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Original article

Pursuing openings and navigating closures for aboriginal knowledges in environmental governance of uranium mining, Saskatchewan, Canada

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ABSTRACT

Efforts at combining or bridging Traditional and Scientific knowledges within Canadian resource management institutions have been well researched. But there has been less research which examines this process in the context of large-scale resource extraction activities. This study explores the views and responses of Aboriginal participants to knowledge bridging in an environmental governance institution overseeing uraniummining in Saskatchewan, Canada. Consistent with other Canadian studies in the resource management and environmental assessment context, many knowledge bridging problems were evident. These included the empirical observations of animal behaviours that were not meaningfully engaged with by non-Aboriginal participants. In addition, the ethical dimensions of Traditional Knowledge (TK) were ignored. However, Aboriginal participants also strategically navigated the governance space by uncovering 'openings' to challenge scientific knowledge claims through TK, as well as assert, confront, and educate industry and government representatives with their own technical and local knowledges. Some participants also recognized 'closures', and chose to withhold TK based on their distrustof how it could be (mis)used. Given the diversity of views about knowledge bridging in this context, and the many problems identified, any top-down efforts to promote TK in certain governance spaces should be carefully reconsidered.

1. Introduction

Traditional Ecological Knowledge (TEK) or Traditional knowledge (TK) as it is also commonly known, has received significant attention by scholars, policy makers, and resource management practitioners in the last 25 years. It comprises varying understandings and assumptions, but for the purposes of this paper the following definition is used where "...TEK refers specifically to all types of knowledge about the environment derived from experiences and traditions of a group of people" (Usher, 2000, p.185). Certainly, the value and importance of TK (as it will be referred to in this paper) to resource management has been well espoused; its value is often championed in the context of knowledge bridging (Berkes, 2009), or as used in combination with Western science to produce more inclusive and comprehensive understandings of resource management problems and solutions amongst diverse actors. However, within Canadian resource management institutions, and particularly co-management,[1] where knowledge bridging has been attempted and well researched, a number of issues including unequal power relations between Aboriginal[2] participants and scientists (Nadasdy, 2003), incompatible ontologies (Booth and Skelton, 2011), and token inclusion of TK in management plans (Houde, 2007; Huntington, 2000; Spak, 2005) have been identified.

Overall, however, there has been relatively less research exploring knowledge bridging in the Canadian context of large-scale resource extraction activities. This is important given 1) the significant environmental and social impacts extractive industries produce; 2) the techno-scientific nature of the extractive industries; 2) the economic interests of government and industry in

[1] Co-management involves (ideally) the sharing of power and responsibility between local resource users and most often government agencies in managing natural resources

[2] In Canada, the term 'Aboriginal' includes First Nations, Inuit, and Métis peoples

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natural resource development; and 3) the emergence of non-regulatory environmental institutions where limited research has yet been carried out on knowledge bridging. These institutions include environmental agencies, boards, and committees that form out of private agreements and comprise any combination of government, industry and Aboriginal representatives who inform or advise decision-makers on environmental management practices and policies. In some cases, environmental boards and agencies develop out of Impact Benefit Agreements or IBAs; IBAs are voluntary, legal contracts between industry and Aboriginal groups that cover economic, socio-cultural, and environmental issues. They can address environmental management issues for communities that are not covered by environmental assessment plans, or prior to environmental assessments commencing[3] (O'Faircheallaigh and Corbett, 2005; O'Faircheallaigh, 2006, 2007; Galbraith et al., 2007; Fidler and Hitch, 2007; Fidler, 2010). Stevenson (1997) notes that processes for giving TK full and equal consideration is most ideally worked out through these supraregulatory institutions, rather than regulatory arrangements where the former can potentially improve upon and address gaps within regulatory measures laid out in Environmental and Social Impact Assessments (Galbraith et al., 2007). However, based on his comparative studies of different supraregulatory agreements in Canada, O'Faircheallaigh (2007) says it is unclear how far TK was integrated into management through these agreements, and there remains limited research on this topic.

This study considers the bridging of TK and Western science in the case of a supraregulatory environmental management institution known as the Northern Saskatchewan Environmental Quality Committee or NSEQC, which oversees uranium mining in Northern Saskatchewan, Canada. Saskatchewan stands as the world's second largest producer of uranium, and currently houses the globe's most productive uranium mine. Uranium mining poses unique environmental challenges related to both chemical and radiological toxicity, requiring specialized techno-scientific knowledge to manage environmental threats. In addition, the scale of development is significant in Saskatchewan, where four mines are currently active, five more are planned, numerous sites are being explored, and several other mine and mill sites are being remediated (World Nuclear Association, 2015). Living in the vicinity of these mines, are 32 Aboriginal communities who have community representatives helping to oversee environmental management of these mines. Given this context, the following questions are addressed in this study:

1) To what extent are common knowledge bridging issues reflected in the NSEQC?
2) How do Aboriginal participants in the NSEQC view and respond to knowledge bridging?

This paper is organized by first reviewing the literature on TK and knowledge bridging in the Canadian context of resource management and resource development. A background on the uranium mining industry in Northern Saskatchewan is then provided. This is followed by a review of the methods, the findings, and discussion and conclusion sections where the latter considers the important context of knowledge bridging in the resource extractive industry, and possibilities (or lack thereof) for meaningful knowledge bridging processes.

2. Knowledge bridging in resource management and development

Traditional Knowledge is not easy to define, and nor is it meant to be. Scholarly critics of the term point out that the knowledge is not just traditional, but contemporary, as it is continually being revised and adapted to particular conditions. For example, having traditional in the title may mean that it is not relevant to present day problems, such as environmental management of resource development (Stevenson, 1996; Nadasdy, 1999). It thereby denies the adaptability and dynamism of Indigenous cultures (Nadasdy, 1999). Despite these criticisms, the term 'Traditional Knowledge' (TK) is still frequently used.

This study adopts Usher's (2000) description of different types of Traditional Knowledge pertaining to the environment that include factual knowledge such as empirical observations used for prediction and monitoring of environmental effects; factual knowledge about past and current use of the environment; moral/ethical statements about how to behave; and the organization of information to provide guidance. The value of Traditional Knowledge for Indigenous Peoples and resource management has been well documented and includes opportunities for political empowerment (Berkes, 1999); providing an ethical imperative for conserving cultural diversity and cultural identities (Berkes, 1999, p.28); and providing biological information such as species identification, animal behaviours, life cycles, distribution, abundance, and migration routes (Berkes, 1999; Huntington, 1999; Dowsley and Wenzel, 2008; Clark and Slocombe, 2011). In terms of Environmental Impact Assessments for resource development projects, Traditional Knowledge can contribute to the identification of Valued Ecosystem Components (Berkes, 1999; Stevenson, 1996), predict possible effects on wildlife (Parlee and Manseau, 2005; Roué and Nakashima, 2002), and distinguish between 'natural' changes and project related changes using baseline ecological data (Stevenson, 1996; Nakashima, 1990). Traditional Knowledge has also been recognized in the Canadian Environmental Assessment Act, albeit as an optional inclusion, whereby "The environmental assessment of a designated project may take into account community knowledge and Aboriginal traditional knowledge" (Canadian Environmental Assessment Act, 2012).

Documented efforts at bridging Western science and Traditional Knowledge within Canadian co-management institutions and Environmental Assessment processes are replete with difficulties (a discussion outside of the Canadian context is beyond the scope of this paper). However, there are some documented successful cases of knowledge bridging in co-management and land claims boards[4] (e.g. Moller et al., 2004; White, 2008), where success is understood as Traditional Knowledge shaping environmental decision-making. For example, Clark and Slocombe (2011) highlight that quota adjustments for grizzly bear hunting in Baker Lake, Nunavut and Aklavik, North West Territories were based on observations by Aboriginal hunters.

More common, are the many issues identified with attempts at knowledge bridging in environmental management institutions. A number of authors discuss how the culturally embedded traditional values or ethical aspects of TK are often not incorporated into decision-making (Stevenson, 1996; Dowsley and Wenzel, 2008; Spak, 2005; Kofinas, 2005; Houde, 2007; Natcher et al., 2005; White, 2008; Ellis, 2005). Rather, TK gets

[3] Given the former Canadian government's streamlining of environmental assessment by limiting public participation and the number and length of environmental reviews required, these supraregulatory arrangements may become more critical spaces for Aboriginal voices and knowledges to be heard and acted upon.

[4] Land claims boards developed out of comprehensive land claims agreements or modern day treaties and " . . . emerged as a means of retaining public government in land and wildlife issues while distancing actual decisions and operations from federal and territorial government control and ensuring direct and meaningful participation by aboriginal peoples (Fenge, 1992 as cited in White, 2008).

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