

## The Emergent Environmental Humanities: Engineering the Social Imaginary\*

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The Environmental Humanities (EH) matter, and scientific consensus now stresses the need for a fundamental shift within the humanities towards more interdisciplinary investigation of environmental issues. In recent years, a need has emerged for the interdisciplinary field of the EH to address the complexity of societal relationships with the natural and built environments (see Braidotti et al. 506). This complex context requires a fluid understanding of the interaction between nature and culture, thus challenging the artificial disciplinary separations between the human, social, and natural sciences—all of which has profound consequences for the future of literary studies as well. The field of the EH questions the basic concepts of reference in the shared understanding of human conditions, their place in the planetary history, and the disturbing potentials for anthropogenic depletion of the entire ecosystem. However, humanistic study of environmental matters is nothing new. Tens of thousands of years before the development of the scientific method, humans attempted to understand their connections to the natural world through culture. Humanistic fields have recently coalesced around the issue of the environment, and the EH have developed incredibly sophisticated, deep, and diverse approaches and theoretical methodologies to examine the human dimensions of the relationship to the environment. While the natural sciences have worked on environmental issues for some time, in the wider context literary, philosophical, and historical study of the environment is underrepresented. Thus what is needed now, more than

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\*For debates inspired by this article, please check the *Connotations* website at <http://www.connotations.de/debate/the-emergent-environmental-humanities>.

ever, is a wide humanistic intervention into environmental questions. What is needed now more than ever is a philosophy of literary and ecological identity.

An essential consideration is to what extent the humanities can contribute to current environmental debates, and to what degree scholarly activities can reconcile the many cultural and ethical questions that climate change demands. Can humans, in the face of unprecedented economic, technological, and social change, utilize their capacity for knowledge building to construct sustainable futures? The EH “assume that modes of social belonging and participation are mediated by cultural representations and interpretations of them” (Braidotti et al. 507). Moreover, the EH raise the need for new transdisciplinary tools and robust interdisciplinary values to deal with the complexity of the many issues involved in climate and environmental change. Socially, it asks what concrete actions can be taken to raise public awareness of the many threats, challenges, and opportunities involved in adapting to global environmental change, and how institutions can best fulfill the task of introducing systemic changes in the way citizens interact with social ecological systems and resources. Finally, the EH opens much needed dialogue between the humanities, the social, and the natural sciences, which must collaborate if a genuine transformation to a sustainable society is to be realized in the conceivable future. The need for a wide humanistic intervention into environmental questions seems clear enough. The question is just what exactly the EH has to offer. What is perhaps striking, and surprising, is both the diversity and breadth of existing fields of academic inquiry that fall under the EH umbrella today. This paper thus discusses the intersection points of the Environmental Humanities to the wider scientific debate. It suggests that the EH are suited to help construct knowledge for sustainable futures.

## The Anthropocene as Catalyst

The acknowledgement of the arrival of the Anthropocene provides ample opportunities for the humanities to work across disciplinary barriers for the common good. In 2002, Nobel Prize-winner Paul Crutzen argued for the widespread use of the term “Anthropocene” (23), which is essentially a neologism suggesting human beings have created a new geological age which began during the Industrial Revolution. In locating the trigger for this new age, the human age, Crutzen believes that the “Anthropocene could be said to have started in the latter part of the eighteenth century, when analyses of air trapped in polar ice showed the beginning of growing global concentrations of carbon dioxide and methane. This date also happens to coincide with James Watt’s design of the steam engine in 1784” (23). Basically, the beginning of the Anthropocene was the time when humans began adding significant amounts of carbon into the earth’s atmosphere. The most important aspect of this development may be the acknowledgement and understanding that human actions have fundamentally changed the geology of the earth. Certainly, evidence of human activities will be found in both the fossil and geological records for ages to come. While the arrival of the Industrial Revolution brought radically improved standards of living for people in the West, the negative consequences of this new age took some time to become understood. Extensive habitat destruction and the introduction of non-native invasive plant species cause widespread extinctions of flora and fauna, and these effects are clearly visible today. Not only are the seas becoming warmer, but chemical dumping is literally changing the biochemical composition of the oceans. One clear result is ocean acidification, which is the ongoing decrease of the pH of the seas. This is caused by the absorption of increased atmospheric carbon dioxide. The long-term effects of such a development are difficult to fathom. Moreover, growing urbanization throughout the world increases rates of both sedimentation and erosion. Thus, human activities in recent centuries dominate the world “on a scale comparable

with some of the major events of the ancient past. Some of these changes are now seen as permanent, even on a geological time-scale" (Zalasiewicz et al. 2228).<sup>1</sup> One of the major problems that remains unanswered today is to what extent the human sciences can respond to the Anthropocene in any meaningful and long-lasting way. However, recent developments suggest that the humanities are already developing potent and codified forms of environmental praxis.

### The Greening of Literary Studies: Ecocriticism

Ecocriticism represents one of the major shifts within the humanities towards study of the environment. Ecocriticism is a blanket term that covers a broad range of theoretical and methodological approaches to examining and understanding the complex and often contradictory relationships between human culture and the environment, with a special emphasis on the examination of culture.<sup>2</sup> Essentially, Ecocriticism is a humanities area of research that examines texts such as literature or film in the context of contemporary environmental concerns. Scholars working in this area are especially interested in exploring the places where there is contact and tension between human culture and the environment, where they meet, or possibly overlap. Lawrence Buell calls ecocriticism the "study of the relation between literature and the environment conducted in a spirit of commitment to environmentalist praxis" (430). Buell is perhaps too careful here, and privileges the study of literary texts over other forms of culture. Richard Kerridge and Neil Sammells provide a broader definition of ecocriticism, calling it the study of "texts and ideas in terms of their coherence and usefulness as responses to environmental crises" (5). While Kerridge and Sammells's explanation broadens the scope of the term ecocriticism, it lacks Buell's call for intellectual forms of direct action. One wonders whether Buell's attention to scholarly engagement can be matched with Kerridge and Sammells's interest in expanding the range of the term beyond literary studies. For the pur-

poses of this paper, ecocriticism can be considered the study of the relationship between culture and the environment conducted in a spirit of commitment to environmentalist praxis (see Weidner). And within ecocriticism, the idea of place remains conceivably the single most important trope.

While place is often seen as a secondary attention in the study of culture, ecocriticism puts it back at the center of the conversation. The goal is to shed light on the culturally complex connections between the environment and culture. Methodologically, ecocritics ask specific kinds of questions to uncover new knowledge about the many connections between human culture and the natural world. Ecocriticism thus has much in common with practitioners of the “often radical and always interdisciplinary fields of enquiry that called themselves ‘studies’. Gender, feminist, queer, race, postcolonial and subaltern studies, alongside cultural studies, [and] film” (Braidotti, “The Contested Posthumanities” 15). In this sense, ecocriticism can be seen as a natural growth of comparative literature. Researchers in various fields employ interdisciplinary techniques to understand issues of cultural power; it certainly plays a role in green studies today, and one focus of ecocriticism, certainly in North America, is on environmental activism. The ultimate aim of ecocriticism therefore is to examine both the many moral implications of human interaction with nature in the hopes of preserving the valuable and unquantifiable qualities of the natural world that are necessary to the existence of human culture and society. One valid critique of American ecocriticism is that it can at times hold up a nostalgic or even superficial and sentimental view of nature. European ecocritics have done considerable theoretical work, and are not only interested in summoning the spirit of the uncontaminated retroactive pastoral, certainly not in the form of some sort of transcendental escapism (see Kaibara and Tucker). In considering ecocriticism as a global movement, a number of concepts help guide much of present-day thinking.

One essential concept is nature, and human language allows us to consider the idea of nature. Lawrence Buell holds up Henry David

Thoreau's writing as a relevant precursor to contemporary Ecocriticism. This is apparent in Thoreau's personal fascination for the field of natural history: "Properly speaking there can be no history but natural history, for there is no past in the soul, but in nature" (86). While Thoreau was considering the history of the earth's geologic and biological diversity and ever-changing ecosystems, the suggestion that the past only exists in nature and not the human mind presupposes a binary between the human and the nonhuman worlds. And given our current understanding, this separation might actually exist linguistically (see Weidner). However, if we can agree that language is "essentially representational," as Dana Phillips claims ("Ecocriticism" 588), then it follows that we can pose the more crucial question of whether humans can ever begin to really fully discuss the existence or absence of nature.

A cynic might argue that human language can represent neither the flow of time nor the incredible variety and diversity of life on this planet. Another concern is whether humans can even begin to effectively bridge the gap between the language of nature and human spoken communication. However, if one sees language as a tool of understanding, then it may provide humans with the best vehicle to begin to comprehend our existence on this planet. And in this respect literature, as a vital cultural and linguistic construction, assists in realizing this goal (cf. Weidner). In crucial ways, Thoreau's journals document this intriguing navigation between language and nature. First, his journals celebrate nature, and at the same time demonstrate sincere human intellectual interest in the environment. Second, there is recognition of a need to balance the trappings of modernity with the autonomy provided by living close to the natural world. It can be said that Thoreau was a proto-ecocritic in anticipating the need for discourse on the relationship between humans and the environment. It is important to note that ecocriticism goes beyond the analysis of literature only, and is helpful in generating questions that are relevant to the EH more broadly, including questions with wide-ranging implications. For example: Is nature stable and predictable, messy and

chaotic, or both? The natural world may seem to be organized through a number of predictable systems, many of which are self-correcting. Such a view suggests that, if human society would simply allow the earth to achieve natural balance, then a suitable environment for plants, reptiles, and mammals can be guaranteed for a considerable period of time.

Chaotic natural phenomena force us to question basic assumptions about the universe, and ecocriticism approaches questions from a number of perspectives. If organic mutations occur randomly, then nature is not an orderly and efficient system whatsoever. Mutations are simply one of the many chaotic natural occurrences that force humans to reexamine the idea of a predictable universe. For example, if one examines the fossil record, it is clear that evolution provides many more paths to extinction than to life. While there may indeed be patterns and systems by which the cosmos normally functions (physics and astronomy are examples of human scientific disciplines committed to charting out natural phenomena, and organizing them into predictable schemata), the existence of biological mutations and other chaotic natural occurrences shows the need to adjust our views on the seeming stability and rhythm of nature (cf. Weidner). Dana Phillips (*Truth of Ecology* 71) and Ursula Heise (*Sense of Place* 64) both seem to abandon the idea of a harmonious state of nature, and instead see a strange, ever-changing and unpredictable biological journey. In *The Ecological Thought*, Timothy Morton argues that humans exist on one large, untidy, connected ecological mesh, an organic web of sorts, and that the realization of our interconnectedness with other life forms is what he terms *The Ecological Thought* (cf. 1). In the most basic sense, ecology can be defined as the study of organisms and their interaction with the environment. T. V. Reed summarizes various focal points within ecocriticism at present, and breaks them down into different groups including conservationist, ecological, biocentric/deep ecological, ecofeminist, and environmental justice (148-49). Reed's chart thus presents a useful point of entry for ecocritical concentrations at present, and shows intersection between ecocriticism and other human-

istic disciplines. It reveals examples of scholarly ecological praxis, though other developments suggest that green solidarity can take many forms.

### Animal Studies

While ecocriticism has opened new vistas in literary studies, another thought-provoking concentration within recent EH research is taking place in the field of animal studies. This area of scholarship brings together researchers working in art history, film and media studies, history, literary studies, and philosophy. Researchers are now engaging the animal extensively. Cary Wolfe stresses the recent growth of animal studies, and emphasizes the ways in which animals are abundantly represented in nonwestern cultures, adding that such societies can be a rich source for contact between humans and animals in art (564).<sup>3</sup> Researchers working in animal studies examine age-old questions to understand better the multifaceted relationship between humans and nonhuman others. The point is to take animals seriously as an object of examination and not only as a natural resource. Donna Haraway (*Staying with the Trouble*) suggests that a fundamental philosophical shift is needed, one that builds kinship across species lines, in the hope of developing a future affinity between terrestrial creatures that exceeds our present grasp. She says that the term “Anthropocene” is insufficient for promoting an optimistic future ecological worldview, and suggests “Chthulucene” ought to enter the discourse. She believes the term Chthulucene is less anthropocentric than Anthropocene, that it acknowledges the human impact on the world, while also recognizing all of the creatures big and small: the octopus, amoeba, and grubs, all nonhuman others that contribute to the rich biodiversity of our shared world. The idea of the Chthulucene may seem a bit utopian at times. However, if we are talking about really changing human behavior and envisioning sustainable futures, perhaps Haraway’s Chthulucene allows for more potential cultural re-

covery than the rather gloomy Anthropocene. The Chthulucene thus presents a wider view of the human relationship to nonhuman others than the Anthropocene allows: the latter entails a rather limited temporal view of this interrelation, but this messy, sometimes antagonistic, and yet symbiotic relationship goes back as far as human history itself.

Indeed, the interspecies imaginary has long existed and reveals the ways the symbolic of the animal has long occupied the human mind. In earlier civilizations, manuscripts and works of art suggested the possibility that different kinds of animals can merge biologically. For example, in ancient Egyptian mythology one sort of sphinx was both part lion and part human. Homer's *Iliad* describes a monstrous immortal creature that had the chest of a lion and body of a goat. Pan is half human and half goat, and exists comfortably in both the animal and human kingdoms. Moreover, consideration of chimera creatures is one way to complicate long-standing distinctions and problematize human-animal deliberations, while at the same time generating fascinating new questions. The age-old distinctions between humans and animals are not at all as certain as once imagined, and we can learn much about ourselves by studying the ways animals communicate, remember, and even mourn. In "The Android and the Animal," Ursula Heise explains a concept she calls "biological otherness," which is a condition of biological difference that does not conform to the usual evolutionary roads (505). Such a situation forces us to question, radically, not only our assumptions about what makes humans different from animals but also about potential opportunities for understanding, and even prospects for transspecies hybridity. Ultimately, the focus of animal studies today is not to better understand the human by comparing ourselves to the nonhuman other. Truly, the goal of contemporary animal studies research in the humanities is to try to better understand the human, as well as become more aware of the essential otherness of the nonhuman. Thus, Haraway's call to think in terms of multispecies kinship, as opposed to the animal-human dyad, is a useful way to ponder the complexity of our relationship to ani-

mals. The idea of chimeras and other forms of transspecies hybridity is not new, but strange animal hybrids still largely lie beyond existing models of humanistic inquiry, generally and certainly beyond the concept of the Anthropocene. While animal studies have done much to propel the EH forward, the recombination of the human relationship to their bodies forces us to consider other fascinating, often mind-boggling new possibilities, moral dilemmas, and new questions.

Far-reaching scientific advances force humans to reconsider the animal as matter and the implications in techno-scientific developments. For example, what is the effect of the animal *in* the human on a material level? What is the consequence of the human being as animal/biological matter? In other words, what might the scientific closing of the gap between species mean for humans and how they view their own bodies and the physical forms of nonhuman others? The most modern of tools have not only changed the relationship of humans to the environment but also the relationship between humans and their own bodies. In times of such radical technological change, we are compelled to reassess our relationship not only with machines but also with nature. Sweeping technological developments and innovative scientific tools have already changed the way the human body functions. Pacemakers and artificial hips are ubiquitous. Pig heart valves are routinely stitched into leaky human hearts. While possessing the heart valve from a pig might not at first seem to create a radically new form of human, what might additional, even more far-reaching developments mean for our understanding of what it means to be a human being? Braidotti reminds us that the medicalized commodification of animal bodies goes far beyond heart valve replacements: "Animals like pigs and mice are genetically modified to produce organs for humans in xenotransplantation experiments. Cloning animals is now an established scientific practice" ("Animals, Anomalies, and Inorganic Others" 86).<sup>4</sup> Such developments force us to once again pose fundamental questions about not only the rights of altered humans but also those of nonhuman others, who share much of the same biology and, by extension, at least some of the same rights as

ourselves. Philip Dick wrote about such concerns in the 1968 science fiction classic *Do Androids Dream of Electric Sheep?* While Dick's novel was a creative inquiry into what it means to be human after anthropogenic ecological apocalypse, Donna Haraway brought a more theoretical view of animal and machine through the figure of the cyborg, which are hybrid creatures that are "simultaneously animal and machine" ("A Manifesto for Cyborgs" 66). Her work on cyborgs not only forces us to confront the lingering dualisms that have contributed to our current ecological crisis, at the same time she encourages us to accept the potentials of technology to further the human endeavor (100). And while animal studies remains a remarkably rich area of EH scholarship, other disciplines too are contributing to the EH movement.

### Environmental Citizenship, Ecological Citizenship, and Political Ecology

Historically, Environmental Citizenship has been frequently associated with the liberal tradition. In this sense, nature is understood as an assembly of resources to be commodified, and ecological crises are identified as the simple endangerment of natural resources and thus exploitation of those resources. In this context, movement towards greater efficiency in economic activities would seem to slow the depletion of resources, thus benefiting the greater good. Derek Bell sees the most pressing ecological challenge as an opportunity "to address important weaknesses in contemporary liberal theory" (45). One way to meet the ecological (and social) challenge within the liberal model is through the introduction of what can be called environmental rights (see Bell 49). The recognition of environmental justice issues during the Clinton/Gore administration in the US in the 1990s provides a useful illustration. However, as Jelin rightfully asks, "[W]hat demands of positive rights can be deduced from the recognition of the greenhouse effect?" (52). While environmental citizenship involves aware-

ness of responsibilities to the wider society, the expansion of capitalism, continued acts of biopiracy, and discussions of growth limits remain central. The ethical questions posed here leave people largely devoid of opportunities for social learning, which is a fundamental condition for real transformation towards sustainable culture.

Ecological Citizenship is a more sweeping form of civic engagement and seeks fundamental societal change by suggesting a break with the system of contemporary Western capitalism; it may even open up spaces for the development of genuine solidarity with other animal species, what Donna Haraway says allows for “multispecies environmental justice” (*Staying with the Trouble* 8). The focus of ecological citizenship lies on the merits and responsibilities of citizenship as well as the hope that deliberative democracy will lead to profound change. Haraway sees this profound change as shared responsibility to reduce birth rates over the next few centuries. This manifests in developing new forms of kinship such as communal child-rearing. Ecological citizenship comes closer to an approach based on individual identity as a social being, or, as Melo-Escrihuella has it, a “personal duty or lifestyle-change approach” (68). Such a form of citizenship is didactic, and Dobson asserts that educational institutions are essential in this context. An intriguing problem here is the role of a supposed neutral state in such a process. In other words, how can the state remain neutral if economic and educational systems need to be profoundly reformed? Can the state remain thoroughly neutral in the face of widespread and integrated corporate lobbying in the political process, as well as the economic and social tensions brought about by unprecedented ecological change? Another intriguing challenge is what should be done if, for example, one particular nation-state is actively working against such a global view, perhaps in an effort to protect its own interests. And while these theoretical problems are real, if we are speaking about social transformation, the needed changes are necessarily deep, both vertically in the context of institutions as well as horizontally in the context of citizens and nonhuman others.

By the end of the last millennium, citizenship and environmental discourses had already formed a new field of political ecology. The task now is for academics to further “explore the idea and to place it in relevant theoretical frameworks and contexts,” writes Bell (192). While the concept of environmental citizenship was introduced as early as 1990 by the Canadian environmental ministry, more recent distinctions are useful in the context of the contemporary understanding of climate change and related civic responsibilities. Andrew Dobson compares contemporary Western citizenship discourses and asserts that while liberalism highlights rights-approaches (qtd. in Gabrielson 430), civic republicanism stresses duties and virtues. He criticizes the dualistic thinking between these concepts as excluding other possible forms of green engagement and solidarity. He introduces what he calls post-cosmopolitanism, which is an alternative form of social action to shared obligations beyond the nation-state. Post-cosmopolitanism is thus aware of the historic inequitable consequences of globalization, and the resulting forms of environmental and economic injustice that follow.

The unequal relationship between developed and developing nations exacerbates, and is exacerbated by, ecological problems. At the core of Dobson’s analysis lie the injustices of asymmetric globalization, which he explores as mostly an extension of the Global North’s dominant influence and not as the balanced interaction between North and South. He describes climate change as the most fitting example of this lopsided relationship. While the North is largely responsible for environmental problems ranging from increased carbon emissions, nuclear proliferation, to biopiracy, the South will face the most severe consequences of this economic, political, and ecological imbalance. Technologically advanced Northern states will continue to develop tools to deal with the direct effects of climate change. One example is the ongoing expansion of the Delta Works in the Netherlands. While the Dutch are relatively well equipped to deal with rising sea levels, Indonesia is far less prepared. This example highlights the continued asymmetric relationship between developed

and developing nations. The “Alliance of Small Island States” is a collection of states which are threatened by flooding and the social and economic consequences such disasters generate. Dobson argues that the typical cosmopolitan call for a stronger dialogical involvement in the global community will not necessarily benefit the islands. He therefore prefers shared distributive costs that build “on the interconnectedness view of globalization” (21) to combat such problems. While a compassionate redistribution of resources, expertise, and shared suffering might help, it cannot do justice to the historical relations that gave rise to the situation in the first place. Dobson argues that the “principal difference between cosmopolitan and post-cosmopolitan citizenship, [...] is that between the ‘thin’ community of common humanity and the ‘thick’ community of ‘historical obligation’” (81). Dobson’s aim is therefore to create a robust concept of citizenship that imposes obligations based on deep historical injustices. Thus, if each citizen on Earth would restrict themselves to their fair share of resources, the world would benefit not only socially but also ecologically. Moreover, other concepts of environmental solidarity add to the discussion.

### Environmental History, Environmental Philosophy, New Materialism, and Postcolonial/Indigenous Digital Media

Research carried out in the area of environmental history is crucial to the continued development of the green humanities. Environmental historians examine the ways that humans have interacted with the environment over time. The field developed as a response to increasing environmental awareness in the final decades of the twentieth century. Donald Worster says that environmental history has “a great potential for changing the way we conceive of the past” (viii). The field attempts to trace the ways in which we have arrived at our current ecological predicament by taking into account a larger view of nature-historical developments. It is not interested only in historical

developments but in the implications of those developments for the current state of affairs. For the sake of simplicity, the field can be broken down into three main areas of focus. The first involves understanding changes in nature over time, as well as the human impact on the world. Worster considers humans as a kind of parasite (cf. 293), but the real point is that the world functions as a kind of fertile “womb.” Thus it can be said that the human misuses the fertility of the earth.<sup>5</sup> The second major area concerns socioeconomic developments such as the ways that humans process raw materials into other more advanced materials for the purpose of economic distribution and consumption. Consider the historical developments that led to conflicts over access to Amazonian rubber in the late nineteenth and early twentieth centuries, and the severe ecological and social consequences that followed. Environmental historians are interested in tracing the larger narrative behind such processes to develop new ways of thinking about the complex relations between ecology and human society. The final area of focus of environmental history, according to Worster, is “purely mental or intellectual, in which perceptions, ethics, laws, myths, and other structures of meaning become part of an individual’s or group’s dialogue with nature” (293). The last of the three focal points intersects with similar research being carried out in environmental philosophy.

Environmental philosophy is directly linked to environmental history and has much to add to the wider conversation within the EH. Essentially, environmental philosophy is an area of inquiry dedicated to the study of the environment and the human place within it. Similar to the fields of environmental history and ecocriticism, it emerged in the latter part of the twentieth century as concerns over nuclear proliferation and dangers of chemical pollution grew. A crucial publication that helped set these developments into motion was Rachel Carson’s 1962 *Silent Spring*, a narrative that traces the spread of dangerous chemicals throughout the wider ecosystem. Paul Ehrlich’s 1968 *Population Bomb* placed a human face on the unfolding environmental tragedy; it argues that overpopulation will engender uncountable

human deaths and immeasurable human suffering in the period to come. Both of these publications contribute to the philosophical discussions around ecology today. A further development in environmental philosophy occurred with Arne Naess's 1973 article, "The Shallow and the Deep, Long-range Ecology Movement." Essentially, Naess asserts that policies to ensure promotion of recycling and reduction or resource depletion are insufficient to lead to a real shift in ecological consciousness and transformation of society, and that it is more effective to consider principles of diversity, decentralization, egalitarianism, and social equality. As such, Naess poses many of the same intractable questions with which those working in environmental philosophy are occupied today. While work in environmental history and environmental philosophy are important to the continued growth of the EH, work in materialist studies also makes a contribution.

Work in what can be called materialism in a general sense challenges traditional forms of binary thinking within the academy and is directly relevant to contemporary environmental discourse. New Materialism focuses on matter and why it matters; it attempts to provide a perspective on materiality and the ways this can contribute to knowledge creation. According to William Connolly, New Materialism challenges the "classical ontologies of mind/body and self/world dualism" (399). New Materialism thus criticizes anthropocentrism, which is a prerequisite to biocentric modes of thinking. It also refuses to accept the longstanding dualisms such as the human mind vs body, culture vs nature, and technology vs the natural world. Such a shift in thinking is vital in a time when ecological calamities push the boundaries of our current intellectual limits. Moreover, New Materialism questions many modernist assumptions. After all, any study of culture today is necessarily entangled with larger questions of nature. Any consideration of science highlights the ways in which even the most abstract machineries occur as transformations of material assemblages. Therefore, New Materialism addresses not only environmental matters: by extension it practices ecology in the tradi-

tion of Bateson, Guattari, and others. Connolly believes that New Materialism defies conventional modes of scientific thinking, including “exclusive humanism, secularism, [and] omnipotent notions of divinity and scientism” (402). The movement is not without criticisms. Marlis Schweitzer and Joanne Zerdy wonder what is really new about the movement and complain that the term New Materialism “is potentially misleading in that it suggests that scholars who identify with this perspective have wholly rejected or proceeded beyond the basic tenants of [...] materialism rooted in Marxist thought” (4). Instead of simply adding to the conversation, Dolphijn and van der Tuin try to establish a system of thinking that “traverses and thereby rewrites thinking *as a whole*, leaving nothing untouched, redirecting every possible idea according to its new sense of orientation” (emphasis theirs, 13). The difficulty of such a vision will be to implement it into environmental practice. In other words, what might New Materialism add to the discussion on ecological change on a practical level? If we are interested in promoting new ways of thinking about economics, consumption, and matter as a resource, such questions are necessarily complex, deep, and open.

Work carried out in postcolonial and digital media and indigenous studies also assist in filling the gaps within EH. Lisa Nakamura (2002) and Ponzanesi and Leurs (2014) agree that the postcolonial digital humanities is now a fully established field of inquiry. Digital media provides the most complete contemporary platform to challenge geographical borders as well as reconsider transnational contexts. Nakamura, Ponzanesi and Leurs’s work on transversal projects tracks the critical analysis of power formation of mainstream culture into the complex cultural analysis of the posthuman age. The efforts to set up a robust field of the digital humanities, as well as the decolonialization of media, have been historically dominated by economic and corporate interests. This is especially true considering the ways that the media are used as tools to propagate consumerism and political ideology.<sup>6</sup> Walter Mignolo and the decolonial movement propose a similar emphasis, but with different methods. Mignolo

defines coloniality as the matrix of European power and its accompanying logic (cf. xviii), and calls for a fundamental break from such a tradition. In this way, we might possibly talk of the de-westernization of humanity, which can promote new ways of thinking that are conducive to progress on the environmental question. De-colonialization challenges both the epistemic and material foundations of historical European power projection, in a form of direct action called “epistemic disobedience” (122-23), as a way of “de-linking” from this disastrous legacy of colonial oppression. Indigenous forms of knowledge and non-Western epistemologies can therefore provide inspirational material for this journey. Such a situation can result in brand new alliances between environmentalists, native peoples, climate refugees, new media activists, and forces of anti-globalization, which today represent forces that constitute a significant example of new political assemblages.

Indigenous studies also contribute to the contemporary debates surrounding environmental and social justice and thus further enrich the EH. One recent example of ecological engagement in the context of media activism includes the groups associated with the Dakota Access Pipeline demonstrations in the US state of North Dakota. For months these groups, led by members of the Standing Rock Indian Reservation, resisted commercial construction of an oil pipeline from Canada through Native American lands, calling themselves water protectors. Various American Indian tribes from throughout the Americas joined the protests, as did college students, foreigners, journalists, and upwards of 2,000 members of the Veterans Stand For Standing Rock, a group of US military veterans that traveled to North Dakota in solidarity. The Standing Rock organizers capitalized on the possibilities of social media to draw global attention to both their environmental struggle as well as condemnation of the overzealous militarized police response to nonviolent protest. This example of transnational environmental activism mirrors Rob Nixon’s emphasis of taking indigenous epistemologies seriously not just as a relic of the past but as a blueprint for the future (see *Slow Violence*). Kim TallBear discusses

similar issues in her *Native American DNA*, which brings together indigenous epistemologies, environmental and social justice issues, along with an excellent and timely discussion of scientific and technological developments. Essentially, she says that ideas about racial science, which date to the nineteenth century, are being renewed through the practices of DNA testing. She argues that, because science appears so convincing, we tend to accept it above Native American beliefs about what constitutes kin. She ultimately claims that this shift over what defines what a Native is has lasting consequences for native lands, rights, and autonomy. Another recent academic development includes the Hastac Scholars Forum, which focuses on the legacy of colonialism, the realities of postcolonialism, and the ways that digital media can function to decolonialize the future.<sup>7</sup> They start from the assumption that Eurocentric thinking and the destruction of indigenous ways of knowing can be improved by the adoption of digital technologies. The intersection of digital technologies with the EH is therefore essential, since alternative technologies may work against the forces of colonization and “post-colonial legacies that maintain social injustice” (Braidotti, *The Contested Posthumanities* 30). What this all amounts to is the recognition that the EH are building critical mass.

### Emergence and Convergence

The EH has made significant theoretical interventions into the contemporary environmental debate and has clearly reached a state of maturity, though there is much work to be done. The EH produces yearly conferences around the globe, disseminates knowledge through numerous publication outlets, and offers degree programs to those aspiring to integrate environmental praxis through humanistic research. Conferences within the EH are widespread and occur frequently around the world. The maturation of the Association for the Study of Literature and Environment, which began in the United States, has quickly branched out into a global network of connected

organizations devoted to the humanistic study of environmental issues. There are regional chapters situated in Europe, the United Kingdom and Ireland, Asia, and India. A comparable scholarly organization includes the Nordic Network for Interdisciplinary Environmental Studies. Numerous publication outlets are now available for EH scholars. Unsurprisingly, the EH movement has coalesced around a number of institutions concerned with the investigation of environmental and social issues, including the Research Centre for Environmental Humanities at Bath-Spa University in the United Kingdom. Bath-Spa offers numerous degree programs at the MA level: in Environmental Humanities, Literature, Landscape and Environment, as well as an MSc degree in Environmental Management. They also offer PhDs. Moreover, The Seed Box is an international environmental humanities collaboratory located at Linköping University in Sweden, and is richly supported by government agencies. The goal of this program is to research across the nature-culture divide to help solve today's pressing environmental problems. Other institutions are also engaged in environmental inquiry, such as the Rachel Carson Center in Munich, Germany, which focuses primarily on social science questions around environmental issues. The Utrecht Sustainability Institute, hosted at Utrecht University in the Netherlands, seeks "a good balance between economic growth, the environment and the welfare of people" (Utrecht Sustainability Institute par. 2). However, while there certainly seems to be a greater focus on sustainability within institutions, which is a welcome step, many of these developments are driven by a purely managerial and natural sciences perspective without incorporating EH to any comprehensive degree. Therefore, the current situation requires a shift of sorts towards the incorporation of the all-important human dimension of environmental thought. In other words, the uneven development of institutional practices today provides an excellent opportunity to integrate EH as we proceed deep into the twenty-first century.

While there are no easy solutions to the many ecological problems we face, what is clear is that the EH offers modes of thinking that

must contribute to the environmental conversation. Only by reconsidering our place in the world can we begin to consider alternative and sustainable ways of living. This is especially important as ecological traumas will continue to escalate. Populations continue to grow, resource depletion continues, rogue states are nuclear-capable, mass extinctions are escalating, multinational corporations invested in fossil fuels hinder political progress, and billions of residents in the developing world strive towards western levels of economic growth. In this sense, the EH can conceive of the human being ecologically, as a part of a series of structures that cross nature and culture, organic and inorganic, flesh and machine. The environmental turn in the arts and the development of arts as environmental research practice are forms of ecological praxis. Indeed, any real social transformation must include the humanities. Katharine Meenan and Jennifer Rice argue that “[t]here is no independent arena of ‘social’ and ‘natural’ things, only relational moments between objects and people, humans and nonhumans” (qtd. in Del Casino 66). Thus more than simple collaboration, a unification of different academic disciplines needs to take place, by mapping narratives to accompany models. When discussing the potentials for ecology and the academy, Martin Hynes is even more resolute: “Examining the social and individual implications of major challenges can no longer be a simple add-on to existing research. It must be integrated into mindsets and research from the start” (European Science Foundation). Therefore, what is truly needed is a fully integrated EH.

So what are the EH today, and can a single definition adequately encompass the myriad humanistic approaches under the EH umbrella? Scholars working in the EH often claim an interdisciplinary focus, and that the EH is a large tent under which a multitude of humanistic methods and subjects can be found. Thomas Dean supports the idea of a broadened approach and argues for an expansive environmental criticism to “reconnect the disciplines that have become sundered through over-specialization” (par. 2). Such a view is often repeated throughout current ecocritical literature. Jean Arnold further argues:

Looking at texts for their ideas about the natural world results in a cross-fertilization of the humanities with other academic disciplines: when literature combines with biology, cultural theory, biochemistry, art, ecology, history, and other sciences, any combination of these fields forms a cauldron of brand-new perspectives. (1089)

Such openness to other disciplines is a needed change in the humanities. Given rich and diverse theoretical and methodological advances in EH scholarship, it is evident that we are approaching critical mass.<sup>8</sup> We can now consider the EH as a lightning rod between the arts and the sciences. Indeed, we can even conceive of the possible emergence of a philosophy of literary and ecological identity.

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## NOTES

<sup>1</sup>See the 2018 Intergovernmental Panel on Climate Change Report, convened by the United Nations, "Global Warming of 1.5 °C" (Allen, Babiker, Chen et al.).

<sup>2</sup>William Rueckert first used the term "ecocriticism" in "Literature and Ecology: An Experiment in Ecocriticism" (1978), which called for interdisciplinary approaches to study of ecology and literature. Cheryll Glotfelty revived the expression in 1989. She urged its adoption in the interdisciplinary study of literature and the environment (Branch 1). The expression "ecocriticism" has since been used in discussion of environmental assessments of literary texts, and more recently in various forms of cultural developments.

<sup>3</sup>See also Malamud; and Derrida and Mallet.

<sup>4</sup>See also Braidotti's *The Posthuman, Nomadic Theory*, and "Posthuman, All too Human."

<sup>5</sup>See also Carolyn Merchant's *The Death of Nature: Women, Ecology, and the Scientific Revolution*.

<sup>6</sup>Consider, for example, the superficial advertising that emerged in the United States immediately after the 9/11 attacks that linked increased consumption to patriotic duty. Contemplate also the ways that the media is manipulated by ideology in the pursuit of the endless war on terror on both sides of the ideological spectrum.

<sup>7</sup>See also Parikka Jussi's *Digital Contagions*, which examines media ecology and archeology from a neomaterialist perspective.

<sup>8</sup>The authors invite critical discussion and close readings that respond to the theoretical considerations outlined in this paper.

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