soil. Where the great had failed, the small succeeded.

The success of the humble muskrat suggests that everything should be respected equally, and this respect for all things is perhaps the most important facet of TEK. If the mindset of the people is anything less than mutual respect, which infers that someone or something is more important than someone or something else, this is in direct conflict with TEK. Another important moral of this story is the Aboriginal beliefs of interconnectivity and interdependence. These beliefs speak to the fact that in some way everything is mutually reliant upon each other, including things living and non-living. This kinship with the natural world makes for the stage that the practice of TEK is carried out. Deborah McGregor (2004) gives her interpretation, “perhaps the closest one can get to describing unity in Indigenous knowledge is that knowledge is the expression of the vibrant relationships between people, their ecosystems, and other living beings and spirits that share their lands. . . all aspects of knowledge are interrelated and cannot be separated from the traditional territories of the people concerned”.

Something else that distinguishes TEK from other knowledge systems is that there are several different ways to acquire knowledge, which require staying attuned to one's environment. According to McGregor (2004), “all knowledge comes from the Creator and from Creation itself. Many stories and teachings are gained from animals, plants, the moon, the stars, water, wind, and the spirit world. Knowledge is also gained from vision, ceremony, prayer, intuitions, dreams, and personal experience”. This holistic learning style, the use of physical, metaphysical and spiritual conduits of information help the Indigenous people to have a breadth of knowledge that they would otherwise not be capable of acquiring if they only used, for instance, the physical information at their disposal.

As far as an actual definition of TEK, there are many, and most are complicated. For the purposes of this paper, Cajete's will be used, as defined in McGregor's (2004) text: "the accumulated body of knowledge of the remaining Indigenous groups in the world which represent a body of ancient thought, experience and action that must be honoured and preserved as a vital storehouse of environmental wisdom. Cajete's definition of TEK implies that it is cumulative, or ongoing and also describes the different ways of attaining information, thought, experience and action as opposed to the more linear Western style.

To summarize, Traditional Ecological Knowledge is both a product and a process of coming to know the world and your place in that world. It is through action, relationships and respect for all that life is sustained and new knowledge is acquired. The acquisition of TEK is physical, metaphysical and spiritual. With TEK, you are entering upon a relationship with Creator and Creation, and with it the assuming of responsibilities of that relationship.

Contrary to the Aboriginal beliefs of interconnectedness and interdependence, Western ecological science tends to view the environment as a "collection of commodities" (Mazzocchi, 2006). In doing so, Western science seeks to isolate an individual species from its environment with the intention of economical gain, but the outcome is usually exhaustion of the species and adverse and unforeseen effects to the ecology from which the species was taken. Caroline Butler (2002) claims, "Fisheries management, for example, has tended to operate on a species by species basis, which has been criticized for overlooking the links between species in terms of habitat and feed competition, predatory relationships, etc.", this reductionist method of science is in stark contrast to the holistic science executed by the Aboriginal people.

Western science is dichotomous in nature and "in resource management scenarios, TEK is often placed in opposition to Western science, particularly biology" (Butler, 2002). In her

article Methodological Review and Approaches for Local/Traditional Knowledge Research, Butler (2002) provides some examples of this binary opposition; “TEK is qualitative, holistic, oral, practical and nature-centred, whereas Western Science is quantitative, reductionist, textual, theoretical and human-centred”. Placing the two paradigms in opposition focuses on their differences rather than what they have in common. It also compartmentalizes TEK, and therefore decontextualizes it; when this is done TEK is rendered useless.

It seems treasonous to put TEK in a series of boxes, but it is a perfect example of what Western science has been guilty of doing, whereby “attempts to separate TEK into segments can lead to misinterpretations or cause partnerships with tribes to fall apart” (Reo, 2001). If TEK is to be utilized successfully, it must be kept together with the TEK holders or it loses its value. To that point, McGregor (2004) states,

...this is a perfect example of what can't happen. Indigenous Knowledge (IK) cannot be separated from the people who hold and practice it, nor can it be separated from the land /environment /Creation. Furthermore, IK does not lend itself to being fragmented into various discrete categories if Western science and TEK are be used together to achieve desired outcomes.

As Western scientists are sometimes unwilling to work with non-scientists this has been a source of friction between the two camps. In order for TEK to be useful, it must be accompanied by the TEK holder and utilized within the environment from which it originated.

According to McGregor (2008) in an article about the State of the Lakes Ecosystem Conference in 2000, three headings must be addressed if TEK is to be used successfully alongside Western science, “lack of Aboriginal Representation, exclusion of First Nations Interests, and a lack of trust”. Despite these pitfalls, there exist many scenarios in which the simultaneous use of TEK and Western science has resulted in success. Each one has several things in common with the other: both sides' are fairly represented, both sides interests are

included, and there is trust as mentioned above. These commonalities will be addressed in each of the following case studies involving the successful use of TEK and Western science together.

In an article about polar bear habitat management by Sarah Rinkevich, the use of TEK alongside Western science has yielded a more accurate, comprehensive view of the state of polar bears in Alaska. The United States Fish and Wildlife Service interviewed 61 Inuit hunters from 12 villages along the North and Northwest coast of Alaska about polar bear habitat use, whereby “villagers were selected for the consistency of harvest patterns and their location within polar bear habitat” (Rinkevich, 2008). The orations were turned into maps that identified important areas of “feeding, denning, and seasonal movements, information that was not previously available in scientific literature” (Rinkevich, 2008). An example of this would be the changing of lead systems (linear areas of open water within ice) depending on wind and ocean currents. The changing of a lead alters the accessibility to the bears. Rinkevich (2008) finds that “hunters responses often reflected this variability through statements such as ‘this lead is present when the wind blows from the south’”.

The use of TEK also availed to Western science the variability of denning areas depending on snow depth, and that factored in to the “planning activities involving the oil and gas industry in polar bear habitat in Alaska” (Rinkevich, 2008). Further, the U.S. Fish and Wildlife used TEK to produce a population estimate, and TEK also “alerted scientists to the importance of marine mammal carcasses as a food source during the fall open water period” (Rinkevich, 2008). This in turn led to a study on polar bear foraging patterns. This coordinated effort achieved bilateral success and according the U.S. Fish and Wildlife service, “as it plans future conservation efforts for the polar bear, the service will continue to work with Indigenous and other local people to collect and make good use of their unique ecological knowledge” (Rinkevich, 2008).



This initial project established trust between the parties if you could assume that the Indigenous people would not continue had they felt otherwise. As far as both parties gaining from this project, the U.S. Fish and Wildlife are getting critical information about polar bears that they would not have without TEK, and the Aboriginal people are wresting satisfaction out of the fact that they know a very important part of their web of life (polar bear) will be taken care of, and therefore it ensures the propagation of their subsistence lifestyle.

Another wonderful example of the use of TEK alongside Western Science takes place on The Pikangikum First nation of Northern Ontario, who have been working on a project called the Whitefeather Forest Initiative. The goals of the initiative are to “undertake resource management within a 1.3 million hectare land base referred to as the Whitefeather Forest Planning Area ... and to create long-term, sustainable economic and employment opportunities” (McGregor, 2009). They are accomplishing this by “developing partnerships in education, environmental stewardship and business that build on community strengths” (McGregor, 2009). Where the case is usually that TEK and Western science are partners, with Western science overseeing the project, in this case the Aboriginal TEK holders and the community as a whole are the primary overseers of this project. This “community in the driver’s seat” sees to it that Pikangikum has maintained control over the decision-making process, which is rooted in Ojibwa culture (McGregor, 2009). The Ojibwa belief of “Maamoowii n’daamoowin, or being of one mind” involves bringing together the thoughts and ideas of all parties involved to create well-rounded initiatives that are fair to everyone (McGregor, 2009).

Within the Whitefeather Forest Initiative there exists three collaborative arrangements that recognize the peoples responsibly to their land and the important role that elders play in the decision making process. The first in 2002, was “Protected Areas and First Nation Resource

Stewardship: A Cooperative Relationship Accord” (McGregor, 2009). This accord was signed by a number of First Nations in Northwestern Ontario that share similar interests in stewardship of their ancestral lands. The second, in 2003, was “Economic Opportunities and Resource Stewardship- A Partnership Framework” (McGregor, 2009). The object of this arrangement was to acknowledge the shared goals of First Nations and environmental agencies such as the Government of Ontario. It focuses on maintaining environmental stewardship practices of all parties, but also aiming at economical sustainability. The third arrangement, “The Whitefeather Forest Research Cooperative” was established in 2004 (McGregor, 2009). This is a coordinated effort between Pikangikum and “four academic institutions interested in assisting Pikangikum in realizing its goals through cross-cultural research that honours and respects the teachings and wisdom of Pikangikum Elders and will be carried out on the basis of respect and in a manner that will bring together the best of different knowledge traditions” (McGregor, 2009). This focus on capacity building between the two sciences lends credence to the success of this project, and it serves as good evidence to the thought of TEK and Western science having a longstanding mutually beneficial relationship for years to come. According to McGregor (2009) the “main mechanism for ensuring that the vision is achieved is the Whitefeather Forest Initiative Steering Group, which is led by the most esteemed elders of Pikangikum”. Youth are also encouraged to participate. This just may be the single most important piece of this project. The youth of Pikangikum are getting involved in their traditional way of life through language and action. There is no better way to propagate one’s way of life than to give it to the youth by engaging them. If that is all Pikangikum were to gain from this it would be a success for them, but they are also gaining economic livelihood, community cohesion, and some semblance of self-government.

In the last three decades or so, TEK has proven itself useful in a variety of instances, two of which were included in this paper. If given a fair treatment it can be used alongside Western science to achieve goals that are beneficial to the Aboriginals themselves and to society as a whole, goals that would have been unattainable without the use of both paradigms. What does the future hold? If TEK is to gain broader acceptance, then two factors must be overcome, namely “inertia and inflexibility” (Huntington, 2000). What is meant by inertia is the “general resistance to change because it upsets the familiar and comfortable” (Huntington, 2000). Author Henry Huntington (2000) states that with “continued pressure from TEK advocates...and more collaborative research and mounting evidence...this resistance may be overcome”. Inflexibility is expressed in several forms: political correctness replacing science and outright refusal to work with non-scientists; power in management decisions; and the changes that would be required on the behalf of Western Science to allow room for TEK. “While one would hope that the evidence of the utility of TEK would help overcome this resistance as well as inertia, the positions here are more entrenched” (Huntington, 2000). It would seem here that the best form of action to take is to stay the course, keep doing good work, and let your actions do the talking.

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