Nonlife, Ethics, and Earthly Relation

by

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DISSERTATION ABSTRACT

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The field of environmental ethics has neglected the abiotic entities and processes of our planet. Rocks, glaciers, clouds, mountains, bodies of water, the planet itself – they are commonly taken as mere background and resource to human ventures. Yet given the global scope of human activities and their negative environmental influence, ethical frameworks are needed that direct human responsibilities toward nonlife. This dissertation explores the motivation and context for such ethical frameworks. Classical environmental ethics maintain an anthropocentric ethical model, known as extensionism, that devalues nonlife and is complicit in ongoing processes of social marginalization. A promising alternative to extensionism is a relational model of ethics. Through the philosophies of Brian Burkhart, Vine Deloria Jr., and Martin Buber, I articulate the suitability of the relational model for cultivating responsibilities toward nonhuman others, living and nonliving. Additionally, I consider the development of *geoethics*, an approach that mobilizes geological reasoning in response to environmental degradation. I argue that a key component of successful geoethics is the notion of deep time, which is both originally an Indigenous concept and also important to geoscience. Deep time provides a view of our constitution as earthlings and our planetary ethical responsibility.

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PRELUDE

> *I am the sentient offspring of this rock; in this evanescent encounter Dust shall return and meet in retrospect the dust from whence he came…. If I can recollect my pre-natal past, my gestation in the geological womb, my genealogy, then I shall know who I am and where I am.*
>
> *...As the blood in my veins is but an inland sea, so the rock in my bones is but borrowed from the subterranean matrix in which I am re-immersed. Behind the hostility of plutonic depths, and interred with these sediments, and dissolved in the sea, are the nutrient powders of life.*
>
> *...So now would I, this rock parasite, return to praise my natural parents….* I *shall linger and wait in wonder. I shall celebrate my geogenesis, my being in freedom, by conversing with this cosanguine rock from whence I was hewn.*
>
> - Holmes Rolston III, "Hewn and Cleft from this Rock" (1971)

Rocks have power. It is easy to forget this when they are often surreptitiously embedded in building construction, hidden behind and within the precisely engineered glass of device screens, and (in the case of nuclear power plants) encased in water and cement – the latter of which is an anthropogenically synthesized rock aggregate. Rock is the very foundation of reality, pushing up upon my chair legs as I write this and buoying my gait. Of course, rock is frequently covered over with other things, but it is there nonetheless.

In other places, the power of rocks is so palpable and immediate that it pulls appreciators from across continents and oceans. Arches National Park draws more than 1.5 million visitors to southeastern Utah (precisely, to small town Moab of 5,200 residents) every year to view its

unique formations of Entrada Sandstone. The mania of visiting the formations is astounding and peculiar; few other natural rock features draw such obsession, creating a daily line of idling automobiles waiting 40 minutes outside the entrance station incessantly from 7am to 5pm. The park's arches, windows, potholes, spires, and fins of rock command attention by standing as much as 5,653 feet above sea level. Tourists place themselves under the tallest blazing red arch, 112 feet at its highest opening, and experience a brief, impressive moment of up to 208 million years of sediment accumulation and erosion. Though most visitors merely see the rock from the car and on short excursions just a few steps from a parking lot, the visitation craze cannot be attributed merely to cultural sentiment and the famous depiction of Delicate Arch on Utah's license plates. The rocks *themselves* generate this interest and (hopefully) reverence, and it is impossible not to be fascinated and moved by the giant guardian elders impressing upon the senses: they intrude into vision and press up into the soles of eager feet and hands traversing the slickrock. The rock makes these visions and traverse possible, makes even my own body possible.

Wilderness advocate Edward Abbey described the power of the rock thus:

> A weird, lovely, fantastic object out of nature like Delicate Arch has the curious ability to remind us… that *out there* is a different world, older and greater and deeper by far than ours, a world which surrounds and sustains the little world of men as sea and sky surround and sustain a ship. The shock of the real.… For a few moments we discover that nothing can be taken for granted, for if this ring of stone is marvelous then all which shaped it is marvelous, and our journey here on earth, able to see and touch and hear in the midst of tangible and mysterious things-in-themselves, is the most strange and daring of all adventures. (Abbey 1971, 45)

Abbey is incorrect to maintain a distinction between human and wild world (somehow *out there,* not "our" world), though his awe is exceedingly appropriate. The earthly processes that sculpted

the arches and spires of so many tourist photographs also sculpted the tourists as well. Hiking along the massive, sometimes globby, always striking, sandstone, one feels overwhelmingly part of it, part of this marvelous earthly construction. It is barely cognitively believable, and yet it is sensuously undeniable. From this impressive rock, this geological force, life is hewn, a miraculous abiogenesis. At this angle, "our" human world *is* the world of Earth. "Humans are the earth and therefore bear its history" (Nail 2021, 6-7). Rock power enables other power.

With this dissertation, I mean to invite earthly power into philosophical thought – or, rather, it is already there (though buried, backgrounded) and I invite readers and interlocutors into receptivity toward the power of rocks. Environmental philosophy in the classical philosophical tradition has long held that the culturally-constructed separation of humankind from nature causes and exacerbates environmental problems. As will become evident to readers of this work, I largely agree with this assumption and seek a sense of continuity with nonhuman others through our shared earthly constitution.

Some commentators indicate this continuity through invoking the *planetary*. While this word might connote an impersonal and abstracted, larger-than-life, cold holism, to me it (albeit imperfectly) captures the interrelationships of beings in a more-than-human reality. There are no ontological boundaries that bar relation, so the *planetary* is one holistic of the material web of relations stretching across this special space rock. Particularly given the wide influence of human activities across the span of Earth's surface (and even down into its crust), it seems necessary to give attention not only to the biosphere – the purview of mainstream environmental ethics – but also to the earth's interconnected hydrosphere, atmosphere, and lithosphere. Perhaps this planetary attention can (though perchance counterintuitively) begin to evoke the personal experience of being an earthling among other earthlings. Ethically, the *planetary* suggests an

approach that acknowledges and appreciates the interconnectedness of earth beings, living or otherwise.

Admittedly, I will not spend much space exploring the possibility of the concept of the *planetary* per se. However, it does hang in the ambience of this project. The questions arise, answered by suggestions rather than hard-held claims: What does it mean to think the planet, and to see it as component to ethics? Is there a specific planetary responsibility? Does a planetary ethic detract or distract from necessary, localized ethics, or is there a way to think the world from the ground up?

More directly, this dissertation is about nonlife and its place in ethics – a focus that includes the planetary but can also indicate individual earth others.[1] By "nonlife," I mean a variety of diverse earth others who are generally recognized in mainstream science as being unalive, abiotic, or lacking life: rocks, mountains, glaciers, clouds, wind, water, sun, stars. There is no straightforward categorization of these earthly beings that is not at least a little insidious.[2] For as Val Plumwood's insightful argumentation reveals, classical logic forces a concept of negation where the prefix "non" specifies a universe without its object (Plumwood 1993). In this case, the meaning of "nonlife" (~L) is predicated upon "life" (L) such that nonlife cannot be independently or positively valued but is entirely dependent upon life for its content. In this classical understanding of logical negation, nonlife is *backgrounded*, pushed out of attention and significance. This reinforces the common assumption that abiotic entities are passive and unable

[1] For some, planet Earth is alive – whether via animism or Gaia Theory that understand Earth as a living system. I will not discuss these views in detail, though I recognize that their proponents may be less convinced by the need for a focus on nonlife. I am instead concerned with provoking the possibility of any responsibility toward abiotic entities, regardless of which entities one believes to be alive.

[2] It is possible that other languages avoid the problem of classical negation I describe with alternative words for "nonlife."

to command ethical response; in this view, they remain mere resources, instruments toward the ends of living creatures – namely, humans.

For lack of a better term, I proceed with "nonlife" to describe those earth others who cannot be said to possess life.[3] Because of its imprecision, the term can describe abiotic systems and processes as well as individual entities. This capaciousness of the term is desirable, as it may be able to indicate the earthly dynamism that continually produces entities. After all, a rock is never *just* a rock but is a moment in kinetic transformation. (It may be easier to see this dynamism with a cloud, which is continually moving and changing via air, water, and heat.) Further, the non-specificity of "nonlife" also opens the possibility of considering entities of the built environment. I do not speculate about artifacts or engineered nonliving entities here, though I am generally interested in creating conceptual space for this consideration. That is, if there is an ethics of nonlife to be developed, it should not only be concerned with so-called "natural" abiotic others, but also with others who have been engineered or built. But I certainly get ahead of myself with this suggestion.

This dissertation proceeds through four additional movements (followed by a coda), each exploring a theme related to nonlife. The movements are not intended to build systematically upon one another, instead raising issues in multiple and not necessarily contiguous directions. However, each movement further develops its focus on nonlife that overlaps with themes from the other movements.

In the second movement, I introduce a problem in classical Western environmental ethics: the framework of ethical extensionism. As a schema for conceptualizing ethical value,

[3] Even "life" is a rather fraught term with no uncontroversial definition. Without a clear concept of what life is, the distinction between life and nonlife becomes fuzzy indeed.

extensionism not only constricts ethics to interactions with biological others but also stunts the pursuit of environmental wellbeing in tandem with social liberation efforts. I show that this shortcoming is serious enough to warrant a reconceptualization of responsibility (ethics) toward nonliving entities. Perhaps frustratingly, I do not provide a positive project that could be called an ethics of nonlife. This dissertation supplies only the motivation for thinking ethics in an alternative framework to extensionism, not the articulation and discussion of the details of ethical relation with nonliving entities.

Instead, I turn toward the discussion of an alternative to extensionism: relational ethics. The third movement details one promising perspective of relational ethics, given by Martin Buber. Ethics are profoundly personal for Buber, seated in relation and dependent upon receptivity to the other. I provide a reading of Buber's ethics that elucidates its great concern for nonhuman others and surpasses biotic boundaries. Buber's relational ethics illuminate the possibility for inheritors of the Western philosophical tradition to develop ethics differently. Strikingly, a Buberian relational ethic resonates greatly with Indigenous ethics as expressed by Brian Burkhart and Vine Deloria Jr. Relational ethics can therefore be understood as an opportunity for ontological solidarity and decolonization (Muraca 2016).

Indigenous relational ethics already include an understanding of responsibility toward abiotic entities. They may not agree that such entities are actually devoid of life, but they importantly do not exclude rocks, mountains, glaciers, and others from ethical consideration because of their material qualities (e.g. the possession of "life"). Longstanding reciprocal relationship indicates what is required of each party in relation, thereby designating the terms of ethics.

Keeping right relation with nonhuman kin over generations, Indigenous philosophy expresses a keen sense of responsibility arising from the landscape, from the earth. Indigenous philosophy maintains this wisdom even while the frenzy of naming the "Anthropocene" epoch grappled with recognizing humans as a geological force. As geoscientists have begun to turn to ethical questions about their disciplinary praxis and the uptake of their insights in public society, the recent call for "geoethics" – a geologically-informed ethic – ripples toward the Indigenous knowledge of ethics, earthly ontology, and temporality.

The fourth movement brings geoethics into conversation with Indigenous philosophy – a discursive interaction that calls for geoethics have heretofore been missing. For some geoscientists, the ethical power of their discipline arises in the geological sense of temporality known as "deep time." Engaging the Indigenous philosophy of Brian Burkhart, Vine Deloria Jr., Tink Tinker, Viola Cordova, and Max Liboiron, I show that deep temporality is always already an Indigenous idea, inextricable from ethical and material relations with the earth. Unlike the other movements in this dissertation, this one is more practically-oriented, detailing what geoscience must conceptually address for geoethics to be meaningful. (Though I still do not provide a concrete program for action.) The development of geoethics means the simultaneous decolonization of geoscience disciplines (i.e. geology, stratigraphy, climatology, etc.). I see this movement as contributing to a recently budding set of literature about the colonial baggage of geoscience and its Western scientific metaphysics. I highlight the Indigenous critiques of this metaphysics to indicate the stakes of a responsible geoethics. In this discussion, I also suggest that ethics toward the planetary would be helpfully developed through an Indigenous notion of deep time.

In the final movement I further explore deep temporality, now specifically focused upon its relational dimensions. For an earthly ethic, temporality must be understood through the experience of relationships, including relation with the earth itself. This challenges prevailing conceptions of climate change urgency. I weave together the insights of four unlikely interlocutors, both Western and Indigenous, whose views do not always cohere: Kyle Whyte, James Hutton, Martin Buber, and Vine Deloria Jr. Visible in the interactions of these thinkers is both an ethical and personal sense of the notion of deep time. This opens questions of responsibilities toward earthly entities while attending to their geological constitution in vast timescales. An ethics of relation can readily ground a planetary ethic as it personalizes and localizes temporal experience.

Throughout this dissertation, I am largely concerned with the ontology (worldview) out of which ethics can be understood and enacted. For ontology provides the terrain of ethics: a view of reality makes some actions possible and desirable while making others not. I do not take this to be a work of applied ethics, though I realize that for many readers this may be the most compelling aspect that arises as they engage with the movements. What does an ethics of nonlife look like? How can geoethics or the notion of deep time improve responses to climate change? These questions linger as overtones throughout the work. Perhaps I will have intimated a semblance of an answer to them by the end. But first, allow me to show why ethics should be fundamentally concerned with relation, including relationship with nonlife.

II.

AGAINST EXTENSIONISM: TOWARD AN ENVIRONMENTAL ETHIC OF NONLIFE

Extensionism remains the dominant framework of value in environmental ethics literature. It describes the evolution of argumentation that has extended moral considerability from a limited purview of inter-human affairs to the considerability of nonhuman animals, organisms, species, and ecosystems. "Ethical extensionism," as it was first coined by Roderick Nash, uses *existing* ethical concepts, expanding their reach to consider new subjects in the more-than-human world (Nash 1990; Cuomo 1998). The expansion is axiologically based, preoccupied with determining which entities have value and therefore can be rightly understood to demand our moral response.

Considerability in the extensionist model has largely been drawn along biotic lines. Living entities are said to have value, whereas nonliving entities are not.[4] As Paul Taylor has put it, abiotic things cannot be said to be made better or worse off, as it does not seem to matter to them what happens to them, but clearly nonhuman organisms and their collectives can be (Taylor 1986). This line of thinking appears to be popular and represents the character of the extensionist model: if certain entities do not possess necessary and/or sufficient qualities to be recognized as intrinsically valuable, they therefore do not impel any direct moral responsibility. Extensionism has been largely concerned with debating the empirically-observed material capabilities of

[4] "Moral value" indicates the possession of intrinsic moral worthiness. "Moral consideration" refers to the ethics that are consequent to moral value. Extending moral considerability, or considering any being ethically, in the extensionist frame means that a being must possess intrinsic value.

nonhuman entities and determining their moral value based on those capabilities (viz. sentience, consciousness, agency, vitality).[5]

I contend that this extensionist demarcation between the biotic and abiotic is not an innocent boundary; rather, it threatens to truncate the alliance between environmental and human social justice movements. Some scholars – predominantly feminist – have already critiqued extensionism in various ways, and yet its continued dominance in environmental ethics discourse suggests that these critiques have not been taken up nor appropriately understood. For instance, Joel MacClellan (2024) has recently argued that extensionism can be pursued alongside its critiques, appearing to miss the insightful force of the feminist perspective.

As I am greatly sympathetic to existing critiques of extensionism, I argue here to amplify feminist concerns with an additional charge against extensionism: its failure lies significantly in its unsavory sociopolitical implications. Extensionism is, at best, largely complicit with ongoing projects of social domination that are parasitic upon the axiological demarcation between life and nonlife. It has now been well-documented that women and BIPOC in the Western context have been demeaned through their socially-constructed likeness to nonliving entities. Such social constructions have an enduring legacy that radiates throughout political institutions and social sentiment today. Without targeting the conceptual foundations that permit the moral disregard for nonlife, environmental ethics risks alienating itself from projects that seek to liberate these marginalized human groups.

My purpose here is *not* to argue for the moral status of nonliving entities and processes. Such an endeavor is easily misunderstood while extensionism's wide reach sets the terms of

[5] This tactic is widespread in extensionist justifications, but one notable example is Matthew Hall's discussion of findings from botanical sciences while invoking a Kantian notion of personhood for the moral status of plants (Hall 2011).

moral legibility. Rather, I show that there is strong motivation for developing and championing alternative frameworks of axiology and ethics. Perhaps a different ethical framework can more readily comprehend responsibilities toward nonlife – and in fact, this is already component to many models of ethics in North American Indigenous traditions. I hint at an alternative to extensionism in the final section of this movement, though I am mostly concerned with articulating extensionism's commitment to biotic value and its disjunct with social liberation projects. First, I discuss the formal and logical construction of ethical extensionism, indicating its alignment with the delineation of life from nonlife in environmental ethics literature. While ecocentric perspectives might be expected to appreciate the value of nonliving entities, I show that language slippage in some prominent ecocentric theorizing should raise skepticism about the value of the abiotic in ecocentric perspectives. This slippage indicates a key weakness of the extensionist model. Then, I turn to elevate existing feminist concerns about extensionism by illuminating how extensionism's moral disregard for nonlife provides the conceptual schema for methods of sexism, racism, and colonialism. In the face of ongoing projects of social domination that are predicated on the logical structure of extensionism, environmental ethics should ardently seek the transformation of axiological discourse toward alternative frameworks.

Extensionism and its biotic bias

In 1973, with his now-famous essay "Is there a need for a new, an environmental, ethic?," Richard Routley ushered in a serious discourse about nonhuman nature in the Western philosophical profession. Routley calls for the development of new conceptual tools for a robust, environmentally focused ethic. Rather than simply orienting existing values and ethical models

toward fresh considerations (nonhuman nature), Routley argues that there is a need for a *new*, a specifically environmental, ethical approach:

> It is not, as [Aldo] Leopold seems to think, that [environmental] behavior is beyond the scope of the prevailing ethics and that an *extension* of traditional morality is required to cover such cases, to fill a moral void. …what is required is a *change* in the ethics, in attitudes, values, and evaluations. (Routley 1973, 205, italics in original)

As I understand Routley, a properly environmental ethic will require something of a paradigm shift in philosophy, a need for ethical thinking that is not contained by existing models. Perhaps this statement even implies that environmental ethics are not – or *cannot be* – expressed in traditional Western normative theories. Yet, the development of such a *new* ethical model is largely not where the burgeoning literature in environmental ethics went.

Instead, the environmental axiology and ethics contemporary to Routley's call did exactly what Routley critiques Leopold for: taking existing moral concepts and extending them to the nonhuman world. Extensionism is a response to the so-called "demarcation problem," as coined by Elliot Sober (1986) – the "problem" of demarcating who (or what) constitutes the moral community. Members of the moral community are beings understood to be intrinsically valuable, primary holders of value who impel direct moral response. These members occupy a central space in ethics. Extensionism merely expands the amount and kinds of beings who enjoy membership in the moral community – it does not participate in a fundamental alteration of existing moral concepts or principles. Peter Singer, for instance, shows that moral consideration can be extended to sentient nonhuman animals through the application of classical Utilitarian principles (Singer 1975).

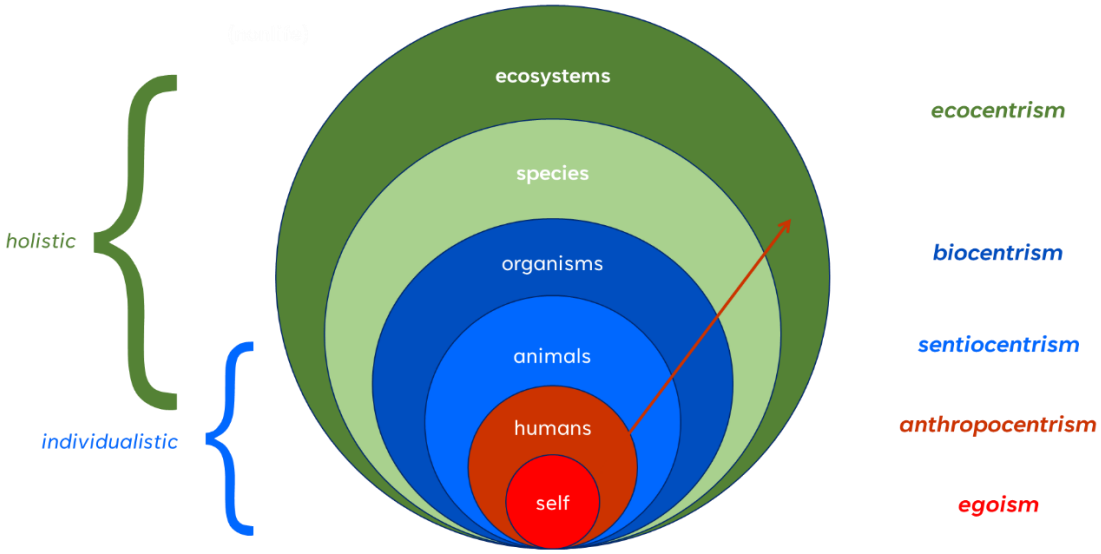

Fig. 1. The general trajectory of extensionist environmental ethics. Historically speaking, extensionism saw arguments against anthropocentrism, where only human beings are seen to have intrinsic moral value (famously, because of their rationality), and expanded moral considerability toward nonhuman animals, then organisms, then to species, ecosystems, and even to the planet. Each circle marks the edges of the moral community for the relevant perspective. The arrow signifies the expansion of the moral community from its historically assumed human center. Sentiocentric perspectives argue that the moral community is made up of beings who are sentient: able to feel pain and pleasurable sensations. This means that (at least most) animals have moral value. Biocentrism argues that all living beings, regardless of sentience or consciousness, have moral value. This locates value in the quality of being alive. Biocentric perspectives can be individualistic (recognizing value in individual organisms) or holistic (recognizing value in the collective biosphere). Ecocentrism recognizes holistic or systemic value in entire ecosystems that are comprised by natural entities and processes. The value in an ecosystem arises in its emergent qualities as a system, rather than as an aggregate of individuals with value.

Under extensionism, membership in the moral community is contingent upon an entity's being valuable for their own sake. Any non-member is then only morally considerable insofar as they are connected to a current member – i.e. they are instrumentally valuable to a moral

community member (Muraca 2011). Thereby, non-members can only impel indirect moral responsibility at most, and have no considerability or value in and of themselves. This means that as the moral community is delineated, the demarcation logically creates a category of *dis-inclusion* where entities are merely instrumentally valuable. *Inclusion* presupposes the exclusion of some entities in order to maintain the moral community, though this relegation is not amoral. The meaning of intrinsic value hinges upon there being something merely instrumental (Burkhart 2019).

Barbara Muraca observes that the logical structure of extensionism is parochial and hardly captures axiological intuitions about the more-than-human world. She writes, "it leaves no additional options for a more complex consideration of values beyond the dichotomy between ends-in-themselves and means to others' ends" (Muraca 2011, 378). How, for example, should extensionism conceptualize value that is emergent in relationship?[6] Or how should a species (or other valuable being) be respected if it is both intrinsically and instrumentally valuable, particularly if its instrumental value conflicts with protecting its intrinsic value? The parsing of value into intrinsic and instrumental, as basically oppositional to one another, is too simple to describe all valuation and the ethics that arise from such valuation. Further, the demarcation of the moral community presumes that ethical action follows from community membership: members of the moral community impel direct duties toward them, whereas non-members

[6] Emergent value is reflective of many Indigenous views of the more-than-human world, where moral significance arises and is kept in relationship among beings. As but one example, the Blackfeet concept of *Aoksisowaato-op* emphasizes the profound connection of all beings. Literally translated, it means "all living beings depend on one another." There is no notion of value outside of these relationships (e.g. held by individuals). In Lakota, the concept of *Mitákuye Oyás'iŋ*, "all my relations," expresses the responsibilities to human and nonhuman others that arise in relation and interconnectedness. (For a detailed explanation of the challenge this poses to Western environmental ethics, see Burkhart 2019).

require only indirect duties. Extensionism thereby conflates axiology with deontology, as Muraca shrewdly points out.[7]

More than fifty years on from Routley and Singer's landmark texts, environmental ethics remain largely extensionist.[8] And, in apparent agreement among ethicists and the general public, the moral community is delineated along biotic-abiotic lines: living beings are frequently and strongly argued to have (intrinsic) moral value, where nonliving beings and processes are not. Additionally, biocentric positions are incredibly widespread and popular, as exemplified in much influential and recent environmental ethics literature (see Goodpaster 1978; Taylor 1986; Agar 2001; Varner 2002). Critiques of biocentrism are also now common, though the critiques are not made because of the moral importance of nonliving entities and processes (see Basl 2019 and MacClellan 2023).

From an extensionist viewpoint such as Taylor's, that biotic beings have value and abiotic beings do not is a straightforward implication of the recognition of intrinsic value: nonliving entities and processes simply do not possess the necessary qualities to be part of the moral community. However, outside of the extensionist framework, there is nothing that objectively precludes moral responsibilities toward abiotic entities and processes. The moral community is drawn between the living and nonliving not because nonliving beings uniquely lack some essential moral property but because this just happens to be the place where the edges of the moral community are currently argued. If not along biotic and abiotic lines, extensionism would, *logically*, draw its boundary of the moral community somewhere else.

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[7] See Muraca's 2011 article for an incisive analysis of the Kantian conceptual baggage of extensionism.

[8] It is difficult to avoid overgeneralization when describing a particular thought tradition. Without diminishing my critique, I recognize that within any intellectual tradition there are those thinkers who push back against its orthodoxy. There are certainly intrinsic value theorists who have sought to reframe the use of intrinsic value and whose work resists some of the issues of extensionism that I describe below (Katie McShane's work is a commendable example in this regard).

Nonlife, or abiotic entities and processes, do not feature in extensionist arguments. If nonlife is morally considerable, it is in its similarity or relation to life that it can be said to impel ethical responsibility. New materialism, which emphasizes the vibrancy and animacy of matter, has functioned this way in extensionist discourses: animism indicates the moral considerability of matter itself because of its lively agency. The abiotic is articulated with language regularly reserved for living beings. Arguments for a Gaian earth ethic similarly imply moral considerability for the planet as a living system, if not a kind of superorganism (Harding 2006). A handful of other commentators argue that nonliving beings, including systems of artificial intelligence, should be given moral standing (i.e. considerability) insofar as they may display humanlike qualities that are morally salient, such as appearing to conduct meaningful lives (Sebo 2025). Life in the extensionist framework is indubitably valued, acting as the principal quality of value across extensionist approaches (for even ratiocentric and sentiocentric perspectives would no longer see rational or sentient beings as members of the moral community *in the same way* if those beings die). Extensionism harbors a biotic bias.

But how can this be, when the extensionist framework includes robust articulations of the value of ecosystems? In the ecocentric view, the ecosystem is the primary unit of value, constituted by earth beings and processes that are themselves valuable because of their participation and role in the ecosystem. Ecocentrism would thereby seem to include an assertion of the value of nonliving beings and processes, since these are components of a valuable ecosystem just as much as biotic entities and processes. However, even though they might discuss abiotic components as part of valuable ecosystems, I find that ecocentric perspectives do not adequately consider the moral value of nonlife. This is predominantly due to the tacit reliance of ecocentric value upon biotic value. It seems that in the articulation of the holistic value of

ecosystems, this value is dependent upon the value of the ecosystem's living components, thereby harboring biocentrism.[9]

Ecocentric views unwittingly maintain the life-nonlife ethical boundary through their articulations of ecological ethics. Against their holistic intentions, the reliance of their language upon biotic imagery and qualities reinforces a latent biocentrism. I offer three examples from notable ecocentrists J. Baird Callicott, Arne Næss, and David Abram, raising suspicion that ecocentrism in fact maintains the life-nonlife boundary of the moral community.

Callicott champions Aldo Leopold's Land Ethic as a nonanthropocentric guiding ethical paradigm. Leopold's is a holistic view of flourishing biotic communities, while acknowledging their dependence upon abiotic ecological components such as energy flows and water (Callicott 2013, 30). It is clear that Leopold saw the land (understood to mean an ecological system) as possessing its own moral value (37). To respect this value, Leopold provided the following maxim, frequently cited as *the* "Land Ethic": "A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community." Callicott explains that Leopold had developed a thorough-going ecological organicism toward the end of his life that viewed the ecosystem as itself a collective organism (87). This converges the intrinsic value of the land with its biotic qualities.

Seeking to update Leopold's perspective to accommodate the changes of ecosystems over time, Callicott proposes the following revision for a "dynamic" land ethic: "A thing is right when it tends to preserve the beauty of the biotic community and to disturb it only at normal spatial and temporal scales. It is wrong when it tends otherwise" (Callicott 2013, 97). In both Leopold

[9] Many, but not all, ecocentric theorists are vulnerable to this critique. Holmes Rolston III's conception of ecosystemic value is a notable outlier in ecocentric arguments.

and Callicott's maxims for an ecocentric ethic, explicit emphasis is made upon the *biotic* community. While perhaps not convinced that the ecosystem is itself alive as a collective organism, Callicott nevertheless maintains a supposedly ecocentric view focused on the preservation of the biotic. But how can this encapsulate a true land ethic without morally subordinating the nonliving features of the ecosystem? It is, after all, the *land* ethic, a name evoking imagery of the abiotic geography that characterizes an entire ecosystem *along with* its biotic elements.

This preoccupation with the community as biotic reveals limitations of extensionism. Callicott concedes that the land ethic "is inappropriately scaled to meet the challenge posed by global climate change" since it is interested in the biotic community as opposed to the global atmosphere and global ocean (150). And yet he concludes that an accompanying Earth ethic is impossible given the sheer size of the planet and the temporal difficulties of experiencing climate change as a transgenerational problem. Callicott instead doubles down on the biotic elements of the land ethic and argues that an anthropocentric "Earth" ethic should be pursued in addition to the land ethic (301). It seems that extensionism cannot reasonably accommodate incorporating nonliving entities and processes into its moral community, unless the Earth can be shown to be a living Gaia, an idea Callicott flirts with at various points in his argument.

Callicott notably sees ecocentrism outside of the extensionist framework. As he describes, an extensionist begins with a preferred traditional moral theory and asks how it may be used to give nonhuman beings moral considerability. The extensionist thereby uncritically expands the reach of their preferred traditional moral theory. But Callicott sees himself and other ecocentrists as having a separate aim: "ecocentrists are more concerned to criticize than to expand conventional Western moral philosophy (and metaphysics as well)" (Callicott 1989, 4).

This reflects the common use of "ecocentrism" to counter anthropocentrism. But while ecocentrism certainly does challenge classical moral philosophy in disrupting an explicit focus upon *Homo sapiens*, it also maintains the logical structure of extensionism. And, as Callicott's ecocentric maxim focuses on the "beauty of the biotic community," this logical structure operates in morally favoring life over nonlife.

Næss powerfully suggests ecocentrism in resistance to anthropocentrism through his "ecosophy" of deep ecology. He critiques ecological science and social movements for being narrowly focused upon human interests and advocates for a *deep* ecology that sees human being as inextricably part of the more-than-human world. It is this recognition of the ecological self that opens the possibility of an ecocentric ethic. At the heart of Næss' approach is the ontological "rejection of the man-in-environment image in favor of *the relational, total-field image*" (Næss 1973, 95, italics in original). Humanity does not move superficially across an environment, manipulating the space for its purposes. The worldly *whole* is both constituted by and reaches beyond human intention. Humans are in relation with environments, part of ecology. This relation fundamentally constitutes the relata: "an intrinsic relation between two things *A* and *B* is such that the relation belongs to the definitions or basic constitutions of *A* and *B*, so that without the relation, *A* and *B* are no longer the same things" (95). Humans are part of ecology and should thus act in ways that honor this relation.

For Næss this deep ecological ontology is also tied to a principle of "biospherical egalitarianism," guiding action with a "deep-seated respect, or even veneration, for ways and forms of life… *the equal right to live and blossom*" (95-96). Næss writes that this respect can be developed from a recognition of one's own constitution as a living being in identification with other living beings:

> what makes intense personal appreciation of diversity of life forms and the whole ecosphere possible? There is one process that perhaps is more important in this respect than any other: the process of so-called *identification*. We tend to see ourselves in everything alive.… Given our biological endowment, each of us has the capacity to identify with all living beings. (Næss 1992, 73)

The principle of biospherical egalitarianism can only be applied in the recognition of the human self as but a small component of the larger ecological whole – the Self of the cosmos. Ethical ecological work involves the Self-realization of the human self as embedded in and thoroughly constituted by the ecological Self that extends far beyond the human individual. Therefore, this Self-realization is an expansion – ontologically and ethically. Though Næss does not put it thus, his work suggests an expansion of the fundamental recognition of intrinsic value of oneself as the intrinsic value of the holistic ecological Self. Such self-recognition backgrounds abiotic features of the world, as one identifies with the living of the moral community.

Næss does move quickly from this biocentric tonality to an ecocentric suggestion, writing that

> … given the physiological, psychological, and social basis of gestalt perception and apperception, humans have the capacity to experience the intimate relations between organisms and the inorganic world – that is, between the biosphere and the ecosphere in general. So we have natural expressions such as 'living landscapes' and 'the living planet.' (Næss 1992, 73-74)

Yet, this ecocentric focus retains the ethical valuation of biocentrism. While Næss makes a descriptive claim about how self-realization reasonably leads to a conception of ecosystems as alive, it also reads as a normative claim, particularly in light of his recommended principle of biospherical egalitarianism.

It is far from clear that the process of identification with other living beings can lead to appropriate ethical appreciation of the nonliving entities and processes of the

more-than-human world – or, in Næss' terms, "the whole ecosphere." In fact, deep ecology has been described by some commentators as a specifically biocentric model (Martinez et al. 2008). Deep ecology has also been criticized for maintaining a peculiarly *human* selfhood and extending it indiscriminately across earthly differences (Plumwood 1991; Kheel 2008). Though he is careful to articulate the ethical importance of ecological systems, Næss' ecocentrism is based upon biotic value, especially insofar as it relies upon the Self as an extended valuation of the living, human self. Biocentrism creeps into Næss' view even though he does not crystallize humanness at the center of the ecosystem.

With similar nonanthropocentrism, Abram radically argues that mind, a traditional marker of moral significance in extensionism, is not an exclusively-held property of human individuals. Instead, it is a feature of our shared atmosphere. Mind is not an interior property within our cranial bodies, Abram says, but it contains us – "you and I are both situated *inside it* – a recognition that we are bodily immersed in an awareness that is not ours, but is rather the Earth's" (Abram 2009). Describing various landscapes and atmospheric components, including wind, thunderstorms, rain, and the torpor of summer heat, Abram invites the reflection that mind is the air, the mood on our breathing planet. "The feelings that move us… all are born of the encounter and interchange between our life and the wider Life that surrounds us" (Abram 2009). With these articulations, Abram implies the worth of the more-than-human world, and, in particular, its nonliving components that contribute to collective atmosphere. An environmental ethic may arise from "a renewed attentiveness to this perceptual dimension that underlies all our logics, through a rejuvenation of our carnal, sensorial empathy with the living land that sustains us" (Abram 1997, 69).

Yet his emphasis upon the earth as alive – as breathing, as "the wider Life" – is a suspicious slippage in his ecocentric language. He writes,

> If we allow that mind is a biospheric quality, an attribute endemic to the wide sphere that surrounds us and sustains us, we swiftly notice this consequence: each region – each topography, each uniquely patterned ecosystem – has its own *particular* awareness, its unique *style* of intelligence. (Abram 2009, italics in original)

Why is mind a specifically *biospheric* quality? Why not an *ecospheric* quality? As I interpret Abram, particularly as he so intentionally and lovingly describes the contributions to mind and consciousness of the abiotic atmosphere, he really means to acknowledge mind as a quality of the earth – Earth, the collective product of living and nonliving entities and processes, regardless of whether one considers the planet itself to be living or not (Abram certainly does). Abram gives no argument that mind must originate in a primordial living being. Is it not more compelling to Abram's view to confront the great mystery of how life emerged from nonliving context, and to recognize *this* as the movement of mind?

Abram's animism, as well as the repeated emphasis upon life in Callicott and Næss' works, accentuate the moral value of life. And yet, each argues for an ecocentric ethics. Against ecocentric intentions, it is barely a stretch in the extensionist frame to conclude that ecosystem value is dependent upon *life* and its biotic value, implicitly reinforcing the mere instrumentality of nonlife. Though extensionism has expanded the moral community from humans to organisms to ecosystems, its outer limits still instrumentalize nonlife. Linguistically and logically, extensionism is tinted with biocentrism.

Extensionism's Troubling Implications

Compelling critiques of extensionism have already been articulated, mostly by ecofeminist scholars (see Plumwood 1993; Warren 2000; Plumwood 2002; Cuomo 1998; Calarco 2015; Gruen 2015; McKenna 2023). Although extensionist ethicists may explicitly claim a nonanthropocentric approach, ecofeminists illuminate that the extensionist framework is itself anthropocentric. In extending moral considerability to nonhuman others, extensionism does not require dismantling anthropocentric assumptions. For instance, an extensionist might believe that nonhuman animals have value and deserve moral consideration but also believe that humans are more deserving of moral consideration. Considering a greater number and diversity of entities to be morally valuable does not necessitate a reconception of human place in the more-than-human world nor the reevaluation of values. Rather, as Karen Warren observes, extensionism preserves hierarchy with humans at the moral apex (Warren 2000).

Extensionism approaches ethics with a centric-periphery metaphysics. It presumes the center of the moral community to be more valuable than those on the periphery (and those beyond the boundary are not intrinsically valuable). This metaphysics assumes the human ethical actor at the center of the moral universe, wondering how they should comport themselves in the world. The assumption of a human center to ethics is not an innocent one based upon the phenomenology of moral life. Rather, the center of the moral community carries with it the baggage of how the central human self has been conceptualized in Western philosophy – traditionally white and male. If not the only morally valuable being, this identity has certainly held sway as the most valued. Insofar as extensionism preserves existing human chauvinism, its

emphasis upon humanity at the center of the moral community also preserves lingering conceptions of "the human" as a limited concept.[10]

In fact, extensionist theories have not been thoroughgoing in their critical analysis of sociopolitical categories, such as "human" and "nature." Chris Cuomo argues that there is a common failure in extensionist environmentalism to address the political dimensions of ecological problems (Cuomo 1998, 43). For her, this includes the social context of the terms extensionism uses. As she avers,

> while holistic thinkers like J. Baird Callicott and Arne Naess want to include "human" in "nature," by refusing to consider the particulars of human cultures, they leave unexplored the permeability of the boundaries between nature and culture, the specific ways these boundaries are maintained and transgressed, and the fact that the concept of nature is a product of culture. Flattening the meanings of "human" and "culture" implies an equally flat, undifferentiated, self-evident "nature." That is, while there is an acknowledgement that aspects of the human/nature divide are false, holism does not critically engage the arbitrariness and flexibility of the divide, or its shifting location, in part because it sees the "human" side uncritically. (106)

Cuomo highlights not only the issue of Callicott and Næss' uncritical use of laden terms but also the flattening of concepts – here "human" and "nature." Flattened concepts are unsuitable to express complex details of reality. The "human" operative in these holistic accounts cannot conceptualize *every* human but is a generalization rooted in Western culture that is posited over and against "nature."

[10] Plumwood similarly describes this problem with her concept (informed by Marilyn Frye's work) of "backgrounding," a feature of dualistic philosophies that centers and foregrounds a particular value while denying its dependence upon another. For instance, women have been backgrounded while providing essential maintenance for masculine reality. Plumwood describes backgrounding as "making the other inessential, denying the importance of the other's contribution or even his or her reality, and through mechanisms of focus and attention" (Plumwood 1993). Extensionism backgrounds nonhuman others by centering the human in the moral community.

Extensionism additionally flattens category concepts to create a taxonomy of moral value: there are "animals," "plants," "organisms," "species," and "ecosystems," etc. Extensionist accounts tend to be blasé about the ways these category concepts interpenetrate one another or are definitionally fraught, such as "species" and "life." It also obscures the differing characteristics of beings within each category. Moral value is attributed to individuals in these categories fully, or not at all. This conferral of intrinsic value upon individual entities (including collectives conceptualized as their own "individuals"), diverts attention away from the relational aspects of nature, the interdependence and mutual constitutions of earth beings. Extensionism construes value as occurring outside of these relational aspects: value is a property of entities.

Ecofeminism also charges extensionism as anthropocentric insofar as extensionism relies upon the similarities held among entities. As Warren puts it, only nonhuman others with sufficient similarity to humans can join the moral considerability "club" (Warren 2000, 197). Extensionist arguments have progressively indicated a variety of qualities that supposedly justify moral value, including rationality, consciousness, sentience, agency, or life. But these qualities are human-colored and are attributed to nonhumans in a "solipsistic" way (Muraca 2016, 27), even if extensionists broaden these concepts to accommodate some differences. Extensionism asks, how are nonhumans valuable like us? It begins with human value and then pulls others into the moral community based on their human-like qualities. This amounts to an obsession with similarity. Christian Diehm writes that

> the extensionist error is not simply that of acknowledging ways in which other-than-human entities are akin to us human ones and asking that we adjust our relations with them accordingly. It amounts, rather, to a sort of fixation on sameness, a hyper-concentration on similarity narrowly construed. (Diehm 2010, 14)

For Val Plumwood, the extensionist strategy is "assimilationist" because instead of expressing continuity between different earth others, it is preoccupied with a specific (human, often rationalist) way of being in the world. This obscures the differences between earth beings, which is to do violence to their unique ways of being in the world. Plumwood argues that extensionism supports harmful dualisms in its own dualizing of the morally considerable and those others who are relegated to mere instrumental use. She explains that "dualism cannot allow a nonhierarchical or unassimilated concept of otherness" (Plumwood 1993, 123). Indeed, a dualism is characterized by its hierarchical valuation. As extensionism is a dualistic framework, it "is less about expanding our ethical sensibilities than about assimilating some other-than-human beings to an already existing, highly restrictive model of agency and respect" (Diehm 2010, 7). Instead, Plumwood argues for ethics that acknowledge and respect both continuity and differences between earthly entities.

MacClellan, responding to feminist critiques of extensionism noting that extensionism obscures difference, says these critiques are correct but that they should be understood as complements rather than as replacement to extensionist arguments. "After determining what beings are morally considerable, it is a mistake to presume that their interests are identical to one's own," MacClellan concedes (MacClellan 2024, 162). But if Plumwood is right about the dualisms that extensionism proliferates, then the assumption of similarity is no simple mistake that extensionists make. MacClellan describes this as a minor error rather than recognizing it component of the vast conceptual infrastructure that upholds value dualisms. Instead, MacClellan doubles down on extensionism's demarcation problem. He writes,

> The question that axiological extensionist arguments answers is: 'who (or what) matters, morally speaking?' This is a very particular sort of question to resolve a very important issue. That this question continues to need to be asked is evidenced

by the billions of animals whose interests are systematically disregarded each year. (162)

MacClellan's extensionist plea insinuates that if animals were actually recognized as intrinsically valuable (morally considerable) beings, they would not be systematically disregarded. However, the concept of intrinsic value has been operative in environmental and animal ethics for at least half a millennium, and this has hardly prevented the exploitation of nonhuman organisms and ecosystems.[11] Could it be that the issue lies in the metaphysics of the extensionist framework?

Following Plumwood's critique, perhaps it is starting with the demarcation question that is the problem. Extensionism assumes that we can and should determine who and what possesses moral value, implying that there will be entities that do not. This imports an unhelpful conceptual legacy of dualism and, as Muraca has pointed out, reifies a category of exclusion outside of the moral community. Perhaps the solution is to begin from an ontology of relation and an axiology where everything is ethically considerable in some way. I will return to this suggestion in the next section.

In addition to the insightful critiques made by other ecofeminists, I further contend that extensionism's biotic bias is complicit in ongoing projects of social domination that use conceptual imagery to morally ostracize target populations. Extensionism maintains the dualistic demarcation of moral value at the edges of life, categorically allowing any abiotic beings or those similar to them to be instrumentalized. The framework does not offer any tools to resist the social structures of domination and subjugation that construe populations as nonlife.

Socially-constructed controlling images have long likened women and BIPOC to dirt, to dead and inert matter, thereby attempting to justify their inferiorization and exploitation. As

[11] This is not to ignore the reality that moral change takes time. MacClellan resists the pragmatic objection that extensionism is ineffectual or too slowly initiates a change in societal practices (MacClellan 2024, 169).

Patricia Hill Collins powerfully argues, domination always involves making the subordinate into an object, which controls the difference between the dominator and the subjugated. These controlling images "are designed to make racism, sexism, poverty, and other forms of social injustice appear to be natural, normal, and inevitable parts of everyday life" (Collins 1990, 69). Controlling images thereby demean through nonlife by the making of objecthood. *Object* is a term usually designating abiotic things. So successful are these controlling images that they even naturalize this objectification.

Extensionist arguments too infrequently express awareness of this social phenomenon. Rather, extending moral value is largely construed as an empirical matter: what characteristic can be observed in nonhuman others such that it is sufficient to indicate that a being is intrinsically valuable? Though some ethicists are objectivists and believe that the value is simply *there*, their arguments for nonhuman value are certainly subject to social construction. What seems objective and natural is not outside of social influence, not even value. Simultaneously, processes of social control make value hierarchies and domination seem natural.

Controlling images have naturalized female inferiorization and subordination. Susan Griffin observes that in the lineage of the Western though tradition, "It is decided that matter is passive and inert, and that all motion originates from outside matter…. It is decided that the nature of woman is passive, that she is a vessel waiting to be filled" (Griffin 1980, 5). By this controlling image, women are supposed to be passive, like an inert, nonliving object. Luce Irigaray also writes of male-dominated culture that "they've left us only lacks, deficiencies, to designate ourselves. They've left us their negative(s)" (Irigaray 1985, 207). In a reading of Aristotle, Irigaray notes how woman is conceptualized as *vessel* but also as matter and form

(Irigaray 1993).[12] Vessel and form are concepts of emptiness, and matter is bare materiality, stuff, thingness – in other words, each is a descriptor of nonlife.

The passivity imposed upon women is also assumed of people of color and reinforced by colonial structures that extracted Africans across the sea to be slaves. Zakkiyah Iman Jackson writes that Blackness has been bestialized and thingified, the latter of which is "the process of imagining black people as an empty vessel, a nonbeing, a nothing, an ontological zero, coupled with the violent imposition of colonial myths and racial hierarchy" (Jackson 2020, 1). Black femaleness in particular was signed as a lack and as an absence in order to present a normative version of white, Western womanhood. Jackson argues that this depiction of black female flesh functions as the limits of "the human." Through a mode of plasticity, antiblack domination "seeks to define the essence of a black(ened) thing as infinitely mutable" (11). A mutable object is believed to be more pliant to instrumentalization. Paradoxically, the plasticity of living bodies becomes the grounds for exploiting Blackness as nonlife.

In the New World, Black and Indigenous people were exploited as nonliving features of the supposedly exploitable land. So influential was this controlling image of nonlife, Kathryn Yusoff writes, that it is immanent to the "grammar" of geology (Yusoff 2018a). Not only with its practices but with its language and operative concepts, geology therefore proliferates

> the very division between 'dead matter' and the privileged 'live subject' that constitutes the active politics of recognition in late liberalism. The matter fix of subjectivity organizes hierarchical categories of recognition of the human as priviledged [*sic*] white liberal subject to the nonrecognition of black and indigenous subjects. (Yusoff 2018b, 214)

[12] For Irigaray this recognition opens creative potential for resistance to these controlling images.

It is the division of life and nonlife, as respectively agentic and inert, that allows for the value hierarchization that underlies race: "racialization belongs to a material categorization of the division of matter (corporeal and mineralogical) into active and inert. Extractable matter must be both passive (awaiting extraction and possessing of properties) and able to be activated through the mastery of white men" (Yusoff 2018a, 2-3). Racial domination depends upon the maintenance of the dualism between life and nonlife.

These controlling images are deeply entrenched in culture and are not so easily overcome. They may be sufficiently dismissed in theoretical spaces, but as these scholars indicate, the constructed transformation of marginalized groups into nonlife is not merely historical and has an enduring legacy that radiates into societal institutions and attitudes. Jackson describes the reach of the problem as epistemological and ontological:

> What observers and commentators [of the African's presumed incivility] did not question was their own universality, their grid of intelligibility, and how it conditioned not just what they saw, or even how they observed, but how they *knew* what they saw. This is an issue of perception that exceeds the question of what was *actually* observed and what was 'made up' or 'imagined'; instead of debating the facticity of a story, it is imperative to interrogate how we would go about evaluating any empirical truth claim. This calls into question how we 'know what we know,' not only about a world 'out there' but also how we 'know ourselves.' Epistemology is a problem not of the past but one that is constituent with our being. (Jackson 2020, 7-8)

Controlling images are also an axiological issue, of course. Their embeddedness into cultural identity and value amplify the need for critique of extenionism's biocentrism. I fear that the controlling images of nonlife and their social consequences are unlikely to be dissolved any time soon. What practices can extensionism recommend that would seriously and effectively resist devaluation?

A popular counter to these controlling images of nonlife is similar to MacClellan's position. It is the view that controlling images are fictitious, false, and do not reflect the real humanness of women and BIPOC who are subjugated. This view holds that liberation projects must (merely) emphasize the humanity of these groups to achieve their ethical consideration and therefore prevent their domination. It is a plea to place the subjugated in the center of the moral community. Note the great moral weight that the concept of humanity is carrying in this view: it assumes similarity of groups, appealing to shared qualities to ground ethical responsibility.

Jackson argues fiercely that this social justice strategy is ineffective: recognition of the humanity of Blackness does not resist racialized colonial violence (Jackson 2020). As the counter is firmly consistent with extensionism, it maintains the value hierarchy of the life-nonlife boundary and the center-periphery metaphysics. Muraca's response to this counter is quite convincing:

> we might understandably want to subsume all entities which we consider more than mere means to the ends of individual (human) subjects under the category of inherent moral value. Yet, by doing this we implicitly accept [the dichotomy of intrinsic-instrumental value] and still leave the field outside the moral community to a mere instrumental consideration. (Muraca 2011, 378)

The structure of extensionism itself permits this domination as it creates and maintains the dualism of the intrinsically valuable community over and against the morally dis-included. Extensionism does not require any specific moral constraints upon actions of instrumentalization, perpetually opening the possibility of domination. Because extensionism is a categorical schema, it provides no tools with which to resist ethically undesirable instrumentalism.

As ecofeminists have insisted, this objection to controlling images does not target the root of the problem of social domination: the very logic that allows for the subjugation of these

groups. This logic of domination (Warren 1990) depends upon the dis-inclusion of nonlife from the moral community. Without an approach that targets its organizing logic, projects of liberation are stunted. Plumwood observes that moral dualism will "boomerang," returning again and again to "strike down the less privileged sectors of humanity itself when these allegedly 'lower' orders of humans are assimilated to nature and to animals, as they have been systematically throughout western history" (Plumwood 2002, 146). The structure of extensionism *permits* the categorical hierarchization of the morally included over the dis-included. Environmental ethics that endorse extensionism are therefore, at best, complicit in processes of marginalization and exploitation that mobilize controlling imagery of nonlife.

Toward social justice with relational ethics

Tom Birch argues forcefully that it is a mistake to be lured into the question of the "demarcation problem." The presupposition "that we can and ought to find, formulate, establish, and institute in our practices, a criterion for (a proof schema of) membership in the class of beings that are moral *consideranda*" must be abandoned (Birch 1993, 315). Value is not a property held in beings, individual or collective. Birch describes the task of attributing moral value as "rather clearly a function of imperial power mongering. [It assumes] the moral legitimacy of the Western project of domination and control," which is dependent upon a "hierarchy of more and less considerable Others over which legitimately to exercise power and control" (315-316). Assigning considerability – or its absence – is to assume authority over the assigned, "an arbitrary act of power and violence to the beings that are thereby rendered Other (i.e. constructed as objects for domination and control)" (318). À la Birch, participating in

extensionism upholds domination, even toward entities included in the moral community through value ascription.

Insofar as human social justice issues are environmental issues and vice versa, the field of environmental ethics should confront the barriers between these social movements. Otherwise, it risks alienating social justice causes – and thereby also loses momentum for environmental causes. I have endeavored to show that extensionism is one major barrier between environmental ethics and social justice. Extensionism cannot provide effective, enduring opposition to the problems of marginalization and exploitation because it logically depends upon categorizing some beings as instrumental, thereby exploitable. Pursuing alternative ethical frameworks to extensionism presents the grounds for solidarity between social and environmental movements. As Muraca insists, "a different axiological scheme is not just a conceptual tool for scholarly disputes in environmental ethics. Rather, it can turn into a powerful set that hosts different languages of valuation in their own right and form…. Changing the axiological scheme… is a political act [to] renegotiate the terms of reference for environmental action" (Muraca 2016, 36). Imposing its narrow, assimilating version of responsibility toward more-than-human others, extensionism is an axiological form of cultural imperialism.

Instead of demarcating the moral community, Birch suggests a different starting place to the question of what more-than-human ethics entails. He writes, "it is not possible to discover our obligations to others, of whatever sort, unless and until we give them moral consideration. Only then can we discover what, if anything, is required of us by the relationships in which we live, or ought to live, with them" (Birch 1993, 322). In this way, everything has moral standing and should be provided with moral consideration. Moral consideration is a predisposition of

openness and receptivity. It does not determine what a responsible relationship looks like but creates the possibility of one.

In other words, relationships always already possess a moral character. The ethical task, then, is to cultivate the relationship into a good one, one that gives space and respect to the other being. For Plumwood, we can prepare ourselves toward making good on these relationships by recognizing the *intentionality* of nonhuman others. But intentionality is not to be understood through the extensionist frame:

> It is not that their degree of intentionality acts as a criterion of their qualifications or deservingness for receiving moral consideration from us, but that our willingness and ability to recognise the other as a potentially intentional being tells us whether we are open to potentially rich forms of interaction and relationship which have an ethical dimension. (Plumwood 2002, 181)

Intentionality enables us to see our continuity with nonhuman others without assimilating them into extensionist axiology: "Mountains… present themselves as the products of a lengthy unfolding natural process, having a certain sort of history and direction as part of this process, and with a certain kind of potential for change" (Plumwood 1993, 135). As Plumwood indicates, even abiotic others, quite different from ourselves, are beings with whom we share earthliness and to whom we have responsibility.

But one does not have to accept the concept of intentionality to recognize relationship as the fertile ground of ethics. In much Indigenous ethical wisdom, it is *kinship* that plays a regulative role in ethics. Brian Burkhart explains that the concept of kinship marks "our attitude and approach to the search for our right path and right relationships" (Burkhart 2019, 301). Like intentionality, kinship does not determine how particular relationships ought to be conducted. It

is not "automatic," but "something that must be established within a local community of beings" (301). Attention to kinship relations allows for ethics to unfold.

As Burkhart explains of Indigenous ontology, it is rooted in locality, being with and of the land. Morality itself is "in the land – it is an originary and continual manifestation of the land" (288). Relations are constituted by locality, which create the contours of right relationship. That is to say, ethics and values are of the rich, fundamental interconnections between earth beings. These relationships are specific to place and the personalities of the beings there, and are given meaning through the particularities of their locality (Deloria and Wildcat 2001). In contrast to extensionism, Indigenous ethics understand values as relational. Consequently, extensionism is rather incoherent and cannot indicate how to treat beings, instrumentally or intrinsically valuable. "One cannot speak of what is right to do through delocality since relationships, respect, and reciprocity are only manifested through locality" (Burkhart 2019, 288). Extensionism, and its universalized axiology and ethics, are only possible through a philosophy that is delocalized, abstracted from relationship with land.

Burkhart beautifully describes how a relational notion of value orients oneself toward ethical consideration:

> If we take our relationship as the primary mode of moral reflection, we need not worry about any of these abstract categories under which the objects of our relationships might be subsumed. All our relationships can be an I/Thou. The relationship I have with my drum, the drum that I have made, is different, of course, than the relationship I have with animals or plants that provide me with food or with the relatives in my human communities that sustain me as well, but this does not change the fact that I do relate to it and so must treat it with respect as the relative that it is…. I must approach my relationship with it and my understanding with this attitude of respect no matter what sort of thing it is. (Burkhart 2019, 305)

Environmental ethics cannot be contained by the categories of extensionist moral status. The difficult but crucial ethical work is to cultivate right relationship with others, regardless of their bioticism.

By honoring Indigenous ethical wisdom and building relational ethics from the ashes of Western philosophy, we undertake the real work of solidarity with the marginalized and exploited. Such work is impossible via cultural imperialism. So long as extensionism prevails in environmental ethics, a wedge remains between ecological and social aims. This also means that there is good reason to reconsider our relationships and valuation of nonlife. I propose a new guiding question: What would it look like for environmental ethics, for the moral community, to have no *center*?

III.

BEYOND BIOCENTRISM WITH MARTIN BUBER

In *Indigenizing Philosophy Through the Land*, Brian Burkhart identifies Martin Buber as a non-Indigenous philosopher whose work is nonetheless aligned with Indigenous understandings of environmental kinship. For Burkhart, Buber clearly articulates the danger of philosophizing without a sense of place: begetting a kind of abstract universality that Burkhart identifies as "delocality" (Burkhart 2019). Buber's ethics of I-Thou grounds the ethical engagement between self and other through the texture of their lived relationship. Ethics is not given in the application of abstract principles, supposedly applicable to everyone at all times and in all contexts; rather, ethics is corporeal: it is carried, enacted, and negotiated as I am a body enmeshed in world of bodies. In Burkhart's terms, ethics can only occur *in locality*, in recognition of the kinship relationships with nonhuman others that constitute not only selves in relation, but also the possibility of ethics itself.

As Burkhart shows Buber's alliance with Indigenous environmental wisdom, he also suggests Buber's relational ethics as a powerful critique and alternative to classical Western environmental ethics. Where mainstream environmental ethics has progressively argued for the intrinsic value of earth-others based on a taxonomy of features they essentially possess (such as sentience or bioticism), Indigenous ethics conceptualizes value as emergent from the interrelationships of beings in place. Ethical value is thus not a possession held by entities. In fact, Burkhart explains that the Western conception of intrinsic value as an internal characteristic belonging to entities is problematic because it is delocalized – abstracted and universalized so

that it supposedly floats free from its connection to land (Burkhart 2019). Alternatively, Buber means to emphasize the material yet spiritual reality of morality that arises in our experience via earthly relation. Relation is ontologically primary, fundamentally constituting beings as they are. In other words, entities do not precede their relationships. Barbara Muraca calls such an ontology "radical relationism" and argues that it helps to support a decolonial conception of nature (Muraca 2016).[13]

Excepting Burkhart's analysis, the ecological implications of Buber's thought are undertheorized – although recently there has been an increased general interest in a Buberian environmental philosophy (see Kuchtová 2024). There remain few focused philosophical accounts of Buber's ethics as it pertains to the more-than-human world.[14] In this chapter, I provide such an account, describing the great capaciousness of Buberian relational ontology for cultivating responsibility toward nonhuman beings. While Buber's larger project is to articulate a philosophical anthropology, I argue that his interest in human being need not be seen as anthropocentric. Rather, Buber firmly situates humanness in the more-than-human world from which it is constituted. Further, while Buber's language about nonhuman animals sometimes retains the tonality of humanism that has differentiated human beings as over and above other creatures, I show that hierarchy is not a necessary component of Buber's thought. In discussing Buber's conception of ethical relationship with nonhuman beings, I explicate Buber's

[13] Though Muraca uses Alfred North Whitehead's philosophy to explicate radical relationism, Buber expresses very similar ontological insights.

[14] Internet searches find several doctoral dissertations on the subject, while the published literature in Anglophone peer-reviewed mediums remains slim. Most currently available commentary on Buber's import for environmentalism is found in theological and educational studies (see Blenkinsop 2005; Scott 2010; Breslauer 2016). In my personal experience at conferences, philosophers acknowledge and are interested in the ecological contributions of Buber's work. Additionally, I have William Edelglass to thank for first introducing me to Buber's work and suggesting its usefulness for environmental thought.

appreciation of difference, which distances his approach from mainstream environmental ethics founded on sameness. Because ethics does not require sameness, and is instead focused on acknowledging the unique contributions of the other in relation, Buber's thought can even recognize nonliving entities and processes as rightful recipients of ethical consideration.

First, I will discuss Buber's philosophical anthropology and address the concern that this humanistic focus might appear to readers as an obstacle to environmental thinking. Then I turn to Buber's expression of I-Thou through moments with nonhuman others, showing that Buber does not necessitate human moral hierarchy over nonhuman beings. Finally, I develop the insight that Buber's I-Thou is crucially based upon difference, therefore accommodating ethical relation toward abiotic others. In this way, I invite a reading of Buber that pushes beyond classical Western frameworks in environmental ethics.

Philosophical anthropology and anthropocentrism

Buber is best known for his thoroughly personal ethics, first described in his 1923 text *I and Thou*. There he observes that human beings have a "twofold" attitude: we can choose to take up a stance of I-It or a stance of I-Thou. These are *moral* attitudes, ways of seeing the world and acting in it. I-Thou seeks to acknowledge the limited episteme of the I in relation, requiring the opening of oneself to the full presence and perspective of the other. I-It looks on the other as a manipulable object, the I supposedly detached from the other to achieve an "objective" classification or use of the other. However, while the I-It attitude has moral valence, it in fact precludes the possibility of actual ethics by detaching the human I from relation with the world. The I-It only has ethical bearing in that it prevents ethical relation. I-Thou alone allows for ethics to occur at all.

It is upon this ethical foundation that Buber develops his philosophical anthropology in his later works. The project of a philosophical anthropology is to explore what humanness consists in, and "what makes man a problem to himself" (Friedman 1960, 29). Buber's account comes particularly in response to other philosophers like Kant and Hegel, who propose universal rational enlightenment as the solution to the anthropological problem (Burkhart 2019). In contrast, Buber focuses upon the realm of the *between* – what is not internal to any individual human, but what is interhuman (and, as we shall see, also interspecies and interdependent with all the more-than-human world).

One troubling aspect of human life Buber observes is the "increasing decay of the old organic forms of the direct life of man with man" (Buber 1955, 157). Meaningful community is made difficult because many communities are made so large (presumably through processes of globalization) to impede the direct, experienced relation and connection between their members. Buber writes that "The organic forms of community offered to modern man – who, as we saw, has lost the feeling of being at home in the world, has lost cosmological security – a life which had the quality of home" (157). This problem is not merely a material homelessness, but also an ontological and spiritual homelessness. In *I and Thou* Buber illustrates that this feeling of homelessness is a loneliness arising in consequence of the I-It attitude. Loneliness is a solipsistic feeling, the figment of a single human in a mess of *things,* of *Its*. To combat this loneliness and pursue meaningful, fulfilling ethical life, a reconception of ontology is needed: the realization of human being as fundamentally and deeply relational.

Buber locates this problem of human loneliness in the tension of a divided consciousness: we understand ourselves as individuals or as part of collectives. Buber argues that this is a false dichotomy. Individuality and collectivity, each considered, is "a mighty abstraction. The

individual is a fact of existence in so far as he steps into a living relation with other individuals. The aggregate is a fact of existence in so far as it is built up of living units of relation" (1955, 203). So while the concepts have some factual basis, Buber is quite clear on their risky illusions. The human individual "accepts [their] isolation as a person, for only a monad which is not bound to others can know and glorify itself as an individual to the utmost. To save himself from the despair with which his solitary state threatens him, man resorts to the expedient of glorifying it" (1955, 200). In the collective, individuals are not seen: "the 'whole,' with its claim on the wholeness of every [hu]man, aims logically and successfully at reducing, neutralizing, devaluating, and desecrating every bond with living beings" (1955, 200-201). Human "isolation is not overcome here but overpowered and numbed. Knowledge of it is suppressed, but the actual condition of solitude has its insuperable effect in the depths, and rises secretly to a cruelty" (201). Our social and cosmological homelessness is crystallized in this dichotomous vision.

Through his philosophical anthropology, Buber emphasizes instead the *between* that is emergent in relationship and constitutes the beings in relation. This genuine relation "cannot be reduced to one of [either individualism or collectivism], and does not represent a mere compromise between them" (202). As Buber describes it, "'Between' is not an auxiliary construction, but the real place and bearer of what happens between men… it does not exhibit a smooth continuity, but is ever and again re-constituted in accordance with men's meetings with one another" (203). The between takes ontological primacy and provides the possibility of ethical life as humans recognize their place in the world of more-than-human relations. It is radical for Buber to suggest that entities do not precede their relations. Nor can these relations be reduced to a glossed holism; they must be treated in their specificity – the specificity between man and man. As Buber describes, "Man exists anthropologically not in his isolation, but in the

completeness of the relation between man and man; what humanity is can be properly grasped only in vital reciprocity" (1965, 84). Finding true relief from loneliness and homelessness requires the reciprocal relation of I-Thou among human beings: to recognize another as *Thou* and to have them recognize oneself as *Thou*.

While Buber characterizes the *between* largely as interhuman and spends much of his work articulating human-human relationships, in other moments the *between* is more mysterious and exceeds the interhuman. Such mystery arises in Buber's Judaism. Buber believes that God is immanent in the world, present in all aspects of relationality and not merely in the interhuman. But God is never baldly encountered – he is addressed through another material being. Buber writes that any I-Thou relation is an encounter with God: "Every particular *Thou* is a glimpse through to the eternal *Thou*; by means of every particular *Thou* the primary word addresses the eternal *Thou*. …the inborn *Thou* is realized in each relation and consummated in none. It is consummated only in the direct relation with the *Thou* that by its nature cannot become *It*" (2000, 77). The interhuman *between*, then, is yet given by the divine more-than-human. Ethics is made possible through divine spirit, for God is the very condition of right relation.

An environmentally-concerned reader may be concerned by Buber's explicit focus on the realm of the interhuman *between*, even if ethics is not restricted to human-human interactions only. His emphasis upon the lives of human beings may sound anthropocentric, overly concerned with human affairs in comparison to human affairs with nature. More apparently troubling is Buber's denial that "rocks, plants, and animals… are capable of complete reciprocity, which he restricted to the interhuman I-Thou" (Atterton 2004, 267). Is this "complete reciprocity" required for equal ethical consideration? If Buber maintains a moral hierarchy, a latent anthropocentrism, this would undermine the capacity of the I-Thou to seriously consider the nonhuman other.

Anthropocentrism has been a frequently confused concept in environmental ethics literature. As Tim Hayward articulates, "anthropocentrism" conveys both an ontological and an ethical view (Hayward 1997). In the ontological dimension, human subjects (or humanity writ large) are posited at the center of a worldview. Images may arise here of the Ptolemaic solar system, with the human planet so powerful to cause all celestial bodies to orbit Earth. But as Hayward points out, this ontological view may or may not support the ethical dimension of anthropocentrism (i.e. this centering may be merely descriptive). Often the term has often been employed, as Nicholas Agar does, to "trace the preservation of any chunk of nature back to some human benefit or interest" (Agar 2001, 3). In such an ontological use, the term denotes the indelibility of our human situatedness and implies that any nonathropocentric view must be somehow divorced from human interest. Allen Thompson calls this "conceptual anthropocentrism" (Thompson 2015), the acknowledgement that our perspectives are always human, all too human.

The ethical dimension of the term views human beings as either always the primary morally considerable entities (weak formulation), or human beings as the only morally considerable entities (strong formulation). In both formulations, anthropocentrism fundamentally posits humans in moral hierarchy above other entities' moral considerability. This meaning of the term is useful to capture the arbitrary or dogmatic privileging of human interests over nonhumans. For instance, the strong formulation appears in the insistence that only human beings have value, distinguishing human distinguishing human beings categorically and unequivocally from other entities. As Kopnina et al. describe, "at its core ["anthropocentrism"] involves the planetary-scale subordination of nonhuman organisms that denies they have value in their own right" (Kopnina 2018, 115). In weak formulation, nonhuman beings are denied ethical

consideration largely by omission – for if a human's value is prioritized or seen as *more* valuable over a nonhuman being's value in every situation, this maintains a hierarchy of value.

Buber's philosophical anthropology does not suffer from the ontological anthropocentrism that Hayward describes. Recall that Buber's ontological interest is relation. Relation is *mutuality*, requiring differing entities as equally part of the relation. Both parties participate in the relation – not one more than the other (though we can imagine differing levels of ontic participation). Buber acknowledges humanity's partaking in nature, and human beings as animals. When he discusses human particularities, they are as situated in the world shared with others. Buber is not rightly accused of anthropocentrism from an ontological standpoint since he does not believe human beings to be situated outside of the mutuality of relation. I am only one part of a relationship. Additionally, it is quite important to Buber's thought that we participate in relation *as human beings* – for certainly we cannot be anything else. This importance does not come from a separate or hierarchical ontological status of humanity but is merely the location of our perspective from which we act ethically or unethically. Use of the term "anthropocentrism" in this meaning is, from a Buberian perspective, trivial and empty, for Buber repeatedly emphasizes that one can only act from their own limited episteme, from their own corporeality. This situatedness is not, in itself, a problem. It is the condition from which we can take on the attitude of I-Thou or I-It.

Whether Buber's view is normatively anthropocentric is a more complex concern. Buber spends significant time in his writings presenting his philosophical anthropology: a vision of what makes human beings *human*. This involves differentiating human beings from other life forms, usually by indicating the possession of valued features or capacities. The problem of anthropocentrism arises when such differentiation is marshalled as justification for diminished

moral considerability of nonhuman beings, and for this reason Buber readers may worry about what Buber's descriptions of human-nonhuman differences imply, morally. The charitable reader will notice, however, that Buber hardly details these features to elevate humans or to exclude nonhuman beings from Thouness. *Of course* humans are different from other animals, Buber well observes. There may even be morally relevant differences. However, Buber does not make the familiar argumentative move of classical humanism to justify ethical consideration or devaluation via the presence or absence of particular features in any entity.

Buber contrasts humanity from nonhumans by writing that man "is the creature (*Wesen*) through whose being (*Sein*) 'what is' (*das Seiende*) becomes detached from him, and recognized for itself" (1965, 61). Buber suggests that this distance between self and the structure of reality is necessary to comprehend the world of relation. Even when he writes that nonhuman animals do not "know the state of relation" since they do not perceive others "as contrasted and existing for [themselves]," we should not take him to mean that for this reason they are unable to engage in relation. Rather, the problem of knowing relation is bound up in the anthropological problem of homelessness. Buber likely speculates that nonhuman animals are not engaging in a meta-analysis of the ontology of relation in the way that humans are. Additionally, Buber may simply be mistaken about animal cognition. For animals must, evolutionarily speaking, have some sense of themselves as differentiated from other beings. This is necessary for animal survival. In this way, nonhuman animals *do* know something of the relation.

Regardless of whether this is a meaningful (ethical) difference between humans and nonhuman animals, Buber's conception of humanness does not explicitly depend upon the metaphysical privileging of human beings. Nonhuman others do not cease to be rightful participants in ethical relation simply because they do not "know the state of relation."

How then are we to understand Buber when he, seemingly anthropocentrically, writes, "What is peculiarly characteristic of the human world is above all that something takes place between one being and another the like of which can be found nowhere in nature" (1955, 203)? With more ecological sensitivity, Buber probably could have better expressed that interhuman relations are yet a part of nature (which he seems to recognize elsewhere). Here Buber appears to be referencing politics as a peculiarly human feature, rather than describing all ethical relation as uniquely interhuman. Politics is for Buber the shaping of society by itself and is deeply personal in that it is built by and must attend to whole persons. Adamantly resisting conceptualizations of political life as "the collective," Buber insists upon the necessity of the I-Thou in societal formation (Zank and Braiterman 2020). An I-Thou attitude *must* guide life together. Because I-Thou is not restricted to interhuman relations, this suggests that politics necessarily includes the more-than-human world. However, politics certainly does appear differently among human beings than it does anywhere else. Interhuman politics must grapple with the oscillation of the split human consciousness between the individual and the collective, as well as the tendency to adopt the I-It attitude and presume the world to be made of manipulable things. Buber's focus upon human society in this way does not in itself constitute an anthropocentric view. In fact, better interhuman relations are likely indispensable for improved more-than-human ethics.

In her reading of Buber, Alžbeta Kuchtová emphasizes that Buber criticizes hierarchical structures in society, among humans (Kuchtová 2023). However, she also reads him to maintain human hierarchy over nature that undermines his liberatory politics. As she describes,

> Buber says in *I and Thou* that this difference [between a tree and a human] is marked by the darkness and lack of a language. But this difference is not the correct one, as the contemporary sciences tell us, because the difference is a difference in the means of communication that trees and humans use…. Buber fails to

> acknowledge this, and, therefore, he establishes a hierarchy between different relations in the world. (Kuchtová 2023, 585)

Kuchtová's critique assumes Buber to be complicit with philosophical humanism that posits human beings as valuable over and above nonhuman beings. I see little evidence for this assumption. First, Kuchtová assumes in her analysis that language and communication are the same thing – which, as I will explore shortly, is not necessarily the case for Buber. But even if Buber were to believe that nonhumans do not communicate, this does not in itself indicate hierarchy, since it is far from obvious that Buber mobilizes a notion of moral value based upon the possession of speech. Instead, Buber should be understood to identify differences between humans and nonhuman others that do not indicate an elevation of human moral status above nonhuman nature.

Kuchtová draws her conclusions from Kaufmann's translation of *I and Thou.* She says that Buber characterizes nonhuman others as incapable of language, conveying instead a "darkness." As Kaufmann's translation reads, Buber says that there are three spheres of relationality, where the first is "life with nature. Here the relation vibrates in the dark and remains below language" (Buber 1970, 56-57). Kaufmann takes great poetic liberty. In Buber's original German, the words "vibrate" and "dark" do not appear at all in this passage. It is better translated thus: "our life with nature, in which the relation clings to the threshold of speech" (Buber 2000, 98).[15] This translation makes Buber's meaning much less severe. Kaufmann's translation evokes mystery and loss of understanding, suggesting a devaluation of nonhuman others by their existing "below language." Buber's original text asserts no such devaluation.

[15] The original German text reads: „das Leben mit der Natur, darin die Beziehung an der Schwelle der Sprache haftet" (Buber 2010, 120).

In my reading, Buber reflects the experiential difficulty of communication with nonhuman others – not that they do not communicate or have no language. In an encounter with a nonhuman other, the meeting is marked by ineffable exchange, sometimes a mutual recognition that is on the edge of spoken articulation, pregnant with signification, and yet beyond the ease of any human language. Buber realizes the difficulty in communicating and engaging ethically with any nonhuman being in the absence of shared spoken articulation, which, as human beings, we rely upon for convenience and immediate access to expression. When Buber conveys nonhuman beings as without the same abilities as human beings, he merely acknowledges that nonhuman nature does not have qualities *in the same way* that humans do – not necessarily that those nonhuman beings are without those qualities entirely, in their own unique manners.

Without the framing of classical humanism that maintains anthropocentrism, Buber's text itself does not reassert the common assumptions of that humanism. So when Peter Atterton points out that rocks, plants, and nonhuman animals cannot engage in the "complete reciprocity" of relation, I suggest that this statement of Buber's is best understood through the limits of human experience. There is perhaps nothing essential about the constitution of nonhuman others that prevents their "complete reciprocity" in relation. However, from our human situatedness, we do not engage with nonhuman others in the same fullness we assume from other human beings with whom we notice similar constitution. It may be that even as I recognize a nonhuman *Thou*, nonhuman others do not look upon me as a *Thou,* rich with the use of that human concept. Reciprocity is mirrored between human parties, each exchange looking familiar, whereas we may be poorly receptive to all that nonhuman others give in relation. But this familiarity is not necessary to ethical relation and is merely experientially descriptive of how my human being perceives the other.

Let me address Buber's seeming anthropocentrism (if even latent), in another way. Buber describes nonhumans as just as equally participating in relation as human beings – participating as a kind of agent, some*body* with whom I meet and by whom I am actively influenced. The other *approaches* me in relationality, pressing upon my corporeality and perception. As Buber writes,

> That living wholeness and unity of the tree, which denies itself to the sharpest glance of the mere investigator and discloses itself to the glance of one who says *Thou*, is there when he, the sayer of *Thou*, is there: it is he who vouchsafes to the tree that it manifest this unity and wholeness; and now the tree which is in being manifests them. Our habits of thought make it difficult for us to see that here, awakened by our attitude, something lights up and *approaches us* from the course of being. (2000, 117-118).

I need not expect the tree to respond to me like another human might respond to my language or gestures. The tree does not reach out with a branch and grasp my hand, per se. But there is another kind of reaching in which the tree nevertheless participates. The tree approaches me as I find myself in an I-Thou attitude and am receptive to relation. Clearly, nonhuman beings are active in creating the world, including the conditions for my experience of the world. Indeed, even when I do not address a tree consciously, my body interacts with them. Trees cycle and filter the air I breathe, transpiring water into the atmosphere daily and holding the soil of the ground where I stand. Forests store carbon, regulating the climate for which my human body is adapted. They shade me and engender cool breezes, protect from both UV exposure and cold rain. This is not mere instrumentality but the conditions of my being. I am constituted by the tree's existence; I am constituted by relation. This deep recognition of relationality displaces hierarchical arrangements by reminding of togetherness and the call of respectful response to the other, human and nonhuman.

Buber's more-than-human ethics

Buber's dialogical ethics begins in ontology. The attitudes of I-It and I-Thou shape the world, respectively, inciting ethical relation in I-Thou or not in I-It. The word-pairs "I-Thou" and "I-It" intimate relations: "primary words are spoken from the being" and "being spoken they bring about existence" (2000, 19). One's ontology is not innocent or passive. The expression of my ontology in my attitude and my speech in fact creates me and the world. My perspective of the world has an influence upon the world and molds me with it. I am differently constituted with Thou than with It.

Perhaps subtly, Buber points out that relation is necessarily part of any ontology. Even when I say the word-pair "I-It," there is still an I and a world – two entities in relation. "There is no *I* taken in itself," Buber writes (2000, 20). This recognition is obscured in an I-It ontology, which takes the I to be the solipsistic subject in a world of things. The I of I-It takes the world as passive object that the I manipulates and experiences: "the *I* which stepped forth declares itself to be the bearer, and the world around to be the object of the perceptions" (35). I conceptualize myself as separate from the world. But it is a great irony of the I-It that when I conceptualize something as an "it" I still institute a *relational* stance – and one with ethical implication (though inanimate *things* are not usually recognized as the recipients of my ethics). There is *I* and *It*, and I am not actually contrary to the world. In contrast to saying *It*, "When *Thou* is spoken, the speaker has no thing for his object. For where there is a thing there is another thing" (20). *Thou* must be spoken with the whole being, in great receptivity and acknowledgment of the self of relation. For it recognizes no objectified other. But when I adopt the I-It stance I perpetuate the world as its over and over, even diminishing myself to a solitary, lonely thing.

Relation is conceptually undermined – though never materially displaced – through the I-It attitude. Buber's description of this attitude reveals this crucial aspect of his thought: relationality is both an ontological condition *and* an ethical striving. I-Thou cultivates the possibility for ethics because it honors the relational situatedness of our corporeal constitution. Only through this realization can we foster ethics. Meaningful, ethical life is given to us in relation, for we are fundamentally constituted by it. I never precede my relations with any Thou or It.

To grasp some of the influence of Buber's account, take Emmanuel Levinas' conception of ethics as first philosophy in comparison, with which Buber greatly disagrees. Levinas requires that the Other be situated in an asymmetrical and ethically demanding metaphysical position: the other is poorer than I, in need, and thereby compels my ethical response. The Other forces my responsibility, appearing as the widow, the orphan, the naked (Levinas 1969; Levinas 1987). Buber, however, finds this problematic on two fronts: first, that the other in relation necessarily appears in such an asymmetrical way, and second, that the other automatically engages my ethical response. Buber does not preconceive any corporeally-specific features of the Thou, allowing many differing others to be recognized in ethical relation with me – and not just those who appear as widowed, orphaned, or naked. In short, the other need not appear as unfortunate and vulnerable to impel ethics. Further, for Buber, ethics are not fulfilled through mere recognition of the other as other; my *openness* to the other is necessary for the possibility of ethical relation. Nor does tending to the other's needs guarantee an ethical exchange, Buber writes. For "if all were well clothed and well nourished, then the real ethical problem would become wholly visible for the first time" (Buber 1967, 723). I must first open myself to the other through the adoption of the I-Thou attitude.

Such openness is hardly automatic, however. Buber demonstrates the convenient, alluring ease of the I-It when standing before a tree: he could observe the tree as if compiling a superficial report, remaining seemingly unaffected by the tree. He could "look on it as a picture," note his perceptions of its movement and rigidity, "classify it in a species and study it as a type in its structure and mode of life," "dissipate it and perpetuate it in number" by imagining a whole cloned forest or its absence, or "subdue its actual presence and form so sternly that I recognize it only as an expression of law" of the universe (Buber 2000, 22). In each of these ways he *could* consider the tree, Buber recognizes that "the tree remains my object, occupies space and time, and has its nature and constitution" (23). In this attitude, the tree is the passive object of the human perceiver's gaze and mental exercises. The It stands alone, demanding nothing of me and bearing no meaning upon my sense of self.

The I-It stance does not require the kind of thoughtfulness and arduous attention that I-Thou does. To recognize an other as a Thou involves an active, deliberate entering into relation – a *turning* toward the other. This is a corporeal, epistemic, and spiritual orientation to meet the other, bringing the other out of the background and into the exclusivity of the phenomenal moment of relation. I become deeply aware of the other.

Buber describes such a moment powerfully with his housecat. Meeting each other's gaze, the immediacy of relation emerges with the urgent possibility of ethics:

> The beginning of this cat's glance, lighting up under the touch of my glance, indisputably questioned me: 'Is it possible that you think of me? Do you really not just want me to have fun? Do I concern you? Do I exist in your sight? Do I really exist? What is it that comes from you? What is it that surrounds me? What is it that comes to me? What is it?' ('I' is here a transcription for a word, that we do not have, denoting self without the ego; and by 'it' is to be imagined the

streaming human glance in the total reality of its power to enter into relation.) (2000, 94-95)

Though it is not marked by linguistic speech, this dialogical encounter is an emblem of ethical life. Buber and the cat become aware of one another in the instant, simultaneously oriented toward each other as fellow relata. In the query, "Do I concern you?" the relationship between beings is meaningfully acknowledged and demands an ethical response. That the cat does not vocally utter these words is irrelevant to the dialogue; in this moment the feline other approaches in their corporeal being.

Buber repeatedly acknowledges that the dialogue necessary for I-Thou is not only linguistic. As Maurice Friedman observes about Buber's work, "literal speech is always only *one* of the many forms of dialogue and never simply synonymous with it" (Friedman 1993, 110). Dialogue for Buber includes an opening of oneself to the other and an attentive listening for what comes, whatever comes. He never specifies that what one hears will necessarily be easy to understand; rather, he accentuates the unpredictability of the other's responsive engagement. Relation with nonhuman others "clings to the threshold of speech," but is not thereby without dialogue (Buber 2000, 98). Relation with spiritual beings is also without speech but not demeaned. Even more radically, Buber writes that "just as talk in a language may well first take the form of words in the brain of the man, and then sound in his throat, and yet both are merely refractions of the true event, for in actuality speech does not abide in man, but man takes his stand in speech and talks from there" (2000, 49). Speech, while it may mark human corporeality and is emblematic of human engagement, is a mode of betweenness, not a human possession.

Buber is insistent that the other in an ethical encounter need not be another human, need not speak or show up in the world as humans do. Recognizing the other in I-Thou relation does not rely on sameness or even similarity; particular features do not indicate moral considerability.

Buber writes, “No kind of appearance or event is fundamentally excluded from the series of the things through which from time to time something is said to me…. The limits of the possibility of dialogue are the limits of awareness” (1955, 10). Buber does not require characteristics of moral agency, consciousness, or even linguistic speech for the Thouness of the other – those qualities that are often argued to be necessary for ethical relation.

While a cat shares many mammalian traits with human beings and may thereby seem to be ethically considerable, Buber challenges expectations of Thouness even further by exemplifying I-Thou relationality with the tree. Buber chooses for his first description of an I-Thou relationship not an other who is readily accepted as a Thou, like a human being, but an other who is drastically different from me. This move to recognize the tree as Thou is unexpected and uncommon in depictions of ethical relations, particularly among Buber’s philosophical predecessors and his contemporaries. It is a significant choice that indicates the capaciousness of the I-Thou, straightforwardly depicting a valuation of otherness that reaches beyond human being. The tree is no mere thing, no datum to be seized and mechanically comprehended. “The tree is no impression, no play of my imagination, no value depending on my mood; but it is bodied over against me and has to do with me, as I with it – only in a different way” (2000, 23). Both human and tree are bound up in the togetherness, constituted through their relation. In this more-than-human encounter, Buber describes ethics and a rich ontological sense of life: “all real living is meeting” (2000, 26). And here it straightforwardly appears that this ethical meeting occurs among living beings, human and nonhuman.

This meeting is profoundly spiritual, for the eternal Thou of God is met in every particular Thou. Friedman puts it thus:

> God makes use of everything… every kind of natural existence for his manifestation. 'There is not one realm of the spirit and another of nature,' wrote Buber in *Israel and the World*. …The love of the Creator and of that which He has created are finally one and the same. We help God by loving His creation in his creatures, by loving it toward Him. (Friedman 1993, 113-114).

Not only does the nonhuman other approach me "from the course of being," but so does God, through His creation. The nonhuman world is a manifestation of divine love, and it is this relation that motivates all other ethical relation. The more-than-human world is both wonderful in itself and also the divine immanent. This makes nature my crucial ethical partner. Friedman explains that "Nothing is more central to *I and Thou* than Buber's understanding of creation. It is creation in the biblical sense that underlies Buber's assertion that man is given a ground on which to stand and that he is able to go out to meet God, man, and world from that ground" (Friedman 1993, 113). Responding to the other ethically is to uphold the divine covenant of relation.[16] Thus for Buber, we need not ask the detached question *how do we know what good relationships look like?* Good relationship with the Creator guides the relationship with nonhuman others, biotic or otherwise. We participate in the mutuality of nature.

Beyond the biotic Thou

As expressed with the tree, the cat, the human, I-Thou appears to favor life for its content. Indeed, Buber is intensely interested in the corporeal world. Importantly, these others to whom I am in relation are not identifiable because they share some similarity to me, even the similarity

[16] The Covenant occupies a central place in Jewish theology. Such spiritual guidance is similar to Indigenous notions of covenants made with nonhuman others in the world (see Deloria 1999).

of being alive. Buber is remarkably accommodating of difference.[17] The Thou is an open category that marks relation.

Recall Buber's recognition of the tree as a Thou, an other with an astonishingly different body. If relationality does not reflect a reality of predetermined individuals who are afterward brought into orbit, but instead acknowledges subjectivity as an emergent and changeable feature of relationality, then the ethical relation does not require that bodies appear in any particular way. It does not crystallize certain features that would seemingly make me or the other recognizable. This is relatively straightforward when Buber writes that "Genuine [ethical] conversation, and therefore every actual fulfillment of relation between [I and Thou], means acceptance of otherness" (Buber 1965, 69). To be clear, otherness is recognizable enough to identify I and Thou each as relata, as differing bodily beings in the world. But *difference* does not take on any particular attributes for Buber.

Luce Irigaray charges the I-Thou as appropriating others into an undifferentiated, extracted Thou (Irigaray 1996). She worries that a single horizon of Thouness would make it easier to assume sameness between myself and the other – an assumption that has been used to silence women. While this is a legitimate worry on Irigaray's part, the I-Thou does not actually swallow the other. In fact, the very notion of the Thou is Buber's attempt to acknowledge the sheer unassimilable, irreducible otherness between me and another body.[18] It is through the other's otherness and distance from myself that I come to recognize relation. Without this recognition of otherness, the Thou cannot be ethical. The ethical relationship between human

[17] In other work, I have developed this point on Buber's recognition of gendered difference.

[18] Where Buber might be helped by Irigaray's perspective is in a positive project of articulating particular relations.

beings occurs not because two parties share an essential human similarity, but because the indelibly human interaction is the corporeal ground for relation.

Buber's insistence of the primacy of relation, as well as the open category of the Thou, mean that a Buberian approach to environmental ethics is both desirable and alternative to mainstream environmental ethics discourse. Rather than argue that nonhuman nature is intrinsically valuable because of its possession of valued qualities, such as language or aliveness, Buber invites a baseline ethical consideration of *all* others. Accordingly, this consideration is not based upon similarity and instead accommodates the variety of differences between self and other. Buber's relational ethics is therefore neither capturable by mainstream Western environmental ethics nor entirely complementary. A Buberian environmental ethic does not determine, categorically and a priori, which beings are ethically valuable and to whom we have responsibility; instead, Buber indicates the attitude of receptivity with which I must approach the other to mutually negotiate our good relation. It is partially this differentiation from Western environmental discourse that allies Buber's approach with Indigenous environmental wisdom, as Burkhart notes.

Because I-Thou reflects the fundamental relational situatedness of the I in the world and opens an ethic to the other in their difference, Buber's relational ontology provides a rich grounding to think relationality and ethics with *all* others. No preconception of the other impels my ethical responsibility or precludes it; that is, beings recognized as abiotic need not – and I suggest, should not – be excluded from ethical consideration. Because of Buber's open concept of the other, it hardly seems that Buber could mean the I-Thou to be ethically committed only to life. Since he does not mobilize an ethic of sameness like that of mainstream environmental ethics, Buber cannot be considered a biocentrist, believing life to be the only or primarily

morally considerable entity. Instead, Buber's radically relational ethics explodes any *centric* approach to ethical consideration. Consequently, I-Thou obliges a much larger contemplation of the earthly constitution of earthlings.

Buber's is undoubtedly a demanding approach. His depiction of ethics is intensely particular, focused on specific relations, even relations with nonliving entities. He thereby reveals the fundamental complexity of ethics – and also mirrors the complex interrelations of nature. There is no simplification of the Thou into abstracted principles or calculations. And yet a common but serious misunderstanding of Buber precludes appreciation of the power and related difficulty of the I-Thou.

Before correcting this misunderstanding, here is a clarification. I-It and I-Thou are two ways of relating to the world: in I-Thou I honor my ontological situatedness in relationship and position myself to be ethical, whereas in I-It I deny my embeddedness in relationships and foreclose the possibility of being ethical. In this way, I-It and I-Thou are binary. To be open to the influence of the other and the pursuit of ethics at all, I must enter the perspective of I-Thou. I-It prevents any such relation because it divorces me from my actual corporeality within a nexus of connections to other corporeal beings.

The binary is an ethical one: to pursue the possibility of good relationship or not. But Buber is misunderstood to mean that this binary reflects an ontological reality – that entities in the world either belong to I-Thou or I-It. Friedman suggests this misunderstanding in his critique of scientific methodology:

> Science investigates man not as a whole, but in selective aspects and as part of the natural world. Scientific method, in fact, is man's most highly perfected development of the I-It, or subject-object, way of knowing. Its methods of abstracting from the concrete actuality and of largely negating the inevitable

> difference between observers reduce the I in so far as possible to the abstract knowing subject and the It in so far as possible to the passive and abstract object of thought. Just for these reasons, scientific method is not qualified to discover the wholeness of man. It can compare men with each other and man with the animals, but from such comparison and contrast there can emerge only an expanding and contracting scale of similarities and differences. This scale, consequently, can be of aid in categorizing men and animals as differing objects in a world of objects, but not in discovering the uniqueness of man as man. (Friedman 1965, 19-20).

In addition to implying that science cannot be ethical, Friedman's description of scientific method makes it seem that the rightful task of the I-It attitude is to categorize entities in the world as Thous and Its.[19] Peter Leithart (2018) expresses a similar misunderstanding of Buber when he charges I-Thou as a dualistic approach unable to conceptualize differential – and potentially ethical – relations with things, what we call "its." Yet the I-Thou and the I-It stance do not themselves classify beings. Rather, I-Thou and I-It are attitudes that either (in the former case) allow for the possibility of ethics or (in the latter) preclude ethics through the alienation of the I. Assigning It-ness to any being would be to predetermine the relation, to close myself to the actuality of the other and foreclose any appropriate relation.

Nothing is lost by avoiding the I-It posture. It is certainly a mistake to assume, as Leithart does, that the modality of I-It can provide respectful engagement with the other. But it is also a mistake to assume that simply because mainstream science has engaged in the attitude of I-It that it must continue to do so, or is essentially unethical. Scientific methods of inquiry can still be ethically employed if they are nested in an I-Thou attitude. Buber is quite clear that we need not give up any modes of contemplation in I-Thou: "it is not necessary for me to give up any of the

[19] Perhaps Friedman matured his thought on this point throughout his career on Buber's work. In a later essay, Friedman insists that "The It is not nature… it is man's concepts and categories about nature" (Friedman 1993, 115), suggesting the incorrectness of viewing It and Thou as taxonomical.

ways in which I consider the tree. There is nothing from which I would have to turn my eyes away in order to see, and no knowledge that I would have to forget. Rather is everything, picture and movement, species and type, law and number, indivisibly united in this event" (Buber 2000, 23). Scientific knowledge (or, any knowledge) is only ethically possible through turning toward the other, emergent from the relation.

There is little, if anything, about I-Thou that is ethically straightforward or easy. Particularly in a time of widespread accelerated environmental degradation, the risk of cosmological homelessness looms potently. Buber might suggest it is the proliferation of the I-It attitude, the conceptual divorce from our relational reality, that brought about climate change and other ecological destruction. However, in showing fidelity to our corporeal relation in a world of bodies, the I-Thou opens the possibility for ethical life. I-Thou may not be sufficient for ethics, but it is certainly necessary, and urgent now as we seek to find ourselves at home with this Earth.

IV.

GEOETHICS: DEEP TEMPORALITY AND THE PLANETARY

Although the International Commission on Stratigraphy voted last year not to adopt the "Anthropocene" as the current earthly epoch, the specter of human geological force still looms. As the Earth progressively warms and environmental degradation continues due to human activities across the globe, a heightened sense of urgency mounts in environmental consciousness. Adverse human influence has now touched the most remote areas of the planet, including plastic pollution in the Mariana Trench and at the top of Mount Everest, increased weathering, permafrost thawing, and the intensification of meteorological patterns. Human activities have terraformed the planet extensively, moving more earth and sediment than any other geomorphic agent, combined (Hooke 1994). This planetary scale of human impact has prompted calls in environmental theorizing for a global scale response.

Philosopher J. Baird Callicott argues that an Earth Ethic is needed to complement a biospheric Land Ethic, in order to address the vast spatial and temporal aspects of the planet. Because climate change is a global phenomenon whose effects are not felt immediately, a Land Ethic needs a companion Earth Ethic that encourages planetary- and geological-scale thinking (Callicott 2013). Historian Dipesh Chakrabarty concurs, observing that "the science of global warming takes us away from an earth- and human-bound imagination," profoundly unsettling the narrative of globalization (Chakrabarty 2021, 75). For the *global* perspective refers only to human political history, with its complications of power structures and inequalities. While the *global* remains a politically germane lens, Chakrabarty argues that another perspective is

simultaneously needed: the *planetary*. Interwoven with the global, the planetary provides a sense of the geological: the embeddedness of the global in the deep history of the human species and the nonliving components of Earth and other planets.

Despite Callicott and Chakrabarty's calls to attention, classical environmental ethics discourses have not typically focused on this planetary scale, nor upon the earthly constitution of human beings. Environmental ethics has instead been occupied with determining the sorts of entities that have value, from animals to organisms to ecosystems. It has not argued directly for the value of and corresponding responsibility toward abiotic entities and processes, such as earthly homeostatic systems.[20] And ecocentric arguments, though conceptualizing value holistically, do not obviously scale up to the planetary level (hence Callicott's argument for a separate Earth Ethic). Without a justification for the value of Earth's abiotic entities and processes, ethical frameworks appear to fall short in addressing the anthropogenic degradation of not just living but earthly systems. It seems that a kind of geological ethic is needed, an appreciation of the constitution and history of our planet, and our place as part of it – as earthlings.

Meanwhile, "geoethics" has been recently argued for by Western earth scientists, partially because of their disciplinary attention to abiotic entities and processes, and likely also because of the attention geology has been receiving as stratigraphers try to find the "golden spike" that designates the start of the Anthropocene. Proponents of geoethics see a prominent role for geoscience in confronting environmental issues. The term "geoethics" has had several

[20] Some attempts have been made to articulate the value of the planet via Gaia theory, though the justification of Gaia's ethical value is generally lacking. Gaia is either described as a living entity, treated ethically through the value accorded to other life, or it is a nonliving system of self-maintenance that does not hold value in mainstream ethical frameworks.

meanings over its roughly 35-year usage, though only more recently coming to prominence (Nikitina 2016 ; Peppoloni and Di Capua 2022). For some, geoethics is a set of business principles guiding the scientific discipline and the geological activities of natural resource management, where for others geoethics is a responsibility that geoscience has toward the rest of society, and for still others geoethics represents the social and ecological responsibilities that humans have as a geological force upon the planet (Nikitina 2016; Bohle and Marone 2021; Peppoloni and Di Capua 2022). Though they may sometimes have been individually treated, these meanings are not discrete and reflect the wide-reaching ethical opportunity for geoscience. Bohle and Marcone argue that geoscience shares an "intrinsic relation" with sustainability, since the geosciences are "the sciences of the functioning of a habitable planet" (Bohle and Marcone 2021, 1-2). Regardless of its quiescent values, geoscience provides a basis for geoethics in its attention to nonlife and its values of appreciating life on a dynamic planet of complex abiotic processes.[21]

As the term "geoethics" increases in usage, other geoscientists also call for increased attention to what they see as the ethical contributions of geoscience. For Marcia Bjornerud, this involves the mobilization of geological reasoning, specifically, to address contemporary environmental crises. In her 2018 monograph written for the general public, Bjornerud asserts that a broad cultivation of "timefulness" is necessary to address current climate disaster (Bjornerud 2018). Her argument is a plea for the greater societal uptake of geological epistemic

[21] "Geoscience" is synonymous with "earth science." Both terms umbrella several subfields concerned with the study of Earth's constitution, history, and dynamic systems (i.e. geology, geophysics, meteorology, oceanology, paleontology, etc.). Each of these disciplinary names has arisen relatively recently as academic institutions across North America seek better inclusivity – both through the recognition of multiple fields of earth study, and in an attempt to appeal to a greater diversity of students.

goods, including geology's "single greatest contribution to humanity," fathoming *deep time* (2018, 16).

Bjornerud's request for "timefulness," specifically rooted in geoscience, is an intriguing suggestion in response to climate change. But exactly to what ethical purpose Bjornerud's deep time sensibility can be put is a topic needing examination. In this essay I explore the potential of geoethics and timefulness from both geoscientific and philosophical perspectives. Deep time is not a notion exclusive to classical geology but is firstly an idea well-articulated in numerous Indigenous traditions. Due to geoscience's cultural imperialism, this insight has been, and remains, underappreciated in ethical discourses. If geoscience is to pursue ethical praxis, it must contend with its role in colonialism. An Earth ethic, a *geological* ethic, will only be suitable in the acknowledgement of its indebtedness to Indigenous knowledge and worldviews.

In this movement, I will first discuss the welcome interface between ethics and geoscience, articulating geoethics as an approach arising both *for* geoscience and *from* geoscience. However, the implications of an Earth ethic reach past the bounds of scientific practice, particularly in Bjornerud's imploration for a new temporality in social consciousness. I then detail deep time as it is described by both geoscientists and Indigenous philosophers, indicating its rich ground for geoethics. These ontologies of geoscience and Indigenous traditions are not obviously united, especially since geology has a colonial history and continues to perpetuate cultural dominance over Indigenous knowledges (Rogers et al. 2022). I discuss the challenges in cultivating geoethics from these two perspectives due to the sticky history and ongoing proliferation of colonialism through geoscientific cultural imperialism. Finally, I suggest that the meaningful development of geoethics can be successful from a decolonized practice of

geoscience.[22] Through the notion of deep temporality grounded in spatial relations, geoethics and Indigenous ethics find convergence and provide the foundation of an appropriate planetary ethic.

Ethics for and from geoscience

The profession of geoscience has lately surged with interest in social responsibility. This interest is focused in at least two important directions: the improvement of geoscientific communication to the nonspecialist public (via geoscience education and inclusivity initiatives), and the role of geoscience in understanding and addressing the effects of human activities upon the planet, including fossil fuel burning, deep sea mining, and geoengineering (Di Capua et al. 2021). Geoscientists Silvia Peppoloni and Giuseppe Di Capua note that "The repercussions of geological practice on the social fabric are evident," such as the effects that seismic findings have upon societal preparedness for natural disasters (Peppoloni and Di Capua 2022, 15). Geoethics assuredly has some role as a set of guiding principles for scientific praxis, including guiding field research operations and geoscientists' interactions with natural resource extraction companies. But the calls for geoethics are also focused on scientific engagement with environmental and social issues. Peppoloni and Di Capua write that "In the last twenty years, the urgency of some environmental issues demands a new scientific commitment by geoscientists, the responsibility to assume their social role as never before" (2022, 15). In this crucial moment, "geosciences are clarifying the deep interconnections and delicate balances of the Earth system, the irreversibility of many phenomena underway, the enormous anthropic impact on natural

[22] Based upon the strikingly few currently available books and peer-reviewed articles on the colonial history of geology and the effort to decolonize geoscience, this work of decolonization is just beginning for geology. One intention of mine in this movement is to elucidate and elevate the concern of coloniality from Indigenous philosophers, who provide a rich and penetrating critique not only of the colonial activities of geoscience but of its operative metaphysics and values.

processes and dynamics, and the limits of available resources. In this scenario, geoscientists can become promoters of a truly collective awareness" (15). Di Capua has argued in the past few years that geoethics *should* become a guiding approach not just for geoscience, but outside of the profession (Di Capua et al. 2021).

Peppoloni and Di Capua use the term *geoethics* to indicate the ontological and methodological contributions of geoscience to ethics. Geoethics, as they conceptualize it, is "a rational, operational, and multidisciplinary language" that centers geoscientific findings in societal decision-making and also acknowledges that humans "are modifiers, only partly aware of the natural environments and territories in which they operate and live, of their physical, chemical, and biological characteristics, as well as of the social and cultural traits that characterize those territories" (Peppoloni and Di Capua 2022, 3). Humans are intimately part of earth, contextualized in the activity of earthly systems. Geoethics is acutely informed by this recognition and is also concerned with values expressed through geoscientific practice: which values guide geoscientists' work *and* which responsibilities geoscientists have to human society and the nonhuman world. Peppoloni and Di Capua are insistent that geoscientists have a social responsibility not only in the way geoscience is practiced but also in the valuation of geoscience's epistemic goods (i.e. geological insights and data). Put another way, geoethics must be concerned with values both intrinsic and extrinsic to scientific praxis. Geoethics includes an awareness and celebration of the kinds of knowledge that the geosciences create: the dynamics of rocks, water, air, and all nonliving earthly systems.

Peppoloni and Di Capua note that before the general public can participate in geoethics, geoscientists must participate in consciousness-raising in their discipline to accept that scientific praxis is thoroughly value-laden (Peppoloni and Di Capua 2022, 5). Perhaps the geosciences

already value sustainability across the discipline, as Bohle and Marcone assert. But geoscience is also implicitly value-laden in its cultural context, such as through its legacy from colonial Europe. Given the recent calls to decolonize geological curriculum and pedagogy, the work of acknowledging that geoscience is value-laden is just beginning (Rogers et al. 2022). Once geoscientists have participated in the reflection upon their discipline's latent values, geoethics can further promote ecological values by indicating the need for a "cohesive international community, committed to the shared resolution of global environmental problems" (5).

Similarly to Peppoloni and Di Capua, Bjornerud proposes a geological ontology for better ethics in the face of environmental crisis. This ontology includes geological systems-thinking and a fuller awareness of human situatedness on the grand timescale of the earth. This is timefulness, "a clear-eyed view of our place in Time, both the past that came long before us and the future that will elapse without us" (Bjornerud 2018, 17). Bjornerud contends that contemporary society is time-illiterate, thereby truncating the possibility for ethical life in the face of climate change.[23] Ultimately, action should be informed by geology's epistemic products; that is, the public needs greater uptake of geological insights. Bjornerud does indicate specific ethical outcomes that geological thinking would support: a skepticism about proposals for geoengineering and a preference for sociopolitical activities and regulations that show fidelity to the long-term functioning of earthly processes. However, the lingering question is how, precisely, knowledge of geological systems and the recognition of Earth's temporal extension beyond human existence can amount to appreciable change in ethical praxis.

[23] Bjornerud acknowledges that "prescientific conceptions" of deep time are present in some non-Western cultures (Bjornerud 2018, 193 note 2), though is generally unreflective upon the likely irrelevance of timefulness for many non-Western ontologies. Bjornerud seems to present timefulness as a global necessity and does not acknowledge that other cultural epistemes may not be lacking in a rich sense of time and connection to earth systems.

Disappointingly, Bjornerud does not elaborate robustly on geological methodology, which is undoubtedly important to her plea that the wider public develops an understanding of geological systems and learns to "think like geologists." If fathoming deep time is important, then it would be prudent to detail the process for positioning ourselves in the "distances and proximities" of earthly time (17). Her book reads as an introduction to geological processes and earthly history, so presumably geological literacy (i.e. familiarity with geological knowledge sets) is methodologically necessary toward timefulness. More explicitly, Bjornerud is concerned with articulating a kind of geological ontology of timefulness based upon the recognition that humans belong to a vast earthly reality stretching much further than humanity.

However, Bjornerud seems to take it as rather obvious that timeful-thinking *would* transform environmental ethics and planetary consideration. Her most overt explanation of geological thinking as an ethical force arises in her recollection of having accidentally destroyed a large tourmaline crystal "that had witnessed a third of Earth's history" (128). As she describes,

> After several years of immersion in the world of geology, I had developed some sense for Deep time. And I saw that in an avaricious second I had carelessly destroyed an exquisite thing…. I felt sickened by the scene of devastation around me, and my complicity in it. (128)

While Bjornerud's experience might feel morally relatable to readers, this example seems to reduce environmental ethics to a kind of negative aesthetics. It is a very tenuous conclusion indeed that simply because someone knows a formation took millions of years to shape they would then find the destruction of the formation to be wrong. Geoscience is itself involved in destruction consistently – in taking field samples, breaking open geodes, and searching through layers of rock for fossils, to name a few practices. What is more, geoscientific products, such as

knowledge of particular formations and their interaction with geosystems, are mobilized for the extraction of resources, including those desired for fossil fuel alternatives.

While I am greatly sympathetic to Bjornerud's nascent ontology, the next step in developing a geological ethic is to specify timefulness through method – through action. For Bjornerud hopefully expresses the goal that "Maybe, just maybe, [timeful attention to] the Earth itself, with its immensely deep history can provide a politically neutral narrative from which all nations may agree to take counsel" (Bjornerud 2018, 18-19). What can geoethics recommend, for scientific praxis or for responding to global environmental disaster? An explanation is desirable between ontology and ethics to describe how worldview shapes – and should shape – action.

Callicott, while musing on the augmentation of the Land Ethic with the Earth Ethic, frustratingly constrains the capacity of the planetary as he claims the need for an "anthropocentric" Earth Ethic – i.e. an earthly ethic that is focused upon human interests and value. Callicott apparently believes that an earthly ethic provides limited potential, since he is convinced that it is impossible to meaningfully cognize the scope of the planet (Callicott 2013). But is this conclusion warranted? The geoscientists I have mentioned here seem much more optimistic in a geological ontology – that cognizing the vastness of Earth's temporal and spatial scope is indeed possible and ethically useful. Certainly, human cognition is limited by any individual's bodily constitution and situatedness in a particular place in the world. Geoethics does not necessitate a mythical grasping of the planet in its (supposed) entirety to turn ethical attention toward the earthly. Perhaps appropriate geological thinking needs a narrative to relate our personal lives to the geological. Deep time provides this narrative.

Deep time, always already Indigenous

Deep time is the phrase coined by John McPhee in *Basin and Range* (1981) to describe human activities in the context of earthly temporality. Deep time stretches far beyond humans as prehistorical (predating written records) and prearcheological (predating archaeological records). McPhee's coinage captures what Scottish geologist James Hutton suggested in the 1700s to differentiate geological inquiry from theological creationist narratives that began planetary time scales with the advent of humanity. Now augmented with acute evidence of the human impact upon earthly environments, the notion of deep time situates human activities in the context of the expansive unfolding of the planet's existence. It dwarfs human existence in this giant timescale. While the idea of geological time predates McPhee's coinage, *deep time* "more evocatively conveys the novelty of the concept: that it annihilates altogether the scale of human concerns" (Dresow 2023, 3).

Deep time is one expression of geology's lawlike, universalizing principle of *uniformitarianism* that has historically guided much geoscientific thinking. Uniformitarianism is famously confused in geological literature, though it can generally be understood as the principle that geological processes have acted uniformly enough through time that we can make inferences about the past based on presently available material evidence (Dresow 2022). Without a uniform, stable basis for earthly processes, geological tools like the Geologic Time Scale (GTS) could not be constructed. The GTS provides a narrative unfolding of time through named periods and epochs and ages, modeling the variety of changes (some tumultuous) the planet has undergone since its initial formation from gravitational accretion around the sun. Uniformitarianism allows disparate evidence from sometimes great distances across the planet to be connected to one another, forming the story of Earth's constitution and history.

In one sense, deep time's uniformitarian approach is abstract and merely metaphorical. In another, deep time is profoundly material for geoscience. Because time cannot be humanly comprehended in the infinite, or even in the extremely vast stretches of planetary history, geology thinks time spatially. This brings earthly history to present experience. Rocks even serve as literal "time-rock units" that are actual (not metaphorical), physical markers of particular time intervals past, surfaces of time. In this way, geology has a "visual language" (Dresow 2023).

This spatial reasoning is not an invention of geology, or any other Western geoscience. It is always already an Indigenous method, practiced since time immemorial. Tink Tinker observes that "notions of deep time are not intrinsically foreign to Indian peoples," bridging non-Indigenous geological claims with Indigenous ones (Tinker 2004, 108). The moniker of "deep time," with its grounding in geoscience, does not fully describe Indigenous temporal wisdom (since Indigenous temporality exceeds the geoscientific notion in many ways), but its ontological implications match what Indigenous knowledge already holds wise: good relation of and with the land. The Indigenous sense of deep temporality is yet spatially and spiritually connected to the particular lands and practices of Indigenous peoples.

Viola Cordova reminds that time is relationally and culturally constructed (Cordova 2007). Temporality is experienced and conceptualized relative to place and custom. Time is not a self-existing *thing* or dimension*,* Cordova affirms, but a *measure*: "Time is merely a measure of motion: of the motion of the sun, stars, and moon through the sky, of changes that are visible and can be predicted" (118). In contrast to Western metaphysics of history where time is plastered onto an infinite universe, Vine Deloria Jr. describes that Indigenous metaphysics are "taken directly from the world around them, from their relationships with other forms of life. Context is therefore all-important for both practice and the understanding of reality" (Deloria 2003, 65).

The structure of Indigenous metaphysics is crucially *spatial*. This spatial thinking requires ethics to be articulated in the physical world and real human situations, not through abstract principles that are taken to be valid at all times and for all circumstances (72). A major difference between Indigenous and Western metaphysics is the Western insistence upon "absolute historical recording" of their version of reality, whereas Indigenous religion does not insist that its particular understanding of creation necessarily leads to conclusions about all of humanity and all of reality – and especially not to blanket conclusions about humanity's "good or evil nature" (87).

It is therefore a notable difference between Western geology's deep time and Indigenous deep temporality that Indigenous temporality is intimately connected to relationship *with* the land. Importantly, this does not mean that Indigenous histories are devoid of earthly knowledge from before human beings appeared.[24] As Deloria explains,

> Science insists, albeit at a great price in understanding, that the observer be as detached as possible from the event he or she is observing. Indians know that human beings must participate in events, not isolate themselves from occurrences in the physical world. Indians thus obtain information from birds, animals, rivers, and mountains, which is inaccessible to modern science. (Deloria 1997, 40)

Indigenous relationships with nonhuman others allow for those nonhuman others to tell of their knowledge beyond human experience. It is relation to the land, and fidelity to relationships with nonhuman beings, that allows for an expansive understanding of temporal unfoldings.

This relationship to the more-than-human world is *personal*. The more-than-human is kin. Rocks are grandparents, Tinker writes, holding a powerful sense of relation through time as the source and maintenance of life (Tinker 2004, 109). Time is experienced through relationship

[24] The story of Skywoman, found in Anishinaabe and other tribal traditions, recalls earth before human beings appeared and details Skywoman's arrival (Kimmerer 2015).

– it arises and is taught in the material reality of the rocks. Deloria describes that "to have time, there must be a measurable distance to travel during which time can pass" (Deloria 2003, xvii). Space is limited primarily geographically, and any sense of time that arises here is second to "present geographical experience" (69). Deloria describes their intertwinement through sacred sites:

> The vast majority of Indian tribal religions… have a sacred center at a particular place, be it a river, a mountain, a plateau, valley, or other natural feature. This center enables the people to look out along the four dimensions and locate their lands, to relate all historical events within the confines of this particular land, and to accept responsibility for it. (66)

In short, "space generates time" (70). Sacred places are a centering point for Native ontology, epistemology, and ethics: "Sacred places are the foundation of all other beliefs and practices because they represent the presence of the sacred in our lives. They properly inform us that we are not larger than nature and that we have responsibilities to the rest of the natural world that transcend our own personal desires and wishes" (285).

Indigenous conceptions of time are imbued with responsibility, with ethics. Time is not an "objective" universalized truth that hovers, disconnected, above the earth. Rather, it is given in earth, the ground of ethics. It conveys right relation, the way to walk in life. Indigenous deep temporality contains the reminder of longstanding covenants of relation to other earthlings. If geoethics is to be successful, it must find its foundation in the fertile, deeply temporal sense of ethical relationship with Earth.

Geology and coloniality

While I have suggested deep time as a potential convergence between Indigenous knowledge and geoscience toward geoethics, major obstacles stand in the way of their alliance. Foremost among them is geology's colonial origins and its ongoing proliferation of coloniality, particularly by serving extractive industries. While earth science degree-holders can now readily find employment outside of extractive industries, the discipline still bolsters extractive activities (and is yet known for this), thereby supporting continued colonial endeavors.[25] Western science has also harbored racism, disdaining Indigenous knowledge – geological and otherwise.

The discipline of geology as it is recognizable and practiced today emerged at the height of European imperialism in the late 18th century and early 19th century, whose metaphysics fancied nonhuman nature as a knowable and predictable machine. Nature was to be dominated and controlled to achieve certain knowledge of it, as well as the advancement of "civilized" society. Geology was the science of knowing and maximizing nature as a resource. It was brought to the New World for the purpose of resource prospecting and extraction (Rogers et al. 2022). There, Indigenous people were perceived both as part of the exploitable land and as part of a lower and more primitive form of humanity that would soon go extinct (Plumwood 1998; Yusoff 2018; Frankel 2025). Geological explorations and knowledge played a key role in dispossessing Indigenous people of their territories. Black people, extracted from their homes and brought to the New World to be enslaved, were believed to need the guidance of "the hand of whiteness" (Frankel 2025).

[25] Indigenous lands are increasingly threatened by mining and energy development industrialization (Kennedy et al. 2023).

Predating Social Darwinism, geology supplied the reasoning that race was a progression of *strata.* Geology created a "vertical view of time," where life forms found in fossils appeared to progress toward greater diversity and complexity through the strata. Indigenous and Black people were seen as part of past strata, while colonizers saw themselves as the victorious present and future above the strata (Frankel 2025).

Meanwhile, resource exploitation led to the fortressing of universities to protect knowledge of the elites. As Rogers et al. explain, "These institutions play by a set of internalised structures and hierarchies and acknowledge internal rules, which go towards reinforcing colonial and racist power relations. Such 'powerful knowledge' continues to ignore, belittle, and erase other systems of knowledge" (Rogers et al. 2022, 191). For example, the practice of "parachute science" persists, where researchers "parachute in" from elsewhere to a site and remove material from the study area without consulting local experts.

Indigenous temporal insights have hardly been recognized by geoscience. Deloria details the dismissal and disrespect of Indigenous geological knowledge by Western science in his monograph *Red Earth, White Lies*. Indigenous people have passed geological data through the generations via oral storytelling, which have been dismissed as mere folklore by Western science. Rather than recognize tribal knowledge as providing important corrections to the GTS, the historical sciences have undermined Indigenous traditional knowledge by contesting the length of time that tribes have lived in their homelands (Deloria 1997). In fact, Indigenous stories tell of witness to prominent geological events on a long timescale. In some cases, Western geoscience has eventually corroborated the details of this traditional wisdom (Deloria 1997; Tinker 2004).

A startling racism demeans Indigenous knowledge in Western science. Deloria illustrates this by examining the lack of evidence for the Bering Strait theory. The theory posits that in arriving via ice bridge in North America, Indigenous peoples are newcomers to the continent and cannot have been present in their lands as long as they claim. As Deloria notes, "By making us immigrants to North America they are able to deny the fact that we were the full, complete, and total owners of this continent" (Deloria 1997, 69-70). The theory undermines Indigenous sovereignty as well as epistemology. Deloria explains that

> American Indians, as a general rule, have aggressively opposed the Bering Strait migration doctrine because it does not reflect any of the memories or traditions passed down by the ancestors over many generations. Some tribes speak of transoceanic migrations in boats, the Hopis and Colvilles for example, and others speak of the experience of a creation, such as the Yakimas and other Pacific Northwest tribes. Some tribes even talk about migrations from other planets. (Deloria 1997, 81)

Intergenerational memories, passed through oral storytelling, are not recognized as their own forms of knowledge and science. In comparison, and despite its widespread popularity, the Bering Strait theory in fact is supported by very tenuous evidence. It represents a lack of the rigorous method for which Western science prides itself.

Deloria sources the dismissal of Indigenous perspectives in Western metaphysics, which he describes as obsessed with a linear conception of history. This linear temporality contributes to a vision of reality where "history is all important and nature is merely an inert mass to be exploited" (Deloria 2003, 58). The Christian tradition at the heart of Western metaphysics contends that human experience can be recorded in linear fashion from a set origin from Genesis to the existence of a future heaven, assuming that "humankind's experiences have remained fairly uniform" and abstracting from lived experience (120). Deloria calls this the

"uniformitarian interpretation of history," presumably after the geological uniformitarianism (121-122). This uniform notion of history carries with it the teleological assumption that Christians progress beyond the "mythic" beliefs of Indigenous religions to greater (moral) heights: "Religion has often been seen as an evolutionary process in which mankind progresses from primitive superstitions to logically perfected codes of conduct… honed to philosophical purity of expression. The validity of most religious traditions is believed to be their ability to explain the cosmos" (64-65). What was really an experience of a deity in a particular local situation "is mistaken for a truth applicable to all times and places, a truth so powerful that it must be impressed upon peoples who have no connection to the event or to the cultural complex in which it originally made sense" (65). History and the marching of linear time are thus intertwined with the universalizing and detached metaphysics of Western thought.

Following Deloria, Brian Burkhart illustrates the cleavage between Indigenous views and the harm of colonial Western thought as the latter's delocality. "The goal of coloniality in the first place," he writes, "is to erase the actual locality through delocality" (Burkhart 2019, xvii). This delocality is a perspective divorced from its fundamental connection to land. In delocality, Burkhart asserts, "We forget that our being is not human being in the sense that we understand this term as a delocalized, planetary humanness that floats free from the land." Rather, "Our being is always first and foremost an originary and continual manifestation out of the land, being-from-the-land" (xvi). Coloniality has sought to disrupt the locality of Indigenous perspectives, laminating a delocalized perspective on to Indigenous communities and dispossessing Indigenous people of their lands. (Burkhart points out, resisting colonial annihilation, that Indigenous locality can never actually be removed but only obscured (xvii).)

Max Liboiron similarly distinguishes between the colonial vision of land and the Indigenous living relationship with place, Land. They observe that "Small-*l* land is usually synonymous with Nature, in that both focus on only some aspects of relations, such as soil, air, water, animals, and plants, but not on human people, events, memories, spirits, or obligations. Nature describes colonial relations with capital-*L* Land" (Liboiron 2021, 48). Liboiron emphasizes *specificity*: "unlike land, Land is fundamentally relational and is *specific* to these relations" (45). "Land" is a term for all the relations that are unique and proper to a place and people, not universal. To put it in Burkhartian language, Land is locality.

The delocalizing force of coloniality imposes the narrative of colonial difference in an attempt to silence the Indigenous philosophical voice. Through colonial delocality, Indigenous voices are heard only for their representation of "a cultural or national truth that can only be judged as an authentic or inauthentic expression of that culture or nationality" and not as speaking *the* truth (Burkhart 2019, xix). Burkhart uses the perception of the authority of science as an example: "We do not speak of diversity and authenticity in relation to the broad spectrum of voices of scientists because we understand science as arising out of something real, whereas we understand culture, religion, faith, spirituality (particularly as those relate to Indigenous peoples) as arising out of something fictional" (xx).

Locality is not just an epistemic position that vies for attention among other epistemes. Burkart argues that locality is more than simply situating knowledge as part of a particular human construction (Burkhart 2019, 64-68). It is not an artifact of Indigenous knowledge, instead being the more-than-human. Appeals to universal truth *and* appeals to situated truth both fail because they are yet delocalized, caught either in a self-important generality or a diminishing relativism. Locality is also more than a mobilized concept. Locality *is* "a materiality, but it is

also a reconceptualization of materiality itself from the present perspective of delocality. Locality in this way is more than a backdrop or background context for being and knowing" (xvi-xvii). Locality is the root of being that "is a part of each of us and speaks through us and from our historical and geographical place in the world regardless of how our identity is constructed in relation to culture or nation" (xiv).

When we conceptualize ourselves through delocality, we invent a planetary humanness that somehow floats free from relation to the land (Burkhart 2019, xvi). Burkhart warns that appeals to planetary philosophy do "not maintain a conceptual clarity of geographic locality…. Thinking planetarily without clarification can be equated with the same universality and delocality of modernity/coloniality that serve to disrupt the land itself as the ground and the limit to thinking" (49). Coloniality persists in delocalized metaphysics. This means that decolonizing geoscience requires further disruption than small methodological tweaks like avoiding parachute science and including Indigenous participation in geoscientific research. Instead, it requires a change in ontology, the structures that organize observations of the world. It also requires an awareness (and potential change) of the values operative in perspectives and methods. Geoethics cannot blithely posit a framework for planetary responsibility without reproducing colonial harms.

Importantly, the change in ontology that is needed in mainstream Western geoscience must not entail the assimilation or control of Indigenous ontology (Mantyka-Pringle et al. 2025). That is, the challenge facing geoscience is the development of its own localized ontology of earthly relation, rather than seeking to incorporate and appropriate Indigenous knowledge. The two knowledge sets can walk together as partners while geoscience works at remediating its metaphysics. The real potential of geoethics is thus more difficult and yet more promising than

its advocates have suggested, as it represents the opportunity for reconciliation between geoscience and Indigenous knowledge, as well as needed ethical attention toward earthly systems.

The promise of geoethics

There is positive potential in geoethics if it is able to confront geology's colonial past. Because of its careful attention to deep time and the vast more-than-human world, geoethics holds the possibility of achieving solidarity with Indigenous plights. Geoscience and Indigenous perspectives appear to share important values of attention to the physical nonhuman world across long timespans, even if geoscience must alter its practices and ontology to better support Indigenous knowledge.

Peppoloni and Di Capua maintain that geoethics asks geoscientists "to become more aware of the cultural dimensions of geosciences, to recognise the social value of their scientific knowledge, as well as to assume the ethical responsibility of using this knowledge for real progress of society, while respecting the balance between the development of social systems and the protection of ecological systems" (Peppoloni and Di Capua 2022, 23). While necessary, awareness of the colonial metaphysics and influence of Western science is only a preliminary to enacting responsibility. While yet ensconced in Western metaphysics, "ethics" maintains delocality (Burkhart 2019).

Indeed, geoethics and the ethical valence of deep time are likely to sound tinny and unjustified in present discourses. Philosopher Max Dresow doubts the ethical promise of geological temporality. He reminds that "almost from the beginning, deep time was domesticated within a framework that saw man as the end, or *telos*, of history" (Dresow 2023, 47). From this

perspective, “it follows that deep time can offer no affront to human dignity, no matter its great magnitude” (47). An earthly ethic has no pull if it is concentrated narrowly upon human affairs and value. But besides its suggestion that “the scale of human concern ought to extend beyond its ordinary horizons,” Dresow argues that “deep time is too abstract a notion to command our moral attention” (2023, 49). Certainly, a delocalized notion of deep time cannot impel earthly responsibility.

How is this delocalization to be resisted? Chakrabarty reconciles an attention toward the force of the geological, the power that exceeds human doing, with sociopolitical history through a new orientation toward temporality. He writes, “How do we relate to a universal history of life – to universal thought, that is – while retaining what is of obvious value in our postcolonial suspicion of the universal? The crisis of climate change calls for thinking simultaneously on both registers, to mix together the immiscible chronologies of capital and species history” (Chakrabarty 2021, 42). Chakrabarty suggests that we must learn to see time in multiple dimensions: the temporality of human sociopolitical affairs and the temporality of the planet that dwarfs those affairs. Moving between these temporalities, one after another and over again, may help to re-ground the vastness of the global and the planetary. Thus, one way of confronting delocalized views and practices is to disrupt the singular authority of universalization, and allow both the lenses of the global and the planetary to influence our sense of history.

But seeing through compound temporality does not in itself bring the *global* and the *planetary* into localized understanding. Rather, ethically speaking, the *global* and the *planetary* must be reframed to reflect place-specific experience. If we think *through* the land, a notion of planetary locality can be “a powerful disruption of the delocality of modernity/coloniality” (Burkhart 2019, 49). It is crucial to recognize that “methodologies – whether scientific, writerly,

readerly, or otherwise – are always already part of Land relations and thus are a key site in which to enact good relations (sometimes called ethics)" (Liboiron 2021, 7). In their intimate connection with Land, methodologies are therefore already imbued with ethical value and a call to respond to the more-than-human. Liboiron asserts that "Science always happens within land relations, and those relations are always specific to that place, even if you don't believe in Land" (46).

This acknowledgement of latent land relations in science is not to diminish the weight of the colonial problem: the reach of colonialism is far and "lurks in assumptions and premises, even when we think we're doing good" (45). Rather than pursue universalisms, Liboiron proposes that anticolonial science can engage in *generalizability*. "Generalizability is about commonality, shared characteristics, and overlap. Things that generalize can still be place-based and have differences, despite similarities" (152-153). Universalism is the sin of colonialism and reproduces colonial harms: a universal claim "requires fungibility or exchangeability" (51). Generalization, however, is a necessary feature of inductive reasoning. It is not that inductive reasoning is made impossible in Indigenous knowledge systems; rather, induction is the reasoning of generalizability, of commonality.

Since there is no "homogeneous sense of time shared by all societies," Deloria writes that "We can and must, therefore, create a new understanding of universal planetary history" (Deloria 2003, 64). Here Deloria does not mean a "universal" in the abstracted, delocalized sense of Western metaphysics. He suggests instead a commonality among diverse senses of time that are connected to the physical realities of the planet. A generalization that bridges observations of particular places is still possible, so long as it is motivated toward Land and resists the pull of delocality. Any generalization will yet highlight the narratives of spatiality. Additionally,

knowledge is provisional rather than absolute. Deloria writes that "the hallmark of the true Indian philosopher was the ability to hold in suspended judgment the experiences he or she had enjoyed or was told, and to file away that bit of knowledge until the time when more data of closely related content came his or her way" (Deloria and Wildcat 2001, 6). Generalizations should not be taken to hold in perpetuity. As Land changes, so must generalizations be responsive to that change.

Reasoning through generalization, rather than universalization, allows one to think the world "from the ground up," as Jason Wirth suggests (Wirth 2024). It confronts, head-on, the difficulty of thinking together the *global* or the *planetary* with locality. They are in tension when the *global* or *planetary* is conceptualized as universal, floating free from the land. Instead, building connections between places and attending to their unique power disrupts the delocalized top-down approach of the *global* and the *planetary*. It forces a reconceptualization that the *planetary* is a nest of local abodes, teeming with earthlings (Wirth 2024).

Timefulness, as a key component of geoethics, is a hopeful means to achieve this ontological shift. Bjornerud's description of deep time sensibility is striking: "A window is opened, illuminating a distant yet recognizable past… this enchants the world with layers of meaning and changes the way we perceive our place in it" (18). Timefulness can be a gateway to ethical value, to the imbuement of abounding earthly existence. It can provide a narrative of relationship with the earth. Geoscience arrives at this timeful narrative through its field practice of encountering strata, through personally examining and drawing and making connections between rocks that are the traces of time. It may be able to cultivate a practice of earthly respect if these personal relationships are kept in view, allowed to ground the vast sense of temporality conveyed by the GTS. The scale itself must not be held authoritative; rather, its origins and

construction should more readily be taught – for it is a process of generalizing across locales that leads to the stitching together of a planetary narrative.[26]

Bjornerud points out that temporality has two useful dimensions in the Greek language: *chronos*, the etymological basis for "chronology," where time is something that "simply marches on," and *kairos*, where "time is defined within a narrative" (Bjornerud 2018, 26). *Kairos* is a notion very close to the temporality of Indigenous knowing as described by Deloria, Cordova, Burkhart, and Liboiron. *Chronos* cannot avoid its involvement with the delocalized universalization of time in the geological tradition, and geoscience would do well to cultivate its knowledge and discourse through *kairos.* Geoscientific *kairos* will not be automatic; this will require deep commitment and the reformation of the ways geoscientists speak and teach their discipline.

As Tinker writes, "Much of American Indian knowledge comes from careful observation of the world, always done out of an attitude of relational respect and reciprocity" (Tinker 2004, 118-119). Deloria comments that this sense of relationality – its methodology and its guidance for making observations – is not a form of knowledge unique to Indigenous people. Rather, "it would be available to anyone who lived primarily in the natural world, was reasonably observant, and gave other forms of life respect for intelligence and power of thought" (Deloria 1997, 41-42). Geoethics invites an engagement with temporality that personalizes relation to Earth in its vast dynamic unfoldings. Sharing an expanded notion of temporality, geoscience has an opportunity to ally itself with Indigenous wisdom to develop a crucial planetary ethics – and perhaps even guide a responsible approach to widespread environmental degradation.

[26] For historical details about how the GTS was constructed in Western science, see Dresow 2023.

V.

ON THE RELATIONALITY OF DEEP TIME

As the planet Earth's average temperature continues to rise, it is not uncommon to hear dire phrases about "time running out" for political and ethical overhaul to address climate change. In 2020, a 62-foot-wide digital clock began looming over Union Square in Manhattan, counting down the years, days, hours, minutes, and seconds to the date of Earth's "deadline" – a supposed "critical window for action to prevent the effects of global warming from becoming irreversible" (Moynihan 2020). The artists behind this Climate Clock, displayed in New York City and online at ClimateClock.world, insist that the world has *one* deadline by which we must "act in time." The Climate Clock is meant to indicate the planet's "climate budget," at whose depletion "the likelihood of devastating global climate impacts would be very high" (Climate Clock 2024). At the time of this writing, humanity reportedly has only about five and a half years "left to limit global warming to 1.5 degrees Celsius" (Climate Clock 2024).

Besides questions of measurement about whether this "carbon budget" is accurate, the Climate Clock and its associated discourses of "running out of time" impress a troubling temporal authority upon the problem of climate change. Kyle Powys Whyte points out that the image of a ticking clock reinforces a linear temporality, which, he argues, obscures ethical responsibilities (Whyte 2021). "What appears to be in peril," Whyte says of the urgency created in linear climate time, "is some taken-for-granted state of affairs that is threatened by climate change" (Whyte 2021, 45). Indeed, what makes this future point Earth's *deadline*? To my eyes the Climate Clock evokes a few dubious assumptions and implications: (1) that climate crisis can

be described as a monolithic problem summarized by the time humanity "has left," (2) that irreversible effects of climate change *will happen* in the future – implying that irreversible effects have not *already happened*, and (3) that there is only one meaningful temporal scale: the one whereby humans, collectively, respond to the average warming of the planet.

These assumptions paradoxically de-emphasize the multiplicity of climate change-related harms. Is it not irreversible that some species have already gone extinct or are dangerously imperiled because of climate change effects, and that human climate refugees have already fled their homes as their lives have been made precarious due to changing weather patterns? Whyte reminds us that Indigenous peoples' traditional relationships to specific localities and nonhuman others have already been disrupted by the colonialism that also fueled climate change (Whyte 2017). What about climate-related injustice *now*? The linear countdown already seems to have failed those groups; they have been left.

Perhaps the Climate Clock, with its incessant counting down second by second, is too focused on the future and not enough on time elapsed or time currently experienced. It projects an impending future through its linear temporality, moving toward some singular target on the horizon that cannot quite be seen. This is a realm of speculation. I do not mean to suggest that speculation on the to-come cannot be meaningful, but a sole focus on this future neglects other important aspects of temporality. It does not encourage a strong sense of now, and much less an understanding of where we've been. These are crucial elements of an ethical response to climate change. For an understanding of how the problem came to be and how it affects life in the present will imply particular ethical responses. With the projection of a singular deadline, the Climate Clock insinuates a problem far off, yet to come, something to address later.

I would like to suggest that cultivating the possibilities for an ethical future in the face of climate change will require an alternative sense of temporality.[27] I am intrigued by geoscientist Marcia Bjornerud's call for "timefulness," what she describes as "a clear-eyed view of our place in Time, both the past that came long before us and the future that will elapse without us." Timefulness includes "a feeling for distances and proximities in the geography of deep time" (Bjornerud 2018, 17). Bjornerud argues that we take up geology's "single greatest contribution to humanity," fathoming deep time, for addressing climate change. It is this deep time sensibility that Bjornerud suggests is necessary to inform ethical decision-making – specifically, as her book's subtitle notes, "thinking like a geologist can help save the world." This is a minimal claim: deep time becomes one of many important inputs for ethical decision-making. But is there also a stronger normative valence to a deep time sensibility? (Bjornerud does not spell out this possibility.)

I contend that a deep time sensibility is normatively relevant through its ontological dimensions. Deep time contextualizes life (including human life) in the vast material unfolding of this earthly planet. Ontologically, this involves three components: (1) the grounding of temporality by the Earth's material constitution, (2) the contextualization of human existence in the vast expanse of time in Earth's inhuman history and future, and (3) the positioning of human beings in relation with and amid the planet. This relationality is a particularly important feature of deep time. In this movement, I explore three contributions to the ontology of deep time relationality. First, James Hutton's account of geological time highlights the distinctly earthly,

[27] I largely use the terms "time" and "temporality" interchangeably. I do not take either term to independently evoke a particular mode of sequential progression, as has sometimes been argued (i.e. neither is inherently linear or cyclical). As I explore in this movement, a meaningful sense of time (or temporality) will include attentiveness to relationships held in the present, as well as an ontological contextualization of relationships constituted by deep materiality and history.

material quality of temporality. Next, Martin Buber's discussion of temporality shows its necessary constitution in relation. Third, Vine Deloria Jr. describes relations as crucially imbued with ethical responsibility. I then close with a brief reflection on what deep time can mean in relation, providing texture to Bjornerud's call for a normative timefulness. A deep time sensibility must recognize temporality as a feature of lived earthly relation, the place where responsibility to one another is honored.

The perspectives I weave together here do not cohere perfectly. While they overlap at points and together help to illuminate the ontological and ethical importance of deep time, they also come into tension. I will attempt to signal their disjuncts while building a constructive notion of deep time through their insights.

Hutton's deep temporality

In the late 18th century, Scottish agriculturalist and academic enthusiast James Hutton introduced the notion of geological time with his tome *Theory of the Earth*. Often credited with the founding of modern geology, Hutton's account was striking in juxtaposition to his contemporaries, who largely used a biblical time scale to explain earthly morphological events. As science historian Rachel Laudan describes, "Unlike Christians, who thought that God had designed a world with a distinct beginning and a definite end, [Hutton] hypothesized a world that, as far as the geologist could tell, extended indefinitely far into the past and would last indefinitely long into the future" (Laudan 1987, 116). Remarkably, Hutton contextualized earthly observations in a temporality that stretched beyond a discrete (human) origin and an expected culmination. That temporality was instead textured by the movements of the Earth: "For having, in the natural history of this earth, seen a succession of worlds, we may from this conclude that

there is a system in nature…. The result, therefore, of this physical inquiry is, that we find no vestige of a beginning, - no prospect of an end" (Hutton 1795, pIcIsIV).

Hutton's *Theory of the Earth* reconstructs a history of "natural operations which have succeeded each other," that he argues can be discerned from the "present situation of things" (Hutton 1795, pIcII-III). He repeatedly emphasizes that this temporal knowledge arises from the observation of physical phenomena – from an attentiveness to the stuff of Earth. Time, manifested in material formations and processes, is more than merely a convenient application of the concept of temporal sequence. Temporality has a distinctly geological constitution. Hutton describes this in his recognition of the cyclical quality of earthly processes. The earth is "balanced by the processes of weathering and erosion," where no observed rocks are "primeval" or "primitive" but products of the Earth's cyclical system (Oldroyd 1996, 94). For if soil is continually being carried away, then there must be some process of returning sediment – otherwise all land surface would be reduced to a flat plain (93). Hutton's view thereby also resists linear progression and catastrophist conceptualizations of time as adequate to geological explanation (285). Time cannot rightly be linear nor punctured by merely random chaotic events, or else erosion and rock formation can hardly be satisfactorily understood (without the divine explanation that Hutton rejected). Rather, material reality, in its interdependent formations and processes, quite literally grounds time.

Further, this geological evidence is flavored by human perception. Hutton was greatly aware of the limitations of observation, arguing that this ought not to be taken as evidence of geological or temporal limitation. As he writes of field observations,

> In thus tracing back the natural operations which have succeeded each other, and mark to us the course of time past, we come to a period in which we cannot see any further. This, however, is not the beginning of those operations which proceed

> in time and according to the wise economy of this world; nor is it the establishing of that, which in the course of time, had no beginning; it is only the limit of our retrospective view of those operations which have come to pass in time. (Hutton 1795, pIcII)

Hutton charges that the geologist is mistaken to think that the limits of observation are the limits of reality. He addresses a familiar epistemological concern: how can we know what we cannot directly observe? Hutton's reasoning builds upon Nicolas Steno's 17th century principle (now law) of superposition that recognizes lower rock strata to be deposited before those lying above them. While processes from the distant past are not directly observable, their effects are, as evidenced in stratified deposits. Assuming a relative uniformity to physical causes, an observer can work backwards from the presently observable, recovering a past sequence of events that provides an account of how things came to be what they are by linking the observation to a time sequence (Oldroyd 1996, 66). With induction, geological history surfaces. Geological time is thus hardly an abstract concept imposed upon physical reality but instead engendered by the Earth's constitution and movement. And, this reality is revealed through the situatedness of the perceiver's limited episteme.

Though Hutton almost certainly did not mean to be understood quite this way, his description of observational limitation evokes a potent relation between geological formations and human perceivers. One might say that perception *responds* to the earth. Geological knowledge, including geological time, emerges between observed and observer. And yet, the most impressive insight of this geological knowledge is that there was an ancient world even before humans and their perception of it. This "before" is accentuated by John McPhee's 1981 term "deep time," a poetic articulation of Hutton's geological temporality beyond human observation. *Deep time* is pre-historical in that it includes temporality before written human

records and is pre-archaeological in that it designates stretches of reality before anthropological remains and artifacts. The concept of deep time indicates temporality as (at least partially) *located* in geological entities, forces, and events. Deep time is more-than-human. Following Hutton, time in the abstract is not available to us. He writes,

> Are we, with our ideas of *time*, (or mere succession), to measure that of eternity, which never succeeded any thing, and which will never be succeeded? Are we thus to measure eternity, that boundless thought, with those physical notions of ours which necessarily limit both space and time? (Hutton 1795, pIcII)

Deep time measures present physical reality rather than institutes a definitive account of eternity. This depth certainly reminds of a reality without human beings – a reality that occurred in the past and that likely will come again in the far reaches of tomorrow, regardless of our response to climate change (Bjornerud 2018, 173). Deep time swaddles human existence in a greater reality of this planet. Though infinity is not to be measured – and therefore not known – a rich temporality of physical, geological reality is.

While my creative reading of Hutton emphasizes the material quality of deep time, it is yet possible to abstract Hutton's conception of deep time from the physical dynamism of the earth. As it (re)constructs the history of the planet through eons and epochs from the Hadean earth eon to the Holocene epoch, the concept of *deep time* might appear to stand in for linear accounts of near-eternity (or, at least, stretches of millions of years that are difficult to conceptualize), and Hutton's formulation does not prevent this posturing. Buber's ontology of relation, however, more ably tethers time to materiality. Time is not simply present in physical evidence, as if passively in wait to be unlocked, but is borne by ethical relationship.

Buber's relational temporality

Similarly to Hutton, Martin Buber rejects an abstracted and absolute sense of time. In his 1938 essay "What is Man?" Buber recounts his own terrifying experience with the authoritativeness of the abstract concepts of time and space:

> When I was about fourteen years of age I myself experienced this in a way which has deeply influenced my whole life. A necessity I could not understand swept over me: I had to try again and again to imagine the edge of space, or its edgelessness, time with a beginning and an end or a time without beginning or end, and both were equally impossible, equally hopeless – yet there seemed to be only the choice between the one or the other absurdity. Under an irresistible compulsion I reeled from one to the other, at times so closely threatened with the danger of madness that I seriously thought of avoiding it by suicide. (Buber 1955, 136)

Each visualization of time and space young Buber tries to conjure requires an image of eternity – limitlessness of form and sequence – if only in opposition to familiar finite reality (e.g. "edgelessness" seems to require the visualization of edged space, and a temporality with definite beginning and end yet invites the question about what defines a "beginning" or an "end" against a sea of no time). Buber describes that the serious attempt at comprehending infinity is intensely troubling because it "makes man… emphatically conscious that he is not a match for the world" (136). Infinity, the origin and end of time, the edge of spatial reality, and reality without spatial contours are each conceptualizations that make one a stranger to the world; the intellectual exercise induces profound loneliness. For Buber this was severe enough horror to drive him to consider ridding himself of this experience by embracing death.

The abstract concepts of space and time that Buber tries to visualize as a teenager indicate the limits of perception, forcing him to struggle with imagining what is likely quite impossible to imagine. This difficulty is understandably frustrating. But this does not fully

encapsulate Buber's existential distress. The philosophical problem that irks him is the assumption that such concepts provide the capacity for comprehending the world universally, consistently, and indubitably. It is not that such concepts are problematic because they are incomplete – though indeed they are. Rather, the deception is in attempting to "comprehend" the world itself. Buber famously wrote that "the world is not comprehensible": it is "the glorious paradox of our existence that all comprehensibility of the world is only a footstool of its incomprehensibility" (Buber 1957, 27). The world is not comprehensible in the sense that reality cannot be purely conceptualized or understood. It cannot be perfectly explained through grandiose cognition. It is not to be "grasped" as if possessed or harnessed by human knowledge. The concepts of time and space fail as universal concepts if they pretend to authoritatively explain reality qua reality.

Buber admits that it was reading Immanuel Kant's *Prolegomena to Any Future Metaphysics* that resolved his existential dilemma when trying to grasp infinity. There Buber found that space and time are social concepts that are "not attached to the inner nature of the world, but to the nature of my senses" (Buber 1955, 136). They are "only the forms in which my human view of what is necessarily works itself out" (126). Such concepts may be useful in their capacity to explain and explore, but do not correspond to how the world noumenally is.[28]

This is where Buber's philosophy ultimately departs from Kant. For Buber it is not a problem that concepts do not correspond with "actual" reality because they cannot reach the noumenal, but because they do not reflect our relation in the world. They do not describe a human being in their wholeness, which must be understood by seeing one *in* the world.

[28] Kant divides reality into what is knowable by human beings and what is not. The *Phenomenal* is the world as it can be perceived through human speculative reason. The *Noumenal* holds the content of the intelligible world but is inaccessible to human cognition – it is the objective world-in-itself, the way the world is beyond human intuition.

Ultimately, conceptualizing time and space as metaphysically authoritative requires their occurrence outside of relation. That is, they require taking oneself out of the world to visualize (if they can be visualized at all). Time is never grasped as time ad infinitum, in its abstract entirety, but is *lived*. And the lived, actual world is a world of relation. It is this world only that is meaningfully encountered: "all real living is meeting" (Buber 2000, 26).

The personal nature of temporal perception does not commit Buber to complete subjective relativism, however. Buber is clear that there is reality beyond what I encounter in relation. Constituent of relation is the acknowledgement of one's finite episteme. There is another with whom I am in relation, an other who has their own perception and knowledge that cannot be mine. Reality does not depend solely upon the perceiving subject. Rather, it is emergent from material relation, from mutually participating partners in relationship. This is what Buber means when he says that "Man is comprehended only in the world, the world is not comprehended in him" (Buber 1955, 127). Understanding is reached only through relation in the world, not through a priori grabs, as if there were no relation.

Relationality is not a choice; it fundamentally and inevitably constitutes us. My choice is how I respond. I can choose to honor my relational constitution. I become myself when I recognize you respectfully as an other (as Buber says it, "I become I through my relation to the Thou; as I become I, I say *Thou*" (Buber 2000, 26)). The world discloses itself to me, and through my attitude I must do this disclosure justice: "something lights up and approaches [me] from the course of being" (2000, 117-118). The world may not be comprehensible, "but it is embraceable: through the embracing of one of its beings" (Buber 1957, 27). Only a personal relationship reveals the world – in relation I come to understand the world. As Buber writes, "He who truly experiences a thing so that it springs up to meet him and embraces him of itself has in

that thing known the world" (27). In this corporeal space of relation is ethics, where I choose to turn toward the other and develop an attitude of openness toward them. Ethical relation necessitates this radical relationism, the recognition that reality is co-created by the parties in relation, rather than moved about as an accidental background. Reality cannot be "experienced" otherwise – in fact, it is not "experienced" at all in the sense of receiving it passively (Buber 2000). Entities do not precede their relationships but are actively created by them. The world is encountered personally *through* relation between self and other.

Because of the primacy of relation in Buber's ontology, time must also be located in relationship. To explain this ontological fact, Buber differentiates two varieties of time: cosmological time and anthropological time. Cosmological time is an intellectual concept of time only, an abstracted notion of a thing called temporality. It presumes metaphysical authority. We can make use of the concept, Buber says, "as if all time were present in a relative way" to us, "even though the future is not given to us at all" (Buber 1955, 140). Cosmological time is not actual human time, but a time in terms of thought (141). Though we interact with it like it is real, it is alien to human reality (144).

In contrast, anthropological time is time of actual relationship. This human time "cannot be comprehended, because the future cannot be present" (141). It can only be lived. In the moment of encounter, "nothing else exists, nothing save this beloved thing, filling out the world and indistinguishably coinciding with it" (Buber 1957, 29). In the other I come to know the world. But the future depends upon the will and action of living persons and is not something to be *known*. Time is, rather, encountered through memory. Buber elaborates, "as soon as we experience something *as time*, as soon as we become conscious of the dimension of time as such, the memory is already in play; in other words, the pure present knows no specific consciousness

of time" (141). Not having any sense of time in the passing moments of the present, anthropological time is real only in its historical dimension, in what has already come to pass.

The anthropological for Buber has clear emphasis over the cosmological, since cosmological time is a metaphysical concept that is, at most, only cognitively useful and risks isolating us from relation. Buber states that "an intellectual image of the universe which builds on *time* can never give the same feeling of security as one which builds on space" (Buber 1955, 140). It is the living, corporeal world that provides meaning and antidote to the loneliness of trying to comprehend the world. Relation occurs in bodily space.[29] Time is then an encounter in relation where I attend to the unfolding of the relationship.

For Buber, ethics requires fidelity to our relational constitution. Time must crucially be understood in the context of that relational reality, rather than posited as a metaphysical universal. Deloria's account of spatial ethics details the damages of linear cosmological time where Buber's is sparse. Deloria makes no differentiation between a useful "cosmological" concept of time and one more "anthropological," instead suggesting temporality as contiguous between beings, human or otherwise. This continuity is provided by the contours of the earth itself.

Deloria's spatial responsibility

Vine Deloria, Jr. critiques Western metaphysics for privileging time over space in his landmark 1972 book *God is Red*. The Western philosophical worldview, heavily predicated by

[29] Buber writes that the difficulties of cosmological time and anthropological time each are resolved in "an image of the universe which is grounded on faith: the power of faith alone can experience perfection as something assured, because it is something guaranteed to us by someone we trust – whom we trust as the guarantor also for what has not yet come to be in our world" (Buber 1955, 141).

Christian beliefs, asserts a governing linear temporality. Time is allowed to "consume" space, Deloria writes, causing "meaninglessness and alienation discernable in our generation [today]" (Deloria 2003, 72). For Deloria, Christianity instills an obsession with a future afterlife, denuding present relationships of their meaning and failing to provide guidance to life on planet Earth (74).

Western linear temporality, reinforced by Christianity, is a colonial metaphysics that posits one particular account of time as an objective universality.[30] This so-called "objective" time has been mobilized against Indigenous people to argue for their inferiority, their "primitive" and "undeveloped" ways of life that are supposedly basic in a teleological progression of civilization. The colonial vision of reality holds linear history to be all-important and nature "merely an inert mass to be exploited" (Deloria 2003, 58).

Resisting the harm of colonial metaphysics, time is better understood as bounded by space. Temporality cannot stand as an abstract principle governing reality – rather, it arises in specific realities. As Deloria describes it, Indigenous temporality is not held as a universal value, but only occurs internal to relationships (93). He writes, "Absent in this approach was the idea that knowledge existed apart from human beings and their communities, and could stand alone for 'its own sake.' In the Indian conception, it was impossible that there could be abstract propositions that could be used to explore the structure of the physical world" (Deloria 1999, 44). *Time* and *space* do not exist apart from their manifestations in the physical world, nor can

[30] We can see this imposition described in worries about the Anthropocene, where the epoch named after humanity's stratigraphical footprint seems to make humans a monolith with the same geological impact. The Geological Time Scale would recognize in name only the humans who had such a tremendous effect on geological constitution and yet indicate this impact as the responsibility of all humans. But marginalized groups have had demonstrably less impact. Especially if colonialism is acknowledged as a major contributor to climate change, the naming of the Anthropocene would obscure particular histories and responsibilities. The Anthropocene is to be posited as the next marker in the supposedly objective, definitive register of history.

they meaningfully be divorced as explanatory concepts. They must be experienced by participants in the world. Because of this, time is specific to relations in place: in short, "space generates time" (Deloria 2003, 70). Deloria explains that "to have time, there must be a measurable distance to travel during which time can pass" (xvii). Time measures the unfolding of an encounter between traveler and landscape – between two parties in a relation.

Time is relational, determining the meaning of relationships. As an illustration of this idea, Deloria discusses the notion of "seven generations" that was used by the Plains tribes to describe time. He writes, "If a family was respectable and responsible, its members would be granted old age and a person could live long enough to see and know his great-grandparents and his great-grandchildren" (Deloria 1999, 57). Thus it is the relationships between members of differing generations that measures time, as opposed to numbered decades or years.

Yet, as it is incorrect to posit "temporality" as an authoritative metaphysical principle, so is it inappropriate to institute "spatiality" or "relation" in time's stead. For relation is always specific to participants in particular place. Deloria clarifies that the common Indigenous phrase "We are all relatives" is not an absolute metaphysical statement but represents "a practical methodological tool for investigating the natural world and drawing conclusions about it that can serve as guides for understanding nature and living comfortably within it" (Deloria 1999, 34). The ontological recognition of relation serves as a foundation to understanding good living: it allows one to reason about how to conduct those relationships. Here time, which is necessarily played out through relation, is also strongly ethical. Deloria writes:

> Time is a complicated concept in a living universe. The basic pattern seems to be that of growth processes, which is to say that time has qualitative packets of quanta that are regulated by the amount of time it takes an organism or entity to complete a step in maturation. Thus all entities are regulated by the seasons, and their

> interaction has a superior season of its own that encompasses their relationship and has a moral purpose. (Deloria 1999, 57)

The concept of relation is never merely relation in an abstract or general sense, but is a specific set of *response*-abilities between those in relationship. Good relation is about taking up particular actions and attitudes toward the purpose of serving that relationship.

Whyte puts this point similarly: "It's not just enough to believe one has a responsibility" (Whyte 2021, 48). Acknowledging relation does not indicate how I am to comport myself in my relations, nor what those relationships actually look like. Sometimes, an appropriate relationship involves aggression or parting. The ethical task is to discern and enact a suitable response to any other. Indigenous history, told through stories and ceremony, teaches tribal members how to maintain and understand particular relationships. Ethics is proliferated through the cultural memory of a specific people to a specific place. Good relationships can thus be described as responsibilities that honor longstanding covenant:

> The idea of the covenant… is an early and important concept for tribal peoples. Stories explaining how the people came to hunt the buffalo, how the salmon came to be the major food supply, how bird feathers were incorporated into ceremonial costumes and medicine bundles, all derive from early interspecies communications in which other life forms agreed to allow themselves to be used in ceremonial and economic ways. A covenant places responsibilities on both parties and provides a means of healing any breach in the relationship. (Deloria 1999, 51-52)

Elsewhere Deloria explains how even rocks are mutual partners in relation and uphold their responsibility to relation as their Indigenous counterparts are expected to uphold theirs (34). In the relationism Deloria describes, ethics is a spatial responsibility, a respect for all connections with others, including nonhuman entities and processes. Upholding this respect involves taking up one's place in a very long history of relationship, indeed.

Deep time in relation

Whyte argues that instead of deploying a linear temporality, climate change is better addressed with kinship time. When time is experienced through kinship, "duration is perceived according to the degree of current kinship relationships, the history of kinship relationships, and future possibilities of kinship relationships" (Whyte 2021, 49). Deep time, originally an Indigenous notion, is a helpful companion to kinship time, especially for non-Indigenous persons who may not already have a sense of kinship. The notion of deep time contributes a crucial ontological realization that situates human beings in relation with the world – or, more specifically, with some particular part of the planet with which I am directly in relation. This place, as a network of interdependent inhabitants and processes, has long been here before me and will sustain in some way after me. Deep time allows me to see the reach of kinship relationships and honor that which makes my relationships, my existence possible.

With the philosophical insights provided by Hutton, Buber, and Deloria, deep time cannot be posited as a linear timeline from Earth's speculative beginnings to its speculative ends. Rather, deep time denotes the unfolding of the planet's changes, including those long before human arrival. The earth's interrelationships – gaseous and solid, abiotic and microbial, viral and fungal – are each implicated in this unfolding. Deep time is not separate or separable from lived time; it is comprised of lived time. For my encounters, I participate in multiple temporal scales. I am perhaps most importantly and evidently involved in a personal time scale, but I also participate in a humanly global and a geological planetary scale as well. Ted Toadvine articulates this insight elegantly: "[we are] moments of passage and moments of becoming for innumerable,

overlapping, and intersecting temporal happenings. And these happenings are not punctual nor discrete; they're mutually implicated" (Toadvine 2022).

Adopting a deep time sensibility, I become more responsive in my relationships as I see them intertwined with multiple time scales. For instance, I become attentive to the ways that my lover has been shaped by their relationships with their past lovers. Seeing my lover on a time scale beyond our particular connection allows me to respond with compassion and sensitivity when they react in a manner habituated by those past intimacies. History also shapes constitution beyond behaviors. A deep time view allows me to acknowledge the chronicles of myriad earthly components in my laptop that make it a functioning laptop. Chucking my laptop on the ground would not only impede its instrumental value to me, but I would not be respecting the processes that contributed to its construction: the billions of years of lithium, silica, and petroleum formation; the fuel burned in manufacturing and transportation; the poor labor conditions of cobalt miners and the nonhuman animals harmed by the mining process. Given the sheer amount of earthly material and energy held in my device, I hardly respect its incredible place in the unfolding of geological time by impulsively destroying it.

This thinking can quickly turn into a seemingly limitless list of historical contributions to the formation of anything in deep time (What were the molecules of my body before they were me? –the metabolism and shared evolution of living organisms in interaction with their environments –and, before that, stardust). It also does not definitively answer the pressing question of *how* to act. My point here is that this deep, geological history is not meaningless. It is not superfluous nor only slightly important to our ethical decision-making – and is actually quite materially real in our relationships. Looking toward the future and a hopeful response to climate change, a deep time sensibility nudges us to pay better attention to what created this wicked

problem. Deep time reminds us that we are inexorably intertwined in relation with this space rock. And though we never experience Earth as a planet, we catch glimpses of our responsibility to it in our lived relation: we are earthlings. The portending of the deep time to come is how we will choose to face this geological fact.

VI.

CODA

As I have allowed these movements to explore widely among the themes of nonlife, ethics, and relationality, I have perhaps invited more questions than provided responses. I acknowledge that some of the most pressing questions are those I have not endeavored to directly answer: What is the texture of earthly relation, and how might we articulate a more respectful relationship with Earth? How might geoethics and deep time actually guide action? How can geoscience improve its praxis, pursue decolonization, and develop geoethics for and from its discipline? What, precisely, does an ethics of nonlife entail, and what does it recommend in response to global and planetary issues? These questions will continue to shape my thinking far beyond this dissertation, I am sure, and represent the work still to do that has been opened by this project.

What I have achieved here, however, is a discussion of the motivation and context for these questions. More specifically, I hope to have convinced the reader of points in two main directions.

(1) Environmental ethics should pursue a framework that accommodates responsibilities toward nonlife. Not only is this necessary to better address planet-wide environmental degradation, such as climate change, mass extinction, and terraforming, but it is also prudent in a social reality that consistently demeans marginalized populations as nonlife, or otherwise morally unconsiderable. An ethics of nonlife would more readily reflect our earthly constitution and would be focused upon our experience as earthlings among a

diversity of human and nonhuman others. Further, an ethic of nonlife could accommodate responsibilities toward what we might consider the *planetary*, the wide web of relationships on this space rock, and its interaction with interplanetary beings.

Such an orientation toward nonlife requires an alternative ethical framework to extensionism. As I showed in movement II, extensionism distracts from the complex and dynamic relationships that comprise the planet, instead preoccupied with conferring value. A model of relational ethics is better able to articulate responsibilities that exceed bioticism, which I illustrated in movement III with Martin Buber's philosophy.

What is particularly compelling about Buber's account is that it develops relational ethics from a Western standpoint. It is one thing to point to Indigenous ethics as an appropriate model of relational ethics and quite another to recommend inheritors of the Western philosophical tradition to practice those ethics. For not all Indigenous ethical wisdom is meant to be shared. As tribal members participate in ceremonies and rituals to maintain covenants with nonhuman beings and spirits, those raised solely in the Western tradition do not (and in some cases, should not) have access to that cultural knowledge and praxis. Indigenous ethics helpfully indicate the shortcomings of Western metaphysics, as I discussed in movements IV and V, but inheritors of the Western tradition must build their own ontology of relation to avoid further colonial harm in cultural appropriation. Buber provides one such avenue (a powerful and convincing one, I think) for reconceiving Western ontology and ethics.

(2) Deep time is a precondition for a better environmental ethics. As geoscientists and Indigenous philosophers note, the temporality of traditional Western metaphysics is

narrow, anthropocentric, and culturally imperialistic. It distracts from crucial relations that are necessary to ethics as well as the recognition that we are earthlings and that ethics come from Earth. I showed this by engaging with the Indigenous philosophy of Vine Deloria Jr. and Brian Burkhart, especially, in movements IV and V, as well as the relational ontology of Buber in movement III. The material fact of our earthly constitution is often forgotten, even in environmental discourse. Acknowledging continuity with this place includes a long history of the dynamics of materiality that occurred to make this moment the one we experience.

Engaging the notion of deep time also readily includes Indigenous discourse. Adopting a deep temporality can help to combat the universal linear time characteristic of Western colonial metaphysics. Indigenous deep temporality is also inextricable from ethical attention toward nonliving others. Deep time thereby demands ethical interface with nonliving others. (I tried to show that Buber's philosophy makes room for the nonliving other in movement III.)

Deep time is thus an appropriate foundational aspect of geoethics, which acknowledges our fundamentally earthly constitution and directs our ethics toward the marvelous dynamics of the planet. A truly beneficial geoethics requests a transformation of the mainstream ethical approach. For the earth is no passive study object but a partner in knowledge and value creation. Geoethics implies, then, that ethical frameworks move out of extensionism and toward relationality to accommodate its earthly ontology.

I recognize that the notion of "deep time" may feel sterile – and perhaps terrifying? – to some readers. But it need not be sterile or abstract in the context of place. I attempted to address

the unhelpful, delocalized sense of deep time in movement IV, but allow me to say a bit more. If there is any ethical promise in geological temporality, then "deep time" cannot be taken as a lone, cerebral concept of *chronos* depicting the marching of numerical time. Taken in this sense, Max Dresow is correct that it certainly holds no ethical sway. However, when coupled with a bodied experience of rock, a material immersion, deep time augments bodily experience with a profound cognitive rendering. This is ultimately what Deloria means to emphasize when he says that space bounds time. The physical receptivity in proximity, the immediacy of relation, is what provides meaning to temporality. The history of relation becomes real, present in moments of interaction. Deep time is thus an invitation to an imaginative understanding of earthly ontology, a conceptual traverse mediated by the material relatedness of earthothers. It both grounds our experience in historical context and augments that experience with input from earthly relationships. It is a *kairos,* a narrative of temporality that reframes the past and the present and the future into the moment of experience in this place.

This is indeed a mere blink of the eye in the vast scope of earthly moments, but the smallness does not make it insignificant. Many say that the universe is indifferent, and perhaps the earth "does not care" whatever is done to it – especially in the context of billions of years of changes it has undergone. But still our relationships with this place matter, to us and to (at least some) other beings. That should be enough to urge our responsibility and our gratefulness. Of course the earth's history matters; it makes us who we are. We do well to honor that.

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