Methodological Review and Approaches for Local/Traditional Knowledge Research

Draft Report

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This briefing paper

1. ***reviews the content of local/traditional ecological knowledge as reported in the published literature;***
2. ***defines traditional ecological knowledge and provides back ground information on research and community processes.***

A more complete account, including case studies based on north coast examples, can be found in: Menzies (ed) n.d. Integrating Local Level Ecological Knowledge with Natural Resource Management: Exploring the Possibilities and the Obstacles. See, especially "Introduction: Understanding Local Ecological Knowledge" Menzies and Butler; "Historizing Indigenous Knowledge: Practical and Political Issues" Butler.

Understanding Traditional Ecological Knowledge

Introduction

The relationships between indigenous peoples and the environment have always been of interest to academics. There is a long history of studying indigenous land-based practices and traditions. However, during the last few decades, these practices and traditions have become of increasing interest as a source of wisdom about sustainable resource use and environmental conservation. As the disastrous environmental impacts of Western industrial development and the shortcomings of Western resource management and conservation efforts have become understood, alternative practices and perspectives have been actively sought. The Brundtland Commission report, *Our Common Future* (world Commission on Environment and Development 1987) emphasized the potential of indigenous and/or traditional knowledges to provide insight for the conservation of biodiversity. Researchers and planners have since focused on the applications of Traditional Ecological Knowledge (TEK) in contemporary environmental and resource management scenarios.

The birth of 'TEK' as a major research focus and resource management tool is related to the attempted shift to an ecosystem-based management approach. Western resource management has, until recent efforts, been guilty of isolating resources and species in both development and conservation planning. 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. Initiatives to conserve one type of fish can result in negative impacts on other species health. Forestry practices have tended to focus on trees and ignore impacts on non-timber forest resources, watersheds, and aquatic species.

Recent efforts to conserve biodiversity and to manage based on the health of entire eco-systems have lead to the new valuation of TEK. This emphasis on TEK is based on the understanding that traditional indigenous economies have tended to involve the simultaneous and proximal use of multiple resources on a subsistence basis, rather than the intensive, isolated, single resource use that characterizes Western industrial economies. In other words, the way that indigenous people live off the land often means that they need to understand the way that the different plants and animals interrelate, how the ecosystem works as a whole and how they can use that system to sustain themselves. This type of small-scale yet system-wide understanding is the approach that resource managers are turning to in order to better manage natural resources and the environment as a whole.

During the last decade, social scientists, biological scientists, and resource managers in Canada have paid more and more attention to what First Nations know about the ecology of their traditional territories. Having lived in these territories since time immemorial, and having used the local resources into present time, First Nations communities have a well-developed understanding of the local environment, and their own impact on local resources. Traditional Ecological Knowledge can complement, supplement, and guide biological science and resource management. TEK can provide both the appropriate questions to ask about natural resources and ecosystems, and the missing answers to some existing questions. Furthermore, TEK can provide the appropriate structure for sustainable local resource management. Traditional laws,

harvesting patterns, and stewardship roles can provide the most suitable frameworks for territorial resource use.

Definitions and Attributes of TEK

Traditional Ecological Knowledge (TEK) is the term used to describe the knowledge and beliefs that indigenous peoples hold of their environments, that is handed down through the generations. Jameson Brant, a Mohawk has described indigenous knowledge as:

> *A body of information about the interconnected elements of the natural environment which traditional Indigenous people have been taught, from generation to generation, to respect and give thanks for.* (in Bombay 1996)

Fikret Berkes has broadly defined indigenous knowledge as the local knowledge held by indigenous peoples, and suggests the TEK is a subset of IK. TEK is the ecological part of IK, the land-based, practical knowledge of species, and the beliefs regarding human interaction with the ecosystem (Berkes 1999).

In resource management scenarios, TEK is often placed in opposition to Western science, particularly biology. Comparing TEK and science in such a way tends to oversimplify and emphasize the differences between these two ways of seeing the world. This can make them appear incompatible, and is therefore somewhat unproductive. However, a summary of the lists of contrasting characteristics that have been generated can aid in understanding the more general tendencies of each approach, and more specifically, in understanding the ways in which TEK and science become opposed in management settings.

TEK	**WESTERN SCIENCE**
Qualitative	Quantitative
Holistic	Reductionist
Oral	Textual
Long-term observation	Short-term experimentation
Intuitive	Analytical
Historical	Statistical
Practical	Theoretical
Cyclical	Linear
Nature-centred	Human-centred
Inclusive	Selective
Consensus-based management	Regulation-based management

(See Grenier 1998, Berkes 1993, Wolf et al. 1992, Berneshawi 1997)

A story from the work of Milton Freeman (1979) provides insight into the differences between Western resource management and TEK-based management. In the 1960s the Game Management Service of the Northwest Territory wanted to reopen the muskox hunt, but only allow a small quota of old bulls to be taken as trophy animals.

Their reasoning was that these animals no longer reproduced and were therefore 'superfluous'. The Inuit community argued that young bulls should be taken instead, because the old bulls were important to the social organization of the herd. They play a dominant role in maintaining and defending the herd. The game wardens were managing solely on biology and reproduction calculations, but the Inuit were using their knowledge of the herd dynamics to identify surplus animals.

Some of the identified attributes of TEK demand further discussion.

1. TEK is CUMULATIVE and LONG-TERM

TEK is an ever-growing body of knowledge. It has been developed over many generations, and expands as each passing generation's experience is added to the community's tradition. TEK is an attribute of communities with a long history of resource use in a particular area.

TEK is often differentiated from Local Ecological Knowledge (LEK) because of its extremely long-term perspective. Many different communities have developed detailed knowledge about the environment around them, such as non-aboriginal fishing communities. *Traditional* knowledge, however, is generally associated with indigenous communities or those with several centuries of accumulated knowledge. TEK builds on experience and adapts to change.

2. TEK is DYNAMIC

While the term *Traditional* Ecological Knowledge emphasizes continuity and long-term practices, it is important to note that this does not mean that it is static and unchanging. TEK is rooted in, and informed by, a traditional lifestyle, but adapts to change and incorporates contemporary information and technology. New information is continually added as the environment is transformed, as weather patterns shift, as species are wiped out or introduced. One generation may have knowledge of how to hunt with traps; the next generation may translate this knowledge into how to hunt with guns. Non-indigenous knowledge can be incorporated into TEK, thus expanding its scope (Ruddle 1994).

TEK may be revised daily and seasonally through the annual cycle of activities (Clayoquot Sound Scientific Panel 1995); thus each season of resource use increases the depth and scope of the knowledge. TEK is not just a knowledge of the past, but also of the present.

There are some academic discussions about the loss or 'erosion' of TEK as indigenous communities become more integrated into regional or national economies. It is important to differentiate between situations where a community's TEK is adapting to new environmental and economic conditions, and where TEK is being lost due to a disruption of transmission, or population loss. Just because land use activities have changed or decreased, does not necessarily mean that a community's TEK is deteriorating.

That said, the emphasis on the importance of Elders' knowledge in First Nations communities is valid. Elders often have different knowledge than the younger generations within a community and twentieth century Canadian Aboriginal policies have disrupted cultural transmission. It is therefore important to many communities to document their Elders' TEK and many First Nations have made this a research priority.

It is important to emphasize however, that younger First Nations people also have TEK that can be extremely important for sustainable resource management.

3. TEK is HISTORICAL

It is because TEK is cumulative and dynamic, that it provides a historical understanding of environmental change. First Nations knowledge, for example, predates European contact and thus provides a multi-generational perspective on the environmental impacts of colonialism and industrial development. First Nations TEK is a direct knowledge of change since contact; through considering indigenous experiences of resource use, we are given a picture of the rapid transformations of the landscape and natural resources since colonial settlement.

On the North Coast of British Columbia, experience of a pre-contact environment is only a few generations past. This knowledge is extremely valuable in identifying pre-industrial levels of species abundance, impacts of industrial pollution, and impacts of newly introduced resource-extraction technologies. For example, the difference between an Elder's fishing experiences and a young person's fishing experiences can provide insight into environmental change.

4. TEK is LOCAL

TEK is locally developed, and provides highly specific and detailed information about areas of traditional resource use. The small-scale and local nature of TEK is both a strength and a weakness. TEK provides an intimate understanding of an area that other forms of research and experimentation cannot match. However, the specificity of TEK limits its broad application and requires that in-depth TEK documentation be done for every eco-system.

5. TEK is HOLISTIC

Traditional knowledge has been described as holistic, meaning that all elements are viewed as interconnected and cannot be understood in isolation. As discussed above, a holistic perspective has been missing from resource management and efforts are now being made to understand the interrelatedness of species and their environments.

6. TEK is EMBEDDED

TEK is part of a particular cultural context. It is not only specific to an ecosystem, but also to a way of understanding the world. Generalizations about TEK focus on the experience of Aboriginality, the continuity and intimacy of land use, an indigenous conservationist ethic, and a spiritual connection to the land. It is important to emphasize that there are many traditional knowledges, each one attached to a different Aboriginal culture. A community's TEK is embedded in the matrix of its unique local culture, history, and traditions. It is thus possible to talk about Kitkatla TEK, Tsimshian TEK, and more generally, Indigenous Knowledge.

It is difficult to interpret and use TEK without understanding its cultural context. Practical knowledge of where to find and how to process resources cannot be separated from the traditional structures of territory and resource ownership, cultural rules regarding resource use and waste, and even issues such as the traditional gendered division of labour within a community. Furthermore, most Aboriginal discussions of

TEK insist that this practical knowledge derives from and reflects a spiritual relationship with the land and resources.

7. TEK is MORAL and SPIRITUAL

In many indigenous cultures, TEK is grounded in a spiritual and reciprocal relationship between the people and their environment. The natural world is often understood as sentient and proactive and infused with spirit. Thus, there are right ways and wrong ways to relate to and interact with the environment (Clayoquot Sound Scientific Panel 1995). Practices are governed by more than just a principle of sustainability for survival's sake, but by a moral sanction against waste or greed. This aspect of TEK has been highlighted in its opposition to Western science.

Research Issues

The following reflects some critical issues regarding the documentation and interpretation of Traditional Ecological Knowledge.

1. CULTURAL TRIAGE

In contemporary contexts, TEK research and more general data regarding subsistence practices are used to identify lands that must be preserved from development in order to protect culturally important resources. This process however, tends to open up other areas to development, and to potential environmental disruption. While a First Nations may express a holistic conservation position, that all the resources and areas are important, they are often forced to choose between areas of their traditional territory in a way that inevitably results in loss. Stoffle and Evans refer to this process as "cultural triage' (1990). Triage refers to the screening of medical patients to determine their priority for treatments; when not all can be saved, the choice is made to treat those with the greatest chance for survival, and they are ranked according to immediacy of need. Indigenous communities face cultural triage: "a forced choice situation in which an ethnic group is faced with the decision to rank in importance cultural resources that could be impacted by a proposed development" (Stoffle and Evans 19990: 95). This choice preserves some resources, but puts others at risk. This form of triage forces an unnatural ranking of species, areas, and heritage sites.

It is crucial that TEK research that contributes to development planning consider both the approaches of holistic conservation, and cultural triage. These two positions should be factored into the methodological framework, so that participants have the opportunity to emphasize the importance of all resources, but can also prioritize areas and resources if development threatens traditional territory (see Stoffle and Evans for a full discussion of the issues surrounding these two positions).

2. DECONTEXTUALIZATION and DISTILLATION

Paul Nadasdy warns that the artifacts of TEK research often possess none of the characteristics that such studies use to define TEK in the first place. During the research process, TEK is "distilled" into a product that is easily integrated into the Western resource management system. While TEK is defined as holistic, oral, qualitative and intuitive, the research results tend to be categorized, written, quantitative and analytical

(Nadasdy 1999: 9). The reports from TEK research are thus often more like scientific reports and remove the traditional knowledge from cultural and ecological context.

Thus a danger of TEK research is that it can simply make TEK a tool of Western science, rather than a complementary approach to resource management. The wisdom of community members is translated into facts and figures that a biologist can use. Furthermore, case studies of several co-management boards suggest that First Nations participants do not feel that their knowledge is contributing to the research agenda (Nadasdy 1999, Kendrick 1998). Community research priorities are not addressed, but community TEK is expected to be provided in order to benefit scientific research projects.

It is critical that TEK research reflect community goals and priorities, and that TEK reports reflect the way that information is transmitted within the community. TEK should not be translated, distilled, nor abridged in order to make it fit predetermined, external data requirements.

3. POLITICAL INFLUENCES

It is critical to understand the political context of TEK expression and use. The expression of TEK is often part of a movement towards political sovereignty and greater control over natural resources. The highly politicized context of the current struggle over Aboriginal rights and title can influence TEK research in a number of ways.

Despite the fact that current TEK research and documentation may contribute positively to a First Nations' land and resource claims, or might increase the community's involvement in resource management, community members might be reluctant to have their knowledge recorded. Some communities have suffered further loss of resource control by participating in research that records their traditional harvest areas and processing methods. Furthermore, traditional structures of resource stewardship and ownership often influence who is able to use and even talk about specific areas. It is extremely important that researchers understand these concerns and these traditional censures when trying to document the area and extent of particular resource utilization. Individuals may not mention the most important areas where they harvest food in order to preserve those areas. Alternately, an individual who is considered a community expert may not give information on certain areas because they personally do not have the right to publicly discuss that territory. A younger person may want to check their contribution with an Elder, before having it recorded.

These limitations, if not comprehended by the researcher, can result in areas of prime importance for subsistence being left out of maps and other documents identifying key resource use areas. This is of great concern if the research is expected to prioritize land use patterns and identify areas open for alternative development.

Community control of the research, and community researchers will alleviate most of these issues. It may be helpful to address these issues at the level of the clan or house. Having researchers from the same clan or house conducting interviews with community members can contribute to consensus building and comfort with information distribution.

4. EVALUATING TEK

Traditional knowledge provides its traditional users with a practical understanding of their environment and the resources that they use. When TEK is being used by a First Nation to inform its conservation and development planning, this body of knowledge has to be gathered from many individuals and sources. Facts about and relationships between species need to be cross-checked between community participants, and against other sources. When TEK is used as a basis for contemporary resource management, it must be validated. This validation should be community-based and rigorous.

Information from TEK interviews need to be considered in light of each individuals' personal history and territorial scope of resource use. What areas do they know about, what years did they spend actively using those territories? Information from an Elder about salmon fishing at a particular creek is extremely important, however, if the Elder has not fished there for 2 decades, it is necessary to find a younger person who has fished there recently in order understand the health of that run of fish. If the Elder fished there 7 days a week, but his son was limited to fishing 2 days a week, their information regarding the fish must be considered in light of these different practices. If one used a beach seine and the other a gillnet, that information must be used to interpret their estimates of salmon abundance. If there is no community member fishing there currently, perhaps commercial fishing records can provide some insight. Similarly, archaeological records might assist in extending the temporal scope of the data about fish in that creek.

Chippewa law professor John Borrows emphasizes that indigenous knowledge is important, but not perfect, and many sources must be consulted in environmental planning (1997). Borrows, and other researchers, suggest that the disruption of Aboriginal land use by European colonization and subsequent disenfranchisement of First Nations from their land, has resulted in fragmented TEK which must be pooled with other information sources, and evaluated in light of the limitations on Aboriginal resource access since contact.

5. DIFFERENTIATION of TEK

Traditional knowledge is not homogeneous even within a small community. People in different positions know different things about resources and the environment. Men and women, Elders and young people have different knowledge. When researching TEK it is important to understand the many ways that knowledge might be differentiated within the community. Researchers will thus have to talk to many different types of people in order to fully document the TEK held in the community.

The following list of possible sources of TEK differentiation is derived from Neis et. Al 1999, Grenier 19998, Sillitoe 1998, Tsuji 1996 and Nazarea 1998. Both personal characteristics of individuals, and their relation to others in the community and outside the community influence their ecological knowledge.

TEK Differentiation	
Personal Attributes	*Status Attributes*
Age	Education
Gender	Occupation
Clan/Class etc.	Involvement in commercial harvest
Level of curiosity	Income Level
Observation skills Ability to travel	Social status Roles and responsibilities in community
Area of resource use	Technology and strategy of resource use
Place of residence	Degree of autonomy/control of resources

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