TRADITIONAL ECOLOGICAL KNOWLEDGE IN CLIMATE CHANGE RESEARCH: INSIGHTS FROM *SACRED ECOLOGY*

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As the world grapples with the impacts of climate change, researchers are increasingly exploring the potential of traditional ecological knowledge (TEK) to enhance our understanding of local changes and support the development of adaptation strategies. In his seminal book *Sacred Ecology*, Fikret Berkes provides a foundational framework for understanding TEK and its relevance for addressing climate change. This blog post discusses key concepts from Berkes' work, highlighting the potential of TEK to inform climate change research.

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What is traditional ecological knowledge?

The concept of traditional ecological knowledge emerged in academic debates in the 1980s, with initial studies rooted in anthropology and, in particular, ethnoecology, ethnobotany, agroecology, etc. Since then, TEK has gained prominence in the international scientific community, with an increasing recognition of its value in environmental problem-solving across various disciplines.

Scholars have debated the definition of TEK at length, proposing a variety of alternative terms. In Sacred Ecology, Berkes acknowledges these ongoing debates but adopts a working definition of TEK as "a way of knowing; it is dynamic, building on experience and adapting to changes" (Berkes, 2018, p. 8). Berkes draws attention to the cumulative, place-based nature of TEK, which develops through intergenerational interactions between societies and ecosystems. These societies exist in a close relationship with nature and are often, but not exclusively, indigenous.

Four interlocking levels of TEK

As a framework for analysis, Berkes distinguishes four interconnected levels of TEK:

- Local knowledge – specific local knowledge of land and animals that is based on empirical observations and holds survival value.
- Land and resource management systems – a set of ecological practices grounded in local knowledge, forming a resource management system.
- Social institutions – the social structures which mediate the operation of resource management systems within the community.
- Worldview – the belief system which determines how a society interprets observations related to its environment.

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A key aspect of Berkes' understanding of TEK is the distinction between knowledge as content (what is known) and knowledge as process (how this is produced and applied). For Berkes, TEK encompasses both dimensions, functioning as a body of knowledge and an iterative process of knowledge production.

Taken together, these four levels characterise TEK as a "knowledge-practice-belief complex" (Berkes, 2018, p. 19), offering a way to understand the dynamic, situated ways in which communities interact with their environments.

Ways of knowing: TEK and Western science

Academic discussions have continuously juxtaposed TEK with Western scientific knowledge. TEK is embedded in specific society-environment relationships and grounded in holistic worldviews where humans and other beings coexist in harmony. In contrast, Western science, rooted in a positivist-reductionist paradigm, tends to be abstract and universal, taking a utilitarian approach which positions nature as a resource, commodity or ecosystem service. This perspective is underpinned by assumptions of subject/object and nature/culture dichotomies, alongside a logic of human exceptionalism.

The Western scientific tradition has historically dismissed knowledge rooted in alternative paradigms, resulting in the marginalisation and silencing of non-Western knowledges – what sociologist Boaventura de Sousa Santos (2016) has referred to as epistemicide. While some scholars regard TEK as a challenge to the hegemony of Western scientific knowledge, Berkes emphasises the coexistence of multiple ways of knowing and argues for the complementarity of TEK and Western science; only by generating dialogue and synergies between different knowledge systems can we address the complex environmental challenges of the 21st century.

TEK and climate change research

Climate change is one of the most urgent issues of our time. Researchers are increasingly exploring the avenues TEK offers to better understand local climate impacts and inform adaptation and resilience strategies. For Berkes, thinking about TEK in the context of climate change illustrates its nature as a dynamic process rather than a static information source.

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While traditional communities do not possess historical knowledge of climate change, they do, however, possess "weather-related knowledge, consisting in a sensitivity to critical signs in the environment and an intuitive understanding of what they mean for the conduct of practical tasks" (Berkes, 2018, p. 180, drawing on Ingold & Kurttila, 2000, p. 192). Through this sensitivity and intuitive understanding, communities can recognise environmental changes provoked by climate change, understand their wider consequences, and develop responses that feed into adaptation strategies.

Scholars have identified five areas in which TEK can synergise with scientific approaches to climate change: local-scale expertise; climate history; hypothesis

formulation; community adaptation; and community-based monitoring (Riedlinger & Berkes, 2001, cited in Berkes, 2018, pp. 183-4).

In this way, TEK and scientific knowledge complement one another to forward an understanding of climate challenges; the global models of Western science offer "synoptic perspectives" that explain broad climate patterns, while local observations provide detailed insights into micro-level impacts that global models are not tuned to detect (Berkes, 2018, p. 190). Bringing TEK and Western science into dialogue thus creates important "knowledge partnerships" that are necessary to address climate change as a complex systems problem requiring multi-scalar analysis (Berkes, 2018, p. 199).

A collaborative approach to climate research

Studies on TEK and climate change have developed participatory and decolonial methodologies to co-produce knowledge in ways that empower communities. A pioneering example of this collaborative approach is the Inuit Observations of Climate Change project (Berkes & Jolly, 2001; Ford, 2000; Nichols et al., 2004; Riedlinger & Berkes, 2001). Researchers from the International Institute for Sustainable Development were invited by the Inuvialuit people of Sachs Harbour in Banks Island, Canadian Western Arctic, to document climate-linked environmental changes, notably changes to sea ice that were affecting safety and hunting practices.

The project was designed in partnership with the Inuvialuit community, ensuring the integration of scientific and local knowledge. Research objectives were established collaboratively, findings were shared with the community in culturally appropriate ways, and publications were approved by the community with local experts credited for their contributions (Berkes, 2018, p. 185). The Sachs Harbour community viewed themselves as part of the solution rather than passive victims of climate change, demonstrating how collaborative approaches can enable local communities to become protagonists in climate action (Berkes, 2018, p. 198).

Today, scholarship is developing new pathways of participatory research with local communities across the globe. Berkes' conceptualisation of TEK offers a valuable framework for understanding climate change and crafting adaptation strategies. With the complexity and growing urgency of climate change, there is an increasing need for innovative, interdisciplinary and multi-scalar research

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that integrates different ways of knowing. By fostering partnerships between TEK and scientific knowledge, we can develop further understanding of local and global climate impacts and build more effective solutions.

References

Berkes, F. (2018). *Sacred Ecology* (4th edition). New York: Routledge. https://doi.org/10.4324/9781315114644

Berkes, F. and Jolly, D. (2002). Adapting to climate change: Social-ecological resilience in a Canadian Western Arctic community. *Conservation Ecology*, 5(2), 18.

Ford, N. (2000). Communicating climate change from the perspective of local people: A case study from Arctic Canada. *Journal of Development Communication*, 1(11), 93-108.

Ingold, T., & Kurttila, T. (2000). Perceiving the environment in Finnish Lapland. *Body & Society*, 6(3-4), 183-196. https://doi.org/10.1177/1357034X00006003010

Nichols, T., Berkes, F., Jolly, D., & Snow, N. B. (2004). Climate change and sea ice: Local observations from the Canadian Western Arctic. *Arctic*, 57(1), 68–79. https://doi.org/10.14430/arctic484

Riedlinger, D., & Berkes, F. (2001). Contributions of traditional knowledge to understanding climate change in the Canadian Arctic. *Polar Record*, 37(203), 315–328. https://doi.org/10.1017/S0032247400017058

Santos, B. de S. (2016). *Epistemologies of the South: Justice Against Epistemicide*. Abingdon, Oxon: Routledge. https://doi.org/10.4324/9781315634876