Material Ecocriticism and the Creativity of Storied Matter

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ABSTRACT Situated in the conceptual horizons of the new materialist paradigm, material ecocriticism views matter in terms of its agentic expressions, inherent creativity, performative enactments and innate meanings. It asks us to rethink the questions of agency, creativity, imagination, and narrativity. Taking into account material-discursive practices (Karen Barad) and material-semiotic processes (Donna Haraway), material ecocriticism claims that matter is endowed with meanings and is thick with stories, manifesting as "storied matter." In other words, there are multiple stories of cosmology, geology, history, ecology, and life embodied in every form of materiality. This essay discusses how matter and meaning coalesce in these narrative potentialities of the physical world, or "narrative agency," a material ecocritical conceptualization of matter's expressive capacity.

Despite its increasingly multivalent definitions, proliferating branches, and theoretical standpoints,[1] ecocriticism has always retained a distinct interest in the significance of the material world, recently framing its dynamics within the conceptual horizon of the new materialist paradigm. However, while earlier modes of ecocritical inquiry have exclusively focused on the ontological primacy of the world, maintaining a skeptical view of its discursive formulations[2] and thus inadvertently putting a rift between nature and culture, the recent ecocritical scholarship has welcomed a more integral understanding of matter and discourse. The difference here bears on the question of developing a more rigorous "non-dualist epistemic practice" (Van der Tuin and Dolphijn 167), one that appraises "the interplay of human and nonhuman forces" (Bennett 31) in an onto-epistemological[3] theoretical framework that, in fact, characterizes the conceptual map of the new materialist paradigm at the outset. Being in conversation with authors

1. Representative branches include postcolonial, environmental justice, and transnational ecocriticisms; and mimetic, bioregional, eco-cosmopolitan, postmodern, and posthuman approaches are among the theoretical standpoints ecocriticism employs.
2. On this issue, see Oppermann, "Ecocriticism's Theoretical Discontents" (2011).
3. This is Karen Barad's term that connects ontology and epistemology. "Practices of knowing and being are not isolable," she writes. "We know because we are of the world" (185).

who have been in the forefront of devising this map, the new dimension of ecocriticism "examines matter both *in* texts and *as* a text trying to shed light on the way bodily natures and discursive forces *express* their interaction whether in representations or in their concrete reality" (Iovino and Oppermann, "Introduction", emphasis in original).

The new materialist conceptual map emerges from a radical dismantling of the boundaries between human and nonhuman agencies, the social and the natural, and above all between matter and discourse. As Susan Hekman perceptively puts it: "The social is not separated from the natural [...] but rather they continually interpenetrate each other. Bodies, texts, machines, human and nonhuman entities continually interact in complex relationships" (14–15). For this reason, the new materialist theorists like Karen Barad theorize matter and discourse through one another, as "material-discursive practices," rather than writing "matter and meaning into separate categories" (25). While Barad exemplifies the emerging onto-epistemological reality of intra-acting agencies in specific quantum experiments, another influential new materialist theorist, Jane Bennett, considers the real-life effects of matter with such vivid examples as the electrical power grid, foodstuffs, metal, stem cells, and even trash. She acknowledges their "ability to make something happen" (24) when these elements form assemblages with the human dimension. In Bennett's view, agentic materiality induces "unforeseeable" changes in the world (63), because, she claims, "biochemical-social systems can sometimes unexpectedly [...] choose developmental paths that could not have been foreseen" (112). This entails a truly non-anthropocentric vision, pointing to how, to quote Bennett again, "human culture is inextricably enmeshed with vibrant, nonhuman agencies" (108). It is this vision of the co-constitutive materiality that sets the framework for the new materialist thought which has had a transformative effect on ecocriticism, bringing forth "material ecocriticism." By building on the insights of the new materialist theorists, material ecocriticism follows their claim that "foregrounding material factors and reconfiguring our very understanding of matter are prerequisites for any plausible account of coexistence and its conditions in the twenty- first century" (Coole and Frost, "Introducing" 2). More significantly, however, material ecocriticism explores the narrative aspects of agentic materiality as intermingled dynamic emergences and discursive forms. In other words, it analyses "the interlacements of matter and discourses not only as they are re-created by literature and other cultural forms, but also as they emerge in material expressions" (Iovino and Opperman, "Introduction"). In this essay I deliberately

focus on matter's narrative creativity rather than its literary and cultural representations. Since the examples from literary and cultural texts have already been discussed in a collaborative article written by Serenella Iovino and myself,[4] elaborating on material expressions here is important in order to showcase in more detail how matter and meaning coalesce in matter's narrative potentialities.

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Material ecocriticism is the study of the expressive dynamics of nature's constituents, or *narrative agencies* of *storied matter* at every scale of being in their mutual entanglements. It seeks to explore the narrative dimension of the material world in terms of the stories embodied in material formations. The phrase "narrative agency" means that we are surrounded by stories, which are not limited to historical narratives, archeological and architectural signs, cultural and literary texts. There are also geological, biological, and cosmic stories that compel us to envision the physical world as storied matter teeming with countless narrative agencies that infiltrate every imaginable space and make the world intelligible. Taking matter as "a corporeal palimpsest in which stories are inscribed" (Iovino, "Stories from" 451), material ecocriticism posits that all constituents of nature from the subatomic to the higher levels of existence possess agency, creativity, expression, and enduring connections that can be interpreted as a mélange of stories. From atomic particles to stellar formations, the storied matter encompasses the whole of material ecological relationships that produce meanings interlaced with human destiny. These meanings are performatively enacted by both turbulent and placid encounters of myriads of material forms enmeshed in what Donna Haraway calls "semiotic materiality" (163) configuring the world in immense creativity.

Using chemical signalling molecules to communicate with one another, bacteria are a prime example of such creative disclosures. Bacterial behaviors, as the molecular biologists Stephan Schauder and Bonnie L. Bassler evidence, "are regulated by quorum sensing, including symbiosis, virulence, antibiotic production, and biofilm formation. Recent studies show that highly specific as well as universal quorum sensing languages exist which enable bacteria to communicate within and between species" (1468). Bacterium is a very complex cell to perform creative expressions,

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4. See "Material Ecocriticism: Materiality, Agency, and Models of Narrativity" (2012).

and belongs to the minimal physical systems. Stuart A. Kauffman, a prominent molecular biologist, calls this system "a molecular autonomous agent" (74) that is able to modify its immediate environment: "I mean that the agent can act on its own behalf in an environment, like the bacterium swimming up the glucose gradient or me going to the hardware store" (78). Like cells, molecular agents, according to him, are emergent, can self-reproduce, store energy, and "carry out at least one thermodynamic work cycle" (79). They can act and "evolve by heritable variation and natural selection that assembles the molecular systems in the cell that allow response to food or poison, typically by doing work" (79).

Significantly, however, semiotic materiality is not confined to biological organisms, or organic matter only; it is also the inherent property of inorganic systems, entities, and forces. Igneous rocks, like granite, for instance, provide ample evidence of expressive creativity. Granite, writes Manuel De Landa, "forms directly out of cooling magma, a viscous fluid composed of a diversity of molten materials. Each of these liquid components has a different threshold of crystallization [...]. The result is a complex set of heterogeneous crystals that interlock with one another, and this is what gives granite its superior strength" (64). Therefore, he claims, "granite is an instance of a meshwork [...] *a self-consistent aggregate*" (64, emphasis in original). This shows that defined as self-consistency or self-determining capacity, agency exists beyond the biological world, even in synthetic matter which exhibits astonishing creativity and can be considered emblematic of storied matter. The recent research project at the University of Glasgow provides a concrete example. Attempting to create life from carbon-free, inorganic chemicals, the scientists in 2011 have built inorganic chemical cells, called iCHELLs. The result was that, just like carbon-based cells, the inorganic chemical compounds are capable of self-replicating and evolving.[5] These examples indicate that situated within a pervasive semiotic materiality and disclosing an active creativity, narrative agency emerges in meaningfully articulate forms, and projects interesting and often alien life patterns that issue from the traffic of nonliving and living entities, all engaging the world in complex relationships. Being part of this dynamic life-generating process, humans are the major actors, among other equally important nonhuman ones, of the narrative of creativity in the evolutionary processes.

5. See Deren Quick, "Scientists make first step towards bringing life to inorganic matter." http://www.gizmag.com/bringing-life-to-inoganic-matter/19855/

Notwithstanding the human agency, however, the eloquence of matter's ongoing configurations are visible in the eruption of volcanoes, the rumbling vibrations of earthquakes, the contingencies of hurricanes and storms, the formation of metals, the perduring lithic compositions, the delicate patterns of spider webs, the intricate songs of whales, the coordinated dance of bees, and in species encounters; but not only. The vast spectrum of creativity extends into all networks of vital materialities: There are assemblages of toxic chemicals, multiplying layers of pollution moving in and across landscapes, waterscapes and air with lethal effects on human and nonhuman bodies; there are intersubjective fields of collective activity occurring in "an interfolding network of humanity and nonhumanity" (Bennett 31). This image of perennial material configurations is an image of expressive earth communities, both animate and inanimate. They all relish a sense of an enfolding co-existence performatively enacted in an immense field of interconnected materiality. Their stories enable us to discern the meanings of material intimacies inseparable from the human dimension.

Material ecocriticism proposes that these stories, in the form of active creativity, emerge through the interplay of natural-cultural forces, trajectories, and flows, forming constellations of matter and meanings. Elements, cells, genes, atoms, stones, water, landscapes, machines, among innumerable others, are embodied narratives, repositories of storied matter. Inhabiting not only the material, but also the discursive spaces spawned by human agency, these variously agentic material formations as narrative agencies create meaningful "choreographies of becoming" (Coole and Frost, "Introducing" 10). As such, they become consequent upon social and economic processes, making material practices and their discursive formulations mutually constitutive. This is a "tangled world," as Stacy Alaimo explains it. In such a world, she writes, "science, politics, ethics, and the mundane but consequential practices of ordinary humans, swirl together" ("States of Suspension" 489).[6] Discourse, in this perspective, is not a linguistic construction exterior to materiality; it does not refer, as

6. Although Stacy Alaimo rightly claims it is "difficult to capture, map, and publicize the flows of toxins across terrestrial, oceanic, and human habitats," ("States of Suspension" 477), the agentic material formations have visible social and economic consequences. Alaimo herself refers to the disruptive effects of toxic substances in the food chain and the consequent medical expenditure of restoring health, and also to the economic consequences of the increasing anthropogenic threats on local and global ecosystems. This natural-cultural dynamics necessitates not only ethical but also political reflection and thus a change in discursive practices—all prompted by manifold material agencies. Material ecocriticism interprets this reality as "a mesh of agencies that are both material, industrial, political, chemical, geological, biological, and narrative" (Iovino, "Stories from" 456).

Karen Barad compellingly argues, to signifying systems, representations, or utterances of a unified subject. Rather, the "relationship between the material and the discursive is one of mutual entailment" (152). Hence the term "material-discursive" Barad offers to explain "the causal relationship between discursive practices and the material phenomena" (34). In this sense, matter with its "intensely alien activeness", to quote Jeffrey J. Cohen, "is never *merely* constructed (not merely conceptual, not a social or discursive fabrication, not passive)" (*Stories of Stone*, emphasis in original). Matter is part of the material-discursive composition, an integral domain of knowledge and being.

What this material-discursive co-emergence signals is the dissolution of anthropocentrism and thus the binary logic of traditional humanism deeply enmeshed within the social and cultural practices of othering the more-than-human-world. Narrative agency enhances the new materialist theoretical approach by further undoing such stubborn dichotomies as animate/inanimate, organic/inorganic, language/nonlanguage, and material/discursive, as in the case of iCHELLs. In Barad's cogent account, the compound term "material-discursive" registers a sense of an integral understanding of social and natural phenomena, and removes matter and meaning from "one balkanized enclave or the other" (25). Considering the material and the discursive together does not mean, according to Barad, "collapsing important differences between them," but means "allowing any integral aspects to emerge" (25). This is diffractive thinking—thinking concepts and matter through one another—that material ecocriticism holds crucial in bridging the divide between matter and its social constructions, and in positing the co-presence and coevolution of humans and nonhumans.

The composite reality of this world that we share with nonhuman beings and material forces and substances, can best be defined as "naturalcultural," a significantly composite term Donna Haraway has introduced to breach the categorical schism between nature and culture. The notion of coexistence, thus, is premised upon the conglomeration of intertwined agencies that produce creative materiality reflected in the animate world, which Jane Bennett designates as "an interstitial field of nonpersonal, ahuman forces, flows, tendencies, and trajectories" (61) that extend into the corporeal and social dimensions of human reality. The enmeshment of human and the nonhuman bodies, of ecosystems and technological, social, cultural practices, of politics, ethics and aesthetics, in this view, is so thick that it produces ineffable impacts on terrestrial and aquatic biomes and climatic systems. One of the most crucial consequences

of this human and nonhuman enmeshment is that bodies are no longer seen as purely discursive constructs, nor as biological substances with boundaries. Bodies are sites of material interchanges between "various bodily natures" (Alaimo, *Bodily Natures* 2), directly engaged with the environment, and other bodies of macro and microbiomes. As viruses, bacteria, parasites, or microbes, these material agencies can "destroy, enrich or disable, ennoble or degrade us" (Bennett IX). Stacy Alaimo cites xenobiotic chemicals to exemplify how the human body is so deeply embedded in the environment, and Jane Bennett refers to parasitic helminth worms in our immune system, bacteria colonies in our elbows, and microbes in our bodies to give a sense of how "human agency is always an assemblage of microbes, animals, plants, metals, chemicals [...]" (120). This intriguing map of "interconnections between various bodily natures," which Alaimo defines as trans-corporeality (*Bodily Natures* 2), discloses the body as a permeable, hybrid zone where nature truly converges with culture, making boundaries between all bodies porous.

Consider for a moment the incisive explanation of the tenuous boundary between the body and the environment offered by Margaret Atwood in her review of Rachel Carson's *Silent Spring* in *The Guardian* (December 7, 2012), published to commemorate the 50th anniversary of the book's publication. Atwood writes: "the inside of your body is connected to the world around you, and your body too has its ecology, and what goes into it—whether eaten or breathed or drunk or absorbed through your skin—has a profound impact on you." This "viscous porosity of entities" (Tuana 200) is another way of saying that there are "nonhuman powers circulating around and within human bodies" (Bennett IX), now coming into public attention in so many discrete ways with the increasing media exposure of global pollution, toxicity, and the humanly made substances, like plastic passing through our bodies and the bodies of birds, fish, and other species. Therefore, recognition of interconnectedness is key to this process of corporeal entanglements with the uncanny agencies that populate the living spaces alongside the earth's native vegetal, mineral, and animal entities. Just as it is important to conceptualize how we can feel "the tangible textures, sounds, and shapes of the biosphere" (Abram 63), and know that "our bodies are always intertwined with the broad flesh of the Earth" (127), it is also important to consider how these deviant toxic agents have now become part of this expanding cartography of trans-corporeality. Like Alaimo's model of trans-corporeality, Andrew Pickering's metaphor of the mangle, and Karen Barad's notion of intra-action provide us with a useful index of overlapping models and concepts in articulating this

vision of interconnectivity and emergent materiality. These new materialist conceptual tools help theorize the co-dependency between ecosystems, landscapes, climate, species, and the social and cultural textures of human habitats, all of which intersect in ceaseless rhythms of life and death.

In this ongoing process, human agency is so reciprocally connected and constitutively intertwined with nonhuman agencies that they all become "mangled in practice" (Pickering 23). Arguing thus, Andrew Pickering notes the "degrees of symmetry between human and material agency" which emergently define and sustain each other. We are "constitutively engaged with the world of material agency" (20) he states, drawing attention to what he calls a mangle of practice in science studies. He instantiates his contention by referring to particle physicist Donald Glaser's experiments with elementary particles in bubble chambers, and explains how Glaser's detectors "did things [...] and that these doings were importantly separate from Glaser" (51). Glaser had taken a passive role when the bubble chambers produced "tracks and photographs in a way that is not substantively attributable to any human agent" (52). The detectors in the laboratory showed a definite agentic capacity, quite independent of the human observer. This explains that humans are *part* of the ontology of the material world not by way of observation and reflection but rather by way of "intra-action"—the mutual constitution of entangled agencies—of the observers and the observed. As Barad explains, "in contrast to the usual 'interaction,' which assumes that there are separate individual agencies that precede their interaction, the notion of intra-action recognizes that distinct agencies do not precede, but rather emerge through, intra-action" (33). Consequently, our discourses and technologies, philosophies and sciences, and ethics and aesthetics become inseparable from the very material world within which they intra-act. It is in this onto-epistemological sense that we can begin to talk about material agency that is bursting with life, or "vital materiality" (Bennet 55) filled with surprising narratives.

It must be clear by now that matter is no longer viewed as a passive, inert, or inanimate substance. Rather, matter has its own "emergent generative powers (or agentic capacities)" (Coole and Frost, "Introducing" 9). The new materialists perceive matter as equipped with a capacity of self-organization, intrinsic vitality, effectivity, and productive agency "differentially distributed across a wider range of ontological types" (Bennett 9). Forming itself in complex heterogeneous patterns, matter creates agentic assemblages with the power to instigate long-standing effects like the 2011 E-coli virus outbreak in Europe that has afflicted the entire agricultural economy of Spain. Or consider the effects of the

oceanic plastic literally changing the water's ecology,[7] and the plants that transform cultures. Michael Pollan, for example, convincingly argues about how the potato "altered the course of European history" (XVIII) that instantiates quite visibly the fact that "the linguistic, social, political and biological are inseparable" (Hekman 25). Taking plants as nature's alchemists, Pollan claims in *The Botany of Desire* that these alchemists are "experts in transforming water, soil, and sunlights into an array of precious substances, many of them beyond the ability of human beings to conceive, much less manufacture" (XIX). These are agentic activities overflowing with such vitality and meaning that they elude technological, social, or cultural control. In light of these views, we understand that matter is not only conceptually more important, but also ontologically more meaningful. As "an emergent property created through dynamic interactions between physical characteristics and signifying strategies" (Hayles 3), matter is no longer "a capacity localized in a human body," but an effective player in an "ontologically heterogeneous field," (Bennett 23). In a sense, reality is now defined as a site of various layers of materiality, cognition, meaning, and as "matter-energy" as De Landa puts it (21), where matter expresses itself rather creatively: "Rocks and winds, germs and words, are all different manifestations of this dynamic material reality, or, in other words, they all represent the different ways in which this single matter-energy *expresses itself"* (21, emphasis in original). The multiple constellations of these forms, whether they are geological, biological, organic, inorganic, social, or linguistic, map our discursive and material reality.

In such a radical rethinking of the environment as a dynamic co-mingling of human and nonhuman agencies, discrete and conjoined forces, pliable elements, and co-emerging meanings and matter, the world comes to be seen as a terrain of complex interchanges between innumerable generative forces. This "complex web of all possible relationships" (138), in Donna Haraway's apt definition, turns reality inside out (160), revealing the interplay of multiple agentic forces and entities in a dense field of trans-corporeality.

Material ecocriticism posits that this field is thick with stories projected by material agencies with undeniable signifying forces, interacting within material-discursive networks. The close study of these networks has precipitated the new materialist "break-through of the schism between

7. I am referring to Jeremy Konner's "mockumentary," *The Majestic Plastic Bag*, narrated by Jeremy Irons. This ironic film is about the story of a plastic bag, represented as petroleum species, which struggles to reach the final destination of the Great Pacific Plastic Patch. This is an area of plastic waste within the North Pacific Gyre, estimated to be twice the size of Texas.

sign/culture/language and referent/nature/matter" (Van der Tuin 288), which also has deep ecocritical resonances. Put another way, the conceptual horizons of the new materialisms as I have been sketching so far, provide an onto-epistemological frame for ecocritical investigations of the non-anthropocentric alliances, compositions, and performances of human and nonhuman natures and bodies, and more materially grounded appropriations of human-nonhuman relations through which many stories persistently emerge. Indicated by this framework, we dwell in a world crisscrossed by nonhuman agencies, which combine and collide with the agentic field of our species.

These encounters, however, are not a new discovery. Jane Bennett observes that "[h]umanity and nonhumanity have always performed an intricate dance with each other. There was never a time when human agency was anything other than an interfolding network of humanity and nonhumanity. Today this mingling has become harder to ignore" (31). The reasons of this last statement are evident. Pollution, poverty, environmental and social injustice, species extinction, depletion of local ecosystems, global warming, disseminated toxic matter, and other ecological problems are all facets of a global ecological crisis fostered through anthropocentric thought. One strategy to contest this mode of thought, suggested by the new materialist conjecture, is to shift our focus and acknowledge that everything in the living world has agency, which should not be exclusively associated with human intentionality, but seen as part of material generative dynamism that signals the necessity to change our anthropocentric values and destructive practices. Material ecocriticism sees this dynamism as composed of narrative agencies, "a community of expressive presences" (Abram 173), where all beings "have the ability to communicate something of themselves to other beings" (Abram 172). Like the meaningful signs issued by many life forms indicate, meaning is "an ongoing performance of the world in its differential intelligibility" (Barad 335). Although overlooked by the human part, intelligibility emerges when "part of the world becomes differentially intelligible to another part of the world" (Barad 342); it is, therefore, not a specific human capacity.

Thus understood, agency manifests itself in many ways, and is distributed across humans and nonhumans that include not only biological organisms, but also non-biological players, such as metals, electricity, and machines. Even in garbage, as Jane Bennett insists, there is vibrant materiality. Bringing attention to the alien agency of waste in New York, Robert Sullivan, too, underlines how the "garbage hills are alive" quivering with "billions of microscopic organisms thriving underground in the

dark, oxygen-free communities" (96). Whether detrimental to ecological health or not, in its ongoing materialization agency is an "expressive, telluric power," which is "steadily bodying forth its own active creativity and sentience" (Abram 171, 170). Expanding its collective life circle, the animate earth expresses itself with each creature enacting "this expressive magic in its own manner" (Abram 171). Unlike the relentless agency of the pollutants and toxic chemicals that circulate in and out of bodies, David Abram's examples display a more lyrical picture of narrative agencies that are part of the collective network of agentic forces and entities, which he calls "sensible phenomena" (172): the whispered hush of the uncut grasses at dawn, the laughter of birch leaves, tumbling waterfalls, gusts of wind, compost piles, rusting automobiles, feathers, grains of sand, dormant volcanoes, snowdrifts, diamonds (171, 172). They are—though not all of them deemed alive—eloquent, and thus "participate in the mystery of language" (172). This is the foundational premise of material ecocriticism; it examines narratives encoded in the articulate community of nonhumans.

Material ecocriticism sheds light on matter in terms of its inherent creativity, its performative stories and innate meanings. "Our earthly life," in Serenella Iovino's words, "is a cohabitation of stories" ("Steps" 136). As we have seen, a main thread of this trajectory entails relational ontology premised on the causal correlations and co-constitutive relationships among all entities and meaning-making processes. From the material ecocritical perspective, matter acts as the very embodiment of signification and possibility of meaning in life. Since matter is "co-constituted by various forms of power and knowledge" (Alaimo, "Trans-corporeal" 243), it becomes the co-producer of social reality, and of its symbolic and metaphoric formulations in literary and cultural imagination. In short, matter produces stories.

Matter's expressive and creative capacity cannot be denied, simply because wherever we turn to look we can discern its power to weave interlacing bundles of narratives. Inspired by Karen Barad's definition of matter as "a dynamic expression/articulation of the world in its intra-active becoming" (392), material ecocriticism insists on the significance of matter's narrative dimension. It brings "imaginative attention toward a material vitality" (Bennett 19), conceptualizes the physical phenomena as storied matter, and theorizes matter's eloquence. Borrowing the term "onto-tale" from Jane Bennett, material ecocriticism, in general, foregrounds matter's onto-tales. Such an approach, as Serenella Iovino aptly puts it, reshapes ecocritical directions, because it "concentrates on matter [...] *as a site of narrativity*, a storied matter" ("Material Ecocriticism"

57–8, emphasis in original). If matter is envisioned as a site of narrativity, produced by social, cultural, geological, and biological forces, it invites a new understanding of its dynamism as a material-discursive phenomena through which its eloquence is engineered. It is this dynamism or agency "in its ongoing articulation" (Barad 149) that evinces a clear instance of matter's narrative dimension. "If matter is agentic, and capable of producing its own meanings, every material configuration, from bodies to their contexts of living, is 'telling,' and therefore can be the object of critical analysis aimed at discovering its stories, its material and discursive interplays" (Iovino and Oppermann, "Material Ecocriticism" 79).

And if narrative agency is framed by a communicative process, it follows that narratives are specific enactments of creativity and vitality found across the nonhuman world, making language "a property of animate earth itself" (Abram 171). Every organism, every geological formation, every object carries "evolutionary stories of co-existence, inter-dependence, adaptation and hybridization, extinctions and survivals. Whether perceived or interpreted by the human mind or not, these stories shape trajectories that have a formative, enactive power" (Iovino and Oppermann, "Introduction"). Fossils, volcanic rocks, glaciers, bones, archeological sites, bodies, elements, atoms, molecules, DNA, as narrative agencies, are a palimpsest of stories that may or may not always be legible, memorable, or easily identifiable. Stone, for instance, is a perfect material archive for stories, yielding "tales of life's ubiquity" as Jeffrey J. Cohen avers. To illustrate, he refers to pebbles: "Most any pebble is full of carbon microfossils such as acritarchs, the cysts of ancient algae. Such data burgeon with narrative, for story is a process of relation making, and thereby inherently ethical." Cohen is right in stating that "these stories emerge through humans, but without bearing only anthropocentricity" (*Stories of Stone*). Disclosing matter's "self-organizing dynamics" (Swimme and Tucker 48), these stories are inexhaustible records of life. Significantly then, life is shaped by the creativity of its many parts, a complex process known as coevolution. By venturing into the realm of story, material ecocriticism unveils this apparent eloquence of matter, and makes a strong point about how understanding the meanings it conveys reveals the intertwined narrative of our own interdependence. Moreover, reading the Earth in its narrative dynamics elicits a recognition that it "is a creative community of beings that reorganizes itself age after age so that it can perpetuate and even deepen its vibrant existence" (Swimme and Tucker 56). It is, thus, not too surprising that narrative agencies populate this living planet.

By conflating our interpretive practices with the horizons of numerous narrative agencies, material ecocriticism seeks to analyze their meanings disseminated across this storied world, across the stories of material flows, substances and forces that form a web of entangled relations with the human reality. This fusion of horizons has a liberating effect of moving the human vision from the language of otherness to that of differential co-emergence. Such a recognition not only urges us to act responsibly as part of the world, but also underlines the importance of the ethical subject as "an embodied sensibility," the embodied self whose "ethical relations extend to the other-than-human" (Barad 391–92). Emphasizing this radical rethinking of human and nonhuman relations is the attempt to dehierarchize our conceptual categories that structure dualisms and determine our oppressive social, cultural and political practices. Therefore, destabilizing such artificially naturalized systems of meaning is a precondition to resolve many complex issues, such as climate change, and to update our logocentric and anthropocentric discourses. In this journey, material ecocriticism can orient us towards "a new integrating story" (Swimme and Tucker 3).

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