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Nature's Imagination: Reveries of Connection and Persistence

Abstract

Nature's imagination has been conceived in an allegorical or humanist fashion. This paper argues for a natural imagination in actuality as a radical counterpoint to status-quo concepts of sustainability. The self-hood of non-human beings and the necessity of connection in the natural world are addressed and related to a philosophy of becoming. This paper insists on a material semiotics constituted through the willful aspect and imaginative capacity of all life forms. Maintaining the primacy of relationship, terra-consciousness may provide an imaginative antidote to our all-too-human alienation from non-human entanglement in the Anthropocene.

Keywords

Nature's Imagination, Sustainability, Material Semiotics, Symbiosis, Becoming, Ecosystems, Onto-ecology

> The world is an immense Narcissus in the act of thinking about himself.
>
> Joachim Gasquet[1]

We live in a science-fiction world. The rate of our technological progress, even in the last 30 years, is truly staggering. Our tools have imparted us with super-human abilities. My phone has endowed me with a borderline telepathic capacity to find and access information, goods, and services. Embedded as we are in the forward march of progress, we don't consider the ways

[1] As quoted in Bachelard 2006.

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such technology has become a part of us. We would do well to heed the Sphinx's riddle to Oedipus. She knew, as we often forget, that our tools become incorporated into our being. The old man's cane is properly his third leg, for he cannot walk without it. What walks on four legs in the morning and thinks with two brains for the rest of the day?

With the rise of our technological dependence (beyond and before cell phones), we have forgotten other matrices of dependence we are entangled in. The realities of our social and economic lives are thoroughly entangled with our technology to the point of inseparability. But what of our natural life? What of the whole of life on this planet? Despite living in a world seemingly dreamed up in science-fiction, our technocrats do little reflection on the state of affairs, preferring the cacophonous march of progress to quiescent contemplation.

By way of reflection, I turn to Isaac Asimov, one of the great science-fiction writers of the last century. In a short story called *Green Patches*, he imagines a human expedition to another planet where all life forms live in harmony. They live in harmony because the planet itself (or rather the planet's living biome) is a single organism. Asimov imagines the thoughts of one piece of that organism, a secret stowaway aboard the human vessel. The stowaway's mission: incorporating everything on Earth into a single organism. This organ-piece of the planetary organism calls humans and other animals "life-fragments." It is appalled to learn these fragments compete for food and reproduce with no consideration for ecological carrying capacity. The organ-piece anticipates subsuming all these fragments into one consciousness, harmonious and benevolent. Eventually, this stowaway is unwittingly destroyed, preserving the reign of individualism on Earth (1991).

Now, the idea of my consciousness being subsumed into a single, global Mind sounds rather unattractive to me, but I can't ignore the ecological sense of such harmonious, interdependent living. There are streams of thought crisscrossing through disciplines, from biology and ecology to anthropology and philosophy, attempting to imagine these kinds of harmonies. With my feet in these waters, I hope to engage your imagination as well. To this effect, some may find my course of argumentation philosophically wanting. Yet, what I hope to achieve is sprawled across ethics, epistemology, and ecology. Perhaps it is a materialist cosmology of enchantment, with all the trappings of contemporary academic discourse. So, we will begin with the wolf of environmental degradation and the sheep's clothing of sustainability discourse. After recovering a non-humanist notion of sustainability, I will speak of be-

coming and transforming to decenter our commonly held notion of self. Then I move into a discussion of the perceptive and cognitive capacities of non-humans, through their willful aspect, in relation to material semiotics. This will be further refined through a section on imaginative mimesis. In the following section, I explore the connections at the heart of what it means to live on this planet and our human alienation from those processes of connection. In conclusion, I extend the hope of nature's imagination and where, as human life-fragments, we might place ourselves within a terra-consciousness, as *natura naturans.*

Sustainability and Degradation

Sustainability is a universally acclaimed concept. Having achieved the status of a buzzword, it legitimizes any project affixed to it. Visions of "sustainable futures" dance in the minds of loquacious businessmen and conservationists alike. Who could be opposed to a sustainable business model? Sustainable agriculture? Sustainable conservation? Sustainable development? However, with astounding ubiquity come endless circulations of definition. In business, sustainability has become roughly synonymous with simple economic solvency. A sustainable business is a self-reproducing one. In development work, a sustainable project comes to be defined in roughly the same terms if it can achieve self-sufficiency. When we turn to environmental sustainability, we still observe a generally economic conceptualization of "natural resources" or even "natural beauty." We hold the Earth as a trust-fund (Ingold 2016). The question becomes: What is the most we can extract without decimating the resources necessary for our children's survival? The discursive category of natural resources belies our inability to see the entanglement of Earth's processes (Tsing 2015, Latour 2018). The only way it is possible to engage in something like strip mining is by assigning an economic value to the "resource" such as coal, diamonds, uranium, etc. and then ignoring as incidental "negative externalities" the degradation of a local water supply and deforestation. This is a hallmark of status-quo sustainability discourse. We have needs, corporations have interests, states need revenue, and the Earth must be preserved insofar as it can continue to provide the raw materials for the growth of human civilization. However, it is the growth of human civilization that is degrading the Earth. We are like a hapless cartoon character in a tree sawing away at the very branch on which he sits. He won't need to saw all the way through before the branch will break and send him tumbling down.

In response to environmental degradation, some ecologists have begun assigning price tags to ecosystems. Ecological economics has estimated the value of Earth's major ecosystem services at $33 trillion annually, almost twice the global GDP. Rainforests are valued at $5 trillion. Coral reefs are in the billions. These estimates are based upon how much it would cost to manufacture and maintain carbon capture systems, erosion inhibitors, sea walls, wildlife sustenance, and other "services" provided by these ecosystems (McCarthy 2015). While placing monetary values on natural ecosystems gives accountants and CEOs pause the world over, the specter of ecosystem ownership looms. Placing a price tag, however astronomical, on the Great Barrier Reef implies that it may be purchased. It is difficult to imagine a more dystopian future than multinational corporations purchasing the great natural wonders only to bulldoze them into economically sanctioned oblivion.

The arithmetic of profit and loss cannot be applied to the natural world, nor, rightly considered, to human relations. To borrow the title from one of Tim Ingold's lectures, we need to reorient ourselves towards the sustainability of everything. Status-quo sustainability is simply untenable. No thing is self-sufficient. No system is closed. We live inside open worlds (Kohn 2015, Ingold 2011a). To sustain is to contribute to the persistence of being, to continue the existence of a being. It is common sense that no living thing can persist in and of itself. Even if I might escape the crush of the city and live in the woods, I must still find sustenance in the food I eat, the water I drink, and the air that I breathe. The same holds true for all forms of life.

Yet, if I went into the forest, inhabited a specific ecosystem, and sustained myself there, it would be conventionally assumed that I had left the realm of human activity. However, the towns or factories upstream of my water source, the smokestack belching carbon into the jet stream, or the chemical pesticides airborne from neighboring agribusiness argue to the contrary. We have enveloped the whole world in a destructive sociality. It is not just the hypothetical hermit who is effected: there are beings and life-systems in more delicate symbiotic balances than we can appreciate as *homo economicus*.[2]

The sustainability of everything should destabilize the centrality of human persistence in the world. In 2008, Ecuador carved the rights of nature into its new constitution. This was partially in response to the crimes of

[2] As humans, we are assumed to act in rational, self-interested ways in order to maximize our capital-inscribed utility. As any human knows, this kind of human does not exist, but our world, our policies, and even our understanding of ourselves are influenced by this conception.

Texaco-Chevron, who began extracting oil from the upper Amazon region in the late 1960s. The consortium of oil companies ignored regulations from the American Petroleum Institute and used an outdated remediation system instead of the latest technology that Texaco had itself patented. The resulting millions of gallons of toxic waste were simply dumped into the Amazon river network. Toxic sludge was buried in pits dug for this purpose and an export pipeline to the coast was constructed (Cely 2014). In this brief overview, I cannot elucidate the catastrophic damage done to that ecosystem. Instead, imagine the army of bulldozers, dump trucks, and steamrollers. The roar of chainsaws and the stench of asphalt. What could survive this destruction? Profit took precedence over the persistence of myriad flora and fauna. We cannot expect, in a world where the only morality is human interest, that environmental concerns will triumph over the trifecta of human needs, corporate interests, and state revenues. It is admirable to uphold the rights of nature and we should look to Ecuador and other countries with similar convictions in their governmental texts for policy guidance. The difficulty, of course, arrives with the primacy of human survival and action. The world runs on fossil fuels, how can we justify coming to a screeching halt for the benefit of some trees and animals? There needs to be a more radical awareness of our inextricable entanglement in the natural world, otherwise the human race will be hard-pressed to carry on.

Persistence and Transformation

Persistence cannot occur without transformation. We are continuously changing. For a being to persist, it must ingest, digest, and incorporate (Haraway 2016). In other words, it must make that which was other part of itself. The mighty oak tree starts as an acorn. Incorporating water, nutrients from the soil, carbon dioxide from the atmosphere, and light from the sun (i.e.: "others"), the acorn becomes a seedling, then a sapling, and so on, through its life cycle. This is common knowledge with metaphysical resonance. According to the Greek philosopher Heraclitus, "No man ever steps into the same river twice" (as quoted in Plato, 402a). The implication goes far beyond the impermanence of water. We can say that no person sees the same oak tree twice. For at any given moment, the oak tree is in the process of becoming, incorporating things that were other than it and unincorporating things that were of it.

Another classical thinker, Lucretius, wrote "the seeds of things are all moving forever, the sum of them is completely still" (as quoted in Ingold 2016). Our atoms, the "seeds of things," are continually in motion. Motion

begets life and life begets motion. Such movements happen at different scales, both spatially and temporally, but nothing is still. Everything flows along continuums of intensity (Deleuze, Guattari 1987). In death there is dissolution. This movement of becoming allows us to notice transformation in the active sense of "mingling" (Ingold 2011a). Returning to the previous formulation, I also partake: ingest, digest, and incorporate. Whether it is the air I breathe binding to the blood pulsing through my veins, or the water I drink lubricating and filling those veins, or the food I eat building the muscles with which I move, I am continually transformed through intermingling. We are all continually transformed.

If we consider transformation as a kind of mingling, new ways of looking at our environment open. We can no longer conceive of the world as filled with discrete objects. Every thing is receptive in its movement, in flux. Wind breaks the mountain even as the mountain forces the wind into swirls and eddies, forming banks of clouds and pressure systems. Water cuts rivulets into the Earth while the dry dirt soaks up the moisture. Bits and pieces are carried away only to be deposited elsewhere. Hills rise and fires dance. There are no boundaries - things exist only as temporary crystallizations of movements and intensities (Deleuze, Guattari 1987). Because there are no boundaries, there are no objects (Ingold 2011a). We live *inside* Terra, Gaia, the global biome, not on the surface of a spinning blue-green marble (Latour, Aït-Touati 2018). We experience the mutual permeability of our home as we incorporate it into ourselves and it incorporates us (and all we create) into itself.

Perception and Intention

If no being is static and unchanging, all beings are becomings. Becomings must be sustained in order to persist. This act of sustaining can be receptive or appropriative. Making a qualitative distinction between degrees of animation,[3] either of these modes can be willful or not. A mountain does not seek to reproduce itself, it is produced by external forces. All life forms, however, must intend to survive and receive sustenance. How can I claim that plants,

[3] Following from my earlier point on the movement or animation of all things, we can make a qualitative distinction between biological life and what we usually conceive of as inanimate objects. Introducing a "spectrum of animation" is reductive, yet placing a mountain, a river, a sunflower and a wolf along such a spectrum would not prove too difficult. I use it as a rhetorical strategy rather than a biological claim.

for example, have intention, or a "willful aspect"?[4] First, all life forms have sensory abilities of some variety. Watch a sunflower tilt its head toward the warmth of the sun. Observe a tree contorted to reach the sunniest spot through a break in the forest canopy. Yet this is not simply reducible to sense, for sense is not the same as perception. Perception is the process of taking in the cluster of sensory data and simultaneously discovering the meaning they possess and investing them with meaning (Merleau-Ponty 1981). Perception is directly related to action. As Merleau-Ponty describes, "sensations […] are enveloped in a living significance" (1981, 209). The perceiver, body entangled in the world, communes with things in their practical significance (ibidem).

To put it another way, this sensory data is information. According to Gregory Bateson, the elementary unit of information is "a difference which makes a difference" (1972, 460). The difference between light and darkness or between cold and heat—the difference between the white of the page and the black of the ink—make another difference as a life-form selects a single difference from among a theoretically infinite number of differences. This selection of difference creates another difference in the sequence of transformations that constitute living. Information, then, does not exist in itself, rather it is the transform of a difference. Only living things can make such transformations of difference, but these transformations are not unidirectional—moving only from exterior to interior. Instead, they are caught up in circuits of organism-plus-environment (ibidem), caught up in relationships of living significance. Sensory input, as difference, in its selection through the attentiveness of perception, activates transformations from difference to difference in complete (but not closed) circuits. So, the sunflower turns toward the sun's warmth and you respond to the written word.

Primary perception, what I have been describing, is a non-positing, pre-personal, pre-objective, and pre-conscious experience (Merleau-Ponty 1981). The "phenomenal body" (ibidem, 232) of perception is distinct (though inseparable) from the thinking subject. This body is responsible for the synthesis of sense data for perception. In synthesizing, the phenomenal body brings its various resources together in a unifying synergy to form an intention. This intention is not a thought, "but takes for granted all the latent

[4] The term "willful aspect" denotes "the appearance of intention". While acknowledging the limits of knowledge about the interiority of a non-linguistic Other, I believe there is still a case to be made for all living things possessing a degree of intentionality. When I use the term "willful aspect," it describes both the presentation of intentionality and acknowledges a potentially piecemeal, divided interiority.

knowledge of itself that [the] body possesses" (ibidem, 233). The senses are unified not through consciousness but through their perpetual incorporation into the knowing organism (ibidem). Thus, sunflowers are also perceiving life forms and possess pre-conscious intentionality in their primary perception.[5]

Let us take as an example the slime-mold *physarum polycephalum*. This slime-mold is a large, single-cell organism. The organism's multi-nucleic center has tube-like appendages that it uses to feed itself. A group of researchers placed it in a maze with two food sources. Not only was it able to find both food sources, it also rearranged itself into one long tube connecting the food sources through the shortest route in the maze. The scientists concluded this was a kind of calculation and thus a kind of intelligence (Nakagaki et al. 2000). This simple organism, in its calculation (in Bateson's terms, the selection of differences which will make a difference for it), exhibits preconscious intentionality and thus a willful aspect.

Material Semiotics

Now, when we consider multicellular organisms with brains, the animal kingdom, we find other selves. Animals are interpreters as well as perceivers. By attending to the lifeworld they find themselves in, animals persist through a complex sociality that is inter- and intra-species. An animal has a perspective that ascribes meanings to processes of survival, reproduction, and sustenance (Ingold 2011b). Meaning here does not demarcate that which is signified by a given signifier. Rather a sign "stands to somebody for something in some respect or capacity" (Peirce, quoted in Kohn 2015, 74). Moreover, "signs designate only a certain formalization of expression in a determinate strata" (Deleuze, Guattari 1987, 78). In this way, meanings are means—"stand-ins" or waypoints—of expression within groups of somebodies to achieve an end. These expressions may take on formal symbolic aspects, as in language, or non-symbolic orders of magnitude, as in analogic animal communication (Bateson 1972). The scent of certain flowers stands for something (the flowers) to the bees that drink their nectar. The sound of

[5] The phenomenal body, as it exists in the realm of phenomenology, seems to be only applicable to the human subject. However, elsewhere in Phenomenology of Perception and The World of Perception, Merleau-Ponty acknowledges the perceiving interiority of insects and animals (1981, 78, 87 & 2004, 58-59). We of course cannot speak of an animal's experience of phenomena, so I will not speak of non-human phenomenal bodies, but the implications of non-conscious intentionality reverberate throughout this analysis.

a crashing tree means something to a bird or a monkey nearby. The magnitude of these scents and sounds also means something to the perceiver—proximity, perhaps.

These material semiotics are integral to the construction of selves and their navigation through the world (Kohn 2015, Haraway 2016). Eduardo Kohn argues for a hierarchy of Peircian signs moving from the iconic (forgetting difference) to the indexical (cataloguing similarity) to the symbolic (relating indices) (2015, 52-53). Simply put, humans communicate with other humans and with non-humans through nested sets of semiotic meaning. The aforementioned crashing tree comes from a story in Kohn's book *How Forests Think*. The tree was cut down by a man in the hope of making a monkey move from its sheltered perch to give his son a clear shot for the kill. The crashing sound of a tree is perceived and interpreted by the monkey. That particular crash is iconic with other crashes, those previous crashes have been iconically indexed with dangerous situations, and these are all indexed together so that the monkey assumes "danger" is present. As such, the human and monkey are communicating in the realm of signs as the monkey makes associative leaps and then physically leaps away from the sound of the falling tree (Kohn 2015).

Here, material semiotics is simultaneously a process of semiosis and a quality of nature.[6] If we must adhere to the language of signified and signifier, material semiotics could be understood as the quality and process by which one collapses into the other. In the natural world, a sign can be simultaneously signified and signifier. More precisely, the meaning of a material sign is coextensive with its material qualities and inseparable from them. "A rose is a rose is a rose." Yet, living things require, as already asserted, "others" to persist. So, the process of living necessarily ascribes meanings through material semiosis to navigate a world of "others." In this way, material semiotics requires the intent to relate. This intention is necessary if I am to take this rose that is always-already only a rose and use it as a token of love for another. Before this, however, the rose must itself have an intent to relate to the sun if it is to transform the difference between heat and cold into a meaningful, living significance.

At a deeper level, processes of double articulation inaugurate codes of self-organization. Milieus affect organisms via selection, sanctioning certain codifications. These codes can be 'read' by those somebodies who intend to relate with the somethings the codes articulate. Milieus articulate the organ-

[6] This simultaneity is inherent to an understanding of "nature naturing," *natura naturans*, as necessarily processual, in a constant state of becoming and transformation.

isms who then articulate the milieu (Deleuze, Guattari 1987). Ant colonies organize themselves via articulations of code in the dirt. A piece of this articulated code, tunnels, in turn, articulates the anteater's snout (Kohn 2015). As the signifier and signified collapse into one another at the horizon of meaning, the interpretant may itself become a sign in the course of interpretation. Content and expression follow along with this double articulation (Deleuze, Guattari 1987). So, it is by way of material semiosis that our symbolic linguistic ability emerges. Through attaching certain human sounds to signify indices of material icons and subsequently relating these human sounds to one other in nested symbolic-indexical associations, we arrive at human language (Kohn 2015). Thus, human intelligence, the life of the mind and language, is inseparable from the natural world from which it emerges, "the prehuman soup immersing us" (Deleuze, Guattari 1987, 73). "The individual mind is immanent but not only in the body. It is immanent also in pathways and messages outside the body; and there is a larger Mind of which the individual mind is only a sub-system" (Bateson 1972, 468). All of life can participate in semiosis and interpretation. In this way, we can understand that all lifeforms "think" in this non-linguistic, material-semiotic fashion (Kohn 2015). We all think in, with, and through our environment (Ingold 2011b). Even organisms without brains are still perceiving—interpreting and reacting to certain indices of material icons. These icons and indices of icons *mean* something to such organisms, and these organisms in turn *mean* something to others. As all living beings endeavor to give shape to a world from which they emerge (Merleau-Ponty 2004), I insist upon a willful aspect being present in all life forms.

Imaginative Mimesis

Of course, we understand human will predicated upon a conscious self, "*I* will do such-and-such today." The willful aspect for non-self-conscious organisms maintains their perspective of intentionally interpreted, semiotically meaningful sense data, and is augmented through what I call imaginative mimesis. The imagination is the predecessor of will. Consider our human imagination, we construct images beyond reality (Bachelard 2006). Those imaginings can become reality only through the exercise of will. This will must be exercised on matter. I imagine a sandcastle, I must interact with the sand to make the castle a reality. The initial material absence of the thing imagined is a pre-requisite for the imagining. Let us call this a "constitutive absence" (Kohn 2015, 37), the realness of potentiality. An absent future inflects present action. However, an absence of material constrains the imagi-

nation. A child completely unfamiliar with sand could imagine a castle, but not a sandcastle. Therefore, imagination must be grounded in the material world, manipulating matter into form and filling form with matter (Bachelard 2006) even as matter takes form of its own accord and stimulates the imaginative process (Kohn 2015).

To move the imagination away from self-consciousness, we briefly turn to dream. It is impossible for a dream to convey indicative statements. Through pattern recognition, a dreamer may come to understand that the sun is shining in her dream, but for a variety of reasons the dream cannot assert "It is sunny." This is because there is no meta-communicative frame within which to establish any difference between the literal and the metaphorical (Bateson 1972). Imagination reaches into the unconscious in analogic fashion. In other words, dream proposes patterns but is incapable of negating or affirming them.[7] Negation, in contrast to the analogic communication of animals, requires the digital communication of language (ibidem). To use Bateson's example, a dog may show its fangs—a signal for combat, an icon of a bite—but cannot iconically indicate "I will *not* bite you" (ibidem, 432, emphasis mine). Rather, the negation can only be arrived at through the simulation of the activities of a fight to the point that both animals understand that no harm is meant. We call this play. There is a continuity between the state of dreaming and the communication of animals in their shared iconicity. This permits a kind of self-hood that skirts the problems of the Cartesian *cogito.* The Cartesian view of the self, besides needing language, needs a thinking self that is aware it is thinking. A dreamer maintains a perspective, an "I" position, without needing to be aware of the dreaming. Similarly, animals can maintain a perspective[8], or self-hood, through the proposal of a pattern of their existence, without requiring the meta-communicative frame to affirm or deny the proposition. In this sense, I diverge from Kohn's "thinking" forests in favor of imaginative ability as a locus of self-hood. Material semiosis should be understood as an imaginative (rather than and prior to the rational or linguistic) process of intention concerning those codes and articulated patterns that accrue meanings for groups of somebodies.

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[7] The self-conscious lucid dreamer could, in fact, come to such an indicative negation or affirmation, but only insofar as he or she can first establish the meta-communicative frame: "I am dreaming," "This is *not* real."

[8] De Castro's "perspectivism" implies that self-hood can be extended to those beings which maintain a perspective. That thing which occupies a point of view is both semiotically creative and created—a self—even in the absence of a linguistic, self-reflexive "I" (De Castro2014, Kohn 2015).

In attempting to give an imaginative capacity to the non-human realm, it is important to deemphasize the visual. The concept of the image evokes exclusively visual sensations. However, we can also imagine sonic aspects even in our predominantly visual reveries. I can imagine the sonic qualities of my mother's voice as I imagine her welcoming me home and what she might say. Our cognitive faculties privilege the visual. However, let us consider a wolf. Its sense of smell is exponentially more powerful and more important than its vision. Could it not experience olfactory images? Through material semiosis, it could. It smells a doe in the woods and that olfactory iconic sign, indexed with previous experiences of the scent, brings the imagination into play. The wolf begins to smell not just the doe, but also the associated scents of the hunt and the kill, the smell of warm blood and a meal.

Imagination is a prerequisite for memory. For Bachelard, experience places us on the "threshold of a daydream in which [we] shall find repose in the past" (2014, 35). Remembering relies on a reconstruction of images in imitation of previous experience, so imaginative capacity comes prior to the remembering. Imagination in this way is even coextensive with sense perception (ibid). Even a rudimentary definition of imagination as "images produced mentally" leads us to assert that sensory perception actively imagines the world around us. What is seeing other than a process of constructing a mental image based on the play of light translated through the retina? (Bateson 1972, Merleau-Ponty 1981). This is the beginning of imaginative mimesis. The mimetic is simultaneously creative and imitative[9] (IJsseling 1997). The wolf will attempt to bring its sensory imagination into being through a process of imitation. It will imitate that which it has done before to experience that image—taking into account and creating the differences between the situations. In animals like wolves, there is the antecedent mimesis of learning to hunt. A wolf must imitate its kin to understand the process of bringing down prey. It is the resulting embodied knowledge, rather than a humanistic concept of memory, that enables it to act mimetically on an imagined potential future. In this way, the imagination provides a way to think about the willful aspect of non-human selves as they carry their perspectives into an imagined future in the absence of a language bound subjectivity.

[9] Additionally, the mimetic is always partially imaginary insofar as the thing imitated is constituted in the imitation. The imitating being does not become the imitated but rather the imagined projection of the imitator upon the imitated (IJsseling 1997). This gives a potentially different meaning to the term imaginative mimesis. I use the term to refer to the process of acting mimetically toward an imagined potentiality.

Symbiogenesis and Human Alienation

In the previous sections, I have been thinking with animals, slime-molds, sunflowers, and humans as bounded individual entities. Despite the persistent intermingling and permeability of our world, it was necessary to crystallize these movements into discrete individuals for a moment. Yet, the impossibility of individuality becomes readily apparent when organisms start involving themselves with each other. It is impossible for us to see the same oak tree twice for elemental reasons: atmospheric incorporation and the like. Furthermore, there is also a host of other living organisms that are coming and going in symbiotic cooperation. Where does the lichen end and the tree begin? Can you untangle the fungal threads from the roots of the tree? Bringing symbiosis closer to home, try to separate yourself from the bacteria in your intestines that allow you to break down the food you eat. It would be impossible. Our survival is predicated on relations with other organisms. Not just the human baker who may provide us with bread, nor just the chicken from whom we collect eggs, but whole colonies of bacteria must live inside us for our continued survival. We have within us other selves, becomings, with perspectives and willful aspects. So, in chorus with Whitman: we contain multitudes! We are holobionts, life-knots of concentrated becoming-with (Haraway 2016). However, we are not very cooperative when it comes to becoming in concert with other selves with whom we are entangled. Too concerned with maintaining our self-hood, we cling to our precious individuality. So, I will call us humans "life-fragments" along with Asimov's organ-piece. Let me explain further.

What makes a cooperative holobiont? One example is the acacia tree. There are many varieties, but all form symbiotic relations with other organisms in their ecosystem. Specifically, one variety of Acacia grows thorny protuberances and secretes nectar to house and feed a species of biting ant. This ant in turn keeps away beetle borers and mammalian leaf eaters. Then we slip down to the roots, where mycorrhizal associations with funghi keep the tree nourished by breaking down inorganic material. The Acacia itself fixes nitrogen in the soil, a specialized but highly necessary task, as most other plants need to extract nitrogen from the soil. These plants in turn feed other animals, secrete other nectars, and continue tangling together the threads of life in ever larger ripples (Haraway 2016). Life, by its very nature, is entangled. All life forms are changing through encounters and persisting through entanglement (Tsing 2017). *Symbiogenesis* is the process by which these various life forms change (become) with and through one another in

intimate connections. Scientific orthodoxy insists complex life arose through the gradual association and incorporation of simpler life forms with and into each other. Mitochondria in our cells are thought to be ancient bacteria that were absorbed and then put to work by early single-celled organisms. These kinds of connections, the processes of encounter, incorporation, entangling, and *symbiogenesis*, are at the heart of the survival strategy for all life forms on Earth. Thus, holobionts are by their nature open: open to new encounters that lead to new connections, to new ways of persisting together, to entangled biodiversity (Haraway 2016).

This basic relational aspect of the world has been utterly overlooked by humans for too long. We are holobionts that close ourselves off to potential entanglements. We fragment ourselves. We are Life-fragments by choice. We exercise our extensive mental faculties to construct languages and philosophies and economic systems that alienate us from connections with a vast array of potential partners in the task of persisting together. In a global capitalist system, living things are forcibly removed from their life-worlds, alienated through various processing and shrink-wrap packaging, and sold as commodities (Tsing 2017). Brussel sprouts are one of my favorite vegetables, but I had never seen what they looked like as they grow. I knew them wrapped in plastic and stacked on refrigerated shelves, at least until I went to a garden in Brussels and saw the funny looking plant. Green leaves shooting out over a stalk with the little sprouts helixing down to the dirt. At that moment, the alienation of the commodity process seemed to work in reverse. I recognized a double alienation. Not only was the vegetable torn from its life world, sanitized, and packaged, I had been too. I had been alienated from the actual process of cooperative sustenance and packaged into concrete and metal. A life-fragment among life-fragments.

Nature's Imagination and Terra-consciousness

I return to the titular concept to trace what I do not mean by nature's imagination. In 1768, J.B. Robinet wrote a text entitled "Philosophical Views on the Natural Gradation of Forms of Existence or the Attempts Made By Nature While Learning to Create Humanity" (Bachelard 2014). A real mouthful, but illustrative of the anthropocentric understanding of nature's imagination in evolutionary biology. The understanding that humankind was somehow the pinnacle of evolutionary activity underpins much of what I write against in this paper. Additionally, the imaginative capacity of nature is often conceived allegorically or anthropomorphically. However, synthesizing the pre-

vious sections, I believe that an argument can be made for nature's imagination as an interlocking system of mingling wills, intentions, and imaginations affecting change in concert.

First, we have our elemental processes. The constant movement of the tectonic plates crashing together and moving apart. Mountains in their rising, winds in their blowing, and tides in their rushing all form and manipulate the terrestrial life-world,[10] stitching together and tearing asunder the soup of matter in which we all move (Ingold 2011a). These elemental processes of life-making are then augmented by organisms constructing their niches and ecosystems. Life makes room for itself. Bacteria released the first gases that began the process of making our atmosphere breathable for multicellular life forms.[11] Fungi broke down rocks into component minerals to allow the first plant life to grow. Those first plants in their living and dying created the organic material for worms to consume. This kind of cooperative evolutionary trajectory expanded the livable space on our planet, allowing more and more life forms to come into being (Latour, Aït-Touati 2018). The end of evolution is biodiversity, not humanity.

In this life-world, meanings are inscribed in the trampled path of a deer through the grassland, the wafting scent of a female dingo in heat on the air currents, or the reverberating sound of a falling tree in the forest. These are neural networks sending information to the hunter, the mate, and the monkey; to all those who intend to relate with this material semiotics. This information network is etched in the land, the air, and the water. Pulsating with life, it facilitates the encounters and entanglements that result in persisting, becoming, and transforming. As living becomings entangle themselves with one another, they do so with willful aspects, through the perception and interpretation of sensual icon-images. Then, through imaginative mimesis, they create the world together. Nature's imagination is not located in a cosmic brain but rather composed of wills and imaginations in tension and harmony. It is a vast, planet-enveloping network connecting nodes of

[10] I don't use biosphere in this essay to avoid the pitfalls of thinking with a globe. Globe thinking implies a position of standing atop a sphere, contributing to our understanding of the natural world as a background when in fact we are inside the thin layer of the inhabitable terrestrial life-world (Latour, Aït-Touati 2018; Ingold 2011a, 2011b, 2016).

[11] Lovelock's Gaia hypothesis suggests that the atmosphere is maintained in a homeostatic state by a global life-form, Gaia (1972). I do not believe it is necessary to posit such a figure. I prefer nature's imagination instead as a concert of wills and selves maintaining such a global homeostasis. Moreover, the equilibrium and harmony implied in his hypothesis obscure nuances of tension and disequilibrium that are not unique to human activity in the world.

becoming as they relate with one another, changing and building the life-worlds they exist within. Instantaneous image brought to life in a moment, a succession of moments, by a collection of intentions in relation.

The salience of the Anthropocene makes clear which wills have been dominating nature's imagination in this epoch. We are of course a part of nature's imagination: we are natural and reliant upon the health of this wafer thin terrestrial ecosystem we call home. Yet we are also life-fragments. Is it necessary for our individuality to be subsumed into a planetary organism as in Azimov's story? Not at all, we are simply primates convinced we are gods. We have forgotten that we emerged from the natural world. Our language convinced us of our absolute singularity: the pinnacle of biological evolution. Yet there is no *telos* to biodiversity.

Michel De Certeau writes at great heights: "It [the elevation] transforms the bewitching world by which one was 'possessed' into a text that lies before one's eyes" (2011, 92). He is right to call it a text. When we elevate ourselves in our symbolic linguistic system, alienating our human minds from non-human matter, all we see is text. The world lies before us. Our only task is one of extraction. So, we isolate ourselves from the life- and meaning-making networks we emerged from. We sterilize our living spaces and fragment our potentially symbiotic relations with the world around us.

How does a life-fragment unfragment? Through terra-consciousness.[12] We must be aware of the state of the terrestrial ecosystem and incorporate our bodies into this ecosystem and the network of imaginatively willful becomings with whom we might entangle and become-with. Tim Ingold tells us bindings are not boundaries. Bindings are open, in flux, while boundaries are static and closed. Let us find new and inventive ways to bind ourselves to the life-cycles of endangered species, to coral reefs, and rain forests. For we are already bound, we have simply forgotten the binding.

In the system organism-plus-environment, an organism that destroys the environment destroys itself (Bateson 1972). The overly instrumental or purposive view of nature as a trove of resources we find in capitalism is antithetical to nature's imagination. Infinite economic growth is an impossibility. Moreover, the Lauderdale Paradox holds that an increase in private riches is only possible by choking off public wealth (Hickel 2019). When we think of the myriad selves we share the world with, how much greater is the tragedy when the public includes non-humans too! We need to rethink everything

[12] I advocate for a terra-consciousness in relation to Bruno Latour's (2018) project of the Terrestrial as the alternate vector, perpendicular to the trajectory of modernism from the Local to the Global, upon which our new politics must take place.

through this lens. Following Latour, this would entail a "system of engendering" (2018, 82) rather than systems of production. Systems of engendering consider terrestrials—all the selves that occupy this Earth with us. Such systems are focused on dependency rather than the false economic freedom of production and consumption. Tracing out a system of terrestrial interdependency would require renewed interest and research in the "life sciences"—those that study this Critical Zone within which everything and everyone we have ever known or ever will know resides. It would involve taking stock of the myriad beings with whom we can and cannot live—an exhausting and exhaustive, but not impossible, task (ibidem).

This will require us to rethink the way we live. We must move away from the nation-state (ibidem) and towards city-regions. We can conceptualize any (capitalist) human settlement as a colony, both in the ecological sense shared with ants or bees and in the brutal extractive sense of imperial expansion. For "capitalism always needs an outside, external to itself, from which it can draw uncompensated value" (Hickel 2019, 59). Additionally, it is imperative that at the juncture of nature and culture, agriculture, we examine what it means to be part of nature instead of over and against it. How might we turn agriculture from being a break, an extractive frontier from which we draw uncompensated value, to being a node in a continuity? City-region food systems are being developed (FAO 2014), but these often still fall into humanistic or economically driven frameworks. We must re-privilege this world we have dishonored without denigrating the human (as a virus, as fallen) to maintain a humble opinion of our powers.

> But we shall bear with equanimity those things which happen to us contrary to that which a regard for our advantage postulates, if we are conscious that we have done that which we ought, and that we could not have extended the power we have to such an extent as to avoid those things, and moreover, that we are a part of nature as a whole, whose order we follow. If we understand this clearly and distinctly, that part of us which is defined by our understanding, that is the best part of us, will be wholly contented, and will endeavor to persist in that contentment. For in so far as we understand, we can desire nothing save that which is necessary, nor can we be absolutely contented with anything save what is true: and therefore in so far as we understand this rightly, the endeavor of the best part of us agrees with the order of the whole of nature.
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> Spinoza, *Ethics*, Part IV, Appendix, Paragraph 32.

We must honor the entanglements and life-webs in which we find ourselves, that the best part of us might agree with the order of nature. Build cities, institutions, farms, transportation, and economies in biomimetic fashion. If imagination is the predecessor of will, whatever we will do, we must first imagine. So I leave you with the barest beginnings. Perhaps human consciousness can be *natura naturans*—imagining as nature imagines.

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