LITERARY GEOGRAPHIES

Speculative Ecologies: Anxieties, Hierarchies, and Anarchies in the Natures of Speculative Fiction

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Abstract: Ecological anxiety is an increasingly prominent response to environmental degradation, and one which often manifests within forms of fiction. Representations of nature in literature and film reveal the ways in which our society relates to nature, and, in turn, what the term "nature" means in the context of environmental crisis. Speculative fiction provides perhaps the widest potential spectrum for representing nature, in terms of the variety of forms nature can take. This essay, therefore, argues that speculative fiction is a production of nature, wherein nature is defined culturally, altering it in ways that reinforce or challenge the existing power structures that underly environmental crises. Positioning recent examples of speculative fiction within both literary and critical theory, the first portion of this essay highlights how invocations of nature metaphors can reinforce hierarchical and deterministic frameworks. The second portion of the essay presents opposing examples of fiction which challenge power structures using a variety of literary traditions to question and re-imagine the order of nature. Lastly, the essay situates the forms of nature depicted in speculative fiction at the intersection of a production of nature, human geography theory, and social ecology, putting often divergent theories in conversation with each other and revealing a framework for imagining, critically assessing, and re-imagining the ways in which speculative fiction produces nature.

Keywords: Speculative fiction; ecological fiction; eco-criticism; geography; environmental humanities; literary theory

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Introduction

Ecological anxiety, or 'eco-anxiety', is the anxiety and distress caused by ongoing ecological crises and deteriorating environmental conditions (Coffey et al. 2021; Onishi 2022). Exacerbated by the very real acceleration of global warming and collapse of biodiversity across the planet (IPBES 2019; IPCC 2023), these eco-anxieties nonetheless reveal the subjective and political foundations upon which representations of nature are constructed by centering questions about how the natural environment is defined (Robbins and Moore 2013; Castree 2014; Onishi 2022). If we accept that anxiety is tied to the threat of loss, or the fear of losing something (Lacan and Granoff 1956), then definitions of what that something is become critical for understanding its manifestations.

Within this framing is the implication that ecological and environmental crises are rooted in social context. Castree (1995) argues this by stating that the science and theory bound up in environmentalist ideology is inseparable from the cultures that produced them, reflecting a nature that is at once both real and epistemic. Which is to say that the way humans make sense of what is (and is not) nature involves not just 'objective' scientific knowledge but is simultaneously inseparable from the subjectivity of contemporary society through which knowledge is interpreted. Take, for example, the colonial homogenization that Lekan (2014) finds lurking in the extraterrestrial imagery used to construct the narratives of modern environmentalist movements. Here, Lekan ties NASA images of Earth to the abstraction of localized environmental and political struggles into the universal history of human exploitation of nature that characterizes the Anthropocene as a narrative. When humanity looks at planet Earth, all of humanity becomes responsible for its fate. Moore's capitalist 'world-ecology' goes further, arguing that it was the development of the map itself that allowed for the ontological abstraction of space (and time) required to produce the cheap nature needed for capitalist expansion (Moore 2016). The planetary scale of these images and discourses enabled not only new ways to imagine a global nature, but also the reduction of responsibility for global environmental crises to all of humanity, thereby de-spatializing and de-contextualizing the role of capital and colonialism in environmental degradation.

This subjectivity of nature has several important implications. The first is that it highlights the sociality of nature and underscores that our shared environment is as defined by our discourses as it is by any material reality. Nature is a form of fiction, in the sense that it is interpreted and cannot be (fully) located within any single, cohesive reality (Soper 1995; Castree 2005) In recognizing this, the project of environmental humanities becomes not only to imagine new environmentalisms, but to examine the discourses society uses to interrogate and define nature culturally, and how those discourses reinforce, challenge, or dissolve the existing power structures responsible for environmental crises. Where the nature of the Anthropocene narrative reinforces these power structures by separating human from nature, the world-ecology of the Capitalocene challenges the violence of this binary by re-locating society within nature's interactive domain (Moore 2016). Along similar lines, Bookchin's theory of 'social ecology' takes as its premise that ecological crises are inseparable from social

ones and re-envisions a way for society to ethically reconcile with its origins in nature (Springer 2013; Bookchin 1990).

If we accept the sociality of nature, and its relational production as an interplay between the human and the non-human, then the other important implication of its subjectivity is that nature discourses become a hinge upon which nature is produced. The notion that nature is a form of fiction is rendered paradoxical by the realization that fiction itself is often a form of discourse by which nature is produced (Castree 2013). Like maps and satellite imagery, fiction makes sense of the world (nature) via representation.

Of course, there are many genres of fiction that deal both directly and indirectly with themes of nature, and it is, obviously, beyond the scope of this project to critically approach the whole corpus of nature representation. Speculative fiction, however, by definition entails more developed worldbuilding than other genres, frequently requiring the creation of entirely imaginary worlds. These worlds, often with their own internally consistent systems of culture, society, geography and ecology, can themselves be viewed as practices of sense-making (von Stackelberg and McDowell 2015). Similarly, de Freitas and Truman (2021) posit speculative fiction as a way of imagining new and alternative forms of empirical inquiry. They argue that authors of speculative fiction radically alter (through re-imagination) the empirical 'real world', defamiliarizing knowledges previously taken for granted. Martin and Sneegas (2020) drawing on Ekman and Taylor 2016) call for a 'critical worldbuilding', which applies a critical engagement with speculative worlds, and also characterizes them as sites of conflicting production and struggle. Such productions and struggles implicate the inherently political dimension of creating speculative worlds which fundamentally both influence – and influenced by – the social, historical, and spatial contexts in which they are created (Harris 2020; Martin and Sneegas 2020). Because representations of nature are often invoked via the ecological and environmental aspects of speculative worldbuilding (von Stackelberg and McDowell 2015), these representations are themselves also political. Thus, the focus on speculative worldbuilding as an object of critical analysis provides a powerful tool for engaging with themes of nature in speculative fiction. The usefulness of this tool is perhaps even greater than it at first seems, because it also allows for critical engagement across different forms of speculative media. While film, novels, short stories, and other media are all distinct in their developments, when engaging with speculative genres they become linked in a milieu by the narrative tradition of worldbuilding, making possible a much broader critical analysis.

Simultaneously, the worldbuilding of speculative fiction functions as a process of broader transportation, one which moves the reader (or viewer) into the realm of wonder. Roberts (2019: 9) attributes this process to the formal structure of the metaphor, arguing that 'worldbuilding is ancillary to the crucial thing that makes [science fiction] (and fantasy for that matter) vital, crucial, and wonderful.' For Roberts, the transportation of speculative fiction facilitates encounters with the other, with that which is alien, with the new and strange, and with the marginal and oppressed. Thus, the metaphors of speculative fiction are as politically important as the content within metonomic worldbuilding.

The purpose of this project is then to problematize and contextualize representations of nature in the worldbuilding and metaphors used in foundational and modern works of

speculative fiction, arguing that each of these is a production of nature with political implications. First, I will discuss how a commonly used theme of nature, the arboreal metaphor, often reflects hierarchical lines of thinking that reinforce a nature-society duality using Richard Powers's (2018) novel *The Overstory*. Second, I will ground this duality in philosophical context, using Frank Herbert's (1965) novel *Dune* and Alex Garland's (2014) film *Ex Machina* to show how nature imagery is often used to symbolically represent a deterministic ideology. From here, I will move to examples of speculative fiction that challenge the order and structure of determinism, using adrienne maree brown's (2021) novella *Grievers*, Apichatpong Weerasethakul's (2021) film *Memoria*, Stephen Graham Jones (2020) novel *The Only Good Indians*, and Spencer Nitkey's (2023) short story 'The Painted Boy', to illustrate the flexibility of the speculative form with which hierarchical and deterministic frameworks can be challenged. Lastly, I use Aric McBay's (2023) novella *Inversion* and Yang Wanqing's (2024) short story 'The Peregrine Falcon Flies West' to facilitate thinking about new versions of nature that resist deterministic framings and dissolve hierarchical forms of nature.

Hierarchy and order in the arboreal metaphor

Characterizations of nature in fiction take many forms, but among the most frequent depictions is the arboreal metaphor (Nitzke and Braunbeck 2021). Tree imagery is often deployed as a representation of nature itself, particularly in order to critique the environmental degradation that underpins ecological anxiety (Cloke and Jones 2020). Haskell (2018) posits trees as 'connectors' within the network of all living beings that dissolves the human/nature duality without reducing an all-encompassing nature to an 'omnibenevelent Oneness'. However, nature representations that (understandably) retreat from mysticism and anthropomorphism can alternatively fall into depictions that conjure the verticality and hierarchy of neoliberal capitalism, thus reinforcing the primary driver of environmental destruction (Lave et al. 2010; Springer 2014).

Recently in the worldbuilding of speculative environmental fiction, Robert Powers's *The Overstory* has deployed the arboreal metaphor into new territory, using it to structure the experimental framework for the novel and extending the metaphor back into literality by conceptualizing nature, and trees specifically, as components of a sentient whole. In creating this tree-nature-sentience, Powers leans on a growing theme of nature discourse more broadly which recognizes a non-human agency in trees and is prompting calls for a new nature ethics (Nitzke and Braunbeck 2021; Lockwood and Heiderscheidt 2023; Schmidt 2024). Nixon (2021) argues that Powers's representation of nature as a tree-nature-sentience (with communication) provides a cooperative alternative to neoliberal invocations of nature as a place of ruthless competition. Nixon sees tree communication narratives as community models which allow for a coexistence of both competition and cooperation. In contrast, Vermeulen (2023) questions this characterization, stating that Nixon's views share with neoliberalism an ontology of order and subordination of individuals to a higher intelligence – both computerized artificial intelligence and the neoliberal market, or in Nixon's case, the

forest. For Vermeulen, this subordination of individuals is a defining characteristic of neoliberalism, and the similarity between the neoliberal market and Powers's artificial intelligence in *The Overstory* is emblematic of the overstated opposition to neoliberalism in the environmental humanities.

While Vermeulen's identification of Hayek's (1945) subordination to 'spontaneous order' present in both Nixon and Powers's tree-nature-sentience is apt, what all three miss (to varying degrees) is the hierarchical nature that is fundamental to the arboreal metaphor itself. Put simply, trees have vertical forms, which can in turn lead to vertical – and hierarchical – representations. Deleuze and Guattari (1987) elaborates on this, arguing that the dichotomous, binary, and totalizing structure of the arboreal metaphor has dominated Western thought and contributed to its hierarchical framework. Furthermore, the verticality of tree imagery invites a notion of scale that leaves open space for a hierarchical and authoritative politics (Springer 2014).

It is thus common to invoke the arboreal metaphor and simultaneously bring along this underlying vertical framework. We see this explicitly within the narrative of *The Overstory*, where the tree-nature sentience gives rise to a data-cybernetic sentience developed via algorithms that analyze environmental data collected by satellites. This data-cybernetic intelligence arises as a result of the satellites' ability to observe the planet's changing biosphere at *inhuman scale*, and the implication here is that a vertical abstraction (as scale) is required to read nature. At the global scale, people are reduced to information, existing only in the aggregation of the measurable data they produce. Capturing the world at this global scale, satellites render it as map, as composed of aggregates that allow for the systematic quantification of space required for the pre-determinism of hierarchical forms of thought. This is similar to how McBrien (2016) traces the development of the world-ecology of the Capitalocene as a project of neoliberal capitalism's planetary surveillance, with the goal of unified control over global energy, climate, finance, trade, and information. McBrien's process leads ultimately to what he calls the "Necrocene", where capitalism both becomes extinction, and also requires it, as a metabolizing force predicated on scarcity. Thus, modern environmentalism is only possible within a capitalist sysHavtem embodying extinction, and ecological anxiety is but a reflection of the capitalist death drive.

Seen in this light, Vermeulen's (2023) critiques of *The Overstory* become even more salient when contextualized within the realization that spontaneous order is but one of these hierarchical forms which can arise from the verticality of the arboreal metaphors in nature representations. However, this is not to say that nature representations which seek to eliminate this verticality are, *per defaltam*, any less political or problematic.

Order and oneness as determinism in science fiction

The characterization of nature is not restricted to the arboreal metaphor, in fact it would not be hyperbole to say that this has been a central aim of the entire project of philosophy. In *The Philosophy of Social Ecology*, Murray Bookchin (2022) presents the history of this pursuit as a

troubling debate between conventional reason and romantic intuition, where both can lead (and have led) to deterministic and hierarchical lines of thought. For Bookchin, the structure and order of conventional reason, while conducive to scientific development, also produces a coldly analytical framework that removes ethical consideration from the profit-optimized quantification of commodity capitalism and enables technological advancements that can either liberate or oppress society writ large. Romantic intuition, on the other hand, fosters a sense of connectedness – or 'oneness' – between people and environment that is necessary for an ethical environmentalism, but can also lead to an ambiguous and reactionary mysticism.

Deterministic tendencies are therefore latent within two paradigms of foundational frameworks for understanding nature, each of which has representations in the worldbuilding and metaphorical symbolisms of recent works of speculative fiction. Alex Garland's 2014 film, *Ex Machina*, uses both paradigms in its depiction of nature as a metaphor for the inevitability of the film's version of artificial intelligence. Lockwood (2024) argues that the grandiose cinematography showcasing mountain vistas, glaciers, and remote wilderness juxtaposed with the techno-minimalist home of the film's antagonist presents humanity as simultaneously subordinate to the underlying forces that govern nature, and also as components dissolved indistinguishably into nature itself. Throughout the film the two main characters often interact with their surrounding nature via hiking, exercising, or simply conversing outdoors. During one conversation Nathan, the film's main antagonist, deliberately understates the scenery when he remarks 'Not bad, huh', while the two of them overlook a majestic glacier. The setting's imagery is meant to convey a sense of time unfolding at geologic timescales over which the film's characters have no agency but rather are simply pieces of an already-written story currently unfolding. The film states this explicitly when Nathan delivers the comment that 'the variable was when, not if', while referring to his creation of artificial intelligence. Caleb, the film's protagonist, and Nathan also debate the various natures of sexuality, art, and evolution. Grinnell (2020) sees much of their discourse (and the film itself) as an exploration of the Kantian categorical imperative, where when the characters lie to each other they violate each other's autonomy. Grinnell poses the paradox of the film's use of a Turing test as a plot device by arguing that if Ava (the artificial intelligence created by Nathan) passes Nathan's version of the Turing test, then he has violated the categorical imperative by administering the test in the first place and removing Ava's autonomy. During the film's climax, Ava does indeed pass Nathan's test, which we know that Nathan (and perhaps Garland) views as an inevitability. Returning to the nature imagery of the film, the evolution of Ava is presented as pre-destined, where the characters are simply acting in accordance with the forces that subordinate all of humanity to the causality of the external world. The film parlays this duality into hierarchical relationships among the characters along lines of intelligence, class, gender, and sexuality, where ultimately Garland fails to challenge the deterministic and hierarchical frameworks which he draws attention to. The characters of *Ex Machina* are thus free of any moral or ethical judgment because there are no such choices to be made.

On a grander and more complex scale, Frank Herbert's *Dune* (and Denis Villeneuve's film adaptations) presents a nature with multiple loci for identifying hierarchical determinism as both order and oneness. In the case of order, Herbert gives two alternative modes, where

on one hand nature– in the form of the trees and greenhouse of the Arrakeen city occupied first by the Harkonnens, then by the Atreides – symbolizes the power and lavish wealth these families possess. An important motif of the narrative is the ecology of Arrakis, where the Fremen have a generational plan to transform the desert planet into a temperate forest world. The ecology at play here is founded in systems theory, where Herbert presents a planetary ecosystem that, once set on the correct course with the appropriate climatic and chemical ingredients, will follow a predictable and pre-determined ecological path toward a utopian paradise. Within this vision is not just the hierarchical orders of systems theory, but also a suggestion of eventual stasis that rarely if ever actually exists in nature. Alternatively, Herbert uses evolution as a metaphor for hierarchy as the natural order of living things. This framing is most apparent in the 'sifting' of people by the religious order known as the Bene Gesserit, which claims to search for 'humans' amongst 'animals', implying a hierarchy not just among different types of living organisms, but within humanity itself. Herbert also characterizes nature as a duality, at once safe when in the form of water and vegetation, and dangerous when present as sand and the great worms of the Arrakin desert. Of course, this danger is relative: where the Fremen have learned to navigate the desert with ease, the Harkonnens view it as inhospitable while also reducing the Fremen to simply components of a dangerous landscape, and the Atreides view the Fremen as a means to the end of desert domination. There is also a duality in the normative framing of the nature of Arrakis. The capitalist Imperium, and the Harkonnens, view the desertification of Arrakis as desirable for providing the profitable spice resource, while the Fremen take an oppositional view with their plan for de-desertification. In both cases, the desert landscape of Dune is reminiscent of our own dryland ecologies which are frequently sites of colonial dispossession and violence (Davis 2016; Benjaminsen 2021). The duality also creates a familiar nature that must be conquered in order to be exploited, and this hierarchical framing of nature is acknowledged within the narrative of *Dune*, presented as the antagonistic viewpoint that the main protagonist, Paul Atreides, must both reconcile himself with and overcome.

To propel that character (hero) journey, Herbert provides the opposing 'ecological' conception of nature, deploying this framework primarily through the character known as 'Dr. Liet-Kynes', a planetary ecologist, and the Fremen people, who inhabit the desert of Arrakis. Kynes is an interesting character, personifying an altogether separate duality of nature that is both evolutionary, in the sense of the ecological and biological development of the Arrakin environment, and prophetic, blending Bene Gesserit prophecy with this trajectory of evolution and the universe itself. With this oppositional nature, Herbert resists the more exploitative framing characterized by the antagonistic viewpoint, but replaces it with a nature that is homogeneously dissolved into a universal oneness, or a 'joining and flowing with the process', as Kynes states it. Such imagery is used often, presented as the eternal nature of the sands of Arrakis operating as a metaphor for the universe itself, and the sand's psychoactive spice that dissolves the boundaries between self and desert, desert and planet, and planet and universe. Reinforcing this loss of self is the Fremen philosophy of water, where the water of one's body belongs to one's 'seitch', or tribe, not to oneself. Thus, sand and water take on synergistic elemental powers of dissolution that romantically mystify the forces moving events

forward, removing agency from any characters involved. This 'spiritual oneness' of nature is as hierarchical and deterministic as the order and exploitativeness of nature with which it is meant to juxtapose, making Herbert's Dune a preeminent example of deterministic and hierarchical speculative fiction.

Challenges to the structure and order of nature in horror

While the worldbuilding of speculative fiction can manifest a nature that reinforces hierarchy, it can also produce versions that re-define, re-examine, and challenge such framings. In his blending of horror with philosophy, Eugene Thacker's (2011) book, *In The Dust of This Planet*, traces the transition from historical uses of theology for explaining the unknown, or 'unthinkable', aspects of the world, to the modern use of supernatural horror. Thacker (2011: 2) extends this notion to the entire project of philosophy, stating that 'one of the greatest challenges that philosophy faces today lies in comprehending the world in which we live as both a human and non-human world – and of comprehending this politically.' Supernatural fiction, and horror specifically, offers a philosophical avenue for approaching the unknowability of nature, challenging the order of nature through the limits of our ability to understand it, and helping us re-think the world as unthinkable. From here, Thacker derives a potent insight about the relation of supernatural horror to unthinkability – if supernatural horror is a way of thinking about the world as unthinkable and rendering the limits of our knowledge as material, then the specter that haunts horror is not death, but life itself.

Thacker probes this concept within disaster fiction, where the biological dimension of life is often centered as a tension between the death of the individual (organism) versus death of the category (species extinction). The abstraction from the individual to the species level often coincides with the magnitude of the disaster as things like plagues, alien invasions, and climatic collapse play out at the planetary scale. But perhaps the more interesting aspect is that the specter of human extinction invites the question of who witnesses such an event if humans no longer exist to do so. Extinction, as a concept, becomes an unknowable facet of nature as we attempt to ponder our own collective non-existence at inhuman scales of space and time (Hegglund 2019).

Disaster and extinction fiction also return us the realm of ecological anxiety. Onishi (2022) connects 'eco-trauma' to these anxieties, highlighting the unknown and uncertain futures that disaster fiction invites us to imagine ourselves in. These narratives often occur in a dystopian future where humanity exists in a reduced technological capacity compared to our modern condition, and the resulting anxiety manifests as a fear of material and cultural losses, while trauma forms from the imagined experience of this loss. Trauma, however, is not static in time nor space. Trauma has a mobility that arises from its delayed experience after the causal incident (Coddington and Micieli-Voutsinas 2017). Trauma travels spatially, embodied within and developing over time. In this way, trauma has both a geography and a history to its manifestation.

Grievers, by adrienne maree brown (2021), performs a kind of inversion of these ideas by localizing disaster, in the form of a speculative disease, within the city of Detroit. This disease produces a debilitating, all-consuming grief in its victims, rendering them as static shells of their former selves before death. brown filters this disease through the lens of Dune, the narrative's protagonist who investigates and maps the spread of the disease, and in doing so, brown literally provides a witness to this local extinction as Dune chronicles its spatial and temporal unfolding across the city. In doing so, she charts the spatiality and temporality of her own grief. Dune's trauma travels with her, and the narrative follows Dune's struggle to comprehend the meaning of nature's course, while under the surface there is the inevitability of when Dune herself will succumb to the disease, returning us to the existential question of who will witness Dune's own grief, in both life and death. The order of nature in *Grievers* is as unknowable as a world without human beings, or, in other words, as unknowable as nonbeing.

It is this unknowability that challenges the order of nature, and if nature is unknowable, it cannot be controlled, quantified, or commodified. Furthermore, as Onishi (2022) points out, where science fiction can produce imaginary futures, horror can reveal the world as it truly is. If the world is unknowable in the era of the Capitalocene, horror can help us navigate these unknowable waters and their associated eco-anxieties. Whether spatial, temporal, or biological, the dimensions of the modern world are the structures upon which capital operates. Challenging these structures therefore disrupts a production of nature in service to capital, rendering supernatural fiction a powerful tool for critiquing the capitalist project.

Eeriecology: the dialectic of "weird ecology"

Weird fiction occupies a literary space that is often adjacent to, but distinct from, the horror genre. Weird fiction is defined by presenting something that does not belong, something that is out of place, often forcing a shift in perspective that allows us to re-define the familiar through such juxtaposition. While much has been written about the history of weird fiction and its recent resurgence, including the development of the New Weird, weird ecology is a motif that deserves more attention. Turnbull (2021) finds similarities between the global weirding of the Anthropocene and the weird ecologies of speculative fiction, specifically highlighting Jeff VanderMeer's Southern Reach trilogy as depicting a nature that is 'impure, hybrid, and inhuman', a nature that is yet to be determined and which resists any nature-society distinction, while Onishi (2022) uses Alex Garland's adaptation of VanderMeer's *Annihilation* to call for a 'weird environmental ethics.' Similarly, Ulstein (2021) argues that the experimental nature of weird fiction provides a potential mode for exploring the problems of the Anthropocene. As I have discussed above, however, where the Anthropocene fails is not in its explanations of a changing environment, but in where it places the root causes. So, if 'the weird' offers a new way of defining nature sans problematic determinisms, 'the eerie' provides a new way into nature that dissolves existing hierarchy.

Fisher (2016) defines the eerie in opposition to the weird, whereby the weird is a presence that does not belong, the eerie a failure in the relation between presence and absence.

Eeriness is a sensation caused from a 'failure of presence', where something that should be present is not, or a 'failure of absence', where something should be absent, but is not. Fisher therefore derives eeriness dialectically from the weird, giving rise to a more robust framework for identifying an emerging literary mode: eerie ecology, or 'eeriecology'.

Agency is an important characteristic in both the eerie and eeriecology. The feeling of eeriness is often evoked in landscapes where humans are absent, and this absence produces a sensation of the uncanny in the actions of plants and animals, in turn inviting speculation about the underlying consciousness of nature. Fisher provides such examples of nature agency as du Maurier's 'The Birds', stating that 'since the eerie turns crucially on the problem of agency, it is about the forces that govern our lives and the world' (2016: 64). Eeriecology takes this agency a step further by introducing specific forms of nature agency, like memory and consciousness, thus deconstructing our assumptions about the way nature functions.

Apichatpong Weerasethakul's speculative film *Memoria* (2021) uses sound to blend environment with history and place, producing an uncomfortable depiction of nature agency through ecological memory. Set within Colombia, using the Colombian rainforest as nature's representative, the film's protagonist is haunted by a recurring, mysterious sound. The unsettling sound is a classic example of the eerie, where its origin functions as the failure of presence, and Weerasethakul uses this as a metaphor to ask how ecological memory might manifest itself, and what it might mean for humans to interact with those memories. Here, *Memoria*'s eeriecology not only challenges our preconceived notions of nature but imagines new ways for nature to function that deconstructs our sense of time and place.

If nature has a memory, then the natural progression is to ask what specifically nature might remember. In his novel *The Only Good Indians*, Stephen Graham Jones's (2020) version of nature is one in which nature-society interaction is bounded by rules. When a group of friends violate these rules by hunting a herd of elk on land reserved for elder tribe members, the resulting nature-agency remembers and returns to haunt the group years later. While never fully escaping the nature-society dualism, Jones's nature-agency nonetheless represents an underlying mechanism of self-correction, deploying memory and consciousness as a way of mediating society's production of nature.

If *The Only Good Indians* remains within the bounds of a nature-society distinction, Spencer Nitkey's short story, 'The Painted Boy', seeks to dissolve the boundary altogether. Taking advantage of the experimental tradition of short fiction, Nitkey tells the story through the curated notes for an exhibit of paintings by a fictional artist and the boy whom the artist finds and kidnaps in the woods, in order to use as a medium for his art. As the narrative transitions from focusing on the original artist's work to art created by both the artist and the boy, and ultimately ends on artwork solely by the boy after his escape, Nitkey focuses on the boy's developing consciousness coinciding with his emergence from a once 'feral' animal to a self-recognizing human. Consciousness, for Nitkey, develops from nature in a dialectical process where we eventually see the boy creating his own art gallery in the museum courtyard, shaping the vegetation to produce his artwork. The imagery functions elegantly as a metaphor for the reciprocality of the production of nature. But there is also an eerie speculation in Nitkey's work here – we don't understand the origin of the boy, or what kind of nature could

give rise to his presence. The realization that lies under the surface, then, is that we don't fully understand the nature that gave rise to us.

Ecological memory, and its implications, infuse nature with an eerie consciousness that extends beyond agency. One implication is the challenge to our understanding of nature, where the use of eeriness is an invitation into nature and new ways of its functioning. Beyond this, though, is a more powerful significance: as we seek to understand nature, we change it. The dialectic of this dynamic produces a feedback loop, where society advances its understanding of nature, changing nature in the process, and changing society again in response. Because society develops from nature, any change in society is also a change in nature, thus beginning the cycle again. Following this, we come to the eerie conclusion that we will never fully know nature. It will always lie just beyond our grasp. But there is also an opportunity here to define nature in new, non-capitalistic and non-oppressive ways.

Dialectial nature in speculative fiction

In his theory of social ecology, Bookchin (2022) gives us a framework for nature that is developmental, where nature is both a form with latent possibilities and a process that allows for differentiation. Social ecology is rooted in an evolutionary ecology with development that has directionality toward differentiation without requiring a hierarchical structure that places humans at an apex. Instead, society and culture are positioned as 'second nature', where human consciousness has evolved out of a non-human 'first nature', and although distinct in the developmental process, first and second nature are not separable, but rather interact through a process of continual development on a historical continuum. Social ecology therefore posits a nature that develops through dialectical growth, constituting a cumulative process by which the old is always being re-worked into the new in a trend toward increasing complexity, diversity, and subjectivity. Society (second nature) realizes its latent potential by stewarding first nature in such a way that it benefits humans while fostering the innate trend towards diversification, rather than an exploiting first nature or subordinating human society to a nature that we depend upon. If abstract, social ecology nonetheless provides a robust framework for reconciling the common binary of conceiving nature as either a human-society duality, or a mystical essence.

Social ecology can also be viewed as the production of nature based not on conquest for commodified exchange value, but rather along non-hierarchical lines based in use value. Quite literally, the development of social ecological theory is, in itself, a production of nature in that it alters our conception of nature, and in turn our relations to it. This subsequently alters society itself in the feedback loop mentioned above, and thus social ecology elegantly becomes the very process by which it is defined. What remains is not just to expand the abstracted theory, but to explore the imaginative ways in which an ecological society might manifest. Because of speculative fiction's unique worldbuilding and metaphorical transportation it is particularly well-suited to this purpose.

Aric McBay's novella *Inversion* (2023) envisions an entirely new universe in order to depict a nature based on social-ecological principles. Using the speculative science fiction genre, McBay's narrative is set within a pocket universe, inverted so that the entire universe is a globe-shaped inhabitable world, created within our own universe by a futuristic, progressive community to escape oppression. In retreating into this pocket universe, they imbue it with a renewing characteristic: a flaming wall that travels across the world, burning but also renewing in its wake. The nomadic peoples of the pocket universe travel synchronously with the flame wall, burying things in the ground and finding them new and improved after the flame wall's passing. Not only are objects renewed, but people themselves are reborn upon death on the other side of the flame wall. Thus, the flame wall serves as a metaphor for the dialectical re-working of the old into the new that defines social ecology. McBay's experimental universe embodies other social-ecological principles as well. Nature is stewarded by the inhabitants, guided in a way that both meets the needs of the communities, but also adheres and encourages nature's innate tendency of growth and development toward diversification. In these eco-communities, society and nature are distinct but never separable domains that interact and influence each other in a process that involves continual renewal and developmental growth, embodying Bookchin's social ecology and providing a visualization for understanding its framework.

With 'The Peregrine Falcon Flies West', Yang Wanqing engages with social-ecological ideas using new forms of consciousness. The speculative element of the short story revolves around the arrival of spherical objects that immediately begin cooling our global climate upon their appearance in the sky. Wanqing's narrative tracks the discovery that these objects have a sentience, and that their initial goal is to communicate with the avian species of Earth. The protagonists of the story thus intuit that they must use a model of avian consciousness to communicate with the spherical beings, and here Wanqing is depicting a use of non-human consciousness as a tool used by human society. In other words, this is an example of second nature making use of first nature. But for Wanqing, neither first nor second nature exists in hierarchy. Through the use of non-human consciousness for communication, the story recognizes different forms of consciousness, in both the avian model and the spherical beings, that represent the differentiation innate within nature. There is also a reliance upon first nature that symbolizes its resistance to human-dominated exploitation. Perhaps the most interesting speculative element in Wanqing's story is the technology, whereby society has developed a novelty computer operating system that processes using short and long-term memory analogous to that of the human brain. This technology becomes instrumental in the development of the avian communication model, and thus functions to expand human thought and consciousness in a looping, interactive development between first and second nature. Wanqing's nature is, therefore, a manifestation of social ecology via the non-hierarchical form it takes, and the productive interactions between first and second nature that direct each toward greater diversification.

The theory of social ecology provides several conceits for understanding nature. One such is that of unity in diversity. Viewing nature through a lens of diversification is a way of reconciling the nature duality and the nature oneness binary. Speculative fiction exemplifies

this not only in the various forms of worldbuilding and metaphorical themes it uses, but also in the specific natures contemporary science fiction is imagining along non-hierarchical lines. Another conceit of social ecology is the notion that the process of biological evolution is participatory. In other words, organisms play an active role in the development and evolution of their own species in correspondence with their level of consciousness. This introduces a gradient of participation that increases with the complexity of the species, culminating in the distinctive consciousness of human society that, in turn, consciously alters the trajectory of our own development. Speculative fiction provides a rich canvas for imagining natures that foster a non-hierarchical development of human-society-nature evolution.

Conclusion: The political nature of producing speculative nature

It is not difficult to draw a line connecting the rise of ecological anxiety to the increase of planetary-scale thinking associated with current global phenomena such as anthropogenic climate change. Braun (2015) highlights that this growing recognition, across a wide variety of disciplines, stems from a realization that socio-ecological change is both impending and necessary. But this opportunity also carries a responsibility to create imaginary futures that grapple with our social and ecological problems. As Braun (2015: 242) puts it, 'with the advent of the Anthropocene the separation of nature and society, and the human from the nonhuman, is no longer tenable, if it ever was'. Literature, film, and art are crucial components of society and culture that can help us reconcile the nature-society binary that permeates the crises of our current socio-ecological moment, and which are the source of our growing ecological anxieties.

Echoing this sentiment, Strauss (2015) argues that narratives of socio-ecological change function as a vehicle for explanations of political imaginaries. This function also creates a need for analyzing socio-ecological narratives using an eco-criticism grounded in the political theory of nature. For Strauss, the utopianism of science fiction is, literally, a political imagination of literary narratives that illuminates the ways in which ecological crises are inseparable from social crises. Extending this analogy to the broader spectrum of speculative fiction, the literary mode becomes a medium in which the politics of nature can be imagined, challenged, problematized, and subsequently re-imagined.

In fact, representations of nature are part of a broader process that influences the political question of how we, as members of human societies, should live. The way we use, alter, and protect nature implicates these representations, revealing the power that public media has in shaping nature representations and their centrality to politics in general. Layering this dynamic is the fact that latent within nature representations are the politics of the author. This is because the very act of representation creates that which it represents. Thus, every representation of nature, including those made by speculative fiction, is a political act.

By accepting this, we progress past the desire to create an apolitical nature that, by definition, cannot exist, and toward an interactive relation with nature's production. As Bookchin (2022) argues, our ecological crises originate in social crises. To address this, we

must address the politics of our social relation with nature. If nature itself is a fiction, then the fictions that represent nature must be continually assessed critically, and subsequently re-imagined, in a processual development in order to produce a socially ecological nature.

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