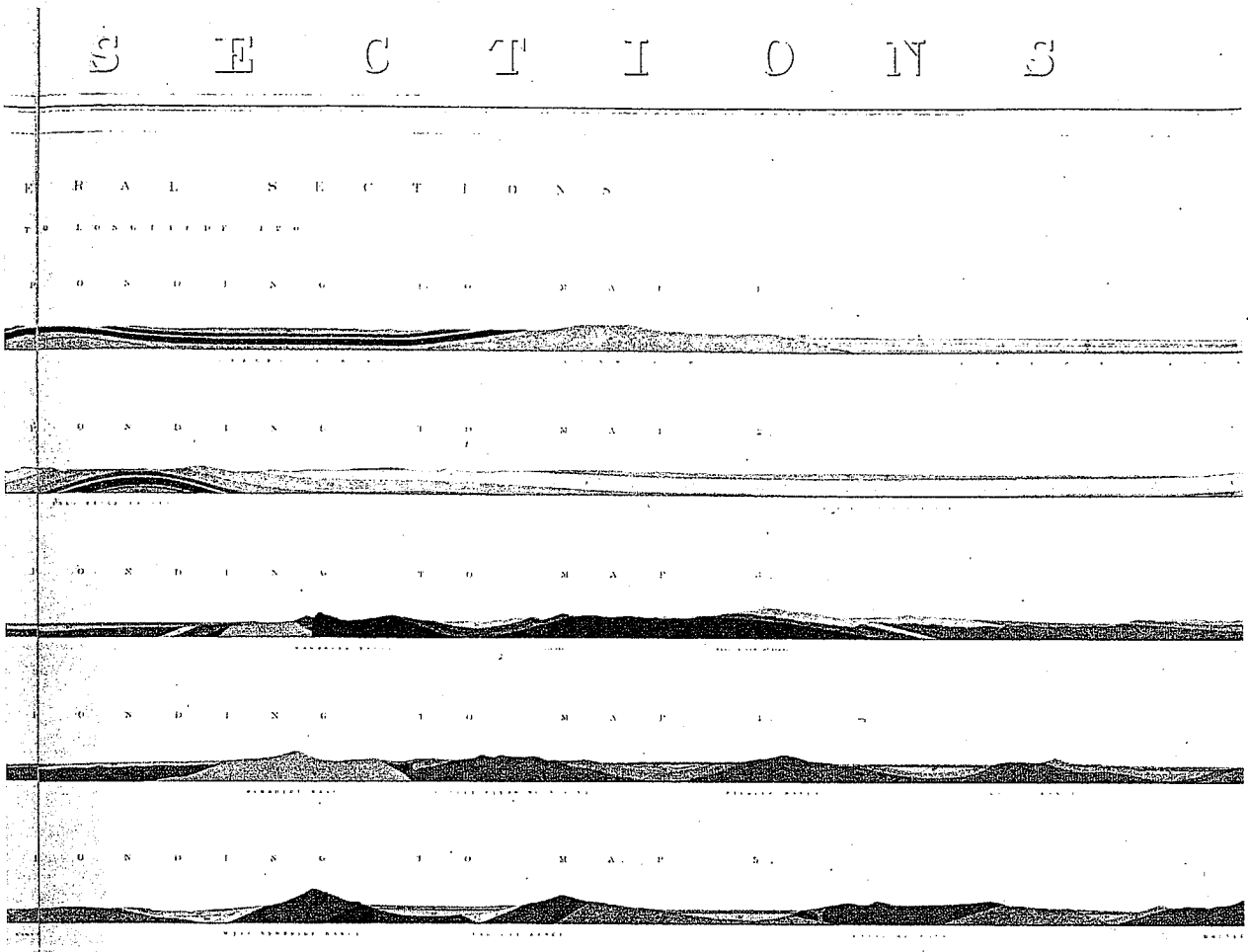

Anthropocene Reading

Literary History in Geologic Times

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Introduction

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In "The Storyteller," Walter Benjamin proposes that we "imagine the transformation of epic forms"—the heroic epic, the fairy tale, the proverb, the legend—as "occurring in rhythms comparable to those of the change that has come over the earth's surface in the course of thousands of centuries."[1] Benjamin compares the long durations of geomorphological alteration, the gradual movement of uplift and sedimentation, to the drift of literary genres across history: "There is hardly any other form of human communication that has taken shape more slowly, been lost more slowly" (147). This incremental shape-shifting suggests a further implication of Benjamin's analogy, related not to the scale of time but to its formal ordering, a likeness between lithic strata and the shaping power of narrative to organize time. Perhaps it is this formal intimacy with stone, this sense of the Earth as a primordial medium, that explains why, in Benjamin's view, stories so often extend "a ladder . . . downward to the interior of the earth" (157), attending even to the "mineral . . . the lowest stratum of created things" (161). An alertness to the lithic as a narrative medium reflects back on human self-conception. The storyteller sees human eventuality in the mineral world, "a natural prophecy of petrified, lifeless nature—a prophecy that applies to the historical world in which he himself lives" (161). In "The Storyteller," Benjamin contrasts the epic forms, which convey "distance"—the vastness of the Earth, the amplitude of time—with the modern novel, which addresses readers who expect immediacy, "information" up to the moment and close at hand. Literary form thus has internalized modernity's accelerated tempo and so no longer echoes the dilatory rhythms and extended durations that Benjamin associates with geological time.

Though the dialogue between literary criticism and the Earth sciences rarely achieves the esoteric grandeur of "The Storyteller," it is a persistent feature

of both modes of inquiry. This is more than a matter of metaphorical traffic, as in the motif of the "stone book" or the critical propensity for describing texts as having topographical depths to be mined or rifts to be exposed. Stones, as Jeffrey Jerome Cohen has written, are a "spur to ceaseless story," "ancient allies in knowledge making," "material metaphor[s]."[2] Narrative expresses a basic human imperative to understand our place in a dynamic world of water, weather, and rock. "Storytelling," Bruno Latour observes, "is not a property of human language, but one of the many consequences of being thrown in a world that is, by itself, fully articulated and active."[3]

Geology has long defined itself as a scientific discipline through a simultaneous disavowal and incorporation of literary modes, especially romance, the narrative form concerned with marvelous phenomena: enigmatic ruins, vast time scales, absent causes.[4] In *The Sacred Theory of the Earth*, the Restoration physicotheologist Thomas Burnet—whom Stephen Jay Gould credits with conceptualizing Earth's past in terms of a "sequential narrative"[5]—claims that any reconstruction of planetary history will exceed empirical explanation and rely on imaginative ways of knowing. Some men, he writes, "distrust everything for a Fancy or Fiction that is not the dictate of Sense, or made out immediately to their Senses. Men of this Humour . . . call such Theories as these, Philosophick Romances." Yet, claims Burnet, "such Romances must all Theories of Nature . . . be."[6] Geology took shape as a modern discipline through its rejection of fancy and fiction, yet because it deals with scales of space and time unavailable to human experience, it has never altogether transcended its provenance in imaginative narrative forms.[7]

The literary dimensions of geology—a practice of *reading* stratigraphic inscriptions and *narrating* evocative, if improbable, stories—become even more pronounced in the Anthropocene, the proposed geological epoch in which humans, collectively, have come to rival "some of the great forces of Nature in [our] impact on the functioning of the Earth system."[8] In *The Earth After Us* (2008), Jan Zalasiewicz, the convener of the Anthropocene Working Group, dramatizes the challenges of interpreting the stratigraphic inscription left by humanity. In what amounts to a work of science fiction, he imagines a species of extraterrestrial stratigraphers arriving on Earth to reconstruct this epoch and understand its agent: "A storyteller arrives, one hundred million years from now, to tell the tale of the human species."[9] The alien scientists sift through layers of concrete and plastic, attempting to comprehend the species that left such traces behind. Their task will be "to find the message left by the human

race"—an inscription "written in the strata"—and "then to decipher it" (118). Such reading and narrating, however, need not await geologists from another world. The Anthropocene is, after all, not only an epoch in Earth's geohistory defined by the shaping influence of human activity. It is also the epoch in which our singular species reads its transformative presence in the Earth's strata, reads *itself* in the rocks, and in doing so establishes new stories about its identity and this planet.

When Paul Crutzen and Eugene Stoermer proposed the term "Anthropocene" in 2000, they dated it to James Watt's 1784 patent on the double-acting steam engine.[10] This specificity coalesced a disparate set of causes and consequences into a widely recognizable act of technological innovation. In this version, the Anthropocene appears as a story of the unintended outcomes of human ingenuity, a Promethean tale. But there are other Anthropocenes as well. The Anthropocene Working Group has recommended that an Anthropocene associated with the postwar Great Acceleration be formalized as an epoch in the geological time scale (GTS), a designation that will ultimately require ratification by the International Union of Geological Sciences. The working group arrived at its recommendation after considering various "boundary events," including the Neolithic revolution, the Columbian exchange, fossil-fuel-powered industrialization, and nuclear weapons testing. Each start date redefines the narrative, its eponymous agent—the Anthropos as agriculturalist, conquistador, inventor, industrialist, capitalist, cyborg—and thus the shape and potential outcomes of the story. As the geographers Simon Lewis and Mark Maslin argue, "the event or date chosen as the inception of the Anthropocene will affect the stories people construct about the ongoing development of human societies."[11] In selecting a global boundary stratotype section and point (GSSP), or "golden spike"—a beginning, a spatiotemporal origin—geologists give narrative shape to history.

The Anthropocene, however, has never been simply a term of stratigraphic relevance. Indeed, we can think of no concept that has resonated so widely, so quickly, across the disciplines in academia and in the popular press. It has inspired interdisciplinary journals, numerous articles, symposia, monographs, and cover stories in the *Economist* and the *Guardian*. We believe that scholars are debating the Anthropocene not because it names a clear-cut epoch in which social and geological history come into alignment, but rather because its implications productively unsettle conventional disciplinary modes of inquiry. Critiques that the Anthropocene is merely a fashionable buzzword—or worse, a term that naturalizes capitalism, imperialism, or social inequality—may actually

symptomatize the difficult intellectual burdens the Anthropocene imposes on us. In our view, the Anthropocene has inspired such intense debate, from the biophysical sciences to the humanities, because it identifies a problem, a problem of how emergent forms of causality, operating *across* sociohistorical and planetary systems, have come to be read in the Earth's strata and then conceptualized and communicated.

The Anthropocene is not an easy story to tell, especially for disciplines established within the "modern constitution" defined by the separation of social signs from natural facts.[12] As Dipesh Chakrabarty contends, anthropogenic climate change marks the point at which "the wall between human and natural history has been breached," demanding a wholesale reevaluation of the conceptual apparatus upon which the discipline of history is predicated.[13] This breach poses an equally profound challenge for the sciences, insofar as that epistemological "wall" preserved the divide between subject and object upon which objectivity, one's separation from what one studies, is based. As Latour observes, "the very notion of objectivity has been totally subverted by the presence of humans in the phenomena to be described" ("Agency," 2). Knowledge of nature comes to be inseparable from knowledge of social systems, and vice versa. Jason Moore calls this the problem of the "double internality": human social and economic forms at once *shape and are shaped by* "biological and geological conditions."[14] Lewis and Maslin, to offer one example, note that the 1610 Orbis spike, an atmospheric CO_2 dip precipitated by the depopulation of the Americas, converged with the emergence of Immanuel Wallerstein's capitalist "world system."[15]

Any definition of the Anthropocene identifies a point of entanglement between the Earth system and social systems, wherein varied forms of causality, from the imperatives of capital accumulation to the manner in which CO_2 absorbs infrared radiation, intersect. The Anthropocene Earth system, to put this another way, includes not just the hydrosphere, atmosphere, biosphere, and lithosphere, but also diverse economies and energy systems, societies and symbolic orders. In the Anthropocene, all scholars are called upon to become Earth system humanists, which involves thinking about how these systems interrelate with, internalize, and destabilize one another. Just as geologists are learning to account for sociohistorical causality and the rhetorical implications of stratigraphy, humanists are learning about the carbon cycle, ice-core sampling, and thermodynamics. Scholars across the disciplines are asking, in new ways, what it means to read history: to define an archive, to posit causality, to name a period or epoch, to narrate resonant stories about continuity and change.

Anthropocene Reading: Literary History in Geologic Times takes an avowedly disciplinary approach to this multidisciplinary problem, navigating two interconnected imperatives: to read the Anthropocene as a literary object and at the same time to recognize the Anthropocene as a geohistorical event that may unsettle our inherited practices of reading. The authors in this volume examine the Anthropocene as a narrative, investigating the rhetorical protocols informing lithostratigraphic practice and revealing the inherently fictional and yet epistemologically productive quality of any periodizing marker. Our aim, however, is not to deconstruct the Anthropocene, to unmask its inescapable rhetoricity, or to assert a disciplinary precedence vis-à-vis scientific truth claims. All of the contributors to this collection grapple with the Anthropocene as a historical *event*, a momentous phase transition in the Earth system that exceeds narrativization. The Anthropocene provides an opportunity for literary studies to test and transform its methods by examining how the symbolic domain might, or might not, index a historicity that exceeds the human social relation and encompasses planetary flows of energy and matter.

The "Anthropocene" is a newly resonant term for a long-standing problem in geology: the status of the current, and unfinished, epoch and of humankind's distinct place in it. This is no surprise, really, given that geology came of age during the Industrial Revolution, mapping strata in coal seams and railroad cuts. In *Epochs of Nature* (1778), Georges-Louis Leclerc, Comte de Buffon, identified the seventh planetary epoch, the current "time of man," in terms of the civilizational advancement promised by abundant fossil fuels. A few years later, James Hutton's *Theory of the Earth* presented the Earth system as a "machine" modeled, as Martin Rudwick has shown, on the coal-fueled Newcomen steam engine.[16] In 1854, the Welsh geologist Thomas Jenkyn termed the current epoch the "Anthropozoic," a designation adopted by Samuel Haughton in his *Manual of Geology* (1865). In the United States, George Perkins Marsh published *The Earth as Modified by Human Action* in 1874, revising his earlier *Man and Nature* (1864). Russian scientists used the term "Anthropocene" as early as 1922.[17] The proposal to formalize the Anthropocene as an official epoch in the GTS thus marks a moment of heightened self-reflexivity in the history of geology and Earth system science. Crutzen and Stoermer first proposed the new epoch in the year 2000. The Anthropocene is a millennial concept, a theory of (geo)historical crisis that has followed in the wake of the "end of history" that Francis Fukuyama proclaimed at the fall of the Berlin Wall in 1989, the same

year that Bill McKibben described anthropogenic climate change as the "end of nature."[18] It turns out that the only thing that came to an end was the momentary illusion that "history" and "nature" could be conceptualized as separate.

In January 2016, members of the Anthropocene Working Group published an article in *Science* with the unambiguous title "The Anthropocene Is Functionally and Stratigraphically Distinct from the Holocene." The article lays out the conceptual criteria for the new designation: "Any formal recognition of an Anthropocene epoch in the geological time scale hinges on whether humans have changed the Earth System sufficiently to produce a stratigraphic signature in sediments and ice that is distinct from that of the Holocene epoch."[19] The authors posit a straightforward relation between a geophysical claim, that humans have altered the Earth system, and a stratigraphic claim, that such change leaves a "signature," a sign that enables a clear delineation between epochs by marking a scale shift in the geomorphic agency of a single species. And yet this changing and this inscribing are not the same. They act on different objects, the "Earth System" and "sediments and ice." The case for naming the Anthropocene is not presented as an analysis of the anthropogenic forcing of the Earth system, a potentially catastrophic crossing of "planetary boundaries," but is instead premised on a more narrowly semiotic claim about the clarity of a "signature" recorded in a lithostratigraphic archive.[20]

The authors of the *Science* article examine a number of candidates for a suitably clear and long-lasting signature, from "technofossils" and "geochemical" markers, such as pesticide residue, to concentrations of atmospheric carbon dioxide and the biostratigraphic signature left by increasing extinction rates. They also anticipated the recommendation made to the International Geological Congress in August 2016, which suggested that the Great Acceleration replace the Industrial Revolution as the most compelling lower boundary for the Anthropocene. "The most widespread and globally synchronous anthropogenic signal," they write, "is the fallout from nuclear weapons testing" (Waters et al., "The Anthropocene," aad26225). In a 2015 article, the working group had already suggested that a mid-twentieth-century lower boundary is "stratigraphically optimal" because the first nuclear bomb test in 1945, which left a clear layer of radiocarbon in the rock strata, is coincident with, if not causally related to, the more consequential, although less stratigraphically significant, Great Acceleration.[21] Hence, when contemplating the formalization of the epoch, the focus on anthropogenic intervention in the Earth system, which is to say the identification of a distinct mode of geohistorical causality, gives way to the

question of identifying a synchronous, unambiguous, and long-lasting signature. Semiotic criteria take precedence over a geophysical account.

In an essay in the *Anthropocene Review*, Clive Hamilton polemically diagnoses this stratigraphic sleight of hand. Those who privilege the legibility of the signature are "fixated on the marker at the expense of what is marked."[22] He calls this fixation the "golden spike fetish": "an event in world history" is confused "with a historical marker for it." If, after all, the primary goal were to align sign and cause, the increased atmospheric concentration of CO_2 would be the obvious candidate, since it is the main driver of global climate change and the most significant manifestation of anthropogenic intervention in the Earth system. However, CO_2 emissions and atmospheric concentrations constitute an incremental, if accelerating, process, one without clearly demarcated boundary events but with complex social, economic, and technological causes. Moreover, the climate and sea level "signals" associated with increased greenhouse gases are "not yet . . . strongly expressed." Multiscalar, multicausal phenomena that cut across biogeochemical and sociohistorical domains do not necessarily leave clear-cut, localizable signatures.

The stratigraphic search for a "signature" that marks the emergence of the Anthropocene is a search for its definitive agent, the one who signs. The autograph of the "Anthropos" attests to its presence as a coherent entity, much the way a signature on a legal document attests to the identity of the person who affixes it. A signature, as Jacques Derrida explains, is a distinct form of inscription, one that serves to counteract the nonpresence of a speaker in written communication. Whereas in a spoken utterance the embodied presence of the speaker can be assumed, in writing the absence of a living person may be counteracted by the presence of a signature. The unique status of the signature derives from its clearly embodied origin. It attests to its author's "having been present," to an instance of "present punctuality," a specific person acting, and this action constitutes a singular spatiotemporal "event."[23] Yet to be meaningful, a signature must also endure; it must be "able to be detached from the present and singular intention of its production," legible even in the absence of its inscriber. A signature is a *supplement*, seeming to bear the "force" and "intention" of its inscriber in a form that survives the absence of its original source. Hence, the use of the signature as the trace or symptom of an elusive phenomenon, which has a long history in the sciences, takes on a newly appropriate resonance in the Anthropocene. The signature uniquely conveys the former presence of its author; it is a mark that remains, and remains meaningful, in

the absence of the signatory. So, on one hand, the working group is attempting to establish, on the basis of a signature, the identity of an Anthropos as a single entity capable of acting as a planetary force. On the other hand, this signature must be commensurate with other stratigraphic markers: not only globally synchronous but also legible in the absence of other "historical" archives. This is why stratigraphers have objected to references to social history in identifying the epochal "boundary event," as in Lewis and Maslin's reference to the Nuclear Test Ban Treaty rather than the first appearance of nuclear residue.[24] For the stratigraphers, the signature must stand alone.

This tension between inscription and system is long-standing in geology, which depends on the constant negotiation between coconstitutive imperatives to delineate the Earth's strata—an enterprise often understood in semiotic terms, as an act of reading—and to account for the forces of planetary change: to *periodize* and to *historicize*.[25] The Anthropocene, however, introduces a new form of causality into the Earth system. Stratigraphers focus on a signature rather than an agent, in part because the actual status of the Anthropos poses problems they are not equipped to confront. The working group works backward, locating a legible signature and on that basis positing the existence of a species capable of altering the Earth system.

With this in mind, it should come as no surprise that the most resounding critique of the Anthropocene concept coming from the humanities focuses on the very question that, as we see it, the language of the "signature" attempts to forestall: the identity of the Anthropos. *Who*, precisely, leaves this signature, given that *Homo sapiens*, as a species, is defined by immense cultural and social variation? Responsibility and vulnerability are asymmetrically distributed in the changing Earth system. Given that the Anthropocene is decidedly not coextensive with the evolution of our species, but is rather an event that occurs in historical time, would it not be more precise to identify the Anthropocene with the distinct historical conditions in which human societies achieve geologic agency? Andreas Malm and Jason Moore have each suggested that "Capitalocene" better reflects the sociohistorical drivers of the new epoch. Malm argues that "this is the geology not of mankind, but of capital accumulation"; arising out of social conflict and exploitation, fossil capitalism is the "very negation of universal species-being."[26] Donna Haraway and Anna Tsing use "Plantationocene" to emphasize the epoch's inherently imperialist ecology and to make us "pay attention to the historical relocations of the substances of living and dying around the Earth as a necessary prerequisite to their extraction."[27]

These are immensely important critiques, both in foregrounding the ethicopolitical stakes of the Anthropocene and in focusing attention on the actual socioeconomic systems that constitute geologic agency. What such criticism of the Anthropos overlooks, however, is that for scientists the designation of a single species as an agent is a *specifying* move rather than a universalizing one. The point is not that *all* humans are transforming the Earth system but that a single species in the biosphere is transforming the planet, a significant event in geologic time. The working group attempts to elide the problem of the social through its invocation of a stratigraphic signatory, while a critical humanities perspective insists on social variation and relations of power but is often inattentive to the broader biogeophysical systems in which humans intervene as a distinct agent. The perceived incompatibility between these positions on the Anthropos attests finally to the deep epistemological challenge of conceptualizing the double internality.

The nomination of the Anthropocene is finally a stratigraphic prerogative, for it is stratigraphy that bequeaths us the geological time scale. The members of the working group are clear that, having accepted as axiomatic the significant human intervention in the Earth system, their job is to identify "a signature that is distinct from those of the Holocene and earlier epochs," to approach the designation of the Anthropocene in terms that "are consistent with those used to define other Quaternary stratigraphic units" (Waters et al., "The Anthropocene," aad26221). They also acknowledge that this is an impossible task. The question of whether to formalize the Anthropocene in the GTS, they write, is "a complex question, in part because, quite unlike other subdivisions of geological time, the implications of formalizing the Anthropocene reach well beyond the geological community. Not only would this represent the first instance of a new epoch having been witnessed firsthand by advanced human societies, it would be one stemming from the consequences of their own doing" (aad26228).

The Anthropocene is not only a break within the stratigraphic record but also an event that in effect breaks stratigraphic practice. As Bronislaw Szerszynski insightfully observes, such inscription works against our long-standing view of lithic impenetrability and in so doing disrupts the basis of the stratigraphic record itself: "The Anthropos will thus 'lie' in the strata in a different sense, in a different plane, not 'true'—as a perjurer, disrupting the semiotic logic of geology as much as its materiality."[28] In the context of the Anthropocene, stratigraphy's protocols of reading lead to questions about how human assemblages have come to constitute a planetary force of nature, questions that are only answerable outside of

its disciplinary framework. Moreover, unlike other stratigraphic demarcations, which are ascribed retrospectively, the Anthropocene is unfinished, a tale without an ending. Indeed, the working group acknowledges as much at the end of an article in which they address the tension between Earth system science and stratigraphy directly, noting that geologic ages are ultimately determined not by the boundary events at their edges but by the stable climatic patterns that constitute the parameters of life within them. Citing the 2016 *Science* article, they write, "It is clear from both chronostratigraphic and Earth System perspectives that the Earth has entered the Anthropocene, and the mid-20th century is the most convincing start date."[29] However, in the very next sentence they go on to explain that "the Earth System is still in a phase of rapid change and the outcome is not yet clear." And they acknowledge, "The ultimate nature of the Anthropocene cannot yet be determined." In the midst of mounting their most forceful case to date for the formalization of the Anthropocene, these members of the Anthropocene Working Group allow that any characterization of the new epoch is provisional at best. The Anthropocene will ultimately be defined not by the point at which it began, but by the conditions of life within it. No matter where the GSSP is affixed, it will not determine the arc of the Anthropocene so much as the point at which the Holocene came to an end. Nonetheless, insofar as it will shape the stories we tell about human agency and human responsibility, the formalization of the Anthropocene will have material implications, potentially transforming the Anthropos itself.

The methodological predicaments we have been tracking in the stratigraphic discourse have been paralleled by a pronounced methodological disquiet in literary studies in the twenty-first century. Questions of method and rationale, of how and why we read literature, have always been a feature of literary studies, a broad-tent discipline that makes room for cultural critics and aesthetes, biographers and textual editors, empiricist historians and speculative theorists. The emergence of the Anthropocene as a multidisciplinary problem, however, has coincided with a malaise, and a new modesty, in literary studies. Literary scholars in the new millennium have been actively debating the legacy of theory, the future of method, and the coherence of literature as an object of study. We are asking how we justify the resources dedicated to our work—reading, teaching, and writing about literature—in an age of neoliberal austerity and STEM ascendance.

While no less rancorous, the theory decades (roughly 1970–2000) were defined by an unusual confidence in the purpose of our discipline. Knowledge,

identity, and authority were understood to be constituted within a symbolic order that literary critics had powerful tools for unlocking. Groundbreaking works of literary history and criticism read works symptomatically, identifying the breaks in a text's legibility that express a broader psychic, linguistic, or social causality, whether the law of the father, the workings of *différance*, or the conflict over the means of production. In *The Political Unconscious* (1981), for example, Fredric Jameson trained readers to seek not a text's "unified meaning," as contained within its "organic form," but rather to pursue the "rifts and discontinuities within the work." These "clashing and contradictory elements" are "reunified" not in the text but in the critic's identification of a sociohistorical "process of production."[30]

In more recent years, a number of literary scholars have expressed a greater modesty, disavowing metalanguage and the ambitions of critical "suspicion," the impulse to demystify or destabilize in the act of reading.[31] In their introduction to a special issue of *Representations*, Sharon Marcus and Stephen Best advocate for a "surface reading" comparable to the "weakly" interpretive work of natural-historical classification, positioning literature scholars as more like stratigraphers than Earth system scientists.[32] Literary scholars working in the digital humanities have looked to quantitative methods to analyze "big data," establishing new archives and models, though it remains an open question whether such interpretive practices have produced compelling ways of rereading literary and cultural histories.[33] New formalists have turned to the organizing shapes and patterns that are shared by literary works and social systems, in what Caroline Levine dubs "strategic formalism."[34] New materialists and posthumanists have sought to establish methods of reading premised on a flat ontology, broadening our conception of signs, agents, and relations so as to resituate humans, and human meaning-making, in a broader constellation of beings.[35]

As an inherently global problem, the Anthropocene dovetails with the resurgence of interest in world literature and deep time in the work of scholars like David Damrosch, Wai Chee Dimock, and Franco Moretti.[36] Anthropocene reading shares this scholarship an attention to flows, trajectories, and systems that go beyond national borders and human time scales, while at the same time attending to the interplay of these systemic relations through fine-grained analysis. Like world literature, Anthropocene reading also depends on translation, not between languages but between disciplines. Ecocriticism, meanwhile, has long entered into dialogue with science. Initially characterized by a rejection

of "theory" in favor of empirical realism drawn from biology, ecocriticism has shifted its focus to questions of social difference and environmental justice, exemplified in Rob Nixon's *Slow Violence and the Environmentalism of the Poor*, while other twenty-first-century work, such as Stephanie LeMenager's *Living Oil*, has been marked by an engagement with energy and matter.[37] Given ecocriticism's recourse to scientific principles, we might trace this arc in terms of the sciences it avows: first biology and ecology, then sociology and political science, and now stratigraphy and Earth system science. This process has been generally one of addition rather than substitution, as each wave intersects with and refracts those that preceded it.

In assembling this volume, we wondered whether the Anthropocene could clarify or complicate these debates about literary reading in the twenty-first century. The challenge of reading natural and social history in their double internality, which we identify in the stratigraphic discourse, takes inverse form in the humanities. Sociosymbolic phenomena have to be conceptualized in relation to the inhuman forms, forces, and scales of planetary systems and geologic time. We asked our contributors not only to read the Anthropocene but to consider how the Anthropocene might require us to read differently. What if the history implied by the dictum "always historicize" turns out to be not the internality of social relations but rather social relations as they shape and are shaped by thermodynamic, biospheric, atmospheric, and hydrological processes? Can we extend our own definitions of texts, signs, and traces? What can formalism do with nonhuman forms? Can literary reading provide insight into the Anthropocene's paradoxical alignment of precarity and agency, political urgency and deep time? Does literary history register modes of affect and experience related to thermodynamic, geological, and atmospheric processes? How can postcolonial and Indigenous studies be brought to bear on the question of species being? What might it mean to read geohistory symptomatically? Can the accelerated transformation of literary forms noted by Benjamin be understood to express broader patterns of change in energy production and the organization of biospheric systems? How might the Anthropocene inform current debates between historical materialists and new materialists, formalists and surface readers, historicists and post- or transhistoricists? How can we, as readers and critics, enter into dialogue with scientists without collapsing the differences between our disciplines: the differences between poiesis and physis, between poems and ice cores, textual and lithic archives, narrative and algorithmic ways of knowing?

We asked our contributors to articulate a method of Anthropocene reading and to show how it operated in practice. Something different, and deeply illuminating, happened instead. Rather than staging a consistent methodological practice, the contributors to this collection all read improvisationally, drawing on a range of conceptual tools, theories, and practices. It turns out that when your object of concern is something like the Anthropocene—multiform, multiscalar, multicausal, multitemporal—a commitment to methodological consistency may be exactly the wrong approach. In the pages of *Anthropocene Reading*, you will see psychoanalytic, philological, and deconstructive gestures. Our readers unpack metaphors and metonymies. They examine the affordances and limits of genre: allegory, romance, the medieval mystery play, the realist novel, experimental poetry. They stage experiential predicaments. They critique. They take up narratological problems: superpositioning, catastrophe, the vortex. They read forms, signs, fossils, structures, traces, symptoms. They tarry with the negative and hold out hope for messianic reversals. They get close to the text, down to the punctuation. This multiplicity of approaches leads us to the conclusion that the strength of our reading practices in literary studies may derive not from methodological rigor but from the acceptance of inconsistency, the belief in complexity, the attention to contradiction, and the labor of translation.

Reading in the Anthropocene is an invariably polyglot, salvage practice in which we employ all of our tools to discover meaning amid the ruins. Indeed, many of our readers emphasize the limits of knowledge and the inexpressible qualities of the Anthropocene: it becomes knowable only in incompletion or negation. There is a modesty in Anthropocene reading, but it is not the modesty of one who claims to merely describe. Our contributors universally accept that no single method can fully account for the various forms of Anthropocene causality and Anthropocene mediation. A number of them advocate methods that are defined by partiality and incompletion. They tend to practice forms of symptomatic reading, exploring textual depths and rifts, but without the invocation of a secure critical vantage point that would exempt the reading itself from the very condition it seeks to diagnose.

If it is not possible to enact a narrowly consistent Anthropocene reading practice, it is possible to perform individual readings that showcase the adaptability and innovative range of interpretive methods. Certain key problems in Anthropocene reading—the literary mediation of geohistory, the relation of literature to other (inhuman) media, narrative form and unconformity,

the identity of the Anthropos, the formalization of scale variance and scale change—recur across the volume. Taken together, the chapters of this book evidence a practice of reading literary history in the context of geohistorical transition, a practice defined by a shared commitment to the interpretation of human and natural history in their double internality. No matter when (or if) the Anthropocene is formalized by the International Union of Geological Sciences, or what signature is ultimately vested with the authority to proclaim its coming of age, other dates and other markers will retain their significance because of the stories they tell. The instrumentalization of fire, the birth of agriculture, the first written word, the conquest of the Americas, the Industrial Revolution, the Great Acceleration: each offers a signal moment in the entanglement between human societies and the Earth system, an entanglement that is constitutive of human history.[38] The Anthropocene debate provides an occasion for, once again, recognizing this connection, for reckoning with the biogeochemical and thermodynamic contexts in which transpire all history and all symbolic activity. In this sense, the "Anthropocene" in our title does not promise a single practice or method, but rather establishes the conditions under which *all* reading must henceforth proceed.

Among the central preoccupations of this collection is the problem of periodization, dating. Stratigraphers invoke not a day or a decade as the time unit in which human history comes to suddenly intersect with geologic time, but a year: 1610, 1784, 1945.[39] As Steve Mentz observes in his contribution here, such dating "concentrates [the] mind": the "provisional" closure of the single year is a way of salvaging "form from inside disorder." A date imposes a division, establishing an end and a beginning. One order of things gives way; another takes hold. As inflection or flash point, the single date invokes the catastrophism of Cuvierian geology rather than the incremental shifts of Lyellian uniformitarianism.

Strikingly, the two chapters in this collection that focus on specific years—Mentz on 1610 and Tom Ford on 1800—also explore punctuation, the marks of syntactic closure and transition. This seemingly incongruous pairing, crystallized in the two meanings of "period," (a double-meaning shared by the term "epoch") underlines the scalar shifts that Anthropocene reading demands. Mentz observes, "[M]arks of punctuation that separate epochs and narratives from each other" can also be the basis for producing "genre hybridities" helping us to "create new things with old tools." Ford identifies an eccentric punctuation pattern in Charlotte Brontë's *Jane Eyre* (1847), the colon-dash (:—), which

paradoxically conveys continuity and disjunction. Punctuating periods serve important purposes: isolating phase transitions, specifying causes, assigning responsibility. Jennifer Wenzel associates this mode of periodization with the geological law of superposition, which assumes that strata closest to the surface are newer. While she questions the implicit hierarchy of linear historiographic models, she also offers a provocative proposal for an Anthropocene boundary event, drawn from leaked Exxon files revealing that the company began covering up climate change research as early as the 1970s, "an intentional act . . . with implications for all life on Earth." "What are the different implications for justice," Wenzel asks, "if one sees history as cyclic or linear, repeated or ruptured, analogous or without precedent?"

As Jeffrey Jerome Cohen observes in his chapter, linearity—with its "definitive beginnings, vexed middles, smoothly inescapable ends"—fails to account for an Anthropocene swirling with "affective detritus, recondite matter, queer fragments, anomalous proximities." Its narrative form is less a sedimented layering, a straightforward plot line, than a tale "sinuous and coiled," what Cohen calls a "vorticular story," "the entwinement of multivectored lines." As an alternative to the linearity of periodization and the search for a definitive boundary event, several of our contributors invoke the geological concept of the unconformity, extending Eric Gidal's pioneering work of Anthropocene literary history, *Ossianic Unconformities: Bardic Poetry in the Industrial Age*.[40] The unconformity is a gap or disjunction in the stratigraphic record that marks a period where no deposits were left or where sediment has been removed by erosion. This break gives form to the intersection of multiple temporalities, forces, or media, just as fossils memorialize a meeting of the biosphere and lithosphere or as ice cores track the history of the atmosphere as coalesced within the cryosphere. Each of these intersections can be understood as an unconformity, where a system has been impeded, disrupted, or enfolded by another and where that disturbance has left a record in formal disjuncture. After all, as Benjamin Morgan insists in his chapter, form is a property of texts and social systems but also of the geological strata and the biological organisms embedded therein.

Extending Gidal's model of bibliostratigraphy, our contributors identify a number of principles by which literary texts establish unconformities insofar as their matter and meaning intersect with broader geohistorical forces, including resonance, precedence, haunting, estrangement, synonymy, anticipation, allegory, cross-hatching, overdetermination, correlation, obsolescence,

and coincidence. In some cases, this intersection has to do with the textual medium as matter. Ford points out that in the Anthropocene all writing is "writing on the world" because texts are always haunted by the CO_2 emitted in their production. Derek Woods points out that the acceleration of fossil fuel usage in the late twentieth century and into the twenty-first has coincided with a rapidly accelerating production of texts—written, filmed, digital—such that the semiosphere is in effect supplanting the biosphere. Amid this informational onslaught, the Anthropocene also presents us with information loss. Stephanie LeMenager argues that the Anthropocene's casualties include the banality once embodied in the daily news, because "climate change 'news' fails to be 'news' insofar as it implies an end to the everyday itself, since the everyday relies on human habit and its complement of forgetting." Anne-Lise François asks what happens to literature, as a unique medium for the "human bearing of tradition," in an age defined not only by new "technologies of storage and extraction" but also—referring to capital, to the atmosphere's increased absorption of electromagnetic radiation, and to the long-term lithostratigraphic implications of human activity—"by too much retention, too much accumulation, too much permanence."

The unconformity provides a model for reading *absence* itself as a site of meaning, a record or archive. Anthropocene reading often means reading negation, interpreting rifts and lacunae. As Dana Luciano explains in a discussion of nineteenth-century ichnology, fossilized dinosaur footprints indicate "the *presence of an absence*: the mark of the here-no-longer that nevertheless remains." This mark of absence is one of the many ways in which the Anthropocene becomes legible in negation. In his contribution, Matt Hooley points to the fraught implications of narrative absence in relation to Lewis and Maslin's dating of the Anthropocene to the deaths of 50 million Native Americans during the euphemistically dubbed "Columbian exchange" of biota between the Old World and the New. Despite attending to atrocity, Hooley notes, the Orbis hypothesis "makes Indigenous people and knowledge scientifically legible only in or as disappearance." The Native person thus becomes the metonymic figure of vulnerability, the exemplary sign of otherwise diffuse ecological harm. Indigenous disappearance becomes a synecdoche for vulnerability writ large, transforming twenty-first-century Native people into living fossils. LeMenager, too, frames the Anthropocene as a problem of racial invisibility, arguing that climate change eradicates the "privilege of not thinking of oneself as embodied,

as matter overwritten and writing history," a privilege accorded by the illusory invisibility of whiteness, which she aligns with the fantasy of living "unencumbered by material constraint."

Unconformities put different phases of the past into contiguity, offering a counterpoint to the linearity often implied by the law of superposition. The unconformity helps us to read instances in which knowledge—partial, anticipatory, or allegorical—of the Anthropocene precedes the term's formal conceptualization. "[W]e hear old things in new ways," as Mentz puts it. Noah Heringman in his contribution tracks the conventions of scientific "romance"—concerned with "negotiating multiple discrepant temporalities"—from Buffon's *Epochs of Nature* (1778) to the popular science of Elizabeth Kolbert's *The Sixth Extinction* (2014) and Jan Zalasiewicz's *Earth After Us*. Taking what she calls a "posthumous perspective," Juliana Chow suggests in her chapter that studies using Thoreau's journals as climate records continue Thoreau's own project, extending the naturalist's work beyond the span of his life while emphasizing its ever-partial, unfinished quality. Ford reads Romantic works of art as "indirectly allusive anticipations" by which the literary artifacts of the past come to write the "Anthropocene present." Nonetheless, he notes, "the Romantics could name themselves but not the Anthropocene," making those anticipatory documents strangely out of step with the era in which they appeared: could not have meant what they now mean. This asymmetrical contemporaneity is the unconformity of the Anthropocene, in which divergent and seemingly incompatible histories rub up against one another, highlighting the potential for the future to remake the past. With this potential for historical unconformity in mind, Justin Neuman, in his contribution, examines how we read climatological forecasts that have not come to pass, turning to Henry Adams's early twentieth-century warnings of global *cooling*, which was to be brought about by the excessive combustion of fossil fuels, a mistaken theory that lives on in the fantasies of climate change deniers even as modernist techno-utopianism recurs in the promise of the geo-engineered "good Anthropocene." Neuman reads Adams's reflections on the technological emporium at the 1900 Exposition Universelle in Paris as an "energy recognition scene," highlighting the way in which recognition may serve as an interruption: the "externalities that extend spatially and temporally beyond a text's representational systems" may intrude upon the act of interpretation.

Reading history in relation to energy flows, which Adams held to be the historian's task in the modern era, complicates not only the linearity of time, but also the idea that it can be divided into units of comparable duration.

The scaling up of human action within the Earth system also entails a simultaneous compression of human history within geologic time. Woods suggests, "As the potential energy of fossil fuels unravels, the speed of history increases" so that "the Great Acceleration is far 'longer' . . . than any other period of literary history" because "there is more history, more communication, and more inscription per unit time than in the past." Cohen characterizes the Anthropocene as "an engine of narrativity powered by acceleration and intensification." It is fitting that Woods and Cohen, who foreground the idea of the Anthropocene as acceleration rather than rupture, study archives far removed from one another—the medieval and the post-1945 "contemporary"—suggesting again how the Anthropocene may be conceptualized as an unconformity within literary history. The Anthropocene proceeds via acceleration and concentration—in François's words, "retention and release," "disinterment and sequestration"—in ways that cannot be neatly periodized.

Periodization, as in the nomination of an Anthropocene epoch, is largely a matter of scale. Events that appear to hinge on dramatic ruptures at one scale become gradual processes of accumulation and acceleration at another. For our contributors, it is the distinct purview of literary genres and forms to make legible such scale variance and translation. In his chapter, Heringman explores the persistence of romance motifs in popular geology. Reading one geologist (Zalasiewicz) reading an influential predecessor (Buffon), Heringman claims that identifying the literariness of geology—its traffic in wonder, its speculative scenes of time travel and truly posthuman reading—serves not to undermine science but to promote a "historical understanding of geological time," the particular ways in which writers adopt literary motifs to convey the scale variances at stake in the Anthropocene. François similarly asks how prose works of Anthropocene science and theory recapitulate the lyric project of "hold[ing] together overlapping yet semiautonomous temporal scales"—"condensing and extending, slowing and accelerating time"—in order to capture the paradoxical temporality of the Anthropocene, a sudden transformation in the scale of human power that depends on the "fast consumption of deep time" and has implications for "the rest of time to come." Morgan approaches the problem of reconciling divergent scales through a renewed attention to literary form, suggesting that "scalar leaps and disjunctures" be approached as *forms*, opening them to "critical strategies for reading mediations, images, and narratives." Morgan argues that Thomas Hardy's novels stage scalar incommensurability, dramatizing our failure to imagine the inhuman immensity of outer space or

deep time to the point that "formlessness itself becomes a form." This emphasis on the limits of multiscalar thinking echoes Hooley's emphasis on "nonscalable" ecological vulnerability, an alignment that suggests that rather than continuing to aspire to an encompassing vantage point that would enable us to grasp the full magnitude of the Anthropocene, we should instead make peace with, and even embrace, our inevitable failure to do so. LeMenager returns to the individual scale of the everyday Anthropocene, describing the task of the "Anthropocene novel" as "paying close attention to what it means to live through climate shift, moment by moment, in individual, fragile bodies."

Depending on the date chosen for the Anthropocene's emergence, the identity of the Anthropos changes. Rather than attempting to isolate a single origin story, this proliferation of actors can serve as a guide to the shift from individuals to systems, which is necessary for locating (and addressing) the distinctive causal mechanisms operative in Anthropocene history. In Mentz's chapter, Old Man Anthropos takes the stage to declare, observe, and question his own guilt for an Age of Man that is in fact an Age of Death. This crisis arises from a confrontation with the 1610 Anthropocene, a periodization that attributes responsibility for global environmental change to European imperialism, or, as Hooley calls it, "an ascription" that rewrites "complex, even inscrutable, experiences of environmental harm as readable." In contrast to such resolute assertions of legibility, which enable us to pass judgment, Hooley asks that we "read vulnerably" in and through the impediments to our own understanding, a condition that echoes the practice Wenzel calls "reading under duress." As Wenzel explains, "'duress' derives from *dūritia*, Latin for 'hardness'; it shares this root with 'endure.'" Thus, she asks, "How is reading a form of endurance?" This emphasis on precarious endurance recurs in Cohen's rejection of the "ark" as a bastion against rising seas and climate refugees.

Chow takes a similar approach in advocating for "partial reading," a practice she sees modeled in Thoreau's regional, particular, and perpetually unfinished writings on natural history. In contrast to the systematizing viewpoint pioneered by George Perkins Marsh (often cited as a precursor to Anthropocene discourse), Thoreau's methods offer Chow "a concurrence of biological, literary, and historical forms" predicated on "partialities" and "dispersals" as opposed to "organic wholes" or "monologic continuity." In articulating this vision, Chow adopts a vantage that she calls "critical partiality," which she describes as "a mode of being partial, partial *to* something, partial *of* something." Any act of reading is thus partial in both senses of the term, born of attachment in the

midst of incompletion. After all, we cannot read everything. Woods examines this predicament as well. The Great Acceleration that now appears to be the frontrunner for the golden spike also accords with an unprecedented acceleration in media and textual production, threatening to "infowhelm" us at every turn and leaving even the most voracious reader haunted by the "Great Unread." As Woods explains, this overprofusion of texts provides an eerie correlate to the unnamed and unknown species hastening to extinction, further underlining the precarity of Anthropocene reading. In this regard, it seems telling that LeMenager not only highlights the Anthropocene as an occasion for genre innovation in the emergence of "cli-fi," but that in so doing she reaffirms the work of the novel throughout its history: cultivating and expressing the subjective experience of an individual consciousness. The "struggle for genre" is thus also a return, a repurposing, an invitation to read—and read again.

A partiality for literature precedes and underwrites this collection.[41] The Anthropocene is, after all, not what impels us to read. Though our contributors find themselves *rereading* under the sign of this proposed geologic epoch, we were all reading already. We are *partial* readers; sometimes we are too distracted to read or we find that there is just too much to read. Faced with the Great Unread, on one hand, and planetary crisis, on the other, we continue to read as individuals, scholars, and teachers. As Ford observes, the category of literature that emerged in the Romantic period is based on literature's capacity to put "unsayable things"—from absent causality to inarticulate affect—into words. We read because we are terrified. We read to confront our complicity, to ratify our guilt, to mourn the losses. As Heringman reminds us, we read for "wonder," the awe of the Anthropocene sublime mixed with the "pathos" of extinction.

To read is to establish relations in time; reading is revitalization. Luciano describes critical reading as an act of "preservation," a "collaborative or compositional process" arising out of "necessary connections among thought, energy, flesh, mud, minerals, sediment, wind, and water." Reading metabolizes the remnants of absent life into new forms; reading disperses seeds, like the milkweed tufts that Chow traces as they waft from Thoreau's pages into these. To read is to follow Cohen's plunge from familiar archives into history's whirl. In the essays collected here, readings have become writings, interpretations transposed into inscriptions, asking to be read. As Wenzel observes, "allegorizing like the Magistrate, I struggle to read and write in a mode adequate to history,

answerable to the future." We read under duress: speaking to the future, about the past, on behalf of the present.

Global geo-engineering projects, resource wars, and refugee crises are all possible features of the near future, but they are not the only ones. Using existing technology, it would be possible to switch the entire world from fossil fuels to renewable energy in a couple of decades.[42] The intractability of the Anthropocene arises from sociopolitical systems rather than geophysical ones. In order to expand our horizons we need to tell different stories, stories that, as LeMenager suggests, help us form attachments "to multiple generations, distant futures as well as distant pasts, all times worthy of curation and song." The Anthropos in the Anthropocene need not refer only to a culpable agent—it can also become an injunction. The species that reads itself in the stone might yet be brought into a new degree of self-awareness *as* a species and, out of that recognition, weave new democracies and inclusive economies, conjoined to resilient ecologies.

At the end of "The Storyteller," Benjamin turns from geology to biology, from bedrock to life: "A proverb, one might say, is a ruin which stands on the site of an old story and in which a moral twines about a gesture like ivy around a wall" (162). From epic forms to proverbs, encompassing wholes transform in slow time—or accelerating time—to fragmentary scraps of wisdom, legible traces of ruination. If the Anthropocene marks a breach in the wall between human and natural history, then imaginative literature may be understood as the ivy that overspreads that wall, finding its way through the gap, entwining the happenings of history, intractable yet fragile, holding onto the crumbling structure even while hastening its decay, wrapping its tangled forms around the ruins of the modern constitution.

Notes

1. Walter Benjamin, "The Storyteller: Observations on the Works of Nikolai Leskov," in Benjamin, *Selected Writings* (Cambridge: Harvard University Press, 2002), 3:143–66, 147 (hereafter cited parenthetically in text).

2. Jeffrey Jerome Cohen, *Stone: An Ecology of the Inhuman* (Minneapolis: University of Minnesota Press, 2015), 4–6.

3. Bruno Latour, "Agency at the Time of the Anthropocene," *New Literary History* 45.1 (2014): 1–18, 13 (hereafter cited parenthetically in text).

4. See Noah Heringman, *Romantic Rocks, Aesthetic Geology* (Ithaca: Cornell University Press, 2004).

5. Stephen Jay Gould, *Time's Arrow, Time's Cycle: Myth and Metaphor in the Discovery of Geological Time* (Cambridge: Harvard University Press, 1987), 42. Gould emphasizes Burnet's concern with "narrative": "a story line of pasts that determine presents

and presents that constrain futures" (44). In *Principles of Geology* (1830–33), Charles Lyell holds that if history were viewed as proceeding in too short a time span it would "assume the air of a romance," contending that it is only when viewed against the expansive backdrop of deep time that geological change can become legible as the result of slow-moving forces still in operation, an implicit shift from romance to realism. Lyell, *Principles of Geology; or, The Modern Changes of the Earth and Its Inhabitants Considered as Illustrative of Geology*, 10th ed. (London: John Murray, 1867), 94. See discussion in Jesse Oak Taylor, *The Sky of Our Manufacture: The London Fog in British Fiction from Dickens to Woolf* (Charlottesville: University of Virginia Press, 2016), 11–12.

6. Thomas Burnet, *The Sacred Theory of the Earth* (Carbondale: Southern Illinois University Press, 1965), 17.

7. Adelene Buckland argues that for Victorian geologists, the narrative turn was imperative because it served as both "a systematizer of geological knowledge" and a technique for "capturing new audiences and readerships, aligning geology with culturally authoritative narratives from classical and biblical literatures." Buckland, *Novel Science: Fiction and the Invention of Nineteenth-Century Geology* (Chicago: University of Chicago Press, 2013), 17.

8. Will Steffen, Jacques Grinevald, Paul Crutzen, and John McNeill, "The Anthropocene: Conceptual and Historical Perspectives," *Philosophical Transactions of the Royal Society A* 369 (2011): 842–67, 843.

9. Jan Zalasiewicz, *The Earth After Us: What Legacy Will Humans Leave in the Rocks?* (New York: Oxford University Press, 2008), 7 (hereafter cited parenthetically in text).

10. Paul J. Crutzen and Eugene F. Stoermer, "The 'Anthropocene,'" *Global Change Newsletter* 41 (2000): 17–18.

11. Simon L. Lewis and Mark A. Maslin, "Defining the Anthropocene," *Nature* 519 (March 2015): 171–80, 178.

12. See Bruno Latour, *We Have Never Been Modern*, trans. Catherine Porter (Cambridge, Mass.: Harvard University Press, 1993).

13. Dipesh Chakrabarty, "The Climate of History: Four Theses," *Critical Inquiry* 35.2 (2009): 197–222.

14. Jason Moore, *Capitalism in the Web of Life: Ecology and the Accumulation of Capital* (London: Verso, 2015), 1–2.

15. Immanuel Wallerstein, *The Modern World-System*, vol. 1, *Capitalist Agriculture and the Origins of the European World-Economy in the Sixteenth Century* (New York: Academic, 1974), cited in Lewis and Maslin, "Defining," 175.

16. Martin Rudwick, *Bursting the Limits of Time: The Reconstruction of Geohistory in the Age of Revolution* (Chicago: University of Chicago Press, 2005), 162–63.

17. See discussion in Lewis and Maslin, "Defining," 177.

18. Francis Fukuyama, "The End of History?," *National Interest* (Summer 1989): 3–18; Bill McKibben, *The End of Nature* (New York: Anchor/Doubleday, 1989). On this conjunction, see Margaret Ronda, "Mourning and Melancholia in the Anthropocene," *Post45*, June 10, 2013, http://post45.research.yale.edu/2013/06/mourning-and-melancholia-in-the-anthropocene.

19. Colin N. Waters et al., "The Anthropocene Is Functionally and Stratigraphically Distinct from the Holocene," *Science* 351.6269 (2016): aad26221–10 (hereafter cited parenthetically in text).

20. See Johan Rockström et al., "Planetary Boundaries: Exploring the Safe Operating Space for Humanity," *Ecology and Society* 14.2 (2009), https://www.ecologyandsociety.org/vol14/iss2/art32.

21. Jan Zalasiewicz et al., "Colonization of the Americas, 'Little Ice Age' Climate, and Bomb-Produced Carbon: Their Role in Defining the Anthropocene," *Anthropocene Review* 2.2 (2015): 117–27. The authors also cite Lewis and Maslin, who consider both a 1610 start date and "a peak of radioactivity" in 1964, associated with nuclear weapons testing. Lewis and Maslin observe that the disadvantage of the 1964 radiocarbon dating is that "although nuclear explosions have the capacity to fundamentally transform many aspects of Earth's functioning, so far they have not done so, making the radionuclide

spike a good GSSP [global boundary stratotype section and point] marker but not an Earth-changing event" ("Defining," 177).

22. Clive Hamilton, "Getting the Anthropocene So Wrong," *Anthropocene Review* 2.2 (2015): 1–7, 5. "Finding new species (or other signs) in rock strata," he observes, "is not the same as identifying a change in the functioning of the Earth System" (5).

23. Jacques Derrida, "Signature Event Context," in his *Margins of Philosophy*, trans. Alan Bass (Brighton, England: Harvester, 1982), 307–30, 328.

24. Zalasiewicz et al., "Colonization of the Americas," 122.

25. As Rudwick shows in *Bursting the Limits of Time*, in the later eighteenth and early nineteenth centuries the earth sciences were divided between classificatory and speculative imperatives. Geognosy, closely associated with mining industries, is a science of description and classification, not of "causal explanations" (84). Geognosy gave way to what William Smith calls "stratigraphical geology," which uses fossil remains to delineate formations. Rudwick contrasts this approach, which establishes its scientific credentials on the modesty of its empiricism, with the work of Georges Cuvier, a French paleontologist whose observation of significant extinction events invited the speculative reconstruction of the forces of past geologic cataclysms.

26. Andreas Malm, *Fossil Capital: The Rise of Steam Power and the Roots of Global Warming* (London: Verso, 2016), 390–91.

27. Haraway coined the term in conversation with fellow anthropologists Noboru Ishikawa, Scott F. Gilbert, Kenneth Olwig, Anna Tsing, and Nils Bubandt. See their "Anthropologists Are Talking—About the Anthropocene," *Ethnos* 81.3 (2016): 535–64, 557.

28. Bronislaw Szerszynski, "The End of the End of Nature: The Anthropocene and the Fate of the Human," *Oxford Literary Review* 34.2 (2012): 165–84, 180.

29. Will Steffen et al., "Stratigraphic and Earth System Approaches to Defining the Anthropocene," *Earth's Future* 4 (2016): 324–45, 337.

30. Fredric Jameson, *The Political Unconscious: Narrative as a Socially Symbolic Act* (Ithaca: Cornell University Press, 1981), 56.

31. See, for example, Rita Felski, *The Limits of Critique* (Chicago: University of Chicago Press, 2015).

32. Stephen Best and Sharon Marcus, "Surface Reading: An Introduction," *Representations* 108.1 (2009): 1–21.

33. In relation to the Anthropocene, some of the most productive work in digital humanities may be that attending to the ecological embeddedness of media technologies themselves, suggesting an alignment with fields such as book history as routes into the materiality of the text. Examples include Jussi Parikka, *A Geology of Media* (Minneapolis: University of Minnesota Press, 2015); and Nicole Starosielski, *The Undersea Network* (Durham: Duke University Press, 2015).

34. Caroline Levine, *Forms: Whole, Rhythm, Hierarchy, Network* (Princeton: Princeton University Press, 2015).

35. See, for example, Julian Yates, *Of Sheep, Oranges, and Yeast: A Multispecies Impression* (Minneapolis: University of Minnesota Press, 2017).

36. See Wai Chee Dimock, *Through Other Continents: American Literature Across Deep Time* (Princeton: Princeton University Press, 2006); David Damrosch, *What Is World Literature?* (Princeton: Princeton University Press, 2003); Franco Moretti, "Conjectures on World Literature," *New Left Review* 1 (January–February 2000): 54–68.

37. Rob Nixon, *Slow Violence and the Environmentalism of the Poor* (Cambridge: Harvard University Press, 2011); Stephanie LeMenager, *Living Oil: Petroleum Culture in the American Century* (Oxford: Oxford University Press, 2014). Early ecocriticism's resistance to the linguistic turn is evident in many of the essays collected in Cheryll Glotfelty and Harold Fromm, eds., *The Ecocriticism Reader: Landmarks in Literary Ecology* (Athens: University of Georgia Press, 1996).

38. See Jeremy Davies, *The Birth of the Anthropocene* (Berkeley: University of California Press, 2016), 140.

39. Ted Underwood has identified a similar predicament in literary history, noting

that periodizing terms like "Romanticism" or "modernism" are predicated on the ability to read stark breaks located around specific events or in the work of specific authors. "In principle," Underwood argues, "literary scholars should be able to move back and forth between different kinds of historical argument, invoking continuity or contrast as necessary for a particular thesis. But in practice, we find it very difficult to make arguments about continuous, gradual change." *Why Literary Periods Mattered: Historical Contrast and the Prestige of Literary Studies* (Stanford: Stanford University Press, 2013), 169.

40. Gidal in *Ossianic Unconformities* adopts the Huttonian principle of the angular unconformity, "disjunctions in the stratigraphic record, . . . physical manifestations of heterogeneous time," as a way to read similar compressions and dislocations in the "poetic unconformity" of the Ossian poems, such as the interweaving of elegiac and progressive moods, and in the "medial unconformities" of Ossian's nineteenth-century reception as the poems were remediated in ordnance surveys, musical scores, and tourist guides (5, 7, 68). Gidal identifies in Ossian's reception a persistent cross-referencing between text and topography. This "biblio-stratigraphy," as he terms it, provides an acute mode of reading "the social and spatial disruptions of industrial modernity" (15, 12). *Ossianic Unconformities: Bardic Poetry in the Industrial Age* (Charlottesville: University of Virginia Press, 2015).

41. In making these claims for reading, we are not attempting to claim the Anthropocene as the exclusive province of literature. After all, Benjamin balanced his investment in story with a fascination for film, celebrating the camera's capacity to render phenomena "accessible only to the lens (which is adjustable and can easily change viewpoint) but not to the human eye" through effects like "enlargement or slow motion, to record images which escape natural optics altogether." Imperceptible phenomena, such as climate change, become knowable only through an expansive array of media—from computer models to ice cores, from films to video games—and hence all Anthropocene readings are multimodal. Benjamin, "The Work of Art in an Age of Its Technological Reproducibility: Second Version," trans. Edmund Jephcott and Harry Zohn, in Benjamin, *The Work of Art in the Age of Its Technological Reproducibility and Other Writings on Media*, ed. Michael W. Jennings, Brigid Doherty, and Thomas Y. Levine (Cambridge, Mass.: Harvard University Press, 2008), 19–55, 21.

42. Malm, *Fossil Capital*, 368–69.