

Implementing Indigenous and Western knowledge systems (part 2): “You have to take a backseat” and abandon the arrogance of expertise

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Abstract

Despite innovative technological "solutions" to address ongoing water crises in Indigenous communities, significant disparities persist in Canada. Financial investment in infrastructure is necessary, but it is hardly sufficient to address the real problem: entrenched colonialism. One of the greatest challenges in decolonizing research is to prevent that research from reproducing the very categories it is seeking to critique and dismantle. We share findings from thematically-analyzed interviews with academic and community-based researchers who conducted water research with a stated intent to implement Western and Indigenous knowledge systems. Findings revealed that while there is co-learning, ontological and epistemological assumptions carried into these relationships often impede truly integrative practice. Respondents shared how they worked through these persistent barriers of a colonial system.

Keywords

Indigenous knowledge systems, water research, water management, water policy, integrative knowledge, semi-structured interviews, Canada

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Implementing Indigenous and Western Knowledge Systems (Part 2): “You Have to Take a Backseat” and Abandon the Arrogance of Expertise

Water plays a significant role in Canada’s national identity (Bakker, 2011). The network of freshwater rivers and lakes that thread their way across the landscape and into Canadians’ geographical imagination creates the illusion of abundant fresh, clean, and safe water (Bakker, 2011; Sprague, 2007). This illusion was, at least momentarily, shaken when national news networks ran the results of a 2008 report published in the Canadian Medical Association Journal, which noted the existence of more than 1,700 active boil water advisories across the nation, some of which have persisted for years (Eggertson, 2008). While shocking to some, the media frenzy sensationalized what has been a common occurrence for a significant number of Indigenous (First Nations, Inuit, and Métis) communities in Canada for quite some time (Mascarenhas, 2012; White, Murphy, & Spence, 2012)—not to mention Indigenous communities around the globe with similar histories (e.g., McOliver et al., 2015; Rigby, Rosen, Berry, & Hart, 2011; Salmond, 2014).

The commonness of occurrences like these, however, does not make them acceptable in a just society. The obvious question they pose is: Why are these occurrences so common? The answer is similarly obvious, but by no means uncomplicated. Despite increases in funding to support infrastructure “solutions” designed to address ongoing water crises in Indigenous communities, significant disparities persist between Indigenous and non-Indigenous communities in Canada. This problem is by no means exclusive to Canada—indeed, it is part of a global crisis. While most of the 2.4 billion people without access to sufficient sanitation reside in the Global South (World Health Organization [WHO], 2017), water quality and quantity disparities in Indigenous communities of the Global North demonstrate that this is not a “far away” problem, though it has implications for populations across the globe. Financial investment in infrastructure is certainly necessary here as well, though it cannot sufficiently address the real problem: the systematic marginalization, or outright disavowal, of the critical role that Indigenous knowledge systems must play in addressing this crisis—a crisis that is, in part, born of the ill-conceived notion of Settler colonial¹ institutions, government agencies, and scholars that Western knowledge systems and solutions are universally useful or applicable (Mascarenhas, 2012; McGregor, 2012; White et al., 2012).

In recent years, it has become increasingly apparent that Western knowledge, science, and technology are not addressing water issues and water-related challenges (e.g., increased risk of flooding, ineffective wastewater treatment, and agricultural and industrial draws on watersheds) in Indigenous nations and other communities in Canada (Canadian Water Network, 2013; Health Canada, 2015; Mascarenhas, 2007; Sanderson et al., 2015; White et al., 2012). As a result, the Canadian Water Network (CWN)² issued a call for proposals in 2014 for a study that would (a) identify and assess the most promising water research and management practices involving Indigenous and Western knowledge systems and

¹ Settler colonialism names a formation of colonialism whereby, as Wolfe (2006) has explained, settler colonizers come to stay and “invasion is a structure not an event” (p. 388). It is exemplified in the ongoing state building actions of nations such as Canada, the United States, and Australia and their relations to the Indigenous populations over whose territories their nations claim sovereign rule.

² The CWN is a Network Centre of Excellence in Canada, established by the three federal granting agencies for research, which encompass the natural sciences and engineering, the health sciences, and the social sciences.

(b) explore associated challenges and opportunities through a systematic review of the literature, so as to inform and transform water management practices in integrative ways.

Our team was funded by CWN to carry out this work. Drawing on the principles of community-based participatory research (Castleden, Sloan Morgan, & Lamb, 2012), we established a National Advisory Committee (NAC) comprised of Western-trained Settler³ water experts and Indigenous knowledge-holders to join us in our own co-learning journey by co-creating our research design. Our design included holding a National Water Gathering to seek a broad range of perspectives from additional Indigenous and non-Indigenous water researchers, managers, and integrative knowledge practitioners about what to include and what to look for in our systematic review of the literature.

In Part 1 (Castleden et al., 2017), we reported on our review of the academic and grey literature concerning integrative Indigenous and Western approaches to water research and management in Canada. Our methodological approach involved identifying 279 relevant documents. After a careful review, which was based on rigorous inclusion criteria, 63 were subjected to a systematic and realist review. Our reporting tool included six broad categories:

- a. Descriptive data;
- b. Context (that is, under which context(s) water was considered or discussed);
- c. Research purpose, which, when further analyzed, revealed five general areas (integrative approaches, relationships to water, institutional arrangements and capacity, water governance, and drinking water–human health connections);
- d. Approaches (that is, what methodologies were employed and/or discussed within the literature);
- e. Integrative knowledge approaches that were employed and discussed; and
- f. Cited outcomes.

Our analysis revealed two broad themes across this body of literature:

- a. The recognition that tokenism is no longer acceptable practice, and
- b. The development of respectful nation-to-nation relationships in water research, management, and policy is needed.⁴

Our systematic and realist review was intended to capture the breadth and depth of integrative water research and management in Canada.⁵ Perhaps unsurprisingly, in doing this review we identified

³ By Settler, we mean any non-Indigenous person living in Canada—whether through ancestral or contemporary immigration to this country over the past 500 years—who, through intentional or unwitting actions, have dispossessed Indigenous Peoples from their lands and now inhabit their territories.

⁴ These findings are discussed in detail in Part 1 (Castleden et al., 2017).

limitations, one of which we have attempted to overcome in this article. We recognized both that there are constraints regarding what can be conveyed in publications, as well as the reality that some exemplary work in this area may never be published. Thus, we decided to reach out to the first authors (typically academics) of exemplars in this field to conduct semi-structured qualitative interviews with them and their community partners. The purpose of these interviews was to explore respondents' experiences of undertaking integrative work and the strategies they used to conduct research. In the following section, we explore how assumptions regarding the most basic categories of inquiry can (most often unintentionally) reproduce deep forms of colonization. Specifically, we examine how different ontologies of water (that is, fundamental assertions regarding the being or existence of water [e.g., water is sentient; water is inert]) are constitutive of different ways of relating to water. Moreover, we examine how, in a Settler colonial society structured through uneven relations of power, one knows water has an important effect on the allocation and enactment of roles in collaborative research partnerships. Finally, we begin to sketch what a relational ontology for thinking about water might look like, and how it could inform new ways of both relating to water and to each other through research.

Methods

We developed an interview protocol in collaboration with our NAC in order to generate appropriate questions to solicit respondents' perspectives on the "effectiveness" of integrative approaches to water research and management. Semi-structured interviews are common in qualitative research as they allow researchers to understand a respondent's point of view and lived experiences, and to go in unanticipated directions as the interview unfolds (Denzin & Lincoln, 2005).

Interviews were conducted over the phone or Skype™ and lasted approximately one hour. Thirteen researchers were contacted and their participation was requested because they were the first authors of peer-reviewed articles that described exemplary integrative knowledge regarding water research. Of those 13, 11 consented to be interviewed. A twelfth researcher, who was recommended via snowball sampling, also consented to be interviewed. We had originally hoped that study respondents could put us in contact with their community partners so we could engage with Indigenous community co-researchers' perspectives, but this quickly became untenable. In many cases, a significant period of time had passed between the completion of the published studies and our study, and we realized that community-based partners' time and resources were either committed elsewhere or the research relationship had not been maintained.⁶

To obtain perspectives from community knowledge holders, we turned to the NAC and received the names and contact information of individuals that NAC members knew had experience as community-based co-researchers. As such, interviewees were not all necessarily related to a specific project that was included in the systematic realist review, but are regarded as Indigenous knowledge holders or have community-specific expertise about water (research, management, or relationships) from Indigenous

⁵ We view integrative water research as research that embodies the ideals of ongoing knowledge co-creation between Indigenous and Western knowledge holders (Bartlett, Marshall, & Marshall, 2012; Bartlett, Marshall, Marshall, & Iwama, 2015).

⁶ We recognize the contradiction that this presents regarding understanding "research as ceremony" (Wilson, 2008), relational ethics (Castleden et al., 2012), and friendship (de Leeuw, Cameron, & Greenwood, 2012).

perspectives. In the original and adapted recruitment process, we sought this method of purposive sampling to recruit interviewees based on specific experience and knowledge that could respond to the project's inquiry (Patton, 2002). Twenty-five knowledge holders or community researchers or partners were contacted, and 11 consented to being interviewed. Each interviewee was given the option of reviewing their transcript for accuracy and to review their quotations in the context they were used in the project's final report.

Interviews were transcribed verbatim and analyzed using a thematic analysis (Guba & Lincoln, 1994). While the goal of the research and the advice from the NAC framed our interview protocol and guided our coding process, we also employed data-driven coding (DeCuir-Gunby, Marshall, & McCulloch, 2011; Weston, Gandell, Beauchamp, McAlpine, Wiseman, & Beauchamp, 2001). Interview transcripts were coded and analyzed by three research assistants and our project manager, who was responsible for maintaining the codebook (an efficient practice as suggested by MacQueen, McLellan, Kay, & Milstein, 1998). The codebook was maintained through an iterative process; as insights about the data were reached, they were included in the codebook with detailed definitions so as to increase consistency among the four coders (DeCuir-Gunby, et al., 2011).

Findings

Our analysis resulted in three overarching themes:

- The elucidation of a more-than-science relationship to water that many of our participants held or encountered in their co-learning journeys,
- The perpetuation of colonially-inscribed roles in water research and management, and
- Moving forward for a shared future relationship with water and with each other.

Each of these themes is described below with representative quotations from respondents (R#=Researcher; C#=Community Representative).⁷

Fluvial Intimacies: Expansive Understandings of Water and Water Ontologies

It became apparent early in the interview process that respondents had understandings of water that extended beyond the dominant abstraction of water as merely H₂O. An Indigenous community representative succinctly captured this notion, stating: “when someone else looks at the land they see trees and water. But it means a lot more to us” (C5). The meaning of “a lot more” was expressed in a number of different ways by other respondents. For instance, many Indigenous community representatives described how water is fundamentally constitutive of place:

A lot of the water systems that we do use at our cabins have been used for hundreds of years . . . There is a connection, but where the water is always running it's always different, but you know

⁷ To maintain anonymity, we have neither specified respondents' gender nor identified institutional researchers as Indigenous or Settler, given the small pool of potential interviewees who were available to us through the systematic review (noted in Part 1; Castleden et al., 2017).

where your grandfather's probably stepped because there's probably paths walking into . . . We're probably still using the same path that he used, down and picking up our water and that. So there's always a sense of knowing where to go, and knowing who you are, and knowing that your water will sustain you. You and your family to come. (C4)

Here, water is not abstracted from the places and peoples with whom it exists in relation. Yet water remains central for subsistence, such that most Indigenous community representatives point out:

It's critical. It's transportation. It's food. It's sustenance. Water is life itself, you can't really live without it. So to contaminate it, to me, is unconscionable. (C7)

In addition, many respondents noted how water also exceeds and spills over instrumental categories of understanding. As the previous respondent suggested, water-places are often essential sites for connection to the land and to one's past and future relations. By speaking of water and water-places as playing a part in "knowing who you are," this respondent highlighted how water partially constitutes one's identity. This suggests a relational understanding of water that is far more expansive than hydrological conceptualizations of water that underpin dominant management discourses.

Respondents also expressed the notion of responsibility to water that as something that seems to greatly exceed hydrological understandings of water. One Indigenous community respondent explained:

Well, my personal interest is part of what I understand to be our cultural responsibility towards the land and the water that we, as Indigenous people, have been basically created to look after and steward and maintain protection of. And so, on a very personal level, I take that responsibility seriously. And I like to, basically, try to help educate and promote awareness to other Indigenous people as well as non-Indigenous people about what that responsibility is. (C9)

Similarly, Indigenous and Settler researchers who work and have worked with First Nations and Métis peoples addressed the ways that relations to water exceed narrow, techno-centric understandings of it. For instance, many researchers spoke about the central role of women in terms of responsibility to and for water. One researcher noted, touching once again on the intersections between water and identity, how their own identity and the source of their academic interest in water is in many ways:

. . . personal in that it was driven by my personal responsibility. And I had the Elders tell me that maybe it's my responsibility [and . . .] I feel the need that something needs to be done about this [water crisis in Canada]. (R3)

Expanding on this, another researcher spoke about the teaching they had received in a First Nations context, whereby:

. . . the responsibility for governance is something that was given to them by the Creator. It is based on, in this case, women's connection with water through childbearing and childbirth. It's something that is preserved over time. It has to do with an understanding that all things are sentient and so there is a respect for the water in the way that the water is equal to us and that

she has her own purpose for existing that's quite independent of ours, and that we need to take heed to that and respect that. (R8)

Though these quotations can in no way do justice to the expansive and varied ways in which water is understood in different Indigenous contexts, even a cursory reading of how many respondents talked about water suggests a significant tension with techno-centric, Western paradigms that are embedded in water management. Another researcher highlighted this tension when speaking about the challenges of doing truly integrative research:

So we have to be aware of the values that we also bring that are fundamentally cultural. The idea that water does not have personhood—that's really a cultural assumption that we carry with us when we conduct work as Western scientists. So we really have to do our own self-reflection and assessing our own understandings of the world and the ways in which they're informed by the culture of science and the practice of doing science. I think that in order to start in a way that is truly going to be integrative, we all have to be aware of that. (R11)

As many of our respondents suggested, this belies a fundamentally different way of thinking about relationships to water than is present within dominant management discourses; yet this difference cannot simply be reduced to a question of culture. It is at an intersection between knowledge systems where the role of power becomes apparent. As one respondent noted, in order to acknowledge how power operates:

As researchers, we have to acknowledge that the relationship between Canadian government, the Settler community—which is us—and the First Nations and Indigenous people and Inuit has been a colonial relationship. (R2)

This necessitates thinking about water “issues” as more than technical problems removed from broader social contexts. As one researcher explains:

These problems are not simply technological problems or problems about knowledge integration, but they're fundamentally problems about power and about the state's refusal to acknowledge and respect Indigenous communities' responsibilities for water, alongside the ongoing processes of colonization, where there's kind of a lack of recognition of the historical injustices that have often perpetuated some of these water crises or instances of concerns around water. It's a recognition that it's part of a larger history of colonialism rather than just a problem that kind of emerges out of the blue that somehow effects Indigenous communities disproportionately, or a technical problem, right? . . . There are wider problems that involve power and are related to wider forms of colonization. (R11)

Statements such as these, it should be reiterated, are more than a matter of opinion. Rather, they are rooted in experts' experiences of witnessing the ineffectiveness of attempts to address emerging water crises without considering the historical and geographical contingencies that have been central to producing our contemporary reality. Eliding the broader socio-political contexts in which current water crises arise is to compartmentalize the nature of these crises in such a way as to exclude historical and contemporary settler colonialism and the role of Settler colonial states and societies in the creation of these problems. In contrast, speaking of fluvial intimacies is both a provocation and a means of

characterizing relational ways of thinking about water that open up to the mutually constitutive entanglements through which water, people, and non-human animals shape each other. Bodies move through water, and water moves through bodies; each leave traces of their passing. Water flows play, have played, and will always play a pivotal role in shaping the physical spaces people inhabit as well as the social relations that underwrite peoples' political, economic, and health landscapes.

Stakeholders and Experts: The Settler Colonial Performativity of Management Roles

Narrowly framing water issues as a technical abstraction and assuming the primacy of Western analytic categories also entails the assumption of specific roles within the process of engaging with water issues. Respondents commonly affirmed that (other) researchers, managers, and policy makers tended to view First Nations, Inuit, and Métis groups involved in research concerning water not as rights-holders, but rather as one of many stakeholders within a project; this meant that they often did not engage with Indigenous knowledge systems in the same way that they did with Western knowledge systems. In this sense, what could pass for progressive processes were instead deeply political truth claims, which assumed (and thereby reinforced) both the legitimacy of the Settler state as the rightful sovereign over land and waters and Western (i.e., scientific) knowledge over other knowledge systems. As another researcher observed:

There's a common assumption that First Nations are [only] stakeholders. Many people believe in earnest that that's a really progressive step forward[,] is to be including First Nations in this conversation. But viewing First Nations as just one of many *sui generis* stakeholders, rather than the ones with the rights to those lands, is nowhere near the level of understanding or respect that's needed to create a relationship where something could be done in terms of real action. (R7)

Within a historical context that has actively excluded Indigenous Peoples from decision-making processes for generations, opening space at the research or negotiation table for Indigenous people as stakeholders may seem progressive. Yet, it ignores, and works to erase, the fact that First Nation, Métis, and Inuit peoples “[are] . . . Indigenous nation[s] whose land is unceded” (R7). The same respondent went on to say that: “I think that if you're treating [Indigenous Peoples] like stakeholders on their own land, progress will stagnate” (R7). Indeed, the concept “stakeholder” is itself an exogenously imposed category that presupposes a limited range of acceptable behaviours. It also sustains a hierarchical set of distinctly Western relationships that privilege state sovereignty and Western science. It is such a worldview that makes the following a reality:

Federally and provincially they're pretty biased in terms of a preference towards quantitative data . . . in their decision making. And those decisions they're making based on that one kind of evidence and that one kind of truth impacts people that don't necessarily identify the same way with that truth. They've got policies in this country founded and based and supported and justified from one knowledge system that are influencing and very directly impacting the lives of the First Peoples of this country. (R9)

The effects of water management decisions that are made with “one kind of evidence,” and that produce “one kind of truth,” work to delineate both the nature of the “problem” and the nature of the “solution”

in ways that legitimize and privilege Western science and a Western knowledge system. Moreover, doing so results in missed opportunities:

Indigenous knowledge . . . more than really trying to understand objects, [it] attempts to understand relationships, and this is what tends to be often missed in Western knowledge. When we break down systems into small pieces, we also tend to remove some of those complex relational things that in a sense, make the system behave the way it does. (R2)

Indeed, as many of our respondents noted they had witnessed, even progressive efforts that have sought to include Indigenous knowledge systems in water research and management practices are often woefully inadequate:

I find a lot of the so-called efforts to integrate Western science and traditional knowledge are very much of that flavour. When you look at what integration means, it's like the really important questions get answered by the biologists, and then there's this thin, sort of politically correct layer of Indigenous knowledge that gets put on top of it. And I think that's a bullshit kind of approach. (R4)

Aside from being critical of tokenistic engagement with Indigenous Peoples and their knowledge systems, the above quotation also represents a growing awareness on the part of Settler researchers that different ontological positions are often reduced to multicultural differences, whereby Western researchers and state institutions accommodate Indigenous difference by opening a small place at the decision-making table. While this could be seen as an improvement from the repressive use of state power that has historically sought to disavow and bar Indigenous presence at such tables, it is more insidious than that, and it remains deeply problematic. As one researcher pointedly noted:

There's also that power dynamic of sitting in a room, being not only a minority in terms of number, but also being a minority in terms of the type of system of thinking that you have and not feeling comfortable talking about that. So, Indigenous knowledge is [often] left out for that power difference as well. (R7)

What this respondent is alluding to is how disciplining modes of power function so that Indigenous Peoples must make their difference transparent and accessible to state actors, Western scientists, and/or environmental managers. In these contexts, difference is exploited as the foil against which another knowledge system is taken for granted as the "norm." The requirement for Indigenous Peoples to present their difference in a manner that is recognizable to the Western gaze in order to be heard was a theme which materialized in a variety of different ways throughout our research (interviews, literature, Water Gatherings, and NAC conversations) and speaks to the subtlety of contemporary colonial power relations. An oft-cited example by respondents noted differences between "rights to water" and "responsibilities for water." For example:

Yet I do agree with the idea that inherent rights come to mind and the fact that I'd rather say inherent responsibilities. That's what the Elders talk to me more about. Although they'll use the term "rights," they try to shun away from it. So, these are responsibilities . . . Once we put it into inherent rights, we're starting to get in . . . I feel and I think this has been communicated to me, we just move it into the legal realm. And we can sometimes be a little narrow once we start

talking rights. But certainly all of the Indigenous communities and people that I've spoken with are really obviously moving into that narrative because it's the narrative that resonates well within Canadian policy. (R3)

Many respondents noted similar tensions; given the nature of relationships to water and how water was thought of at an ontological level, thinking and acting in terms of responsibility was deemed more appropriate than thinking and acting in terms of "rights." However, given the necessity of engaging with the Settler-colonial state, many Indigenous Peoples have had to engage in rights-based discourses rather than responsibilities-based discourses, lest they risk being invisible to the Settler state (Moore, von der Porten, & Castleden, 2016).

Relations and Difference: Moving Forward Together

Despite the ways that historical and contemporary colonial relationships between Indigenous nations and Settler society in Canada have shaped narratives of responsibility to water into discourses of natural resource management, both Indigenous and Settler respondents in this study still held considerable hope for developing novel approaches to integrative water research.

There is recognition of the value of science in protecting health in deciding quality of food and water that is outside the scope of traditional ability. And on the flip side, there are a huge number of examples of where Inuit knowledge had informed research, identified trends or factors that scientists had overlooked that led to improved research in many different ways. (C2)

Developing such approaches, however, requires asking the right questions, not the same old (Western) questions that insert (tokenistic) Indigenous responses with puzzlement afterwards about why it (e.g., technological solution, policy, program, etc.) did not work. All respondents were aware of the considerable work required to begin the process of decolonizing research relationships:

So, you know, the old cliché of "it all starts with political will." I think it is going to take the will of those involved in those areas to recognize that [there] has been some pretty fundamental ethnocentric, Western ethnocentric, superior assumptions made about how research gets done in our communities. And to try to re-inform and re-educate about how that process should really happen in terms of human being to human being. That is a pretty fundamental process that needs, and would need to be implemented at different levels because obviously whether you are talking about government or the academic institutions, there are some pretty entrenched folks who have no time, nor interest, in trying to capture a new worldview on how research gets done. (C9)

Colonial subjectivities run deep and Western frameworks for understanding the world remain hegemonic when it comes working with water. Speaking about the necessity for processes of co-learning towards understanding that more than one knowledge system exists and can help us (all) think about and relate to water differently, this respondent alluded to the power of building relationships across difference in order to develop more expansive understandings of the various water crises in which we find ourselves embroiled. As an Indigenous community representative noted, this is hardly a simple task:

When you and I each have our own worldview, and while we accept knowledge that other worldviews exist and that they may have value, it can be really hard for us to step outside and really understand what the other is about. And you know, maybe we'll convince ourselves that we do understand—and that can be damaging sometimes—or that we don't need to understand. I think that is the biggest challenge. (C6)

Co-learning about others' knowledge systems is always a social process and never an endpoint in and of itself. More than attempting to grasp and fix “what the other is about” (which we will discuss as a form of epistemic violence below), to “step outside” of one's worldview involves re-thinking how we have come to know our own knowledge systems. Given that many, if not most, Indigenous Peoples are accustomed to living in two worlds, what this really means is Settlers accepting that aspects of Indigenous knowledge systems will not be translatable or fit into the boxes of mainstream Western approaches to water research and management and that extracting pieces to incorporate into management efforts is not just inappropriate, but colonial. An Indigenous community representative succinctly underscored this point:

The fact [is] that it is status quo, it is mainstream for [Settler] academics to have to be able to access Native Traditional Knowledge or Indigenous Traditional Knowledge. We need to find a way to change the energy in that relationship because it is set up as a giver and a taker, and we need to get to a point where both give and both take. That sense of reciprocity is pretty much found throughout our natural laws—universal laws, that many, if not most of our cultures are based upon. (C9)

Researchers, Indigenous and Settler alike, noted a number of ways by which to begin re-orienting research relationships towards reciprocity. Multiple respondents noted the importance of abandoning the conceit of considering oneself an expert in order to develop a sense of humility and an ability to listen. One noted, for example:

You have to take a back seat to start. You have to listen. Too often, people come into an Indigenous community, and they want to talk. They want to lecture away at people, or they have solutions. And I think you really have to take this slower approach in terms of going in and listening first, right? (R6)

Similarly, several respondents noted the value of openness and getting to know the communities with whom researchers work (and likewise, communities getting to know researchers) so as to gain insights and understandings that can benefit integrative water research projects:

I think coming in with an attitude that you're open to anything [is important]. You don't mind trying new things, you don't mind . . . like, get out in the community. Don't just come in, stay in your hotel room, come to the office in the morning, leave again at 4:30, and stick in the hotel room. Get out in the community, see what activities are in the community. If you want to play hockey, or if there's a sewing group, just go. It's a way to connect. (C4)

Another widely discussed insight was the importance of creating spaces that facilitate more equitable modes of relationality:

One way of looking at it is just even the assumption that we “sit down” to talk about something. Venue is one thing that could change. In some cultures, for example, decisions are made out on the land, and people talk as they are doing whatever they’re doing, be it gathering or moving around from one location to another, hunting—whatever it is. Just that process of who makes decisions and when and how it’s discussed differs. So sitting down in a boardroom immediately biases the conversations to a Western way—like sitting in a room, indoors and holding a meeting with Robert’s Rules. That is only one culture’s way of doing things. (R7)

While small, the acts listed above all work to unsettle the power relations that have dominated Indigenous–Settler relationships in water research and management. Rather than merely offering Indigenous Peoples a “place at the table” at which mainstream ways of conducting research and management are discussed, one respondent noted that we need to work toward a complete shift in how we approach this kind of work:

Talk about changing the premise, right? It’s none of this nonsense about, “Well, what if we saved a seat at the table for our Indigenous partners?” It’s, “What if we take the table and go, Huff! New table?” So they start it over. (R4)

When we begin to think about water and water management as more than a narrowly conceived technical problem, possibilities for growth, change, and healing emerge both within and across Indigenous and Settler communities:

Because of the fact that, even though we are known as people of [place name removed], and much like what has been referred to through the Truth and Reconciliation Commission as the tacit recognition of cultural genocide that has impacted how we actively maintain our stewardship role . . . we have to re-awaken and re-orient our own people, and especially our youth around the watershed and species and how we are to have that connection and good relationship with all of creation around us . . . To me, [Western] science and [Indigenous] Knowledge should work hand in hand, even if it seems as if they are opposing. Because I think that . . . whatever the hypothesis, the observations are, it’s only through combining the two approaches will we, as human beings, be able to fully develop our faculties and our awareness and our understandings beyond the simple, physical, equational relationship that we have with everything around us and inside of us. (C9)

All of the respondents talked about the search for ways to meaningfully relate across difference and build more expansive understandings of water. Indeed, all of the respondents suggested that, were these ways to inform our relationships and the nature of the work we carry out together, the potential for integrative approaches is available for those who are willing to enter into a lifelong co-learning journey. Per their assertions, entering these journeys will help make working with and thinking about water a way of healing our damaged relationships—both with each other and to water—that have been caused by centuries of colonialism.

Discussion

Our findings reflected that a range of Indigenous ways of thinking about water are more expansive than the dominant Western conceptualization of water as simply H₂O. For Settler researchers, Indigenous

researchers, and community knowledge holders alike, our respondents articulated a number of ways of knowing water and the responsibilities that flow from these ways of knowing. Both were articulated in relation to different Indigenous territories, are born out of teachings which arise from heterogeneous, place-based ways of knowing, and inform and are informed by the specific ontologies from which they emerge. For example, from our small sample alone we saw that for some, water is sentient, animate, and alive; for others, the places from which water flows are fundamentally connected to how people come to know themselves. For still more others, (English) words were inadequate to describe their relationships to water. Across the board, however, these ways of knowing and relating to water radically exceeded the ways in which most academically-trained (mostly Settler) researchers relate to water. This is not to say that Western-trained chemists, hydrologists, and water managers viewing water through only a Western lens are wrong to do so; rather, it is to say that reducing water to its physicality severely constrains the sorts of questions we can pose and the sorts of answers we can come up with when seeking to address water issues in integrative ways.

Similarly, respondents discussed how their experiences with various forms of collaborative water research or water management partnerships were mediated and structured by pre-established roles. Considering the categories of stakeholder, expert, and bureaucrat at an ontological level challenges any pretence to neutrality or progressiveness. These are sets of social relations with attendant Settler-colonial hierarchies that, when enacted, work to reproduce and legitimize those hierarchies as natural or inherently valuable. Scholars have noted, in manners aligned with many respondents' experiences, that being compelled to adopt such roles as a precondition of "having a place at the table" lends itself to producing colonial subjectivities (Alfred & Corntassel, 2005; Desbiens & Rivard, 2014; Howitt & Suchet-Pearson, 2006; Nadasdy, 2005). This is certainly counterproductive to integrative approaches that argue for a lifetime of co-learning (Bartlett et al., 2012).

In Part 1 (Castleden et al., 2017), we challenged researchers and managers to desist with tokenism; here, our data allowed us to take our challenge a step further. Being required to make the nature of one's Indigeneity transparent is to ostensibly compel Indigenous Peoples to make themselves and their knowledge systems "fit" into Western management practices (Howitt & Suchet-Pearson, 2006; McCreary & Milligan, 2014). Presumably, teasing out legible parts of Indigenous knowledge systems from their respective ontologies is necessary if Indigenous knowledges are to be subsumed into dominant (Western) management paradigms—particularly in a way that does not call into question the latter's neutrality and thereby legitimacy. Interviewees, Water Gathering participants, and our NAC all agreed: This is *not* the way forward.

Jumping scales, we can see parallels between the discourses emerging from co-management and collaborative contexts and Coulthard's (2007, 2014) argument of how the Canadian state's liberal politics of recognition has become the dominant discourse through which to approach Indigenous self-determination. Coulthard and others (Day, 2001; Povinelli, 2002) have argued that in order to be recognized as Indigenous by the colonial state, Indigenous Peoples must be rendered static and legible in ways "that [do] not throw into question the background legal, political, and economic framework of the colonial relationship itself" (Coulthard, 2007, p. 451). The result is a Western ontology of Indigeneity (Hunt, 2014). We draw this parallel to note that the process of incorporating Indigenous knowledges into natural resource management frameworks is bound up in much broader networks of colonial meaning making and the Western ontologies they work to maintain. There are always particular

politics at work in the act of knowledge production. Under such circumstances, the potential for Indigenous ontologies to unsettle dominant ontologies can be easily neutralized if the effects of knowledge integration are ultimately (whether unwittingly or not) employed toward the self-legitimation of colonial institutions and the colonial state. Put another way, integrative or collaborative research that compartmentalizes ideas shared by Indigenous knowledge holders works to legitimize colonial mentalities.

To avoid reproducing efforts at integrating Indigenous knowledge into Western discourse—the very issue we identify as problematic—we turned to the guiding principle of Two-Eyed Seeing. Two-Eyed Seeing, a concept introduced to the integrative sciences by Mi'kmaw Elder Albert Marshall, refers to learning to see the strengths of Indigenous knowledge with one eye, and using the other eye to see with the strengths of Western knowledge. In doing so, one can arrive at more comprehensive and mutually beneficial understandings (Bartlett et al., 2012). The creation of an advisory committee comprised of Indigenous and Western water experts to guide our research from design through dissemination allowed us to see our research “with both eyes.”

Earlier in this article, we posed the question: Why do water disparities between Indigenous and Settler peoples in Canada (and elsewhere) not only exist, but exist commonly and frequently? We suggested that technology and capital were not the solutions; rather, confronting entrenched colonialism and the privileging of Western science over Indigenous knowledge systems were solutions more likely to effect real change. From this, the question becomes: How do we carry out effective and integrative decolonizing water research—research that does not reproduce the very categories and structures we seek to dismantle? According to respondents to this study, this does not happen behind a desk. Overwhelmingly, the people with whom we spoke emphasized the importance of relationality. This means being on the ground and working with communities to co-construct engagement processes and study designs that take both Indigenous and Western knowledge systems into account. As Hunt (2014) has suggested, “this may involve becoming unhinged, uncomfortable, or stepping beyond the position of ‘expert’ in order to also be a witness or listener” (p. 31). For those schooled in Western ways of knowing, it involves fundamentally re-thinking what it means to know. But we are not seeking to replace one set of universalizing assumptions with another, nor are we suggesting the disposal of Western knowledge altogether. The researchers and community knowledge holders to whom we spoke were all eager to find new and innovative ways of implementing Western and Indigenous ways of knowing side-by-side. What is necessary is that those who have been schooled in Western traditions begin the laborious work of unpacking their own positionalities both within and beyond the research process. As we have attempted to demonstrate, thinking about how ways of knowing are both the products and constitutive parts of different ontologies can help us do this.

Limitations

The purpose of this article was to expand on our previous research that sought to examine emergent themes in academic and grey literature on integrative water research and management by interviewing the authors of that literature, so as to generate a more comprehensive understanding of the strengths and challenges accompanying integrative water research and management. This research was not without limitations, however, as only a small sample size of interview participants participated in this study. We

believe that this did not negatively impact our findings, though there is the possibility that further insight could be gained from more interviews.

Conclusion

To conclude, we must acknowledge that respondents came from a variety of different places across Canada. Some were Settlers, some were Indigenous, and we have by no means captured all worldviews. Our discussion is meant to offer an entry point of inquiry into integrative Indigenous and Western water ontologies. To do more would be beyond the scope of this article. Moreover, for many of us, these are simply not our teachings to impart. Our goal was to convey the experiences and challenges of working across difference that we hope will sensitize the uninitiated to ask different questions and more importantly to be able to hear different answers. We note that discussing Western and Indigenous knowledge systems we may have set up an illusory static dichotomy between the two; this is not our intention. While there are inherent differences between Indigenous and Western knowledge systems, all knowing systems are in constant flux and remain fluid over time with newly created knowledge and knowledge exchange. When thinking about and engaging with multiple ontologies, we all need to recognize that there are worldviews that exceed our categories of understanding. Moreover, we need to learn to hear about things that our categories cannot grasp if we are to transform our relationships to water and to each other. We must engage difference without objectifying it.

While Indigenous and Western knowledge systems can help to inform integrative research, and may at first seem quite disparate, they are not. As much as the growing engagement with co-management, collaborative partnerships, and community-engaged approaches to working with Indigenous communities on water-related issues has been an important step in decolonizing research relationships and our relationships to water, we must be cautious of the unseen political work that occurs in the move toward using Western and Indigenous knowledge systems in integrative ways in both research and management. Engaging with Indigenous knowledge holders and their knowledge systems in a manner that ignores the political, historical, and geographical contingencies from which they arise is an act of epistemic violence. As we work toward reconciling and healing our deeply troubled relationships with both each other and with the lands, waters, and air around us, having Indigenous ontologies inform both governance of and responsibility to water represents an immense opportunity for co-learning and healing.

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