

Roundtable on Indigenous Knowledge and Western Science: Summary of Literature

January 2019

Institute on Governance
Business Name registration number:
13205 6631 RT0001
60 George Street, Ottawa, ON, K1N 1J4

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**Institute on
Governance**

LEADING EXPERTISE

**Institut sur
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EXPERTISE DE POINTE

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Introduction

As the Government of Canada moves forward on two distinct initiatives—the strengthening of science in decision making and the commitment to renewed relationships with Indigenous peoples in Canada—policy makers find themselves at a challenging yet fundamentally important crossroads.

Both initiatives face a host of pressures in the contemporary political and governance landscapes.

On the one hand, the Government of Canada’s promise to implement the Truth and Reconciliation (TRC) Calls to Action, its release of the *Principles respecting the Government of Canada’s relationship with Indigenous peoples*, and various legislative proposals that call for an increase in Indigenous participation in decision making are among the many drivers for determining how these renewed relationships will directly impact policy development. On the other hand, more and more questions are being asked about the nature and role of science-based evidence in governance amid waves of post-truth and popular politics. Decades of science-informed advice are caught up in the high tensions among the governing elite, wary citizens, and media actors by which information—accurate or not—can now be shared more easily than ever.

This changing landscape presents an excellent opportunity to explore the role of culture, history, and identity in relation to Indigenous knowledge and western science, and how the two may be interwoven to shape public policy and inform advice. Moreover, it is at this intersection that we may find promising and potentially complementary solutions to these two key problems.

Methodology

In preparation for a roundtable on 8 February to discuss how Indigenous knowledge and western science can shape public policy, the IOG conducted a review of the relevant literature. A full list of references is available at the end of the document.

IOG staff conducted an extensive review of material that examined both Indigenous knowledge and western science, placed in a governance context and, where possible, situated in Canada. This area has broad applications: environment, wildlife, climate, and natural resources; water management; health, including mental health; education; intercultural relations; and research methods and approaches.

The present summary focuses on the literature, which lends itself to a theoretical, strategic conversation that is not rooted in any one specific sector of the economy (e.g. health or environment). Every effort was made to preserve the voice of the authors and to reflect the variability and contention inherent to this relatively young literature. This document is designed to synthesize the review’s key findings: source material and the contrasts between different authors’ ideas are now placed more explicitly in the context of the roundtable event.

Key Findings

The literature review identified several conclusions that featured prominently in the existing discussion around western and Indigenous knowledge. By providing an overview of these findings, the IOG hopes to guide participants of the roundtable event as they further this discussion within the context of Canadian governance. The findings are organized by their area of contribution—i.e., what type of information they bring to the discussion: (1) the nature of Indigenous knowledge; (2) principles for collaboration; (3) supporting models and theories; (4) challenges; (5) recommendations.

The Nature of Indigenous Knowledge

Indigenous knowledge is a broad concept that encompasses diverse cultures, traditions, languages, geography, and heritage of Indigenous peoples in Canada. However, when making a comparison with other ways of knowing, namely, western scientific knowledge, it seems possible to generalize some common traits.

Several sources speak of three. First, Indigenous knowledge is based on its holders' intimate relationship with the natural world. Instead of abstracting from formalized and often controlled observations, as is the case in the western scientific tradition, Indigenous cultures focus on their place within larger ecosystems in order to derive their understanding of the world. Accordingly, it is said to be acquired through personal experience with nature—through 'showing/doing' as opposed to 'explaining/listening.'

Second, Indigenous knowledge is sustained through passing down this experience among generations; this intergenerational transmission is largely oral and dependent on Indigenous languages. It follows that human kinship in sharing Indigenous knowledge is crucial, which highlights a conflict with the written and impersonal documentation associated with western science.

Third, Indigenous knowledge is described as dynamic and evolving—much the same as western-based ways of knowing. The use of 'traditional' to label Indigenous ways of knowing reflects their basis in longstanding cultural practices but should not be interpreted as 'out-of-date' or 'static.' In fact, like its western counterpart, Indigenous knowledge is responsive to contemporary challenges ranging from politics to mental health to climate change.

Alternative titles for Indigenous knowledge are raised to identify nuanced areas or applications. One common example is 'traditional ecological knowledge' or 'TEK,' which focuses on cumulative insights on animal and vegetation life, human impact on ecosystems, and other nature-based data within Indigenous knowledge. From another perspective, one source¹ suggests that Indigenous knowledge is an adapted, concrete version of an underlying

¹ Bombay, A. et al. (2017).

way of knowing called ‘sacred knowledge.’ Sacred knowledge represents the survival of an Indigenous culture’s creation story over time. Another source² reinforces this strong relationship between an Indigenous people’s traditional knowledge and Creation, and goes further to explain that this knowledge calls on its holders to go “beyond knowing” and take responsible action. Nevertheless, the three basic traits of Indigenous knowledge listed above seem to enjoy broad consensus.

Principles for Collaboration

At the intersection of western and Indigenous knowledge is an implied collaboration between multiple knowledge holders with common goals: in this case, the goal is sound and inclusive governance informed by the available evidence. But how can this goal be achieved? This question will be addressed in later sections of the document. First, however, the current section will look at the related question of the general principles or best practices around which any western-Indigenous collaboration can be built.

Two broad distinguishable areas where these ways of knowing intersect are government programs like Environmental Assessment on the one hand, and general academic research on the other hand. Beginning with the collection and use of Indigenous knowledge by governments and industry, the Canadian Environmental Assessment Agency³ and others identify certain principles. The ultimate goal should be building long-term relationships beyond the immediate project. This involves early and sustained engagement between knowledge holders, and deliberate efforts to develop trust. Other sources⁴ reflect on and add to the importance of a long-term focus, stating that projects approached as one-off endeavours are doomed to be unsuccessful within the bigger picture of systematically including Indigenous knowledge in public decisions.

Next, Indigenous knowledge must be respected from the perspective of intellectual property: those who wish to access it must seek explicit permission to do so, and they must only use it within the scope of this permission. Further to this point, Indigenous knowledge will not just be applied, but *co-applied*.⁵ Co-application of this sort entails that Indigenous knowledge on which projects rely will no longer be seen as a government- or business-serving commodity, but rather as a basis for collaboration and mutual understanding. Third, those who engage with Indigenous communities must ensure that their intentions, methods, and results are communicated with the community in an accessible manner. Crucial to this principle is a commitment to cross-cultural dialogue that engages parties on all sides.

The above principles reflect the current federal Environmental Assessment framework, which, while based on the duty to consult, is not considered to be inherently collaborative. In 2018, new legislation was proposed that would modify the existing framework.⁶ Among other things, the new laws would place a stronger focus on the rights and interests of Indigenous peoples,

² McGregor, D. (n.d.). Traditional Knowledge

³ Canadian Environmental Assessment Agency. (2015).

⁴ McGregor, D. (n.d.). Traditional Knowledge; McGregor, D. (n.d.). Lessons for Collaboration

⁵ Canadian Environmental Assessment Agency. (2017).

⁶ Environment and Natural Resources Canada. (2018).

improving the potential for genuine collaboration in Environmental Assessment. New measures include Indigenous engagement and participation plans to lay out how collaboration will occur; additional funding to support Indigenous participation; and the mandatory consideration of Indigenous knowledge.

Turning to academic research, several sources that recorded relevant case studies outline the general ingredients for strong western-Indigenous collaboration in this regard. A fundamental tenet is referred to as multi-epistemic scholarship: research that is informed by various cultural perspectives, achievable primarily through the inclusion of scholars from these cultures. Another principle is known as the decolonization of research and refers to the dampening of power imbalances that exist between western-based researchers and Indigenous community members within a project. A final principle, and perhaps a means of realizing the previous one, is the use of existing social networks and management capacity within communities during research. The presumed superiority—and therefore prioritization—of western methods and resources is an impediment to equal and productive collaboration.

Supporting Models and Theories

While the above principles present a relatively unified front, the discussion begins to reflect its real diversity when it turns to the models within which collaboration can occur. A number of theoretical frameworks have been developed based on case studies, and these can be broadly categorized depending on how their authors view the purpose of bringing together western and Indigenous ways of knowing.

From one perspective, Indigenous knowledge should be *integrated* with western knowledge. That is to say, traditional insights from Indigenous cultures enter into different relationships with accepted scientific insights: they can be convergent (the same), complementary (mutually serving), or contradictory (in conflict). Accordingly, the key to collaboration is finding models to incorporate Indigenous knowledge into contemporary science. The areas of environmental assessment and health tend to subscribe to this view. One proposed model is the causal map, also known as the fuzzy cognitive map, which graphically illustrates the cause-and-effect relations among ideas in a knowledge system.⁷ Some suggest using this tool to compare Indigenous and western systems in order to target complementary areas. Another example is the managerial practice of Adaptive Management, which views project development in terms of hypotheses, tests, and feedback.⁸ Some suggest that this cyclical model will help relate the scientific method to Indigenous ways of knowing that prioritize continuous learning and predictions.

On the other end of the spectrum is the view that, as one author says, Indigenous and western knowledges are “best linked, not integrated.”⁹ In other words, holders from different communities should *engage* each other without necessarily integrating or subsuming each other. The underlying theoretical framework, coined by Mi'kmaw Elder Albert Marshall, is

⁷ Giles, B. G., et al. (2008).

⁸ Crawford, S., et al. (2010).

⁹ Nicholas, G. (24 April, 2018).

known as ‘Two-Eyed Seeing.’¹⁰ It refers to looking through both cultural perspectives simultaneously and collaboratively when approaching questions of science. Other more specific models have flowed from Marshall’s foundation. For example, one author speaks of an ‘ethical space’¹¹ where historically isolated cultures can meet: this involves addressing the reasons behind isolation and creating a more morally conscious relationship. From a more concrete point of view, researchers extoll the virtues of the community-based participatory research (CBPR) model.¹² In keeping with the principles of accessible and balanced research, this model provides tools (e.g., community workshops, field trips, story sharing) for bringing together multiple knowledge systems in the context of local projects.

There is also the question of how projects and, on a larger scale, governance structures, should be organized in the first place. Some believe that in order to effectively address the policy problems that touch Indigenous communities and that already draw on Indigenous ways of knowing, a certain degree of authority must be delegated to Indigenous communities themselves. One author¹³ grounds this delegated model in the concepts of self-determination and self-government: nation-to-nation relationships, as promoted by the federal government, should involve the recognition of Indigenous people’s responsibility and, therefore, decision-making power over programs that affect them.

Challenges

Working at the intersection of culturally distinct ways of knowing—especially in relation to science-based decision making in government—does not come without challenges. Authors in the existing literature recognize this reality in many ways and detail complications in their respective areas of study and discussion. From these complications, three overarching areas can be identified by looking at the various subtopics of Indigenous-western collaboration.

Many make mention of a long-standing and rigid dichotomy between all that is considered professional western science and all that is considered traditional Indigenous knowledge. This has proven problematic because (1) it labels the intellectual relationship in question as a black-and-white binary, and (2) it is built around an assumption of inherent western-science superiority. Several areas of study report facing specific obstacles in bridging western and Indigenous knowledge caused by this divide. For example, a mental health expert operating a clinic in a British Columbia First Nation describes a dismissive attitude within the professional mental health community toward alternative healing.¹⁴ Products of this attitude are then seen in other areas, such as in chemistry and other science education, where curricula are said to reserve very little if any room for Indigenous approaches.

A second group of obstacles appears on the surface to be a simple lack of interest to engage from both western and Indigenous knowledge holders. However, further investigation has led many to conclude that the underlying challenge is, rather, a severe lack of trust. Most often,

¹⁰ Martin, D. E., et al. (2017).

¹¹ Ermine, W. (2007).

¹² Kwiatkowski, R. E. (2011).

¹³ McGregor, D. (n.d.). Traditional Knowledge

¹⁴ Benning, T. (2016).

Indigenous knowledge holders are reluctant to share their insights because history has shown Canadian governments to be prohibitive and punitive towards Indigenous cultural expression. Even if contemporary government policy has abandoned this stance, the years' worth of mistrust still holds communities apart in many cases. Recalling the BC First Nation clinic, patients seeking concurrent alternative healing deliberately try to hide this fact from clinic operators. The complex and gradual process of building trust is expected to remain a long-term challenge for policy makers.

Finally, there are obstacles that relate in different ways to both the western-Indigenous intellectual divide and trust building described above. What they have in common is their basis in actual project development—that is, various complications that arise during the practical implementation of collaboration. For example, returning to the importance of trust, some natural resource projects have reported complications in building relationships between private-sector proponents and Indigenous communities: capacity issues for participating in meaningful engagement, use of third-party consultants as intermediaries¹⁵, short-term engagement, and lack of post-project sustainability are a few culprits. From another perspective, even when engagement is successfully established, actors often face fundamental challenges in how information is codified, shared, and applied to a situation or context.

Recommendations from the Literature

Indigenous-western collaborations at the heart of existing discussions share the goal of improving governance in response to new ideas. The literature proposes several recommendations based on the above findings (definitions, principles, models, and challenges.) While these recommendations may reflect potential next steps for decision makers, they simply provide for further discussion within the context of the roundtable event.

The first point raised in the literature is that western-Indigenous knowledge-based relationships must become more symmetrical. This responds to the challenge of dichotomy and power imbalance cited by many studies, and provides that Indigenous and western ways of knowing must interact on equal footing. A number of practical measures to this effect have been recommended. Many wish to see greater Indigenous representation in professional science communities; this starts with positively reinforcing Indigenous students' interest in science and diversifying the curriculum to which they will be exposed. From the perspective of intercultural collaboration, projects must also facilitate mutual learning—a two-way flow of knowledge—as opposed to unilateral instruction on either side. Trust will be an important prerequisite to any such collaboration, and partners can achieve it by focusing on the tangible benefits for communities without promising what cannot be realistically delivered.

Another point is that there must be greater respect for the inherent diversity of Indigenous ways of knowing—both horizontally (across various First Nations, Inuit, and Metis communities) and internally (within a community). This means acknowledging that Indigenous

¹⁵ Gondor, D. (2016).

peoples are all distinct societies with varying cultural traditions, which, while sometimes seen as a whole within the larger Indigenous-western discussion, must be addressed individually in practice. The literature insists that local problems require local solutions; accordingly, partners must choose among available models and discern relevant challenges in a case-by-case, community-focused manner. It is then within each particular community that further diversity can be addressed: some recommend the application of gender-based analysis and other intersectional models as a means of finding the best possible solutions.

On a final note, the literature makes the jump from relationships and research to governance and decision making. There is indeed a broad recommendation to begin exploring adjustments to governance institutions that could facilitate western-Indigenous collaboration in science-based policy areas. At one end, it is recommended that decision makers find ways to apply fundamental theories such as Two-Eyed Seeing to the public policy process. This would involve further experimentation with and development of supporting models, such as those listed here. However, many believe that more institutionally significant changes will have to occur. While changes of that sort imply long and demanding efforts, many contend that such efforts are fitting for a policy initiative that is inherently wide-reaching and ongoing.

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