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Introduction: Assembling the Ecological Digital Humanities

JEFFREY JEROME COHEN AND STEPHANIE LEMENAGER

JEFFREY JEROME COHEN is professor of English and director of the Medieval and Early Modern Studies Institute at George Washington University. His books include *Of Giants: Sex, Monsters, and the Middle Ages* (U of Minnesota P, 1999), *Medieval Identity Machines* (U of Minnesota P, 2003), *Hybridity, Identity, and Monstrosity in Medieval Britain: On Difficult Middles* (Palgrave, 2006), and *Stone: An Ecology of the Inhuman* (U of Minnesota P, 2015), as well as the edited collections *Monster Theory: Reading Culture* (U of Minnesota P, 1996), *Prismatic Ecology: Ecotheory beyond Green* (U of Minnesota P, 2013), and, coedited with Lowell Duckert, *Elemental Ecocriticism: Thinking with Earth, Air, Water, and Fire* (U of Minnesota P, 2015).

STEPHANIE LEMENAGER is Barbara and Carlisle Moore Professor of English and professor of environmental studies at the University of Oregon. Her publications include *Living Oil: Petroleum Culture in the American Century* (Oxford UP, 2014) and the forthcoming collection *Teaching Climate Change in the Humanities*, coedited with Stephen Siperstein and Shane Hall. She is a founding editor of the online journal *Resilience: A Journal of the Environmental Humanities*.

WE ASSEMBLED THIS CLUSTER OF ESSAYS TO BRING TO THE DIVERSE AUDIENCE OF *PMLA* SOME OF THE INSIGHTS, METHODOLOGIES, AND models for rethinking narrative, public engagement, and environmentality that the ecological digital humanities (EcoDH) offer. We are founding members of the new MLA forum TC Ecocriticism and Environmental Humanities, a collective whose existence and vigor derive from the community that social media (at their best) foster. With its syllabus exchange and participant-directed conversations, the forum's *MLA Commons* site owes much to the digital humanities principles of outreach, access, and inclusion. Although this electronic space is a work in progress, MLA members are using it to share pedagogical materials and research and to conduct lively discussions that push beyond the comfort zones of time period and disciplinary training.[1] Teaching and scholarship have also been greatly enhanced by interdisciplinary networks that bridge unnecessary divides between the academy, activists, and a capaciously imagined public. Yet from the start we knew that we could not hope to be comprehensive in what we offer here. Vast and flourishing, the ecological digital humanities originate in work that spans decades. In their instantiations and concerns, they are also radically new, and the summoning of these essays marks an early attempt to establish a "futural archive," to use a term of one of our contributors. We present in what follows snapshots of the approach's energy and emphases, a glimpse of achievements as well as intimations of possible futures. We bring together work by academics early in their careers with projects by foundational practitioners, scholars who have caused the ecological digital humanities to thrive.

EcoDH, our abbreviation for this emergent field, developed from the mingling of the environmental humanities and the digital humanities. Both are known for being interdisciplinary and collaborative; challenging business-as-usual scholarship by imagining new forms and employing new media for academic work; emphasizing making, composing, retrofitting, and repairing over unsustainable

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cycles of innovation; valuing archiving and preservation while looking to forge the future; and insisting on the necessity of diversity now and in the past, whether in a space of practice, a data collection, a human community, a multispecies assemblage, or an ecosystem. Both have been hailed for and accused of being the next big thing, and both stimulate utopian and salvific imagining of the future humanities.

Although the digital and environmental humanities have "dark sides," which some of our contributors take up, the negatives tend to diminish when these approaches come together—for example, when the ecological digital humanities follow the activist, tactical direction outlined by digital humanities theorists like Rita Raley and postcolonial science and technology studies scholars such as Kavita Philip, Lilly Irani, and Paul Dourish. Tending away from "top-down administrative agendas and directives that would harness creative energies for publicity and profit" and embracing situatedness, contingency, and collaborative speculation, EcoDH often celebrates nimble and even collapsible infrastructures, asking, after Richard Maxwell and Toby Miller, the ecological question of "how much media technology is socially necessary" (Raley 38; Maxwell and Miller 41). With their stress on the fostering of wide audiences for their endeavors, the digital and environmental humanities can offer modes of conducting what has been called the "citizen humanities" (after citizen science), intellectual and cultural work that involves publics inside and outside the academy.[2] Potentially less hierarchical than the traditional humanities, both the digital and environmental humanities often rely on crowdsourcing for knowledge building. The most expansive and socially engaged imaginings in both approaches converge and intensify in EcoDH.

Combining research with activism, the ecological digital humanities bring together big data and the personal, art and science. EcoDH projects span multiple media but are mainly online phenomena, ranging from Web sites to apps. The approach has largely ignored ancient tensions between the digital humanities and new media studies, shuttling between media applications and forms to pursue projects oriented toward environmental and epistemological problems that trouble interspecies thriving. Networked technologies enable environmental scholars and eco-theorists to think outside human speed and scale. Created by and for humans, narrative—the natural habitat of most literary scholarship—has a difficult time capturing the nonhuman world, an entangled domain that is always too slow, too swift, too vast, or too small for immediate apprehension. The ecological digital humanities attempt to rethink narrativity by staging different kinds of stories, oscillating between scales, and involving diverse participants in unfolding and recording nonhuman phenomena. Activating more of the human sensorium than text alone typically does, projects in the ecological digital humanities are often visually rich. They can also be aurally dense and based on collaborative fieldwork (they bring embodied place to networked ecologies). The Web site and traveling exhibit *sLowlife*, for example, is dedicated to the vibrancy of plants, employing stop-motion photography to demonstrate how an aesthetically resplendent vegetal world moves, grasps, and retreats in a tempo human eyes cannot discern. Elizabeth Ellsworth and Jamie Kruse's *Making the Geologic Now* is a book and Web site emphasizing that minerals offer poetry and art that humans only sometimes grasp, because the geographic and temporal scale of subterranean minerals' unfolding escapes us. In another work, the same authors read the 450-million-year-old scrapings of a glacier on outcroppings of schist in Central Park as "geopoetry," the meeting of a story-obsessed witness with a "repository of mineral intelligence." Stone becomes an ecological agent with an inscribed and inhuman story (Kruse and Ellsworth, sites 7 and 8).

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By performing on scales that exceed the affordances of narrative and by being committed to the recognition of nonhuman actors and their spatiotemporal orientations as fundamentally social, the ecological digital humanities act as a nexus of the natural and social sciences and the humanities—and potentially in excess of these anthropocentric disciplinary designations. The Earth Vision Institute (sponsor of *Extreme Ice Survey*, a slow-photography and archival project) takes as its motto the deceptively simple formula "Art + Science." This combination underscores the investment of the ecological digital humanities in projects that use multiple rhetorical modes to communicate data, stressing persuasion in aesthetic and affective registers. Humanities scholars do not always work with the big data that make global warming undeniable to scientists, but as scholars who devote their lives to understanding and teaching difficult material and its cultural impacts, they know how to communicate the stories of change that looming catastrophe entails. Humanities scholars also understand the importance of intergenerational memory in their traditional archives and can bring to the data sets furnished by the digital humanities' infrastructure "both memory of the reasons why expert rule in the past has gone so wrong, and memory of the amazing potential" of collaborative data gathering, to cite the historian Jo Guldi, who writes of how "information" derived from geographic information systems and the data visualizations they enable can and cannot address climate change.

Bethany Nowviskie's multimedia work on the digital humanities in the Anthropocene explores how technology yields tools for understanding temporal immensity, especially as the nonhuman world rebuffs human framing. Nowviskie recognizes herself and other practitioners as "builder[s] and caretaker[s] of systems," emphasizing the digital humanities' potential for witnessing and in some cases remediating the spatiotemporal tears associated with unfolding events like climate change, ocean acidification, and accelerated extinction. As a performance and as an archive, the poster-and-slogan collection *Dear Climate* establishes a space where creating and preserving go hand in hand and where the need to render global warming humanly apprehensible is foregrounded (Zurkow, Chaudhuri, Kellhammer, Ertl, and Rothberg). Encouraging contributions from a wide public, *100 Views of Climate Change*, another innovative confluence of art and science, also aims to tell better stories about the catastrophe's impacts and thereby alter what can too often seem an inevitable future. *Life Overlooked* hopes to distribute its labor by encouraging ordinary people around the world to contribute their scientific and cultural knowledge about local plants and animals in a time of unparalleled species extinction. The site offers templates for adapting and teaching the project in colleges, universities, and secondary schools. *Life Overlooked* aims to extend into new realms even as it records past success. EcoDH cultivates communities that cut across the lines of species and kingdom. Even when focused on history and loss, the approach is invested in ecological protest and questioning of the status quo, aiming to create alternatives to the world as it is through cooperative storytelling and shared scenario design. This *PMLA* cluster demonstrates the diversity of projects and theoretical provocations being pursued under the broad rubric of EcoDH.

The two editors of this cluster come to the ecological digital humanities (and to this collaboration) through varied long-term engagements. Jeffrey Jerome Cohen is a medievalist with an abiding interest in the digital humanities and the use of social media in the formation of less hierarchical academic communities as well as shorter-term activist collectives. He initiated the blog *In the Middle* (www.inthemedievalmiddle.com), now a cooperative effort among four contributors. Readers have accessed the blog more

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than 2.5 million times since 2006. Interactions through this blog, *Facebook*, and *Twitter* have been essential to the completion of his ecologically minded work, including four collections of essays published by an inventive open-access press (enabling anyone to download beautifully produced volumes for no charge). Most of his ecocritical work has been accomplished through collaboration and involves a significant Web presence. He is also interested in more lasting eco-media, such as stone structures used to send wordless stories across millennia. The ecological digital humanities have been integral to his teaching. He designed an undergraduate course around a digital-curation project called The Life of an Object. Students in the course were charged with researching and conveying in an engaging, digital-humanities-savvy manner the material and cultural origins of an object from the distant past and tracing its vibrancy across time, especially as it moved from its generative context. The students chose swords, rings, stirrups, an iron-clad door (such as the one that closed Heorot, the mead hall in *Beowulf*), even a vellum manuscript page, anything with textual and physical existence. Situating these objects in their historical environments, the students detailed how the world shaped the objects and was in turn reconfigured through the objects' agency. The students undertook these investigations as works of public scholarship and were encouraged to make them available on the Web. Cohen also teaches an eco-theory seminar that revolves around an ecological digital humanities assignment called A Tiny Ecology. Students choose a small, previously neglected place close to home for intense attentiveness. During the seminar, participants observe this space daily, noting changes in it and in their affective relation to this little biome. Projects have examined a concrete planter by a Metro station, a drainage ditch alongside an office building, a single pine tree in a parking lot, a city fountain frequented by pigeons, the landscaping of the National Museum of the American Indian, a desolate urban park, and the moss-filled crack of a balcony on a high-rise apartment building. Students attend to human influence and neglect, the unfolding of stories of race and gender in lived space, gentrification, nonhuman forces (weather, sunlight, microclimates, pollution, decay) and their effects, and the surfacing of particular histories and ecosystems—especially the evident species of animals and plants. Students often have to learn the difference between kudzu and dandelion, a starling and a wren, biodegradable refuse and enduring petrochemical waste (itself originally a vegetal form of life). The final presentations are creative multimedia projects meant to be offered to the world as well as the class, EcoDH as public outreach, the small and personal as the first step to a widened audience and open engagement.

The other editor of this cluster, Stephanie LeMenager, comes to the ecological digital humanities because of an obsession with petroleum, which became the living and nonliving agent through which she assembled an ecological memoir and literary-cultural history of the American twentieth century, *Living Oil*. That project at its inception was ignorant of Richard Maxwell and Toby Miller's exhaustive study of the ecological costs of literary and cultural studies, including the rare earths and toxic loads involved in producing digital and filmic media and in applying the varied technologies of the written word. But like Maxwell and Miller, LeMenager recognized as fundamental to her professional practice what Juliet Schor has called the "materiality paradox," which refers to how the most apparently nonmaterial of cultural goods typically require the greatest use of material resources (Maxwell and Miller 7). She found a master's student with information technology skills to perform a life-cycle assessment of *Living Oil* as she wrote it and was shocked to discover that the book's material impacts were scarcely less than that of a fast-food cheeseburger. As the materiality of

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her intellectual labors haunted her, oil itself invaded LeMenager's southern California neighborhood, where intensive fracking had begun, and—seeking a point of view as the micro- and macro-scales of the materials economy pressed on her—she began to frequent the Culver City gallery space of the Center for Land Use Interpretation (CLUI). From here she joined infrastructure tours of hydrologic, energy, and transport systems, such as California's famously toxic Highway 5, and she began to rethink the notion of story in terms of infrastructural connections, switch points, and nodes—learning to decouple narrative logic from the more suggestive, associative insights afforded by the material landscapes of modernity as a living and dying archive. CLUI had become famous for its *Land Use Database*, an early ecological digital humanities project. Infrastructure studies and the digital humanities were thriving at LeMenager's then institutional home, the University of California, Santa Barbara, and in the neighboring metropolis of Los Angeles she found kindred spirits and mentors in the Los Angeles Urban Rangers, who were occupying Malibu's public beaches and Los Angeles's corporate parks, using the public-arts forms of Social Practice to model ways forward for environmental pedagogy. In a commissioned pedagogical collaboration with two of the Urban Rangers' founders, Sara Daleiden and Therese Kelly, LeMenager first began to practice something like the ecological digital humanities as, if not a maker, a design consultant and beta tester. She invited Daleiden and Kelly to use the University of California, Santa Barbara, campus as a lab for a project called i (heart) h2o, which gathered the expertise of campus architects, hydrologists, historians, ecologists, and English professors to stimulate undergraduate students' love for and understanding of the fragility of their water systems through an affective online survey titled *I (heart) h20: How's Your Water Relationship?* (Daleiden and Kelly) and, eventually, a campus-wide scavenger hunt for key hydrologic nodes, prompted by a virtual deck of cards that students downloaded onto their smartphones. Working with artist-designers again in the Mellon-sponsored project Humanities for the Environment, LeMenager coined the phrase "Life Overlooked" to describe an idea she had gleaned from the CLUI—that overlooked "internal fringes" in a landscape are ideal sites from which arise fresh ideas about our relation to and stewardship of the environment (Coolidge, Simons, and Rugoff). As *Life Overlooked* matured through the theoretical interventions of Joni Adamson and Catriona Sandilands, touching on aspects of multispecies ethnography and Laurie Ricou's pedagogical practice of "habitat studies"—which asks students to compile scholarly portfolios for nonhuman lives in their region—LeMenager set her undergraduate students at the University of Oregon to beta-testing *Life Overlooked* on *Facebook*, *Weebly*, and *Pinterest*, where they created archives-cum-personae for, among other species, the checkered lily, moss, and "the majestic lingcod" (Bruffey). As LeMenager and her students played with the capacities for memory preservation, storytelling, and history making across the most readily available digital formats, they learned anew how the arts of narrative and association make us more connected and more alive. This fledgling EcoDH project proved a heartening antidote to Anthropocene hubris and despair.

We conclude our introduction by sketching what have struck us as some of the commonalities and convergences of the essays that follow. Chief among these are accessibility (the essays strive to offer multimodal scholarly work to as wide a public as possible) and generosity (the essays freely share ideas, resources, templates, and provocations to attachment and change). Projects in the ecological digital humanities tend to be transnational, emphasizing how global vectors influence local geographies and cultures and not assuming an equally shared world (or worldview). Many of these projects arise

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from international partnerships. Striving to imagine a less anthropocentric world, the ecological digital humanities are often critical of the human in the humanities. The popular critical term *Anthropocene* is therefore noted as a potentially limited and quietly gendered designation that ignores human specificities (sexual, cultural, gender, racial, and class differences) as well as animals, plants, and elements. Data, aggregates, and statistically large groupings tend to be favored over minute textual work so that distant readings of corpora are more common than close readings of singular works of art. Yet data need to be comprehensible, feelable, and narratable—and the ecological digital humanities strive for a multimodal rhetoric that achieves depth of communication. They attend to language as an entity, not just as a narrative machine. Matter matters: the digital is still material, and the media through which stories are conveyed and archived are not inert. Thinking ecological precariousness is inseparable from thinking academic and social precariousness. Environmental justice and activism are the fabric of the ecological digital humanities, the aim of which is not simply to catalog the vanishing things of the past and the present but also to alter the future. Preservation and curation are intimately connected to critical sustainability and revitalization. For the ecological digital humanities to accomplish this shift in vision, scales and tempos must also shift: the large with the small, the fast with the slow. Wide collaboration flourishes here: artists, activists, humanities scholars, scientists—even industry and governments. Pedagogy is central to the mission of the ecological digital humanities. Many EcoDH projects involve students and offer templates for courses, further study, and diverse modes of engagement. Creativity and artistry flourish, with an emphasis on craft and making (the ecological digital humanities have inherited the digital humanities' do-it-yourself ethos). Substantial funding, which is not always necessary for solo work in the humanities, can be integral to the success of EcoDH projects when they attempt to operate on the scale of subsidized projects in the sciences. At the same time, practitioners of the ecological digital humanities often work against the commodification of nature and resourcism and in conversation with postcolonial and indigenous digital humanities practices that use social media and performance as counters to capital-intensive tools. Typically, EcoDH projects are offered for multiple uses and for adaptation, multiplying possibilities for authorship and engagement. The ecological digital humanities strive to broadcast and amplify voices that have not often been heard in mainstream media, making the environment not something unchanging since time immemorial but part of a plural, indigenous, and diverse future. The multitemporal archive for thinking the future differently that EcoDH builds is for specialists and nonspecialists alike, a scholarly endeavor translated into generous public outreach and relentless engagement.

Notes

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1. See the forum TC Ecocriticism and Environmental Humanities on *MLA Commons* (commons.mla.org/groups/ecocriticism-and-environmental-humanities) and the short piece about the forum on *MLA Commons* ("Ecocriticsm").

2. The phrase "the citizen humanities" may have many origins and is closely related to "the civic humanities"—a concept associated with Doris Sommer. For us, the citizen humanities emerged out of extensive dialogue in the West Cluster of the North American Observatory for the Mellon-sponsored project Humanities for the Environment.

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