

**Unearthing Ecologically Unsustainable Root Metaphors in BC Education:  
A Transformative Inquiry Into Educator and Curricular Discourses**

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## Abstract

This inquiry used an ecojustice education framework and the transformative inquiry methodology to better understand the cultural and linguistic roots of global socioecological crises and to distinguish where ecologically unsustainable root metaphors show up in curricular and educator discourse. I first examined the British Columbia K–7 Science and Social Studies curriculum-as-plan[ned] to identify iterations of three ecologically unsustainable root metaphors of Western industrial culture—anthropocentrism, individualism, and reductionism. Then, 11 inquiry partners responded to written interview questions about how these metaphors appear in their teaching practices; three educators participated in follow-up semistructured interviews. In addition to these contributions, self-study reflections provide another layer to the connections I made among the literature, curriculum, and educator responses. The curriculum made no links between Western culture-language-thought patterns and socioecological crises. Several inquiry partners, however, did identify a relationship between these root metaphors and how the Western world treats the “environment.” Finally, the self-study portion revealed that despite understanding the power of root metaphors to shape our thinking and a deep desire to change, these taken-for-granted assumptions still arise in my teaching. Weaving together these findings, I recommend that future curriculum and teacher education include (a) the teaching of different worldviews to counteract the hegemony of Western industrial culture, (b) the power of language to shape thinking and actions, and (c) strategies to undertake the inner work needed to shift away from these culture-language-thought processes.

*Keywords:* ecojustice education, transformative inquiry, curriculum, self-study, socioecological crises, Western industrialized culture

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### List of Abbreviations

BC	British Columbia
BC MoE	British Columbia Ministry of Education
BCTF	British Columbia Teachers' Federation
CC	Curricular Competencies
FNESC	First Nations Education Steering Committee
IPCC	Intergovernmental Panel on Climate Change
TI	Transformative inquiry
WIC	Western industrialized culture

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Generally, this section consists of notes of appreciation to supervisors, advisors, family members, and friends who have supported the undertaking. Recommendations are that this acknowledgement section be no longer than a page, but this inquiry aims to disrupt certain Western (educational) norms. This deviation from the norm also serves a pedagogical function. Right from these first pages, I want to situate us as reader and writer, to the best of my ability, in what Chet Bowers and Gregory Bateson would call an *ecological worldview*. Throughout this work, right from these first sentences, I hope you see the alignment between my paradigm and praxis in resisting Western reductionist tendencies and embracing a broader, more holistic view.

This inquiry has come to be only because of the dynamic web of life and interconnected processes on Haudenosaunee and *lək<sup>w</sup>əŋən* (Lekwungen) lands and beyond. These acknowledgements must therefore include far more than my human family members, inquiry partners, friends, supervisors, teachers, and students (who are, of course, teachers as well). This inquiry has come to fruition because of the kindness and hard work of the farmers who planted and harvested my food, the seeds that have sustained me, the pollinators that have sustained them, the water that nourished them all. Furthermore, all of their parents, and their parents' parents, must be thanked for their work in sustaining these cycles of life. In various meditations, the late Zen Buddhist monk Thich Nhat Hahn (Plum Village, 2014) asked if we as individuals can see the cloud in a cup of tea or a piece of paper. He called this notion *interbeing*; the fact that it's all connected. We are all connected in the most profound and simple ways, and I am grateful for each species, being, and entity that has helped me along the way.

There are a few people whom I would like to thank directly, some who will be able to read this, some who will not. First, I would not be here today, able to undertake this inquiry, if it

were not for the willingness of family members to take in my 11-year-old orphaned Granny (Dorothy Brown) in New Brunswick in the early 1900s, or for the quick thinking and sailing skills of my grandfather, who righted a boat he and my mother tipped when she was a teenager. I would not be here if my mom hadn't practiced holding her breath so she could untangle herself and make it out from under that sail. I would not be here without the people who gave my paternal great-grandfather a job after he turned down the offer to work on the Titanic and stay in England to marry my great-grandmother. So many nodes in the web that could have gone another way, but here I am.

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## Chapter 1: Introduction: A Crisis of Culture (of Which I Am Part)

My initial inquiry arose while working on a sustainable environmental education campus in the Bahamas in 2013. After all the students had learned and experienced there, I wondered what would happen when they returned home to the United States? Would their new habits stick? Would they embrace sustainable living upon their return? What value shifts, if any, occurred? At that point in my environmental education career, I had experienced several sustainable and alternative living campuses, and I wondered exactly why it is so difficult for me and my students to maintain our ecologically sustainable practices when we return home from these experiences. Why, despite all we know about ecological crises, does Western industrialized culture (WIC) maintain the unsustainable status quo?

What cosmologies, ontologies, and epistemologies are this lifestyle based upon? That is, what underlies our actions, our systems, and our taken-for-granted assumptions about the world? What exactly do we teach each upcoming generation? How do these WIC beliefs show up in the curriculum-as-plan[ned] (Aoki, 2004e, p. 159) in British Columbia (BC)? Given the power of language to shape our thinking, my inquiry question shifted to: How might our educational discourse (inadvertently) support ecologically unsustainable beliefs and behaviours? Later, I settled on the question that guided this inquiry: Where and how do ecologically unsustainable root metaphors arise in the British Columbia curriculum and educator discourse?

Given that global ecological crises appear to be the result of the beliefs and practices of WIC, this dissertation looks at WIC and how these beliefs are conveyed. As a member of this group, I have written from the perspective of the Westerner and intentionally invoked the use of *we* and *our* throughout this dissertation to connect the broader Westerner to these crises. There are times I use *we* to signify a group other than the dominant Western perspective, that of

educators or scholars, say, and I identify which *we* I mean. In other parts of this work, I have written from a personal perspective, intentionally invoking “I” to highlight one way WIC is internalized and put back out into the world again. My hope is that these various viewpoints help ground the theories and potentially illuminate similar experiences for you. Throughout this work, Reader, we will dip in and out of these different perspectives to see how and where they strengthen, challenge, and conflict with each other.

### **Definitions**

Several definitions are helpful to ensure we approach this inquiry from the same direction because words like *sustainability* and *curriculum* appear in many contexts in the literature. I define some important terms below; others are defined where they are first used.

*Curriculum*: This word has come to mean all manner of things regarding to the content of what educators teach in and outside of schools. Here I use the word to refer to the “curriculum-as-plan[ned]” (Aoki, 2004e, p. 159), the governmental documents that teachers in BC are required to teach, assess, and report on students’ progress in learning the information and skills therein. I use *curriculum*, *curriculum-as-plan*, and *curriculum-as-plan[ned]* interchangeably in this text. *Curriculum-as-lived* describes how these documents are brought to life by educators.

*Discourse*: Hall (1997) defined discourse as “a group of statements in any domain which provide a language for talking about that topic and a way of producing a particular kind of knowledge about that topic” (p. 222). Foucault (1982) expanded discourse to include anything that could be written, said, or otherwise signified. Bowers (1995) explained how discourse (language) produces and limits knowledge, this way: “Cultural groups are thought by the cultural schemata in their languages as they think *within the languages*” (p. 31, emphasis added).

*Ecologically unsustainable:* I use this term to describe all discourse, actions, and thought patterns that describe taking from the earth or any earth communities without replenishing at the same rate and quality. If ecological diversity is degraded, these linguistic, action, and thought patterns are ecologically unsustainable. Our Western neoliberal economic system is ecologically unsustainable, as are the tenets (root metaphors) that underlie this system, such as anthropocentrism and Eurocentrism.

*Root metaphors:* Root metaphors “are those sets of assumptions, usually implicit, about what sort of things make up the world, how they act, how they hang together, and usually, by implication, how they may be known” (R. H. Brown, 1977, p. 125). They are “the most basic assumption about the nature of the world or experience that we can make when we try to give a description of it” (MacCormac, 1976, p. 93). They begin structuring neural pathways when we are young and are reinforced and strengthened until we ultimately forget they are metaphors and take them for reality (Bowers, 1980; Lakoff & Johnson, 1980; Lent, 2017). Root metaphors are the foundation for other spinoff metaphors. For example, *mechanism*—the idea that living things can be compared to or act as machines—is an offshoot of the root metaphor *reductionism*.

*Socioecological crises:* Social and ecological crises have typically been articulated as separate issues. Bowers (1995) called this separation a “schizophrenic condition” where concern about environmental degradation is kept separate from existential and cultural questions relating to “how much is enough?” (pp. 1–2). This inquiry, however, is founded in the understanding that issues of injustice, from gender-based violence to habit loss to colonialism, are all rooted in a modern Western way of thinking about and relating to the world around us. In other words, this inquiry begins from the premise that we are experiencing a crisis of culture. Therefore, going

forward, I consider these issues together and describe them as socioecological crises to reconnect our cultural ontologies and epistemologies with current social and ecological realities.

### **Situating Myself**

Given that I live as an uninvited guest on the traditional lands of the lək<sup>w</sup>əŋən-speaking peoples, one aim of this inquiry (and all my future writing and teaching) is that it contributes to our collective decolonization. This place has taught the Songhees and Esquimalt people since time immemorial, and I am grateful for their reciprocal and ongoing relationship with the land. I am also aware that colonization has robbed too many generations of this knowledge. In a podcast interview (Dion & Suntjens, 2021), Donald described colonization as an ongoing process of relationship denial. He said, “Probably the one that’s done the most damage is the denial of the relationships with the things that give us life” (Donald, as cited in Dion & Suntjens, 2021, 31:27). I hope that by bringing attention to our Western discourse we can repair and renew relationships “with the things that give us life.”

As part of my positioning, I want to state that I am a settler, and I have approached this inquiry from an Indigenist paradigm (Tanaka, 2015a; Wilson, 2007). However, just as one does not need to be female to be a feminist, one does not need to be Indigenous to be an Indigenist (Royal Roads University, 2020; Tanaka, 2016). Wilson (2007) laid out several principles that guide research from this stance that focus on the preservation of relationships, process, and the transformation of participants (see Appendix A). I understand being Indigenist as an approach rather than a specific end goal. I am in a state of “be~coming” (Tanaka et al., 2014, p. 2) Indigenist as my embodied understandings, experiences, and knowledge deepen. As I learn more about (and through) Indigenous epistemologies, I can better ground this inquiry in them. The ~ symbol denotes that I am simultaneously *being* and *becoming* Indigenist. In light of my efforts to

contribute to decolonization, one of my goals here is to have you, the reader, understand the nuances of this Indigenist approach to research. This will take time as we build our relationship throughout this work. Wilson (2007) has said, “Our own relationships with our environment, families, ancestors, ideas, and the cosmos around us shape who we are. . . . Good Indigenist research begins by describing and building on these relationships” (p. 194).

This inquiry is all about relationships as well as the culture-language-thought patterns that shape them. In this work, I share formative experiences that led me to my inquiry question and poignant, humbling moments of my transformative inquiry (TI) process with the hope that they shed light on how invisible, ubiquitous, and pervasive WIC thought-language patterns are. I hope this work shifts your understanding of the ecological crisis to see how it is the result of cultural beliefs and that these beliefs, encoded in our language, and thus my use of the term socioecological crises. I hope to present these patterns that shape our relationships in such a way that you feel hopeful and reflect on your own discourse and conditioning. I hope these ideas intrigue you enough to want to discuss them with your colleagues. I hope this work contributes to shifting our culture-language-thought habits to those that are sustainable, ethical, just, and regenerative. *Chi Miigwetch. Həyŝx'qə.* Thank you.

### **The Issue: The Status Quo**

“The evidence from scientific studies strongly suggests that our culture, as well as others, is based on assumptions that ignore the interdependence of cultural and natural systems” (Bowers & Flinders, 1990, p. 28).

In May 2021, former UN Secretary-General Ban Ki-Moon warned that the world is “standing on the precipice of all these crises” (as cited in Bryer, 2021, para. 4). As that truth settles in, exhale and notice. Notice what is happening for you and within you. TI, the

methodology used in this dissertation, embraces the whole self—reason and emotion, mind and body, spirit and intuition, and more. In fact, that we Westerners think these are separate parts of us contributes to the issues I examine here. So, Reader, we will begin the (re)union of these parts of ourselves here. What sensations, emotions, and thoughts occur within you as you read the words, “We are standing on the precipice of multiple crises?”

Daily, we learn about myriad dire global circumstances and yet, we have limited spaces to digest this reality; many of us seem to tune them out. Thunberg (2018) captured this disconnect and her confusion about it succinctly. She reasoned that if we are changing the entire planet’s climate, if it was “really happening, we wouldn’t be talking about anything else” (Thunberg, 2018, 0:43). “Tuning out” or dissociation is a psychological coping mechanism humans use to manage trauma and *climate trauma* is an “ever-present, . . . entirely new, unprecedented, and higher order category of trauma” (Woodbury, 2019, para. 1). So, maybe people *cannot* talk about it. Maybe this tuning out is a way to manage our overwhelm and climate grief (Cunsolo & Ellis, 2018). Maybe, because of our individualistic culture, we feel powerless to address these issues and frustrated at our governments for not doing enough (Hickman et al., 2021).

Although we may be limited in our ability to make change, we are not paralyzed. Many people resist problematic systems, support local farmers, and protest unsustainable policies; however, the power structures in our culture shape and limit the scope within which we can act (Foucault, 1982). My inquiry starts from this position that the status quo, specifically WIC norms, need to change in order to improve equality amongst humans and ensure ecological health. The troubling ecological reality is not news (Bowers, 1974; Carson, 1962; Leopold, 1949) and there is increasing awareness that changes need to occur across multiple sectors

(Hawken, 2017). For example, divesting from fossil fuels, reworking election policies on funding and representation, and regenerative agriculture are just three methods amongst others that could improve the lives of humans and our “more-than-human” (Abram, 1996, p. 7) relations. Given that these (and other) interconnected, practical solutions exist, why are they not implemented on a larger scale? What hurdles prevent this? What legacy or inherited effects might be resisting these changes? These questions can be approached from a variety of angles, but as an educator I am interested in how we become literate in the ecologically unsustainable “thoughts and ideas already inscribed” (Aoki, 1993/2004b, p. 293) in our culture.

### **A Few Western Norms: Colonization, Commodification, and Consumerism**

Through ongoing colonization, Western beliefs and practices have reached most corners of the globe, upending, converting, or eliminating other cultures and languages in their wake (Bowers, 1993, 2001a, 2010a; Klein, 2007; Norberg-Hodge, 1991). In fact, by 1914, Europe held “roughly 85 percent of the earth as colonies, protectorates, dependencies, dominions, and commonwealths” (Said, 1993, p. 8). Colonization, in this inquiry, is not limited to an act completed in the past. Instead, it is the process and mindset that fosters the ongoing denial of relationships (Ng-A-Fook, 2020). By denying our reliance upon the natural world, we can easily reduce other beings to their instrumental and economic value. We commodify them. The spread of Western values and discourse, including the desire for “unfettered economic growth” (Donald, 2019, p. 104), has led to unsustainable consumption patterns, the exploitation of millions, and an altered planetary climate including myriad ecological breakdowns (Dakos et al., 2019).

To efficiently harvest or “extract” these so-called commodities, we need to understand when and how best to do so. Western science and technology have offered a “rational” way to predict and control our environments and our economies. The root metaphor of anthropocentrism

or human supremacy causes us to overlook our dependence on the rest of nature, creating the “illusion of disembeddedness and invincibility” (Plumwood, 2005, p. 238). From this perspective, developments in science and technology are labelled as “progress,” and the Janus view of science is ignored. There is a tacit agreement that this progress is our collective WIC goal. More than 30 years ago, Bowers and Flinders (1990) challenged the idea that we could replace natural systems with artificial technologies; nonetheless, today, many put their faith in technofixes believing they will allow us to continue living this consumeristic lifestyle.

Globalization exports images of this excess and consumerism around the world, suggesting this is how to achieve happiness and success (Bowers & Martusewicz, 2009), the so-called “good life” (Kasser, 2004). These images and advertisements perpetuate Plumwood’s (2005) “illusion of disembeddedness and invincibility” (p. 238) with “carefully orchestrated visual images of plenitude” (Bowers, 1997, p. viii). Perhaps corporations recognize the pain we are experiencing in the face of increasingly dire socioecological crises because they market not the taste or quality of a product, but instead how it will make us feel. As headlines declare, “Climate crisis: 11,000 scientists warn of ‘untold suffering’” (Carrington, 2019), Coca-Cola says we can “open happiness,” Wal-mart tells us saving money allows us to “live better,” and Airbnb comforts us saying we can “belong anywhere.” (This message about belonging is immediately and ironically contradicted by the #mankind, thereby excluding more than half of the human race). These advertisements also highlight what WIC values. These slogans show us that happiness can be acquired through material goods, that money makes life good (and more money makes life even better), and, that men are still the default, the “One” who belongs.

These products can distract us from our existential angst (Solomon et al., 2015) and the socioecological reality. They may provide a moment of joy or even just a reprieve from the

“precipice of multiple crises” before the unease settles in again and we turn to another distraction. Despite what the advertising industry tells (sells) us, the planet cannot supply sufficient raw materials for all roughly eight billion humans to live the Western lifestyle. Raw materials, or “natural resources,” are WIC terms for fish, rocks, forests, and entire landscapes. These reductive terms cognitively and morally distance us from these other living beings and components of the biosphere. This language ignores their roles and relationships in the wider ecosystem that sustains us and conflates their worth with their utilitarian value. It sounds like their purpose is to be turned into something else or that it is in their very nature to be a resource for us. I provide more details on these languaging practice in Chapter 3. Despite the ubiquity of these messages, many of us know there is some different way to be in relationship with the world.

### **An Interlude**

#### ***Allow Me to Ask About You***

Reader, how are you? This is a weighty topic. Facing these crises can be difficult. Much of this pressure on our socioecological networks gets internalized and the psychological stress becomes physiological stress. Movement helps release the build-up of stress hormones and mindful awareness can allow us space to recognize what is happening inside us. So, I suggest we pause for a mindful moment to check in. Myriad studies have shown the benefits of meditation and mindfulness practices (D. M. Davis & Hayes, 2011; Flook et al., 2013; Hülshager et al., 2013; Kabat-Zinn & Hanh, 2009; Zelazo & Lyons, 2012), yet I would like to shift our perspective of mindfulness slightly. I would also like to put aside the images of peaceful people with calm faces and clear minds. Instead of this imagined peace as the goal, let us simply be curious. Let us resist the Western doctrine of rationality and try to embody this experience, to

learn from our bodies' wisdom (McMorrow, 2021). I invite you to read the next paragraph and then put aside the paper or device on which you are reading and practice.

Closing or lowering your eyes, take a moment to ground down in your seat, unroll the top of your spine, and gently lift your chest so you are sitting in a noble posture. Tucking your chin just slightly, relax your jaw and tongue. Take a quiet deep breath. Do this a few times and try extending your exhale through pursed lips so your exhale is longer than the inhale. That helps access the parasympathetic (the rest-and-digest) nervous system. Now, notice. With your mind's eye, notice what is happening in your body. With curiosity, scan from the tips of your toes up your legs through your torso and down your arms at a pace that works for you. Go back and check in with your shoulders, your neck, your jaw, the roots of your hair, and the space between your eyebrows. What sensations do you notice? What emotions are present? What reactions are you having to this view of the socioecological crises as a crisis of culture? Is there a numbness to this information? Outrage? Exhaustion or exhilaration? Much of this information is not new, but perhaps looking at it through the lens of our culture is. Perhaps recognizing our complicity is.

All of the responses can be described scientifically and written up in peer-reviewed journals, but let us step outside this paradigm based on rationalism and scientism. I want us to notice, all the way through this written work, how we feel. It is not common practice to examine the deep assumptions of our worldview. What arises within us in relationship to the ideas presented here? As we understand that the socioecological crises are a crisis of culture, what emotions and thoughts arise? I bring up this practice of the pause here in this first chapter when you are fresh, Reader, because our WIC has, except for very recently, pushed emotions down and away. By disconnecting from our bodies, we draw boundaries on what information is considered valid. Foucault (as cited in Hall, 2001) explained how "the production of knowledge

is always crossed with questions of power” (p. 78). This idea has political implications (Stephens, 2013); those who define these boundaries, define what counts as knowledge.

### ***Rationalism, Emotional Intelligence, and Dualisms***

Our cultural training asks us to rely on our intellect. *Mind over matter. Use your head.* This quality is so well-honed that we have lost connection to what is happening in the present moment to ourselves, others, and the planet. The paradigm of rationalism is actually a catch-22, a double-bind. The TI methodology critiques this “ability” to separate ourselves from our emotions and embraces them as our teachers. Traditionally, emotions are associated with the body and with women, whereas cool-headed reason and the brain (from which reason supposedly arises) are associated with men. These associations—emotions with the body and women, reason with the head and men—are important because they point to a couple of many cultural dualisms (Plumwood, 2005) where one item is understood to be separate from and superior to the other.

Plumwood (1993) defined dualisms as

an intense, established and developed cultural expression of such a hierarchical relationship . . . [it] is a relation of separation and domination inscribed and naturalised by culture and characterised by radical exclusion, distancing and opposition between orders constructed as systematically higher and lower. (pp. 47–48)

A key component of Plumwood’s (1993) definition is that these hierarchical relationships are “naturalised by culture”; they are not universal. Dualisms are generally written this way: man/woman, reason/emotion, and mind/body, where the first term is separate from and superior to the second term (Martusewicz et al., 2015). These three dualisms have shaped WIC through the legacies (and root metaphors) of patriarchy, scientism, and the distrust of our emotions—rationalism. To address the socioecological crises, we need to see these dualisms and other

linguistic patterns for what they are: cultural beliefs inscribed in cultural discourse (Bowers, 1997, 2001a). Understanding how our thoughts and discourse (re)create the status quo is part of an ecological way of thinking.

***Please Allow Me to Introduce Myself (Some More)***

Before discussing some Western historical discourses and influences that led us to this status quo, let me share a little more of my story and what brought me to examine our culture. This dissertation synthesizes my learning over the past several years, but in hindsight, events throughout my life led me to this inquiry. So, following Wilson's (2008) maxim that "storytellers need to impart their own life and experience into the telling" (p. 32), I share four formative experiences that led to this inquiry.

**No Logo and Learning From the Past: Toronto, 1999.** Have you ever had one of those moments where you wonder what future generations or even your future self will think of you? At some point in my teenage years, I found out that my mom had smoked when she was younger, and I was shocked. When I asked her about it, she simply said it was different back then. I wondered: What aspects of my life would my future children look back on, incredulous at my choices with the knowledge they had? Then, I realized something. I was already out of alignment with my values, and I didn't need the benefit of hindsight to see this.

Earlier that year, I read Klein's (1999) book *No Logo*, which described, among other things, the sweatshops in which my clothes were made. She explained the intricacies of corporate power, and I remember learning (and being shocked by) how American businesses strategically avoid paying health insurance for their employees by hiring them for slightly less than full-time hours. "What? Who would do such a thing?" 19-year-old me thought. I now know the conditions of my birth—White, middle-class settler in what we now call Canada—offer me the privilege of

being shielded from this knowledge until this point. Although others lived this reality, I learned about it only through this book. I may have been naïve then, but I knew my instincts were not wrong; those policies were. How could people born less than an hour from me be forced into this predicament? It was my introduction to global injustices.

**The Rule of Thumb and Colonial Legacies: Kenya, 2002.** While studying environmental biology during my undergraduate years, a 3-month university field school in Kenya showed me firsthand the depth of global inequality. One day our class met with the leader of a rural women’s group who discussed with us, among other topics, the tradition of female circumcision, also known as female genital mutilation. We learned it was where young women’s clitorises are cut out of their bodies by other women. The United Nations Population Fund (2022) explained that this practice is a “manifestation of deeply entrenched gender inequality” (Why is FGM performed section, para. 1). Though dangerous and extremely painful, young women are not fit for marriage and could be outcast from their families if they refuse the procedure. “Procedure” sounds a little more clinical than it should; clitorectomies are usually completed by other village women in local huts with rusty knives. Given the severe consequences of this stigma, this women’s group was not trying to end the tradition but improve the tools used in this procedure, so fewer young women died during the process.

This shocking information was not the only reason I recall this day so vividly. The woman leading the discussion was dressed in the traditional royal blue Samburu dress with layers upon layers of colourful necklaces made of seed beads typical of several Kenyan tribes. What stood out against this outfit and her dark skin was a bright white cast on her arm. At the end of her talk, someone asked about her cast.

That? Oh, her husband had broken her arm.

Wait . . . What?!

That was the day I learned about “the rule of thumb.” Men were (are?) allowed to beat their wives with a stick as long as it was no bigger in diameter than their thumb.

I could not (and still cannot fully) understand it. What happened? How could her husband do this? Although immersed in patriarchy, no one had named it for me yet. My 21-year-old mind spun with this situation. Rebecca, from Archer’s Post, a dusty rural village in central Kenya, showed me the conditions under which too many women live today.

The second time my worldview shattered on this trip happened when our caravan of trucks filled with Canadian university students and professors drove through another small town. The benches of these trucks faced inward, and the sides were open to the air. I was the only person up on my knees on the bench and facing out, listening to music. As I took in the houses and shops, a tall, slender, and incredibly dark-skinned Kenyan man looked directly at me and said, “Fuck you, White man.”

Fear. Freeze. Confusion. Who? Me?

Guilt. Maybe me, I’m White—but I’m not a man . . .

Denial. Wait, *I* didn’t do anything.

Shame. Or did I? I’d learned so much already here in Kenya. What else don’t I know?

**Same, Same But Different? The Bahamas, 2013.** Working as a marine environmental educator on a sustainable campus in the Bahamas was a dream, at first. I spent my days teaching students about mangrove ecosystems while wading through them, doing snorkel transects, and cliff jumping. It was busy and wonderful. However, as you read at the beginning of this chapter, after a couple of school groups came and went, an oddly familiar question popped up: What happens when these students return to the conveniences of North America? At this point, I had

worked at (and therefore, had come and gone from) several environmental education campuses. If I, university educated and privileged in other ways, slipped back into the status quo lifestyle and struggled with maintaining these ecologically sustainable habits and mindsets at “home,” how could I ask the youth I taught for a day or a fortnight to change themselves or the system?

**Epilogue: Sitting With Discomfort (Or Rather, My Inability to Do So): Victoria, 2020.** Some years ago, a doctor diagnosed me with two kinds of anxiety. One of the ways they manifest is difficulty sitting with uncertainty or discomfort and a resulting desire for control. This craving for control is not unique to me. It is echoed throughout Western culture and linked to agriculture, religion, and the Scientific Revolution. I think this (perceived) control gives us a sense of security through predictability.

The cognitive dissonance I experience as I continue to learn how the systems that led to my life circumstances are designed by people of my ilk (whatever that means) and simultaneously, *intentionally*, hold others down is now unbearable. As a highly sensitive person (Aron, 2010), these myriad injustices hurt my heart and keep me up at night. And yet, I am grateful for these experiences that have allowed me to witness these inequalities, the sensitivity to “dwell” with them, and the means to pursue these questions. This dissonance is uncomfortable and confusing but, I hope, fruitful.

My goal in undertaking this inquiry is to discern how WIC and discourse shapes our relationships with one another and the environment, and how places of learning contribute to these foundational beliefs. How can educators better address this disconnect between our Western lifestyle and the state of the socioecology? How did it come to be that transnational corporations treat people (and “natural resources”) as they do? In what values are the legacies of patriarchy and colonialism rooted? Why is it so difficult to shift current social structures to

embrace ecologically sustainable practices? What leverage points are available to educators (Meadows, 1999)? How might all these ideas be connected? Reader, before we can identify possible leverage points, let us first accurately “set” the problem (Reddy, 1993). What are the qualities of WIC that fuel these beliefs and promote socioecological crises?

### **Double Binds of the West**

At first glance, the social and ecological injustices described in the anecdotes above can appear discrete. After all, we are taught this way—protecting this forest or that coral reef means eliminating the jobs of foresters and fishers. On closer examination, however, the reductionist thinking (humans/nature) that separates us from the ecosystems is part of the issue. Just like the separation of mind/body and reason/emotion, this thinking (re)creates the very mindset and conditions that led to these socioecological issues. Bateson (1972) called this phenomenon a *double bind*. Despite being written 17 years ago (and specific to the United States), Orr (1994/2004) captured some of the double binds in our Western societies and education systems when he asked:

How, in fact, do we educate the young to think clearly about important things in a culture that spends \$500 billion per year to deceive using the finely honed tools of advertising? How do we prepare them to comprehend systems, patterns, and larger contexts in a society much distracted by entertainment and given to specialization? How do we teach the young of America to honor the world when the United States is the leading cause of climate change? How do we teach them to love land and community when our society values such things far less than it does individualism and consumption? (p. xii)

Double binds like these still permeate Western society today. The Canadian Minister of Environment and Climate Change recently rationalized the need to build an oil pipeline so we can afford to make investments to mitigate the impacts of climate change (Boisvert, 2021).

### **Cultural Myths We Tell/Are Told**

For millennia, Westerners have strived to understand our purpose and our place within the panoply of species on the planet (Capra & Luisi, 2014; Eisler, 1987; Evernden, 1992; Huxley, 1908, p. 39; Lent, 2017; Lovejoy, 1936; Merchant, 1980, 2016; Plumwood, 1993, 2005; Worster, 1994). The legacies of Plato and the Realm of Forms, Aristotle and the Great Chain of Being, the femininity of Nature, and the erasure of goddess traditions linger in our cultural discourses and neural pathways today. Eisenstein (n.d.) said, “For millennia, civilization . . . has understood progress as a matter of extending control onto the world: domesticating the wild, conquering the barbarians, mastering the forces of nature, and ordering society” (p. 7).

Western thinkers concluded that humans are unique among animals and rest atop of the earthly Great Chain of Being. Some authors have posited that this sense of superiority, and even hero complexes, arose to manage the existential angst that surfaces because we are the only species to know we are going to die (Rowe & Mathews, 2021; Solomon et al., 2015). Three well-known Western cultural narratives support this view of human supremacy, including Christianity (Eisler, 1987; White, 1967), the Scientific Revolution (Merchant, 1980), and the rise of neoliberalism (Harvey, 2005). Each of these three influences is described next.

#### ***Christianity***

From its inception, Christianity has nurtured two beliefs central to WIC: anthropocentrism and individualism (Heath, 2018; Sessions, 1974; White, 1967). In the Christian view, God made the earth *for us* and Genesis (1:26) implores us to “have dominion over the fish

in the sea, and over the fowl in the air and . . . over every creeping thing that creepeth upon the Earth.” From this position, it is a short step to the commodified, utilitarian view of nature and the aforementioned “illusion of disembeddedness” (Plumwood, 2005, p. 238). White (1967) pinpointed this instrumental view as beginning with certain technologies that arose in Christian Medieval Europe. Although some interpretations of the Bible lean towards stewardship (Sessions, 1974) versus the domination described here, both perspectives situate us in a central and superior position to the rest of nature.

A second quality of Christianity that contributes to current discourses of separation is that of *individualism*. At its core, Christianity is about a “sacred relationship between the individual and God” (Heath, 2018, p. 9). In a time where city states had their own individual gods and rituals were public events, this new and uniquely independent relationship with the divine was a compelling feature of Christianity, as was the promise of eternal afterlife (Heath, 2018). These attributes of Christianity were so appealing that people left their regional religions, and thus their families, to worship Christ. Christianity promoted the value of individuals. The Bible is interpreted various ways, though, and some (for example, Richards & James, 2020) have claimed individualism appears in the Bible because Westerners interpret it through their own lens. Although religion and science are often pitted against one another, several have argued that Christianity incubated the beliefs that allowed the Scientific Revolution to take place in Western Europe (Stump, 2016; Whitehead, 1925, Worster, 1994).

### ***Western Science***

Prior to the 16th century, nature in Europe was seen as an extension of God, and everything was imbued with this godlike presence (Merchant, 1980; Warren, 2000). Christianity separated humans from nature. The discoveries of the Scientific Revolution then played a

significant role in the new paradigm of the Enlightenment thinkers and perpetuated the “predict and control” mandate of science undermining the metaphor of the earth as mother. Instead of “feeling beings” we became “objective” recorders of nature, separate from it (Capra & Mattei, 2015; Warren, 2000). Merchant (1980) claimed this removal of animistic organic assumptions about the cosmos “constituted the death of nature—the most far-reaching effect of the Scientific Revolution” (p. 193).

Scientific rationalism subverted other forms of knowing and became the apex form of knowledge (Plumwood, 2005). Pratt (1992) eloquently described how Westerners reduced nature: “One by one the planet’s life forms were drawn out of the tangled threads of their life surroundings and re-woven into European-based patterns of global unity and order” (p. 31). Despite this scientific legacy, the anthropocentric, reductionist view has been changing among some Western scientists. Capra (1975, 1996), Shiva (2005, 2020), Lovelock and Margulis (1974), and Maturana and Varela (1998) have all proposed shifts to a more holistic, ecological view of nature that exists in myriad Indigenous cultures (Cajete, 1994, 2000; Kimmerer, 2013; Lipe, 2019; Little Bear, 2000).

### ***Neoliberalism***

A third and more recent cultural myth that contributes to the Western taken-for-granted worldview, including the root metaphors of anthropocentrism, individualism, and competition, is the rise of neoliberalism. Although several iterations of this ideology exist (and resulting practices and policies), I use Harvey’s (2005) definition of neoliberalism as “a theory of political economic practices that proposes that human well-being can best be advanced by liberating individual entrepreneurial freedoms and skills within an institutional framework characterized by strong private property rights, free markets and free trade” (p. 2). Neoliberal policies reduce

social spending and delegate all services to the private sector which has shifted power away from governments (Harvey, 2005). The idea that the markets are the best way of organizing society has constituted anyone with “any dependence on the state as a *morally lesser* form of being” (Davies & Bansel, 2007, p. 251, emphasis added). This atomization of society into competitive individuals is embedded in schools as well. Standards, testing, competition, efficiency, privatization, and corporations in schools are all commonplace today.

### **Indigenous Worldviews, Briefly: Relationality and Spirituality**

“We require another story to tell, another model, so that the deeper implications of the[se] . . . metaphor[s] can be drawn out by means of contrast. Simply speaking, in order to engage in frame restructuring, . . . we need first an opposing frame” (Reddy, 1993, p. 171).

These WIC myths of anthropocentrism, consumerism, individualism, reductionism, and rationalism do not represent universal human values. That said, this worldview is powerful and unlearning hegemonic norms can be challenging. Little Bear (2000) explained:

It is deep-rooted and implicit assumptions upon which attitudes are based and that make a person say, “That’s the way it is.” It is these assumptions that make it hard for a person to appreciate an alternative way of thinking and behaving. (p. 83)

Thus, this section introduces an opposing frame, an alternative paradigm, one that has the potential to unseat this Western *cognitive imperialism* (Battiste, 2013).

Although Indigenous peoples have hugely diverse cultural norms, there is a shared ontology or worldview in which humans are intimately connected to and a part of the natural world (Battiste, 2000; Cajete, 1994; Kawagley & Barnhardt, 1999; Michell et al., 2008; Simpson, 2014). In contrast to the Western human-nature dualism, Indigenous peoples see the world “as an intimate relationship of living things” (Deloria, 1994, p. 13) including human

beings. The goal of Indigenous learning is to understand and live out how to live well in a place and as such, ecosystems are preserved. This paradigm is guided by spirituality, respect, restraint, and relational accountability (Johnson et al., 2016). In fact, Wilson (2008) said, “Relationships . . . are our reality” (p. 7).

There is a shared truth among Indigenous peoples that relationality and spirituality “are of paramount importance in daily socio-cultural and socio-political interactions” (Styres et al., 2019, p. xv). In a chapter entitled “Allegiance to Gratitude,” Kimmerer (2013) shared, with permission, the Haudenosaunee Thanksgiving Address. Having grown up on Haudenosaunee lands (and Anishinabewaki and Mississauga territories) in south and southeastern Ontario, I now invoke these “words that come before all else” (Kimmerer, 2013, p. 107). The Thanksgiving Address offers greetings and appreciation to the natural world. In contrast to the WIC view, this address highlights our fundamentally interconnected nature and our utter reliance upon beings and processes over which we have no control. The spacious and gracious mindset that arises from this Address provides a welcome contrast to the Western mindset.

I offer the first two stanzas here to set the tone for this dissertation and to develop our relationship, Reader. (The full Thanksgiving Address can be found online; Stokes & Kanawahientun, 1993). You are an essential component of this process and I thank you, too, for being here. I invite you to read the following words slowly and with reverence.

#### The People

Today we have gathered and we see that the cycles of life continue. We have been given the duty to live in balance and harmony with each other and all living things. So now, we bring our minds together as one as we give our greetings and thanks to each other as people.

[All gathered respond:] Now our minds are one.

The Earth Mother

We are all thankful to our Mother, the Earth, for she gives us all that we need for life. She supports our feet as we walk about upon her. It gives us joy that she continues to care for us as she has from the beginning of time. To our mother, we send greetings and thanks.

[All gathered respond:] Now our minds are one. (Stokes & Kanawahientun, 1993, p. 1)

Others thanked in subsequent stanzas include the waters, the fish, the plants, the animals, the four winds, the sun, and the Creator, amongst others (Stokes & Kanawahientun, 1993). The Thanksgiving Address made me consider how rarely I am thankful for the wind. I have been a sailor all my life, so there are hundreds or even thousands of times I thought I was thankful for the wind, yet rereading this address recently made me realize I was thankful for the wind in a different way now. Not for winning a race or arriving at port faster; instead, I felt a broader appreciation for how the wind helps pollinate food for us all, spreads seeds, and brings rain. Then, this afternoon, my appreciation went rogue. I was in awe of pollinators, seeds (seeds!), rain, and then, perhaps oddly, manta rays and that one incredible dive in Thailand. I appreciated Cousteau's invention of SCUBA gear, the people with whom I picked kiwifruits in Aotearoa/New Zealand, and the fact that I could travel to these places.

See, that is how it goes, at least for me. At first, I am thankful for one thing, and then this web emerges, where more and more relationships are added to the ever-growing list of beings and processes for which I am thankful. I have much to learn from the Haudenosaunee, and I am grateful for their perspective, this tradition, and their care for the lands that raised me. The Thanksgiving Address has been helpful in allowing me to recognize instances in which my own worldview is limited by the very concepts I am studying here—the ecologically unsustainable

Western cultural norms. Sometimes the presence of these beliefs in my mind is difficult for me to recognize or admit because I wish I were already outside these Western norms. Hence, I strive to be one who can both see with and through this worldview as Bateson (Schumacher Center for a New Economics, 1976/2013) recommended.

## **Conclusion**

WIC has developed specific culture-language-thought patterns which are spread around the world through globalization, education, and international aid. On the whole, these cultural patterns and discourse are “largely invisible” (Bowers, 1993, p. 21), and thus it is challenging to see how they are linked to socioecological crises. In this chapter I have discussed how global crises are rooted in the status quo of WIC and how difficult it can be to face the reality of our participation in these systems. This inquiry aims to bring attention to and challenge taken-for-granted Western cultural and linguistic norms such as the culturally constructed dualisms between culture–nature and reason–emotion. Three cultural narratives, Christianity, the Scientific Revolution, and the adoption of neoliberal policies, continue to reinforce and spread ecologically unsustainable beliefs.

Because socioecological crises are rooted in Western norms and discursive practices, I described some common aspects of Turtle Island Indigenous cultures, to present an opposing frame. I hope, by the end of this inquiry, these two perspectives can become more than “a site of tension between this and that” (Aoki, 1993/2004b, p. 291). I turn now to Bowers (1997), who has long discussed culture’s impact on discourse and education and explained that it is time to “challenge what is being taught in our educational institutions” (p. 2). Going forward, three of the foundational ideas of WIC linked to these global crises are the focus on this inquiry:

anthropocentrism (human superiority), individualism, and reductionism. Specifically, this inquiry looks at how these Western cultural assumptions appear in educational discourse.

In the upcoming chapters, I describe the TI methodology used (Chapter 2), then review the relevant literature describing the constitutional nature of language and discursive influences on the curriculum-as-plan[ned], including the main school of thought referenced here, ecojustice education (Chapter 3). After that, I offer an ecojustice interpretation of the K–7 BC Science and Social Studies curricula (Chapter 4) and present educators’ responses to questions about the root metaphors and our Western relationship to the rest of nature (Chapter 5). The final chapter develops overarching connections and conclusions on how education in BC is impacted by Western cultural assumptions and language practices, and I offer some questions and possibilities for future curricula (Chapter 6).

## Chapter 2: Methodology

TI was developed at the University of Victoria (Tanaka et al., 2014) as a method of assisting preservice teachers to inquire into a personalized, professional topic of interest. This process asks the learner~teacher~researcher to undertake an inquiry into a salient issue in teaching, learning, or schooling. TI draws upon four areas, called the *spheres of inquiry*, including the academic literature, classroom (or other educational) observations, inquiry partners, and self-study. Inquirers examine these topics through a “personal, relational, and emergent combination of self-study, journalling, artistic expression, peer interaction, community engagement, and one-on-one mentoring with instructors” (Tanaka, 2015a, p. 70). TI, with specific actions and philosophical approaches, is where theory and practice intertwine. The method is guided by an Indigenist paradigm (Wilson, 2007) and honours relational accountability, generous listening, and finding courage in the unknown of our unique path.

Through TI, inquirers do not seek prescriptive answers but instead experience wandering through the learning, the discomfort (!), the in-between spaces, and ultimately (potentially), the evolution of thought and transformation of self. The TI process is both reflexive and recursive. Reflexivity is the process of turning attention onto oneself in context of the greater whole (Tanaka, 2015b); recursiveness here means that the process unfolds repeatedly such that previous lessons learned shape new experiences in an ongoing cycle. Through TI, inquirers gain a truer sense of self, potential to enact social change, and deep transformation in their practice from the positivist education experience they often had (Tanaka, 2015b). The strength of this process comes from both the myriad contributions as well and the deep, reflexive introspection.

Going forward in this work, I include more self-study reflections similar to the anecdotes in the first chapter, although they focus more specifically on teaching and learning experiences.

These self-study contributions are a fundamental component of the TI methodology and contribute to addressing my inquiry question determining how deeply Western beliefs are embedded in our curricular and educational discourse. These journal entries are dated and formatted as block quotes to alert readers to the change in perspective and tone including the use of contractions and more informal language.

### **Selecting TI**

Despite having already taught the TI process to preservice teachers five times, it was not an automatic choice when considering my methodology. Like Oberg's (2003) graduate students, I was initially limiting myself by perceived academic methodological "prescriptions" that acted as "obstacle[s] to the flow of inquiry" (p. 127). I was focused on the end goal, not the process. After years of teaching environmental education, I wanted to find an effective way to teach sustainability so that we actually lived it. However, when I started this research process, I fell back upon the rational scientism lauded in our culture. I thought I just needed to find the right way to teach these environmental concepts and interconnections. I could do a pre- and post-intervention measuring various behaviours and beliefs, and my results would be scientific. More than that, they would be black and white, clean and simple. I desperately wanted to find the answer to this *problem* of how we treated the planet and each other. I wanted to prove that we could *improve*. I knew the answer would no longer be in the back of the textbook, as it was in my early math and science classes, but it had to exist. Right?

So, I explored different research questions, paths, and intellectual cul-de-sacs, all the while struggling with the quantitative/qualitative dualism in my mind. I had internalized this Western norm, and I wanted to be associated with the former. Somewhere deep down I believed quantitative research held more value, at least by the world at large, and I wanted my research to

hold this value by the world at large. I wanted it to stand for itself; in a way, I wanted it to be universal and applicable to everyone. I hoped to produce something “objective” that everyone could understand. Clean and simple. Black and white. My own Western education, with this anthropocentric, individualistic hubris entrenched, shaped my thinking and limited my approach to the socioecological crises.

As I went on, I struggled with how to accurately capture what students learned in this hypothetical program, what they believed, and how to measure their actions. I knew, from my own experiences in environmental education, that Likert scales would not suffice to articulate the nuance I was interested in capturing. This struggle led me to realize this research path was not my passion per se; it was the scientific method. It was my sole concept of research. After several discussions pondering different methodologies with my supervisor, she suggested TI—a method I had taught for 3 years at that point. After a pause, during which I finally recognized and released the grip of scientism and accepted there were other (valid) ways of knowing, I agreed. In fact, I had been using this method all along as I looked to the literature, consulted peers and other academics, and endlessly contemplated my own teaching experiences and personal beliefs.

### **Paying Attention and Not Knowing**

In this method, inquirers resist the rush to produce results (Lasczik Cutcher & Irwin, 2017) and instead finding a “slower way of scholarly being” (Ulmer, 2017, p. 202). TI starts out with “paying attention and not knowing” (Ober, 2003, p. 123) where the inquiry will go. In contrast to the neoliberal culture of the West, TI follows Rilke’s (2011) advice from the last century:

I would like to beg you, dear Sir, as well as I can, to have patience with everything unresolved in your heart and to try to love the questions themselves as if they were

locked rooms or books written in a very foreign language. Don't search for the answers, which could not be given to you now, because you would not be able to live them. And the point is, to live everything. Live the questions now. Perhaps then, someday far in the future, you will gradually, without even noticing it, live your way into the answer. (p. 24)

We will resist searching for answers, Reader, and live the questions now. In fact, we are already immersed in the TI experience and will be throughout this dissertation. TI is both a method and an ontological stance, and for that reason it impacts everything, including the tone and style in which this dissertation is written. TI disrupts “the empire of reason” (Worster, 1994, p. 27) dominant in the West by embracing emotions and intuitive ways of knowing. As noted above, TI disrupts binaries and dualisms and asks us to look deeply into ourselves and our culture to see how each informs the other. In this way, my inquiry question and my methodology are “congruent” (Oberge, 2003, p. 128). TI is an iterative process whereby scholars engage in myriad activities, sometimes recursively, to uncover what they can about their inquiry question.

Recursion comes from the Latin root *recurrere*, which means “to run back” (Doll, 2013, p. 259). This same term is used in mathematical expressions when iteration is used, yet here I mean it as Bruner (1986), Bateson (1972), and (Harries-Jones, 1995) did: how past understandings shape our current thoughts and how our current thoughts and understandings influence past models by looping back on themselves and moving forward with new understandings. Together, reflexivity and recursion in the TI process should lead to wiser actions in the future by connecting our current and past experiences and thoughts with our knowledge of self in relation to others. Because of the recursive nature of thought-language, there is no way to identify specifically how each of the four spheres has impacted what you read here, only that each one played a critical part in this whole.

## Identifying Touchstone Stories

In order to pinpoint issues that are significant to the inquirer, the TI process can start with identifying a *touchstone story*, some educational event or memory that stands out (Tanaka et al, 2014). These events are often memorable because either they carry an emotional tone or remain unresolved. For example, perhaps as a child, one experienced frequent family moves or marginalization that impacted one's learning and views on education. Or perhaps, having overheard something a teacher said to another student or having disagreed with something done in class lingers in the mind. Due to the power dynamics and the hierarchical structures inherent in Western culture, sometimes we are not ready or not willing to respond at that time, and the story sits on our hearts. These touchstone experiences offer a meaningful place to start the inquiry (Chambers, 2004; Tanaka et al., 2014).

My touchstone story originates in 2013 in the Bahamas, on the island of Eleuthera that I wrote about in Chapter 1. I was working with a team of international educators in tropical marine and conservation biology teaching some Bahamian elementary students, but mostly American high school and university-aged students. My 23-year-old self would have been on cloud nine, but my 33-year-old self was more critical. I had worked for several environmental education organizations by then, and I had started to notice similar claims of “transformative experiences” in their marketing materials. As the facilitator of these experiences, I was not sure what we were hoping to transform our participants into. Yes, there were incredible experiential aspects unique to this program, including measuring and tagging sea turtles, working in the permaculture garden, and taking blood samples from sharks. However, despite the sublime nature of these experiences, I had led lessons like this before and was not sure that they would be enough for *transformation*. Western culture is so . . . powerful. Convenient. Persistent.

Ultimately, I realized the program had the same underlying taken-for-granted beliefs of the other environmental education programs I had taught: “If people only knew what was *really* happening, they would change.” For example, “If we tell the kids the dire state of this ecosystem or that species, they will change what we are doing to the planet.” This thinking is based in the Western, linear cause-and-effect paradigm (Lakoff, 2016; Macy, 1991) and a rational worldview. I wondered to myself how anything was going to change if we were teaching the same ways and things that we had been taught. As the educator in these programs, I knew that “dire information” and still I took flights, bought new clothes, and periodically used disposable coffee cups:

*Journal entry, May 2013:* I am aware of the impacts of these lifestyle choices I make but there are societal structures that encourage these actions and act as hurdles to systemic changes. Why aren't we discussing these issues? If, as a relatively privileged adult, I take these conveniences for granted and am uncertain on how to make changes at the societal level, how can we expect our students to be any different? We can teach the life history of sea turtles (or pandas or polar bears) but unless we also educate about our deep cultural/political beliefs, nothing will change.

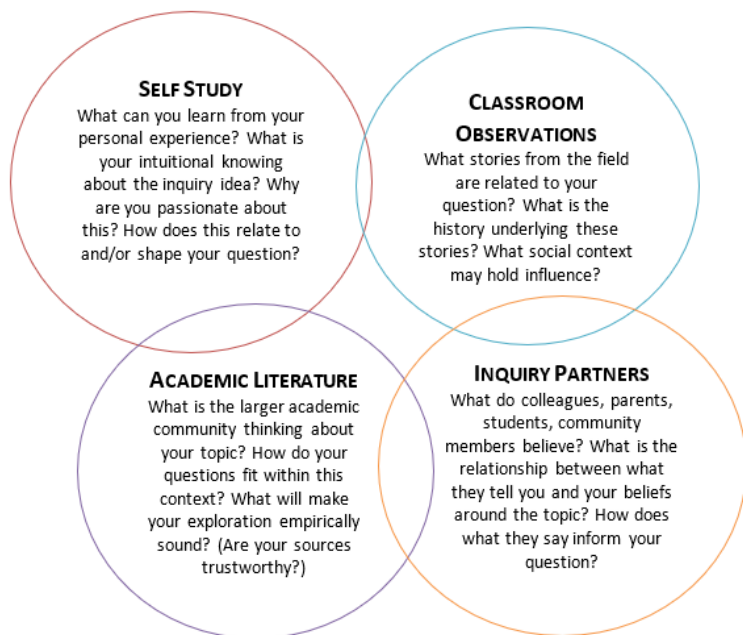
### **Exploring the Unbounded Question**

After a touchstone story is identified, the next step in TI is to create an *unbounded question* (Henderson, 1992) that gets at the heart of the issue in the touchstone story. An unbounded question is like an open question, but it goes slightly deeper; it has no immediate or complete answer that will be true for everyone. Tanaka et al. (2014) offered these examples: “How might my attitudes, beliefs and values affect my teaching? What do learners really care about? . . . How do I~we build a healthy learning community in schools?” (p. 2).

To explore their unbounded question, inquirers take a holistic view of the issue by drawing upon “all significant learning experiences, whether they are within the classroom walls or beyond” (Tanaka, 2015b, p. 4). This link to real-life educational experiences is essential because all of culture is educational (Bowers, 1996). The four spheres of inquiry in TI that are traditionally drawn upon are (a) self-study, (b) classroom observations, (c) inquiry partners (peers), and (d) the academic literature (see Figure 1). The inquirer shifts from one sphere to the next whenever necessary, ultimately thoroughly drawing upon all four as data sources. The process is nonlinear, iterative, and reflexive. Tanaka (2015b) described it as a “specific, yet fluid and evolving approach that embodies liminal spaces, relationships and in-between” (p. 4).

### Figure 1

#### *The Four Spheres of Transformative Inquiry With Prompting Questions*



*Note.* Adapted from *Transformative Inquiry*, by M. Tanaka, N. Stanger, V. Tse, and M. Farish, 2014, p. 4. Copyright 2014 by Apple Books.

Aside from the academic literature, described primarily in the next chapter, three other sources contributed to this inquiry question. The first was the BC K–7 Science and Social Studies curricula. The second was the written and oral semistructured interviews with educators (see Appendix B for the questions). These contributions, or *warm data* (Bateson, as cited in Cawn, 2010/2020), represent the TI inquiry partner sphere. Finally, I analyzed my own teaching journal entries. These self-study offerings are sown throughout the dissertation and denoted by their dated and block quote form, as mentioned above. In addition to these four spheres, Tanaka (2015a) listed several other facets key to the TI process—emotional engagement, vulnerability, generous listening, relational accountability, and disrupting conceptual dualisms. The next four subsections elaborate on each of the TI spheres of inquiry, starting first with the academic literature, then educational observations, inquiry partners, and finally self-study.

### ***Academic Literature***

Like all academic research, TI uses theoretical perspectives from various schools of thought and other contributions in the literature to bolster and challenge previously held beliefs and experiences. Whatever is produced through this inquiry must be examined and verified “within the broader context of researchers, scholars, practitioners, artists, and thinkers who also engage with the topic” (Tanaka et al., 2014, p. 476). The main fields drawn upon here are ecojustice education, ecofeminism, and the Indigenous pedagogical and methodological literature with support from critical discourse analysis. Chapter 3 is devoted to reviewing the relevant literature, and other connections are woven throughout the rest of the work.

### ***Educational Observations***

In this study I used an adapted version of TI. Instead of just classroom observations, I expanded these educational observations beyond the classroom to include the K–7 BC Science

and Social Studies curricula-as-plan[ned]. These documents are taught to more than 560,000 students each year (Government of BC, 2021) and thus have significant potential to influence the culture-language-thought processes of upcoming generations. Using an ecojustice lens along with tools from critical discourse analysis, I identified components of the curriculum that reinforce, contradict, and/or question three ecologically unsustainable root metaphors that reinscribe WIC—anthropocentrism, individualism, and reductionism. Chapter 4 describes this iterative process in detail. Full notes on this critical interpretation of these curriculum-as-planned documents for Social Studies and Science can be found in Appendices C and D, respectively. Additionally, the director of research for the BCTF provided some context about the curriculum reform; this background information is found in Appendix E.

Given the understanding that language is nonneutral and that we are “thought by the cultural schemata in [our] languages as [we] think within the languages” (Bowers, 1993, p. 31), how are Western, industrialized culture-language-thought patterns that fuel the socioecological crises embedded in and prescribed by the very documents educators are required to teach? While critically reviewing the curriculum-as-plan[ned], I kept several questions in mind, including the following: First, where do iterations of the three root metaphors of interest show up? What overall ontological and epistemological bases are present? How do the types of content and competencies taught encourage us to think in particular ways? How does that thinking impact the rest of nature? Human communities? How does the curriculum impact (i.e., recreate or reform or reinforce) particular cultural patterns? How do the K–7 Science and Social Studies curricula foster or hinder our connections to the ecosystems upon which we rely?

True to the TI methodology, this work occurred recursively. I gathered and synthesized information in multiple iterations, learning as I went and re-evaluating previous reflections. First,

I sought out broad patterns about these relationships and discourses and then homed in, guided by critical discourse analysis strategies (Machin & Mayr, 2012; Wodak & Meyer, 2009), on specific details that reinforced these root metaphors. That said, how we understand the world, including any curriculum, “is always the result of how [we] interpret it via [our] linguistic or socio-symbolic systems” (Zheng, 2020, p. 30). (As with anything in print, this interpretation is personally, historically, and culturally situated, not universally true. Nevertheless, it represents my mindset and understanding at this time and will likely shift in the future.)

Given that root metaphors are “the buried ideological sources from which the culture draws strength and reproduces itself intergenerationally” (Martusewicz et al., 2015, p. 72), they are critical manifestations of the culture-language-thought patterns. The three root metaphors studied here, anthropocentrism, individualism, and reductionism, were selected after discussions with ecojustice scholars because of their potent ability to fuel socioecological crises. After describing and unpacking examples of these root metaphors in the K–7 Science and Social Studies curricula, in Chapter 4, the chapter closes with a section highlighting instances of ecological thinking in the curriculum. These instances act as examples of what types of knowledge and discourse ought to be carried forward into the next version of the curriculum to address the cultural patterns that fuel socioecological crises.

### ***Inquiry Partners***

Inquiry partners, the third sphere of TI, are peers with whom the inquirer explores their inquiry questions as well as their intellectual and personal soul paths. They may pose questions, offer generous listening (Tanaka et al., 2014), suggest alternative fields that might support the research, and reflect our own growth back to us when inquirers need support. They play a crucial role in grounding us and the research in relationships. Inquiry partners may be friends, peers,

colleagues, family members, or fellow academics. Indigenist methodologies require researchers to be accountable to these relationships because research takes place relationally (Wilson, 2008). This means checking my assumptions, my critical reading of the curriculum, and my conclusions with my inquiry partners, the literature, and myself.

Relationships with inquiry partners “can act as a catalyst for progressing into deeper relationality and connectivity as learners collectively move beyond the perils of a purely objective way of knowing” (Tanaka et al., 2014, p. 72). These relationships deepen through *generous listening*; that is, paying attention with more than just the mind, taking in the whole person, noticing what they say and what is left unsaid. With one’s attention entirely on the speaker, we are not waiting for our turn to speak but instead listening for understanding. Inquiry partners offer us an opportunity to examine how the lens through which we see the world relates to others’ views (Tanaka, 2015b). Informal inquiry partners for this study ranged from fellow academics to friends to coworkers. However, Chapter 5 focuses solely on the interview contributions of 11 participating inquiry partners.

Interviews with these inquiry partners offered me insights into their thoughts on Western discourse worldviews and their personal relationships with the rest of the natural world. Their professions ranged from preschool teachers to youth workers, occupational therapists to university instructors. They answered several written survey questions, including introductory questions about their relationships and WIC’s relationships with the rest of nature, as well as their thoughts on the presence of the three root metaphors (anthropocentrism, individualism, and reductionism) in their respective fields and teaching praxis.

That said, print communication does have several limitations (Bowers, 2005, 2015a) and feelings and thoughts change over time—sometimes even moment to moment. To account for

these limitations, all inquiry partners were invited to engage in follow-up oral interviews; three participated. Inquiry partner responses provided insight to the curriculum-as-lived; offered personal nuances, insights, and questions that would not otherwise have arisen from my reading of the curriculum-as-plan[ned]; and enabled assessment of the degree to which their written responses had captured the feelings they revealed in their oral responses. During our oral interview, one participant shared, “[I] re-read that part of my answer, and I don’t believe it anymore.” Curriculum-as-plan[ned] and curriculum-as-lived are both part of our WIC discourse, and by offering critical reviews of both here, my intent is to improve the accuracy of what educators convey to students. More on this topic can be found in Chapter 5, which presents the responses of the interview inquiry partners.

**Who Are My Interview Inquiry Partners?** Initially, I invited Bachelor of Education students from a summer environmental education course I taught in 2018. The intention was to hear the voices of teachers-to-be rather than those who might retire shortly, with the logic that those at the end of their career would have fewer students to impact. My email invitations to this cohort received no responses. (Perhaps this was due to receiving my ethics approvals and having sent out the invitations after the cohort had graduated; many had already started their careers.) Then, after spending a long weekend with a friend and her two young girls, I was reminded of how many adults create (and recreate) culture for children and youth (Bowers, 2001b; Giroux, 2001; Pinar, 2006; Sandlin et al., 2010; Sandlin et al., 2011; R. C. Smith & Eisenberg, 1987).

After discussions with my supervisor, I decided to cast a wider net and invited inquiry partners through opportunistic sampling (also known as convenience sampling; Luborsky & Rubinstein, 1995). Opportunistic sampling is when researchers invite convenient participants, or in this case inquiry partners, to participate in the project. This strategy allowed me to invite 11

diverse educators whom I knew had an interest in this work. These inquiry partners all self-identified as people whose professions involve working with children or adolescents. Their roles included an elementary teacher, an outdoor playschool (preschool) teacher, a university instructor, a retired teacher, a girls' group volunteer leader, two occupational therapists (one works with urban youth aged 17–19, the other in northern Indigenous early childhood education settings), a team-building educator/consultant, a violence prevention workshop leader, a foster home and youth outreach staff member, and two secondary teachers. Gender-wise, there were seven females, three males, and one nonbinary inquiry partner ranging from 25 to 72 years of age; three were fathers, two were mothers, and one was also a grandmother. Geographically, seven were located in the Greater Victoria area; one in Bella Coola, BC; one in Edmonton, Alberta; and two in rural Ontario.

Four inquiry partners were teachers who offered their perspective on the “curriculum-as-lived,” but I also invited other adults who regularly worked with children or adolescents (those under 25 years old) as inquiry partners. This wider-ranging group of inquiry partners captured impacts on children's and adolescents' lives in addition to those in school-based education. Any resulting patterns in thought-language would indicate the breadth and saturation of these ideas in WIC. I wanted people who worked with this age group because significant neural development occurs throughout this time (Siegel, 2010), and research on significant life experiences has suggested that early experiences can shape pro-environmental values and behaviours (Chawla, 1998, 2001; C. C. Williams & Chawla, 2016). Thus, outdoor experiences with the significant adults in children's lives can influence environmental commitment (Hsu, 2009). Six of my inquiry partners were either teachers or parents, and therefore had significant influence on young people's foundational beliefs and discourse regarding the rest of nature. In the end, inquiry

partner responses used similar discourse and root metaphors, highlighting how embedded Western values are in educators across age, gender, and different subfields.

*Journal entry: April 2020.* I just realized that all my inquiry partners were people—another Western assumption. Kimmerer (2013) discussed the teachings of plants, and many Indigenous peoples share the belief that biotic and abiotic elements in the environment can and do teach us. I did not initially add the natural world as my teacher or inquiry partner. Why? What does this mean?

Perhaps it means that I am out of touch with the ecosystem and am not spending enough time outside. Perhaps it is a convention of academia that needs to be challenged. Or perhaps it is a manifestation of the Western anthropocentric assumption. Consciously, I believe that all beings and even nonliving entities can teach us and yet here, writing in the academic context, I did not think to include plants. Or animals. Or the climate.

*Journal entry: May 27, 2020.* This anthropocentric view I held (hold?) was bothering me. Sometimes I wish I could escape (transcend?) these Western norms already. After working on the Esquimalt Reserve for a few weeks, I'm noticing this view of inquiry partners shifting a little. Yesterday I took a break and stood looking over Plumper Bay (currently contaminated from a 2016 diesel spill) and watched two great blue herons fishing. The tide was out and I paused to watch them. Their stealth, patience, and hunting excellence all struck me. There were three more herons on the far side of the bay and eventually these two joined them. I wondered if they were related. I wondered if they had a daily schedule, like the beaver at my mom's house or the dolphins in Florida. How are their bodies, their babies, and their prey impacted by the diesel spill?

How much can we learn by just watching? Also, when did we/I get in such a rush? To learn? Or maybe to achieve? Why not wait for the teachings to come to us? What are we missing by rushing at them? I think I've been in a hurry my whole life. Maybe, through this inquiry, I'm finally slowing down and can learn some new things from this perspective and from other nonhuman inquiry partners.

**Inquiry Partner Contributions: Written and Oral Interviews.** Inquiry partners shared their ideas in two ways: written interview responses (see questions in Appendix B) and 30-minute, open-ended oral interviews. When designing this portion of the inquiry, I had not yet read Bowers's (2015a) work on the limitations of print communication, but intuitively, I knew I wanted to gather some contributions in person. The emergent nature of open-ended conversations was exciting as it has the possibility of leading to ideas I could not have imagined nor thought to ask about in the written interview questions. The invitation to participate in the oral interviews was on the ethics consent form (see Appendix F) that all inquiry partners signed, and three people volunteered. Written contributions were gathered primarily in the fall of 2019 and interviews were conducted during the fall of 2020. The 1-year delay between these two times had to do with the onset of the global COVID-19 pandemic and the resulting rearranging of many people's lives.

The purpose of the written interviews was to get a sense of my inquiry partners' relationship with and to the rest of nature including their use of root metaphors.<sup>1</sup> For example, I

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<sup>1</sup> When I drafted the questions and sent them to the Ethics Review Committee in the fall of 2018, I was not yet using the term "the rest of nature." Thus, the questions reflect an earlier

wondered how these adults would describe their relationship with the local and global environments and how they viewed our general WIC's relationship with and to the environment. What root metaphors would appear in these responses? How did their relationships with the rest of nature compare with how these are presented in the BC curriculum? In addition to garnering insight into these relationships, I also wanted to introduce these educators to these root metaphors to see if and how they might impact their thinking, languaging practices, and teaching. So, I drafted a short introduction to root metaphors in general and the three examples I reviewed in the Science and Social Studies curricula and my own teaching: anthropocentrism, individualism, and reductionism. I asked inquiry partners to consider where, in their own lives and praxis, they observed these ideas. These questions were drafted after I completed the first curriculum reading, but given the chance to do this again, I would update what I wrote to represent all I have learned since the fall of 2018 when I drafted these questions.

The oral interviews allowed me real-time opportunities to clarify inquiry partner responses and garner a deeper understanding of their ideas without the limitations of print communication (Bowers, 2005, 2015a). After contacting the inquiry partners who volunteered to be interviewed, we set up a mutually agreeable date and time for the interview. Due to COVID-19 restrictions, all interviews took place virtually. I scribed notes during the interviews and recorded the audio to revisit our conversations when I was ready to review them. I aimed to offer my inquiry partners generous listening during our interview and allow a safe-enough space

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version of my thinking before I realized how the term “the environment” separates us from the rest of nature and positions us as independent from the biosphere.

(Tanaka et al., 2014) to vulnerably share their concerns about socioecological crises and the role our discourse may play.

My goal was to enact relational accountability (Wilson, 2008) with my inquiry partners. This meant that their voices, anecdotes, and silences must be accurately represented. Their contributions to this inquiry have surpassed what I can articulate here. Each inquiry partner offered me knowledge and support and shared their experiences. Given that we create our reality through emergent relationships (Capra, 1996; Wilson, 2008), I cannot specify exactly how this research would be different if even one person had not participated. In a manner akin to the butterfly effect (Lorenz, 1972), each response is, in part, responsible for this whole.

### *Self-Study*

I start this section by acknowledging, again, the artificial separation that words like “I,” “me,” and “my” promotes. “I” cannot and do not exist on my own and therefore represent a contrived category. Without alternative English pronouns that recognize the myriad influences and relationships that make up “me,” however, I have to use them to articulate how and where “I” fit into this inquiry, while simultaneously challenging the individualistic nature of WIC. This tension is an example of the limitations of current language. Because of this interconnected nature of life and the ecology of mind, none of these ideas are “mine” specifically; they have arisen from interactions with inquiry partners, the rest of nature, the literature, and society in general. TI requires the inquirer to reflect on one’s own practices and experiences as described in the self-study sphere, and the ecojustice framework challenges the notion of independent individuals. So, I acknowledge the friction that arises from using these pronouns and perspectives while challenging our view of individuals as independent.

The self-study portion of TI involves reflexive consideration of the researcher's overall learning~teaching praxis. Rather than technical reflection, reflexivity represents a holistic, aesthetic, and ethical process (Bleakley, 1999). Reflexivity considers one's subjective role and beliefs in the co-creation of any situation (Tanaka et al., 2014). Bleakley (1999) argued that complex reflexivity is deeper than reflection in that it is "an ethical practice of genuine ecological care" (p. 316). I have always been a reflexive person and enjoy identifying patterns; therefore, TI was a natural fit for me. My self-study entailed journaling, reading, solo and group meditation, visual arts, mindful movement, and professional therapy. I have had diverse teaching opportunities from which to draw upon for these reflections. During this study, I have worked as (a) a teacher in School District #61; (b) a teacher educator at the University of Victoria; (c) an adult educator for marginalized community members; (d) a teaching assistant in three different departments; and (e) a teacher and program leader with the Esquimalt Nation during the COVID-19 pandemic. Additionally, brief immersions into non-Western cultures have offered slivers of knowledge that pierced the certainty of my inherited Eurocentrism (Thomas et al., 2020).

The first-person narratives in my journal entries offer (I hope) a "felt sensitivity" (Warren, 1990, p. 135) not commonly found in Western research. In addition to describing some of my own transformative process, the very act of writing has been part of the research. As Richardson and St. Pierre (2018) explained, "Writing *is* thinking, writing *is* analysis, writing *is* indeed a seductive and tangled method of discovery" (p. 1423, emphasis in original). Given that touchstone stories are a critical component of TI, I share anecdotes and reflections to guide readers and to ground me in my experiences as I explore how various theories manifest. These reflections allow perspective on another layer of the culture-language-thought patterns studied here.

Through this writing I have critically reviewed the underpinnings of this Western mindset. Journalling has allowed me to identify where taken-for-granted assumptions were/are embedded in my own ontology, epistemology, axiology, and pedagogy, although they can be difficult to see. Because I was raised and schooled in Western culture, many of my own norms and assumptions operate at the unconscious level (Bowers, 1995, 1997, 2001a) and require deep, continuous, and compassionate reflexive practices. My self-study contributions—journal entries and other ponderings—are always viewed with *critical reflexivity*, “the practice of continual critical introspection on the researcher’s fieldwork practices and relationships” (Walsh, 2009, p. 80). Reflexivity is relational, and it requires humility and clarity of our role in whatever we are examining. We are embedded in the experience and therefore we shape the experience to become what it is. I have an ongoing practice of turning my research lens inside out and back again to inquire and acknowledge how my own beliefs and practices are impacted by the areas I study and vice versa. As Wilson (2008) has said, “We cannot remove ourselves from our world in order to examine it” (p. 14).

### **Humility and Relational Accountability**

TI is a vulnerable and humbling exercise; it embodies and makes apparent the learning process, biases, and any internal resistances to new knowledge. It has the potential to show inquirers where we are uncritical and accepting of ideas, practices, or habits that do not align with our beliefs. It intentionally blurs the lines between learners, teachers, and researchers, because these roles are not mutually exclusive, as we often pretend them to be. As articulated above, the ~ symbol indicates that inquirers are neither static nor one-dimensional in this practice; we are both being and becoming, teacher and student, oppressor and oppressed, separate and one. TI accepts that our contexts help define us, so as we move from one experience

to another, our roles and identities can shift as well (Nisbett, 2003). It never requires us to be one thing, thus we are “asked to relinquish the control traditionally associated with research to follow where the inquiry questions tak[e]” us (Stanger et al., 2013, p. 88). Throughout this work, you will see how I am in the midst of these tangled learner~teacher~researcher roles and grapple with the generative “tensionality” (Aoki, 2004e, p. 159) herein.

Our Western propensity to divide things up into more static categories (Nisbett, 2003) artificially draws lines around particular roles and ideas like investigator and participant. This categorization suggests a one-way relationship when in reality, information, like always, is flowing all ways in the form of “differences that make a difference” (Bateson, 1972, p. 315). In contrast, TI blurs the lines between these roles uses terms like *inquirer* and *inquiry partners*, and this practice is more than mere semantics. The term *inquiry partners* is not a synonym for *participants*. Inquiry partners are “those who come alongside us in our inquiry journeys and think with us; these relationships constitute a different type of learning community grounded in generous listening” (Tanaka et al., 2014, Glossary). Therefore, inquiry partners are co-creators of the knowledge produced through this inquiry.

In addition to encouraging humility and interconnectedness, TI holds central the notion of relational accountability (Wilson, 2008). This means “researchers and authors need to place themselves firmly in a relational context. We cannot be separated from our work, nor should our writing be separated from ourselves (i.e., we must write in the first person rather than the third)” (Wilson, 2007, p. 194). Indigenous scholar Cajete’s (2009) three guiding questions are central to relational accountability: (a) How do we solve the environmental issues on the planet? (b) How do we learn to get along with each other? and (c) How do we care for our own souls? Each question reflects relationality expanding beyond WIC norms. This inquiry responds to the first

two questions and by doing so, addresses the third for me because my learning spirit, or perhaps my soul yearns to increase harmony in the world and decrease suffering.

### **My Role**

Through the literature review, self-study, curricular readings, and inquiry partner interviews, my role was to discover the patterns that connect and identify some differences which (will) make a difference in curricular and educational discourse. As for my interpretations of the curriculum and the interviews, I claim no objectivity on these topics. I currently subscribe to the postmodernist view that writing, thinking, and knowledge are “always partial, local, and situational” (Richardson & St. Pierre, 2018, p. 822). My role vis-a-vis inquiry partners was to listen generously (to the words under the words), hold my own beliefs lightly, and stay open to new perspectives, similar to Oberg’s (2003) process. I am both a passionate ecojustice educator and a product of WIC values, and at times these two parts of me conflict.

Although I had expectations of what I would find, in the end I was pleasantly surprised at how aware inquiry partners were of various aspects of the ecojustice framework. They were much more aligned to the tenets of ecojustice than the curriculum-as-plan[ned] was. This difference brings up questions for future research about how to encourage more educators to understand this framework, as Morrison (2018) investigated, and how these root metaphors play out in the curriculum-as-lived.

### **Conclusion**

Using the four spheres of inquiry in TI, academic literature, curriculum observations, inquiry partners, and self-study (Tanaka et al., 2014), I point to places educators can shift their ontology and epistemology, as well as the curricular discourse, to acknowledge our dependence upon healthy ecosystems and reflect the constitutive nature of language. This method is about as

far away from any that claims rational objectivity, as my earlier training required, and yet, it is ideal for both this project and me as a researcher nested in WIC at this time. My training in the sciences has moved aside to make room for my “learning spirit,” that “entity within each of us that guides our search for purpose and vision” (Anuik et al., 2010, p. 67). I am fully embracing qualitative research and what “I” can bring to this study.

My inquiry questions involve not only identifying where ecologically unsustainable assumptions are concealed in daily discourse, but also what discourses support seeing our connections with one another and the more-than-human world. These latter discourses, those that represent ecological thinking, can replace our current Western root metaphors. These research interests are deeply related to my personal beliefs and values about justice, equity, and equality, as mentioned in the first chapter. My view started out as systems-based (Capra & Luisi, 2014; Meadows, 1999) but has been broadened to ecological thinking by incorporating culture and language, and recognizing how neither are neutral (Bowers, 1974, 2001a, 2010a).

Current global socioecological crises require us, all of us Westerners, to undertake behavioural (and therefore the underlying emotional, ontological, and epistemological) change. We must practice being back in touch with our bodies and our feelings for this inquiry and this work writ large to make sense, so throughout it, I offer moments of pause for you as reader to check in with your attention and physical/emotional states. These invitations offer an opportunity for a different kind of relationship with the information presented here. As a first step of this shift away from neoliberal, efficiency values (Thomas et al., 2020; Ulmer, 2017), I take Wilson’s (2008) advice and wish to pass it on here: “Let us go forward with good minds and open hearts” (p. 11). In *ləkʷəŋən*, the language of the lands I live on, *eyē? Sqâ’lewen* means to work with a good mind and a good spirit. I humbly ask that we both go forward with this quality.

## Chapter 3: Literature Review

### The Power of Language

“Language does not ‘reflect’ social reality but rather produces meaning and creates social reality” (Richardson & St. Pierre, 2018, p. 820).

Whorf (1929) explained how the language we speak creates our world, including how we define it and how we come to understand it. The idea that the language(s) we speak impact our thinking is known as the Sapir-Whorf hypothesis or *linguistic relativity* (Lucy, 2015). Thus, those who speak different languages see and live in worlds with unique realities. Cajete (1994) explained, “The way we talk about a place or another entity reflects how we feel, how we see, how we understand, and most importantly how we think about it” (p. 45). Despite being common in other academic fields, school-based educators are only more recently paying attention to language and discourses as they relate to the ecological crisis.

Sapir (1949) posited “the worlds in which different societies live are distinct worlds, not merely the same world with different labels” (pp. 68–69). Particular words lead to different associations, beliefs, and possible actions (Cachelin et al., 2015; Martusewicz et al., 2015; Thibodeau & Boroditsky, 2011). For instance, The Luntz Research Companies (2002) showed how the phrases *climate change* and *global warming* activate different cognitive frames in our minds. Some other examples of how concepts described with different languages or root metaphors can influence our thoughts include colour recognition (Winawer et al., 2007), emotions (Panayiotou, 2004), and solutions to social issues (Cachelin et al., 2015; Schön, 1993; Thibodeau & Boroditsky, 2011).

Cognitive science tells us how the more often an idea is repeated, the stronger those neural pathways become in the brain until these statements then become the “truth” (Lakoff,

2014). The language used from a young age forms the neurological frames that structure our thoughts and shape what we can learn (Lakoff, 2016). In this iterative, recursive way, language and thought reinforce one another, shaping and permitting certain relationships and behaviours while obscuring or discouraging others (Boroditsky, 2011; Bowers, 1993, 2001a, 2001b; Martusewicz et al., 2015). Bowers (2012) argued, “Understanding how words (metaphors) reproduce earlier ways of thinking, including the silences and prejudices, is as essential to the educator’s craft as knowing anatomy is to the physician” (p. 2).

Slobin (1979) connected this neural shaping process to our behaviours, explaining that languages can shape peoples’ beliefs and actions. For example, English allows for generalization and abstraction more than Chinese does (Bloom, 1981). This may be why Westerners tend to categorize things whereas Eastern thinkers generally look at the relationships between elements (Nisbett, 2003). Nisbett (2003) also said the Chinese consider relationships between things as always changing whereas Westerners have a more linear view of the world. If language indeed “embodies the way a society thinks,” as Little Bear (2000, p. 78) has said, then the way we speak about language tells us what we think about language itself.

For the most part, in the West we subscribe to the idea that language and words, specifically, carry meaning directly to the listener. Reddy (1993) called this the sender/receiver or conduit model of communication. The phrases “Did I get that idea across to you?” and “It’s difficult to get this idea into words” show how this taken-for-granted conduit model is embedded in our culture-language-thought processes. This conduit view suggests that we believe words are containers for meanings and the receiver simply picks up the meaning from the words. This notion, however, is false. The listener makes sense of what they have heard, filtered through their own life experiences, including cultural norms (Reddy, 1993).

### *The Power of Language in Education*

To deeply understand how language shapes our thinking and actions, educators could question this conduit view of language. Doing so would require insight into how discourses, including root metaphors, draw boundaries around knowledge by highlighting some information and relationships while obscuring others. Words do not carry universal meanings. Language is not neutral. In fact, “we dissect nature along lines laid down by our native languages” (Whorf, 1964, p. 214). For teachers to feel prepared to teach how the language we speak today is colonized by values and ideas of the past (Bowers, 2010b), they (we) will need to understand the ways language intersects with knowledge and therefore power, what Fairclough (2014) called *critical language awareness*.

Understanding the power of language to shape thoughts and actions is generally absent in public education, but what is even more rarely acknowledged within the educational field is how every culture communicates using signs specific to themselves as a collective group (Bowers, 1995). As Sapir (1949) said, “Language is a guide to social reality” (pp. 68–69). Bowers (1995) explained we seldom recognize how the “sign system encodes the cultural traditions that influenced the intelligence, values, and level of skill of the persons who designed or constructed the object or system” (pp. 122–123). For example, imagine a large, well-kept, single-family house on a property with mature trees, gardens, and a little painted fence. This image would likely convey affluence and success as pictured in (and reinforced through) many American films and other cultural media. What Bowers (1995) is saying about the oft-ignored deeper level of symbolic interpretation is that this image represents success in a particular culture with traditions, assumptions, and values which we do not generally acknowledge, because they are our own. This house represents success in a culture (WIC) that values individualism and

independence (single family home), private property (the fence shows this), and anthropocentric control over nature (the manicured grounds demonstrate this norm). By extension, this culture accepts inequality because this dwelling is not available to everyone, making it rare, elite, and representative of both meritocracy and the owners' hard work in achieving this status (security systems also reinforce this belief).

This exploration of values and meanings behind the symbolic discourse of the house is an example of the type of cultural interpretation that occurred in this inquiry. Discursive and semiotic patterns of organizing the world are transferred to young people through primary socialization, which happens, often unconsciously, in homes and in schools (Bowers & Flinders, 1990). Because these culture-specific patterns are learned tacitly, they tend to exist at a taken-for-granted level of consciousness and influence thought-language-behaviour subconsciously; this makes them difficult to see (Boroditsky, 2011; Bowers & Flinders, 1990; Morrison, 2018).

### ***Metaphorical Thought and Language***

“Both environmental educators and classroom teachers generally continue to overlook the layered nature of metaphorical thinking” (Bowers, 2008, p. 301).

Unlike the metaphors we learned in middle school as literary tools, the field of ecojustice (Bowers, 2001a), including this inquiry, is based upon R. H. Brown's (1977) understanding that “all knowledge is metaphoric [given that] . . . metaphor is seeing something from the viewpoint of something else” (p. 77). Overall, school-based education neither recognizes nor teaches about this vital aspect of thinking (Bowers, 2001a). Therefore, it may take some time to transition from our taken-for-granted Western purported objective view to recognize how all knowledge, and even words themselves, are metaphorical. This, however, is not a new idea; Nietzsche wrote about metaphorical thought in the late 1800s (Bowers, 1995). For example, the letters h-u-m-a-n

and the sounds they make are, of course, in no physical way related to human beings. The word “human” is only an approximation, a metaphor, for all eight billion or so of us. This is what Bateson (1972) meant when he paraphrased Alfred Korzybiski and said, “The map is not the territory” (p. 455). Some things from the territory make it onto the map and other things do not. In this same way, words cannot accurately represent the ever-changing ideas or beings they intend to. What we can say is never the thing itself; language is symbolic.

R. H. Brown (1977) identified and described three different types of metaphors—*iconic*, *analogic*, and *root*—that we use in thinking and communication. Iconic metaphors are auto referential; they “create the object or image as a unique entity” (R. H. Brown, 1977, p. 85). For instance, a statue could be considered an icon of the person represented. Analogic metaphors are used when we compare one thing to another. For example, for decades, schools have streamed children into different vocational tracks. Here, the placement of children into different types of educational classes is compared to a physical stream and its tributaries. Analogical metaphors are often overarching cultural ideas that were once based on material analogs and then used so frequently that they have become common “knowledge.” The quotations around knowledge are there to remind us that metaphors and analogs (like words themselves) are only partial descriptions of the things themselves. Additionally, as Bateson (as cited in Bowers, 2011, 2015) explained, our understanding of the original analogs upon which these meanings were based may have changed or they may no longer be correct. For example, the word *environment* carries with it a (subconscious) desire to dominate and control it. Similarly, *wilderness*, as depicted in Western fairy tales, is dark and dangerous, maybe even an enemy. Today, we see the environment as a commodity, a source of financial gain to be exploited—and separate from us.

This recursive nature of thought-language is one way how past beliefs come to colonize the present (Bowers, 1993, 1995, 1997, 2015).

The third type of metaphorical thinking (R. H. Brown, 1977), and the focus of this inquiry, appears in our discourse as root metaphors. Root metaphors, also described in Chapter 1 “are those sets of assumptions, usually implicit, about what sort of things make up the world, how they act, how they hang together, and usually, by implication, how they may be known” (R. H. Brown, 1977, p. 125). They occur at the subconscious level (Bowers, 1980) and have existed long before any of us reading this did. Root metaphors are part of our primary socialization, so we ultimately forget they are metaphors and take them for reality (Bowers, 1980; Lent, 2017).

Root metaphors, like plant roots themselves, can be thought of as an out-of-sight foundation for other metaphors. Bowers (2002) said that root metaphors are the “taken-for-granted” (p. 22) cultural assumptions that are fundamental to cultural paradigms and ideology. Using the root metaphor of mechanism, where living beings and systems are compared to machines, streams are drains and hearts become pumps, and “the celestial machine is to be likened . . . to a clockwork” (Kepler, 1605, as cited in Merchant, 1980, p. 129). These root metaphors all describe some aspect(s) of the signified but they obscure others. Today, we say the brain is “wired” in a particular way. Although aspects of the brain are similar to a computer, this metaphor neglects to acknowledge emergent properties of the system of which the brain is a part. For instance, a computer is not impacted by stress or diet or genetics the way a brain is.

Root metaphors share a particular point of view (Flinders, 2021), thus, they communicate (and limit) a culture’s beliefs which impacts our cognition and, ultimately, our behaviours. Over time, root metaphors knit together, reinforcing one another, and producing a particular discourse and worldview which makes large-scale thinking and acting outside this framework difficult.

Root metaphors construct knowledge and place boundaries on ideas, so they are couched in power relations. They govern our thinking: as Foucault (1982) said, “To govern . . . is to structure the possible field of action of others” (p. 790).

Additional inertia is provided by the societal structures, systems, policies, and laws that are all couched in these culture-specific ways of thinking and discourse. Bowers (1995) said, “Cultural groups are thought by the cultural schemata in their languages as they think *within the languages*” (p. 31, emphasis added). That metaphors express a particular point of view and that we neglect to recognize this in schools (and broader society) is of paramount concern to this inquiry. This invisibility of these anachronistic ideas permeating the present is one of the reasons for the socioecological crises of today (Bowers, 1993, 2001a, 2018; Martusewicz et al., 2015). Adding the constitutive nature of language to teacher education has powerful potential to impact educational discourse (Bowers, 2011; Lowenstein et al., 2010; Martusewicz, 2018a).

### **Homing In on Three Ecologically Unsustainable Root Metaphors**

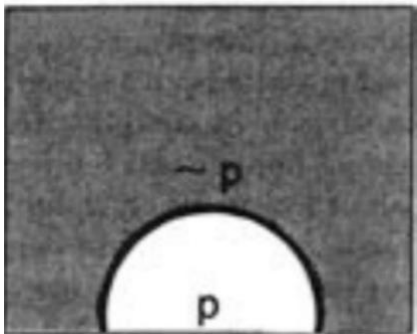
This inquiry focuses on three WIC root metaphors that relate to socioecological crises, anthropocentrism, individualism, and reductionism (Bowers, 2001a; Martusewicz et al., 2015). Respectively, they mean (a) taking a human-centric and superior perspective; (b) seeing the individual as the basic unit in society, independent of others; and (c) assuming complex phenomena can be broken down to their constitutive parts without accounting for how the various parts (or subsystems) work together. When these root metaphors are used today, they impart Eurocentric beliefs about life, inadvertently restricting our thinking. These three root metaphors are described next.

## *Anthropocentrism*

Anthropocentrism has been the norm in Western culture for millennia (Plumwood, 2005; White, 1967; Worster, 1994). Martusewicz et al. (2015) described anthropocentrism as a “powerful belief system that insists that humans have moral and intellectual superiority over all other living members of our planet” (p. 97). Along with our linear view of progress (Bowers, 1980) and increasing technological abilities, this root metaphor allows us to impact the rest of nature at scales greater than ever. Plumwood (1993, 2005) posited a framework that explains the logic of it (and other hierarchical dualisms). The first step is *radical exclusion*, where we create a hyper-separation between ourselves and the other, which is inferior and radically separate from us (depicted by the thick, black curved line shown in Figure 2). For instance, we humans consider ourselves separate and superior from the rest of animals because of our souls, our ability to reason, or some other self-ascribed quality.

### **Figure 2**

#### *Model of Othering*



*Note.* The “one” (p) and the other/backgrounded one (~p) with the dark line between the two groups representing some characteristic the one has but the backgrounded one does not. Adapted from *Feminism and the Mastery of Nature*, by V. Plumwood, 1993, p. 57. Copyright 1993 by Routledge.

Next is the process of *homogenization*; the other becomes a homogenous group and because of this, they are all replaceable. (Plumwood, 1993, 2005). In WIC, we see nature reduced to “natural resources,” where a tree cut down is replaceable by another one planted elsewhere. The next step is a *backgrounding* of the other (Plumwood, 1993, 2005). Any relationship or reliance upon the other is backgrounded, made invisible. This step removes agency and intrinsic value from the backgrounded one and makes it more difficult for the one to empathize with the other due to this distance. After this step is *incorporation* where the other—the backgrounded one’s—qualities are incorporated into the one’s and universalized. The final step to othering is attributing *instrumental* value to that being. They are valued solely for the quality that the one desires (Plumwood, 1993, 2005). Using forestry again, BC’s logging of old growth forests is an example of allocating only instrumental value to old growth trees. Our political-economic and discursive systems do not recognize the value these trees have within their ecosystems, connecting and sharing resources amongst one another and providing habitat for numerous species (Simard, 2021). Instead, we prioritize the human economy and existing infrastructure.

### ***Individualism***

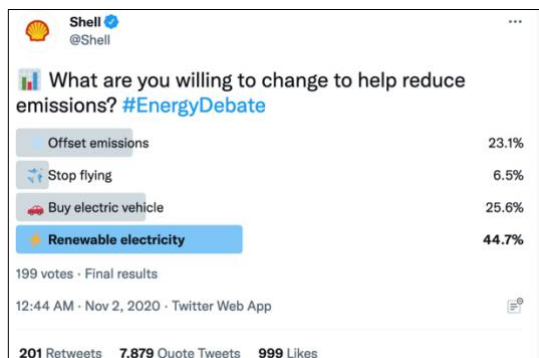
Individualism imagines us as separate individuals independent from one another. The hyper-separated and autonomous aspects overlap with anthropocentrism. In the same way we draw a line between humans and other species, we draw a similar conceptual line between individuals and other humans. The “hegemonic normalcy” (Lupinacci et al., 2018, p. 652) of anthropocentrism in schools also promotes individualist thinking: because of silences in the curriculum, educators fail to acknowledge humans’ dependence upon other people, never mind other species. We can exist only in relation to others, including the 100 trillion ( $10^{14}$ ) or so other

beings inside our bodies (Ley et al., 2006). Martusewicz et al. (2015) described *individualism* as “the assumption that humans are autonomous agents who are at their best when independent from community and culture” (p. 78). When the individual is positioned as the most important thing, “there is no such thing as society,” as Margaret Thatcher once proclaimed (as cited in Hui, 2013).

Centring the individual and backgrounding the role of culture allows us to believe the fallacy that we can be self-made. Individualism precludes awareness of our reliance upon traditions of the past, like family units and roles, cooperation amongst community members, and, important here, languaging patterns. The association of freedom with the individual further encodes false ideas, as though “choosing one’s one values, one’s self-identity, and future” (Bowers, 1980, p. 26) are indeed possible. Individualism is studied here because it is implicated in the socioecological crises in many ways. The conviction that we are autonomous individuals, creating our own knowledge, values, and life circumstances, gives people a false sense of control and fails to integrate the myriad ways the past influences the present. Bowers (2018) has called these ideas “long-standing misconceptions in the West” (p. 2). Individualism normalizes competition, hierarchy, and meritocracies. Furthermore, “the view of the individual as a separate agent allowed the newly discovered capacity for detached observation and rational judgement to be exercised” (Bowers and Flinders, 1990, p. 6). International corporations have hijacked this concept and made everything from litter to carbon output the responsibility of the individual (see Figure 3).

### Figure 3

#### *Shell's 2020 Tweet Implying Individuals Are Responsible for Carbon Emissions and Reductions*



*Note.* This image is a poll from Shell's Twitter account asking individuals what they are willing to change to reduce fossil fuel emissions. By focusing on individual actions, the question puts out of focus the role of Shell and other oil and gas companies. From "What Are You Willing to Change to Help Reduce Emissions? #EnergyDebate," by Shell, 2020

(<https://twitter.com/Shell/status/1323184318735360001?s=20&t=IBb-cFJBTd8KAZ5UkyPjHg/>)

### ***Reductionism***

Reductionism is the third ecologically unsustainable root metaphor of interest in this inquiry. Reductionist thinking is the notion that all things, including living beings, can be broken down into their constituent parts to be better understood and then put back into a whole. Chapter 1 described how the Scientific Revolution contributed to the spread of this type of thinking. Reductionism can be helpful to understand parts of complex structures or systems, yet it neglects how the whole can have other emergent qualities not attributed to any of the individual parts. Take, for example, sugar. It is a carbohydrate made up of carbon, hydrogen, and oxygen molecules that taste sweet. None of the individual parts taste sweet on their own; only upon particular combinations do they take on this quality (Capra, 1996). In and of itself, reductionism might not be a problem if we remembered to zoom back out and evaluate the information

gleaned at the (eco)system level. However, as the state of the world's ecosystems and social systems show us, systems thinking (Capra & Luisi, 2014; Meadows, 1999) or ecological thinking (Bateson, 1972) is not where WIC excels.

Finally, it is important to remember that these root metaphors are essentially categories, lines we humans draw in the world of ideas to group things for our own purposes. There is a subjectiveness to it. This grouping of things allows us to see different patterns or draw certain conclusions that we would not have seen before. At each level of categorization, we generalize, which reduces beings and systems to words, models, or groups. As Tafoya's (1995) Principle of Uncertainty states, the closer one gets to defining something, the further one gets from its context. Therefore, root metaphors are reductionist in their own way. Bateson (Schumacher Center for a New Economics, 1976/2013) asked us to see through the eye, not just with the eye. In other words, we need to recognize how the eye shapes what we can perceive. He asked us to understand (a) what is, (b) what we can see, and (c) how these two differ. This framework would be helpful to remember when considering root metaphors.

### **Curricular Discourse Is/As Cultural Discourse**

“Education, in the broadest sense, is synonymous with culture” (Bowers, 1996, p. 5).

Curriculum is defined in many ways (Bobbitt, 1918; Dewey, 1906; Pinar et al., 1995; Rugg, 1926/1969; Tyler, 1957; UAlberta Sustainability, 2020). Tyler (1957) defined it as “all the learning experiences planned and directed by the school to attain its educational goals” (p. 79), whereas Indigenous educators, such as Simpson (2014), explained, “There is no standard curriculum because it is impossible to generate a curriculum for that which is given to us lovingly from the spirits” (p. 10). Here I use the word to refer to the governmental documents

that teachers in BC are required to teach, assess, and report on students' progress in learning the information and skills therein.

There was a time when these curricular documents were considered neutral—apolitical and acultural—but this is no longer the case. The curriculum-as-plan[ned] is an ideological and political text (Apple, 1990; Bowers, 1980, 2001a, 2018; Donald, 2019; Flinders & Thornton, 2017; Giroux, 1985; McLaren, 1999) “at the vortex of a larger political struggle over conflicting social and cultural agendas” (Cohen, 1993, p. 288). Since the 1970s, the curriculum field has been reconceptualized from the notion of “developing curriculum” to understanding curriculum as discourses embedded in sociohistorical contexts (Pinar et al., 1995). It is now commonly understood that what educators teach in schools, explicitly and implicitly, shapes future adults and future societies with political, cultural, and ecological impacts.

Schooling, and education more broadly, is always moral, too (Bateman, 1974; Flinders & Thornton, 2017; Pinar et al., 1995). Curriculum-as-plan[ned] shows us what society, or rather those with/in power, believes about young people and the future we wish to build. Almost a century ago, Counts (1932) recognized that, in regard to developing curriculum, “complete impartiality is utterly impossible” (p. 19). By what is included or excluded, particular worldviews on gender, politics, race, and ecological relationships are (re)created (Orr, 1994/2004; Pinar et al., 1995). Donald reminded us that, in curriculum, we can see the “model of a kind of human being we have in mind” (as cited in UAlberta Sustainability, 2020, 9:11). In other words, curriculum, like language, is constitutional.

How are Western cultural “historically codified patterns of belief” (Martusewicz et al., 2010, p. 14) embedded in curricular discourse? Although the curriculum-as-lived will undoubtedly be different than the “prosaically abstract language” (Aoki, 1993/2004d, p. 203) of

the curriculum-as-plan, these documents are a wayfinder to cultural values and discourse. Formal and publicly funded education is

both very powerful in terms of conserving the deepest and largely unconsciously old patterns of modern culture and, at the same time, as one of the few public forums we have for developing a critical understanding of the socio-ecological crisis. (Bowers, 1995, p. 3)

Thus, this inquiry aimed to uncover what discourses (culture-language-thought patterns) are (re)created through the BC Science and Social Studies curricula.

### ***Curricular Discourse and Socioecological Crises***

Despite being a cultural institution, formal education does not examine our Western culture; “we have not really understood the special educational issues raised by the culture-language-thought connection” (Bowers, 1993, p. 21). If the Western way of conceptualizing and languaging the world creates double binds that amplify the global socioecological crises, it would behoove curriculum scholars to examine how and where these discourses permeate curriculum. This type of cultural literacy is essential to first identify and then change the discourses that fuel global socioecological crises. How does the curriculum-as-plan[ned] relate to these issues? Specifically, what ecologically unsustainable assumptions exist in the curricular discourse of BC?

Pinar et al.’s (1995) foundational text, *Understanding Curriculum*, demonstrated how curriculum acts as several discourses simultaneously. What, then, does this text (Pinar et al., 1995) say about the curricular discourse around the (then-named) “environmental crisis”? Surprisingly, this crisis is mentioned only once in the entire 868 pages. However, in 1995 the United Nations’ Intergovernmental Panel on Climate Change (IPCC) released its second annual

report on climate change, identifying the dramatic rise in atmospheric carbon dioxide and the likelihood and dangers of it rising further (IPCC, 1995). Decades earlier, Carson's (1962) and Leopold's (1949) significant texts had fuelled the first wave of environmentalism. Additionally, Bowers (1993) had already published on the connections between schooling, culture, and the ecological crisis in *Education, Cultural Myths, and the Ecological Crisis: Toward Deep Changes* with a chapter titled "The Cultural Aspects of the Ecological Crisis" (pp. 9–35). The lack of discussion around the environmental crisis in Pinar et al.'s (1995) text points to a long history of ignoring the connections between schooling and the socioecological crises, still present today.

Along with my central inquiry question about the three root metaphors, I also wondered: How do our taken-for-granted assumptions about human superiority and separateness appear in curricular documents? What is the balance between individual freedom and community needs presented in the curriculum? How are future generations accounted for? Where is a reductionist view of life being taught, and how can the curriculum include (or where does it already include) holistic, ecological perspectives? How might educators teach in an anthropocentric way or (in)directly facilitate this view? Considering the report from the Truth and Reconciliation Commission of Canada (2015a) and the socioecological crises, how are Indigenous ways of knowing and being incorporated?

### ***The Stated Purpose of the BC Ministry of Education***

Supposing the curriculum does represent "value judgements" (Tyler, 2013, p. 4) of those in charge of schooling; what, then, does the BC Ministry of Education (hereafter referred to as the BC MoE) say about the values and knowledges it wants future citizens to develop? Before looking in detail at the K–7 Science and Social Studies curriculum-as-plan, I first take an overarching, comprehensive view of schooling in BC. Through schooling, what stories do "we

tell about the world and our place in it” (Donald, as cited in UAlberta Sustainability, 2020, 8:40)? The stated purpose of the BC school system “is to enable learners to develop their individual potential and to acquire the knowledge, skills, and attitudes needed to contribute to a healthy society and a prosperous and sustainable economy” (BC MoE, n.d.-g, Our Mandate section, para. 1).

Remember that to “critically interpret [any] curriculum-as-plan[ned] requires understanding the ideas as well as the culture-language-thought patterns inscribed in it and prescribed by it” (Thom, 2021, p. 32). Although there are several cultural assumptions in the Ministry’s (n.d.-g) brief statement, here I just examine what patterns are embedded in the concept of “individual potential.” The autonomous, independent individual is a Western construct based on an individualistic, reductionist view of humankind. Therefore, individual potential can exist only in the minds (and therefore the discourse) of people who believe that individuals exist. In feudal Japan there was no word for individual, instead, a person was described as “a twofold of self and other” (Aoki, 2000/2004c, p. 327). Similarly, Samoans do not have terms for “personality,” “self” (individual), or “character” (Marcus & Fischer, 1986, as cited in Aoki, 1993/2004a, p. 284). Cree researcher Wilson (2008) articulated the Indigenous view: “We could not *be* without *being in relationship* with everything that surrounds us and is within us. Our [Indigenous] reality, our ontology is in the relationships” (p. 76, emphasis in original).

These different connotations of humans reject or “humiliat[e]” (Aoki, 1993/2004b, p. 291) the Western Cartesian ego, the individual. If we view the world as interconnected, the way these non-Western cultures do, the individual becomes an artificial category because we cannot exist independently. Our potential, then, is linked to and dependent upon others. How, then,

could one develop their individual potential without mention of others? Although we do not often consider what is included and left out of our daily language in such detail, Aoki (1993/2004a) advised turning towards these discursive assumptions to see “our caughtness in a language” (p. 286). We can see, just in this short passage from the Ministry about its purpose, how unexamined cultural assumptions permeate educational discourse.

### **Two Cultural Influences on Curricular Discourse**

The discourses of neoliberalism and critical pedagogy are well-known within the field of curriculum studies. In the more left-leaning academic circles, the former is usually criticized whereas the latter is lauded by curriculum scholars and social justice advocates. Here these bodies of knowledge are of interest because of how they foster and reinforce discourses of anthropocentrism, individualism, and reductionism that contribute to conditions which have created socioecological crises. The history of neoliberalism was profiled in Chapter 1 in terms of its influence on society in general, and now I focus on how it has shaped curricular discourse. The most obvious way neoliberal ideals enter the school system are through the production of ready-made curriculum by international, national, and provincial corporations touting their products and services. Authors in the critical pedagogy field have long sought equality and freedom for all humans but have failed to recognize their own anthropocentric, progress-driven language-thought patterns. This has led to the field ignoring our dependence upon healthy ecosystems and recreating unsustainable cultural norms.

#### ***Neoliberalism and Curricular Discourse***

“It’s not called what it really is—a system of mass destruction—but rather bears the euphemistically coined phrase ‘free market capitalism’ and is seen as synonymous with the struggle for democracy” (Denzin, 2010, p. xviii).

One of the tenets of neoliberalism is that markets operate best with minimal government regulation and intervention (Lakes & Carter, 2011). Thus, publicly funded social welfare programs, including education, are defunded and privatized, altering how we think of the economy, society, education, and the environment (Henderson & Hursh, 2014; Monbiot, 2016). The rampant exploitation of people, places, and other beings required for this economic system are all considered *externalities*—those side effects not factored into the cost (or price) of the product or service. The true costs of this system are paid in distant places and times, what Nixon (2011) called *slow violence*. The idea that these externalities are “just the cost of business” makes its way into the hallways and classrooms of schools as well.

Neoliberalism and its associated free market discourse are conflated with the root metaphors of individual freedom and democracy (Davies & Bansel, 2007; Denzin, 2010; Lupinacci et al., 2018). This culture specific language-thought patterns, have been exported around the globe and imposed upon other countries through globalization. Although some have argued this process (progress?) is inevitable others have claimed there is “considerable evidence that the development of neoliberal discourses, policies and practices has been concerted and financed and engineered by those with a great deal to gain financially from the resulting labour practices and flows of capital” (Davies & Bansel, 2007, p. 248). As WIC takes over other countries’ governing systems, it changes their priorities in education (Battiste, 2013).

Since the 1980s, neoliberal practices and policies have encroached upon Western public schooling and higher education alike (Henderson & Hursh, 2014). Standards, testing, competition, efficiency, privatization, and corporations in schools are all rooted in neoliberal ideals (Lakes & Carter, 2011) but we are often ignorant as to how these ideas limit our practice (Hursh et al., 2015; Monbiot, 2016). The idea that the markets are the best way of organizing

society has constituted anyone with “any dependence on the state as a morally lesser form of being” (Davies & Bansel, 2007, p. 251). Following this logic, schools ought to help young people achieve financial independence.

Apple (1979) asserted that these unspecified assumptions make “ideological configurations [like this] hegemonic and difficult to deal with” (p. 124). Lupinacci et al. (2018) posited that in order to move beyond neoliberalism, we must learn to recognize it in daily discourse and relationships (p. 654). To see neoliberal discourse within education, one can look at the discourse of education’s mission and vision statements. Provincial Ministries of Education and school districts across Canada describe their goals in these statements, a selection of which follows (emphasis added):

BC: The purpose of the BC school system is to enable learners to develop their *individual potential* and to acquire the knowledge, skills, and attitudes needed to contribute to a healthy society and a *prosperous and sustainable economy*” (BC MoE, n.d.-g, Our Mandate section, para. 1)

Alberta: “The ministry ensures that inclusive learning opportunities enable students to achieve success as engaged thinkers and ethical citizens with an *entrepreneurial spirit*” (Alberta Education, n.d., para. 1).

Ontario: “Ontario is committed to the success and well-being of every student and child. Learners in the province’s education system will develop the knowledge, skills and characteristics that will lead them to become personally successful, *economically productive* and actively engaged citizens” (Government of Ontario, 2014, p. 1)

Saskatchewan: The Ministry of Education is committed to *the success* and well-being of all Saskatchewan learners and the enhancement of literacy for all Saskatchewan people.

By putting the needs of each and every student first, we will ensure that our province *has a highly skilled and highly educated population that will contribute to the success of our province*” (Government of Saskatchewan, n.d., para. 1).

Some of these mission statements include explicit neoliberal values such as contributing “to a healthy society and a prosperous and sustainable economy” (BC MoE, n.d.-g, Our Mandate section, para. 1), “citizens with an entrepreneurial spirit” (Alberta Education, n.d., para. 1), and becoming “economically productive” (Government of Ontario, 2014, p. 1), whereas others are more subtle, mentioning the “success of our province” (Government of Saskatchewan, n.d., para. 1). It is interesting that governmental bodies fail to recognize the double bind (Bateson, 1972) they are creating by prioritizing these values given their contribution to socioecological injustices.

### ***Critical Pedagogy***

Named *critical pedagogy* by Giroux after Freire’s writings (Steinberg & Down, 2020), the roots of this field are in the critical theory of the Frankfurt School. The aims of critical theory are not only to interrogate contemporary culture, but to analyze how things ought to be in society and to empower the marginalized. Key concepts in critical theory that are integrated into critical pedagogy include, among others, culture, power, emancipation, freedom, ideology, and hegemony. Apple (1979), Giroux (1985), and other critical pedagogy scholars argued that schools, reproduce the knowledge, culture, and economics of the dominant class. Critical pedagogy aims to help students investigate the influence and hegemonic power of economic and political forces.

Critical pedagogy has been critiqued for being overly theoretical, empirically lacking, focused on urban communities, and without adequate connections to the school community

(Gruenewald, 2003; Pinar & Bowers, 1992). One of its critics, Ellsworth (1989), challenged the lack of specific change urged of any social or political group. Pinar and Bowers (1992) raised how ecologically unsustainable assumptions of earlier periods are embedded into our languaging practices. Pinar and Bowers introduced the important idea of learning from Indigenous and other ecologically sustainable cultures, rejecting the Western view of these cultures as “primitive,” “backwards,” or “illiterate,” as Freire (1970) referred to them. Indigenous knowledges, however, are now being woven into critical theory (Denzin et al., 2008).

Vital to this inquiry, critical pedagogy neglected to address the ecological crises until 2003–2005 (Gruenewald, 2003; Houston & McLaren, 2005). The anthropocentric, individualistic, and ethnocentric worldviews dominant in this field has overlooked the more-than-human beings upon whom we rely (Abram, 1996). Gadotti (2000) and Kahn (2010) shifted critical pedagogy to rectify the absence of the rest of nature. The resulting subfield of critical ecopedagogy (or simply ecopedagogy) challenges the anthropocentric assumptions central to critical pedagogy by investigating the economic and cultural roots of ecological issues. That said, Bowers (2004) argued that Gadotti’s version still perpetuated Eurocentric beliefs and subsumed all diversity into a single nation for humankind.

### **Ecojustice Education**

“Whether or not you can observe a thing depends on the theory you use. It is the theory that decides what can be observed” (Einstein, n.d., as cited in Meyer, 2008, p. 217).

These shortcomings of critical pedagogy resulted in the field of ecojustice (sometimes written as eco-justice or EcoJustice) or ecojustice education (Bowers, 2001a). Critical pedagogy asks educators to take an experimental view to cultural patterns, whereas ecojustice education recognizes that some Indigenous cultural practices that sustain life have been honed over

millennia. An acrimonious debate between followers of critical pedagogy and Bowers took place through the 1990s and 2000s (Bowers, 1991a, 1991b, 2005; Houston & McLaren, 2005; McLaren, 1991) about important aspects of these educational theories. Ecojustice scholars, including myself, believe the ecological crisis is a cultural crisis (Bowers, 1993, 1995, 2001a; Martusewicz et al., 2010). According to this field, alarming climate trends are not a climate crisis per se, but rather bellwethers of a globalizing culture that has reached a tipping point. Scholars outside ecojustice, including Bateson (1972), Eisler (2003), Merchant (1980), Monbiot (2017), Norberg-Hodge (1991), and Shiva (2005), to name a few, have also argued for culture's pivotal role in shaping the socioecological crises. What makes ecojustice unique among educational theories is the ecological approach it takes.

Ecojustice first aims to ameliorate socioecological injustices by honouring our reciprocal relationships with the world, rather than the commodified, consumer relationships that have come to characterize the West. Second, and equally important, is the question Bowers (2015b) asked (or asked us to ask), "What is the connection between language and the ecological crises?" (1:50). Recognizing the error of our presumption that language is neutral (Reddy, 1993) is a first step to answering this question. As discussed above, language carries forward with it values from the past. Furthermore, it shapes the very way we think about thinking (Martusewicz et al., 2010). Bowers (2018) emphasized:

Naming what is otherwise taken for granted often leads to making it explicit, thus enabling the person to reflect on how it is reinforced by other taken-for-granted cultural patterns and even to introducing changes that may affect the deepest cultural assumptions. (p. 2)

Ecojustice education differs from environmental education because of this cultural and linguistic analysis. The field of environmental education, the history of which is outside the scope of this inquiry, has not been effective in its attempts to create “new patterns of behavior . . . towards the environment” (UNESCO, 1977, p. 26), as we can see by waning ecological health (Pörtner et al., 2022). This failure is likely because environmental education is based in the same individualistic, reductionist worldview that created the crises (Kulnieks et al., 2012; Young, 2009). The idea that individual solutions or the development of a “technofix” can solve these crises are manifestations of the thought process that got us here. Environmental education has become another example of double bind thinking, where the “solutions” actually recreate the conditions for the problem (Bowers, 2001a). Knowing what to preserve and what to transform in education requires ecological intelligence, a form of thinking based upon Bateson’s (1972) ecology of mind. It requires the acknowledgment of information being exchanged constantly at the systems level and requires understanding of how systems are embedded within other systems.

Ecojustice education aims to eliminate human oppressions and foster more equitable relationships among humans, like critical pedagogues. Like ecofeminism (Plumwood, 1993, 2005), ecojustice rejects cultural dualisms (such as man/woman, culture/nature, reason/emotion) and promotes a nondualistic, coemergent, relational worldview. As with Indigenous pedagogies, ecojustice asks us to consider the role of intergenerational knowledge; place-based, high-context knowledges; and life-sustaining traditions. Ecojustice recognizes that not all cultures share the ideals of Enlightenment progress and individual freedom, nor do they advocate for an anthropocentric worldview as Western scholars of critical pedagogy do. To recap, followers of ecojustice strive to ameliorate or resolve the cultural crisis which is at the root of the ecological

crisis. By understanding the taken-for-granted assumptions, including what we ignore and what we pay attention to in Western culture, we can start to see the impacts of our lifestyles on one another and the planet.

### ***Goals of Ecojustice***

Ecojustice education has two major goals: (a) to illuminate the cultural and linguistic roots of the ecological crisis and (b) to revitalize the ecological and cultural commons in order to reduce our dependence on consumer culture (Martusewicz et al., 2015). An example of the first goal is to examine how ecologically unsustainable root metaphors knit together to perpetuate and strengthen particular discourses and certain relationships in society where the hegemonic and destructive forces of the elite are maintained. For instance, the combination of anthropocentrism, scientism (the view that science is the only worthwhile way of solving problems), mechanism, and a linear view of progress permits using phrases like *natural resources* or *raw materials* to describe other living beings and communities. This concept is important because “language thinks us as we think within the possibilities of our language community” (Bowers, 2001b, p. 142). Ecojustice education seeks new (ancient?) relationships and culture-language-thought patterns to encourage socioecological justice.

The second major goal of ecojustice, which is an example of these new/ancient relationships, is to revitalize ways of life that do not depend upon consumer culture, especially the commons.<sup>2</sup> Like Indigenous scholars, ecojustice scholars have argued for a fundamental shift

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<sup>2</sup> Hardin’s (1968) famous “tragedy of the commons” concept missed out how commons were traditionally managed (Monbiot, 2017). These spaces were not a free-for-all in the sense of maximizing one’s gains from them, as Hardin described. If this were the case, there would be no

in our relationships to one another and the planet in order to remedy socioecological crises. Ecojustice education should help recover and preserve different land-based societies' traditions that have allowed them to live in (a) place over millennia (Bowers, 2001a). Instead of oppressing or denigrating these cultures, ecojustice advocates that we learn from these more "mature" (Snyder, 1977) communities. They can point the way to values, traditions, and languaging patterns that could be helpful for Westerners to adopt as we release former unsustainable habits. What values are held central to these cultures? How do/did Indigenous communities meet their needs without destroying the ecology on which they depend? How is this knowledge shared with the next generation to allow these traditions to continue? As Cajete (as cited in UNE Center for Global Humanities, 2020) said, how do these cultures "remember to remember" (17:46)?

In addition to the two major goals of analyzing the cultural and linguistic roots of the crises and revitalizing the commons, Bowers and Martusewicz (2009) named five more priorities:

- i) helping to overcome the environmental and political sources of environmental racism; ii) reducing the consumer-dependent lifestyle and traditions of thinking that contribute to the current exploitation of the cultures of the southern hemisphere by the cultures of the northern hemisphere; iii) revitalizing the diversity of cultural and environmental commons as a way of reducing the environmentally destructive impact

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such thing as the commons; they would all have been degraded as quickly as they were formed. Instead, there was a managing body that made decisions about these spaces to benefit the wider community, not any individual. Enclosures and privatization have decreased these managing bodies, and Hardin's description is more accurately explained as the "tragedy of enclosure."

of the West's industrial culture; iv) learning to live in a way that helps to ensure that the prospects of future generations are not being diminished; v) contributing to a wider understanding of the importance of what Vandana Shiva refers to as “earth democracy”—that is, the right of nonhuman participants that make up the earth's interdependent systems to reproduce themselves in ways that are free of technological manipulation and exploitation. (para. 2)

### ***Ecological Thinking***

“Lake Erie is a part of *your* wider eco-mental system—and that if Lake Erie is driven insane, its insanity is incorporated in the larger system of *your* thought and experience” (Bateson, 1972, p. 492, emphasis in original).

Ecological thinking is a potential antidote to the dominant reductionist worldview. It is based on the notion that “mind” or “mental process” is not something confined to brains or even bodies—instead it is a process, a process of life always responding to changes in the environment or “a difference which makes a difference” (Bateson, 1972, p. 315). To become aware of the infinite differences and intelligence out there is to “become aware of what is sacred” (Martusewicz et al., 2010, p. 17). The living, changing beings and factors in the environment—that is, outside of (but part of) us—are a necessary part of mental process. This is what Bateson (1972) meant when he spoke about the ecology of ideas in systems and said “minds no longer coincide with the skin of the participant individuals” (p. 339). Martusewicz et al. (2015) used the example of a farmer squeezing the soil to illustrate ecological intelligence. Farmers use all their senses to notice the soil's density, texture, humidity, invertebrate life, and other characteristics. This information tells them about the health of the soil and what might need to be adjusted to ensure the success of next year's crops.

Western thinking, conversely, considers that an action takes place in a context or environment whereby the environment is considered the independent variable, as if it does not matter or respond to such actions (Bateson, 1972). This conventional Western view of a static, inert environment should be considered an “heuristic error” (Bateson, 1972, p. 338). This kind of reductionist thinking (i.e., reducing the complexity of the living environment to an independent variable) might reflect why Western cultures fail to notice emergent properties of systems. These reductionist and separatist frameworks lead to what Bohm (1980) called a “fragmentary self-world view” (p. 3). Ecological intelligence requires us to ask of our habits, practices, and languaging: How will this impact culture? How does this affect the local and global ecology? Ecological thinking is fundamental to understanding the ecojustice framework. This skill is required for understanding how language impacts our thoughts by carrying past understandings into the present and for the health of the commons.

### ***Current Extent of Ecojustice Literature***

The ecojustice literature has strong theoretical foundations in Bowers’s (1993, 1995, 1997, 2001a, 2001b, 2005, 2011, 2012, 2018) scholarship. From these origins, other authors have taken ecojustice education in different directions and highlighted connections with a variety of other theories. For example, Martusewicz (2005, 2018a, 2018b) has examined intersections with ecofeminism and an ethic of care as well as how ecojustice can enhance democracy (Martusewicz, 2008; Martusewicz et al., 2015). Butler et al. (2017), Kulnieks et al. (2013), and Tippins and Mueller (2010) have critically interpreted the overlap with Indigenous education. Martusewicz et al. (2010), Mueller (2009), Tippins et al. (2010), Mueller and Tippins (2015), Reis et al. (2014), and others have studied the ways science education can incorporate ecojustice

principles. Morrison (2018) showed, through a critical friends group, how reframing Western beliefs is an emotional, psychological, social, and intellectual process.

Beyond a theoretical framework, ecojustice is also considered a pedagogical approach; thus, empirical research is also relatively plentiful. Methodologically, case studies and anecdotal references are the most prevalent. These empirical studies describe a wide variety of novel educational partnerships (Martusewicz et al., 2010; Thom, 2019) and ecojustice projects or courses with youth and teachers (Glasson, 2015; Lowenstein et al., 2010; Martusewicz & Johnson, 2016; Mueller & Tippins, 2015; Paige et al., 2016). There is also a curricular guide with lesson plans for secondary and higher education (Turner, 2015). Although approaching school science through an ecojustice lens is a close fit, social studies, too, has significant overlap with this framework (Martusewicz & Schnakenberg, 2010). In fact, invoking ecojustice values and goals in science classes can lead to civic action, as Roth (2010) showed. Food security, art, and community-based learning are more subjects that intersect with ecojustice goals (Foster et al., 2019). Dance (Foster & Turkki, 2021), and mathematics (Wolfmeyer et al., 2017) have also been analyzed via ecojustice education. Bowers (2015a) critiqued the American Common Core Curriculum, yet the ecojustice education field has yet to see any analysis of current mandatory provincial curriculum in Canada. This inquiry into the K–7 BC Science and Social Studies curriculum-as-plan partially fills this research gap.

### **This Inquiry and Its Significance**

Despite more than two decades of research on ecojustice education, I cannot help but wonder, along with Bowers (1996), “why has ecological literacy become so difficult for modern cultures to understand and carry out successfully?” (p. 9). Essentially, this is the question that arose in my mind while working at the environmental education school in the Bahamas in 2013

and led me to this inquiry and the field of ecojustice education. Traditional environmental education fails to consider the cultural and linguistic roots of the crises. Without understanding the power of Western culture-language-thought patterns, we continue to seek technofix solutions based on these same Western assumptions. Instead, ecojustice explains that solutions to global socioecological crises are to be found in reviving the relationships that support the environmental and cultural commons. By rejecting economic (and other) enclosures and operating outside of hegemonic economic systems, ecojustice offers an approach to socioecological crises.

This inquiry offers three contributions to the ecojustice literature. The first is conducting a cultural and linguistic analysis of the K–7 BC Science and Social Studies curricula. I queried how anthropocentrism, individualism, and reductionism appear in these documents. By identifying these root metaphors in the provincial documents, they can be used by the Ministry and in future teacher education classes to bring attention to these ecologically unsustainable taken-for-granted assumptions. The second contribution is a critical interpretation of educators' discourse including how and where these root metaphors show up vis-a-vis their relationships with the rest of nature. The final contribution to the literature arises from my teaching journal reflections and the reflexive process of reading them through the ecojustice lens. The purpose of gathering and interpreting educators' perspectives, including my own, is to begin identifying where, when, and how ecologically aware educators promote or challenge these root metaphors in their own teaching practices. This identification can help the ecojustice field with initial patterns of understanding and direction for future efforts.

## **Conclusion**

“No matter how dominant a worldview is, there are always other ways of interpreting the world” (Little Bear, 2000, p. 77).

Building on Chapter 1, this chapter described specific root metaphors that carry forward ecologically unsustainable beliefs from the past into today. Our understanding of the world and the world itself have changed since these analogues were encoded into our thought-language. Furthermore, we educators do not teach how language shapes our thinking, never mind how to alter or shift our discourse towards one that recognizes our interconnectedness. The anthropocentric worldview has caused untold damage to the rest of nature, and yet we still see through this lens of human supremacy. Similarly, individualism still prioritizes the individual over the collective even though all flourishing is mutual. Reductionism impacts how we think of issues, encouraging us to break them down into the smallest parts and ignoring the connections between society and ecosystems.

What we teach children in schools reflects what society, or those in power, believe we should know. By no means is it, or can it ever be culturally or politically neutral. Curriculum is a “complicated conversation” (Pinar, 2019, p. vii), and the BC curriculum is no exception. In this chapter, two influences on curricular discourse were discussed vis-a-vis the three root metaphors of interest here. Neoliberal discourse atomizes society into individuals and externalizes the ecological and human costs of production promoting the root metaphors of individualism and anthropocentrism. The second influence on curricular discourse is critical pedagogy which advocates for the empowerment of the individual. This may sound liberating, especially from the hegemonic control of international corporations or oppressive governments. However, this framework is overly anthropocentric; it too neglects our reliance upon healthy ecosystems.

The third, and thus far the smallest, influence on curricular discourse is ecojustice education. Ecojustice scholars consider the global socioecological crises to be rooted in Western linguistic and cultural norms. Pointing to land-based and Indigenous cultures, ecojustice

literature highlights other ways of speaking about and relating to the rest of nature. The ability to understand how language, often perceived as neutral, influences our thoughts and actions is an example of ecological thinking, a vital component of ecojustice education. By resisting WIC reductionist tendencies, ecological intelligence asks us to see ourselves as part of a larger system where all parts are exchanging information all the time. It asks us to see that intelligence, cognition, is present in all living beings. Finally, I presented the significance of this inquiry into ecologically unsustainable root metaphors in BC curricular and educator discourse. Thus far, despite myriad calls for educators to understand where these language-thought patterns appear in curriculum, no such work has been done for provincial curriculum in Canada.

#### **Chapter 4: Curriculum Review: Social Reproduction, Social Reform, or Something Else?**

This chapter summarizes observations about the curriculum portion of my research question: Where and how do ecologically unsustainable root metaphors arise in educator and curricular discourses? Following Bowers's (2001a) ecojustice framework, "critically interpreting this [any] curriculum-as-plan[ned] requires understanding the ideas as well as the culture-language-thought patterns inscribed in it and prescribed by it" (Thom, 2021, p. 32). Thus, these (nonobjective) observations do not point simply to a change in discourse but rather one part of the necessary shift of our Western educational paradigm. Curriculum developers and educators would benefit to learn about their own cultural assumptions and how their "*senses are culturally shaped*" (Meyer, 2008, p. 220, emphasis in original). Otherwise even so-called curriculum reformists will use the same thinking that created these socioecological crises (Bowers, 2015a).

Bowers (2018) suggested that

naming what is otherwise taken for granted often leads to making it explicit, thus enabling the person to reflect on how it is reinforced by other taken-for-granted cultural patterns and even to introducing changes that may affect the deepest cultural assumptions. (p. 2)

The intent of this chapter is to help name "what is otherwise taken for granted." Thinking of language as a social practice, and seeing both with it and through it (Bateson, as cited in Schumacher Center for a New Economics, 1976/2013), will help create a curriculum with fewer blind spots (Plumwood, 2005).

The first sections detail the development and the layout of the BC K–7 Science and Social Studies curricula, followed by a description of their overarching ethnocentric ontology and epistemology. The curricula exemplify what Kincheloe (2008) said: "When it comes to


epistemology, the West is the referee as to what counts as knowledge around the world” (p. 44). The third section unpacks a sampling of how anthropocentrism, individualism, and reductionism appear in these two subjects; further examples can be found in my field notes in Appendices C and D. To conclude, I offer examples of ecological thinking present in these curricula to highlight promising thought-language patterns, ones that can better describe and address socioecological crises. As with other chapters, woven throughout this one are self-study reflections that illuminate how these root metaphors manifest in the wider cultural sphere.

### **A Note About the Format of the 2016 BC Curriculum**

In 2016, the Ministry released a new K–9 curriculum with the goals of “ensuring our students get the skills they need to succeed in our changing world and making sure that teachers can deliver the curriculum efficiently and effectively” (BC MoE, n.d.-a, para. 1). Each grade and subject were revised so all grades and subjects share the template found in Figure 4. The 2016 BC curriculum-as-plan[ned] (BC MoE, n.d.-b, n.d.-c, n.d.-d) is divided into three categories. These three skills correspond, respectively, to the curricular categories called *Big Ideas* (ideas students are to understand), *Content* (material students are to know), and *Curricular Competencies* (skills students are to do). All page numbers listed below are from the Word versions of the K–9 Science and Social Studies curricula, with elaborations available online (BC MoE, 2016a, 2016b).

Figure 4

## The Layout of the 2016 BC Science Curriculum

 <b>Area of Learning: SCIENCE</b> <span style="float: right;"><b>Kindergarten</b></span>	
<b>BIG IDEAS</b>	
Plants and animals have observable features.	Humans interact with matter every day through familiar materials.
The motion of objects depends on their properties.	Daily and seasonal changes affect all living things.
<b>Learning Standards</b>	
Curricular Competencies	Content
<p><i>Students are expected to be able to do the following:</i></p> <p><b>Questioning and predicting</b></p> <ul style="list-style-type: none"> <li>• Demonstrate curiosity and a sense of wonder about the world</li> <li>• Observe objects and events in familiar contexts</li> <li>• Ask simple questions about familiar objects and events</li> </ul> <p><b>Planning and conducting</b></p> <ul style="list-style-type: none"> <li>• Make exploratory observations using their senses</li> <li>• Safely manipulate materials</li> <li>• Make simple measurements using non-standard units</li> </ul> <p><b>Processing and analyzing data and information</b></p> <ul style="list-style-type: none"> <li>• Experience and interpret the local environment</li> <li>• Recognize First Peoples stories (including oral and written narratives), songs, and art, as ways to share knowledge</li> <li>• Discuss observations</li> <li>• Represent observations and ideas by drawing charts and simple pictographs</li> </ul> <p><b>Applying and innovating</b></p> <ul style="list-style-type: none"> <li>• Take part in caring for self, family, classroom and school through personal approaches</li> <li>• Transfer and apply learning to new situations</li> <li>• Generate and introduce new or refined ideas when problem solving</li> </ul> <p><b>Communicating</b></p> <ul style="list-style-type: none"> <li>• Share observations and ideas orally</li> <li>• Express and reflect on personal experiences of place</li> </ul>	<p><i>Students are expected to know the following:</i></p> <ul style="list-style-type: none"> <li>• <b>basic needs</b> of plants and animals</li> <li>• <b>adaptations</b> of local plants and animals</li> <li>• <b>local First Peoples uses</b> of plants and animals</li> <li>• <b>properties of familiar materials</b></li> <li>• <b>effects of pushes/pulls</b> on movement</li> <li>• effects of size, shape, and materials on movement</li> <li>• <b>weather changes</b></li> <li>• <b>seasonal changes</b></li> <li>• <b>living things make changes</b> to accommodate daily and seasonal cycles</li> <li>• First Peoples knowledge of seasonal changes</li> </ul>
<p>June 2016 <span style="margin-left: 200px;">www.curriculum.gov.bc.ca</span> <span style="float: right;">© Province of British Columbia • 1</span></p>	
Big Ideas – Elaborations	
<b>SCIENCE Kindergarten</b>	
<p><i>Sample questions to support inquiry with students:</i></p> <p><b>Plants and animals have observable features.</b></p> <ul style="list-style-type: none"> <li>• How do the different features of plants and animals help them meet their basic needs?</li> <li>• What basic needs do plants and animals have in common?</li> <li>• What are your basic needs?</li> </ul> <p><b>Humans interact with matter every day through familiar materials.</b></p> <ul style="list-style-type: none"> <li>• What is matter?</li> <li>• How do you interact with matter?</li> <li>• What qualities do different forms of matter have?</li> </ul> <p><b>The motion of objects depends on their properties.</b></p> <ul style="list-style-type: none"> <li>• How can you make objects move?</li> <li>• How does the shape or size of an object affect the object's movement?</li> <li>• How does the material the object is made of affect the object's movement?</li> </ul> <p><b>Daily and seasonal changes affect all living things.</b></p> <ul style="list-style-type: none"> <li>• What daily and seasonal changes can you see or feel?</li> <li>• How are plants and animals affected by daily and seasonal changes?</li> </ul>	
Curricular Competencies – Elaborations	
<b>SCIENCE Kindergarten</b>	
<ul style="list-style-type: none"> <li>• <b>Questioning and predicting:</b> Patterns are natural configurations, designs, arrangements or sequences. Many patterns indicate an underlying scientific principle or unifying idea. People identify patterns and look for relationships behind the patterns they find. They use this information to extend their understanding.</li> </ul> <p><i>Key questions about patterns:</i></p> <ul style="list-style-type: none"> <li>– What patterns do you see in plant life in your local environment?</li> <li>– What weather patterns can you observe?</li> </ul> <ul style="list-style-type: none"> <li>• <b>place:</b> Place is any environment, locality, or context with which people interact to learn, create memory, reflect on history, connect with culture, and establish identity. The connection between people and place is foundational to First Peoples perspectives of the world.</li> </ul> <p><i>Key questions about place:</i></p> <ul style="list-style-type: none"> <li>– What is place?</li> <li>– What are some ways in which people experience place?</li> <li>– How can you gain a sense of place in your local environment?</li> <li>– How can you share your observations and ideas about living things in your local environment to help someone else learn about place?</li> </ul>	
Content – Elaborations	
<b>SCIENCE Kindergarten</b>	
<p>June 2016 <span style="margin-left: 200px;">www.curriculum.gov.bc.ca</span> <span style="float: right;">© Province of British Columbia • 2</span></p>	

## **Overarching Themes: Separation and Hierarchies**

“Western culture is deeply imbued with notions of separateness, isolation, difference, and otherness” (Turner, 2009, p. 183).

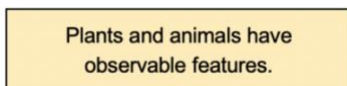
Ethnocentrism is the centring of a particular race or culture with the conviction that it is morally superior to other cultures, giving them the right to oppress other “lesser” cultures (Bowers, 1997; Lowenstein et al., 2010). Indeed, each of the three root metaphors studied here are elements of the Western worldview based on separation and superiority. Because the BC curriculum was written by those nested in a Eurocentric culture, it was unsurprising to see how it presents Western knowledge as not only the norm but the superior form of knowledge (Aoki, 1993/2004b). Sometimes this prejudice is overt and other times the “silences” (Bowers, 2015b, 5:13) convey these beliefs. Beyond the immediate ethical issues with ranking one culture above another, this belief has also resulted in Westerners thinking we have “a messianic responsibility for the development of less advanced cultures” (Bowers, 2010a, p. 10; Thomas et al., 2020).

These curricula reinforce the separation and hierarchy in Western dualisms through biased questions, failing to present other ways of knowing as equal, and failing to question Western beliefs altogether. One way we see this in the use of past tense when discussing First Peoples’ values, cultures, and practices, perpetuating the dead Indian myth (King, 2013). Another example is that right from Kindergarten children learn that they are unbiased observers, separate from the rest of nature (see Figure 5). By positioning humans as rational observers, we maintain our superior position to the rest of nature. What the Western scientific view, and this curriculum, fails to mention is that we too have observable features, and the plants and animals are observing and responding to us as well. We teach youth to “organize, categorize, and manage [nature]” (Mueller & Tippins, 2015, p. vii) rather than to recognize our mutually reciprocal

relationships. This one-way, hierarchical relationship is present throughout the curriculum, normalizing Western patterns while othering non-Western beings.

### Figure 5

#### *Science Curriculum Positioning Humans as Separate Observers*



*Note.* Image from *Area of Learning: Science [Kindergarten]*, BC MoE, 2016a, p. 1.

Perhaps the most poignant example of ethnocentrism occurs in the Grade 3 Social Studies curriculum. On page 15, we see the question “Should Indigenous cultures and languages be maintained?” (BC MoE, 2016b; see Figure 6). Inhale. Exhale. What beliefs about hierarchies, diversity, and progress are assumed in this Key Question? What does the curriculum fail to recognize about Indigenous cultures and languages? The addition of “Explain the reasons for your answer” (BC MoE, 2016b, p. 15) makes space for the possibility that Indigenous cultures and languages should not be maintained. What axiological beliefs are embedded in a question where one culture gets to decide whether another culture should be allowed to continue to exist?

### Figure 6

#### *Ethnocentrism and Colonizing Beliefs in the BC Curriculum*

**Make value judgments about events, decisions, or actions, and suggest lessons that can be learned (ethical judgment):**

*Key questions:*

- Is the technology we have today better than the traditional technology of indigenous peoples?
- What are the advantages or disadvantages of consensus decision making?
- **Should indigenous cultures and languages be maintained? Explain the reasons for your answer.**
- Should anything be done about the loss of indigenous lands? Explain your reasons.

*Note.* Image taken from *Area of Learning: Social Studies: [Grade 3]*, by BC MoE, 2016b, p. 15.

Copyright 2016 by Government of BC.

Ignoring these epistemological assumptions limits students’ thinking. The separation, hierarchy, and scientism central to Western thought are present throughout the curriculum

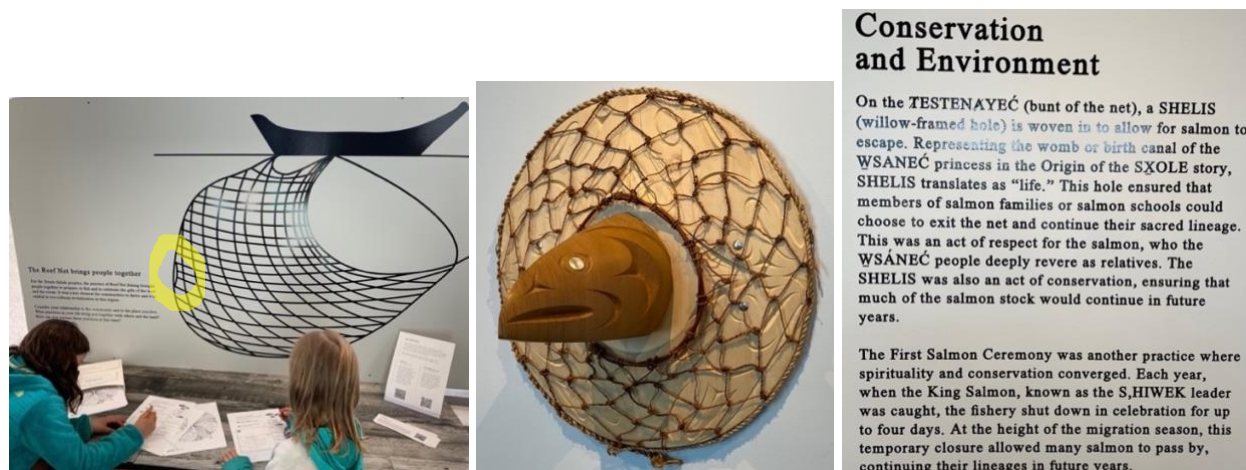
despite calls to “criticize and demystify the ways which Western science have been part of the colonial apparatus” (Denzin & Lincoln, 2008, p. 2). Perhaps because Western science is “sacrosanct” (Bowers & Flinders, 1990, p. 39), it has become the “only perspective used in finding solutions to the issues we face in Western society today” (Lipe, 2019, p. 459). This is why ecojustice education is a powerful lens: though it is a Western construct, it specifically honours the knowledge of Indigenous and other land-based peoples whose worldviews, based on different root metaphors, allow them to live sustainably in a place.

The function of Indigenous knowledge, values, and customs “is to maintain the relationships that hold creation together” (Little Bear, 2000, p. 81). Indigenous knowledges do not separate the world into categories the way we Westerners do. They have unique theories, experts, and methods, so they do not necessarily align with Western disciplines such as history and science (Battiste, as cited in Clyne, 2020). One example is how the WSÁNEĆ First Nations reef fishing practice incorporates technology, spirituality, and conservation (see Figure 7). This strategy and the cultural beliefs upon which it stands are based on a different cosmological and axiological view that respects salmon as relatives. In WIC, we do not allocate intrinsic worth to fish, consider them relatives, or assume cognition, as the WSÁNEĆ peoples do. When asking students if “the technology we have today is better than the traditional technology of Indigenous peoples” (BC MoE, 2016b, p. 15), the question points only to efficiency. It does not invoke conservation, spirituality, or any other relationships. A deep reading of the BC curriculum through a decolonial/anti-racist lens is a worthy topic for more research. In fact, it would be interesting to go further and consider Indigenizing schooling altogether. Here though, staying within the framework of ecojustice education, ethnocentrism—and the separation and hierarchies

within—is shown to be an ecologically unsustainable root metaphor embedded throughout the two curricula.

### Figure 7

*Exhibit at the Shaw Centre for the Salish Sea Depicting Traditional Reef Net Fishing*



*Note.* Left image. The key feature of this type of net is a SHELIS, a willow-framed hole that allows for some salmon to choose to escape and continue their lineage. Middle image. Artwork showing a salmon escaping the reef net through the SHELIS with a wooden carving of the moon. Right Image. On the plaque beside the art, the artist offers this shift in root metaphors: “If we can think in terms of borrowing, rather than taking, we can think in terms of giving back.” Images taken by author, April 23, 2022.

### Anthropocentrism in the BC Science and Social Studies Curriculum

“The creature that wins against its environment destroys itself” (Bateson, 1972, p. 501).

The root metaphor of anthropocentrism describes the positioning of humans as separate, central, and superior to the other. The other, in this case, is anything nonhuman; it could be the land, plants, fungi, nonhuman animals, bacteria, entire ecosystems, and so on. This “latent ideological content” (Apple, 1979, p. 7) is woven throughout the BC curriculum because it is part of the broader Western worldview, and therefore embedded in the minds of those who

develop curricula (Aoki, 2004e). These anthropocentric ideas in Western curricula are not unique to BC; Hufnagel et al. (2018) have shown how, in the United States, the Next Generation Science Standards<sup>3</sup> also describe the environment as something separate from humans. That said, others (Veinović & Stanišić, 2018) have identified a shift from anthropocentrism towards a more ecocentric focus in international science and social studies curricula.

BC's "primary goal of Social Studies education is to give students the knowledge, skills, and competencies to be active, informed citizens who can think critically" (BC MoE, n.d.-c, Introduction section, para. 1). Despite this human-centric goal, there is potential to embrace a more ethical relationship (Donald, 2021; Donald et al., 2012) with the rest of nature in this subject. Martusewicz and Schnakenberg (2010) supported this idea:

The purposes of public education and more specifically the responsibility of Social Studies education ought to be to develop citizens who can understand, identify, and make collective decisions to remediate problems in their communities as a matter of basic survival as well as happiness and overall well being. (p. 29)

"Remediat[ing] problems" (or issues or crises) is the ultimate goal of this inquiry. To that end, this section responds to the query: How does anthropocentrism show up in both the BC K–7 Science and Social Studies curricula? In other words, how are humans positioned in relation to the rest of nature?

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<sup>3</sup> The Next Generation Science Standards were constructed with aims to nationalize curriculum (i.e., all states would adopt this curriculum) as the United States does not have a Ministry of Education or a national curriculum.

### ***“How Can You Make Objects Move?”***

In Kindergarten Science, one of the Big Ideas (that students are to “understand”) states: “The motion of objects depends on their properties” and the elaboration queries: “How can you make objects move?” (see Figure 8). Let us take a closer look at the elaboration question. How does it encourage us to think in a particular way? What “culture-language-thought patterns are inscribed in it and prescribed by it” (Thom, 2021, p. 32)? Here, the individual student (“you”) is centred as the subject and the object—the thing to be moved—is backgrounded. Kindergarteners learn that they are the actor and “the rest of the world, the stage” (Hawkins, 2009, p. 101). This same mindset continues in Grade 2, where another elaboration question posits, “What are different ways that objects can be moved?” (p. 9). Of interest, in the elaboration question, there is no person or agent indicated. This languaging practice is one way we can distance ourselves from the outcomes of our actions, further separating ourselves from the environment.

### **Figure 8**

#### *Curriculum Centring the Student and Backgrounding the Environment*

##### **The motion of objects depends on their properties.**

- How can you make objects move?
- How does the shape or size of an object affect the object's movement?
- How does the material the object is made of affect the object's movement?

*Note.* From *Area of Learning: Science: [Kindergarten]*, by BBC MoE, 2016a, p. 2. Copyright 2016 by Government of BC.

Asking how we can make objects move not only centres our desires, but it also backgrounds the relationships between the object and its original surroundings. It reinforces the “subject–object binary” (Aoki, 1993/2004b, p. 294). This manifestation of the mechanistic Newtonian–Cartesian worldview neither defines an object nor considers the potential purpose of or reason for the original position of that object. It assumes that “to be defined as ‘nature’ in this

context, is to be defined as passive, as non-agent and non-subject, as ‘the environment’ or invisible background conditions” (Plumwood, 1993, p. 4). Anthropocentrism begins here in Kindergarten. Humans are separated out, centred, and more than this, given the hegemony of acting on an “independent variable” (Bateson, 1972, p. 338), on a supposedly inert world without considering the changes we have influenced.

While working at the Vancouver Aquarium, I heard a version of this “make objects move” idea. Visitors would sometimes yell at anyone in a red staff shirt walking by the dolphins, “Make them jump!” Do original positions of things matter? Yes, they do. If objects are never defined in the curriculum, how far might we take this mindset? Can we say, then, that the trees in old growth forests are objects? How about the rocky outcrop in the path of the new highway? Or Bowker Creek? Bowker Creek runs through Saanich, Victoria, and Oak Bay, BC. Currently, only 2.9 km of the 7.9 km length of the creek is above ground. Humans have moved the creek underground; the remaining 5 km now runs through culverts out of site (Bowker Creek Urban Watershed Renewal Initiative, n.d.). Do we have a right to (re)move any of these things?

### ***“Your Environment”***

We see anthropocentric discourse again in both curricula when the environment is repeatedly positioned as something that belongs to us (see Figure 9). This phrase—your/its/their local environment—builds off the first belief that we act on a homogenous, inert world, “a *terra nullius*, a resource empty of its own purposes or meanings” (Plumwood, 1993, p. 4). Because words themselves are metaphors, we can first note how the words “the environment” stand in for, homogenize, and reduce the complexity of interactions and the interdependence of living and nonliving systems that make up the environment. Additionally, this possessive languaging practice (“your environment,” “its environment,” “their environment”) recreates the

subject/object binary (you/environment) with an inherent hierarchy and superiority allocated to the first concept named (Aoki, 1993/2004b; Plumwood, 1993, 2005; Warren, 1990, 2000).

Though the Great Chain of Being is millennia old (Lovejoy, 1936), the ranking and human domination remain a taken-for-granted assumption reinforced by the common discourses of Christianity, neoliberalism, and, as we can see here, Western curricula.

## Figure 9

### *Science and Social Studies Elaborations Demonstrating a Possessive View of Nature*

*Key questions about place:*

- What is place?
- What are some ways in which people experience place?
- How can you gain a sense of place in your local environment?
- How can you share your observations and ideas about living things in your local environment to help someone else learn about place?

**relationships between a community and its environment:**

*Sample topics:*

- natural resource industries
- parks and other natural areas
- population growth and new construction
- water and sewage treatment

**relationship between humans and their environment:**

*Sample topics:*

- protocols around the world that acknowledge and respect the land
- reshaping of the land for resource exploration and development

*Note.* Top image from *Area of Learning: Science [Kindergarten]*, by BC MoE, 2016a, p. 2.

Bottom left image from *Area of Learning: Social Studies: [Grade 1]*, by BC MoE, 2016b, p. 7.

Bottom right image from *Area of Learning: Social Studies: [Grade 3]*, by BC MoE, 2016b, p.

16. Copyright 2016 by Government of BC.

Instead of *their* environment, we might say *the* place or environment in which they live, or the ecological community of which they are a part to shift away from anthropocentrism towards ecological embeddedness. Of interest, in the Science curriculum the phrase “in your local environment” appears under the elaboration about place, where students in Grades K–9 are to get to know the local place they live. The curriculum defines *place* as “any environment, locality, or context with which people interact to learn, create memory, reflect on history, connect with culture, and establish identity. The connection between people and place is foundational to First Peoples perspectives of the world” (BC MoE, 2016a, p. 2). The conflicting

discourse—this definition of place along with the phrase “your local environment”—results from Indigenous knowledges being added on to a curriculum otherwise based on the Western worldview. An Indigenous paradigm is not integrated here, nor are the differences or the “tensionality” (Aoki, 2004e, p. 159) between the two worldviews articulated. In contrast, the First Nations Education Steering Committee’s (FNESC; 2016) description of place (see Figure 10) has several critical components not included in the curriculum-as-plan’s definition.

## Figure 10

### *FNESC Sense of Place Description*

*SENSE OF PLACE*

Connection with place, with the land, is the foundation of Indigenous Knowledge. This means that each Indigenous group holds unique world views, technologies and pedagogies according to their environment and territories. Indigenous knowledge, passed on through the generations, was essential for survival. Survival for First Peoples depended on and depends on their particular knowledge of the land, their unique relationship with the environment, and their shared values and practices through which they made sense of the world.

The concept of Place goes far beyond the physical space. It includes a crucial Sense of Place, the memories, emotions, histories, spiritualities that bind the people to the land.

Five concepts of place have been identified, common to most First Peoples<sup>3</sup>:

- Place is multidimensional. More than the geographical space, it also holds cultural, emotional and spiritual spaces which cannot be divided into parts.
- Place is a relationship. All life is interrelated.
- Place is experiential. Experiences a person has on the land give it meaning.
- Place is local. While there are commonalities, each First Nation has a unique, local understanding of Place.
- Place is land-based. Land is interconnected and essential to all aspects of culture.

Making connections with place in science curricula is an integral part of bringing Indigenous science into the classroom. That means including experiential learning in local natural and cultural situations.

<sup>3</sup> Adapted from Michell et al., *Learning Indigenous Science From Place*, p. 27-28.

*Note.* From *Science First Peoples Teacher Resource Guide: Grades 5–9*, by First Nations Education Steering Committee, 2016, p. 10. Copyright 2016 by First Nations Education Steering Committee and First Nations Schools Association.

Essential to the FNESC description is the understanding that sense of place means the difference between survival and death. Most students today do not have this understanding of

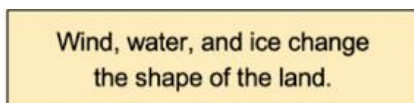
their reliance upon the rest of nature; the anthropocentric “illusion of disembeddedness and invincibility” (Plumwood, 2005, p. 238) is too pervasive in WIC. From the FNEESC document, the reader can also sense the vital, life-giving nature of the relationship with place, whereas the curriculum-as-plan version sounds almost clinical. It seems odd the curriculum definition would differ from this one. At minimum, two points in the FNEESC (2016) document could bring life back into the curricular definition of place: “Place is a relationship” and “Place is experiential.” Adding these characteristics could encourage the practice of ecological thinking.

### ***Ignoring Human Actions***

A third way anthropocentrism occurs in these curricula is presuming our actions are “right” and therefore backgrounding them by ignoring them altogether. For instance, in Grade 3, a Big Idea in the Science curriculum is “Wind, water, and ice change the shape of the land” (p. 12; see Figure 11). At first glance, this idea might not pique one’s attention. It is true; wind, water, and ice all do change the shape of the land, but as we know from housing developments, industrial farming, and removing (or reintroducing) top predators (D. W. Smith et al., 2003) humans are also capable of changing the shape of the land but these human actions that are left out of this Big Idea.

### **Figure 11**

#### *Big Idea Backgrounding Human Impacts on the Environment*



Wind, water, and ice change  
the shape of the land.

*Note.* Image taken from *Area of Learning: Science [Grade 3]*, by BC MoE, 2016a, p. 12.

Copyright 2016 by Government of BC.

Given that education is nested in and shaped by Western society, perhaps it should come as no surprise that others too have found that through “an examination of [Western] educational

research, theory, policy, and practice makes all too transparent an overwhelming absence of attention toward the ecological contexts of existence” (Wayne & Gruenewald, 2004, p. 21). Our activities are ignored, as if we truly exist separate from the places we live.

*Journal entry: May 2010.* While working for the Vancouver Aquarium’s AquaVan (a travelling, mini-aquarium offering education programs), three oil companies sponsored our trip through Alberta. In Fort McMurray, one of them offered us a tour of the “oil sands.” Our team was driven north through the boreal zone that covers about half of Canada’s landmass. It was an uninterrupted sea of green. The tour guide was chatting away, asking questions and “building relationships” (at least this is what I imagine her training manual said). I don’t remember much from this ride except for the moment she said, or in hindsight, warned us, “The landscape will change around the next corner.”

Sand? Suddenly sand was everywhere. Tears burst from my eyes and I held my breath. Around that corner, the forest that had lined the highway for the last hour was decimated. In its place was a desert. Sand as far as the eye could see and, on the horizon, some sprawling industrial metal contraption with rusty storage containers, pipes, and low-lying buildings. There seemed to be no life anywhere. It reminded me of Mordor from the *Lord of the Rings* films. Inside one of those buildings, we signed a release saying we wouldn’t publish any of the photos we took there. The site tour began, but I didn’t hear much. I was too busy nursing my broken heart.

Indeed, “wind, water, and ice change the shape of the land” (BC MoE, 2016a, p. 12), but if we neglect to teach how humans, too, change the shape of the land (and when and why and what the implications of this are) their education is incomplete. Excluding our actions perpetuates the false and anachronistic view that the world is so vast we cannot impact it.

Incorporating an Indigenous view of relationships, “that everything humans do affects the world” (Lipe, 2019, p. 469), would be a more reality-based addition.

### **Individualism in the BC Science and Social Studies Curriculum**

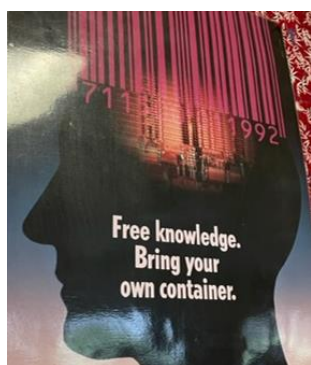
The root metaphor of individualism refers to the idea that individual humans are the basic unit of society and, echoing Adam Smith’s theory, that pursuing our self-interest is in the best interest of all (Martusewicz et al., 2015, p. 52). This “hegemonic normalcy” (Lupinacci et al., 2018, p. 652) assumes reduction from the whole of creation twice: First from the ecosystems we rely on and second from the human community upon which we also depend. Separation from one another manifests as competition amongst individuals, the survival of the fittest narrative, and freedom—in particular, freedom from state control (Bowers, 2011). There are several more taken-for-granted concepts, particularly in the Social Studies curriculum, that relate to individualism, such as rights, democracy, liberalism, private ownership, competitive economy, and sovereignty (Aoki, 1993/2004a, pp. 283–284). Aoki (1993/2004a) suggested we might even feel “too comfortable” (p. 284) with these notions and therefore not question their role in the status quo.

Starting with the Ministry webpage on Social Studies, one sees: “Students must build deep understandings and create *their own knowledge* through investigations into interesting, open-ended questions, debating and discussing historical and contemporary issues, and developing and supporting *their own* hypotheses, solutions, and conclusions” (BC MoE, n.d.-f, para. 2, emphasis added). This thinking follows the Cartesian logic that intelligence or knowledge is believed to reside in the individual; *I think; therefore, I am*. Westerners tend to believe knowledge is an objective, static entity that can be acquired and is held in the brain (just as words can hold meanings), and individuals can possess various amounts of this “thing” (see

Figure 12). This is the rationalization behind the IQ test and why we assess students via tests and exams in school. WIC views creativity in this same way, as something that resides in the individual (Bowers, 1995). These manifestations of individualism neglect to acknowledge the interdependent relations in which we participate; namely, those of our linguistic and cultural communities, and those with the rest of nature.

### **Figure 12**

*Poster Showing the Western View of Knowledge as an Objective Entity*



*Note.* Photo taken by the author in January 2022 at a school library in Victoria, BC.

### ***Independent Learners Creating Their Own Knowledge***

As with the inquiry into the root metaphor of anthropocentrism, I asked: How do the curricula encourage us to think in particular ways about individuals? What ontological and epistemological bases exist? When reviewing these documents, I also kept in mind Bowers's (1993) questions: "What is the image of the individual that is represented, and how is "success" understood? . . . How is community represented?" (p. 5). We see the notion of autonomous intellectual novelty throughout the BC Science curriculum with elaborations such as "What discoveries did you make?" and "Generate and introduce new or refined ideas when problem solving" (see Figure 13). Looking at the first example in Figure 13, the individual student, "you," is centred again. Although the word *you* in English can be singular or plural, the French version

of the Science curriculum uses the singular *tu* in these statements, so I am presuming the English to also be singular.

### Figure 13

*Two Examples of the Western, Individual View of Knowledge Which Obscure Relationships*

**Light and sound can be produced and their properties can be changed.**

- How can you explore the properties of light and sound?
- What discoveries did you make?

**Applying and innovating**

- Contribute to care for self, others, community, and world through per: approaches
- Co-operatively design projects
- Transfer and apply learning to new situations
- Generate and introduce new or refined ideas when problem solving

*Note.* Top image taken from *Area of Learning: Science [Grade 1]*, by BC MoE, 2016a, p. 5.

Bottom image from *Area of Learning: Science [Grade 7]*, by BC MoE, 2016a, p. 29. Copyright 2016 by Government of BC.

This individualistic framing removes us from our peers, other scientific thinkers, language, and cultural traditions (Bowers, 1993, 1995), and even from the very teachers who lead the lesson. Also excluded are the janitors who keep the school safe, the citizens who pay for the schools, the beings and other earthly resources that went into constructing the school. Without mention of the community that allowed these experiments to take place, students are implicitly taught that they alone are the discoverers of information, reinforcing the root metaphor of individualism. In contrast to this WIC logic, Bateson (1972) suggested that mind is inherent in the system as a whole. Indeed, Bateson proclaimed, “there are *multiple* differences between the thinking system and the ‘self’ as popularly conceived” (1972, p. 319, emphasis in original). Without recognition of the community of scholars, this type of thinking is akin to the *terra*

*nullius* concept, only with ideas. The fact that “words have a history” (Bowers, 2013, p. 52) is ignored and the false conduit view of language (Reddy, 1993) promoted.

The second example in Figure 13 centres on the idea of the individual generating “their” ideas as though this can happen on its own, in some sort of vacuum. Generating one’s own ideas, as the curriculum states, promotes what Bowers (1995) called an experimental view of knowledge which ultimately leads to the “nihilistic characteristics of modernism” (p. 16). If all knowledge in schools is constructed by the individual, we end up with intellectual (and moral) relativism (Bowers, 1995). In contrast, for cultures that have lived in place for millennia, knowledge that is essential to survival was remembered and intentionally passed down to future generations, not left to chance. It is and was not up to young people to craft their own knowledge.

### ***Individual Solutions***

Another way the fallacy of individualism shows up in the BC K–7 curricula is a focus on the individual as the site of societal change (see Figure 14). Asking how children can conserve water and make different consumer choices focuses on individual actions for community issues, funnelling us, yet again, into an individualistic logic. Young (2009) has detailed how all of environmental education is rooted in this individualistic, mechanistic mindset. This emphasis creates the cognitive frames such that independent actions become all we can see while putting out of focus systemic issues.

## Figure 14

### *Curricular Components Highlighting Individual Actions While Systemic Causes Are Overlooked*

**Water is essential to all living things, and it cycles through the**

- Why is water important for all living things?
- How can you conserve water in your home and school?
- How does water cycle through the environment?

**Differentiate between short- and long-term causes, and intended and unintended consequences, of events, decisions, or developments (cause and consequence):**

*Sample activities:*

- Explain the historical basis of selected contemporary issues.
- Give examples of how your actions may have consequences for others locally or globally (e.g., effect of consumer choices).

*Note.* Top image taken from *Area of Learning: Science [Grade 2]*, by BC MoE, 2016a, p. 9.

Bottom image from *Area of Learning: Social Studies: [Grade 6]*, by BC MoE, 2016b, p. 30.

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This kind of individualistic languaging practice puts out of focus the community or corporate uses of water as well as the political systems that determine who gets water when (Orr, 1994/2004). It isolates the problem (Bowers, 1974). One child (or even 100,000 children) turning off the water while they brush their teeth conserves some potable water, but this “solution” obscures the pumping of deep-water aquifers for agriculture, urban sprawl in desert climates, and commercial sales of bottled water (Singh, 2021). If teachers and curricula do not present this ecological perspective, how can students truly understand the roots of socioecological crises? This mismatch between the scale of issues and solutions offered can play into students’ experiences of eco-anxiety, feeling paralyzed (Carlson et al., 2020) and helpless (Hamel et al., 2019), and ultimately maintaining the status quo.

### ***“Individual Rights Versus the Public Interest”***

A third way the individual is prioritized and framed in the Western way as a hyper-separated, autonomous unit is the focus on “individual rights” and “personal freedoms” in the curriculum-as-plan[ned] (see Figure 15). These curricular points in Figure 15 raise important

questions: Does the public have rights, too? Does the “environment” have rights? What do these phrases tell students and teachers about the values of our society? In several countries, aspects of the (public) environment, the commons, like rivers and forests, do have legal rights (Boyd, 2017). That the BC curriculum does not make this connection tells us something of the curriculum developers’ mindsets. This is one area the root metaphors of anthropocentrism and individualism overlap and reinforce one another (Martusewicz et al., 2015). Why do other living beings not receive political representation in Western countries? After all, they give us life (Donald, as cited in Dion & Suntjens, 2021). Why does the curriculum not ask students in Grade 6 to learn about how governments vary in their respect for nature’s rights and freedoms?

### Figure 15

#### *Aspects of the BC Social Studies Curriculum Prioritizing Individual Rights*

##### **roles, rights, and responsibilities in the local community:**

###### *Sample topics:*

- individual rights and interests versus the “public interest”
- responsibilities to other people and the environment

Systems of government vary in their respect for human rights and freedoms.

###### *Key questions:*

- How can the exercise of power and authority affect an individual’s rights?
- Should individuals be willing to give up some personal freedoms for the sake of collective well-being?

*Note.* Top left image from *Area of Learning: Social Studies: [Grade 1]*, by BC MoE, 2016b, p.

7. Top right image from *Area of Learning: Social Studies: [Grade 6]*, by BC MoE, 2016b, p. 29.

Bottom image from *Area of Learning: Social Studies: [Grade 6]*, by BC MoE, 2016b, p. 31.

Copyright 2016 by Government of BC.

To promote an ecological or relational worldview, we could consider adding questions about our obligations or responsibility to the human and more-than-human communities. We could ask: How is the individual positioned and represented here? And the community? How about the ecosystem? How are independence and freedom represented? The curriculum does not

state what the balance should be between individual and collective rights; it merely poses the question. (Although we might consider that posing the question validates this notion.)

Although WIC lauds independent individuals, teachers from Eastern (see Nisbett, 2003) or Indigenous backgrounds may present a different balance between individual and community. Indigenous views do not pit the individual against the community (McCabe, as cited in Flourishing Diversity, 2021; Meyer, 2008; Wilson, 2008). For instance, two of FNESC's (2016) pedagogical principles are to "emphasize an awareness of self and others in equal measure [and] recognize the value of group processes" (p. 5). These vital skills are lacking in WIC. Although effects might appear to be separate in time or space from the causes (Nixon, 2011), this planet is one ecosystem, one community, one interbeing (Nhat Hanh, 1993).

### **Reductionism in the BC Science and Social Studies Curricula**

Merchant (1980) described reductionism as thinking that breaks complex systems down into smaller parts to solve each aspect separately. Although this process can give us in-depth knowledge of the components, it removes the part from the system, and that system from the environment (or rather, to be more accurate, it removes that system from the other systems of communication, energy, and materials in which the first system exists). Reductionism is a hallmark of Western science and has been prevalent in WIC due to its success in guiding many discoveries of the Scientific Revolution (Merchant, 1980). Bowers (2011) has questioned how "the West failed to recognize that it was making a major epistemological error when it emphasized things as separate entities" (p. 11).

Reductionist thinking removes context, thereby isolating the object or concept in question and freezing it in time. When we break systems down, we rarely account for what might be removed during this step. Reductionist thinking obscures the synergistic occurrences and

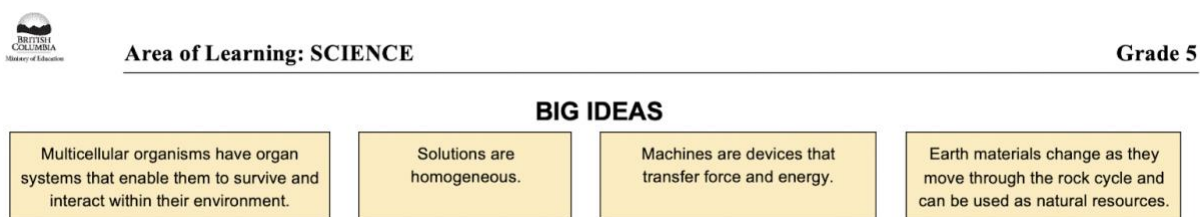
emergent properties of complex systems. Therefore, reductionism is incapable of accurately describing the dynamic, living systems in which we exist and, similarly, is unfit to create or discern (re)solutions for the whole system. The English word “and” (Bowers, 1997) and our noun-heavy English language encourage this view. We turn relationships and interactions (verbs) into things (nouns), which supports Donald’s (2021) understanding of colonialism as a denial of relationships.

### ***Subdividing Subjects***

One way reductionism shows up in the Science curriculum can be seen in Figure 16, where curriculum developers have separated the four so-called fields of science in the Big Ideas. Although this example is taken from Grade 5, this separation is present from K–Grade 9. The Ministry website gestures to this divide saying, “The Science curriculum includes content from biology, chemistry, physics, and earth and space sciences at the K–9 level” (BC MoE, n.d.-e, para. 3) but does not explain why they are separate.

### **Figure 16**

*Reductionism in the BC Science Curriculum: Depicting Strands of Science in Separate Boxes*



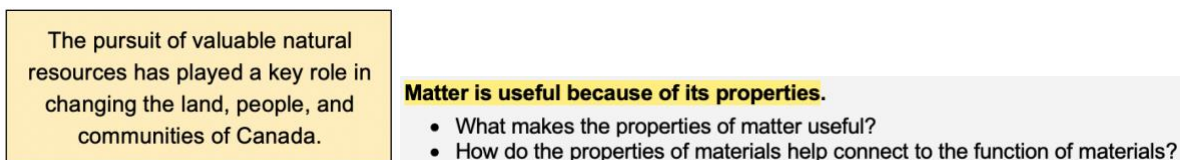
*Note.* This separation occurs in grade K–9. Image from *Area of Learning: Science [Grade 5]*, by BC MoE, 2016a, p. 20. Copyright 2016 by Government of BC.

We can only assume, despite the questioning of school subjects since 1899 (Dewey, 1899, as cited in Kliebard, 1992), it is structured this way because school subjects were created to echo the disciplines found in higher education. That there is no explanation for this division,

and that we take this for granted, points to a cultural normalization of reductionism. Teaching this way further entrenches the division of the living world into siloed categories. A problematic downstream effect of this siloing is the creation of subject area specialists who cannot speak across fields, thus limiting our overall capacity for ecological thinking (though the impacts of this broader discussion fall outside the scope of this chapter).

### ***“Natural Resources,” Naturally***

The most common example of reductionism relating to socioecological crises in both the Science and Social Studies curricula is the term “natural resources” to describe components of the biosphere (see Figure 17). Natural resources are never defined, but given the examples provided, they can be anything from “water, rocks, minerals, soils, and plants” (BC MoE, 2016a, p. 22) in the Science curriculum to marine resources, forests, minerals (e.g., diamonds, gold, asbestos, tin, copper), and energy resources (e.g., natural gas, petroleum, coal, hydro) in the Social Studies curriculum (BC MoE, 2016b, p. 27). This phrase “natural resources” is troublesome, in part, because of the loaded adjective *natural*. In fact, the root, *nature*, has been described as “perhaps the most complex word in language” (R. Williams, 2015, p. 164). The first of three definitions that R. Williams (2015) provided for nature is “the essential quality or character of something” (pp. 164–165). Thus, this term encourages us to believe it is “natural” to use these entities (or beings) as a means to our ends; it is their “essential quality or character” to be a resource to us.

**Figure 17***The BC Curriculum Demonstrating a Utilitarian View of Nature*

*Note.* Left image from *Area of Learning: Social Studies: [Grade 4]*, by BC MoE 2016b, p. 17.

Right image from *Area of Learning: Science [Grade 1]*, by BC MoE, 2016a, p. 4. Copyright 2016 by Government of BC.

This utilitarian view of the world is perpetuated in the curriculum because it is, inevitably, “imbued with the [curriculum] planners’ orientations to the world” (Aoki, 1993/2004d, p. 202). Our hyper-consumer culture is made possible by thinking of nature as having only instrumental value. As animals, heterotrophs, we must consume from the environment, but WIC, rooted in this discourse, has taken consumption (and production) to extreme rates. Our consumption patterns and neoliberal mindset have led to companies producing so much extra product that luxury brands, until recently, burned surplus goods they did not sell (Dalton, 2018). To shift this type of thinking, Bowers (2018) asked teachers to “challenge the archaic idea that we exist as autonomous beings in a world of material and unintelligent things” (p. 39).

***Simple Systems Made Too Simple***

A third important example of reductionism is how systems are simplified to the point that they misrepresent reality. Three examples of this are found in Figure 18. The water cycle is described as being “driven by the sun and includes evaporation, condensation, precipitation, and runoff” (BC MoE, 2016a, p. 11). As with the Big Idea “Wind, water, and ice change the shape of the land” (BC MoE, 2016a, p. 12), discussed above, life is left out. This strictly abiotic

description of the water cycle ignores how animals, plants, bacteria, and fungal bodies are all made up, in part, of water; they play a part in this system. Plants play the critical role of transpiration in the water cycle, but this, too, is excluded. Similarly, underground aquifers (which are being depleted by both industrial agriculture and bottled water companies) are missing entirely.

## Figure 18

### *BC Science Curriculum Content Elaborations Showing the Reductionism of Systems*

Content – Elaborations
<ul style="list-style-type: none"> <li>• <b>water conservation:</b> fresh water is a limited resource and is not being replaced at the same rate as it is being used</li> <li>• <b>water cycle:</b> The water cycle is driven by the sun and includes evaporation, condensation, precipitation, and runoff. T component of weather (e.g., precipitation, clouds)</li> </ul>
Content – Elaborations
<ul style="list-style-type: none"> <li>– food chains: the flow of food energy from one organism to another (e.g., grass to rabbit to lynx)</li> <li>– food webs: interconnecting food chains (e.g., a rabbit may be eaten by a lynx or a wolf)</li> </ul>
<ul style="list-style-type: none"> <li>• <b>climate change:</b> change in climate affects: <ul style="list-style-type: none"> <li>– the interconnectedness of plants and animals, and their local environment</li> <li>– e.g., changes to harvesting dates, changes to schedules due to early/late ripening and runs, lowered water levels in creeks, rivers and lakes, change in humidity impacts the ability to preserve salmon, etc.</li> </ul> </li> </ul>

*Note.* Top image from *Area of Learning: Science [Grade 2]*, by BC MoE, 2016a, p. 11. Middle image from *Area of Learning: Science [Grade 3]*, by BC MoE, 2016a, p. 15. Bottom image from *Area of Learning: Science [Grade 7]*, by BC MoE, 2016a, p. 31. Copyright 2016 by Government of BC.

The second example in Figure 18 shows another system missing a critical component. Here, in both the food chain and the food web, the process of decomposition is absent. This fundamental error in the curriculum-as-plan[ned] obscures that nature acts in cycles. The linear thinking pattern typical of WIC and taught here contributes to socioecological crises because the earth is finite. The third curricular example in Figure 18 shows how the effects of climate change are drastically underestimated. The curriculum ignores the lethal nature of climate change, the plight of climate refugees, and the fact that the Global South bears the brunt of the effects

(Nixon, 2011). This limited description of climate change effects mimics academic literature where “recognition of the most severe, existential, health risks from climate change was [also] generally low” (Butler, 2018, p. 1).

### ***The Limitations of Print Communication***

The fourth example of reductionism in these curricula is how we represent and access information. In the Science curriculum, technology, graphs, keys, and models are all used to present knowledge. Similarly, the Social Studies curriculum asks students to use and interpret maps, legends, print, visual, and audio materials. How do these tools or ways of communicating encourage us to think in particular ways? What information is highlighted and what is backgrounded? Prior to this inquiry, I had never considered these questions, but with Bateson’s (1972) map versus territory words in mind from Chapter 1, let us look a little closer as to what information makes it onto our Science and Social Studies maps and what is left off.

In WIC, written, symbolic, and digital forms of communication are given high status when compared to oral communication (Bowers, 1997; Kuokkanen, 2000). Although the spoken word cannot accurately convey reality either, the printed word (and the digital equivalent) loses several more elements of nuance compared with traditional oral practices (Bowers, 1993). Words “enclose” the thing they describe (Maulucci, 2010). Rasmussen (2012) noted how space and silence can communicate important elements during verbal communication, and these qualities are harder to reproduce on paper or the screen. Graphs, keys, maps, and legends are all examples of modelling or reducing information in written form. Yet the curriculum prioritizes this form and asks students to “explain Indigenous peoples’ use of oral tradition *rather than* the written language” (BC MoE, 2016b, p. 15, emphasis added).

Bowers (2015a) articulated several issues with our culture's reliance upon the printed word: print (a) reinforces abstract thinking; (b) marginalizes awareness that words are metaphors that carry forward the misconceptions and silences from the past; (c) gives the appearance of representing an objective account of reality; (d) provides only a surface knowledge of events, ideas, and cultural processes; (e) represents a world of fixed entities and causal relationships that can be "objectively" understood, and thus misrepresents how all aspects of life involve interdependent relationships and semiotic processes that influence the continual formation of life; and (f) is unable to provide an accurate account of the many emergent information pathways that affect relationships (p. 4).

### **Ecological Thinking in the BC Science and Social Studies Curriculum**

Thus far, the discussion has centred on aspects of the ecologically unsustainable discourse of these two curricula. However, like all documents, they contain multiple discourses. The next sections discuss aspects of these curricula that hone ecological thinking patterns. To recap, ecological intelligence requires us to retain the original root of ecology, *oikos*, the home or the community, when addressing concerns with so-called environmental systems. It unites the cultural with the ecological and is helpful to look at the socioecological crises this way. This way, one might ask: What are the impacts of our actions on the information, energy, and material systems and relationships (Bowers, 2010b)? Because the function of Indigenous knowledge, values, and customs "is to maintain the relationships that hold creation together" (Little Bear, 2000, p. 81), many Indigenous practices have ecological thinking embedded in them. The next three sections offer examples of ecological intelligence in the curricula that focus on relationships, patterns, and human impacts.

## ***Relationships***

Understanding relationships comes up several times in both curricula. As shown in Figure 19, the elaboration of a Big Idea in Kindergarten Science asks, “What daily or seasonal changes can you see or feel?” (BC MoE, 2016a, p. 2). Instead of a purely anthropocentric focus, it is the student’s relationship with the surroundings that is centred. Developing relationships with our surroundings such that we notice the “difference which makes a difference,” Bateson’s (1972) ecology of mind. In Grade 5 Science, we see the following questions: “How do the systems of the human body work together?” (BC MoE, 2016a, p. 25) and “What are the relationships between Earth and the rest of the universe?” (BC MoE, 2016a, p. 26). In contrast to the reductionism in other parts of the curriculum-as-plan[ned], these questions help us look for interactions amongst the parts. In the Social Studies curriculum, our dependence upon the local environment is mentioned in Grade 1, and in Grade 3, students are asked to understand how Indigenous societies value the well-being of the self, land, spirits, and ancestors (see Figure 19).

### **Figure 19**

#### *Curricular Examples Showing Relationships, a Component of Ecological Thinking*

**Daily and seasonal changes affect all living things.**

- What daily and seasonal changes can you see or feel?
- How are plants and animals affected by daily and seasonal changes?

Indigenous societies throughout the world value the well-being of the self, the land, spirits, and ancestors.

*Note.* Left image from *Area of Learning: Science [Kindergarten]*, by BC MoE, 2016a, p. 2.

Right image from *Area of Learning: Social Studies: [Grade 3]*, by BC MoE, 2016b, p. 13.

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### *Patterns*

Patterns are integral to ecological thinking because they allow us to recognize cause and effect, even if they are not directly related in a linear relationship. Given that living systems exist and interact in nonlinear relationships, this broader view of patterning is necessary to see how cultures and ecosystems fit together and impact one another. There are fewer examples of pattern recognition in these curricula compared with acknowledging relationships. Perhaps unsurprisingly, many of the examples that include ecological thinking are connected with First Peoples knowledge. For example, in Social Studies students are to look for “features” in Indigenous cultures’ relationship with the land.

In Kindergarten Science we see the ecological (yet anthropocentric) statement that “People identify patterns and look for relationships behind the patterns they find” (BC MoE, 2016a, p. 2). Of course, other animals, and plants too (see Gagliano et al., 2016) look for relationships behind the patterns they find, but this is a start. From there, patterns in plants, weather, sky, landscapes, migrations, Earth and moon movements, as well as temperature and precipitation, are included up until Grade 4 (see Figure 20). After Grade 4, there is a shift though. Patterns are sought out only in data and data representations—e.g., “tables, graphs and digital technologies” (BC MoE, 2016a, pp. 20, 24). The learning and observing is abstracted in Grade 4, and pattern-seeking at the practical, context-specific level never returns.

## Figure 20

### *Examples of Pattern Identification in the K–7 BC Science and Social Studies Curricula*

The motions of Earth and the moon cause observable patterns that affect living and non-living systems.

#### *Sample activities:*

- Distinguish between fact and opinion on a selected problem or issue.
- Identify features of indigenous cultures that characterize their relationship to the land.
- Explain indigenous peoples' use of oral tradition rather than written language.

*Note.* Top image from *Area of Learning: Science [Grade 4]*, by BC MoE, 2016a, p. 16. Bottom image from *Area of Learning: Social Studies: [Grade 3]*, by BC MoE, 2016b, p. 15. Copyright 2016 by Government of BC.

### ***Impact of Ideas and Behaviours***

Understanding the impacts of ideas and behaviours requires the ability to recognize the previous two components: relationships and patterns. These curricula acknowledge the impacts of behaviours more than the impacts of ideas and languaging practices. We notice the beginning of awareness of human impacts on the rest of nature in both curricula (see Figure 21). Ethical responsibilities are included as early as Grade 3 in the Science curriculum and in Grades 5–7, students are asked to “identify” (Grades 5, 6) and “consider” (Grade 7) “some of the social, ethical, and environmental implications of the findings from their own and others’ investigations” (BC MoE, 2016a, pp. 21, 25, 29). This recognition of the potential of human actions to impact others (through science) is vital to maintaining healthy and respectful relationships with ecological systems. Figure 21 shows two more instances of impacts being explicitly taught in the curriculum-as-plan. That said, overall, the impact of cultural beliefs encoded in our language is neglected in the curriculum.

## Figure 21

### *Curricular Examples Teaching Awareness of Human Impacts*

#### **Earth and its climate have changed over geological time.**

- How and why have Earth and its climate changed over time?
- How do people and their practices impact Earth and its climate?

#### *Key questions:*

- How does your community depend on the local environment?
- What effects do the activities in your community have on the environment?

*Note.* Top image from *Area of Learning: Science [Grade 7]*, by BC MoE, 2016a, p. 30. Bottom image from *Area of Learning: Social Studies: [Grade 1]*, by BC MoE, 2016b, pp. 7–8.

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## Conclusion

This chapter shows how are past beliefs and silences are bound up in the root metaphors (discourse) and education (curricular) systems we have inherited (Bowers, 1993, 1995, 2001a, 2001b, 2011, 2015a, 2015b). After reading the K–7 BC Science and Social Studies curricula for evidence of anthropocentrism, individualism, and reductionism, I found all three root metaphors to be present throughout both curricula-as-plan[ned] and in overarching Ministry statements. Although ethnocentrism was not initially identified as a root metaphor to look for (highlighting my own Western blind spots), it arose as an important, underlying characteristic that reinforces the Western worldview and these three root metaphors. Despite efforts to include Indigenous perspective, these two subjects show a clear dualism between Western and Indigenous knowledges. If educators and curriculum developers choose to use an ecojustice framework, recognizing and addressing this ontological hierarchy is vital.

Given that these curricula were created in the same subject-wide reform released in 2015 (officially taken up in 2016), other subjects such as math and language arts likely contain these same taken-for-granted assumptions. Although these overarching ethnocentric patterns in the

curriculum-as-plan could be seen as a limitation, it can also be seen as an opening to what and where we can rewrite the curriculum-as-plan[ned]. Next, I briefly describe just two opportunities to diversify the worldview in the curriculum and reduce the presence of these root metaphors.

First, the curriculum could contest the apex status of Western science by teaching *etuaptmumk* (two-eyed seeing)—that is, seeing the strengths of Indigenous knowledges with one eye and the strengths of Western knowledges with the other eye, and understanding how to use both together (Bartlett et al., 2012). To do so, teachers could discuss the strengths, limitations, ontological and epistemological assumptions, and goals of both sciences to identify which (or which combination) is the most helpful theory for that issue (Johnson & Murton, 2007; Lipe, 2019).

A second area of curricular potential to ameliorate socioecological crises is expanding how rights, roles, and responsibilities are taught in the Social Studies curriculum. Exploring these ideas with ecological intelligence would include how our current rights impact our relationships with one another and the rest of nature. When Grade 3 children learn about topics like responsibility to the environment, human rights, and connections between communities throughout Canada and the world, they could also learn how to meaningfully participate in maintaining, challenging, or changing them. To do all of this, though, Western culture and knowledge systems need to be understood, like all other knowledge systems, as partial.

Without understanding the strengths and limitations of different knowledge systems, Western educators, myself included, reinforce the root metaphors analyzed here and education will continue to be a colonial practice. Sadly, I know this from personal experience (Thomas et al., 2020). While on a teaching practicum in Kenya in 2012, there was part of an old cardboard box with a rough twine loop attached to the top in the corner of the classroom. The words “native

language speaker” were printed on it. Upon inquiring with the teacher if it was an award of sorts, she was shocked and explained that students had to wear it if they spoke their native language.

You see, at this school students were permitted to speak only English or the regional language, Kiswahili, not to speak their tribal (first) language(s), Kipsigi or Maa. This school was funded by the charity organization Free the Children and yet, we were confining them to the culture-language-thought patterns of the colonizers (Thomas et al., 2020). I could barely believe I was enacting the ghost of the Indian residential school system in another British colonized country. Part of our responsibility as educators and curriculum developers, especially if we are part of the dominant culture, is to recognize these ethnocentric ways and value the myriad ways all cultures are “unique expressions of the human imagination” (W. Davis, 2009, p. 19).

## **Chapter 5: Inquiry Partner Interviews**

Ecojustice education and critical discourse analysis guided my interpretation of the BC Science and Social Studies curricula in the previous chapter. This chapter is influenced by Richardson and St. Pierre's (2018) creative analytic processes and TI (Tanaka et al., 2014). Creative analytic processes are described as ethnographies where authors move "outside conventional social scientific writing" (Richardson & St. Pierre, 2018, p. 821). Here, outside of convention, Richardson and St. Pierre explained that we can learn about both ourselves and our topic. TI's dynamic and reflexive nature combines well with creative writing styles (Tanaka, 2015a). It also asks us to sit with other ways of knowing while simultaneously framing the research within the existing literature. One way of doing so is using writing as research; as de Cosson (2008) said, "It is through the [writing] process that meaning is made" (p. 279).

### **Inquiry Partner Contributions**

As with the curricular readings, I reviewed inquiry partner responses repeatedly while looking for the three root metaphors, any other patterns that connect, and any emotional reactions that took place within me while reading. Along the way, I discussed these ideas with mentors, my supervisors, and other inquiry partners before sitting with—"dwelling" with (Aoki, 1993/2004b, Chambers, 2004; Tanaka et al., 2014)—these responses to see what connections with the literature and curriculum would arise. As with TI as a whole, this process was iterative and recursive, with each insight going on to impact the next.

After and in between various conversations about ecologically unsustainable root metaphors, I (re)read the responses in the same order each time. From inquiry partner responses, I intuitively pulled out the most powerful sentences; that is, I copied those sentences which

addressed the question in a unique or poignant way and placed them in a new document. In any research

sifting through data, whether researcher data from field texts of various kinds or participant data, is the process of *intuitively* sorting out words, phrases, sentences, and passages that synthesize meaning from the prose in the light of a particular research question. (Prendergast, 2006, p. 370, emphasis added)

I assigned each inquiry partner a different font colour and compiled these abridged responses in a new document. I reread them, bolding some words, and making others larger; I found “meaning [to grow] out of the working process” (de Cosson, 2008, p. 279). Then, I went back to handwriting, synthesizing, and pulling out more themes. After distilling significant discursive themes in the responses, I was left with a choice of how to present these ideas. A conversation with one of my supervisors confirmed that my draft response collages were a concise, noteworthy option. Though I feel a deep relational responsibility to my inquiry partners to represent their thoughts perfectly, I also take inspiration from Richardson and St. Pierre (2018) in that “qualitative writers are off the hook, so to speak. They do not have to try to play God, writing as disembodied omniscient narrators claiming universal and atemporal knowledge” (p. 820). Thus, the responses to my interview questions presented below are depicted as response collages. Before sharing these responses, I describe the response collage form.

Like in an image collage (Butler-Kisber, 2008), I collected inquiry partner contributions and reassembled them to create a new whole. Though I edited the final pieces for grammar, syntax, and flow, my goal was for the essence and root metaphors to remain true to the original responses. Informal language is used as these response collages are created out of inquiry partner answers, using their own words. Rather than reading 11 answers to the same question, the

composites here read as though they are from one person who “contains multitudes” (Whitman, 1892/n.d., Stanza 51). Just as conflicting discourses exist in the curricula, the language in these responses at times reproduces and at other times challenges the WIC culture-language-thought patterns of anthropocentrism, individualism, and reductionism discussed throughout this dissertation. Though these response collages are read linearly, I hope you can see points of plurality and continuity in the final product.

Response collages could also be described as textual sculptures (de Cosson, 2008). This format decentres individual responses allowing a multivocal, pluralistic piece. Like de Cosson’s (2008) work, the process of building these response collages, these sculptures of text, was filled with comfort and discomfort, procrastination and flow. The process and the final product offer opportunities to see paradoxes, dilemmas, and juxtapositions (with)in the inquiry at the point of construction. I look forward to this form mediating, as Butler-Kisber (2008) said about image collage, “understanding in new and interesting ways for both the creator and the viewer because of its partial, embodied, multivocal, and nonlinear representational potential” (p. 265).

This composite, artistic method of writing can bring into focus elements that may otherwise be overlooked. The juxtaposition of differing views in sentences that follow each other offer both patterns and points of contrast. In these response collages, readers can witness anthropocentric, reductionist language that distances us from our actions and other discourse that could be considered as ecological thinking which acknowledges the impacts of our actions and aims to create new relationships. For example, in the first response collage on anthropocentrism, one inquiry partner used the phrase, “humans want to see themselves as powerful.” Is this person, this fellow human, potentially diagnosing others, or is it an inability to acknowledge this pattern of thinking in themselves? In contrast, another inquiry partner noticed how, despite their

attempts to refute anthropocentrism, they sometimes defaulted to saying, “Don’t kill that thing because it’s good for me or my garden.” The act of collage has the power to make space for these pluralistic views while subtly inviting the reader to consider their own beliefs. In the end, as with all writing, the reader makes sense of what is read in their own unique way.

### **Response Collages**

The responses are presented first by grounding inquiry partners’ relationships to the rest of nature and then by root metaphor. Readers will notice discursive patterns and seeds of ecological thinking in the first response collage about relationships with local ecosystems. Then, as the focus of the interview questions changed from local to global to the general Western world, reductionist economic systems played a larger role in these relationships. As with the curricular readings, I also address emergent themes in inquiry partner responses. In this case there are three: neoliberalism, hurdles to action, and what I call seeds of hope—descriptions of positive actions that reach toward discursive and tangible ecological sustainability. These three response collages are presented after those on the central root metaphors.

#### ***On Relationships With and to the Rest of Nature***

**“I Am the Local Ecosystem, and It Is Me.”** When describing my personal relationship with the environment, I feel reverence and think of interconnectedness. It brings me joy. I am the local ecosystem, and it is me. I am deeply connected; I think I absorbed this from a young age. By deeply embedding oneself into the environment, you can have a more intimate connection with the cycles. Working the land makes you learn to live in harmony with the seasons. Living on a sailboat, I notice everything. I live in rhythm with the tides, moon, sun, and weather and adapt myself to the environmental conditions of the moment. I am the local ecosystem, and it is me. I try to appreciate and be grateful for the important role that everything in our world plays.

This relationship is ever evolving. The knowledge that this is First Nations land and figuring out that relationship and history of space is new, but I am much happier with this connection and idea in mind. I am the local ecosystem, and it is me.

**Global, Local; It's All Connected.** I am the (local) ecosystem, and it is me. My relationship with the global environment goes hand in hand with being connected to the local environment. It's all connected. The local is the global. And yet, we take the [global] environment for granted. It's a relationship of consumption, exploitation: "It's there, how can it be of benefit to me? How much of it do I have to save so I can consistently consume a chunk of it?" I can feel helpless with respect to climate change. It is overwhelming. It's all connected. The more I learn, the broader the issues become in my mind. It's all connected. The entire world is part of the ocean system. Everything is connected, including humans.

**The Western World and the Rest of Nature.** Our society is based on pillars of consumption. Fast fashion, quick and convenient meals, poorly made products with cheap materials, etc. It's terrible. I use that word with its root of terror on purpose. Through capitalism, everything is primarily viewed for its monetary worth and its true value or sacredness is not taken into account. There is little to no consideration for the big picture, or the long view into the future, of the costs associated with borrowing from the physical environment. Many people enjoy being in nature, but most are not that interested, especially those that live in cities. We still struggle with acknowledging our impact on the environment. The emotional framework of the colonial governments sees the environment and Indigenous people as something to be conquered and tamed. As a hydro cutter, my dad actually had to fight with nature to make a living. This separation between human and environment is entrenched in Western thought and a foundational way in which this framework operates. I often feel helpless re: climate change. With regard to

young people, I believe that the increased incidence in anxiety, depression, and self-harm, coupled with the opioid crisis, are the canaries in the coal mine. They are examples of an unhealthy adaptation to the socioecological crisis.

### ***Relationships With Root Metaphors***

**Anthropocentrism: Don't Kill That Thing.** The root metaphor of anthropocentrism is the main reason we as a world are where we are at. Humans want to see themselves as powerful. Sometimes the children want to squish one of these smaller creatures—insects, worms, and spiders. I try to highlight our relationship with them, our interconnectedness, but I sometimes default to, “Don't kill that thing because it's good for me or my garden.” We humans, especially Western ones, believe we are at the centre of the universe. My work is to continually educate people in government about a colonial mindset of consumption that requires change. My students typically place humans at the topmost branches of any evolutionary tree they are asked to draw and explain this positioning because “we are the most advanced.”

We see the environment as a bank or a resource. We have been borrowing from it for too long and haven't considered the future cost of this overdraft. Even the house I live in, made of wood, contributes, represents my anthropocentric ways. I wish nature and animals were valued at least as much as the economy. Don't kill that thing. I would like to believe I am above anthropocentrism, but I am certain I still move through the world this way. I have owned pets and “working animals” all my life. I hope I'm not like that. I *hope* I'm not like that. I hope *I'm* not like that. I'm vegan. . . Perhaps this actually is the Western world's relationship: a deep internal conflict between what we know we need as humans to survive and thrive buried beneath our collective desire to see ourselves as powerful, central, and in control. Don't kill that thing.

**Individualism: I Do Things Because I Want To.** Individualism is very much a part of my day-to-day actions. I do things because I want to. We like our conveniences. We want things now. We buy what we want when we want it. I am a single woman living alone, making my own income and capable of surviving completely independently of family and community. Society praises me for my ability to do this. I don't spend my "off" time volunteering to service others, I use that time to enrich my life for me. I do love taxes, though, because they support our country and give all people equal chances, and that impacts who I vote for. Boat life rejects individualism—if someone needs your help, it's automatic—you have to help. That's why there are life rings.

Individualism is big in youth care work, emphasizing the importance of youth as individuals, their journey, and their lives, etc. I think this can be a lonely life we are promoting. Community and connection are so important to well-being; especially as I've gotten older, I feel the importance of community in my life and how much we all need one another. It might be valuable to teach youth that all beings are intimately connected and dependent on one another. Recently, I've noticed the influence of my meditation practice and Buddhist readings on this developing nondualistic worldview. Nuxalk communities are built on the basis of the opposite of individualism. What's that called?

Viewing ourselves as separate individuals makes it easier to justify behaviours that are harmful to the rest of the world, rather than viewing all of life as an interconnected web with each being having value in itself. Otherwise, we would have to face the pain of the harm we are causing. Although I try to create a classroom culture where individualism is not front and centre, this is not always possible. I try to encourage students to be concerned about the collective well-being but our (school) system is built on the exact opposite. Students are graded on their own

personal achievements—getting high marks advances you to higher education. Students are graded as individuals. I hear conversations about wanting change, but individuals seem hesitant as to how they should go about this. They do not see how they are an integrated part. I'm frustrated with the lack of change and so I look at what I can do in my own life, in my own home. I do things because I want to. Because I want to.

Community and connection are so important to well-being.

**Intertwined Metaphors: Almost Impossible to Get Away From.** Anthropocentrism and individualism are almost impossible to get away from in our society. I was raised in these paradigms and thinking this way is automatic. It requires continuous effort to notice when we recreate these beliefs in our own teaching. I primarily work with children ages 2–12, and it is incredible (and scary?) to see that many of these root metaphors are already instilled in their understanding and relationship to the environment at a young age. They show up in their interactions with the plants in our garden, our chickens, or how they interact with the small bugs, worms, and spiders they see. I actively disrupt these root metaphors by purposefully interacting with our environment differently. I tell them, “We are part of it, and it takes care of us.”

I try to teach the opposite of anthropocentrism and individualism, specifically when teaching social studies and science concepts. (Although it's almost impossible to get away from). I want the students to think about how we can change our actions to be more inclusive, understanding, empathetic people. We try to locate the students more and more within our community, not just the classroom. I consistently explain to my students that we need to think outside of ourselves so that our industry, tourism, will remain. We are all connected and dependent equally on each other. Anthropocentrism and individualism are almost impossible to get away from in our society.

**Reductionism or Mechanism—A Relationship of Exploitation.** Western industrialized nations tend to see themselves as separate and superior to their environment. They do not see how they are an integrated part and seem to think that there is an unlimited number of materials we can take from the environment. Collectively, I feel that our world's relationship with the environment is quite simply disconnected. I would describe it as a relationship around exploitation or consumption. The environment's worth is only seen in capitalist terms. Can the land be farmed? Can we log the forest? Can I build my home on this oceanfront property, or is this environment something I can profit off by charging people to come see? The WIC collective has a conscious and subconscious agenda in which the optic of desire to progress is rooted in attending to the vices of the masses. As a culture, or as the industrialized world as a whole, I believe it is clear that the environment's worth is only seen in capitalist terms. It's a relationship of exploitation.

This separation between human and environment is entrenched in Western thought and a foundational way in which this framework operates. I think if you asked people, they would say they care and are doing their part to reduce, reuse, and recycle. However, there is so much more that can be accomplished if society could really see the negative consequences of our actions. There is a lack of responsibility on an industrial and personal level for our actions. The environment's worth is only seen in capitalist terms. It's a relationship of exploitation. There's a belief that "if I'm not seen doing something or the outcome of the action is hidden, then it doesn't matter."

I have been in practice for approximately 30 years now. In that time, I have witnessed the erosion and building of various patterns and systems to address the wants of society. There has been an erosion of the quality of the family interactions through the rising costs and leverages

that have been imposed against the family status and function in society. The idea of siloed subjects that are entirely separate from one another may be becoming a thing of the past—or are they? The environment’s worth is still only seen in capitalist terms. It’s a relationship of exploitation.

### *Emergent Ideas*

Besides the three root metaphors of focus, anthropocentrism, individualism, and reductionism, a few other themes arose repeatedly in inquiry partner interviews, so I include them here to see how they might reinforce one another. First, I present a response collage on neoliberalism to showcase how neoliberal values and associated root metaphors like progress, utilitarianism, and competition are still colonizing other cultures today. The second emergent topic is what I have called “struggles and hurdles to action.” Inquiry partners proposed a range of reasons for the lack of ecological sustainability, from intentional ignorance to sadness to unwillingness to give up a convenient lifestyle. To what degree these are true hurdles falls outside of this discussion. Using Bateson’s (1972) concept of an ecology of mind, the fact that these ideas arise, and that people subscribe to them, tells us something about our culture-language-thought patterns. Finally, I finish with a short section called “seeds of hope,” a response collage of areas from which inquiry partners have drawn strength and inspiration because these topics are challenging and positive anecdotes can uplift us, Reader.

**Neoliberalism—Western Minds Know the Way.** The air we breathe. Invisible and encroaching: colonizing children. The new regulations for Jordan’s Principle<sup>4</sup> are attracting more

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<sup>4</sup> Jordan’s Principle “is a child-first principle that aims to eliminate service inequities and delays for First Nations children. . . . [Any public service available to] other children must be

corporate style businesses to reserves for financial gain. It's the commodification of care. Consumerism and utilitarianism are ubiquitous. Experts stream in with no context and no relationships. And we call it "progress." These so-called experts hold brief meetings and leave a pamphlet with bullet points of best practices. As if it were so easy to raise children. As if it could be summed up in bullet points. And then: farewell. Fare well. They're gone. The ignorant privileged, coming to show The Way. And we call this "progress."

No context, no relationships, encroaching and colonizing children. On reserve, I see a desire for Western ways and prescriptive experts. Now, this is success! Elders' teachings, stories, and traditions are considered old-fashioned and aloof. Traditions are (now considered) backwards. Right to Play, an organization that purportedly "create[s] positive and safe environments where children can learn and succeed and, use play in all its forms" (n.d., Our story section, para. 4), arrives up north but these southern experts don't know This Way. Arctic circle sport is not competitive. Southern experts don't know this, and they yell, "Sport is about winning! Kids, if you would *just*. . ." Criticizing the kids for not being competitive enough. Imagine! They are shamed for abiding by their culture's ways. When the program didn't go as planned, the staff asked me what to do. I told them, "Sport is not competitive here. Can you try this in small groups instead?" No. No luck; Southern experts don't know Arctic circle sport is not competitive. The conditions require cooperation instead, but Western minds (don't) know This Way.

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made available to First Nations children without delay or denial" (Assembly of First Nations, n.d., para 2).

There's more. Neoliberal values are invisible and everywhere at the same time. It's even in dear old Thomas the Train. Encroaching. Colonizing children. Sir Topham Hatt's top compliment: "You're a *useful* engine." Neoliberal worldviews, encroaching, colonizing children. Fare well? Fare well.

Western minds know ~~The~~ only one way.

**Struggles and Hurdles to Action: A Hole We Can't Get Out Of.** Why don't we change? We've dug a hole we can't get out of. I can feel a bit helpless at times when I consider the challenges we face with climate change. I used to have a sense of outrage that galvanizes big change, but I don't feel that so much as I age. The status quo has such inertia behind it. We aren't willing or scared enough to change our ways to save the environment. Perhaps we cannot see far enough into the future that we actually believe we should change? Or maybe we can but we don't want to give up our convenient life? Is it a hole we can't get out of? We lack the ability to truly see the impact we are making, and we lack the judgement to make changes because of our inability to see the results directly. The status quo has such inertia behind it. I have friends who think nothing of buying random things weekly from Amazon and don't think twice about the implications of that purchase.

The near absence of healthy and sustainable traditions in home economics is apparent. I despair about what kind of world we are leaving for my grandchildren and their children and grandchildren. What if youth understand the crisis in relation to these concepts more than adults do—or maybe it's that they seem more willing to act on it? I feel doom and sadness when I think about our Western relationship to the environment. I don't like it, and therefore I don't often think about our relationship. I'm exhausted from being the lone advocate "for the environment" at my school and the lack of societal change in general. It's not caught on the way it needs to,

and we've been teaching this stuff for so long. It's really the politics and economics that need to change. We need top-down changes because we cannot do enough at the individual level.

Despite interest, knowledge, and passion, the systems that govern our Western world can exhaust us. The status quo has such inertia behind it. A hole we can't get out of.

**Seeds of Hope.** Despite this deep foundational disregard for our place within the ecosystem, I believe there is an understanding and a calling for the repair of this relationship. Pockets of people everywhere in the industrialized West have continued to live with as much relational harmony as possible. Human-powered activities outdoors ground me and connect me to the land and the people with whom I adventure. I think these ideas are also emerging in my local community, but more slowly. This year I'm challenging anthropocentrism by creating opportunities to get students outside more often. I teach about consumerism.

When I travel, I opt for voluntary hardship to shed privilege and to get greater clarity on interconnections. I meditate with intention. I donate to global charities. I mention these [root metaphors] when I'm teaching biology classes as part of why humans view themselves as being separate from "the environment." I believe there are people having conversations about doing better—I have friends in Germany who are shamed by their friends if they fly. I see more food being grown and consumed locally, and I notice a desire to begin transitioning to less fossil fuel consumption. I hear more conversation about wanting further change, but individuals sometimes seem hesitant as to how they should best go about it. There are many people out there who have a conscious relationship with the environment, and I try to surround myself with those people.

I feel a sense of awe and wonder in nature. All day, we're wet, we're muddy. My favourite place to spend my days is immersed in the natural outdoor world. You can smell it—we're really physically attached to the environment. We try to help create a learning environment

where children can learn and experience alternatives to these root metaphors through their own experiences with us. My mental and physical well-being depend greatly on my interaction with the local environment. Buddhist readings, meditation, nondualism, and a longing to reconnect all help me. Whenever I work with youth, I feel more hopeful. Actually, I feel a little dependent on them. Permaculture, seed saving, and harvesting local flora, fauna, and medicines all allow me to connect with the local environment. I am the local ecosystem, and it is me (but I don't always act that way, nor can I). Growing my own food, I'm no longer the hippie. I'm mainstream! At the acreage, the land will do the work. No prescriptions, just Elders' teachings. Unstructured time outdoors because we contain the knowledge we need to heal. I'll hold sacred space and be a resource if requested but otherwise, let folks heal themselves; let them reassemble the pieces. Divestment is now a threat that makes it onto Shell's annual report (McKibben, 2019). Oh finally. They're listening. After 30 years. We contain the knowledge we need to heal.

**Summary of Relationships.** These collages remind me of the power and limits of language. We, of course, can observe separation between us and other beings—our skin, bark, or scales are the physical boundaries. However, our world does not end at our physical boundaries. Despite the claims of the individualism root metaphor (Bowers, 2018; Martusewicz et al., 2015; Shiva, 2005), individuals are not the basic units of society. Although we are physical beings for most of our lives, we are also energetic beings. Energy flows among beings and information flows between and among beings and nonliving entities. Bateson (1972) argued that this information flow is knowledge; this is the ecology of mind. It is all connected. An ecology of mind also requires consideration of the cultural and natural ecologies of the phenomenon we are studying; in this case, individuals or individualism, and how they continually interact (Bowers, 2011). The fundamental shift in thinking that Bateson proposed is that one not think “of things

(plants, animals, people, ideas, and so forth) as distinct entities . . . [but rather] in terms of their relationships within the larger ecology of which they are a part” (Bowers, 2012, p. 16).

## **Conclusion**

In contrast to my ecojustice reading of the K–7 BC Science and Social Studies curricula these interviews showed increased awareness of and opposition to the taken-for-granted nature of anthropocentrism, individualism, and reductionism. The joy, reverence, and interconnectedness with the rest of nature that inquiry partners described are also apparent. That said, like the curriculum, the interviews showed a mixture of discourses. All 11 inquiry partners displayed a higher level of ecological intelligence than is present in the curriculum. Inquiry partners, especially those who volunteered for the oral interview, were aware of our ecologically unsustainable social and economic systems, as well as some patterns of thought and behaviour. That said, the concept of root metaphors was new, as was the idea that language shapes our thoughts and actions.

One inquiry partner who was working with children 2–11 years old reflected that “many of these root metaphors are already instilled in their understanding and relationship to the environment” by the time the kids come to them. Despite this reality, the teacher has consciously challenged these beliefs by offering different ways of teaching and interacting with the animals and plants at their school. In a sense, they are trying to revitalize “the possibility of touching the Earth, this attunement [that] . . . is rooted (perhaps also uprooted) early in life” (Jardine, 1999, p. 264). Themes of separation, disconnect, and dominance also arose in responses, along with notions of control over the environment. Interestingly, only one inquiry partner connected this desire for power and control to Westerners’ colonial relationships with Indigenous peoples.

One response from the anthropocentrism response collage stuck out to me. This inquiry partner pondered, “Perhaps this is actually the Western world’s relationship: a deep internal conflict between what we know we need as humans to survive and thrive buried beneath our collective desire to see ourselves as powerful, central and in control.” The fear at the root of this idea loops back to agriculture, Christianity, or the developments of the Scientific Revolution. Reuniting with the planet, or even local ecosystems, requires us to address this centuries- (millennia-?) old belief that we need to be in control of our surroundings.

The Western mandate of science has been to predict and control, but why? Even if we can predict floods, tornadoes, and other natural and climate-change fuelled disasters, we cannot completely mitigate or undo their damage. B. Brown (2021) said, “Being able to see what’s coming doesn’t make it any less painful when it arrives” (p. xviii). Knowing the exact wind speeds and time of arrival on land can certainly help save lives, but the fact remains that we cannot control the earth. *Gaia*, if you will, is a much larger system than us. How can we come to peace with that truth? How can we honour and perhaps embrace the possibility of giving up this control? Furthermore, how can we become comfortable sitting in the discomfort of not knowing?

Does that phrase sound familiar? This is somewhat ironic for me to consider because back in the first chapter when introducing myself, I explained the difficulty I have sitting with discomfort. It is a characteristic of anxiety. B. Brown’s (2021) work on vulnerability intersects with this idea; her definition of vulnerability is “the emotion we experience during times of uncertainty, risk, and emotional exposure” (p. 13). Certainly, the vulnerability of how to feed, house, and protect our families has long been a part of human societies. If we Westerners have difficulty being reliant upon something we do not have control over (the earth), as this inquiry partner suggested, how can we become more comfortable with the vulnerability of this truth? Is

this part of the human condition or something unique to our culture? That is, have all human cultures always had this discomfort? Are there other communities, though, that equally share food and other necessities to ensure all people have what they need to mollify this fear, even in times of crisis? Competition plays a significant role in WIC, but how do other cultures balance competition with cooperation? I suppose what I am pondering here is two-pronged. First, how can we deal with our anxieties and vulnerabilities in more constructive ways? And second, what cultural practices mitigate the inherent risk to all, including more-than-humans, of being reliant on something we cannot control?

## **Chapter 6: Weaving It All Together: The Patterns That Connect**

According to the ecojustice framework (Bowers 2001a, 2001b; 2005; Martusewicz et al., 2015), we need education that transforms, but also education that conserves. Specifically, we need education that transforms the Western worldview from its current anthropocentric, individualistic, reductionistic and overall ethnocentric state to one that recognizes relationships, especially, the ones we cannot see. At the same time, we need education that conserves ecologically sustainable practices, such as the cultural and ecological commons, mentoring relationships, and other traditions that reduce our reliance upon consumerism (Bowers, 2005). Discerning what to transform and what to conserve requires an ecological understanding of how our thinking and actions impact others—humans and more-than-humans.

Weaving together the different spheres of this inquiry highlighted three areas in education that could support ecological thinking to help us decide what to conserve and what to transform. These three recommendations are (a) teaching and learning from different worldviews, (b) addressing the constitutive nature of language, and (c) incorporating strategies for inner work. Starting with how worldview matters, below I summarize the patterns that connect in the four spheres of TI with specific attention to overarching themes in WIC. Then, I review these spheres for patterns about how language shapes our thinking. Finally, I summarize these same spheres for what they say about doing the inner work required to shift our deepest cultural habits. Following an ecojustice framework, each of these three sections closes with an offering of how Indigenous knowledges and pedagogies teach more sustainable culture-language-thought patterns. Revealing these patterns that connect offers inroads to incorporating ecojustice education in (teacher) education and in the next iteration of the BC curricula.

## Worldview Matters: Separation and Superiority

“When the basic ideas within are wrong, any system which harbors them is doomed. No amount of political tinkering can save the old system, [Bateson] believed; only a fundamental change in ideas” (Harries-Jones, 1995, p. 30).

Deeply understanding how tacit cultural beliefs show up in curricular and educator discourse is the central goal of this inquiry. This section reviews the theory, curricular observations, inquiry partner, and self-study contributions regarding the WIC worldview. Whether these ideas originated with the ancient Greeks, Christianity, the Scientific Revolution, neoliberal individualism, or even language itself—our Western language patterns reinscribe the idea that we are independent individuals, some of whom hold more value than others. Reducing ourselves in this way backgrounds our reliance upon healthy ecosystems and healthy human communities (which are one and the same).

When looking at the basic assumption of separation and the WIC worldview, science and scientism play a significant role such that we rarely question the procedure of science; “the feeling is that the procedure is established as the (T)ruth” (American Society of Cybernetics, 2012, 11:06). However, the very word *science* comes from the root of *skei*, which means to break down, to separate (von Foerster, 1998, as cited in American Society of Cybernetics, 2012). An etymology dictionary describes the word *science* as the “present participle of *scire* ‘to know,’ probably originally ‘to separate one thing from another, to distinguish;’ related to *scindere* ‘to cut, divide’ from the proto-Indo-European root *skei*—‘to cut, split’” (Harper, n.d., para. 2).

Western science excels at this separating, dividing, and breaking down, and such, it tends to obscure the emergent and codependent qualities of systems. Author, farmer, and environmentalist Berry (2003) suggested that science

would do far better to understand itself as part of a highly diverse effort of human thought never to be completed, that might actually have the power to make us kinder to one another and to our world. . . Science has its proper and necessary place in conversation with all the other disciplines, all being *equal* members. (p. 189, emphasis added)

Balancing science with other ways of knowing, as ecojustice and Indigenous scholars ask us, could help challenge this fundamental issue of hyper-separation.

A second characteristic of WIC is that we imagine ourselves as superior not only to other species, but also to other cultures. This anthropocentric and ethnocentric practice has been called, aptly, a “superiority complex” (Multi-Sense Media, 2015, 21:26) and it prohibits our ability to recognize strengths in other cultures. Within Indigenous languages and cultures are traditions that could teach us how to live respectfully in the various ecosystems we inhabit. We would do well to ask what “life-sustaining processes” (Bowers, 2010a, p. 23) exist in these ecologically sustainable cultures? What root metaphors are used to articulate that worldview?

One practice to consider is the view of nature as a teacher. Rather than being separate and superior from the other beings, Westerners could let go of some of this certainty and wonder what we could learn from salmon or cedar or the chickadee. Greenfield (2020) shared part of an interview on this idea:

“Those salmon are our knowledge system,” continues Matsaw, who is also Oglala Lakota and a tribal research biologist focused on Chinook salmon and steelhead. “They are our Socrates, our Plato, our Aristotle. And they’re still teaching us today. But they are going extinct. It’s just heartbreaking. . . It’s not just an animal, it’s not just a fish. There’s a whole people and culture that can be lost.” (para. 2)

As the dominant Western culture continues to colonize people and places, knowledge systems and worldviews like this are being extirpated (Maturana & Varela, 1980). It would benefit WIC to identify the strengths and limitations in its own epistemology and be curious about other ways of knowing the world.

### ***Worldview of Current BC Curriculum and Educators***

Although Indigenous knowledges, stories, and art are taught and specifically described as “ways to share knowledge” (BC MoE, 2016a, p. 1), the curriculum is predominantly Eurocentric. The Western “illusion of disembodiedness” (Plumwood, 2005, p. 238) is evident in how, for instance, the Science curriculum neglects to mention climate change, one of the most significant crises of our times, until Grade 7. Meanwhile, as of 2020, climate change curriculum is mandatory in all grades in Italy (UNESCO, 2020).

Students in Grade 7 are also asked to “Apply First Peoples perspectives and knowledge, other *ways of knowing*, and local knowledge as sources of information” (BC MoE, 2016a, p. 28, emphasis in original). Other ways of knowing are defined as “the various beliefs about the nature of knowledge that people have; they can include, but are not limited to, Aboriginal, gender-related, subject/discipline specific, cultural, embodied and intuitive beliefs about knowledge” (BC MoE, 2016a, p. 30). This thorough definition is a welcome addition in a Eurocentric curriculum, but its inclusion in Grade 7 is unlikely to deeply challenge the deeply held WIC thought-language of separation and superiority students have been immersed in, both inside and outside of schools.

Inquiry partners were not specifically asked about the Western stance of separateness and superiority over nature, but these ideas arose in their responses, nonetheless. For the most part, inquiry partners described WIC’s relationship with the rest of nature as separate. They enjoy

spending time outside and connecting with nature locally; however, the relationship stops here. As described in Chapter 5, no one mentioned nature/land as a teacher, as is common in Indigenous communities (see Figure 22). I held this same belief until that moment, described in Chapter 2, when I realized that all my inquiry partners were humans. This anthropocentrism is in contrast to an Indigenous worldview, where “one does not simply learn about land, we learn best *from* land. This knowing makes you *intelligent* to my people.” (Meyer, 2008, p. 219, emphasis in original).

### Figure 22

*An Indigenous High School Student's Response to the Question, From Whom Do You Learn?*



*Note.* Reprinted with permission, dated 2021.

### ***Decolonizing Worldview: Plurality***

“In an Indigenous ontology there may be multiple realities . . . rather than the truth being something that is ‘out there’ or external, reality is in the relationship that one has with the truth” (Wilson, 2008, p. 73).

Plurality is a doubly important concept here because of (a) the historical and contemporary practices of Western scholars essentializing other cultures and (b) our WIC belief in one right way (Nisbett, 2003). In an effort to embrace nonlinearity and maintain space for

multiple interpretations by the reader, as practiced in Indigenous storytelling (Lipe, 2019), I represent several key elements (perhaps even root metaphors) of Turtle Island Indigenous worldviews in a hand-printed word cloud in Figure 23. The colours and placement of words are strictly for aesthetic purposes. To my knowledge, there is no hierarchy to these concepts. I offer them here to call attention to their presence or absence in the Western view. After reading through these concepts, I invite you to take a pause to notice what you feel in your body and what thoughts or questions arise in your mind.

### Figure 23

*Representations of Indigenous Worldviews by Turtle Island Indigenous Authors*



Rather than the constriction I feel when thinking about “the one right way” tendency in WIC, this worldview feels expansive and inclusive. After sitting with these ideas and internalizing the teachings, I cannot imagine another way to sustain life on this planet. We Westerners need a fundamental shift in our relationships to the planet and its more-than-human species, to human others, and to ourselves (Boyd, 2017; S. Griffin, personal communication, January 9, 2019; Macy & Brown, 2014; Martusewicz, 2005, 2018b; Plumwood, 1993; Warren, 2000). Shifting and opening to a new worldview is no small task. For this decolonizing and

Indigenizing of the curriculum to be successful, preservice and in-service teachers would need ongoing professional development support to undertake such (un)learning (Barcelos, 2013; Morrison, 2018). Teaching two-eyed seeing (Bartlett et al., 2012) could help to counteract the dominance of the separation and superiority worldview.

### **Language Matters**

Much literature on the power of language exists across disciplines. However, the general population, as well as educators, seem unaware of this body of knowledge. Bowers (2012) argued that “understanding how words (metaphors) reproduce earlier ways of thinking, including the silences and prejudices, is as essential to the educator’s craft as knowing anatomy is to the physician” (p. 2). By now, Reader, you are familiar with the idea that words are metaphors that have a history, and when we use them, we unconsciously resurrect the values and beliefs of a different time. This recursive nature of language means that what educators say today can evoke out-of-date beliefs that (inadvertently) contribute to global socioecological crises. Bowers (2010a) called this the linguistic colonization of the present by the past.

Language matters: therefore, learning how and why language matters, also matters. For instance, English, as a particularly noun-heavy language, encourages a static view of the world with distinct entities, including ourselves (Bowers, 2015a; Kimmerer, 2013). Given the variation in global languages, fundamental ontological characteristics (including ideas about relationships, teaching, and learning) may or may not be able to be translated or described accurately in another language and, similarly, other culture’s ontological views may not be accurately described in English (Gumperz & Levinson, 1991; Sapir, 1949). This power of language is not taught in (the majority) of teacher education programs and so it is unsurprisingly absent from the BC K–7 Science and Social Studies curriculum-as-plan[ned].

One opportunity to examine the power of language in the Science curriculum is through the inclusion—or maybe *integration* is a better word—of Indigenous knowledges (see Figure 24). Through these existing curricular points, teachers could compare multiple cultures’ uses of language, including the ontological, epistemological, and axiological beliefs that underlie the creation of knowledge and the knowledge itself. It is important to remember that no matter what is written in the curriculum-as-plan[ned], teachers’ own understandings of Western thought-language-culture patterns will ultimately limit the discussions with their students (Aoki, 1993/2004d). That said, these points alone are insufficient to teach the next generation about the power of language. This integration would need to be combined with the previous recommendations of addressing Eurocentrism in the curriculum and teaching *etuaptmumk*, two-eyed seeing (Bartlett et al., 2012).

### Figure 24

#### *Opportunities in the K–7 BC Science Curriculum to Interpret Language as Nonneutral*

- Recognize First Peoples stories (including oral and written narratives), songs, and art, as ways to share knowledge
- Apply First Peoples perspectives and knowledge, other **ways of knowing**, and local knowledge as sources of information

*Note.* Top example from *Area of Learning: Science [Kindergarten to Grade 2]*, by BC MoE, 2016a, pp. 1, 4, 8. Bottom example from *Area of Learning: Science [Grade 7]*, by BC MoE, 2016a, p. 28. Copyright 2016 by Government of BC.

Another opportunity to discuss the power of language occurs in Grade 7 Social Studies: “Religious and cultural practices that emerged during [the ancient world to the 7th century] have endured and continue to influence people” (BC MoE, 2016a, p. 35). Teachers could include the history of words and how languages can change over time. To incorporate more ecological thinking practices, teachers could ask: How have the meanings of words like “slave” and

“woman” changed since these times? What remnants of ancient ideas exist in Western culture today? For instance, in the ancient Greek play *Oresteia*, the goddess Athena pledges her loyalty to men and proclaims that women have no relation to their children (Eisler, 1987). How is this proclamation reflected in systems of patriarchy and gender roles today?

Although the opportunity to examine the power of language to think “us as we think within the possibilities of our language community” (Bowers, 2001b, p. 142) exists in some curricula, only one inquiry partner identified that language shapes our thinking. (Incidentally, this was the same inquiry partner who saw themselves as a part of nature.) Given that four inquiry partners and me were all trained teachers, it seems that this idea is not addressed (sufficiently, if at all) in teacher education programs. Thus, restructuring teacher education, also addressed in Bowers and Flinders (1991), and including the power of language would help contribute to new more sustainable culture-language-thought patterns. A chicken and egg problem exists here, though. Teacher educators must understand the interconnections among culture-language-thought to share them with preservice teachers, who could then go on to introduce them to their students. To ameliorate socioecological crises educators and curriculum developers need to understand how the “thoughts and ideas already inscribed” (Aoki, 1993/2004b, p. 293) are communicated through the discourse of the curricula-as-planned as well as the curriculum-as-lived (Bowers, 1993).

### ***Laying This New Path as We Walk***

Unlearning these root metaphors while teaching about them can be an uncomfortable process. It is even more uncomfortable (although it is memorable) when students point out the very beliefs that we as educators proclaim to be teaching about arise in our own teaching. This has happened to me several times during this inquiry, and I learned so much each time. Through

this inquiry, my awareness of unsustainable root metaphors is better honed; however, they run deep and still permeate my thought process. When this disconnect occurs (because we educators, too, were raised in WIC and are in the process of unlearning) and a student points it out, my only advice is to pause, just as we did in the first couple of chapters. Pause. Notice. Feel what comes up—be an observer to it all. I share two anecdotes here to help normalize what this unlearning process could look like. The first relates to the ubiquity of technology and the limits of print communication and the second on reductions and hierarchies.

*Journal entry: Spring 2018.* My Western assumptions were pointed out to me by one of my Grade 6 students. We were about to start the research for an ecojustice-based, cross-curricular research project about product manufacturing, trade, and human rights. As we were lining up a student asked why we had to go to the computer lab, and I automatically said, “All research starts in the computer lab.”

As we walked down the hall together, I thought to myself, “Where did that come from? Why did I just say that?” To this day, I have no idea, but the fact that it came out unconsciously says something about my beliefs, and by extension, our culture’s default beliefs about school-based research. As someone who has conducted various field studies and SCUBA surveys, you’d think I’d have a better answer about research, but these taken-for-granted assumptions run deep.

*Journal entry: Fall 2017.* I was leading a seminar for an adult education class on the readings from our visiting Indigenous education professor. The reading described the seven Grandfather Teachings (love, wisdom, respect, truth, humility, honesty, courage). After discussing the article in small groups, I asked the whole class which teaching they found most important (or prevalent) in their lives, hoping to connect what they had read

to their personal experiences. [In hindsight, I was essentially asking them to create a hierarchy, to rank the teachings in importance to them.]

One student politely pointed out that he thought I had missed the point of the article—that in fact, it was saying *all* of the teachings were equally important and worked together.

Sigh. My Western trained, hierarchical, reductionist mind had struck again. I thanked this student for their observation and for being my teacher that day. Then, I briefly explained my process of learning to identify WIC blind spots like these.

This touchstone story reminds me of what Lupinacci and Happel-Parkins (2016) said about anthropocentrism (which I extrapolate here to all our taken-for-granted assumptions): the more educators can see and resist these tendencies, “the more potential there is for educational experiences to foster spaces where teachers and students learn *together* to recognize the tendency of the privileged to dismiss what they would rather not confront” (p. 26, emphasis added). By explaining my own blind spots and learning in that moment, the students who had not noticed the interconnectedness of these teachings would also be brought along the journey to learn to identify these taken-for-granted assumptions.

### ***Decolonizing Language: Relationality***

“Reality is not an object, but a process of relationships, and an Indigenous ontology is actually the equivalent of an Indigenous epistemology” (Wilson, 2008, p. 73).

Given that language automatically calls up other frameworks and relationships in our minds, how can we be intentional about the ideas that are connected? Let us review two examples of Indigenous language practices to contrast those in WIC. Central to all Turtle Island Indigenous peoples is the concept of living well with others. Donald (2016) called this

“ecological understanding of organic connectivity” *ethical relationality* (p. 11). This value of relationality is reflected in the languaging practices of Indigenous peoples just as Western ontology is embedded in the English language. In Cree, great-grandparents and great-grandchildren both call each other *chapan* (Wilson, 2008). This word describes not the person, but rather the relationship between one another. One cannot be a great-grandparent without having great-grandchildren and thus, each makes the other so (Wilson, 2008). There is no hierarchy.

Another example of this relationality in language is Kimmerer’s (2013, 2017) argument for developing a “grammar of animacy” in English. She offered new pronouns (*ke* and *kin*) to refer to our more-than-human kin. In her Potawatomi language,

birds, bugs, and berries are spoken of with the same respectful grammar as humans are, as if we were all members of the same family. Because we are. There is no it for nature.

Living beings are referred to as subjects, never as objects, and personhood is extended to all who breathe and some who don’t. I greet the silent boulder people with the same respect as I do the talkative chickadees. (Kimmerer, 2017, para. 6)

It would be more accurate, rational even, to consider a cedar tree, *ke*, a subject rather than an object. After all, we know trees exist communally; they communicate and support one another, especially family members (Simard, 2021). How might bringing this grammar of animacy to English alter our view of other beings and our relationships to them? In what ways would it shift our anthropocentric beliefs of separation and superiority? How could it reunite us with the rest of nature and encourage ecological thinking?

## Inner Work Matters

Mistakes, whether they are my own or those of my ancestors or neighbours, will no longer be ignored or denied; rather they must be attended to. If I dwell with these mistakes, in a generative way, or “with a boundless heart” (Jardine, 1990), I may find myself on the path with heart. (Chambers, 2004, p. 11)

This third recommendation has been challenging to write. Although self-study plays a vital role in TI, neither self-study nor inner work is mentioned in the BC curriculum I read, nor did I ask inquiry partners about this idea. (The importance of it arose later in the process, after I had drafted the interview questions.) Furthermore, self-study and inner work are not the same. Although there is overlap, self-study—even recursive, reflexive self-study—does not equate to what I am calling here, inner work. This term describes how we process, hold onto, and understand the emotions that come up when faced with the enormity of both the socioecological crises, how we contribute to them, and what we might need to do to shift our worldview. I was unclear (and insecure about) how to call up a process so central to this inquiry but not usually discussed in the school-based education field. In fact, it may seem like an entirely different topic than the root metaphors this inquiry started out with. And yet, it seems beneficial to inquire how to “dwell” on our mistakes “in a generative way” as Chambers (2004, p. 11) suggested.

Nearly 70% of wildlife has been wiped out since 1970 (Almond et al., 2020) and eco-anxiety is on the rise. Can schools and curricula create spaces where children (and staff) can express these feelings of fear, anger, shame, and overwhelm to work through them? Is this the role of schools? If we need to “face ourselves . . . and [be] willing to sacrifice our unsustainable culture” (Lucaj et al., 2014, p. 5), what inner work needs to be done to shift a culture? The less we talk about our role in the socioecological crises, the more feelings of shame can quietly grow.

However, as Martusewicz (2018b) has said, it “is not a matter of assigning blame; it is, rather, a matter of understanding how the complex symbolic processes of culture work on us, and thus of accepting the responsibility to change ourselves and relationships by which we live” (p. 4). ‘So, what is it about “accepting the responsibility to change” that requires inner work Should we (can we?) educators teach the skill of finding comfort with/in discomfort? How can we create brave spaces that acknowledge our power and privilege to keep students open to learning (Arao & Clemens, 2013)?

TI asks this of inquirers: to be comfortable with the unknown and even to find courage in it (Tanaka et al., 2014). The unknown is where many of us Westerners struggle, but if we expect and allow this struggle, perhaps we can catch our breath and clearly identify what discourses in education need to transform and what needs to be conserved. In this process, can we educators ride the panarchy cycle of growth, conservation, release, and reorganization (Tanaka et al., 2014). If we practice giving up control, or rather recognizing the limited nature of our control, will we be more able to embrace this cyclical nature of change to release and reorganize our thinking?

### ***My Own Transformation***

“The transformation of education begins with the transformed heart of the teacher” (Palmer, 1993, p. 107).

Throughout this inquiry, my state of consciousness has been vastly expanded (reorganized) by the works of Bateson (1972), Bowers (1993, 1997, 2001a, 2018), Capra (1996), Kimmerer (2013), Martusewicz (2018a, 2018b), Plumwood (2005), and most recently, *Woman Stands Shining* (see for example *Flourishing Diversity*, 2021). They have taught me to learn about and from other worldviews, be increasingly aware of my ecological embeddedness in

cultural and natural systems, to question my taken-for-granted responses, and to contemplate the spiritual elements of life. I am learning to stray from the confines of Western science and embrace the rest of nature in a new and spiritual way. I am learning to consider, more thoroughly and ecologically, the impacts of what we say, think, and do, and of what is left unthought, unsaid, and undone. I am learning to be a part of the privileged few and not be paralyzed with guilt and to make mistakes and to keep on going. In short, I am finding what Cajete (1994) calls one's face (identity), one's heart (soul/passion), and one's foundation (true work).

While selecting the anecdotes for Chapter 1, I noticed the repeating pattern and paradox of suffering and privilege that have shaped my life. My front row experiences with various socioecological crises and the privilege to be sheltered from them has long caused me discomfort. Without taking the time to conduct these critical personal and by extension, social inventories, we can tune out or be left with shame. Martusewicz (2018b) explained,

If we are to address the crises sweeping the planet and destroying our local communities, we must examine our own capture in the assumptions, ideologies, practices and institutions that create these problems. We must understand that we ourselves are shaped by, and thus complicit in, these processes. Thus, we must examine our own mindsets, and work to shift our relationships, behaviors and the metaphors we use to construct their meaning. (p. 3)

In “fac[ing] myself” (Lucaj et al., 2014) regarding the socioecological crises, some of the questions about my mindset, relationships, and behaviours that have arisen include the following: How do I benefit from our current unsustainable culture? What am I resistant to giving up? Where are the pockets of resistance to the dominant Western culture that I can learn from? How can my awareness of the ecology of relationships be deepened? In what ways do my language

and habits support the status quo? How can I best use the cultural capital (Bourdieu, 1998) I have been given to shift the culture, or at least to start conversations in my own circles of influence?

TI asks that we dwell in the uncertainty that arises here (Tanaka, 2016). I have learned, and am still learning, that it takes courage to say what one thinks and to acknowledge the limits of one's own thinking. It takes courage to speak about our emotions because for centuries they were thought to cloud our judgment, to be seen in the reason–emotion dualism. It takes courage to ask people to do or try or say new things. It takes courage to challenge the way so many of us think and speak. Tanaka (2016) called this *tender resistance* the act of resisting the harms caused by WIC while “open[ing] our hearts to the collective hopes of who we can become” (p. 164). What I now know is that holding space for others to process our role in these socioecological crises and being vulnerable enough to hope for different relationships in future.

The degree to which our inquiries (or life experiences in general) change us is up to us. What do we let in? What do we resist? What conversations are we willing to have? Who and what are we held by during this time? Although it may be up to us (in part) how much we change, I have not done so on my own. “I” can only exist in the web of relationships that sustain me. My ancestors and those who have gone before me prepared me for this experience. Supportive mentors, inquiry partners, friends, family, students, the Esquimalt Nation, and my relationship with the unseen and unknowable have all held me when things got too heavy.

### ***Decolonizing Inner Work: Spirituality***

Harkening back to the first chapter of this dissertation, the Haudenosaunee recognized the spirit and interconnection among all things through the Thanksgiving Address (Stokes & Kanawahientun, 1993). How can a relationship with spirit aid us in undertaking the inner work to resist anthropocentrism, individualism, and reductionism and encouraging ecological thinking?

Instead of an ego-based goal, doing this inner work is about undergoing some change or challenge to better life on Earth, or better preserve life on Earth. Decolonizing inner work makes it about something bigger than ourselves. Spirit is honoured through ritual and ceremony and by practices of restraint (Kimmerer, 2013; L. McCloud, personal communication, September 2011).

Through an Indigenous lens, our goal in life is to discover the gifts the Creator has given us (Elder Musqua, as cited in Battiste, 2013). The First Peoples principles of learning say that learning supports the spirits and the ancestors and another says that learning requires exploration of one's identity. This brings into question where these gifts, these skills, or these parts of our personality came from—how and why did we arrive here, in this time, in this family, with these traits? This is a question science cannot answer, and so we are left with the unseen, the unknown, the mystery of spirit—and the obligation to share these gifts.

### **Questions for the Next Curriculum**

“No discourse is ideologically innocent and I would be among the last to argue otherwise” (McLaren, 1991, p. 463).

Bowers (2010a) has argued for “greater specificity about the nature of the [curricular] reforms” (p. 11). How can curriculum developers learn to think ecologically so that the next curricula are not infused with these same myopic intellectual traditions? This inquiry has raised many questions about curricular and cultural discourse, but this chapter described three that stand out: How do curriculum developers honour and incorporate multiple worldviews in the curriculum-as-plan (equally)? How do educators teach about the power of language and metaphorical thought? How do educators support students emotionally (and spiritually?) while they (we) do the challenging inner work to shift our ecologically unsustainable Western culture-language-thought patterns?

The ecojustice literature abounds with options to add to these questions. Martusewicz and Johnson (2016) wondered: “[Aside from WIC,] what else is there? How else might communities be organized? What else do community members know and value?” (p. 70). Martusewicz (2018b) asked: “How do we help our students and our neighbors expose the harms of a cultural system now so deeply embedded in our psyches as to seem biologically given and thus inevitable?” (pp. 166–167); “How do we teach and learn within the limits of our planetary existence and humanness, even as we honor the extravagant beauty, power, and gift that is life on earth?” (p. 17); and “What kind of education do we need to revitalize our sense of responsibility to one another and to the earth that supports us?” (p. 166). How can the ecojustice community continue to learn from Indigenous and Indigenist scholars? Looking to them, listening to them, and learning from them can broaden Westerners’ anthropocentric, individualistic, and reductionist worldview and encourage ecological thinking in schooling.

### **A Different Way Forward: Towards Reunion**

“Relationships actually make us who we are” (Wilson, 2008, p. 11).

If separation and superiority are hallmarks of WIC, recognizing our interrelated nature could pierce this “illusion of disembeddedness and invincibility” (Plumwood, 2005, p. 238) and aid us on our path towards ecojustice. Finding alternatives to the anthropocentric, individualistic, and reductionist culture-language-thought patterns could help foster new (and ancient) kinds of communities that recognize our wholeness; the wholeness we have always been seeking (Bohm, 1980). How can we include this reunion and wholeness in the curriculum-as-plan[ned]? Kimmerer (2013) reminded us of the Indigenous focus on reciprocal relationships when she asked: “Do you think that the earth loves you back?” (p. 124). What would we need to change, conserve, or do to ensure that it did? Lupinacci and Happel-Parkins (2016) suggested

“commit[ting] to the daily effort of making friends with other humans and non-human animals, engaging with adversaries, and sharing stories of hope and resilience” (pp. 27–28). Maybe if we can recognize the earth and more-than-human others as a friend or sovereign other, not one to be radically excluded, commodified, or otherwise reduced (Plumwood, 2005), we can heal this relationship.

*Journal entry, February 2022.* I agree. Relationships make us who we are. While working as a teacher on call [substitute teacher], the lesson plan asked that I take three middle school boys to the library to finish “their paragraph.” Groan. They had trouble getting started and I gave them Lamott’s (2005) shitty/stupid first draft advice—the school friendly version. I knew one student from regularly subbing at this school and offered to type his paragraph on soccer as he dictated it. His notes were scarce, so I asked a few prompting questions. First, I asked, “When did you start playing soccer? Were you one of those cute little ones where the soccer ball comes up to your knee?” He cracked a smile, hesitantly. “I don’t even think I was two years old when my dad first put a soccer ball in front of me.” More bashful grinning. I listened generously and asked if that was one of those family stories that get told over and over again. He didn’t meet my eye, but he grinned and nodded. It felt like the start of trust forming.

I asked if he knew a previous student of mine who played for the same soccer club. Suddenly this former student’s face was smiling and waving at me from his phone, as he said proudly, “Who? Her?” Are students supposed to have phones in school? No. Did I call him on this in this moment? Also, no. My connection with this other student encouraged his trust and allowed us a deeper connection and a successful writing session. I was taking Wilson’s (2007) Indigenist approach, although in this case, to pedagogy.

Somehow this whole exchange was not just a paragraph. I realized that is a Western, linear, one-way construct and perhaps why this Indigenous student was struggling—this was a conversation, an ebb and flow of roles. Teacher and student bringing each other into being and switching roles, resisting hierarchies. It was an opportunity for me to learn about and from this youth. He became an inquiry partner. Not for this inquiry but for my general inquiry of how to best help students learn. When he shared with me how it was challenging for him when teammates tried to undermine him in his captain role, I explained that the emotional intelligence he needed to navigate these complex dynamics was the biggest determiner of success in life. I wanted him to understand that his strengths are important. We have seen the ethnocentric curriculum.

Although it is challenging to convey the experience here, print communication limited as it is, this was one of the most enjoyable teaching experiences I have had. I'm still trying to figure out why. Maybe it's because I'm reframing the individualistic ideas of intelligence and schoolwork? Letting go of the hierarchical and reductionistic dualism of teacher/student? Letting go of who I think a teacher is supposed to be and instead, having the courage to feel into who I am, how I connect, what I value—even if those feelings are different from the system's values? My understanding of knowledge, teaching, language, intelligence, and relationships have all shifted since undertaking this inquiry. Working with Indigenous youth and learning ecojustice education and ecological thinking have all shifted what I think is right. What is important, centred. It turns out there is not one right way in education or in culture more broadly. There never was.

I believed this ethnocentric fallacy, and I think a lot of others do (or at least default to this) too. This hierarchy only further separates us and right now, as Eisenstein (n.d.) has said,

We can normalize heightened levels of separation and control, believe that they are necessary to keep us safe, and accept a world in which we are afraid to be near each other. Or we can take advantage of this pause, this break in normal, to turn onto a path of reunion, of holism, of the restoring of lost connections, of the repair of community and the rejoining of the web of life. (p. 17)

Although Eisenstein is discussing the response to the coronavirus pandemic, we can see how the Western reductionist approach to solving problems has created the double binds of separation and isolation and hierarchies and how “the restoring of lost connections, of the repair of community and the rejoining of the web of life” are all fitting responses to our anthropocentric, individualistic, reductionistic paradigm.

Seeking alternatives to this Western view, Aoki (1987, as cited in Jardine, 1999) called us “to be mindful of our rootedness in earthy experiences” (p. 67). Other, older cultures seem to recognize and acknowledge that there is more beyond what we can see, that the boundaries we see may not be all there is, that the spirits and our ancestors play a role in our lives. In order to re-member or reconstitute the world from this view, this illusion of separateness, many cultures use ceremony, stories, plant medicines, and other rituals. In fact, if we look at life itself, we can see it opposes the reductionism at the core of WIC, bringing together separate “parts.” Maturana and Varela (1980) coined the term *autopoiesis* to describe how living systems are self-organizing and self-generating. Life resists the second law of thermodynamics, bringing order out of chaos. We are all a part of this life, this interbeing. At the end of this dissertation, let us remember anthropologist W. Davis’s (2009) words,

The myriad of cultures of the world are not failed attempts at modernity, let alone failed attempts to be us. They are unique expressions of the human imagination and heart,

unique answers to a fundamental question: What does it mean to be human and be alive?  
(p. 19)

There is hope that we Westerners are beginning to recognize the value of Indigenous ways along with the error of our monocultural, ethnocentric thinking. The IPCC's most recent report has acknowledged colonialism as a driver of current and historical inequities relating to climate change (Pörtner et al., 2022). This step suggests members of WIC will start looking to our own ways to understand our role in the broader socioecological crises. You, Reader, and I, are now familiar with some specifics of these cultural-language-thought patterns and some new and ancient ways of knowing, speaking, and being.

*Həyşx'qə*. Thank you for being a part of this inquiry.

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## **Appendix A: 11 Principles to Guide Indigenist Research**

**From Wilson, 2007, p. 195.**

Then, borrowing liberally from the Proposal to Host Universities written by the International Indigenous Graduate Institute (2004) and framed by Indigenous scholars such as Cora Weber-Pillwax, Judy Atkinson, Karen Martin, Fyre Jean Graveline, Stan and Peggy Wilson, Peter Hanohano, and myself as well as other well-known Indigenous scholars, the following principles must guide the research and any resulting documents or actions that arise as a result.

- \* Respect for all forms of life as being related and interconnected.
- \* Conduct all actions and interactions in a spirit of kindness and honesty; compassion.
- \* The reason for doing the research must be one that brings benefits to the Indigenous community.
- \* The foundation of the research question must lie within the reality of the Indigenous experience.
- \* Any theories developed or proposed must be grounded in an Indigenous epistemology and supported by the Elders and the community that live out this particular epistemology.
- \* The methods used will be process-oriented, and the researcher will be recognized and cognizant of his or her role as one part of the group in process.
- \* It will be recognized that transformation within every living entity participating in the research will be one of the outcomes of every project.
- \* It will be recognized that the researcher must assume a certain responsibility for the transformations and outcomes of the research project(s) which he or she brings into a community.

- \* It is advisable that a researcher work as part of a team of Indigenous scholars/thinkers and with the guidance of Elder(s) or knowledge-keepers.
- \* It is recognized that the integrity of any Indigenous people or community could never be undermined by Indigenous research because such research is grounded in that integrity.
- \* It is recognized that the languages and cultures of Indigenous peoples are living processes and that research and the discovery of knowledge is an ongoing function for the thinkers and scholars of every Indigenous group.

## Appendix B: Written Interview Questions

### Investigating the role of Western discourse in our conception of the environment and in global socioecological crises

#### Participant Interview Questions

If you have any questions whatsoever, you may call or email me for clarification at [telephone number] or [email address].

This document contains two question sections. Please complete Part I before reading the attached information and Part II after reading it.

#### **Part I. Please answer each question in at least two sentences. Maximum length: two pages.**

1. In what capacity are you involved with youth?
2. How would you describe your personal relationship to the local environment in which you live? And to the global environment? In what ways do you interact with the environment?
3. How would you describe our collective Western industrialized world's relationship with the environment?

#### **Part II: After reading the included brief information page, please answer the following questions. Please answer each question in at least two sentences. Maximum length two pages.**

4. Given what you've read in the attached document and your own experience, in what ways do you think Western industrialized culture contributes to the global socioecological crises?
5. Which of the following root metaphors, *anthropocentrism*, *individualism*, *mechanism*, stand out in your ways of interacting with the world? Please provide examples.
6. How might knowing about these root metaphors impact or change your teaching/interactions with young people? Do you see or hear alternatives to anthropocentrism, mechanism, individualism action in the communities in which you are a part? If so, please describe.
7. FOR TEACHERS/EDUCATORS: Where do you see examples of *anthropocentrism*, *individualism*, and/or *mechanism* in the curriculum or in your teaching?

### **Backgrounder: Language, Thought, and Root Metaphors**

This study is focused on the role of language in our culture and the implicit values transmitted through language. Specifically, I am interested in our Western industrialized concept of and relationship to the environment. In *The Patterning Instinct*, Jeremy Lent (2017) explains that the language we speak “helps structure memory” (p. 200), “affects how your cognition develops” (p. 197), and “can affect emotions” (p. 201).

I am investigating where certain taken-for-granted assumptions about the world exist in our everyday language. One way these beliefs are communicated is through basic understandings of the way the world “is.” The Western Industrialized world, characterized by liberal democracy, neoliberal capitalism, and monolithic religions has certain generalized values that paint the backdrop of our thoughts, memories, emotions, and actions.

These generalized values and assumptions are shared through root metaphors. Root Metaphors are interpretive frameworks, based on experiences, that make sense of particular cultural practices. A root metaphor is “the most basic assumption about the nature of the world or experience that we can make when we try to give a description of it” (MacCormac, 1976). In the Industrialized West, prevalent root metaphors include anthropocentrism, mechanism/reductionism, linear progress, and individualism. These views have helped our understanding and knowledge in some ways and underlie our thinking and culture and ultimately impact our actions. However, all metaphors, including root metaphors, from which others spring, highlight particular aspects of the concepts they describe, while unintentionally concealing others. Lent (2017) asserted the importance of studying “root metaphors of ancient cultures such as Greece, India, and China [because] they have framed the patterns of thought each of us inherits as we grow up. If we each determined our own way of thinking independently of our language and culture, we wouldn’t need to delve into the past to understand our patterns of cognition” (p. 198).

#### **More on Root Metaphors**

**Anthropocentrism:** Melé (2018) says, “Anthropocentrism is generally understood as the view that the human being is the center of the world and ontologically superior to nonrational beings” (Melé, 2018). Anthropocentric thinking believes other living beings exist to meet our needs, whether that be food, water, shelter or even pleasure/leisure time resources (i.e. animal (horse, dog) racing, fighting, feeding wild animals, etc.). Boslaugh (n.d.) states that in this view,

“other animals may be exploited for the benefit of humankind.” This belief is also commonly attributed to Genesis 1:26 where the Christian God says, “Let man have dominion over the fish of the sea, and over the fowl of the air, and over the cattle, and over all the earth, and over every creeping thing that creepeth upon the earth” (King James Bible, 1769/2010). This view is linked with *utilitarianism*, the belief that nature has value only to the extent that it is useful to us. The opposite of this view would be the belief that other beings having intrinsic value, or value unto themselves.

**Individualism:** This idea is hugely broad-reaching and difficult to summarize, but it can sometimes be helpful to define things by their opposites. For the purposes here, the opposite of individualism is the collective well-being. The idea that the individual is king, superior to the collective, and separate from others came about during the 19<sup>th</sup> century in Europe. After the French Revolution, it was used pejoratively and blamed for the “social dissolution” (Boslaugh, n.d.).

Individualism has specific niches in disciplines from ethics to political science to sociology. Individualists “uphold the dignity of the individual as the ultimate moral principle” (Orlitzky, 2018). Individualism “presupposes privacy. In this private realm, the individual is, or should be, left alone by others and able to do and think whatever he or she chooses” (Orlitzky, 2018). Individualism has evolved since then, and it is now linked, especially in the USA, to personal freedom and liberty from State and religious power.

**Mechanism/Reductionism:** Although these are two different concepts, they are related which is why they are one entry here. Mechanism is the idea that things in nature can be likened to machines, e.g., the heart is a pump, the mitochondria is the powerhouse of the cell, or the brain is hardwired (or programmed) to work that way.

Reductionism is the notion that living beings can be broken down into their parts in order to better understand them and then put back into a whole. Although this can be helpful to understand complex beings, structures or connections, it often misses out on how the whole can have other qualities not attributed to any of the individual parts. Take, for example, sugar. A carbohydrate made up of carbon, hydrogen, and oxygen that tastes sweet to us. None of the individual parts taste sweet on their own, only upon particular combinations do they take on this quality. (Example taken from Fritjof Capra).

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## Appendix C: Social Studies Curriculum Notes

**Table C1**

*Kindergarten: Identity and Families*

Curriculum area	What the curriculum says	My critique/notes	My suggestions
<b>Big Ideas</b> — “Students are expected to understand the following:”	“Our communities are diverse and made up of individuals who have a lot in common”	<b>Individualism.</b> Individuals as the base unit of society.	
	“Stories and traditions about ourselves and our families reflect who we are and where we are from.”	<b>Good</b> —connecting to wider society & potentially to place. <b>Resists individualism.</b>	<b>Make connection to land/place explicit</b>
	“Rights, roles, and responsibilities shape our identity and help us build healthy relationships with others.”	This seems <b>abstract</b> like it is pulling people away from any lived, analogue reality. Our identities are also shaped by traditions, place, and needs and culture (language, songs, dance, stories). Would this language be better/more accessible for Kindergarten?	Nowhere in the Kindergarten Big Ideas is anything <b>about the place/land we live and how that shapes us and our communities.</b> Need to add this in.
<b>Curricular Competencies</b> — “Students are expected to do the following:”	<b>Use Social Studies inquiry processes and skills to ask questions; gather, interpret, and analyze ideas; and communicate findings and decisions:</b>  Key skills: Create pictures to present information (e.g., a picture of their immediate environment, such as their classroom or a room in their home).	<b>Anthro.</b>  All examples are inside places. This reinforces the notion that we are separate from the rest of nature	Include outdoor/wild spaces, too.
	<b>Sequence objects, images, or events, and distinguish between what has changed and what has stayed the same (continuity and change)</b> Elaborations Sample activities: Put objects in chronological order based on visual clues (e.g. older and newer houses and cars)	<b>Neoliberal/consumerist mindset present here.</b> Cars should not be fashion items that change every year (In fact, sustainable fashion shouldn’t do that either...). Therefore we should seek out other examples to use here, rather than re-	Add plants, animals, networks, forests (succession theory)

Curriculum area	What the curriculum says	My critique/notes	My suggestions
	<p>Key questions: How was life different when your parents or grandparents were your age? How has your family changed over time?</p>	<p>produce this unsustainable aspect of our/the Western culture.  <b>Good questions—</b>wider society/big picture</p>	
	<p><b>Acknowledge different perspectives on people, places, issues or events.</b></p> <p>Key Question: If two people have different perspectives or opinions, does it mean that one person is right and the other is wrong? Explain your answer.</p>	<p>Good, but limited to teachers' (and therefore teacher educators' perspectives, and therefore previous generations' perspectives and so on...) to guide conversations. <b>Overall, teacher taken-for-granted assumptions will guide/limit these classroom discussions (TFG).</b></p>	
<p><b>Content—</b>  “Students are expected to know the following:”</p>	<p><b>“Rights, roles, and responsibilities of individuals and groups”</b></p> <p>Sample topics: rights (e.g., legal rights, UN convention on the Rights of the Child); roles (e.g., roles within a family or on a sports team; roles as a friend, peer, student); responsibilities to self, others, and <b>the environment</b></p>	<p><b>Good—</b>we have responsibilities to ourselves, others and the environment...but what if teachers are all steeped in the “three Rs, reduce, reuse, recycle” as environmental steps...how do we push teachers farther or make things more explicit in the curriculum about our responsibilities to the environment/our more-than-human kin? <b>Overall, TFG.</b></p>	
	<p><b>“People, places, and events in the local community and in local First Peoples communities”</b></p> <p>Elaboration: people (e.g., political leaders like the mayor of band council, school officials, local business people); places (e.g., school, neighbourhoods, stores, parks, recreation facilities); events (e.g., new buildings, seasonal changes, sports), natural and human built characteristics of the local physical environment.</p> <p>Key question: What people,</p>	<p><b>Ethno.</b> In the local community and local First Peoples communities? I understand including/incorporating First Peoples intentionally, but this still seems ‘tacked on’ like the “place” curriculum pieces in the science curriculum. If we reversed this and said ... “in the local community and the local Settler communities”, we can perhaps see how this distinction is awkward and not about bringing people together. I think we need advice from First Peoples and other experts in Discourse analysis to make helpful suggestions here. Looks like it's <b>political people of power that are the examples.</b></p>	<p>How about doctors?  Healers?  Grandparents?  Coaches?  Neighbours?  Volunteers?</p> <p>Add in “natural” or green/blue spaces of note, not just <b>anthropocentric ones.</b></p> <p>We rely on a healthy ecosystem, but this is backgrounded here and only the physical environment is noted</p>

Curriculum area	What the curriculum says	My critique/notes	My suggestions
	places, or events are most significant to you? Is your list the same as your classmates' or family's list?	<p>It feels like the neoliberal influence is strong here and could use an influx of cultural commons from an ecojustice lens.</p> <p>Also, in terms of places, no wild places are listed.</p> <p>Mostly anthropocentric, but does mention 'natural characteristics of the local physical environment'</p>	
	<p><b>“Personal and family history and traditions</b></p> <p>Sample topics: traditions and celebrations (e.g. Christmas, other winter festivals)</p> <p>Key Question: What type of stories get passed down from generation to generation?</p>	<p>Ethnocentric/TFG</p> <p>Some stories that get passed down include “the illusion of disembeddedness and invincibility”, individualism, and competition.</p>	

Table C2

*Grade 1: Local Communities*

Curriculum area	What the curriculum says	My critique/notes	My suggestions
<b>Big Ideas</b> — “Students are expected to understand the following:”	“We shape the local environment, and the local environment shapes who we are and how we live.”	<b>Anthro (obscuring)</b> The verb ‘shape’ is used twice here in this sentence which suggests the relationship is equal when it is not and neither is the impact.	We must use different words to address the differing relationship/impacts and address our cultural/ecological overshoot.
	“Our rights, roles, and responsibilities are important for building strong communities.”	<b>Anthro.</b> There is no mention of ecology being a necessary part of the community. Good mention of (human) communities, maybe more emphasis on why this is important	
	“Healthy communities recognize and respect the diversity of individuals and care for the local environment”	<b>Potentially Ethno.</b> Do healthy communities also recognize and respect the diversity of other communities? Or only	Teach inclusivity and appreciation of differences early on. Add on an evaluation

Curriculum area	What the curriculum says	My critique/notes	My suggestions
		<p>individuals within ‘our’ communities? Potential for in-group/out-group bias to arise here.</p> <p>Anthro? “Care for” the local environment sounds like it is our backyard or our pet, something we have dominion over. It is a group responsibility and we need to invoke the politicians to “care for” the beings and places that make up the local environment as well</p>	of how we are caring for the local environment.
<p><b>Curricular Competencies</b>— “Students are expected to do the following:”</p>	<p><b>Use Social Studies inquiry processes and skills to ask questions; gather, interpret, and analyze ideas; and communicate findings and decisions:</b> “Brainstorm, discuss, and compare possible solutions to a selected problem”</p>	<p>The anthropocentric and ethnocentric beliefs, which will be internalized by Grade 1s, will influence these solutions. Given that teachers are also generally immersed in this worldview, who will be able to see beyond it? TFG</p>	
	<p><b>“Explain the significance of personal or local events, objects, people or places”</b></p> <p>Sample activities: brainstorm a list of the most significant places in your community and explain why these are important; Research the history of a significant person in the history of your community.</p>	<p>Individualism. Why “people/person” and not “groups”? Or species?</p> <p>Place and people considered, though...</p>	
	<p><b>“Ask questions, make inferences and draw conclusions about the content and features of different types of sources”</b></p> <p>Sample activities: “Compare old and new photos of places in your community and discuss how things have changed over time”</p>	<p>‘Draw conclusions’—same critique as above, we (re)create our very society unless we intentionally address cultural assumption TFG</p> <p>This is a nice way to ensure the shifting baseline (Pauly, 1995), in terms of wild spaces, housing, businesses, etc. can be addressed.</p>	Potential for discussions about progress and what our views are around where our society is going.
	<p><b>“Sequence object, images, or</b></p>	<p>Huge potential here—re: linear</p>	Add: Which ones are

Curriculum area	What the curriculum says	My critique/notes	My suggestions
	<p><b>events and distinguish between what has changed and what has stayed the same”</b></p> <p>Sample activities: compare changes in technology in your parents’ and grandparent’s time.</p>	<p><b>progress.</b></p> <p>What technologies are teachers discussing and aware of?</p> <p>How have fishing technologies (or transportation or communication) “improved”?</p> <p>But also, how about discussing the impact to evaluate if our view of progress/improvement is actually true?</p>	<p>having significant impacts on colonizing other parts of the globe (i.e. computer technology, cell phones, etc)?</p> <p>Bring in the externalities normally obscured by Western assumptions.</p>
<p><b>Content:</b> “Students are expected to know the following:”</p>	<p><b>“Characteristics of the local community that provide organization and meet the needs of the community”</b></p> <p>Sample topics: local, government, public utilities, emergency services, policing, transportation, stores, parks and other recreational areas, financial services</p>	<p><b>Anthro.</b> Not one connection to the “more-than-humans” that/who keep us alive. From this list here, we can see that food comes from stores and that public utilities come from the government rather than the greater ecosystem. They essentials are removed from their context and the reality that civilizations are based in and dependent upon an ecological reality</p>	<p>Add in ecology to the community and acknowledge the embeddedness of human communities in ecology.</p>
	<p><b>“Relationships between a community and its environment”</b></p> <p>Sample topics: natural resource industries, parks and other natural areas, population growth and new construction, water and sewage treatment</p> <p>Key questions: <b>How does your community depend on the local environment?</b></p>	<p><b>Anthropocentrism</b>—“its environment”.</p> <p>Natural resources—see discussion/critique in science curriculum analysis</p> <p>Also, note order of the sample topics—‘natural resource industries’ is listed as the first type of relationship between a community and “its environment”</p> <p><i>Park and other natural areas</i>—urban parks are rarely natural areas...</p> <p>No living beings mentioned in the sample topics—more general terms like “parks and other natural areas”, but no life specifically mentioned</p> <p>As for how “your community”</p>	<p>Great question: <b>How does your community depend on the local environment?</b></p> <p><b>What effects do the activities in your community have on the environment?</b></p>

Curriculum area	What the curriculum says	My critique/notes	My suggestions
	<p>What effects do the activities in your community have on the environment?</p>	<p>depends on the local environment, this seems like a good place to start at this age, but we also depend on the global environment—perhaps save for later grades?</p> <p>Second question = great! Open ended, also “the environment” not yours or ours...and “the activities in your community” versus individuals’ actions also puts the collective in the picture</p>	
	<p><b>“Roles, rights, and responsibilities in the local community”</b></p> <p>Sample topics: individual rights and interests versus the “public interest”; responsibilities to other people and the environment</p> <p>Key questions: Who gets to make decisions and why? How do decisions affect different people?</p>	<p><b>Anthro. Individualism?</b> Interesting first key questions—individual rights and interests vs. the “public interest”. Does the public (or community) have rights too or just the individual? Does the environment or living beings in the environment have rights and interests? Do we consider them?</p> <p>Second topic: a good start, but I imagine without deep consideration/analysis of culture, we will end up with the individualistic actions of “pick up litter on the school ground” etc. <b>TFG</b></p>	<p>As for the Key questions—we could ask students why don’t plants and animals get a vote? And the second question could be expanded—How do decisions impact different communities of living beings? (Earth Democracy—Shiva, 2005)</p>
	<p><b>Key events and development in the local community, and in local First Peoples communities</b></p> <p>Sample topics: community milestones (e.g. the founding of the community, the opening and closing of local businesses, the construction of new buildings)</p>	<p><b>Enthno.</b> The ‘founding of the community’ could obscure Indigenous histories, settlements, and uses of the land</p> <p><b>Anthro.</b> Why don’t we frame these developments as land/habitat loss? Or at least include it?</p>	<p>Identify and incorporate local First Peoples histories, not just Settler ones</p>

Table C3

*Grade 2: Regional and Global Communities*

Curriculum area	What the curriculum says	My critique/notes	My suggestions
<b>Big Ideas</b> — “Students are expected to understand the following:”	“Local actions have global consequences and global actions have local consequences”	While true, a bit heavy and perhaps unbalanced for the 7–8 year olds.  Could add positive impacts too.	How can we have positive impacts on our local community? Global community?
	“Individuals have rights and responsibilities as global citizens”	<b>Individuals again.</b> While it’s important to note our relative affluence on the global scale, this is not true for all families we teach. So what power or responsibilities does a Grade 2 student have to impact global change?  (I think that is a fascinating question actually. We could seek out child activists and look to see what they have done, but I believe this could be in later grades).  I wonder about how this focus on individuals de-emphasizes our collective power.... <b>neoliberalism</b>	Recognize places/countries where children do not regularly have the rights that children in Canada (usually) do. Is there a way to impact a change in those places?
<b>Curricular Competencies</b> — “Students are expected to do the following:”	<b>Use Social Studies inquiry processes and skills to ask question, gather, interpret, and analyze ideas; and communicate findings and decisions</b>  Key skills: “interpret symbols and legends on	<b>Anthro.</b> All human made “locations”  The recognition that people before us have come to particular decisions for particular reasons is missing here. What traditions	How about adding waterways, trees, reservoirs, rock formations, hills, soil characteristics, elements from local Indigenous stories  This points to the necessity of teachers being educated on the deep cultural assumptions that are undermining the ecosystems and communities that

Curriculum area	What the curriculum says	My critique/notes	My suggestions
	<p>maps to identify given locations in the community (e.g., schools, roads, railways, playground, museums)</p> <p>“Ask relevant questions to clarify a classroom or school problem”</p> <p>“Brainstorm and compare a variety of responses to a given classroom, or school problem”</p> <p>“Predict the possible results of various solutions to a problem”</p>	<p>need to be kept and which do we need to let go of?</p> <p>These “key skills” could (likely) all have an <b>anthro &amp; individualistic</b> slant to them due to the pattern of schools recreating cultures <b>TFG</b></p>	<p>sustain us (Bowers, 1997; 2018).</p>
	<p><b>Sequence objects, images, and events, or explain why some aspects change and others stay the same (continuity and change)</b></p> <p>“Sample activities— create a timeline of key events in your region</p> <p>Key questions: How has Canada changed over time? <b>How have people’s needs and wants changed over time?</b> What needs and wants have changed and which have stayed the same?”</p>	<p><b>Anthro.</b> From whose perspective do we view “key events”— humans, naturally.</p> <p>So let’s point this out, or have activities that also show the impacts on other communities/beings/ habitats to showcase this.</p> <p>Also, which people’s needs and wants have changed? Add in why they have changed.</p>	<p>Connect people’s need and wants ‘changing’ (being changed?) over time to global consequences (if that stays in the curriculum) and to advertising/media, consumer culture</p>
	<p><b>“Recognize causes and consequences of events, decisions, or developments (cause and consequence)</b></p> <p>Key questions: What would happen if people did not take care of their local environment? What would happen if there was nobody leading a community or country?</p>	<p><b>Anthro</b>—suddenly it’s “their environment” Power over/dominance.</p> <p>Also, local only? This year is on regional and global communities...</p>	<p>Add in how we are not currently taking ‘care of’ the environment/ ecologies.</p>

Curriculum area	What the curriculum says	My critique/notes	My suggestions
	<p><b>“Explain why people’s beliefs, values, worldviews, experiences, and roles give them different perspectives on people, places, issues, or events (perspective)”</b></p> <p>“Key question: Does everyone agree on the importance of conservation?”</p>	<p>Key Q: Is this a biased or leading question?</p>	<p>Try a more interesting question like— what are the different views, philosophies, and outcomes of conservation/preservation practices?</p>
	<p><b>Make value judgments about events, decisions, or action, and suggest lessons that can be learned (ethical judgment)</b></p> <p>“Key questions: What should be done about the distribution of natural resources? Should more wealthy countries help out less prosperous countries?”</p>	<p>Anthro. “The distribution of” sounds like it is a given since it is not a verb.</p> <p>Ethno./TFG</p>	<p>Need to include discussions/lessons on <b>consumption</b> when talking about natural resources. Also need to situate it in a non-anthropocentric view.</p>
<p><b>Content—</b> “Students are expected to know the following:”</p>	<p><b>“How people’s wants and needs are met in communities”</b></p> <p>Sample topics: how people acquire goods and services (e.g. by buying or renting or through public funding)</p> <p>Needs and wants in different communities: different needs and wants depending on the climate, different goods and services depending on the size of the community (i.e., small versus large)</p> <p>Key questions: How do the local environment and culture affect the goods and services available in your community? <b>How do different communities help people who can’t meet their basic needs?</b></p>	<p>Ecojustice lens would ask us to think outside of the capitalist framework and include <b>the commons</b> here or families, communities.</p> <p>What kind of needs/wants are we talking about? Do we question the Western way of living at all?</p> <p><b>Ethno</b></p> <p>What sort of obligations are there to assist others? Ethics?</p> <p><b>Good last question</b>— learn from others.</p>	<p>How about bartering and trading for a less consumptive culture that also develops community ties/reduces individualism/loneliness?</p>

Curriculum area	What the curriculum says	My critique/notes	My suggestions
	<p><b>“Relationships between people and the environment in different communities”</b></p> <p>Sample topics: impact of different economic activities and ways of life on the environment; impact on the environment of small and large communities; impact of recreational activities on the environment; community values regarding conservation and protection of the environment</p> <p>Key question: What types of environmental challenges do people face in different communities (e.g., natural disaster, climate change, lack of natural resources)?</p>	<p>“The environment” better than possessive language, but <b>still separate</b></p> <p>“Protection of the environment” separate...superior?</p>	<p>Seems like we could connect this point to the previous one where we point out needs and wants</p> <p>For this key question, we need to add on about Westerners' contribution to climate change versus where the impacts are being felt the most. Include Nixon's (2011) notion of <i>slow violence</i>. Also, need to add on how these challenges are getting more extreme over time.</p>
	<p><b>“Diverse features of the environment in other parts of Canada and the world”</b></p> <p>Sample topics: climate zones, landforms, bodies of water, plants and animals</p>	<p>*Here plants and animals are included as part of (or at least 'features of') the environment</p>	
	<p><b>“Rights and responsibilities of individuals regionally and globally</b></p> <p>Sample topics: responsibility to the environment, human rights, connections between your community and communities throughout Canada and the world</p>	<p>Lots of potential here! <b>Anthro, still</b>. Missing how human communities are nested in ecological communities though...</p>	<p>I wonder about including spiritual practices of connecting to and appreciating local environments. Plants hear. (<a href="https://now.northropgrmman.com/can-plants-hear-the-science-of-sound-sensing-flora/">https://now.northropgrmman.com/can-plants-hear-the-science-of-sound-sensing-flora/</a>), thus, how does expressing appreciation to them change how we relate?</p>

Curriculum area	What the curriculum says	My critique/notes	My suggestions
	<p><b>“Rights and responsibilities of regional governments</b></p> <p>Sample topics: examples of leaders in your community ...and the places where they meet; services such as transportation, policing, firefighting, bylaw enforcement</p> <p>Key questions: Should everyone be responsible for helping others in their community?</p>	<p>Anthro.</p> <p>Social and ecological justice opportunity here</p>	<p>Re: Key Q, again, need to add in more-than-human others...when talking about helping “others in their community”</p>

*Note.* I think we have moved too quickly to scale up the communities we explore in this curriculum. We could spend years exploring the local community. The ecojustice education lens looks at the cultural and environmental commons and these are most meaningful to students if they are connected to people and places they know. If we scale up to regional and global communities too soon, we overlook the importance of developing a relationship with the local land/place.

#### Table C4

##### *Grade 3: Global Indigenous Peoples*

Curriculum area	What the curriculum says	My critique/notes	My suggestions
<p><b>Big Ideas</b>— “Students are expected to understand the following:”</p>	<p>“Learning about Indigenous people nurtures multicultural awareness and respect for diversity”</p>	<p>Is this true? What if it’s based in a racist society? What if it is taught by someone who is unfamiliar with holding space for difficult conversations? Potential for TFG.</p>	<p>How do we nurture a non-hierarchical view of cultures? Westerners (and others?) colonize and believe (explicitly or implicitly) “West is best.” We must point out this belief often and recognize, teach and learn about where Western cultures can learn from others, that there is more than one “right” way to live.</p>
	<p>“Indigenous societies throughout the world value the well-being of the self, the land, spirits, and ancestors”</p>	<p>Excellent model for Western society.</p>	<p>Lots of potential here too. Add on creation stories and the community? Maybe also add</p>

Curriculum area	What the curriculum says	My critique/notes	My suggestions
			relationships among these elements as per Wilson's (2008) work.
<b>Curricular Competencies</b> — “Students are expected to do the following:”	<b>Use Social Studies inquiry processes and skills to ask questions; gather, interpret, and analyze ideas; and communicate findings and decisions:</b>  Key skills: Individually, or in groups, design a course of action to address a problem or issue, and provide reasons to support the action.	<b>TFG</b> will guide solutions though...	<b>Good</b> can bring in ancestors' knowledge here, too. We don't create ideas on our own.
	<b>“Explain why people, events, or places are significant to various individuals and groups (significance)</b>  Key Questions: Why are stories important to Indigenous people? Why do Elders play an important part in the lives of First People? What values were significant for local First Peoples?	<b>Ethnocentrism</b>  What values <i>were</i> important? Promotes the “dead Indian view” from Thomas King (2013)	Wrong tense...Indigenous peoples/cultures exist today and still have particular values
	<b>Sequence objects, images, or events, and explain why some aspects change and others stay the same (continuity and change):</b> “Key questions: How has the way of life changed for Indigenous peoples? How are Indigenous cultures viewed today? How have First Peoples' government and leadership changed over time?	<b>Ethno.</b>  How can authentic (i.e. Indigenous vs Western interpretations of these events) information be brought in here?	How have their lives <b>been</b> changed by <b>colonization</b> ? We need more of an intentional verb here. There was intention in changing the lives of Indigenous peoples through colonization, the Reserve system, the Indian Act, the Residential Schools.. The omitting of this obscures Settlers' roles in this genocide.  As for “how have First Peoples (FP) government and leadership changed over time?”, again it should be noted how they have been changed over time through the Indian Act.

Curriculum area	What the curriculum says	My critique/notes	My suggestions
	<p><b>Recognize causes and consequences of events, decisions, or developments (cause and consequence)</b></p> <p>“Key questions: How might present day Canada be different if First Peoples had not been moved to reserves? How has the way of life changed for Indigenous peoples?”</p>	<p>Ethno. “Been moved to” seems a little innocuous—“forced to” is more accurate</p>	<p>Weird repeat of the question in the above category...also should be “been changed.”</p>
	<p><b>Explain why people’s beliefs, values, worldviews, experiences, and roles give them different perspectives on people, places, issues, or events (perspective):</b></p> <p>“Sample activities: Distinguish between fact and opinion on a selected problem or issue; identify features of Indigenous cultures that characterize their relationship to the land; explain Indigenous peoples’ use of oral tradition rather than the written language</p> <p>Key question: How do the values of Indigenous people differ from the values of people from other cultures?</p>	<p>Ethno. Also, so much here!  “Distinguish between fact and opinion”—Can we also teach these differences between anthropocentrism and ecocentrism; individualism and collectivism; and reductionism and holism?</p> <p>If these are taken for granted assumptions, we believe these opinions to be true because we are surrounded by that belief.</p> <p>“Their relationship to the land”—Good. Seems like this could be expanded upon</p>	<p>Why not reverse the question—explain Western society’s use of written language rather than the oral tradition</p> <p>Same with the key question...</p> <p>Add Key Q—How do the values of Westerners differ from people from other cultures?</p> <p>Oral vs. written. Note hierarchy of information in today’s Western society....</p>
	<p><b>“Make value judgements about events, decisions, or actions and suggest lessons that can be learned (ethical judgment)</b></p> <p>Key questions: Is the technology we have today better than the traditional technology of Indigenous peoples? Should Indigenous cultures and languages be maintained? Explain the reasons for your answer. Should anything be done about the loss of Indigenous lands? Explain your reasons.</p>	<p>Ethnocentrism. I don’t know where to begin with this one. The way I’m interpreting it cannot be what they mean. I cannot believe educators would get together and ask <i>if</i> a culture should be maintained. Surely. That decision is not for anyone outside of that culture to decide.</p> <p>Second, (but the first example) asking if “our” technology is better than “theirs” suggests a linear view of progress and that technological developments</p>	<p>Change/Eliminate key questions.</p>

Curriculum area	What the curriculum says	My critique/notes	My suggestions
		<p>are always improving, but as Bowers discussed throughout his career, we are not pointing out the Janus face of science i.e. what problems arise with today's technologies?</p> <p>Also, with regard to the question about the loss of Indigenous lands, it should not be a closed question. Instead, it should inquire about how we repatriate lands to the original Nations in a fair and just way.</p>	
<p><b>Content—</b> “Students are expected to know the following:”</p>	<p><b>“Cultural characteristics and ways of life of local First Peoples and global Indigenous people:</b></p> <p>Sample topics: potential First People and global Indigenous people for study could include:            -local BC First Peoples            -Canadian and other North American Indigenous peoples            -local Indigenous peoples of South America            -ethnic Chinese and Koreans            -ethnic European groups (Germanic, Slavic, Latic, Celtic);</p> <p>Worldview, protocols, celebrations, ceremonies, dance, music, spiritual beliefs, art, values, kinship, traditional teachings</p>	<p>Potential to really, deeply learn from other cultures here.</p> <p>Ethno. I have a problem with the phrase “people for study”. It has a real ‘objective outsider’, reductionist, ethnocentric slant, however if there was deep learning and critiquing of our own cultures I think that would be a very interesting unit or even year long study.</p>	<p>-add African, Polynesian, Maori, Aborigines why stop with the groups they chose?</p> <p>I think it could be in an older grade too to see how that might impact student thinking.</p>
	<p><b>“Aspects of life shared by and common to peoples and cultures.</b></p> <p>Sample topics: family, work, education, systems of ethics and spirituality</p>	<p>Systems of ethics and spirituality sound great.</p> <p>Work feels like a neoliberal/capitalist component. Not all cultures have/had “work”</p>	<p>Add music, culture, stories, and traditions to sample topics</p>
	<p><b>“oral history, traditional stories, and artifacts as evidence about past First Peoples cultures:</b></p> <p>Sample topics: sacred or significant places and landforms</p>	<p>Good—can elaborate on this for all sorts of connections</p>	

Curriculum area	What the curriculum says	My critique/notes	My suggestions
	<p><b>“Relationship between humans and their environment.”</b></p> <p>Sample topics: protocols around the world that acknowledge and respect the land; reshaping of the land for resource exploration and development; domestication of animals; organization and techniques of hunting and fishing</p>	<p>Anthro. “Their environment”</p> <p>“Protocols around the world that acknowledge and respect the land” = good</p> <p>Many euphemisms here. “reshaping the land for resource exploration and development”—resource exploration and development techniques...</p>	<p>We also need to look at the Western ways these things are done to critique them to point to issues with sustainability. Again, mention the Janus face of science/technology.</p>

Table C5

## Grade 4: First Peoples and European Contact

Curriculum area	What the curriculum says	My critique/notes	My suggestions
<p><b>Big Ideas—</b> “Students are expected to understand the following:”</p>	<p>The pursuit of valuable natural resources has played a key role in changing the land, people, and communities of Canada</p>	<p>Anthro. Ethno. Euphemisms—“pursuit of”, “natural resources” “key role in changing”</p> <p>Value-embedded terms— “valuable natural resources” = valuable to whom?</p> <p>Changing the people of Canada? Decimating the people (and other species) of Canada?/Genocide? But how do we say this in an age appropriate manner?</p>	
	<p>Demographic changes in North America created shifts in economic and political power.</p>	<p>Ethno. This again seems rather innocuous when there was an intentional elimination of Indigenous peoples. How does this show dominance over others?</p>	
<p><b>Curricular Competencies—</b> “Students are expected to do the following:”</p>	<p><b>Use Social Studies inquiry processes and skills to ask questions; gather, interpret, and analyze ideas; and communicate findings and decisions:</b></p> <p>“Key skills: Use grids, scales, and</p>	<p>1) Seems again to be a euphemism bordering on untruth</p> <p>2) Potential to recreate what problems are from an anthropocentric,</p>	<p>Need teachers to be aware of these tendencies in our discourse and culture</p>

Curriculum area	What the curriculum says	My critique/notes	My suggestions
	legends on maps and timelines to interpret or represent specific information; Identify and clarify a selected problem or issue (e.g., provide details; state reasons, implications).; Create a plan of action to address a chosen problem or issue.	individualistic, reductionistic lens TFG	
	<p><b>Construct arguments defending the significance of individuals/groups, places, events, or developments (significance)</b></p> <p>“Key questions: What events are most significant in the story of BC’s development? Should James Douglas be remembered as the father of BC?”</p>	<p>Ethno.</p> <p>From whose perspective do we consider events relevant? How about discussing colonization in general instead of perpetuating the cultural myth of Westerners discovering/creating places? Ethno/Androcentric</p>	
	<p><b>Ask questions, corroborate inferences, and draw conclusions about the content and origins of different sources (evidence):</b></p> <p>“Sample activities: Compare and contrast European and First Peoples accounts of the same event”</p>	<p>Ethno. In theory, good, but if First Peoples have an oral history tradition, how will students access this? Is it safe for FP to share their thoughts on these events in the past now, if living in a racist society where teachers are overwhelmingly Settlers?</p>	
	<p><b>Sequence objects, images, or events, and determine continuities and changes between different time periods or places (continuity and change):</b></p> <p>“Key questions: What resources are important to people in present-day BC compared to people in the past? Explain what has changed over time.</p>	<p>Anthro. ‘Resources’ again. No connection to environment or acknowledgement of Western culture’s impact on rest of nature</p>	<p>Could add cultural analysis here. Would be interesting to look at different values in different cultures</p>
	<p><b>Differentiate between intended and unintended consequences of events, decisions, or developments, and speculate about alternative outcomes (cause and consequence):</b></p> <p>“Sample activities: Hold a debate about whether BC should have joined the United States of Canada or become an independent country</p>	<p>Ethno. What if First Peoples remained their own nations?</p> <p>Ethno. Anthro.</p>	<p>Add: What have we lost through development? How has this impacted other species?</p>

Curriculum area	What the curriculum says	My critique/notes	My suggestions
	Track the positive and negative effects of key events in BC's development on First Peoples		
	<p><b>Construct narratives that capture the attitudes, values, and worldviews commonly held by people at different times or places (perspective):</b></p> <p>“Sample activity: Compare the “discovery” and “exploration” of North America from European and First Peoples’ perspectives</p> <p>Key question: Who benefited most from the early west coast fur trade: First Peoples or Europeans?</p>	<p>Similar problem with oral vs written history. Will be a skewed/biased result due to lack of access to FP perspectives in the classroom... <b>TFG</b></p> <p>I’m uncertain, but I do know in Ontario (Upper Canada), at first it was the First Peoples although this changed throughout the course of the trade.</p> <p>But curious why this is in here no matter who it was.... <b>what is the broader point being made?</b></p>	
	<p><b>Make ethical judgments about events, decisions, or actions that consider the conditions of a particular time and place (ethical judgment):</b></p> <p>“Sample activities: Evaluate the fairness of BC’s treaty process.</p> <p>Describe the importance in protecting minority rights in a democracy</p> <p>Identify key events and issues in First Peoples rights and interactions with early governments in Canada (e.g., the Indian Act, the establishment of the residential school system, potlatch ban, reserve system, treaties).</p>	<p><b>Glad to see this here. But the complexity of the times should be addressed too. I.e. not all people had racist beliefs in the past, so it’s important to address the nuance and ask for people to critically think at all times.</b></p> <p>Such a big, important topic. Should we revisit this each year?</p> <p>Also, order-wise, it’s last out of all the CC. Why? <b>Ethno.</b> I see this pattern in many grades.</p>	
<p><b>Content—</b> “Students are expected to know the following:”</p>	<p><b>early contact, trade, co-operation, and conflict between First Peoples and European peoples:</b></p>	<p><b>Ethno.</b> All explorers and no FP leaders? Interesting balance...from this list it almost seems like the ‘early contact’ was positive...was it?</p>	

Curriculum area	What the curriculum says	My critique/notes	My suggestions
	<p>Sample topics: early explorers: Cabot, Frobisher, Hudson, Cartier, Champlain; voyages of Cook and Vancouver; provision of muskets to First Peoples by Europeans; spread of horses to the Prairies; marriages between First Peoples and Europeans; colonial wars and alliances between Europeans and First Peoples (e.g., between Maquinna [Nuu-chah-nulth] and the Cook expedition or between French colonists and the First Peoples living around the Great Lakes)</p> <p>Key questions: What motivated explorers and settlers to come to Canada? How did the geography of Canada affect European exploration?</p>	<p><b>Fascinating Key Qs:</b> What motivated them? Resources? Running out of them in Europe? Other things? Not all cultures “explored” in this way.</p>	<p>What values motivated settlers to come to Canada? How did settler values affect European exploration?</p>
	<p><b>the fur trade in pre-Confederation Canada and British Columbia:</b> More explorers: Simon Fraser, etc etc</p>	<p><b>Ethno.</b> Why no names of Chiefs in these areas during “exploration”? Why just names of people from away?</p>	<p>Add on “impact of the fur trade on FP culture, land use, language, etc.”</p>
	<p><b>demographic changes in pre-Confederation British Columbia in both First Peoples and non-First Peoples communities:</b></p> <p>Sample topics: disease; European and American settlement and migration; increases in raids causing decreases in population; relocation/resettlement of First Peoples</p>	<p><b>Ethno.</b></p>	<p>**should be rephrased as “forced removal from traditional territories” or something like that</p>
	<p><b>“economic and political factors that influenced the colonization of British Columbia and its entry into Confederation:</b></p> <p>Sample topics: Canadian Pacific Railway; fur trade; American settlement; Oregon boundary dispute; gold rush population boom and bust; colonial debt; Canadian Confederation; expansion and purchase of</p>	<p><b>Anthro.</b> Seems to be missing any geographic and “natural resources” or living beings here in the economic and political factors. An economy must be grounded in the reality of the ecosystem.</p> <p>Also, the idea that one can ‘purchase’ land, though a real transaction in our society, is</p>	

Curriculum area	What the curriculum says	My critique/notes	My suggestions
	Rupert's Land	not real in another sense...	
	<p><b>“the impact of colonization on First Peoples societies in British Columbia and Canada:</b></p> <p>Sample topics: disease and demographics; trade; <u>more complex political systems</u>; loss of territory; impact on language and culture; key events and issues regarding First Peoples rights and interactions with early governments in Canada (e.g., the Indian Act, potlatch ban, reserve system, residential schools, treaties)</p>	<p>Ahh, here it is. Second from the end</p> <p><b>Ethno.</b> “more complex political systems” = ? from colonization?</p> <p>Interesting again what is (second) last.</p>	
	<p><b>“the history of the local community and of local First Peoples communities:</b></p> <p>Sample topic: local archives and museums</p>	<p><b>Ethno.</b> Interesting again, what is last? Also the separation again of the local community and the local FP community</p>	<p>Also, could look at FP's websites and in more modern books. Or if there is a relationship with the local community, could ask someone to come in or connect with the School Board's Indigenous education division.</p>

*Note.* “European contact” is another euphemism. Teaching the real, complicated, multifaceted history of colonization is not conveyed through the term “European contact.”

## Table C6

### *Grade 5: Canadian Issues and Governance*

Curriculum area	What the curriculum says	My critique/notes	My suggestions
<p><b>Big Ideas—</b> “Students are expected to understand the following:”</p>	<p>Natural resources continue to shape the economy and identity of different regions of Canada.”</p>	<p><b>Anthro. Commodification.</b> It used to be “the environment” in early grades and now we've switched to ‘natural resources’.</p> <p>How can we discuss “natural</p>	

Curriculum area	What the curriculum says	My critique/notes	My suggestions
		resources” without mentioning “the environment” or “the rest of nature”?	
<b>Curricular Competencies</b> — “Students are expected to do the following:”	<p><b>“Use Social Studies inquiry processes and skills to ask questions; gather, interpret, and analyze ideas; and communicate findings and decisions:</b></p> <p>Key skills: Use keys and legends to interpret maps (e.g., resources, economic activities, transportation routes, capital cities, population).</p> <p>Identify opportunities for civic participation at the school, community, provincial, and national levels.”</p>	<p><b>Commodification</b> in examples, might there be other important areas/features identified on maps that do not feature the utilitarian view of nature?</p> <p><b>Love this civic participation/active citizenship.</b> Could it be in earlier grades?</p>	
	<p><b>“Develop a plan of action to address a selected problem or issue:</b></p> <p>Individually, or in groups, design a plan of action to address a problem or issue (e.g., fundraising campaign, clothing or food drive, letter writing to a politician, editorial in school or community newspaper, petition).</p>	<p><b>Nice to see letter writing in here</b> and the collective (similar to a point in Grade 4 “create a plan of action to address a chosen problem or issue”—but no elaboration p. 19)</p>	
	<p><b>“Construct arguments defending the significance of individuals/groups, places, events, or developments (significance):</b></p> <p>Key questions: Which people contributed most to Canada becoming an independent country? What is the most significant event in Canadian history?</p>	<p>Nice to see groups in this list to contrast the individualism in other areas/younger grades...</p> <p>I’m not even sure why these key questions are in there? There are clearly many elements that came together to make Canada happen, so why are we trying to pick <i>one</i> person or thing? <b>Individualist.</b> <b>Reductionist.</b></p> <p>Sets up hierarchical thinking, I think.</p>	
	<p><b>“Sequence objects, images, or events, and recognize the positive and negative aspects of continuities and changes in the past and present (continuity and</b></p>	<p><b>Good opportunity</b> to compare rights and freedoms and responsibilities for different groups or people and different species as well.</p>	

Curriculum area	What the curriculum says	My critique/notes	My suggestions
	<p><b>change):</b>  <i>Sample activity:</i> Create an annotated timeline, map, or other graphic to illustrate selected events or periods in the development of Canada.  <i>Key question:</i> What are some key differences between being a pre-Confederation-Canada citizen and being a Canadian citizen today?</p>		
	<p><b>“Take stakeholders’ perspectives on issues, developments, or events by making inferences about their beliefs, values, and motivations (perspective):</b></p> <p>Sample activities: Through role-play, simulations, or letters, present personal perspectives on the challenges faced by immigrants (e.g., climate, language, tolerance for their religion, employment); Examine sources to determine the motivation for historical wrongs against East and South Asian immigrants.</p>	<p><b>Ethno.</b> Why do we not do this during the “studies” of FP?...</p>	<p>We need to add in taking this perspective for folks who are Indigenous</p>
	<p><b>“Make ethical judgments about events, decisions, or actions that consider the conditions of a particular time and place, and assess appropriate ways to respond (ethical judgment):</b></p> <p>Sample topics: historical wrongs against East and South Asian immigrants; Indian Act; residential school system; internment of Ukrainians during World War; internment of Japanese Canadians during World War II; turning away of Jewish refugees prior to World War II; Canada’s response to climate change</p> <p>Key questions: Based on the evidence at the time, was the internment of Japanese people in BC justified? Explain your answer.</p>	<p><b>So many great things in this section—such opportunity to examine</b> Western beliefs and patterns here.</p> <p><b>The response to climate change makes its first appearance.</b></p> <p>This question is strange—why would we ask if it was justified? Seems like a biased question.</p> <p>This last question is also key. But “resource use” is an odd, <b>anthropocentric, reductionistic</b> phrase.</p>	<p>Expand on the climate change response and our investment in “natural resources”</p>

Curriculum area	What the curriculum says	My critique/notes	My suggestions
	What are the <b>potential consequences</b> of non-sustainable practices in resource use?		
<p><b>Content—</b> “Students are expected to know the following:”</p>	<p><b>“the changing nature of Canadian immigration over time:</b></p> <p>Sample topics: changing government policies about the origin of immigrants and the number allowed to come to Canada;</p> <p>The contributions of immigrants to Canada’s development (e.g., Chinese railway workers, Sikh loggers, Eastern European farmers, British investors)</p>	<p>Domination over others?</p> <p><b>Good acknowledgement of others here</b></p>	
	<p><b>“past discriminatory government policies and actions, such as the Chinese Head Tax, the <i>Komagata Maru</i> incident, residential schools, and internments:</b></p> <p>Sample topics: historical wrongs against East and South Asian immigrants; Indian Act; Head Tax on Chinese immigrants; numbered treaties with First Peoples; treatment of Doukhobors; 1884–85 famine; 1907 Anti-Asian Riots; Japanese and German internments; reduction or relocation of First Peoples reserves; ethnic minorities denied the vote</p> <p>Key questions: What types of discrimination have immigrants to Canada faced (e.g., cases of systemic discrimination by local, provincial, and federal levels of government)? How might Canadian society be different today if exclusionary policies toward immigrants from East and South Asia had not been developed during certain periods of history? What effects did residential schools have on First Peoples families and communities?</p>	<p>Domination over others</p> <p><b>Ethno.</b></p>	<p>2nd question = open ended</p> <p>3rd question = wrong tense. Residential schools still have real, lasting, difficult impacts today. (Also, last point, again.)</p>

Curriculum area	What the curriculum says	My critique/notes	My suggestions
	<p><b>“human rights and responses to discrimination in Canadian society:</b></p> <p>Sample topics: Canadian Charter of Rights and Freedoms; LGBTQ rights and same-sex marriage; gender equity; racism; religious freedoms; freedom of speech; language rights; protest movements; examples of individuals who have fought for change and spoken out against injustice; key provisions of the Canadian Charter of Rights and Freedoms; the role of the Charter in establishing equality and fairness for all Canadians (e.g., addressing cases of discrimination)</p>	<p>The limits of the Charter today (in action). <b>Anthro.</b></p>	<p>Discuss othering, dehumanization and domination over others.</p> <p><b>Add in right of nature</b></p>
	<p><b>“levels of government (First Peoples, federal, provincial, and municipal), their main functions, and sources of funding:</b></p> <p>Key question: Which level of government has the most effect on your daily life?</p>	<p>Link this to projects/“problems” earlier in the curriculum—social change, letter writing, socio ecological justice, etc.</p> <p>Concern over whether teachers have enough knowledge to navigate just how much the Indian Act has and still does control the lives on Indigenous Peoples. <b>TFG</b></p>	
	<p><b>“resources and economic development in different regions of Canada:</b></p> <p>Sample activities: Use maps to describe the location of natural resources in Canada in relation to characteristics of physical geography (e.g., fish on the coasts, mineral resources in the Canadian Shield); Identify significant natural resources in BC and Canada, including:</p> <ul style="list-style-type: none"> <li>– fish and marine resources</li> <li>– forests</li> <li>– minerals (e.g., diamonds, gold, asbestos,</li> </ul>	<p><b>Anthro. Ethno</b> (economic development). What else are “natural resources”? I.e. habitat, beings on their own, part of a healthy ecosystem, etc</p> <p><b>Reductionism</b>—beings/habitat to “resources”</p> <p>Energy resources—only one renewable one in examples? Also, why are we not examining the connection between carbon-based resources and climate change?</p> <p>The first key q is telling. <b>Which</b></p>	

Curriculum area	What the curriculum says	My critique/notes	My suggestions
	<p>tin, copper) – energy resources (e.g., natural gas, petroleum, coal, hydro)</p> <p>Key questions: What natural resources are most important to the economy of your community? How has technology affected the discovery, extraction, processing, and marketing of selected natural resources?</p>	<p><b>is most important to the economy...? Reductionism, Anthro. Ethno. Commodification.</b></p> <p>Second q—how about the rate at which these are available/sustainable/reproducing themselves? And the impacts on the communities, human and more-than-human around them</p>	
	<p><b>“First Peoples land ownership and use—</b> land claims disputes;</p> <p>Key Questions: How do First Peoples balance economic development with traditional uses of the land?</p>	<p><b>Ethno.</b> I suppose they are disputed by colonial governments, but perhaps it could just say land claims here for a more balanced tone?</p> <p>Good—can learn from other nations, but also note how colonization has impacted all of our minds</p>	

Table C7

## Grade 6: Global Issues and Governance

Curriculum area	What the curriculum says	My critique/notes	My suggestions
<b>Big Ideas—</b> “Students are expected to understand the following:”	Economic self-interest can be a significant cause of conflict among peoples and governments	<b>Anthro.</b> Missing the impact it has on the environment	Add impact on the ecological systems which sustain us.
	Complex global problems require international co-operation to make difficult choices for the future.	<b>Ethno.</b> Are the choices difficult? Do we need to set it up this way? Is it only difficult for those in power who have to share it?	Frame our next steps as positive. If these steps will ensure (or encourage) our survival, surely they are positive.
	Systems of government vary in their respect for human rights and freedoms.	<b>Anthro.</b> Do systems of government also care for the places in which they are situated? Or the non-human animals?	Add in respect for more-than-human (Abram, 1996) relations. Include NZ, Colombia, India, for examples.

Curriculum area	What the curriculum says	My critique/notes	My suggestions
<p><b>Curricular Competencies—</b> “Students are expected to do the following:”</p>	<p><b>Use Social Studies inquiry processes and skills to ask questions; gather, interpret, and analyze ideas; and communicate findings and decisions:</b></p> <p>“Key skills: With teacher and peer support, select a relevant problem or issue for inquiry.</p> <p>Compare how graphs, tables, aerial photos, and maps represent information.</p> <p>Represent the same information in two or more graphic forms (e.g., graphs, tables, thematic maps).</p> <p>Identify opportunities for civic participation at the school, community, provincial, national, and global levels.</p>	<p>Relevant problems may be restricted to anthropocentric ones unless we broaden teacher education and provincial curricula to explicitly acknowledge our reliance upon healthy ecosystems <b>TFG</b></p> <p><b>Reductionist</b> unless we consider how maps are not the territory (Bateson, 1972). What makes it onto maps and what doesn't? Who has that power to make maps?</p> <p>Same as gr 5</p>	
	<p><b>“Develop a plan of action to address a selected problem or issue:</b></p> <p>Individually, or in groups, implement a plan of action to address a problem or issue (e.g., fundraising campaign, clothing or food drive, letter writing to a politician, editorial in the school or community newspaper, petition</p>	<p>Good. same as Grade 5.</p>	
	<p><b>Ask questions, corroborate inferences, and draw conclusions about the content and origins of a variety of sources, including mass media (evidence):</b></p> <p>Sample activities: Compare a range of points of view on a problem or issue;</p> <p>Compare and contrast media coverage of a controversial issue (e.g., climate change, resource management).</p>	<p><b>Ethno. Anthro.</b> Range of points of view should include non-Western views explicitly and possible non-human views?</p> <p>Climate change is not a controversial issue—perhaps it is our response(or lack thereof) to CC that is. (Also, only second time CC is mentioned)</p>	
	<p><b>Differentiate between short- and long-term causes, and intended and unintended consequences, of events, decisions, or developments</b></p> <p><b>(cause and consequence):</b></p>	<p>Individualism. (same as in science curric)</p>	

Curriculum area	What the curriculum says	My critique/notes	My suggestions
	Sample activities: Give examples of how your actions may have consequences for others locally or globally (e.g., effect of consumer choices).		
	<p><b>Take stakeholders’ perspectives on issues, developments, or events by making inferences about their beliefs, values, and motivations (perspective):</b></p> <p>Key question: Should individuals be willing to give up some personal freedoms for the sake of collective well-being?</p>	<p><b>Individualism.</b> Closed question—could ask an open ended one encouraging the well-being of communities by balancing various needs</p> <p><b>Huge opportunity here!</b></p>	
	<p><b>Make ethical judgments about events, decisions, or actions that consider the conditions of a particular time and place, and assess appropriate ways to respond (ethical judgment):</b></p> <p><i>Key question:</i></p> <p>What are the rights and responsibilities of a global citizen?</p>	<p><b>Great question!</b> Need to be sure teachers can guide this question in a way that does not reinforce Western cultural assumptions that are creating socioecological crises <b>TFG</b></p>	
<p><b>Content—</b> “Students are expected to know the following:”</p>	<p><b>the urbanization and migration of people:</b></p> <p>Sample topics: land usage; access to water; pollution and waste management; population density; transit and transportation</p>	<p><b>Anthro. Reductionist.</b> Strictly human perspective</p>	
	<p><b>global poverty and inequality issues, including class structure and gender:</b></p> <p>Sample topics: treatment of minority populations in Canada and in other cultures and societies you have studied (e.g., segregation, assimilation, integration, and pluralism; multiculturalism policies; settlement patterns; residential schools, South African apartheid, the Holocaust, internment of Japanese Canadians, Head Tax on Chinese immigrants;</p>	<p><b>Big potential here!</b></p> <p><b>Ethnocentrism</b>—colonization of people globally, different types of explorers (i.e. who didn’t colonize)</p>	

Curriculum area	What the curriculum says	My critique/notes	My suggestions
	<p>caste and class systems); caste system; unequal distribution of wealth; corruption; lack of judicial process; infant mortality; women's rights; social justice; treatment of Indigenous people</p> <p>Key questions: How does discrimination and prejudice in modern Canadian society compare with that during other periods in Canada's past or in other societies (e.g., systemic discrimination, overt racism)?</p>		<p>Given this history, how can we promote equity/equality now?</p>
	<p><b>roles of individuals, governmental organizations, and NGOs, including groups representing Indigenous peoples:</b></p> <p>Sample topics: United Nations; International Criminal Court; World Trade Organization; international aid; activists; lobby groups; international aid groups (e.g., <i>Médecins sans Frontières</i> [Doctors without Borders]); Private foundations (e.g., Bill &amp; Melinda Gates Foundation)</p>	<p>Also significant potential here! Individuals versus groups and potential for change/power, etc</p>	
	<p><b>economic policies and resource management, including effects on Indigenous peoples:</b></p> <p>Sample topics: deforestation; mining; oil and gas; fisheries; infrastructure development; relocation of communities</p> <p>Key questions: How should decisions about economic policy and resource management be made? How should societies balance economic development with the protection of the environment?</p>	<p>More big potential here!</p> <p>Anthro, reductionist.</p> <p>Ecosystem-based management would be good to introduce here.</p> <p>Euphemism—"resource management"</p> <p>Last question I think is good—still presumes we are separate from "the environment" but it is getting close to what we should ask.</p>	
	<p><b>globalization and economic interdependence:</b></p> <p>Sample topics:</p> <ul style="list-style-type: none"> <li>· trade</li> </ul>	<p>Good, getting at the big picture, probably good for this age too when abstract thinking is more possible.</p>	

Curriculum area	What the curriculum says	My critique/notes	My suggestions
	<ul style="list-style-type: none"> <li>· imports and exports</li> <li>· G20 (Group of Twenty)</li> <li>· European Union</li> <li>· North American Free Trade Agreement (NAFTA)</li> <li>· currency</li> <li>· tariffs and taxation</li> <li>· trade imbalances</li> </ul>	Shows interconnection. But still <b>reductionist</b> as it doesn't recognize that all of these trade and tariffs are based on a healthy ecosystem	
	<p><b>“international co-operation and responses to global issues:</b></p> <p>Sample topics:</p> <ul style="list-style-type: none"> <li>· environmental issues</li> <li>· human trafficking</li> <li>· child labour</li> <li>· epidemic/pandemic response</li> <li>· fisheries management</li> <li>· resource use and misuse</li> <li>· drug trafficking</li> <li>· food distribution and famine</li> </ul>	<p><b>Also, great potential here.</b></p> <p>Overall, Grade 6 is looking at some big issues.</p> <p>“Environmental issues” is somewhat <b>reductionist</b>. Sounds like they are separate from us.</p>	

Table C8

*Grade 7: The Ancient World to the 7th Century*

Curriculum area	What the curriculum says	My critique/notes	My suggestions
<b>Big Ideas</b> — “Students are expected to understand the following:”	Geographic conditions shaped the emergence of civilizations		Switch geographic to ecosystem (or add ecosystem)
	Religious and cultural practices that emerged during this period have endured and continue to influence people.	<b>Yes! Cultural practices</b> —can examine Western thinking here	
	Economic specialization and trade networks can lead to conflict and co-operation between societies.	<b>Anthro/Reductionist</b> . What other impacts were there? (i.e., ecological)	
<b>Curricular Competencies</b> — “Students are	<b>“Use Social Studies inquiry processes and skills to ask questions; gather, interpret, and</b>	<b>Good</b> —compare them.	Also notice what is lost in the different forms of

Curriculum area	What the curriculum says	My critique/notes	My suggestions
<p>expected to do the following:”</p>	<p><b>analyze ideas; and communicate findings and decisions:</b></p> <p>Key skills:</p> <p>Compare the advantages and disadvantages of various graphic forms of communication (e.g., graphs, tables, charts, maps, photographs, sketches).</p>		<p>communication.</p>
	<p><b>“Assess the significance of people, places, events, or developments at particular times and places (significance):</b></p> <p>Sample activity: Identify specific examples of <b>influences and contributions from ancient cultures</b> (e.g., writing system, number system, philosophy, education, religion and spirituality, visual arts, drama, architecture, timekeeping) and assess their significance.</p> <p>Key questions: What is the most significant archeological finding that helps us understand the development of humans? What are the most significant factors that contribute to the decline of an empire? <b>Why are philosophers from this era still significant today?</b></p>	<p>More <b>good potential</b> here!!</p> <p>Difference between oral and written communication</p> <p><b>Ethno.</b> Also, a clearly Western take on things...how can we balance FP history here too?</p>	<p>Add: Relationships of various spiritual practices and their beliefs about differences and relationships with others</p> <p>(Western) Philosophers—why still relevant today? What legacies do they have?</p>

## Appendix D: Science Curriculum Notes

**Table D1**
*Kindergarten*

Curriculum area	What the curriculum says	My critique/notes	My suggestions
<b>Big Ideas</b>	“Plants and animals have observable features.” Elaborations: “What basic needs do plants and animals have in common?” “What are your basic needs?”	Humans (in this case, the students) are positioned as separate from plants and animals and as the only one doing the observing.	What do all living beings need to survive?
	“Humans interact with matter every day through familiar materials”. Elaborations: “How do you interact with matter?”. (p. 2)	<b>Anthropocentrism.</b>  All physical beings and things on Earth interact with matter and are made up of matter, but here, only humans interact with matter.  There is no mention that we too are made of matter, so we are separated out from the rest of the world.	
<b>Curricular Competencies (CC)— Applying and innovating</b>	“Take part in caring for self, family, classroom and school through personal approaches” (p. 1)	Here humans and our places and spaces are centered.  What about outdoor spaces?	Need to include outdoor spaces.
<b>CC— Questioning and predicting</b>	“Observe objects and events in familiar contexts” (p. 1)	How do we impact objects or events when we observe them? Again, this sets us up as both separate from the rest of the world and uniquely able to do the observing.	Repeats in Grade 1–4
<b>CC— Questioning and predicting Elaborations</b>	“Patterns...People identify patterns and look for relationships behind the patterns they find. They use this information to extend their understanding.” (p. 2)	<b>I appreciate the gesture to relationships in patterns</b>  Humans are centered as pattern seekers. While this is true, most living beings are pattern seekers. Plants seek and grow towards gradients of light and water. Animals too, identify patterns; it is essential for their survival. Patterns of movement, sound, shape, smell, taste all	

		guide animals, including humans, to safety and sustenance.	
<b>CC-Communicating Elaborations</b>	“How can you share your observations and ideas about living things in your local environment to help someone else learn about place?” (p. 2)	Sets humans up as the <i>knower</i> of place.  No gesture to the fact that we cannot know everything, or that there is always more to learn.	Add in “How can you (students) learn <i>from</i> place? How can you <i>learn from others</i> about place?”
<b>Content</b>	“Adaptations of local plants and animals”	In this case, humans are implicitly excluded. Especially since just after this another content area to learn about is “Local First Peoples uses of plants and animals”. I am assuming they mean non-human animals.	Local plants and <i>non-human</i> animals(?)
<b>Content—Elaborations</b>	“Living things make changes: living things may make physical and behavioural changes to survive in different conditions (e.g., migrations, hibernation, etc.; p. 3).	Humans are separated out implicitly, again.	Add in how humans in different environments have physical and/or behavioural changes.

Table D2

## Grade 1

Curriculum area	What the curriculum says	My critique/notes	My suggestions
<b>Big Ideas—“Students are expected to understand the following:”</b>	<p>“Living things have features and behaviours that help them survive in their environment”</p> <p>Elaborations: “How do local plants and animals depend on their environment? How do plants and animals use their features to respond to stimuli in their environments? How do plants and animals adapt</p>	<p>No humans noted here. Though we are, of course, animals, so far we have been implicitly excluded from the animal category but mentioning humans, people or pronouns that are associated with us.</p> <p>+ I appreciate the indication of the relationship of plants and animals in the environment</p> <p>However, the phrase “in their environment” is problematic because it promotes the notion that “the environment” is this Other that belongs to plants and animals (and many other places in the curriculum to people, too).</p>	<ol style="list-style-type: none"> <li>1. Living beings instead of living things.</li> <li>2. Include how human behaviours help us survive but are also hindering other plants’ and animals’ abilities to survive.</li> </ol>

Curriculum area	What the curriculum says	My critique/notes	My suggestions
	when their basic needs are not being met?" (p. 5)		Clarify what "the environment" is.
	"Matter is useful because of its properties" Elaboration: "What makes the properties of matter useful?" (p. 5)	Positions humans as the decider of what matter is useful (presumably to us).	
<b>Curricular Competencies (CC)- Planning and conducting</b>	"Safely manipulate materials to test ideas and predictions" (p. 4)	This speaks to me because later in scientific careers, materials can be other living beings in various cosmetic, medical or other experiments. It seems to be setting up the "separate from" stance.	Repeats in Grade 2
<b>CC— Evaluating</b>	"Consider some environmental consequences of their actions" (p. 4)	This again sounds like the environment is somewhere out there, not connected to us. Environmental consequences affect us as well as other living beings.	Repeats in Grade 2
<b>CC- Applying &amp; innovating</b>	"Take part in caring for self, family, classroom and school through personal approaches" (p. 5)	Similar critique to this competency in kindergarten. Humans and the school are centered with no consideration or mention of outdoor spaces.	
<b>Content</b>	"Behavioural adaptations of animals in the local environment" (p. 4)  Elaboration: behavioural adaptations: dormancy, hibernation, nesting, migration, catching food, camouflage (stick bug) mimicry (fly that looks like bee), territorialism (squirrels fighting), etc (p. 5)	Suggests the term <i>animals</i> does not include humans, as per the examples	
	"Specific properties of materials allow us to use them in different ways" (p. 4)	Who gives us permission to use these materials? In what ways can we use them and what amount is permitted?  The connection of materials to the rest of nature is missing. This framework perpetuates the notion that the environment and the <i>materials</i> contained therein are some inert thing 'out there'.	

Curriculum area	What the curriculum says	My critique/notes	My suggestions
	<p>“Local First Peoples understanding and use of seasonal rounds” (p. 5)            Elaboration: Seasonal rounds refers to a pattern of movement from one resource gathering area to another in a cycle that is followed each year (p. 7)</p>	<p>Resource gathering is the phrase that made me pause here. Resources, sometimes called natural resources, is a Western concept while Indigenous worldviews consider the rest of nature as something like “all my relations”. From an Albertan education document on incorporation Indigenous worldviews: “All my relations” is at first a reminder of who we are and of our relationship with both our family and our relatives. <i>It also reminds us of the extended relationship we share with all human beings. But the relationships that Native people see go further, the web of kinship to animals, to the birds, to the fish, to the plants, to all the animate and inanimate forms that can be seen or imagined</i> [emphasis added]. More than that, “all my relations” is an encouragement for us to accept the responsibilities we have within the universal family by living our lives in a harmonious and moral manner (a common admonishment is to say of someone that they act as if they had no relations).—Thomas King, All My Relations <sup>a</sup></p>	<p>Could add a connection about how we have insulated ourselves from this. (i.e. connected to the adaptations section).            i.e. How do seasons affect us? Others? The planet? How come we can have berries all year long from the grocery store? What are the impacts of that? etc.</p>

<sup>a</sup> From [https://www.learnalberta.ca/content/aswt/well\\_being/documents/all\\_my\\_relations.pdf](https://www.learnalberta.ca/content/aswt/well_being/documents/all_my_relations.pdf).

**Table D3**

*Grade 2*

Curriculum area	What the curriculum says	My critique/notes	My suggestions
<p><b>Big Ideas— “Students are expected to understand the following:”</b></p>	<p>“Materials can be changed through physical and chemical processes” (p. 8)            Elaborations: “Why would we want to change the physical properties of an object? What are some of the natural processes that involve chemical and physical processes?”</p>	<p>Ethics seems to be missing from this big idea. There is no mention of restraint or balance here and we can see how this has manifested in our changing of all sorts of ‘materials’, i.e. oil, mangrove forests, shorelines, etc. While the statement is undeniably true, I wonder how the moral aspect could be included to reduce the anthropocentric nature of this statement.</p>	<p>When should we/For what purposes should we change materials through physical and chemical processes?             When would we not want to change materials?</p>

Curriculum area	What the curriculum says	My critique/notes	My suggestions
<b>Curricular competencies (CC)— Planning and conducting</b>	“Safely manipulate <b>materials</b> to test ideas and predictions”	This speaks to me because later in scientific careers, materials can be other living beings in various cosmetic, medical or other experiments. It seems to be setting up the “separate from” stance.	<b>As in Grade 1</b>
<b>CC- Evaluating</b>	“consider some environmental consequences of their actions”		Add/replace “their actions” with “society’s actions”
<b>CC— Applying and innovating</b>	“Take part in caring for self, family, classroom, and school through personal approaches”	As in Grade 1, this does not show that we are connected or can be through our action—it promotes separateness.	Add political approaches here, too as per Lakoff (2014)
<b>Content</b>	“Similarities and differences between offspring and parent” (p. 8) Elaboration: offspring and parent: a kitten looks like a cat and a puppy looks like a dog but they do change as they grown; salmon changes a great deal as they grow and need fresh and saltwater environments to survive” (p. 10)	Interesting how none of the example animals are humans. This again reiterates the idea that we are separate from other animals.	I would include humans and also frogs or butterflies as examples of animals that go through metamorphosis as well.
	“Physical ways of changing materials.” (p. 8) Elaboration: warming, cooling, cutting, bending, stirring, mixing	Mostly anthropocentric ways of changing materials.  Also, what are materials made up of?	Could add ripping, biting, digging, and folding (petals, leaves, etc)

Table D4

Grade 3

Curriculum area	What the curriculum says	My critique/notes	My suggestions
<b>Curricular Competencies— Planning and conducting</b>	“Make observations about living and non-living <b>things</b> in the local environment.” (p. 12)	Kimmerer (2013) suggests non-human pronouns, ke and kin to refer to our non-human relations so they are not referred to as “it” and “things”	
<b>CC— Evaluating</b>	“Identify some simple environmental implications of their and others’ actions” (p. 13)	Good, but seems like a bit of call-out culture. How can we make this more constructive and look for alternatives and/or reasons for these actions?	Point out advertising and governmental policies around resource use and subsidies when considering reasons for actions.  <b>Same in Grade 4.</b>
<b>CC—Applying and innovating</b>	“Contribute to care for self, <b>others</b> , school, and <b>neighbourhood</b> through personal or collaborative approaches” (p.	First time collaboration has been mentioned. First time neighbourhood has been mentioned.  Also, now “family” has been broadened to “others”.	This should be it from Kindergarten, with an explicit reference to the outdoors.  <b>Same as in Grade 4.</b>

Table D5

Grade 4

Curriculum are	What the curriculum says	My critique/notes	My suggestions
<b>Big Ideas— “Students are expected to understand the following:”</b>	“Matter has mass, takes up space, and can change phase”  Elaboration: “How <b>can you explore</b> the phases of matter?”	How is this related to life?  Also, when should you explore phases of matter?  <b>Missing relationship piece.</b>	
<b>CC-Planning and conducting</b>	“Safely use appropriate tools to <b>make observations and measurements</b> , using formal measurements and digital technology as appropriate	Anthropocentric & reductionist. Again, positions us as separate from the item/being we are observing.	

Curriculum are	What the curriculum says	My critique/notes	My suggestions
		As for digital technology, there is no questioning as to if it is helpful/when/what do we lose when we use it	
<b>CC-Evaluating</b>	“Identify some simple environmental implications of their and others’ actions”	Good, but seems like a bit of call-out culture. How can we make this more constructive and look for alternatives and/or reasons for these actions?	Point out advertising and governmental policies around resource use and subsidies when considering reasons for actions.  <b>Same in Grade 3.</b>
<b>CC—Applying and innovating</b>	“Contribute to care for self, others, school, and neighbourhood through personal or collaborative approaches” (p.	First time collaboration has been mentioned. First time neighbourhood has been mentioned.  Also, now “family” has been broadened to “others”.	This should be it from Kindergarten, with an explicit reference to the outdoors.  <b>Same as in Grade 3.</b>
<b>Content</b>	“The effect of temperature on particle movement”  Elab...solids, liquids, gases change with heating (e.g. boiling point, melting point [melting chocolate]) and cooling (e.g. freezing point [making ice cream]) and these physical changes are reversible.	These examples are all <b>human centric/induced</b> .  Melting chocolate is reversible, but melting ice caps are not on the same timeline.	Why not add puddles, icicles, glaciers?  Maybe need some info on size of the thing melting/freezing and energy it takes?
	Elab: “devices that transform energy” input energy is different than output energy Ex. glowstick, wind up toy, flashlight	<b>All anthropocentric examples.</b>  What about lightning? Echolocation? Body’s metabolism?	Use non-anthropocentric examples as well
	“Local changes caused by Earth’s axis, rotation and orbit”  Elab: above things “cause changes locally—day and night: animals are nocturnal (active at night) and diurnal (active during day)—annual seasons: plants and animals respond to the seasons (Drop leaves, change colour)	Dualism here—What about crepuscular?—sort of anthropocentric as it is in relation to how we operate diurnally (those who are like us and those who are not like us (nocturnal))  Also, while humans are animals, no examples are listed	Add human examples to the list and other animals too (we have insulated ourselves from the seasons significantly)  I’d have linked this to the adaptations section

Table D6

Grade 5

Curriculum area	What the curriculum says	My critique/notes	My suggestions
<b>Big Ideas— “Students are expected to understand the following:”</b>	“Solutions are homogeneous.” Elaboration: “How are solutions homogeneous? What are their uses” (p. 22)	Anthropocentric in that it positions solutions as a thing that is useful and implicitly, we read “to us”.	What roles do solutions provide in the biosphere?
	“Machines are devices that transfer force and energy.” Elab: “How do machines (natural and human-made) transfer force and energy? What natural machines can you identify in <b>your local environment</b> ?”	Here “the environment” is described as “your local environment”. This phrasing brings up a possessive sense—as if the environment belongs to us.	Perhaps we could use the term “the local environment”.
	Earth material change as they move through the rock <b>cycle and can be used as natural resources</b>  Elab: “How do <b>we interact with</b> water, rock, minerals, soils and <b>plants</b> ?  How can Earth be considered a closed material system?  How can we act as stewards of <b>our environment</b> ?”	Cycle—good, but does it promote never-ending supply?  The term natural resources is a central term in the anthropocentric worldview. Living and non-living parts of the biosphere are reduced to how they can be “re-sourced” for human use. The term “natural” also makes it seem...natural for us to use these other parts of the planet for ourselves while there is no mention of preservation or restriction of use for other living beings. First time for the phrase “we interact with...” This is different from “use” of resources”. Good phrasing; it opens the conversation up more.  Why are plants included here?  First time we see the collective is to look after the environment (note: Ecosystem was used previously, but now we are back to the term environment)  Does stewardship promote dominion over? Or at least superiority?	
<b>Curricular Competencies</b>	“A system is a set of interacting or interdependent	-I like this definition of a system. A little confusing re: temporal space. Does	

Curriculum area	What the curriculum says	My critique/notes	My suggestions
<b>(CC)— Questioning &amp; Predicting</b>	<p>pieces that come together to form a whole. A system occupies a physical or a temporal space within a set environment, has a representative form and possesses a purpose or function.</p> <p>Elaboration: How do the body systems work together?</p> <p>How can you observe the concept of <b>interconnectedness within ecosystems in your local area?</b></p>	<p>it promote mechanism? Also nice that the purpose/function is NOT related to humans here</p> <p>-yay for interconnectedness -within ecosystems.</p> <p>What does this imply is outside of ecosystems?</p> <p>“your local area” also perpetuates the idea that the local area belongs to us</p>	
<b>CC— Planning &amp; Conducting</b>	<p>“With support, plan appropriate investigations to answer their questions or solve problems they have identified”</p> <p>“Decide which variable should be changed and measured for a fair test.”</p>	<p>What is an appropriate investigation? Who can point out problems with the perspectives if teachers have not been taught to be aware of WIC norms?</p> <p>“Solve problems”—sounds like it can just happen. Identify the bad guy and fix it (Lakoff, 2014). As though we have some bird’s eye view of it all. This reminds me of the Great Chain of Being (Lovejoy, 1936)</p> <p>Which variable should be changed and measured? What are the impacts of changing and measuring the variable?</p> <p>Reminds me of the Masters research opportunity in SE USA to age dolphins. Only thing is that we needed to pull a tooth out of live, wild dolphins to access this information. Is that a fair way of measuring?</p>	Masters of the universe!
<b>CC— Processing and Analyzing data and information</b>	<p>“Experience and interpret the local environment” ??</p>	<p>Always, already happening?</p> <p>This suggests there can be a time when we are not doing this. While we are insulated from the local environment by so many inventions and technologies, we can never turn this off. Our eyes are reacting to light amounts, our nervous systems to levels of stress/comfort, our brains to thousands of stimuli.</p>	

Curriculum area	What the curriculum says	My critique/notes	My suggestions
	<p>“Identify FP perspectives and knowledge as sources of information.”</p> <p>Identify patterns and connections in data</p> <p>“Demonstrate an openness to new ideas and <b>consideration of alternatives</b>”</p>	<p>I understand why this is here, perhaps as a component of reconciliation, it also suggests or at least recognizes that there is a superior, settler view that has previously judged First Peoples perspectives and knowledge and not worth of being considered valid information.</p> <p>Good—but again recognize that data is removed from the real thing</p> <p>A little late here. Where is cooperation? It should be happening all along, not starting in Grade 5.</p>	<p>This sounds a lot like Plumwood’s notion of our culture is not rational because it doesn’t consider that we could be wrong.</p>
<b>CC— Applying and Innovating</b>	<p>“Contribute to self, others and community through personal or collaborative approaches”</p>	<p>Again, no environment/ ecosystem listed. I suppose community could include it, but not specific enough given the state of the ecosystem</p>	<p>However, if we are the ecosystem then caring for yourself means caring for the ecosystem... Only our current views don’t work this way.</p>
<b>Content</b>	<p>“Basic structures and functions of body systems—digestive, musculo-skeletal, respiratory, circulatory</p>	<p>Also mechanistic as they forgot to put the systems back together again. Additionally, there is no talk about how the mind impacts the systems and how they impact each other here.</p> <p>Also anthropocentric as this seems like human body systems (or at least mammals?) and implies that all bodies have these systems</p>	<p>Add what’s in the other box...</p>
	<p>Solutions and solubility Elab examples: e.g. aj and coffee that can be separated through distillation, evaporation, and crystallization</p> <p>Solubility of solids, liquids</p>	<p>Anthropocentric examples.</p> <p>Sure, we can start with pop, but what about O2 dissolved in water for fish? Or</p>	<p>Use/include ocean water, sap, blood, or spring water as examples of other solutions.</p>

Curriculum area	What the curriculum says	My critique/notes	My suggestions
	and gases, ex.salt [solid], honey [liquid], CO2 [gas in water makes pop]	in our own blood streams?	
	<p>“FP concepts of interconnectedness in the environment”</p> <p>Elab. interconnectedness : everything in the environment is one/connected (e.g., sun, sky, plants and animals) and we have a responsibility to care for them</p> <p>The nature of sustainable practices around BC’s resources</p> <p>First Peoples’ knowledge of sustainable practices</p>	<p>“In the environment” Note: The term ecosystem is gone again. Also, IN suggests it is separate and that people are not included.</p> <p>Care for them - suggests they are incapable of doing it themselves. Also only First Peoples’ concepts of connectedness? What about off-grid folks or other sustainable communities (Are they truly sustainable?)</p> <p>Are BC’s practices around resources truly sustainable? No. Site C, fracking, logging Old Growth, tankers on coast</p> <p>Using the same language here sounds like First Peoples and BC’s resource sector both have sustainable practices.</p>	Big potential here...

*Note.* \*How often are examples human made items or human examples? How often are they not?

How often are they combined linking us to the rest of nature?

Table D7

Grade 6

Curriculum area	What the curriculum says	My critique/notes	My suggestions
<b>Big Ideas— “Students are expected to understand the following:”</b>	<p>“Multicellular organisms rely on internal systems to survive, reproduce, and interact <b>with their environment</b>”</p> <p>Elab: “How are internal systems necessary for survival?”</p> <p>What do your body systems require for survival?</p> <p>How do your body systems interact with one another?</p>	<p>Internal systems— What about the interplay between internal and external systems?</p> <p>“With their environment” sounds possessive, ownership of environment while it also separates multicellular organisms (like us) from environment</p> <p>-good—more open.</p> <p>Possessive, anthropocentric as it is only a human example.</p> <p>This last example is great!</p>	<p>Add external systems or environmental systems or something. It keeps being backgrounded.</p> <p>-extend this to interact with env’tal systems. Wouldn’t that be so interesting? Also include other organisms that are in us (and outnumber us) in terms of cooperation and systems working together. Counteracts the competitive theme in the neoliberal narrative.</p>
	<p>“Everyday materials are often mixtures</p> <p>“What is a heterogeneous mixture? “How can mixtures be separated?”</p>	<p>Materials again—this dead sounding word...</p> <p>BE separated. Open-ended but anthropocentric again. Positions us as the separator.</p> <p>“How <i>are</i> they separated?” has a different tone.</p>	<p>Maybe instead (or in addition to) use something like, “hHw are solutions separated?” (in nature?) Think of river rocks/sediments settling out or evaporation of seawater, etc.</p>
	<p>“The solar system is part of the Milky Way, which is one of billions of galaxies</p>		<p>Add “that make up the universe” at end</p>

Curriculum area	What the curriculum says	My critique/notes	My suggestions
	<p>Elab: What are the relationships between Earth and the rest of the universe?</p> <p>What extreme env'ts exist on Earth or in <b>our</b> galaxy?</p>	<p>Plural relationships = good, but still centres the Earth. I'm not sure there's anything to do about that as it's important we learn about the Earth...just an awareness that we are centring ourselves here.</p> <p>The possessive language continues, right from our environment to our galaxy. (and solar system, see next entry)</p>	<p>Change language to <i>the</i> galaxy, not <i>ours</i></p>
	<p>Elaboration: Key questions about change "How has <b>our</b> solar system changed over time?"</p>	<p>Possessive</p>	
<b>CC—Applying and Innovating</b>	<p>"Contribute to care for self, other and community through personal or collaborative approaches"</p>	<p>Same as gr 5</p>	<p>Should be <i>and</i> instead of <i>or</i></p>
<b>Content</b>	<p>Elab: "heterogeneous mixtures: suspensions (e.g. salad dressing), emulsions (e.g. milk) colloids (e.g. aerosols)</p>	<p>Mostly examples (except aerosols which are both natural and human-made)</p>	<p>Add sea water and other non-human examples</p>
	<p>Newton's law in DPA— examples of effect of balanced and unbalanced forces in school sport and physical activities</p>	<p>Interesting selection...by nature anthropocentric ...why not more everyday things?</p>	
	<p>Components of <i>our</i> solar system</p> <p>First Peoples' perspective regarding aurora borealis and other celestial phenomena</p> <p>Extreme env't again? Incl Cdn contributions</p>	<p>Anthropocentric, possessive</p> <p>masters of the universe</p>	<p>Change <i>our</i> to <i>the</i> solar system (or name it)</p>

Table D8

Grade 7

Curriculum area	What the curriculum says	My critique/notes	My suggestions
<b>Big Ideas— “Students are expected to understand the following:”</b>	<p>Evolution by natural selection provides an explanation for the diversity and survival of living things</p> <p>Elab: Why do living things change over time?</p> <p>How do these changes affect biodiversity?</p>	<p>Might promote the “whatever we do is okay” mentality</p> <p>No examples—good? Unclear? Humans included?</p> <p>Nice, open-ended second question</p>	*living beings
	<p>Earth and its climate have changed over geological time</p> <p>Elab: How and why have Earth and its climate changed over time? How do people and their practices impact Earth and its climate?</p>	<p>Impt, but misleading?</p> <p>Good, need to add on here though, oddly reductionist as in we are not in the picture. Separate from</p> <p>Who is writing this? “Our practices” is what it should read. Not some mythical “bad” people over there. This is distancing language.</p> <p>How about the differences between “first” and “third” world countries’ energy use?</p> <p>People’s practices could be a curriculum for all Grade 7— what are the beliefs and “resources” in that area to create electricity or other energy sources?</p>	Add on specifics of anthropocene
Questioning & Predicting	“Demonstrate a sustained intellectual curiosity about a scientific topic or problem of personal interest	Here’s the language about “problems to solve again”	
	Identify a question to answer or a problem to solve through scientific inquiry	As above...	
	Elab: (but not connected to any particular one?)		

Curriculum area	What the curriculum says	My critique/notes	My suggestions
	<p>Evolution is the change that occurs in living things over long periods of time. This change is the result of organisms being suited to their env't. Evolution is an important concept in biological science, as scientists are always searching for the underlying laws, reasons, or explanations <b>for their observations of living things.</b></p> <p>Key Qs: How have species on Earth evolved due to natural selection?</p> <p>How does fossil evidence support the evolution of geological time?</p>	<p>“Their env’t” = possession</p> <p>Suited to -&gt; does this take away urgency of climate change/crisis? Like “oh, they’re just no longer “suited to here”?”</p> <p>We are not separate from living things or our observations...individ? Anthro? Certainly separate and superior</p> <p>Does this second question make sense?</p>	<p>Should add contrast between competition and cooperation</p> <p>Should add on to natural selection changing env’t....</p>
Planning & Conducting	<p>Observe, measure and record data (qualitative and quantitative) using equipment, including digital technologies with accuracy and precision.</p> <p>Accuracy elab: “how close a measured value is to the actual value”</p>	<p>Sounds a lot like “OBJECTIVE SCIENCE”</p> <p>Supports an objective world...we can know <i>only</i> the measured value....</p>	
	<p>“ENSURE THAT SAFETY AND ETHICAL GUIDELINES are followed in their investigations”</p>	<p>Yay! In Grade 6 it was just “use equipment and materials safely, identifying potential risks”, nothing about ethics.</p>	
Communicating	<p>Place q’s—new-ish and more elaborate</p>		

## Appendix E: BC Curricular Revision Context

The BC Ministry of Education (2014) began consultations about this most recent curriculum reform in 2010. Details about the process, including feedback, can be found in its Curriculum Redesign Update (BC Ministry of Education, 2014), although the BCTF (Gacoin, 2018) had differing views.

Past curricular reforms have not traditionally been democratic (Broom, 2016), but this first-ever, all-grades, all-subjects revision was purported to be by teachers, for teachers. Though BC's most recent elementary curriculum was released in 2016, the process began in 2010. The BCTF did not join curriculum discussions until 2013 due to job action (Gacoin, 2018). A "substantial amount of curriculum development" (Gacoin, 2018, p. 3) work had already occurred by then, and there were "tensions between the stated focus on teacher-led development and the implicit curricular framework" (Gacoin, 2018, p. 9) that was driving these changes. Broom (2020) posited, "Is it possible to argue that government officials may have a special interest in developing curricula which leads to its own continuity, that is, biased processes and products?" (p. 52). What curricular framework was driving these changes and where did it come from? Though there is no reference to any specific research in the Ministry documents, Gacoin (2018) suggests that the framework used in this reform reflects, to a high degree, that of Erickson and Lanning (2014).

Like root metaphors, frameworks have the power to put focus on particular areas while backgrounding others. The chosen "know, do, understand" framework shapes this curriculum right down to specific word choices (Gacoin, 2018). The BCTF explained that participating teachers "operated in complex political contexts, tasked with navigating potentially diverse expectations as to curricular approach, form and content" (Gacoin, 2018, p. 2). Opinions varied

amongst the BCTF teachers about the usefulness of this framework—some felt it was a structured template rather than the blank slate they had initially been offered to rewrite the provincial curriculum. Others said they could not question the framework despite the lack of research describing why they were using it (Gacoin, 2018). One teacher said there was “absolutely no research” (as cited in Gacoin, 2018, p. 11) guiding these changes. This “lack of clarity resulted in feeling that there was an unstated agenda within the Ministry” (Gacoin, 2018, p. 10); one teacher commented that the feeling of a “hidden agenda” might have come from the fact that “there wasn’t really a good sense . . . of where [the Ministry] was going with [curriculum]” (Gacoin, 2018, p. 10). In her analysis of previous BC Social Studies curricular reforms, Broom (2020) wondered: “How democratic has the process of curriculum development and implementation been in a province (and nation) that considers itself to be “democratic”? (p. 52).

## Appendix F: Ethics Consent Form



**University  
of Victoria**

### *Participant Consent Form*

**Project Title:** Investigating the role of Western, industrialized discourse in our conception of the environment and the global socio-ecological crises

**Researcher:** MEREDITH LEMON, PhD CANDIDATE, FACULTY OF EDUCATION, CURRICULUM & INSTRUCTION, UNIVERSITY OF VICTORIA, [EMAIL ADDRESS]

**Supervisor:** DR. WANDA HURREN, PROFESSOR, FACULTY OF EDUCATION, CURRICULUM & INSTRUCTION, UNIVERSITY OF VICTORIA, [Telephone Number], [EMAIL ADDRESS]

#### **Purpose(s) and Objective(s) of the Research:**

- The purpose of this study is to identify the root metaphors in i) my own teaching discourse and work with young people, ii) in others' experiences and discursive exchanges with young people, and iii) in the curriculum that support the logics of domination delineated in the ecojustice education framework. 'Root metaphors' refers to the images, stories, or facts that shape an individual's perception of the world somewhat unconsciously. They are the taken-for-granted ideas deemed true in any particular culture. As the word 'root' signifies they can be the source of other metaphors. For example, we might say, "the individual is king" to highlight our belief in the value of each citizen and their ability to make their own decisions.
- The objective is to investigate the role of Western industrialized discourse in developing our relationship with the environment around us.

#### **This Research is Important because:**

- Bringing critical awareness into my own epistemologies will allow me to mentor other educators and students to do similar critical investigations. In addition to transforming my own teaching practice and discourse, my study will offer suggestions (to curriculum writers, educators, and people who engage with young people) on how to identify problematic, everyday root metaphors that perpetuate beliefs that have led to current socio-ecological crises.

#### **Participation:**

- You have been selected to participate in this study because you have relationships with and the opportunity to influence young people
- Participation in this project is entirely voluntary and you should feel no pressure to do so
- Whether or not you choose to participate will have no impact on your relationships at the University of Victoria or with the researcher.

**Procedures:**

- There will be an introductory meeting where questions will be answered, and consent forms explained and signed. This can be in-person or we can discuss this over the phone and this consent form can be signed and mailed back to me. Each of us will keep a copy.
- Next, I will send out the interview questions via email one month before they are to be returned via email. If participants are interested, they can request a follow-up interview (up to 30 minutes) to discuss these concepts further. These interviews will be coordinated at the participants' convenience and can be conducted in person or by phone/web, as per the participants' preference.
- **Location: *Informational meeting*:** University of Victoria or a mutually agreeable location in Victoria
- **Inconvenience:** Time spent i) for the Informational meeting (15 minutes) ii) reading and responding to the questions (maximum time 2 hours) as well as iii) optional (at your request) follow-up phone interview (max 30 minutes). **Total Maximum time: 2.75 hours.**

**Benefits:**

- The benefits of the study are to the general body of knowledge in the fields of education, environmental education, and teacher education. Specifically, this study will provide an initial inquiry into the discourse and root metaphors used in the BC curriculum and by adults who work with young people. These root metaphors are important to identify because they can unintentionally perpetuate the various logics of domination that are implicated in our global socio-ecological crises.

**Risks:**

- There is a slight risk of emotional discomfort when recognizing the ubiquity of these logics of domination and the resulting oppression of people and places. Informal support will be offered by me as well as internet supports regarding eco-anxiety if desired, and counselling information will be provided if you would like professional support.

**Withdrawal of Participation:**

- You may withdraw at any time without explanation or consequence.
- Should you withdraw, you will be asked if your data can remain part of the study, otherwise it will be destroyed (deleted).
- Should you withdraw, it will have no impact on any relationships with the researcher or at the University of Victoria.

**Continued or On-going Consent:**

- After signing this consent form at our initial meeting (by phone or in person), you will be verbally asked to restate your willingness to be a participant in the study should you choose to participate in the optional follow-up interview. This will be recorded both auditorily and in my notes.

**Anonymity and Confidentiality:**

- In my notes, coding, and in the final writeup, all participants will be referred to by pseudonyms and data will be combined to create composite characters. Any identifying information and features will also be changed to preserve anonymity.
- Specific responses will be kept confidential.
- Documents will be kept on my personal, password protected computer in password protected files.

**Research Results will [may] be Used/Disseminated in the Following Ways:**

- Research results will be shared in my final dissertation and may be in published articles, book chapters, and at academic conferences. An electronic copy of my dissertation will be made available to participants.

**Disposal of Data**

- Data from this study will be disposed of after five years, electronic data will be deleted, and any paper copies of notes will be shredded.

**Questions or Concerns:**

- Contact the researcher(s) using the information at the top of page 1;
- Contact the Human Research Ethics Office, University of Victoria, (250) 472-4545 [ethics@uvic.ca](mailto:ethics@uvic.ca)

**Consent**

Your signature below indicates that you understand the above conditions of participation in this study and that you have had the opportunity to have your questions answered by the researcher, and that you consent to participate in this research project.

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*Name of Participant*

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*Signature*

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*Date*

***A copy of this consent will be left with you, and a copy will be taken by the researcher.***