

Article

# Miskâsowin: Indigenous Science, Technology, and Society

Jessica Kolopenuk

Faculty of Native Studies, University of Alberta, Edmonton, AB T6G 2R3, Canada; jak10@ualberta.ca

Received: 5 December 2019; Accepted: 20 February 2020; Published: 27 February 2020



**Abstract:** Indigeneity has been a site of relationally produced knowledge deemed *scientific* and *political*. In this article, I offer an experimental description of Miskâsowin—an Ininiw/Cree theory of science, technology, and society. This methodological piece is part of an overall project that seeks to understand how changes in technoscience often correlate with changes in the relationships and biotechnologies that colonial nation-states and their citizenries, scientific fields and their researchers, and bioeconomies and their consumers use to form themselves through, in spite of, and (sometimes) as Indigenous peoples. Creating Indigenous theories of the technosciences that affect them is disruptive of colonial ontologies of knowledge and sovereignty. Miskâsowin is part of an emergent subfield of Indigenous Studies: Indigenous Science, Technology, and Society (I-STs). I use this framework to map partial connections whereby Cree concepts of tapwewin (truth-telling), miskâsowin (finding one's core), and misewa (all that exists) resonate with relational academic theoretical frameworks including that of Pierre Bourdieu, Michel Foucault, and Aileen Moreton-Robinson. I do so in ways that are uniquely adapted to my (the researcher's) relationships (and the genealogies that they are routed through) with genomic knowledge and indigeneity; with the scientific and policy fields in Canada (and beyond); and with my own research/er integrity.

**Keywords:** Indigenous Studies; Indigenous methodologies; Indigenous science, technology, and society; Indigeneity; Ininiwak/Cree Peoplehood; relationality

## 1. Introduction

Historians of colonial science have posited a historically located relationship between the development of what is now considered modern science and the technoscientific advances indelibly marking “western” civilization with European imperialisms and colonialisms (for instance [Schiebinger 2004, 2005](#); [Harris 2005](#); [Harrison 2005](#); [Adas 1989](#); [Headrick 1981](#); [Brockway 1979](#); [Wallerstein 1976](#)).<sup>1</sup> Further, Indigenous Studies scholars ([Arvin 2019](#); [Munsterhjelm 2014](#); [TallBear 2013](#); [Bastien 2004](#); [Cajete 2000](#); [Deloria 1995](#)) have located modern sciences and technologies among an ongoing colonial system, which working in tandem (and, at times, in tension) with other institutionalized fields, operate through power relations that tend to rescript Indigenous peoples' knowledges of their existence *as* peoples. In response, Indigenous peoples are producing methodological frameworks capable of analyzing from their own standpoints science and technology projects that affect them. This work is part of a growing network and subfield: Indigenous Science, Technology, and Society (I-STs). The creation of Indigenous approaches to analyses of the sciences and technologies that

<sup>1</sup> For instance, advances in astronomy and thus navigation in addition to developments “in oceanography and climatology, in cartography, botany, agricultural sciences, geology, medicine, pharmacology, weaponry, and other fields” ([Harding 2008](#), pp. 136–37) were produced in relation to European colonial exploration and expansion. As [Byrd \(2011\)](#) explains of Captain Cook's Pacific voyages; “Launched under the auspices of scientific discovery . . . Cook's initial mission to record the transit of Venus inaugurated a wave of Pacific invasion” (p. 2).

affect Indigenous *and* non-Indigenous peoples and territories is disruptive to colonial ontologies of knowledge and sovereignty.

This article explores a set of methodological relations capable of guiding a critical Ininiw (Cree) theory of genomic indigenities. On this front, the article is a methodological contribution that is uniquely adapted to my (the researcher's) relationships with genomic knowledge and indigeneity; with the scientific and policy fields in Canada (and beyond); and with my own research integrity. In particular, I explore and express the theme of genealogy through a language of relationality. I offer Miskâsowin: an Ininiw (Cree) theory of science and technology, which is part of an emergent set of methodological approaches in a subfield of Indigenous Studies: Indigenous Science, Technology, and Society.

The relationships sketched out by the above cited Indigenous Studies scholars indicate that they think about science and technology fields (technoscience) and colonialism together. This relational framing is analytically evocative. Colonial ideas about race, sex, gender, reason, and property have concurrently framed Indigenous peoples as objects of scientific curiosity and as experimental material, rather than as producers of knowledge; as primitive peoples to be civilized through western education, rather than as innovators of complex cultures and societies; and as wards of nation-state governance, rather than as sovereign nations and self-determining peoples. There is, however, little research (exceptions include, [Arvin 2019](#); [TallBear 2013](#); [Deloria 1995](#)) that interrogates the relations through which scientific knowledge production, the institutionalization of science and technology fields, and national science policy programs have been produced and sustained within the formation of Anglo-First-World nation-states (e.g., Canada, the United States, Hawai'i, Guam, Australia, and Aotearoa/New Zealand).

The concept of indigeneity, in its various iterations (e.g., in Canada, legally defined Indianness or constitutionally-defined Aboriginality) relies on haecceities (i.e., the thingness of a thing) of racialized/ing-gendered/ing bio-symbols (e.g., blood quantum or genetic notions of "Native American DNA") that epistemologically and materially pervert and reorder Indigenous peoples' relations to place and to each other.<sup>2</sup> Modern knowledge production that has been formative of scientific fields has re/iterated Indigenous peoples, in no small measure, as not being reasoned enough to produce valid knowledge, to run real governments, or to own land (and our more recent inclusion into the category "human" has not transformed such relations). As such, "indigeneity," in empirical and heuristic forms, has been a site of exchange between relationally produced knowledge deemed *scientific* and *political*.

Indeed, knowledge of racial, and then species purity has conditioned practices of territorial and political invasion and dis/possession as being *natural* and, thus, just ([Horsman 1986](#); [De Gobineau, M. A 1853–1855](#); [Von Linné 1767](#); [Buffon 1749](#)). To put it differently, colonialism involves the re/iteration and regulation of bodies deemed *Aboriginal*, *Native American*, or *Indian*, etc., insofar as formalizations of racialized/ing-gendered/ing difference, nation-state citizenship, legal personhood, and, more recently, biological variation have been predicated on how possessive and exceptional subjects and nation-states are different from those ascribed to (an) iteration(s) of indigeneity. Manifest destiny was and is manifestly racialized/ing-gendered/ing. This is all to say that scientific fields in countries like Canada, but also, other Anglo-First World nation-states have contributed to building colonial multiverses

---

<sup>2</sup> I want to manipulate the reader's rhetorical relations by conceptually deprivileging race and whiteness (because the patriarchy of whiteness too often gets left out). For example, when I conceptually discuss patriarchy, I mean also whiteness, and when conceptually discussing gender and sex, I mean also race. These concepts themselves are not to be used interchangeably and thereby create a sense of analytical relativism. Rather, my intention of terminologically reinforcing the reciprocal existences of racialized/ing-gendered/ing relations of power (even, and especially that it is a word salad), is to play with and challenge the thinking shortcuts that we often take and which filter out consideration of the relational re/productions of race and gender, patriarchy, and whiteness. I am asking the reader to challenge themselves to think also of race and whiteness when they see the terms, gender, sex, and patriarchy; and to bear with me as we work our way to new-ish conceptual languages.

whose troubled histories nevertheless inexorably condition the creation of innovative knowledge in the 21st century.

Among the most rapidly expanding knowledge marking 21st century contexts and transforming the way that research is done in the life sciences is genomic knowledge (Reardon 2005, p. 3). Broadly put, genomics—a loosely tacked field whose shape is finding form through advances in biological sciences—is drawing academic, industry, and public policy attention toward bio-based resources, technologies, and economies. Over the past decade, increasing resources have been poured into DNA-based research in most modern industrial countries. In Canada, for example, Genome Canada receives on average \$63 million per year in federal funding (Naylor 2017, p. 6).

For Indigenous peoples, genomic biotechnologies matter. Far from remaining within their perceived field of production, genomic re/iterations of species and populations are rapidly affecting the ways that policy-based solutions to contemporary governance problems are being determined (Subramaniam 2014).<sup>3</sup> Further, they are relocating political struggle to strange new sites like along flows of data (Nakamura and Chow-White 2012) and scales of temperature (Radin and Kowal 2017). For Indigenous peoples, the study of DNA, whether it is done to, for example, identify a missing person, to search for genetic factors of disease, or for mapping ancient human migrations, has been ascending as the fields of science, politics, law, and capital continue to be defined by power imbalances in which Indigenous peoples are not often in governing control of the policies and knowledge that affect them (Leroux 2019; Kolopenuk 2018; TallBear 2013; Berthier-Foglar et al. 2012; Hinterberger 2012; Kohli-Laven 2012; Harry 2005; LaDuke 2005). Biotechnologies that are predominantly owned and governed by non-Indigenous peoples, governments, and institutions are re/configuring the concept of indigeneity. As such, genomic re/iterations are not a revolution in scientific knowledge/practice, but rather, they are shaped by and re/shape the others: Indian, Aboriginal, Native American, etc. Together, these re/iterations operate in relationship to a more-than-state-based system of coloniality that tends to dislodge and reorder the relations that moor Indigenous peoples to self, place, and kin (or at least, they try to!).<sup>4</sup>

For as long as genome sciences have been emerging, Indigenous peoples have been engaging with their implications. In response to scientific efforts to collect, sequence, store, and patent genetic material, there was a surge of critical scholarship that emerged following the launch of the Human Genome Diversity Project in the late 1990s and early 2000s (Barker 2002; Harry 1993; Dodson and Williamson 1999; Cunningham 1998). More recently, Indigenous peoples are developing or influencing scientific procedures and policies to govern the genome sciences that affect them (Bardill 2017; Bolnick et al. 2012; Garrison 2012; Taniguchi et al. 2012; Mello and Wolf 2010; Cunningham et al. 2007; Arbour and Cook 2006; Fong et al. 2006). Others have connected the governance of genomics with concerns over multicultural interactions between Indigenous and scientific cultures (Malhi and Bader 2015; Tsosie 2007; Bowekaty and Davis 2003; Foster and Sharp 2000). Lastly, others have paid particular attention to reconfigurations of nation, conceptually understood, and national politics, empirically practiced with respect to genomic narratives of race, gender, and hybridity (Wade et al. 2014; TallBear 2013, p. 46). Extending the work of these critical studies, I add that necessary Indigenous governance among

---

<sup>3</sup> Dhamoon (2009) conceptually refers to “identity/difference” rather than “identity” in order to denaturalize relations of liberal identity politics and exposing the relations of power that produce, organize, and regulate meanings of difference (p. 2). In my discussion of re/productions of indigeneity, I am purposefully not discussing “identity.” Rather, I am discussing relationships (structured/structuring through relations of power) that are generated through identity claims and that act to reorder Indigenous peoples’ articulations of peoplehood into identity-based categories.

<sup>4</sup> Expressing re/productions or re/iterations of indigeneity as such is meant to leave analytical and visual space for examining the empirical specificities with respect to the ways that these productions on one hand, do not wholly and independently exist, but on the other are nonetheless articulated in epistemologically distinctive ways and through distinctive relations of power. Put differently, although internal dynamics among fields of knowledge production do not exist completely independently of other fields and therefore do not constitute social reality on their own, they nevertheless “refract symbols, meanings, and identities already in circulation elsewhere” (Andersen 2011, p. 49).

technoscientific fields and projects includes the development of critical Indigenous theories of, and methodologies that are used to engage them.

## 2. Critical Indigenous Theory

In the 1960s and 70s, Indigenous sovereignty movements took place in mostly First World Anglo nation-states where, unlike in other parts of the imperial World, British (and to a lesser degree French and Iberian) colonizing powers transformed into nation-states (like Canada, the United States, Hawai'i, Aotearoa/New Zealand, and Australia) that never stopped occupying and claiming formal sovereignty over Indigenous homelands (Moreton-Robinson 2016). Among these movements, Indigenous intellectuals saw universities as major pipelines fueling colonial projects of appropriation and misrepresentation, which equally buttressed colonial projects of state-craft. These intellectuals (e.g., Vine Deloria Jr., Jeannette Henry, D. Scott Momaday, Olive Dickason, and others) wanted “a seat at the table . . . a primary seat as transformationists within the bounds of scholarship” (Cook-Lynn 1997, p. 22). Their combined efforts led to the eventual formalization of Indigenous Studies, in its regional manifestations, as an academic discipline over the past sixty years (Native Studies in Canada, American Indian Studies in the U.S., Maori Studies in Aotearoa, Kanaka Maoli Studies in Hawai'i, and Aboriginal Studies in Australia).<sup>5</sup>

Resistance against the *ongoing* colonial dis/possession and thus incomplete settlement of Indigenous homelands by Euro-descendant nation-states, their citizenries, and economic markets demarcates the intellectual and institutional foundations of Indigenous Studies. By prioritizing Indigenous peoples and their experiences, knowledges, and stakes in research, the Indigenous Studies project has been connected to the defense of Indigenous sovereignties, territories, economies, and rights (Andersen and O'Brien 2016; Moreton-Robinson 2016; Kulchyski 2000; Dei et al. 2000; Smith 1999, 2013; Cook-Lynn 1997). Among and formative of Indigenous Studies has been critical Indigenous theory, which has emerged to disrupt, from Indigenous standpoints, “the certainty of knowledges produced in the twentieth century, when the study of Indigenous peoples was largely the knowledge/power domain of non-Indigenous scholars” (Moreton-Robinson 2016, p. 3). Further, Byrd (2011) defines critical Indigenous theory as the conversation between Indigenous epistemologies and phenomenologies with critical theory. It provides, she maintains, “a diagnostic way of reading and interpreting the colonial logics that underpin cultural, intellectual, and political discourses” (Byrd 2011, p. xxx). Indigenous methodologies include critical Indigenous theories (among also the researcher's standpoint and methods) (Walter and Andersen 2013). Moreton-Robinson (2015) explains that research done by Indigenous scholars should be about operationalizing our “Indigenous-embodied knowledge” (p. 4) (including *all* of the knowledges and methodological tools that might be helpful to us) in order to “develop and define our intellectual projects, theories, and methodologies” (p. xviii). But, we do not do any of this on our own. Rather, relations theorize relations.<sup>6</sup>

From this intellectual and institutional genealogy, Indigenous STS seeks to build capacities of mostly non-Indigenous institutions (academic, private, and public) through, and in support of, Indigenous expertise, scientific, and otherwise. It is engaged in building the capacities of scientific fields so that they are capable of producing and backing highly interdisciplinary, relational, and Indigenous research and training approaches. Further, its practitioners explore how Indigenous peoples' engagement with science and technology fields, when done in and on their own terms, can support their communities and territories.<sup>7</sup> Indigenous STS is also an international network

<sup>5</sup> Elsewhere (Kolopenuk 2020) I discuss the tensions between Science and Technology Studies and Indigenous Science, Technology, and Society Studies. For the purpose of this article, I take the opportunity to elaborate on the field, Indigenous Studies, which has primarily nourished the development of Indigenous STS.

<sup>6</sup> For more on Indigenous methodologies see (Geniusz 2009; Absolon 2011; Steinhauer 2002).

<sup>7</sup> Dr. Kim TallBear is a recognized leading scholar in the fields of Indigenous Studies and Science and Technology Studies. She was recruited through a Canada Research Chair to UAlberta to build this area of research in the Faculty of Native Studies. In 2016, I was subsequently recruited by the Faculty of Native Studies as a pre-doctoral fellow and then as a faculty

of students, scholars, practitioners, and community members that supports research and training for Indigenous peoples in the technosciences that affect them. Indigenous STS asks questions like: how do the logics of nature, exploration, and discovery, and the scientific and political technologies that they bring to bear impact bodies, peoples, relationships, relatives, and spaces? How have political and scientific philosophies of humanness, morality, legal personhood, and citizenship come at the expense of Indigenous peoplehoods and through re/iterations of indigeneity? And further, how can we disturb assertions of assumed geopolitical dis/possession to territory and the exceptionalism of academic freedom to reconfigure balanced relationships with each other and with *misewa* (all that exists)? In asking questions like these, Indigenous STS is not anti-scientific, but rather, considers how engagement *with* technoscientific fields by Indigenous peoples and from dynamic approaches might support Indigenous ways of relating in and with localities of that which exists.

As I present it in this article, Indigenous STS is analytically productive and can be used to formulate Indigenous methodologies related to the study of science and technology fields. By generating methodological relations that are uniquely adapted to Indigenous researchers' relationships with technoscientific knowledge and fields, Indigenous STS dislocates historical patterns that would otherwise continue to limit Indigenous peoples as being subject to, rather than the ones shaping modern technoscientific fields. For many Indigenous peoples, engagement with science and technology fields is not a project devoted to reconciliatory politics that seek to include us without disturbing the territorial, political, and morally inflected claims of nation-states and their citizens, research institutions and their researchers, and bio-economies and their consumers to possess our territories and to study our bodies while controlling the bioethical principles, protocols, and policies for doing so. Rather, we are peoples with distinct and shared territories, governance systems, and a *sui generis* relationship with those who continue to make their homes in our homelands. Indigenous STS reorders the racialized/ing-gendered/ing epistemologies that loom across time-spaces of coloniality and that would continue to maintain colonial sovereignties and dis/possession through re/iterations of indigeneity.

In large part, I theorize what genomic knowledge means for indigeneity in Canada and, also, what Indigenous knowledge can mean for genome sciences and policies. I focus on genomics because of the intensification of its impact on science, but also policy fields insofar as they are re/making indigeneity through molecular materialities. In particular I am interested in analyzing ways that the biological matter of Indigenous peoples' bodies is being collected and their DNA sequenced for purposes of biological anthropology (i.e., ancient human migration/population genetics), bioeconomic consumption and accumulation (i.e., direct-to-consumer genetic ancestry testing, access to extraction/land), biomedical research (i.e., immunological susceptibilities), and science policy (i.e., missing-persons recovery efforts). Each of these clusters of relations make transvalued re/iterations of indigeneity. These re/iterations are themselves produced and productive of 21st century technoscientific contexts where advances in biotechnology are intensively drawing academic, industry, and government attention toward bio-based governance, consumption, and profit.

A critical Indigenous theoretical framework guides my research. In the work through which I have generated *Miskâsowin*, I have operationalized a critical Cree/Ininiw way of relating to engage three sets of conceptual relations mapped by three relational thinkers: Michel Foucault (relations of bodies and technologies); Pierre Bourdieu (relations of science and politics); and Aileen Moreton-Robinson (relations of patriarchal-white sovereignty and possessiveness). Rather than putting these theorists into argumentative conversation with each other, I have looked for ways that their respective relational analytics are complementary: where they resonate.

In my movement across disciplines and sectors, all of which have a stake in (being productive of) technoscientific relations of indigeneity, I, myself, have been re/iterated. My body is changed. I re/turn

---

member to join Dr. TallBear in building the research area. It is from this institutional process that Indigenous STS (as we are calling it) is materializing at the University of Alberta.



to those emergences when they come forth in resonance with a new experience. This looping method, this mapping, is necessary since I/we am/are required to traverse the prescribed, yet porous boundaries of disciplinary knowledge and institutions in order to offer critiques that reflect their idiosyncrasies. I have come to understand that concepts are fields of struggle in and of themselves. There is no such thing as conceptual certitude as realities evade the concepts which are tasked with describing them. When one is not restricted to the boundedness of modern disciplinary divisions (even as despite our best effort, we tend to, at least minimally, speak through them), they are also no longer bound to the conceptual purities of ontological and epistemological difference-making (and vice versa).

The work of mapping relations means effectively fixing them in time/place amidst the parallel backdrop of ongoing movement among genomic fields and the contingencies of coloniality from which they have derived. While, to me, this knowledge, therefore, becomes obsolete the moment that I (or any of us) write it as being real, this work has more than a scripted analysis to offer. Ideas uttered have energy. They generate force. They are alive and they have their own productive capacities semi-independently from the one who uttered them. This is likely not quite what Foucault, for instance, had in mind when he gave birth to the genealogies of “discourse,” but nevertheless the animacy of knowledge creates and destroys, obscures and proliferates, captures and releases. Knowledge manifests and reorders sets of relations.

### 3. Miskâsowin

Among Cree peoples, stories are told about the first woman: *Achakwyan*, Star Woman. In my understanding, Star Woman travelled ablaze from the hole in the sky, *pakwankîsik*, as some Cree call it, but others know it by the cluster of seven stars called the Pleiades (Buck 2018, 2016). With grandmother spider’s webbing to guide her fall, Star Woman landed on territories that are now understood to be North America. Elder Wilfred Buck from the Opaskwayak Cree Nation in Manitoba explains that Cree and other peoples come from that place too and when our earthly bodies reach the end of their cycle, we return through that cosmic umbilical channel (Buck 2016). Through this movement, we know the stars as ancestors (pastpresentfuture) and as ourselves.

This story points to a Cree genealogy: that Ininiwak come from the stars. However, genealogy is not typically the language used to express Cree relationships with *misewa* (all that exists). Instead, we tend to specifically talk about relationality. For example, through the above story, I have come to understand the stars as relatives who defy the notion that earthly and extra-earthly existence remains unequivocally and, even atmospherically separate. This Cree knowledge is not simply a metaphorical story—it posits that we are the stuff of space—star people. It is not only that we come from the stars genealogically, but that we are the stars. From this epistemological frame, I express my coming to know, not in terms of genealogy, but in terms of all of my relations that sustain the research and me (the researcher).

I call my own set of methodological relations, Miskâsowin. It is a Cree word that means to remember one’s core (Kovach 2009; Cardinal and Hildebrandt 2000). I have come to understand *miskâsowin* in relation to the seven directions and with the umbilical channel that connects earthly existence among the river of spirits (the Milky Way), *pakwankîsik*: the hole in the sky. Connecting with this relationality, as I understand, is the seventh direction: inward to our core, which connects us to the others—the four cardinal directions, North, East, South, and West; up toward the sky; and down toward the earth: to *misewa* (all that exists). Accordingly, there is a presumption here that everything is, by definition, connected to something else. The *a priori* that relationality underscores becomes not just claiming the relativity of all things as being related, but to situate relations as sites of production, power, and critical analysis (this is where Foucault, Bourdieu, and Moreton-Robinson resonate). *Miskâsowin* is infinite action. It is in the remembering, the doing, the ongoing movement, not in the end point to where one connects. *Miskâsowin* is far from an “add methodology to a given question and stir,” but requires connecting with how one’s body is relationally generative with what they know and how they (can) impact realities. Its disposition points not only to the ways that categories of analysis (race, sex, gender,

class, etc.) intersect in practice and produce experience (e.g., Dhamoonian intersectional-type analysis) or how they might be performed as identities of difference (e.g., Butlerian politics of performance), but rather, to train the body/to remember how to think relationally, to know relationally, to speak relationally: *to be in relation*.<sup>8</sup>

In [Cardinal and Hildebrandt \(2000\)](#), Ininiwak elders draw what seems obvious to them: a causal link between the ways that indigeneity gets racially stereotyped (interpersonally and through nation-state policies) and the often difficult material conditions faced by Indigenous peoples. The grandmothers, in particular, “pointed to the number of First Nations peoples who are in jails, the number who have become dependent upon alcohol and drugs, the number who are increasingly found in the streets, the rising number of suicides, and the many other ways in which First Nations communities continue to be traumatized” (p. 22). They maintain that the internalization of these realities is, in part, due to the “mythologies” (p. 22) that depict “First Nations as the original immigrants to the Americas” (p. 22). They go on, “In part, these mythologies were created to justify the taking of First Nations’ lands by Europeans. They also are intended to diminish and weaken the First Nations’ sense of origin and belonging to ‘the Peoples’ Island’” (p. 22). Through an analytic of *dis/orientation* (distorted indigenities disorient), these elders identify the connection between the exogenous stories told about indigeneity and their effects on bodies, including the degree to which they undermine their very being. The elders point to *miskâsowin* as a way for Indigenous peoples to re/orient and empower themselves among their relations.

Like the project of deconstruction advanced by Critical Indigenous Studies scholars and other critical theorists, *miskâsowin* involves breaking down the harmful knowledge and the attachments Indigenous peoples have to the stories that frame us as not belonging in our homelands and as always somehow constitutionally lacking. The process gestured to by the grandmothers-of becoming aware of how indigeneity has been scripted and in turn empowering ourselves-resonates with me. Denaturalizing taken-for-granted logics shaping indigeneity (in language and body) guides my claim that the work of Indigenous STS necessarily includes critique of the interactive production in colonial spaces of scientific, political, and material orders. But to further critique, Indigenous STS must also consider how the use and development of technosciences on Indigenous peoples’ own terms might support our ways of relating. The Indigenous STS idiom holds these two projects together reflexively—productive critique—given that technosciences simultaneously pose potential risks and promises for Indigenous peoplehoods (which include relations with the earth and universe).

In my own process of *miskâsowin*, relationship-building is a method through which I have become invested in, and have affected science and science policy fields in Canada and the United States. It is a method that demands *caring more for the so-called research subject* than straightforward “participant observation” ([TallBear 2014](#); [Schuurman and Pratt 2002](#)). This approach encourages me to speak “in concert with” ([TallBear 2014](#), p. 4) rather than “for” (p. 4), and (I add) “about” the subjects within respective fields. [TallBear \(2014\)](#) insists that her research process is about building relationships, professional networking with “colleagues (not “subjects”), and as an “opportunity for conversation and sharing of knowledge, not simply data gathering” (p. 2). My methodological relating has involved forming relationships with all kinds of people in science and science policy fields in order to get a sense of the breadth of its relational framework: from the Minister of Science and Sport, to science communication experts, to students, to early career scientists, to federal chief science advisors, to my aunts and uncles, to tri-council executives, to people involved in the governance of their communities, to museum curators, and others.

Relationship-building as method is required to *do* actual stuff in an attempt to manipulate the relations of coloniality that exist as the subject of critique; in my case, science and science policy fields. Research-doing entails exactly what it is named. It involves becoming a practitioner in technoscientific

---

<sup>8</sup> I want to thank Kirsten Lindquist who has gifted me with star books and who tirelessly muses over them with me.

fields, not studying them; it involves being formative of them even if only among the most seemingly peripheral sets of relations. This has been a very important way of relating through Miskâsowin since technosciences, themselves, are outpacing the policies that can regulate them and academic disciplines that are trying to make sense of them. Guided by a will-against-purity, against orthodox conceptual forms, Miskâsowin does not heuristically construct an inside and an outside of oneself, nor of relations of coloniality.

So, I have had to become cross-sectoral and capable of speaking different languages, while maintaining the integrity of my body (meaning my tapwewin/knowledge). Fielding science has also required a rare incorporation of literatures: History of Science, Science and Technology Studies (STS), biomedical and genome science papers, Political Theory, Indigenous Studies, Bioethics, juridical texts, etc., and it has required at least basic technical competencies to understand them. I have built these (partial) competencies by investing in the fields themselves: forming relationships with genome scientists, historians and philosophers of science, STS scholars, science policy practitioners, and bioethicists; participating in multidisciplinary symposia, conferences, and invited talks; advising science policy actors and institutions; and helping to develop academic spaces where Indigenous STS can operate. It has been out of my practices of engagement that I have generated the critical Cree theory of science, technology, and society: Miskâsowin.

Stylistically, I use everyday knowledge (tibacimowin) spotted throughout my work which offer observations and reflections from the cockpit of Miskâsowin. This style is a way of inserting an added layer of analysis of the relations (intellectual and institutional) that I traverse while conducting the research: a meta-analysis of sorts. It is intended to invoke a self-consciousness routed in knowing that while I study “this” or “that,” I am not standing from a distance of observation or even of participation. I am, rather, *invested* in that which I am engaging and affecting. Of course, my body is not untouched by this process. It suffers and travels, desires and pleasures. It hurts and feels relief, expands and softens. Generating knowledge is bodily. The body itself is forever changed in the process (for better or for worse), and in a beautiful way, able to produce through new and unknown relations.

#### 4. Being Power

If I am to indulge in the academic practice of categorizing knowledge-relations, my ontological commitment can be explained through tapwewin (speaking truth). Although, we must interrogate the claim to universality that knowledge categories are imbued with (i.e., ontology, epistemology, axiology). For now, though, I am left with writing in, mostly, English and so, I will indulge. In a description of her Cree methodology, Kovach (2009) explains that the research “is about being congruent with a knowledge system that tells us that we can only interpret the world from the place of our experience” (p. 110). The only “truth” or “real world” that exists is known according to one’s own tapwe (truth). Aporia (contradiction) exists when misewa is reduced to singularities of truth. For tapwewin, multiple truths (knowledge that is equally true) exist at once. When a truth collectively resonates among a cluster of relations, then it must be true. The purpose of tapwewin (speaking truth) is not to engage in adversarial argumentation per se like much academic critique does (i.e., speaking truth to power), but to truth-tell: meaning, to channel and share the accumulation of knowledge amassed through one’s myriad relations (i.e., speaking truth about power and being powerful through our truths). These relations are earthly and not, human and not, of this lifetime and not. We are affixed to our tapwe, which extends our relations beyond our immediate field of vision as it, once uttered, generates energy and movement. With this ontological commitment, I see my body as being more than the sum of the knowledge that has come to see me. *It is my tapwewin. I am my “ontology.” I am my relations. My relations. Relations.*

Tapwewin channeled through my body is, in part, determined by being biologically descendant of my mom and dad and theirs, and theirs... My name is Jessica Kolopenuk (deleted for peer review). It is also Wâpiski Mîkwan. Yet also, Waabishki Sabekwe. I am a bear clan Ininiw woman, descendant of Chief Peguis’ people who are Ininiwak and Anishinaabeg from the Red River region



north of Winnipeg: the city whose name bears the characteristic of those mighty muddy rivers whose forks have brought peoples together for as long back as we have been peoples, perhaps for longer. I am of Ininiwak. My people are treaty people, having negotiated and signed Treaty One in 1871. I belong to the McCorrister and Spence families. My father is a mōniyaw. Having married into our McCorrister family, he did not become an Indian, obviously; but, he did belong. This did not make him Cree. It made him family. What follows is my attempt to write my body.

### 1. Encoded

*For my first, I begin where I did: the waters of my mother's body. From her I inherited a code. Mitochondrial DNA. It is no code, no secret to me, though. Haplogroup B, you say? Um, ok sure. Scientific stories abound, but knowing where my body comes from came to me through different means. I am Sylvia's daughter (sic ♪). The blood that flows through, that flows out of me is my homeland. Embodied connection across time-space with all of the other bleeders. Lineage. The Red River. These are the bodies that made me. And this is where we are from.*<sup>9</sup>

In 2013 I sequenced my mitochondrial DNA (mtDNA); like literally...in a lab. It is conventionally believed that bio-moms can pass on mtDNA, bio-dads cannot, although new findings are shifting this scientific convention to some degree. When I sequenced my (grandmothers') DNA, I was not trying to de/code my identity. I was increasing my scientific literacy. What I came to learn, though, is that the story that genetic analysis tells aligns with my own family's knowledge about where we come from, albeit through much different narrative-relations.

### 2. The Moon

*Living somewhere new was thrilling. But traveling across an ocean is hard. Lonely. The energies of those new (to me) places and people and ideas were interesting. Yet, everything my body touched was unfamiliar. I missed that mighty muddy River. Those prairie smells. My people. I needed something to feed my hunger for home. To tide me over. The Moon. Her movement tracks mine, tracks me. She is constant, even if unseen, keeping secrets untold of her dark sides. Her presence and permanence allow me to triangulate my body, up to hers, back down home. My more-than-land-based connection is restored.*

At the early stages of my doctoral research, I was speaking with a medicine woman from home. I asked her about the differences between Cree and Anishinaabe teachings about the colors red and purple as they particularly relate to the moon lodge. Clearly, my question was steeped in a way of thinking characteristic of my doctoral training, and I was expecting a systematic answer to my systematic question. Instead, I got a reminder of something else. Reorienting the question entirely the auntie talked about her kohkums. She said, "you know, I never knew if my grandmothers were Cree or Ojibwe, and I never cared: they were my kohkoms." A simple answer (the one I needed!) layered with a lot of complexity, and it reminded me that among kinship-based Ininiw and Anishinaabe peoplehoods, emphasizing tribal or national differences even as they relate to teachings about colors, is not most important—relationships are.

Within academic teachings, there is conceptual imprecision around ideas of Indigenous peoplehood and nationhood. At times, they are used relatively interchangeably (see for instance, [Andersen 2014](#); [Alfred and Corntassel 2005](#)), and involving a collective political self-consciousness, a shared history,

---

<sup>9</sup> I have written a series of 3 × 100s called "Red Rivers." Red Rivers is a three 100-word experiment in writing. 100s is a writing concept developed by University of Vermont English Professor Emily Bernard in 2009 and then launched by a variety of writing groups. 100s are meant to be flexible, open to structural and conceptual interpretation, exploratory, and experimental. I came across 100s through Dr. Kim TallBear who has published a series of "Critical Poly 100s" as a way to creatively express her auto-ethnographic polyamorous practice. As someone who is painfully disciplined in academic prose, and as challenging as it was, I enjoyed writing these 100s as a way to play with ideas in a manner that is unorthodox, unexpected, and less inhibited.

and territorial boundaries that predate colonialism (Andersen 2014; Alfred 1995; Justice 2006; Simpson 2000, 2014; Tully 1995). Others have revised ethnonationalist portraits of peoplehood to include “four interlocking concepts of sacred history, ceremonial cycles, language, and ancestral homelands” (Corntassel 2003, p. 91). Additionally, nationhood and peoplehood have been consistently associated with different tribal collectives like Mohawk, Blackfoot, Mikmaw, Métis, etc., (Andersen 2014). Yet, others approach tribal or national designations of peoplehood critically. Innes (2013), for example, explains that tribal identities were inaugurated by the fields of Anthropology and History, which have not understood and/or emphasized the interconnected relations *between* national groups like Cree, Assiniboine, Anishinaabeg, and Métis peoples on the northern Plains.

Indigenous feminist and queer Indigenous theorizations have also been critical of nation-based definitions of indigeneity noting the ways that analytical emphases on national designations have contributed to concealing heteropatriarchal relations of power that nurture colonialism. MacDougall (2006) argues that patrilineality in family genealogies gets privileged in Métis histories because of available written sources of record keeping that undermine the crucial roles Métis women have played in practicing wakohtowin—vital exercises of kinship found at the interstices of family, place, and political economy. Huhndorf and Suzack (2010) observe that since the 1960’s the emphasis in Indigenous politics on the distinctiveness of Indigenous nations has contributed to a devaluation of gender issues (p. 3). Engaging with this problem, queer Indigenous analyses shift analyzers away from these nation-based self-affirmations by rejecting “colonial insider/outsider binaries and ask[ing] how familial ties invite relationships across differences” (Driskill et al. 2011).

Nationhood and peoplehood are likely analytically distinct ways of articulating the same thing (i.e., Indigenous peoples’ collective ancestral relationships to place and to one another), but the way that the terms get designated to tribal collectives belies the practices of kinship or wakohtowin-based peoplehood on the northern plains and elsewhere. Returning to Cardinal and Hildebrandt (2000), we can see an alternative approach. The elders offer a theoretical framework for approaching treaty implementation in Saskatchewan by pointing “to the inter-nation aspect of their spiritual traditions” (9) and opposing any First Nation specific approach to treaties. Their understanding of Ininiw peoplehood based on kinship and their stance on treaty implementation suggests that national identification schemes have tended to come at the expense of understanding how relationships have been a central political organizing formation among and between allegedly separate groups (human and not). In this understanding of peoplehood, politics lay therefore in kinship, more broadly expressed as states of being related (wakohtowin), not in a centralized and bounded nation among other nations.

Dene, Cree, Saulteaux, and Assiniboine elders describe the source of their existence as emanating from their being related to the first people, the nistamêyimâkan, on the People’s Island, ininiw ministik. Ininiw peoplehood can be understood as emerging through ancestral relationships to place and relatives (human and non-human) through wakohtowin—the state of being related (Jobin et al. 2018). This version of peoplehood is unintelligible to non-Indigenous observers quick in their attempt to intellectualize its meanings. It is an embodied impossibility for the descendants of colonizers to understand what it *feels* like to be born and live in the territories of your relatives/ancestors.

Wakohtowin is, as Moreton-Robinson (2015) states about Indigenous sovereignty, based on “an ontology that exists outside of the logic of capital” (p. 191); it is not possessive. Being in relation animates Ininiwak peoplehood whereby each individual is a synecdochal part of the whole. Byrd (2011) writes of kinship sovereignties in a similar way. She writes, “[m]y definition of kinship sovereignty depends upon these structured networks as counter to nation-state-centered articulations of sovereignty that depend, in Enlightenment humanism, on the centrality of the sovereign individual” (p. 264). Wakohtowin was not a word that I grew up hearing and it is not a word that I use on a regular basis. I learned, instead, about *family* and I continue to understand my body and the relations that sustain it according to that word.

It is true that my family, like many others, has been impacted by the ebbs and flows of colonial policies and logics, but this is not the whole set of relations of the power of our connection. We have

always found ways to remain oriented through place and to each other in spite of juridical definitions of Indian-becoming and their material consequences. I do not see this as a set of practices of resistance, but rather of power. Within our family, connection is a form of power, not resistance (again, perhaps not what Foucault meant by “power is not only repressive”). Among this set of Indigenous power relations, blood is a bio-symbol not centrally denoting race, but of the energy generated through family relationships to tack together people and territorial connections, unconditionally.

My body is power. Its materiality shapes my choices. My light skin and green eyes might afford me the privilege in social situations to choose whether or not I identify as Indigenous, as Aboriginal, as Indian, as Native... Being Ininiw, on the other hand, is not about self-identification. It is an entire network that we are born into although it is cut by iterations of indigeneity. This reality provides no choice. I am of Ininiwak. Before my energy arrived in this earthly body, I chose where it would land, who I would be, what roles I will play, what lessons I needed to learn, and which ones I could help others learn. It is a choice distinct from the liberal variety of self-identification. It means that our life on earth is a state of being, not becoming. The liberal version depends on the body/mind construct, whereby one can become what they would like to be. This choice—self-identification—paradoxically ends up enforcing the contingency of identity/difference upon bodies throughout their lives and leads to new and unpredictable configurations. Ininiwak becoming happens elsewhere. As such, my body is who I am; it is a manifestation of my energy, it carries my medicine, it contains the data of generations of my ancestors, and it is the conduit through which I channel tapwewin. For me, being kwe and becoming sexed and gendered, are inextricable from all of these things.

I have been trained academically in verses of social constructionism and critical race and whiteness theory. My graduate work was devoted to analyzing the dangers of organizing human groups according to misguided perceptions of physical difference. Yet, I cannot deny the power of sanguine materiality in shaping my sense of self and how my body is moored to the relations that I come from. Blood and bleeding link generations together through emergences.

When I first began to bleed, embodiment came to mean something new to me and, over the years, I have since reflected on what bleeding means to me as an Ininiw iskwe and as an Indigenous woman; how it connects me to my relatives, to my ceremonial items and medicine, and to the worlds of my homeland. Biology has, at least in part, always shaped peoples. I continue to be intrigued with whether there is a way to talk about bloodlines to land that is not all about race and gender. One that opens, rather than forecloses spaces for kinship-making. And, I wonder if there is a way to talk about the physical capacities to bring new bodies forward in a way that does not put sole responsibility of reproducing peoples onto those bodies deemed female.<sup>10</sup>

### 3. White Feather

*Welcome, Wâpiski Mîkwan. We've been waiting for you. This is yours.*

*A white eagle feather. Its beauty froze me in place and tears started streaming down my “ugly-cry” face.*

*The moon lodge is where I received her. The one that was prophesized for me. Wâpiski mîkwanwak, we are reunited. The energy of our bodies is resounding, materially connected through blood. But what does it mean to carry moon medicine? I'm still not sure. For now, I will use it to re/code. Come back with me to my mother's waters, among the bleeders, to our homeland: to the Red River.*

---

<sup>10</sup> I acknowledge that not only women bleed and that not all women do. I respect other bleeding and non-bleeding bodies and the way that each of us relates with our embodied realities. In the expression of my own body power, I do not wish to assert certitude to the categories of sex and gender typically identified with menstruation. I do not have answers to the questions I have posed. My intention, rather, is to speak my truth about my embodied keystone, but this is a limit/ed/ing endeavor. Writing harshly rigidifies any attempt to make sense of the deep and enduring connection to my mother, my grandmother, her mother, and on, and on. This work involves thinking through the networked connections—the nodes and lines—linking the relationships that I have to my own body, to my family, and to my homeland.

## 5. Relations Theorizing Relations: Research/er Integrity

On a warm winter day on a sand island off the coast of Australia, on the ancestral lands of the Quandamooka people, Professor Aileen Moreton-Robinson reached up to hang the freshly bleached linen she had just washed. As I joined her in shaking out and then lining up each piece, we seamlessly conjoined our movements with the yarn we had been having over tea for what must have been hours.<sup>11</sup> That morning I was lost in Prof's stories of endurance that have been required of her and the other warrior women that keep Geonpul families connected to the places and relatives from which they emerged. That day, governance took place among the linen that danced between us moved by the sea breeze. Her stories resonated with mine of family and home half a world away. I saw in them a likeness construed through the fiery collisions of British and then liberal democratic styles of colonialism and that were met with the fierceness of Indigenous women's fortitude. Our peoples have different everyday realities. But, that afternoon, me and Prof came together in a shared experience of colonialism. Over time, as Prof taught me about political theory and its discursive technologies *which constrain Indigenous presence by enabling our presence as Indigenous*, she simultaneously accessed the medicine of her ancestral waters on land and of sea in a way that I am only now beginning to understand was in the brilliant layering of Geonpul sovereignty. Through our relating, she gifted me with nodes of her embodied connection through which I could understand the worlds that I inhabit, that I am required to inhabit, and how those worlds shape the ways I understand inhabiting. With that set of relations came the power and responsibility to take up, in her assessment, which I share, intellectual arms on the battlefield where so-called truths are re/iterated about and used, intentionally or not, to control us: the forever peoples of our territories.

I live in Indigenous worlds, but I do not study Indigenous peoples. I join critical Indigenous scholars like Aileen Moreton-Robinson, and also Audra Simpson, Kim TallBear, and Mishauna Goeman in refusing to make our own people the subjects of our research. I join them in opting to, instead, study how non-Indigenous people, institutions, and logics come to know and form indigeneity with little or no input from us at all (and sometimes, how Indigenous peoples do this to ourselves). Being able to position oneself in research is not only about understanding the relationship between power and knowledge. There is no debate about the possibility of objectivity in this methodological approach. Subjectivity is, instead, taken as a given, and therefore, methodologically, the researcher is responsible to be forthcoming about his or her own perspectives of the world. Without which, your integrity as a person is compromised. This promotes research transparency.<sup>12</sup>

The importance of responsibility lay in the methodological transparency of critical Indigenous theorizing that includes engagement with the embodied and emplaced knowledges about the colonial order that Indigenous peoples have multi-generationally amassed. The sharing of the stories of ourselves, our families, and our homes, is therefore, as [Million \(2009\)](#) explains, powerful for the accumulative affective force that personal yet shared experiences among Indigenous peoples reveal about the relations of power in our present. Our lives are the stuff of theory and the ways that we narrate them involves high political stakes (*ibid.*). We bring Indigenous knowledge to the academy rather than focusing primarily on translating and sharing academic knowledge with the public, although people do that too. Sharing knowledge sends out lines of connections to others whose own experiences are linked to a collective one. This form of relationality among readers and writers aligns the shared struggles of many and it generates a collective energy, the movement of feelings from one body to another: power relations.

---

<sup>11</sup> [Bessarab and Ng'andu \(2010\)](#) explain that "[a]cross Australia, Aboriginal people constantly refer to and use yarnning in the telling and sharing of stories and information" (p. 38). They explore yarnning, not simply to describe a cultural difference, but to elaborate its utility in the production of knowledge as an Indigenous research method.

<sup>12</sup> Others often write, instead, about accountability in research ([Wilson 2009](#), p. 177; [Kovach 2009](#), p. 36; [Weber-Pillwax 2001](#), p. 170).

I have found that positioning oneself and speaking about responsibility is not (only) about whom the researcher is responsible to in the specific context of a research study. For me, research is about the responsibility that I have to all of the relations that sustain it and me (the researcher). Reflecting on responsibility in this way is not so much about an ethical consideration in the formal sense of the word (i.e., in terms of institutional ethics review boards). Rather, it is about understanding everyday relationships and *how they mean something* to tapwewin (channeling/sharing knowledge). I express this meaning by stitching the knowledge generated through my relations into the very skin of my analyses. For example, in this article I have used stories about my parents, the moon and my moon time feather, the Red River and my own river, my time with Prof, some of my elders' teachings, and so forth to inform my exploration of Miskâsowin and Indigenous STS. Everyday relationships are constitutive of this work, not peripheral or illustrative.

To speak of research integrity is part of my refusal to placate the liberalist frame of self-righteousness in research and the normativity of ethics that it promotes. Relations of coloniality restrict my ethics from being ethical. My research integrity is maintained, instead, by my actions to break down the presumed inevitability and nature of things, and enable possibilities for things to be different. Miskâsowin is one example. There is no codification of rules or procedures for this ethical framework because it is not an ethical framework. Rather, it is a set of shifting relations with people, peoples, spaces, institutions, relatives, and routed through one's own core: miskâsowin.

There is a certain amount of existential angst and added labor that comes with devoting as much time and energy into learning about, becoming a part of, and affecting predominantly non-Indigenous fields in order to write about one's relationships among them. As a result, I have found it necessary, as part of my relationship-building as a method, to re/invest in the communities that I am a part of, including my family, my ceremonial communities, and my academic relations. These investments have included much travel back home to Winnipeg, gathering at ceremonies, living room visits, Facetime chats, text messages, road trip talks, crisis, I mean, crises support, meetings, and conferences...

Integrity is a frequentative process where I have reflected on whether I, personally, should be in a role to create knowledge. My loved ones, like many Indigenous peoples, are still reeling from colonially induced traumas and my failure to set "appropriate boundaries" that would keep them at arm's length so that I may do my research is as difficult as it is productive. They guide my research process with lessons about kindness, humility, pain, and unconditional love. My ceremonial communities support me in the roles that I have been given through my names. They guide me in a loving way (for the most part!) to have the courage to continue truth-telling. My academic community checks my integrity too for the passability of the knowledge that I smuggle into the academy. Moreover, my academic kin influence the knowledge relations that I engage in. Why do I pick one theorist over another? Why do I focus on genomics and not microbiomes? Why do I think that race/gender is so important? These are the questions that we are asked and sometimes, the answers simply lay in being a matter of the relations that train you. The significance of our academic relations on affecting our methodological ones should not be understated. We are inundated with information...data, on a second-by-second basis and shaped by the forces of the increasingly neoliberal academy that pushes hyper-productivity, added value, and individualism. It is impossible to know all the things in any given project. Our academic relations guide us in particular ways (for better or for worse), just as our other relations do. We rely on the trust we have for them to direct us and we become heavily reliant on them for (more than) scholarly guidance. All of these relationships inform tapwewin and in expressing miskâsowin, the work has integrity. Being in relation with the communities that I am a part of makes my theories. I theorize what matters because I am connected through relations that matter to me.

**Funding:** This research was funded by the Social Sciences and Humanities Research Council (SSHRC); Canada Graduate Scholarships - Doctoral (CGS D)

**Acknowledgments:** The author acknowledges the editorial team of No More Potlucks (NMP) that published an earlier version of this work.

**Conflicts of Interest:** The author declares no conflict of interest.



## References

- Absolon, Kathleen E. 2011. *Kaandossiwin: How We Come to Know*. Nova Scotia: Fernwood Publishing.
- Adas, Michael. 1989. *Machines as the Measure of Men: Science, Technology, and Ideologies of Western Dominance*. Ithaca: Cornell University Press.
- Alfred, Taiaiake. 1995. *Heeding the Voices of Our Ancestors: Kahnawake Mohawk Politics and the Rise of Native Nationalism*. Toronto: Oxford University Press.
- Alfred, Taiaiake, and Jeff Corntassel. 2005. Being Indigenous: Resurgences against Contemporary Colonialism. *Government & Opposition* 40: 597–614.
- Andersen, Chris. 2011. Moya tipimsook (“the people who aren’t their own bosses”): Racialization and the Misrecognition of “Métis” in Upper Great Lakes Ethnohistory. *Ethnohistory* 58: 37–63. [CrossRef]
- Andersen, Chris. 2014. *“Métis”: Race, Recognition, and the Struggle for Indigenous Peoplehood*. Vancouver: University of British Columbia Press.
- Andersen, Chris, and Jean O’Brien, eds. 2016. *Sources and Methods in Indigenous Studies*. London: Routledge.
- Arbour, Laura, and Doris Cook. 2006. DNA on Loan: Issues to Consider When Carrying Out Genetic Research with Aboriginal Families and Communities. *Public Health Genomics* 9: 153–60. [CrossRef] [PubMed]
- Arvin, Maile. 2019. *Possessing Polynesians: The Science of Settler Colonial Whiteness in Hawai’i and Oceania*. Durham: Duke University Press.
- Bardill, Jessica. 2017. “Comparing Tribal Research and Specimens Policies: Models, Practices, and Principles”. *International Indigenous Policy Journal* 8: 1–22. [CrossRef]
- Barker, Joanne. 2002. The Human Genome Diversity Project: ‘Peoples,’ ‘Populations,’ and the Cultural Politics of Identification. *Cultural Studies* 18: 578–613. [CrossRef]
- Bastien, Betty. 2004. *Blackfoot Ways of Knowing*. Calgary: University of Calgary Press.
- Berthier-Foglar, Susanne, Sheila Collingwood-Whittick, and Sandrine Tolazzi, eds. 2012. *Biomapping Indigenous Peoples: Towards an Understanding of the Issues*. Amsterdam: Rodopi.
- Bessarab, Dawn, and Bridget Ng’andu. 2010. Yarning About Yarning as a Legitimate Method in Indigenous Research. *International Journal of Critical Indigenous Studies* 3: 37–50. [CrossRef]
- Bolnick, Deborah, Holly M. Bonine, Jaime Mata-Miguez, Brian M. Kemp, Meradeth H. Snow, and Steven A. Leblanc. 2012. Nondestructive Sampling of Human Skeletal Remains Yields Ancient Nuclear and Mitochondrial DNA. *American Journal of Physical Anthropology* 147: 293–300. [CrossRef]
- Bowekaty, Malcolm, and Dena Davis. 2003. Cultural Issues in Genetic Research with American Indian and Alaskan Native People. *IRB: Ethics and Human Research* 25: 12–15. [CrossRef]
- Brockway, Lucile H. 1979. Science and Colonial Expansion: The Role of the British Royal Botanic Gardens. *American Ethnologist* 6: 449–65. [CrossRef]
- Buck, Wilfred. 2016. Cree Mythology Written in the Stars [video file]. Available online: <http://www.cbc.ca/radio/unreserved/from-star-wars-to-stargazing1.3402216/creemythology-written-in-the-stars-1.3402227> (accessed on 24 February 2020).
- Buck, Wilfred. 2018. *Tipiskawi Kisik: Night Sky Star Stories*. Winnipeg: Manitoba First Nations Education Resource Centre Inc.
- Buffon, Georges-Louis. 1749. *Variétés dans l’espèce humaine, in Histoire naturelle, générale et particulière*. Paris: Imprimerie Royale, T. III, pp. 371–530.
- Byrd, Jodi A. 2011. *The Transit of Empire: Indigenous Critiques of Colonialism*. Minneapolis: University of Minnesota Press.
- Cajete, Gregory. 2000. *Native Science: Natural Laws of Interdependence*. Santa Fe: Clear Light Publishers.
- Cardinal, Harold, and Walter Hildebrandt. 2000. *Treaty Elders of Saskatchewan: Our Dream Is That Our Peoples Will One Day Be Clearly Recognized as Nations*. Calgary: University of Calgary Press.
- Cook-Lynn, Elizabeth. 1997. Who Stole Native American Studies? *Wicazo Sa Review* 12: 9–28. [CrossRef]
- Corntassel, Jeff. 2003. Who is Indigenous? Peoplehood and Ethnonationalist Approaches to Rearticulating Indigenous Identity. *Nationalism and Ethnic Politics* 9: 75–100. [CrossRef]
- Cunningham, Hilary. 1998. Colonial Encounters in Postcolonial Contexts: Patenting Indigenous DNA and the Human Genome Diversity Project. *Critique of Anthropology* 18: 205–33. [CrossRef]

- Cunningham, Elizabeth H., Vicky A. Cameron, John Evans, Virginia Irvine, Suzanne Pitama, and Paul Robertson. 2007. The Development of Guidelines for Handling Samples and Specimens Collected for Research Involving Māori. *New Zealand Medical Journal* 120: 117–19.
- De Gobineau, M. A. 1853–1855. *Essai sur l'inégalité des races humaines*. Paris: Firmin-Didot Frères.
- Dei, George J. S., Budd L. Hall, and Dorothy G. Rosenberg, eds. 2000. *Indigenous Knowledges in Global Contexts: Multiple Readings of Our World*. Toronto: University of Toronto Press.
- Deloria, Vine, Jr. 1995. *Red Earth, White Lies: Native Americans and the Myth of Scientific Fact*. New York: Scribner.
- Dhamoon, Rita. 2009. *Identity/difference Politics: How Difference is Produced, and Why It Matters*. Vancouver: University of British Columbia Press.
- Dodson, Michael, and Robert Williamson. 1999. Indigenous Peoples and the Morality of the Human Genome Diversity Project. *Journal of Medical Ethics* 25: 204–8. [[CrossRef](#)]
- Driskill, Qwo-Li, Chris Finley, Brian Joseph Gilley, and Scott Lauria Morgensen, eds. 2011. *Queer Indigenous Studies: Critical Interventions in Theory, Politics, and Literature*. Tucson: University of Arizona Press.
- Fong, Megan, Kathryn L. Braun, and R. M. Chang. 2006. Native Hawaiian Preferences for Informed Consent and Disclosure of Results from Genetic Research. *Journal of Cancer Education* 21: S47–S52.
- Foster, Morris, and Richard Sharp. 2000. Genetic Research and Culturally Specific Risks: One Size Does Not Fit All. *Trends in Genetics* 16: 93–95. [[CrossRef](#)]
- Garrison, Nanibaa' A. 2012. Genomic Justice for Native Americans: Impact of the Havasupai Case on Genetic Research. *Science, Technology, and Human Values* 38: 201–23. [[CrossRef](#)]
- Geniusz, Wendy Makoons. 2009. *Our Knowledge is Not Primitive: Decolonizing Botanical Anishinaabe Teachings*. Syracuse: Syracuse University Press.
- Harding, Sandra. 2008. *Sciences From Below: Feminisms, Postcolonialities, and Modernities*. Durham and London: Duke University Press.
- Harris, Steven J. 2005. Jesuit Scientific Activity in the Overseas Missions, 1540–1773. *ISIS* 96: 71–79. [[CrossRef](#)]
- Harrison, Mark. 2005. Science and the British Empire. *ISIS* 96: 56–63. [[CrossRef](#)]
- Harry, D. 1993. The Human Genome Diversity Project. *Abya Yala News* 8: 13–15.
- Harry, Debra. 2005. Acts of Self-Determination and Self-Defense: Indigenous People Responses to Biocolonialism. In *Rights and Liberties in the Biotech Age*. Edited by Sheldon Krimsky and Peter Shorett. Lanham: Rowman & Littlefield, pp. 87–97.
- Headrick, Daniel R., ed. 1981. *The Tools of Empire: Technology and European Imperialism in the Nineteenth Century*. New York: Oxford University Press.
- Hinterberger, Amy. 2012. Categorization, Census, and Multiculturalism: Molecular Politics and the Material of Nation. In *Genetics and the Unsettled Past*. Edited by Catherine Lee, Alondra Nelson and Keith Wailoo. New Brunswick: Rutgers University Press, pp. 204–24.
- Horsman, Reginald. 1986. *Race and Manifest Destiny: The Origins of American Racial Anglo-Saxonism*. Cambridge: Harvard University Press.
- Huhndorf, Shari M., and Cheryl Suzack. 2010. Indigenous Feminism: Theorizing the Issues. In *Indigenous Women and Feminism: Politics, Activism, Culture*. Edited by Cheryl Suzack, Shari M. Huhndorf, Jean Barman and Jeanne Perreault. Vancouver: University of British Columbia Press, pp. 1–18.
- Innes, Robert Alexander. 2013. *Elder Brother and the Law of the People: Contemporary Kinship and Cowessess First Nation*. Winnipeg: University of Manitoba Press.
- Jobin, Shalene, Hadley Friedland, Renee Beausoleil, and Tara Kappo. 2018. *Wahkohtowin ᑭᓄᓐᓂᓐ: Principles, Process, and Pedagogy*. *Canadian Legal Education Annual Review*. Toronto: Carswell Legal Pubns.
- Justice, Daniel Heath. 2006. *Our Fire Survives the Storm: A Cherokee Literary History*. Minneapolis: University of Minnesota Press.
- Kohli-Laven, Nina. 2012. French Families, Paper Facts: Genetics, Nation, and Explanation. In *Genetics and the Unsettled Past*. Edited by Keith Wailoo, Alondra Nelson and Catherine Lee. New Brunswick: Rutgers University Press, pp. 114–42.
- Kolopenuk, Jessica. 2018. "Pop-Up" Metis and the Rise of Canada's Post-Indigenous Formation. *American Anthropologist* 120: 333–37. [[CrossRef](#)]
- Kolopenuk, Jessica. 2020. Provoking Good Bad Biocitizenship. *The Hastings Center Report*. In print.
- Kovach, Margaret. 2009. *Indigenous Methodologies: Characteristics, Conversations and Contexts*. Toronto: University of Toronto Press.

- Kulchyski, Peter. 2000. What is Native Studies? In *Expressions in Canadian Native Studies*. Edited by Ron Laliberte, Priscilla Settee, James Waldram, Rob Innes, Brenda Macdougall, Lesley McBain and F. Laurie Barron. Saskatoon: University Extension Press, pp. 13–26.
- LaDuke, Winona. 2005. *Recovering the Sacred: The Power of Naming and Claiming*. Cambridge: South End Press.
- Leroux, Darryl. 2019. *Distorted Descent: White Claims to Indigenous Identity*. Winnipeg: University of Manitoba Press.
- MacDougall, Brenda. 2006. Wahkootowin: Family and Cultural Identity in Northwestern Saskatchewan Metis Communities. *The Canadian Historical Review* 87: 431–62. [CrossRef]
- Malhi, Ripan S., and Alyssa C. Bader. 2015. Engaging Native Americans in Genomic Research. *American Anthropologist* 117: 743–49. [CrossRef] [PubMed]
- Mello, Michelle M., and Leslie E. Wolf. 2010. The Havasupai Indian Tribe Case—lessons for Research Involving Stored Biologic Samples. *New England Journal of Medicine* 363: 204–7. [CrossRef] [PubMed]
- Million, Dian. 2009. Felt Theory: An Indigenous Feminist Approach to Affect and History. *Wicazo Sa Review* 24: 53–76. [CrossRef]
- Moreton-Robinson, Aileen. 2015. *The White Possessive: Property, Power, and Indigenous Sovereignty*. Minneapolis: University of Minnesota Press.
- Moreton-Robinson, Aileen. 2016. Introduction: Locations of engagement in the First World. In *Critical Indigenous Studies: Engagements in First World Engagements*. Edited by Aileen Moreton Robinson. Tucson: University of Arizona Press, pp. 3–16.
- Munsterhjelm, Mark. 2014. *Living Dead in the Pacific: Racism and Sovereignty in Genetics Research on Taiwan Aborigines*. Vancouver and Toronto: UBC Press.
- Nakamura, Lisa, and Peter Chow-White, eds. 2012. *Race after the Internet*. New York: Routledge.
- Naylor, C. David. 2017. Canada's Fundamental Science Review, Final Report. Available online: <http://www.sciencereview.ca/eic/site/059.nsf/eng/home> (accessed on 24 February 2020).
- Radin, Joanna, and Emma Kowal, eds. 2017. *Cryopolitics: Frozen Life in a Melting World*. Cambridge: The MIT Press.
- Reardon, Jenny. 2005. *Race to the Finish: Identity and Governance in an Age of Genomics*. Princeton: Princeton University Press.
- Schiebinger, L, ed. 2004. *Plants and Empire: Colonial Bioprospecting in the Atlantic World*. Cambridge: Harvard University Press.
- Schiebinger, L, ed. 2005. Colonial Science [Special issue]. *ISIS* 96: 52–87.
- Schuurman, Nadine, and Geraldine Pratt. 2002. Care of the Subject: Feminism and Critiques of GIS. *Gender, Place & Culture* 9: 291–99. [CrossRef]
- Simpson, Audra. 2000. Paths toward a Mohawk Nation: Narratives of Citizenship and Nationhood in Kahnawake. In *Political Theory and the Rights of Indigenous Peoples*. Edited by Duncan Ivison, Paul Patton and Will Sanders. Cambridge: Cambridge University Press.
- Simpson, Audra. 2014. *Mohawk Interruptus: Political Life across the Borders of Settler States*. Durham and London: Duke University Press.
- Smith, Linda Tuhiwai. 1999. *Decolonizing Methodologies: Research and Indigenous Peoples*. London and New York: Zed Books, Dunedin: Otago Press.
- Smith, Linda Tuhiwai. 2013. *Decolonizing Methodologies: Research and Indigenous Peoples*. London: Zed Books Ltd.
- Steinhauer, Evelyn. 2002. Thoughts on an Indigenous Research Methodology. *Canadian Journal of Native Education* 26: 69.
- Subramaniam, Banu. 2014. *Ghost Stories for Darwin: The Science of Variation and the Politics of Diversity*. Champagne: University of Illinois Press.
- TallBear, Kim. 2013. *Native American DNA: Tribal Belonging and the False Promise of Genetic Science*. Minneapolis: University of Minnesota Press.
- TallBear, Kim. 2014. Standing with and Speaking as Faith: A Feminist-Indigenous Approach to Inquiry [Research Note]. *Journal of Research Practice* 10: 1–7.
- Taniguchi, Nicole K., Maile Tualii, and Jay Maddock. 2012. A Comparative Analysis of Indigenous Research Guidelines to Inform Genomic Research in Indigenous Communities. *The International Indigenous Policy Journal* 3: 1–20. [CrossRef]

- Tsosie, Rebecca A. 2007. Cultural challenges to biotechnology: Native American Genetic Resources and the Concept of Cultural Harm. *Journal of Law, Medicine & Ethics* 35: 396–411.
- Tully, James. 1995. *Strange Multiplicity: Constitutionalism in an Age of Diversity*. Cambridge: Cambridge University Press.
- Von Linné, C. 1767. *Caroli a Linne [sic]. Systema naturæ: per regna tria naturæ, secundum classes, ordonnes, genera, species, cum characterizes & differentiis. Editio duodecimo, reformat.* Holmiæ [Stockholm]: Impensis Direct. Laurentii Salvii.
- Wade, Peter, Carlos L. Beltran, Eduardo Restrepo, and Ricardo V. Santos. 2014. *Mestizo Genomics: Race Mixture, Nation, and Science in Latin America*. Durham: Duke University Press.
- Wallerstein, Immanuel M. 1976. *The Modern World-System: Capitalist Agriculture and the Origins of the European World-Economy in the Sixteenth Century*. New York: Academic Press.
- Walter, Maggie, and Chris Andersen. 2013. *Indigenous statistics: A Quantitative Research Methodology*. Walnut Creek: Left Coast Press.
- Weber-Pillwax, Cora. 2001. Coming to an Understanding: A Panel Presentation What Is Indigenous Research? *Canadian Journal of Native Education* 25: 166–74.
- Wilson, Shawn. 2009. *Research is Ceremony: Indigenous Research Methods*. Black Point: Fernwood Publishing Co., Ltd.



© 2020 by the author. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<http://creativecommons.org/licenses/by/4.0/>).