Wisdom from Lichen: The Ecology of Anti-oppressive Environmental Education

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Abstract
Ecologically, lichen plays a significant role in the formation of flourishing ecosystems by breaking apart rock formations using small fungal threads to form fertile soil which supports a growing complexity/diversity of life. This essay uses lichen as a metaphor to describe fossilized constructs (colonial epistemologies and ontologies, neoliberalism, and white centered environmental racism) that need to be eroded within traditional environmental education. Then, lichen-supported biodiversity is used to discuss conceptualizations of decolonizing and queering ecopedagogy which can promote anti-oppressive environmental education that (re)orients and prioritizes flourishing and thriving.

Résumé
Sur le plan écologique, le lichen joue un rôle fondamental dans la formation d'écosystèmes florissants en désagrégeant les formations rocheuses à l'aide de petits filaments fongiques pour former un terreau fertile, substrat d'une vie complexe et diversifiée. Dans cet essai, le lichen est une métaphore décrivant les constructions mentales fossilisées (les épistémologies et les ontologies coloniales, le néolibéralisme et le racisme environnemental à domination blanche) tout en faisant valoir la nécessité d'effriter aussi certains éléments de l'éducation à l'environnement traditionnelle. Le rôle du lichen dans la biodiversité sert aussi à conceptualiser la décolonisation et la queerisation de l'écopédagogie, afin de mettre en lumière leur capacité à promouvoir une éducation à l'environnement anti-oppressive qui (ré)oriente, en en faisant une priorité, les processus de développement et de prospérité.

Key-words: environmental education, ecopedagogy, (de)coloniality, lichen metaphor, neoliberalism, queering ecopedagogy

Mots-clés : éducation à l'environnement, écopédagogie, (dé)colonialité, métaphore du lichen, néoliberalisme, queerisation de l'écopédagogie

Setting the Scene

It was less than an hour until midnight as I surveyed the view. The summer solstice was just days away, and twilight hues made the sight in front of me even more captivating – mountain peaks to my left and right, with a clear path down the central valley composed of jumbled rock, covered in a grey-brown lichen that

was rough to the touch. I was viewing a landscape shaped by a lava flow from three centuries ago at Anhluut'ukwsim Lax̲mihl Angwinga'asanskwhl Nisga'a in northern British Columbia—otherwise known as Nisga'a Memorial Lava Bed Park. What resonated with me on that land was not the large mountain peaks, but the understated lichen slowly, yet powerfully, transforming the land. What wisdom can lichen share with us? And how can I apply what can be learned from lichen ecology to the study of anti-oppressive environmental education, or ecopedagogy?

My experiences as an educator of students from diverse racial, cultural, linguistic, geographical backgrounds prompts me to acknowledge the problematic ways in which western colonial constructs of environmental education and a dualistic human-"nature" divide cause and perpetuate hegemony and oppression. A foundation of 'ecopedagogy' closely aligns with "unveiling these hidden politics" of "socio-environmental oppressions and planetary unsustainability," while also aiming for transformative praxis (Misiaszek, 2020, p.17). In some circles, environmental education theory and praxis is narrowly understood to simply mean learning 'about' the environment. But there is a larger need for a pedagogy that challenges us as educators to uncover epistemological assumptions that have been ignored. The interconnectedness of all and can invite us to embrace an inclusive "planetary citizenship" (Misiaszek, 2020, p. 23). Misiaszek (2021) elaborates that it is the "critical questioning of the unquestionable, the normative 'common sense', that makes ecopedagogies radical in the work for praxis" (p. 61). This essay will explore some of the normative assumptions that perpetuate oppression within educational settings. Mignolo's *Colonial Matrix of Power* (2018) provides further theory in this critical review of environmental education to support a decolonized ecopedagogy as a basis to foster transformative and anti-oppressive environmental education.

Why lichen?

Ecologically, lichen is called a composite organism – a combination of algae or cyanobacteria with fungi in a symbiotic relationship. Lichen are often the first organisms to grow in newly emerging ecosystems. They are found on bare rock and often thrive despite extremely windy, cold, hot, dry, or damp climatic conditions. Ecologists even call lichen "magic" as "they perform feats of biochemical spellcraft essential to the boreal environment" (Fox, 2020). In many biomes, lichen is a foundational organism required to support a thriving network of life. In the Nisga'a traditional territory, lichen is called *bilak̲* and the ecosystem thrives with more than 250 different lichen species on the lava beds (Burton, 2012, p. 163).

As with lichen, I envision ecopedagogy as similarly resilient and essential to support the flourishing of life – with the capacity to invoke a little magic as well. Rhee and Subreenduth (2006) ask, "[h]ow should we rethink and rearticulate the conceptualization and practice of education and research when we situate them

within contemporary imperialism and the history of pervasive colonialism?" (p. 546). An instinct in responding to this question is to (re)turn to ecology to find the lessons from the "more-than-human" world.

In the first half of this essay, I use the eroding properties of lichen in an ecosystem as metaphor to explore facets of environmental education that need to be dismantled in a move towards anti-oppressive ecopedagogy: colonial epistemology, neoliberalism, and environmental racism. In the second half of this paper, I extend the lichen metaphor and use its ecological significance in initiating thriving, biodiverse, and complex ecosystems to suggest ways of equally diversifying and pluralizing ecopedagogy for anti-oppressive flourishing.

Figure 1. Anhluut'ukwsim La<u>x</u>mihl Angwinga'asanskwhl Nisga'a lichen covered rock by Sarah Urquhart (2018).

Wisdom from Lichen

First Wisdom: Eroding Fossilized Surfaces

Lichen is known for its role in the succession of ecosystems as they change from bare rock surfaces to biodiverse climax communities. Lichen dismantles rock surfaces and transforms outer layers of rock into emerging soil using a combination of acids to chemically break down the minerals, along with small

fungal threads that permeate small cervices and cracks. Using these methods, lichen find the 'weak' spots in rock façade to slowly degrade and fracture monolithic formations (Adamo et al., 2002).

Drawing from the Nisga'a Lava Beds in my opening scene, it is possible to connect the volcanic eruption and lava flow that overtook the valley floor – estimated to have occurred during the 1700s – as a metaphor for the destructive entrance of European settler colonizers on unceded land. To some Indigenous communities, rock formations are called Grandfather Rocks and they hold wisdom and stories from ancestors (*Manitoba Rocks!*, n.d.). The existing wisdom and knowledge of Grandfather Rock was quickly obscured and replaced by the lava flow that hardened to rock cover. In this metaphor, the newly fossilized rock formations represent entrenched facets of environmental education that are complicit in many of the colonial, neoliberal and racist education systems that operate within society (O'Brien & Nygreen, 2020). Ecopedagogy, like lichen, can erode and degrade the many assumptions about the land and human-land dichotomies that colonialism imposed on existing wisdom and ways of being. This metaphor is used with recognition that in vilifying aspects of the more-than-human world, like rock and lava, is misaligned with many Indigenous ontologies. Instead, the metaphor is used to call for an openness and "two-eyed seeing" (*Etuaptmumk / Two-Eyed Seeing and Beyond*, n.d.) that places value on the foundations of Grandfather Rock wisdoms and seeks to "liberate knowing and becoming what coloniality of knowledge and being prevents to know and become" (Mignolo, 2018, p.136).

Eroding Colonial Epistemology and Ontology

Using the lichen metaphor, we can ask: which fossilized constructs need to be broken down? First is the Eurocentric colonial epistemology that distinguishes human existence from that of "nature" – that "nature" has been understood to be separate and de-coupled from "human" and viewed as something that humans can/should exert power over. Andreotti (2018) explains that modernity has created a narrow epistemic condition in which, "…we see ourselves as autonomous, individuated and self-sufficient beings inhabiting a knowable and controllable world" (p. 196). This individualism is prefaced on an understanding of human beings as distinct and separate from other forms of more-than-human life and materiality – rather than within a relationship of intimate interconnection. In her discussion of the development of western constructs of "The Human", Sylvia Wynter (2003) traces how the development of western understandings of what it means to be a human (as a rational, individual entity) became entrenched during encounters with Indigenous peoples during the Colombia encounter of 1492, and has been perpetuated in western epistemology/ontology since. This colonial logic of autonomy and individualism has not only separated humans from one another, but also severed human kinship with Land. This separation has created and perpetuated foundations that justify violence and exploitation.

Tuck et al. (2014) note that "it is rare to find explicit discussions of settler colonialism, decolonization and Indigenous conceptualizations of land within environmental education research" (p. 14). Gough (2016) echoes this and outlines how western scientific constructions of ecological and biophysical systems have oriented environmental education since its emergence in the 1960s and 1970s as an "area of study". Yet anti-colonial approaches to being and learning can act as the fungal threads urgently needed to deepen the cracks within colonial epistemology and ontology as it relates to environmental education.

In practice, we can widen environmental education to encompass much more than just scientific facts about ecology, but need to attune ourselves to the spiritual aspects of ecopedagogy. Some examples would be to view ourselves as in kinship with all other living beings and see our wellbeing as intrinsically connected to the well-being of the more-than-human world. Many forms of traditional environmental education have centered "objective" and "scientific" human knowledge *about* the environment (eg. ecology nomenclature like Latin species' names; processes such as water cycles; impacts of pollution) as a primary focus. The assumption is that knowing *about* the environment is a goal so that "we" (humans) can manage and control the environment in ways that humans deem best (and only certain identities of humans – white, male, cis-gender – but more about this is discussed later). This hegemonic knowledge structure places human as the most important beings.

Mignolo (2018) suggests that "decoloniality shall focus on changing the terms of the conversation that would change the content. The reverse does not obtain: changing the content of the conversations doesn't call the enunciation (the terms) into question" (p. 144). It is more than the content of environmental education that needs a rethinking, but the assumptions underpinning knowledge, ways of being, and relationships within that education. A decolonial approach is suggested by Datta (2018), who describes how Indigenous Peoples view land as "relational, which includes the spiritual, emotional" (p. 56) and the more-than-human world as kin. This means we move beyond viewing knowledge about the environment as a utilitarian means to "manage it effectively," but to prioritize a deep knowing and feeling of the connections amongst entities (human amongst the more-than-human world). In education, we need to recognize and honour the relationships that children and youth form with the world, and later in this essay I will provide examples of how educators can support relational orientations in environmental education.

Cole (2016) importantly states that "advancing Indigenous ecological wisdom and practices as 'equivalent' is not about transplanting Indigenous knowledge systems into Western systems rather it is companion planting cultivars with wild types regenerating more complex possibilities…" (p. 8). I am reminded of the 'Education About the Other' section of Kumashiro's (2000) anti-oppressive framework, which cautions that teaching about the 'Other' should not be done to "fill a gap in knowledge… but disrupt the knowledge that is already there" (p. 34).

Incorporating Indigenous knowledge and worldviews into ecopedagogy needs to be more than a tokenistic addition to traditional environmental education but needs to be integrated intentionally as to not further marginalize, essentialize or "other" Indigenous Peoples and Indigenous epistemology/ontologies.

Eroding Neoliberalism in Environmental Education

The second fossilized construct we need to break down is the presence of neoliberalism in environmental education. Kumar (2019) identifies that "neoliberalism derives its power from combining capitalism, behaviorism, and positivism, and, therefore is antieducational to its very core." (p. 236). The neoliberal prioritization of market economies has permeated some environmental education discourse, as contested concepts like Education for Sustainable Development (ESD) tether environmental conversations within the sphere of economics and the politics of development, instead of orienting to a relational focus amongst humans and more-than-humans. We can ask ourselves: what do we even mean by "sustainable development"? What are we "developing"? And for whom? Conversations surrounding development often reinforce narrow westernized understandings of modernity and "is a discourse that promises happiness and salvation through conversion, progress, civilization, modernization, development and market democracy" (Mignolo , 2018, p. 142).

Additionally, the neoliberal influences present in school systems such as competition and shadow education can permeate programs and curriculums that are oriented towards environmental education (Kopnina, 2015). As an example, the Duke of Edinburgh (DoE) International Award is commonly described as having elements of environmental education. The DoE Award involves an "Adventurous Journey" meant to challenge students to engage in the "wider environment" to achieve a gold, silver or bronze level award marketed to students as a way to gain prestige and be attractive to competitive post-secondary institutions, particularly in the United Kingdom (*The framework*, n.d.). A program like this could be considered an example of shadow education (Kim & Jung, 2019) as it is meant to supplement academic curriculum, yet it also shapes youth engagement in "the environment" within neoliberal and colonial frames. Viewing "the environment" merely as a context of challenge (and one that achieves an award that serves self-interest) reinforces the dualistic human vs. "nature" construct, as "the environment" becomes utilitarian – something to conquer or overcome through perseverance. The Duke of Edinburgh International Award was initiated by Prince Philip, consort to Queen Elizabeth II, in partnership with education theorist Kurt Hahn in1956, and was designed to help youth "on the journey of self-development regardless of their background, culture, physical ability, skills or interest" (*History & Founder*, n.d.). The development and implementation of the Duke of Edinburgh International Award echoed centuries of British imperialism and colonialism, as it expanded to numerous countries outside of the United Kingdom, inserting Western, post-war educational philosophy upon

various cultures, and shaping the ontological ways in which youth engage with the world. The discourse of self-development is highly focused on individual meritocracy, and reinforces neoliberal narratives that success in environmental engagement is self-determined yet globally defined as overcoming obstacles and perceived discomfort. Additionally, these meritocratic assumptions gloss over ways that social systems privilege or disadvantage certain groups (apparent in reference to the "regardless of their background" description provided above).

A de-imperialist stance would act like the fungal threads of lichen, to penetrate the problematic ways that initiatives like the Duke of Edinburgh Award reinforce global, neoliberal goals, to redirect the purposes and ways in which engagement with the more-than-human world is encouraged and fostered. Chen (2010) writes,

> "[if] this era of globalization is built on the assumption that to reconstruct a livable earth we can no longer allow any form of imperialism to prevail…starting with rethinking the wrongs and pains of past imperial interventions, is the minimum requirements of the present (p.2).

Ecopedagogy can break apart the underlying assumptions disseminated and perpetuated by an imperialistic monarchy and (re)turn other ways of knowing and being. Educators have a responsibility to critically examine the underlying messages and assumptions provided in environmental education. Choosing to disengage from facilitating or promoting programs that are entrenched within the edifices of neoliberalism can provide the space necessary to prioritize alternative ecopedgogical orientations within/toward learning and being.

Eroding White Colonial Centering and Environmental Racism

A third fossilized construct within environmental education that we need to expose and fissure is the racist centering/privileging of white experiences within environmental education. The exclusive, and default representation of white colonial settler experiences within the more-than-human world has marginalized or excluded the experiences of Black, Indigenous, and People of Colour. While this is problematic, racism goes beyond a lack of representation of racial identities in activities typically associated with environmental engagement (such as hiking, camping, gardening). Socially constructed and Western understandings of what constitutes "nature" dominate, and "environments" are portrayed as a neutral spaces that are "absent of social and economic structures," which in turn "conceals histories of violence and dispossession" (Corliss, 2019, p.2). The universalized ways that "white epistemology of wilderness" has consumed environmental education erases the experiences of people with marginalized identities, while alienating, excluding and hindering the efficacy of ecopedagogy (Corliss, 2019). Fletcher et al. (2021) elaborate on how contemporary critiques of "wilderness" focus on the pervasive negative impacts of human activity. However

this erases and negates the ways that Indigenous and local peoples have engaged with the Land from time immemorial. This erasure has been accompanied by 'ahistoricism' and 'depoliticization'(Andreotti, 2018): environmental education has frequently and selectively ignored the entangled emergence of "resource" exploitation, capitalism, militarism, and racism that settler colonialism began and perpetuates in North America (McLean, 2013).

These forms of oppression are not only historical but occur today within racialized communities at higher risks of experiencing environmental pollution and degradation. Environmental racism is defined as "racial discrimination in the disproportionate location and greater exposure of Indigenous, black and other racialized communities to contamination and pollution…" (Waldron, 2020, p. 734). There are several Canadian examples of how spatial and racial violence manifest together, such as in Aamjiwnaang First Nation and Grassy Narrows in Ontario (MacDonald, 2020) and in the Africville and Pictou Landing First Nation communities in Nova Scotia (Waldron, 2018). Educators who offer experiences where students learn about environmental pollution and degradation should not shy away from engaging the intertwined realities of environmental and social injustice and make clear the politics of pollution as all beings are not impacted and implicated to the same extent (Liboiron, 2021).

Traditional environmental education can also be critiqued for its "salvationist" tendencies, which have often oriented environmental education spheres as places "where 'good' white people can maintain superiority by saving both the environment and people of color, which includes Indigenous communities devastated by environmental destruction" (McLean, 2013, p.358). Educators have the capacity to provide students with the opportunity to engage in environmental learning, in addition to an attunement of the historical and contemporary realities of environmental racism and social injustice present in local contexts. Related to this, encouraging a social justice stance is essential to ensure support of environmental education and an activism that challenges, rather than reifies, violence and oppression.

Over time, lichen slowly grows, and expands into small fractures and crevices of rock formation. Similarly, ecopedagogy can and must erode the harmful colonial epistemologies, neoliberal premises, and racialized erasures within environmental education.

Second Wisdom: Supporting Biodiversity

Other than eroding the rockface, lichen plays a significant role in ecological succession by multiplying the existence of additional species and lifeforms within their host ecosystems. Lichens support habitat formation for many diverse species by developing an enriching and emerging soil layer, generating fertile ground for seeds to take root and germinate, providing nesting materials for birds, and camouflaging small mammals (Fox, 2020). Some Indigenous communities traditionally use certain lichen species for medicinal and health purposes, and

thus support human presence within northern climates (Burton, 2012, p.164). Lichens are highly effective at nutrient cycling and photosynthesis, transforming elements from inorganic atmospheric forms to useful, life supporting chemical forms, which in turn create essential complex lifeforms and intricate food-webs.

Diversity and complexity are intrinsically connected. Biodiversity within ecosystems increases ecosystem resilience, as an abundance of interconnected species allow for numerous and dynamic interspecific relationships. Lichens can remind us of the wisdom that (bio)diversity is highly desirable for the stability and flourishing of larger systems. Similarly, diverse approaches within ecopedagogy can support the flourishing of environmental education for a widened community of humans and more-than-human world.

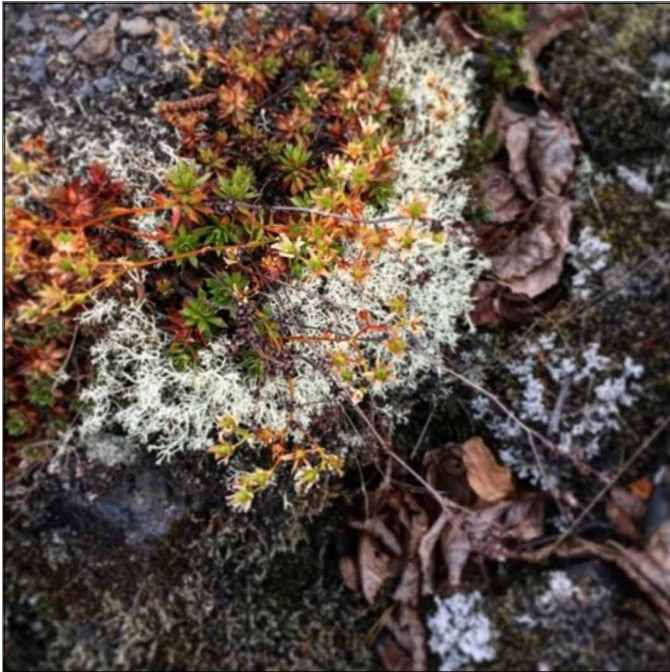

Figure 2. Lichens as a source for flourishing biodiversity by Sarah Urquhart (2018).

False Forms of Diversity

In many instances, there is an assumption that educators operate within systems that allow for choice and diversity of thought. Neoliberalism provides the illusion of “consumer choice” based on the marketization of education. The reality is that neoliberal education reforms privilege certain groups - based

on race, socio-economic status, gender and other identities - and reinforce power differentials, capitalism, and competition that narrow potential choice. For instance, families will often see options for K-12 schooling as disparate – public school, separate schools, private independent schools – yet all remain entrenched within systems that reinforce the assumption that education serves the end of goal of creating an employable workforce oriented within a market economy. Common narratives conceptualize education as a way to widen opportunities for children and youth to find success, but how success is understood and measured remains narrow, while opportunities are not equally accessible (Kumar, 2019).

Additionally, many ways of viewing Land, creation stories, and knowledge have been myopically shaped within narratives of coloniality. Mignolo (2018) points out that Western colonialism and imperialism was "not only economic and political but fundamentally epistemic" (p. 137). What can be understood as epistemicide of Indigenous ways of knowing not only silenced a diversity of thought, but reinforced singular and harmful narratives that further separated the human experience from land. Mignolo (2018) cautions that "modernity names a set of diverse yet coherent narratives, since [Western Christian versions of humanity] belong to the same cosmology" (p.139). The colonization of time, space, and relationalities make it challenging yet essential to recognize true diversity aside from the rhetoric of modernity. Neoliberalism within education and settler logic as epistemicide are the false forms of the diversity it is necessary to resist this in environmental education, as well as education more broadly.

Epistemological and Ontological Diversity in Environmental Education

Rather than accepting singular narratives and onto-epistemologies in environmental education, we need ecopedagogy that more profoundly invites inclusion of a wider range of stories, experiences, and cosmologies. In an explanation of land-based Indigenous education, Wilson et al. (2021) describes the concept of "relational accountability" as an ontological perspective that differs from settler concepts of "self as individual" (p. 222). In contrast, the Indigenous concept of self is best described as "self-as-relationship" – where relationship to ancestors, descendants, the beyond human world – even to ideas and philosophies frames ways of being and knowing (Wilson, 2021, p. 222). If "self-as-relationship" can be viewed as an authentic premise in education, affinity within the more-than-human world becomes possible, as do ways that enable our human beliefs and behaviours to build connections within a complex network of affiliations and proximities.

Educators from early childhood through to tertiary education are engaging with ecopedagogies that (re)center Land-human relationships. Embodied and reflective practices such as "sit spots" and nature journaling have been shown to foster (re)connectedness and attention with the more-than-human world with both kindergarten children and university undergraduate students (Hu, 2022;

Spiegelaar, 2023). Foregrounding Indigenous knowledges and approaches of inquiry can reorient environmental learning to be non-anthropocentric by nurturing, “multisensorial engagements with the more-than-human world” (Nxumalo & Villanueva, 2019, p. 44). Frameworks such as that developed by *Natural Curiosity* can support educators within a range of educational contexts to facilitate environmental learning through an Indigenous lens that prioritizes a sense of spirituality, a deep sense of place, and emphases on interconnection and reciprocity (Anderson et al., 2017).

An openness to diverse ontologies, epistemologies, and cosmologies still needs to be viewed and enacted critically when designing and facilitating learning. Wilson et al. (2021) cautions how some pedagogies that “present or draw on Indigenous ‘traditional teachings’… rely on rigid essentializing constructs or understandings of nature, cosmology, gender, sexuality or other aspects of our cultures, identities and ways of being” (p. 222). When engaging with knowledges that constitute a stretch of our cosmology as educators, we need to do so with an openness and patience that avoids distilling diverse and complex knowledges, or incorrectly reframes them within our existing, and fundamentally incongruent, ontologies. As a person of settler colonial heritage, educated in a traditional, Western scholastic context, there are times when Land-based learning, Indigenous teachings, and ways of being can feel “stretchy” to me, as they exist beyond the colonial frame in which I have been inhered. I seek opportunities to learn alongside my students from Indigenous educators and to invite their voices into my classrooms and teaching contexts. I try to remain attuned to ideas or practices that are challenging to grasp, or cause me to pause. This reflexivity is guided by a capacity to keep an open-mind, prioritize listening, and suspend response– and informs my commitment to intentionally diversify the ideas and relationalities available to my students.

Andreotti (2018) describes how we need “more complex social analyses acknowledging that if we understand the problems and the reasons behind them in simplistic ways, we may do more harm than good” (p. 200). Seeking a diversity of epistemologies, ontologies, or cosmologies then is not about “finding out,” or adding in multiple perspectives just for the sake of it, but is about assessing what has previously been left “unsaid and unthinkable” (Kumashiro, 2000, p. 39). We can receive this wisdom from lichen too. Lichen grows slowly over time, selectively finding an ecological niche fertile for a diversity of life. As well, lichen doesn’t just support diversity for diversity’s sake. Instead, lichen supports a plurality of species in temporal layers, giving rise to multiple species that flourish under ever-evolving conditions.

Diversity of Identities in Environmental Education

Diversity and complexity can thrive within the cracks and crevices of monolithic systems and work to erode dominant monolithic systems. This is true in both ecological systems and in systems of education: diversity can

confront singular identity representation as explained earlier in the historical centering of whiteness in environmental education. Looking to the queering of ecopedagogy, it is possible to think more expansively and explore anti-normative environmental education as a way to illuminate and dismantle "the link between environmental damage and forms of oppression like racism, sexism, and homophobia" (Corliss, 2019, p. 81). In their discussion of queer ecopedagogy, Gough (2021) explains how "[intersectional] analysis and assemblages provide opportunities to deconstruct multiple discourses of oppression – such as the able/strong/male discourse of outdoor education" (p. 175). If environmental education stands a chance at effectively engaging young people with diverse identities and experiences, then it must diversify the representation of humans and the more-than-human world.

Posthumanism also provides a potential theory to move beyond an anthropocentric focus to ecopedagogy, to one that forms relationships and "equity between human and non-human communities," and to embrace complexity rather than "simplicity and certainty" (Gough, 2021, p.176). Posthumanism can be understood as a philosophical movement that decenters human existence and looks to trouble the ways in which "humanity" has centered and shaped notions of modernity. Bayne (2018) explains that

> posthumanism involves us in making an ontological shift from understanding 'the human' as an individuated entity separate from and observant of the world and its (human and non-human) inhabitants, to one which is inextricably connected to the world and only conceivable as emergent with and through it (p. 1).

Justifiably, posthumanism has been critiqued for not acknowledging, "...the ancient presence and contemporary force of Indigenous concepts of human being" (p. 160) and for appropriating Indigenous ecological knowledge into western postmodernist frames of thinking (Bignall & Rigney, 2019). With an awareness of this limitation, posthumanism might still be a helpful frame for educators to challenge anthropocentric environmentalism that focuses on human benefit exclusively at the expense to the more-than-human world. And in addition to posthumanism, concepts of intersectionality, assemblage, and entanglement all embody a diversity, plurality, and complexity that moves away from understanding identities and relationships with(in) the more-than-human world as stagnant, individuated constructs/entities, but rather as fluid, dynamic, interdependent, and non-normative ways of being.

All forms of education have the power to shape our understandings of what it means to live "a good life," as we are an entity amidst the wider network of our kin. In ecopedagogy, it is desirable to consider what a good life means (looks like, feels like) for human life, and with/in the more-than-human world across spans of time. Neoliberalism and capitalism use definitions of market success, consumerism, competition, and dehumanizing systems as avenues toward a narrowly defined and shallow description of "a good life" – and how that life is

designed to only be accessible to a privileged few.

As described earlier, lichen can support the flourishing of many other species. Similarly, engagement with ecopedagogy can support a redefinition of what it means to *thrive* in life – to have our physical, emotional, mental, and spiritual needs met within a wider community that also flourishes without oppression, hegemony, or violence. Russell (2021) suggests that "Queer ecopedagogy invites all of us to experience and imagine ways of being and acting that challenge our notion of what constitutes a 'better' life, including those that seek a more radical change in the world" (p.63). There are multiple examples of how different cultural philosophies engage with the idea of wellbeing and thrive-ability in life – from southern Africa's "ubuntu" (Le Grange, 2012) to Latin America's "buen vivir" (Salazar, 2015). Tran & Khan (2020) define multispecies flourishing as the "needs for survival, transcendence, belonging, dignity and challenge through considerations of land, language, lore (story), living, logic and learning" (p. 1). This would apply to all life on earth, not just human. With care to not essentialize these complex and culturally nuanced concepts, it is possible to identify common notions that orient wellbeing as something that can be understood collectively, in relationship amongst and between beings. In schooling contexts, teachers can introduce these concepts to students as a foundational orientation when engaging with more-than-human worlds – and provide alternatives to common societal narratives about material wealth as a goal for "success." Additionally, when advocating for environmental education opportunities in schools, educators can elaborate not only on the benefits of environmental learning as it serves and benefits students, but to also identify ways in which student wellbeing relates to the flourishing of the more-than-human world. Individual thriving is inherently dependent on the thriving of all beings – ecopedagogy can support this as we move ourselves as educators within community in this direction.

Concluding Thoughts as the Sun Sets

As the summer sun lowered behind the mountains at the Nisga'a lava beds, the shadowed landscape transformed once again with the diminishing light. I stood from a crouched position, breathed deeply, and tiptoed across the rockface, careful not to tread and trample the lichen that can share so much wisdom with us.

Lichen can teach us the value in looking for the crevices and cracks in what might at first appear to be fossilized and immovable ways of being and thinking. In environmental education, we must find the small fissures in dominant western epistemology/ontology, neoliberalism, white-centering, and environmental racism. Lichen encourages us to embrace diversity and complexity to understand the existence of a good life in more expansive ways. Environmental education can be open to a plurality of epistemologies/ontologies,

identities, and perspectives on what "a good life" means for ourselves as well as the more-than-human world.

As I tread carefully across the paths of education, I'll remain mindful of the lessons lichen has to share, and will continue to return to their wisdom as I travel onwards in my teaching and learning.

Figure 3. Anhluut'ukwsim La<u>x</u>mihl Angwinga'asanskwhl Nisga'a at Solstice Twilight by Sarah Urquhart (2018).

Notes on Contributor

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