Introduction

Unexpected Encounters with Deep Time

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Abstract The fractured timespace of the Anthropocene brings distant pasts and futures into the present. Thinking about deep time is challenging: deep time is strange and warps our sense of belonging and our relationships to Earth forces and creatures. The introduction to this special section builds on scholarship in the environmental humanities concerning the ongoing inheritance of biological and geologic processes that stretch back into the deep past as well as the opening up of multiple vistas of the futures. Rather than understanding deep time as an abstract concept, we explore how deep time manifests through places, objects, and practices. Focusing on three modes through which deep time is encountered—enchantment, violence, and haunting—we introduce deep time as an intimate element woven into everyday lives. Deep time stories, we suggest, engage with the productive ways in which deep time reworks questions of narrative, self, and representation. In addressing these dynamics, this introduction and the accompanying articles place current concerns into the larger flows of planetary temporalities, revealing deep time as productive, homely, and wondrous as well as unsettling, uncanny.

Keywords deep time, enchantment, violence, haunting, Anthropocene

Modernity's temporal cadence of ever-onward-rushing progress, newness, and renewal was never all-encompassing. Modernity always had its countertemporalities. There was ruin, both of places left behind and visions of future destruction to come. There was nostalgia—for a vanishing Nature, for a time of craft and community before capital bestrode the globe, for paradise. There were resistant rhythms of everyday endurance, and there were non-Western temporalities never incorporated into

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modernity's singular temporality. At the same time, many of the humanities' key concepts, such as justice, belonging, memory, or subjectivity, have carried temporal components, but these concepts have usually encompassed relatively short time frames. While there have been some efforts to challenge this via concepts such as intergenerational justice, even these longer time frames pale in comparison to deep time frames, which stretch over millennia or more. Of course, until recently it could perhaps have been argued that such frames were not actually relevant to humanities researchers. But one of the secular authorities of modernity—science—has revealed, through its reality-making regimes, a profound moment of temporal dislocation: the very long-term effects of climate change, nuclear radiation, plastic pollutants, and more that, collectively, shatter modernity's temporality and its countertemporalities.

The Anthropocene's shock was to reveal humans as planetary agents on a deep spatial and temporal scale. The corollary to that shock was of course to place humanity within long-running Earth processes. The Anthropocene has of course been wrung through the "shredder's maw" of critique,[1] its latent politics exposed; new formations have been proposed and continue to proliferate.[2] For all their differences, the new –cenes of the environmental humanities and critical social scientists seem united in arguing that science alone cannot reveal the fractured timespace of our present planetary moment. Hence the environmental humanities are bringing to the fore other-than-scientific kinds of sense making. One of the most challenging aspects of the Anthropocene is the way it puts the present in contact with distant times beyond the scope of human experience or even imagining.[3] Thinking about deep time is challenging; deep time is strange and warps our sense of indebtedness to earth forces and creatures past, present, and future. Alienation is perhaps the most logical reaction to sublime, inhuman timescales. Confronted by stretched-out temporal horizons, the human figure is marginalized, decentered as measure of all things.

In this moment of temporal dislocation the environmental humanities have cohered around a sense of loss. That sense of loss is not one of absolute numbers expressed in declining species inventories. Rather, the loss is of historical specificities and multispecies communities formed through creaturely entanglements that stretch way back in time. As we have known since Darwin, creaturely life is not formed in the thin boundary layer of the present but through historical genealogies: life is "preserving the past . . . life binds time, expanding complexity and creating new problems for itself."[4] As we have learned since Darwin, however, genealogies of descent are impure and knotty. Deborah Bird Rose perhaps puts it best when she writes that "all living

1. Latour, *Inquiry into Modes of Existence*, 479.

2. Capitalocene, Chthulucene, Plantationocene, Androcene, Polemocene, Anthropobsence, Anthropounseen, and the Stop-Making-A-Cene, to name a few.

3. Chakrabarty, "Climate of History."

4. Margulis and Sagan, *What Is Life?*, 86.

things owe their lives not only to their forebears but also to all the other others that have nourished them again and again."[5] Biology stands on the cusp of a paradigm shift in which creatures are understood as holobionts—formed through obligate symbiosis and even obligate symbiogenesis—rather than discrete individuals.[6] "We are multilineage organisms," as renowned development biologist Scott Gilbert puts it.[7] Life is a creative inheritance of gifts passed down through deep time, gifts exchanged in the present again and again, through niche creation, symbiosis, parasitism, eating, and being eaten.

There is also widespread interest across the environmental humanities in the geologic as a way of exploring connections with deep time.[8] Rocks, strata, minerals, sedimentations, and more have opened avenues for reorienting thinking around different time frames. Deep time was of course first described in 1788 by the Scottish geologist James Hutton. Most histories have Hutton vanquishing superstitious creationism with meticulous empirical observation of geologic features shaped by cycles of uplift, sedimentation, and erosion. His famous phrase, "no vestige of a beginning, no prospect of an end," invoked a cyclical temporality: deep time was the endless cycling of geology, with no need for meaning, history, or linear progression.[9] Hutton, Stephen Jay Gould argues, discovered "deep time by imposing his rigid view of time's cycle upon a complex earth."[10] Hutton's discovery gave us deep time but lost history in the process. It took Charles Lyell and, two hundred years later, the American author John McPhee to devise a sense of deep geologic time that was linear and historical, disclosed and verified by empirical observation and logical inference.[11]

Today we have a rich understanding of the role of geology not only as a planetary process but in shaping life itself. Early forms of life may well have emerged around oceanic hydrocarbon vents, while current forms of life incorporate mineralogical substrates. Some five hundred million years ago, "some of the conglomerations of fleshy matter-energy that made up life underwent a sudden mineralization," writes Manuel DeLanda, and a new material for constructing living creatures—bone—emerged: "It is almost as if the mineral world that had served as a substratum for the emergence of biological creatures was reasserting itself, confirming that geology, far from having been left behind as a primitive stage of the earth's evolution, fully coexisted with the soft, gelatinous newcomers."[12] The mineral and the biological have become necessary companions in earthly life. Their interaction has also subtended capitalism's spectacular double internality of nature moving through capital, capital moving through nature,

5. Rose, "Multispecies Knots of Ethical Time," 131.
6. Gilbert, "Holobiont by Birth."
7. Ibid., 83; on microbes, see McFall-Ngai et al., "Animals in a Bacterial World."
8. Ellsworth and Krause, *Making the Geologic Now*; Bakke, "Art and Metabolic Force."
9. Hutton, "Theory of the Earth," 304.
10. Gould, *Time's Arrow, Time's Cycle*, 96.
11. McPhee, *Basin and Range*; Zen, "What Is Deep Time?"
12. DeLanda, *Thousand Years of Nonlinear History*, 26.

over the last five hundred years.[13] Fossil fuels, laid down in deep time, have made possible democracy, economy, anthropogenic climate change, and, paradoxically, technoscientific disclosure of the Anthropocene. They also subtend modern human subjectivity and conditions of freedom: we are formed through, as Kathryn Yusoff puts it, a "subterranean geologic debt."[14] Geologic deep time is not therefore antecedent to the present but continues to organize and differentiate arrangements of energy and matter.

The narrow, linear narrative of progress has frayed, and the environmental humanities have begun to think about the future in other ways. From the multispecies ethical time of Rose to the urging of the ghost of the unborn in Timothy Clark's intergenerational ecocriticism, much recent work in the environmental humanities has considered the potential for the uncanny time of the Anthropocene to disturb the unilateral excesses of contemporary capitalist presentism.[15] One main response has been to bear witness to harbingers of future ruin, described by Michelle Bastian as the "new immortals" of the Anthropocene.[16] Plastics, for instance, are found throughout the earth and beyond: from orbiting junk satellites to the bowels of benthic organisms in the deepest trenches of the world's oceans. Almost every piece of plastic ever made remains in existence in some form and will persist for geologic epochs to come. At one extreme, anticipatory ruin can lead to a sense of despair and alienation: more like haunting a charnel ground than sharing a world, as Timothy Morton puts it.[17] But anticipating ruin and confronting vast timescales can also prompt a renewed sense of hope for transformation or at least for recuperation and collaborative survival in a damaged but not yet dead world.[18] The prospect here is of an open future, not defined by the inevitability of progress: "Moderns always had a future . . . but never a chance, until recently that is, to turn to what I could call their prospect: the shape of things to come."[19] Dizzying and daunting, perhaps. But also an opening to which the environmental humanities can respond.

If the "blinding light" of the Anthropocene initially "seemed to drown out other scales and figures," as Tom Cohen and Claire Colebrook argue, "its dimming seems to have opened other narratives."[20] Some of these new narratives, we suggest, will engage the different registers of deep time as it presents itself in the here and now—among the places, lives, and things studied by the environmental humanities. In this way, paying attention to deep time is not to deny the predicaments and injustices of the present. The sense of deep time we invoke here is close to Donna Haraway's *kainos*: the lumpy,

13. Moore, *Capitalism in the Web of Life*.
14. Yusoff, "Politics of the Anthropocene," 6.
15. Rose, "Multispecies Knots of Ethical Time"; T. Clark, *Ecocriticism at the Edge*.
16. Bastian and van Dooren, "New Immortals."
17. Morton, *Hyperobjects*.
18. Tsing, *Mushroom at the End of the World*; Haraway, *Staying with the Trouble*.
19. Latour, "Compositionist Manifesto," 486.
20. Cohen and Colebrook, preface, 7.

thick temporality of a present animated by its immanent pasts but also thrumming with possible futures.[21] The goal of deep time stories will be to place current concerns into a much larger flow of planetary history and futures, nudging deep Earth forces to disrupt our received narrative strategies and moral imaginaries and in so doing provincialize Anthropocene narratives.[22] The six articles in this special section suggest ways to write critical Earth temporalities, showing differentially shared vulnerabilities, joys, and transformations. Following Cohen and Colebrook, the articles also wrestle with the limits of narrative, self, and representation that are brought into focus by deep time.[23] The articles thus also struggle to domesticate unruly Earth temporalities, retaining, in different ways, a sense of the alterity and inhumanity disclosed by deep time.

Encountering Deep Time

In this special section we explore the responsibilities that are elicited not through deep time itself but through multiple types of encounters in which deep time reveals itself. Rather than appearing as an abstract concept, an unending line forward or backward, deep time has an uncanny ability to telescope into and out of everyday moments. We never really encounter deep time: deep time pulls at us as it manifests through places, objects, or affective atmospheres. Across the environmental humanities, encounter tends not to be construed as an event where self-contained, preformed entities meet. Rather, encounter is an indeterminate moment of "contamination," when beings and things are brought together in interwoven rhythms and through which change may—or may not—happen.[24] The event of encounter "punches a hole" in our understanding of what is happening; one is, as Alain Badiou writes, "seized by the not-known . . . suspended, broken, annulled; disinterested."[25] The event of encounter can be an unsettling break with the current situation. According to this way of seeing encounter, encounters with deep time need not follow a given script that necessarily leads to alienation or feelings of helplessness. To explore the prospects for encountering deep time, therefore, this special section focuses on three *modes of encounter*: enchantment, violence, and haunting.[26] *Mode* refers, in the first instance, to the manner in which something occurs. *Mode* can also mean fashion or style (as in the French *à la mode*). We employ the double meaning of mode here, to designate three manners of encounter that are "modish," possessing considerable intellectual history and current traction in the environmental humanities. In selecting enchantment, violence, and haunting, we aim to rework key conceptual concerns of the environmental humanities by placing them

21. Haraway, *Staying with the Trouble*.

22. Chakrabarty, "Humanities in the Anthropocene," 394.

23. Cohen and Colebrook, preface.

24. Tsing, *Mushroom at the End of the World*, 27.

25. Badiou, *Ethics*, 43, 49–51; cited in Zylinska, *Minimal Ethics*, 84.

26. These themes emerged from a reading group at the University of Edinburgh, and the articles in this special section are drawn from a series—Unexpected Encounters with Deep Time—held by the University of Edinburgh Environmental Humanities Network in 2015 and 2016.

in relation to deep time, thus showing how the environmental humanities can multiply our temporal registers and reframe deep time as more than unsettling, uncanny, and dangerous.

Enchantment

Jane Bennett's influential work on enchantment emerges from her observation that there is little to love about "alienated existence on a dead planet."[27] Countering the notion that modern existence is denuded of enchantment, Bennett's work has inspired a great deal of scholarship aiming to explore the sense of wonder that momentarily throws one off track, out of the flow of normal time and into a spellbound, transfixed, or perturbed state. In each case, enchantment occurs as a charge located in the moment between sensing and making-sense-of, an affective force shared between two bodies (not necessarily human), not necessarily named. Within environmental literatures, enchantment's "micro-politics of sensibility-formation" has been a way of mobilizing ethical responses on an increasingly damaged planet.[28] Bennett's formulation of this micropolitics was always an optimistic wager rather than a reliable recipe, however. It contained numerous blind spots: from the forgetting of countless "unloved others,"[29] to the nonrelational, to the fact that contemporary forms of enchantment are most successfully mobilized by capital.[30] These limitations notwithstanding, enchantment remains a productive mode of inquiry across the environmental humanities.

We do not encounter deep time under conditions of our own choosing, and its appearance is not necessarily under our control. Enchantment is not a choice (although receptivity to enchanting experience can be cultivated); it is usually something that arises unbidden. Rather than leading to alienation, the abrupt arrival of deep time can lead to a sense of wonder, recalibration of possibility, or even regret. Enchantment is one mode through which Christine Hansen meets deep time in her account of an extremely destructive bushfire that swept through southeastern Australia in 2009. Combing through the remnants of shattered lives and a blackened landscape, she encounters a metal puddle: a lawnmower melted by the fire's fierce heat. Testimony from other residents shows that leftover domestic items, from pottery to kitchen equipment, prompted a form of enchantment. Not a comfortable, positive kind of enchantment, but uncanny reminders that the intense fire was beyond anyone's control and that, more importantly, it had emerged from the long-run temporalities governing Australian fire regimes.[31] The importance of fire in the landscape had been forgotten, overruled by the progressive temporality of settler colonialism.

27. Bennett, *Enchantment of Modern Life*, 4; Bennett, *Vibrant Matter*.
28. Bennet, "Interview," 101.
29. Rose and van Dooren, "Unloved Others."
30. Ginn, "Light or Dark Political Ecologies."
31. Griffiths, "Travelling in Deep Time."

In this special section, Alan Macpherson considers a more strategic attempt to cultivate a sense of enchantment that might reverberate into the deep future. Artist Caroline Wendling's *White Wood* consists of seven hundred trees that respond, in the first instance, to the centenary of the First World War. Much more than a monument to the historical past and the victims of war, however, *White Wood* is also planted with an eye to its future transformation by persons and beings unknown. The planting wraps geology and biology together: under each tree Wendling placed a rough block of Lutetian limestone, each covered with the fossilized remains of gastropods more than forty million years old. Over time, these blocks may be pushed back to the surface as roots develop and intertwine; the uncertain return of a marker of deep time draws the visitor, unbidden, into sensing the deep future beneath their feet. Of course, there is always the chance that these oaks may die before then, if changing climatic conditions shift their habitat range further south, as it was earlier in the Holocene. Both these articles show that the enchantment of deep time does not live up to Bennett's wager that enchantment leads in any easy way to progressive micropolitics. Rather, the essays here demonstrate the uncertainty between the event of enchantment and any ethico-politcal outcome. The enchantment of deep time is an uncanny and unsettling reminder of vast forces beyond one's control. We might try to channel these forces in more or less enchanted ways, but success will remain elusive.

Violence

The environmental humanities have a rich tradition in bearing witness to the violent imprint of human activities on natural processes and landscapes. We can read these planetary wounds as symptoms of capitalism's epochal world-ecological project: an attempt to make a world through a series of abstractions—money, socially necessary labor time, abstract natures—that render the embedded, historically contingent relations of the web of life into exchangeable equivalences.[32] "There is a violence intrinsic to abstraction, and to abstraction's practical (social) use," as Henri Lefebvre put it,[33] such that capital comes "dripping from head to toe, from every pore, with blood and dirt."[34]

Rob Nixon has provided a key register through which the environmental humanities have explored such violence: "Slow violence," in his view, is a "violence of delayed destruction that is dispersed across time and space."[35] He has argued that we ought to engage with this different notion of violence: "a violence that is neither spectacular nor instantaneous, but rather incremental and accretive, its calamitous repercussions playing out across a range of temporal scales."[36] Slow violence is most remarkable for

32. Moore, *Capitalism in the Web of Life*.
33. Lefebvre, *Production of Space*, 289.
34. Marx, *Capital*, 926.
35. Nixon, *Slow Violence and the Environmentalism of the Poor*, 2.
36. Ibid., 2.

its invisibility, "calamities that patiently dispense their devastation while remaining outside our flickering attention spans."[37] Thus a crucial component of environmental critique lies in illuminating the victims and contexts of environmentalism that have been rendered invisible.

But the violence that accompanies deep time encounters may be slower than slow; it may be even less visible and less anthropogenic than Nixon's formulation allows. Signs of the great "monstrous reproductive excess" of cyanobacteria, which caused the extinctions of the Great Oxygenation Event some 2.45 billion years ago, for example, are still visible.[38] They can be seen in the landscape as uranium oxides and "vast rust belts—iron oxides—on the earth's surface."[39] The Anthropocene also brings the prospect of human extinction into the present. Regardless of self-inflicted damage, humans are cosmically vulnerable.[40] There is a one-in-fifty-nine-thousand chance that a heavy, fast-moving asteroid, 2015PU228, will collide with the Earth in the year 2081. According to the European Space Agency, the asteroid poses no unusual level of danger. After all, the chance is 99.9983 percent that it will not hit Earth. PU228 reminds us that the Earth is not a closed system but is open to deep temporalities beyond our control: PU228 was likely shunted into its present orbit by a collision several million years ago. Deep time violence is therefore not just damage. In line with feminist-biophilosophical configurations, violence is threaded through the very relations of life.[41] In other words, codependency and covulnerability are inevitable conditions of relationality and "worlding." Thus ethical responses need to embed violence within them rather than "sweeping it aside in a fantasy gesture of moral purification."[42] The violence of deep time underscores our constitutive vulnerability to violent forces that both move through and exceed life.

While the violence of deep time is visible across the articles in this special section, it is the explicit focus of two. Richard D. G. Irvine explores the scalar questions evoked when one faces the apparent incommensurability of biographical and geologic deep time. Taking the idea that landscape may serve to mediate these two temporal frames, domesticating unfamiliar depths,[43] Irvine probes human responses to temporal eccentricity in Mongolia. Here the transition from communism to capitalism has generated a particularly acute sense of social rupture, and the article explores the ways in which newly rendered neoliberal individuals in Mongolia can find themselves suddenly at odds with a formerly familiar landscape. Irvine's reflection directs our thinking toward

37. Ibid., 6. In this way, Nixon's proposal represents an extension of Johan Galtung's theory of structural violence, seeking to extend the often very personal context in which we can usually imagine violent acts toward new horizons, such as the banal forms of violence that are ensnared and produced within bureaucracy and power hierarchies. Galtung, "Violence, Peace, and Peace Research."

38. Sagan, "Beautiful Monsters," 170.

39. Ibid.

40. N. Clark, "Ex-orbitant Generosity."

41. Haraway, *When Species Meet*.

42. Zylinska, *Minimal Ethics*, 99.

43. Ingold, *Perception of the Environment*; Ginn, *Domestic Wild*.

the ways that the geo-violence of deep time can be banal and distended through time. In one example, he highlights Mongolian Buddhist "prophecies which speak of a 'time of calamities.'" This apocalypticism performs a kind of telescoping action, whereby distant temporal registers are brought close, and the long-term harm to the landscape caused by mineral extraction is rendered present. In this view, deep time is domesticated not by diffusing violence but through singing about the rupture whereby the "vastness of time" is made present within the time of human life.

Turning from Mongolia to Iceland, the article by Nigel Clark, Alexandra Gormally, and Hugh Tuffen foregrounds the strange and enigmatic characters of geologic violence and human geologic agency. In contrast to the sense of capitalist encroachment and landscape alienation that Irvine highlights, these authors find encounters with deep time to render a surprising intimacy. Building on N. Clark's earlier work on volcanism, which concerns the ways in which "violent destratification" is part of the emergence of new, generative powers of diversification,[44] these authors interpret the exploratory drilling of geothermal wells in Iceland's Krafla volcanic caldera as a radical, unfolding event that may present a "possible reconfiguring of the temporization of inner-outer Earth relations." From eukaryotic reproduction to metallurgy, violence lies at the heart of a series of weirdly benevolent if dangerous forms of becoming with volcanic processes. Both of these articles highlight the precarity of human becoming and the nearness of un-becoming. Above all, while violence destabilizes the human, it is itself an unstable concept, creating new openings for unexpected forms of hospitality, cocreation, and the intermingling of agencies.

Haunting

The final mode of encountering deep time explored in this special section is that of haunting. Haunting is suggestive of both the impress of the fantastic on the real ("conjuring" ghosts) and of the potential for traces to haunt the planet's air, sea, soil, and strata for thousands or even millions of years to come. Uniquely among all the generations of every species that has ever lived, the handful of human generations born in the developed world after about 1950 will leave a detailed impression of how we chose to live that covers the entire planet. One of the most chilling traces of the Anthropocene is the global dispersal of radioactive isotopes that has taken place since mass thermonuclear-weapons testing began in the middle of the twentieth century. This means that everyone born after 1963 has about fifty times more strontium-90 isotopes in their teeth then those born earlier. The half-life of depleted uranium (U-238) is around 4.5 billion years, roughly the same as the age of the Earth, while that of the plutonium in Chernobyl's nuclear reactor is 240,000 years. Such timescales resist the imagination, but they exist as a haunting presence in our daily lives.

The time we live in is, in this respect, very much out of joint. The various ghosts of the Anthropocene are an index of this disjunctive time, useful for framing how we

44. N. Clark, "Politics of Strata."

think about the ways in which we are intervening in deep time. Ghosts are, perhaps first and foremost, expressions of desire: to connect, communicate, or commingle across boundaries, offering a way of thinking about the connections between deep pasts and deep futures that reside within everyday experience. They frequently bring counsel; in this sense, the Anthropocene is like the ghost at the banquet, warning of the coming retribution in the midst of the reverie. Jonathan Woolley's account of the Black Shuck—a phantom dog that prowls the interstitial landscape of East Anglia, bringing death to anyone it meets—explores how monstrosity brings with it a message. A chthonic being like the Shuck, a manifestation of the ongoing, unfinished ones in Donna Haraway's formula,[45] connects those who meet it to the Anthropocene's thanatological reality: while we inevitably are consigned to deep time in death, we are also connected in life to the often deadly consequences of our decisions. "The monster becomes a warning," writes Woolley, "frightening us into following the right routes through an unpredictable, shifty landscape." In Woolley's case, however, the right route is to get away from the chthonic beast as quickly as possible, to run from this harbinger of death.

The Anthropocene's effects are often felt as an uncanny mix of the phantom and the forcefully material. Slow and creeping, unseen emanations of a far distant time and place can nonetheless have devastating effects. As Nick Mansfield affirms, in the Anthropocene "we are haunted by a very material ghost."[46] Andreas Malm writes of the fossil fuels extracted from Gulf oil wells returning to haunt the region in the form of near-unlivable temperatures,[47] while authors have charted the insidious, spectral influence of the developed world's toxic legacies on the developing world.[48] The Anthropocene is haunting, too, in terms of how it makes us feel. Guilt, shame, foreboding, fear; all are part of what we might call the affective Anthropocene. Morton and the Dark Mountain Project have each advocated the importance of allowing grief to take its course[49] rather than moving too quickly into a palliative stage that might miss some of the Anthropocene's crucial lessons.[50] Reaching for a technofix that saves us from facing the uncomfortable truths of our relationship with the world around us might be appealing, but in order to pursue meaningful change, we need to contemplate in full and at length the Anthropocene's losses and disturbances.

Stefan Skrimshire's piece brings these concerns together. In a reading of the nuclear semiotics of deep-earth radioactive waste storage programs, such as Finland's five-hundred-meter-deep ONKALO facility, and of Michael Madsen's 2010 documentary

45. Haraway, *Staying with the Trouble*.

46. Mansfield, "'There Is a Spectre Haunting.'"

47. Malm, "'This Is the Hell That I Have Heard of.'"

48. Nixon, *Slow Violence*.

49. Morton, *Ecology without Nature*; Dark Mountain Project, dark-mountain.net (accessed December 31, 2017).

50. Haraway, *Staying with the Trouble*.

Into Eternity, Skrimshire examines how we confess to the deep future our culpability for the temporal disaster of irradiated waste. Such an act involves, by necessity, a leap into "discontinuous time"; into a time so far distant from us that written communication is almost certainly impossible. For Skrimshire, confessing inaugurates "a radical encounter . . . with temporality and finitude," which might even "help orient ethical thought toward everyday encounters with deep time." Knowing ourselves as the ghosts who will endure in the dark ecological futures inaugurated by our collective actions should motivate us to think again about our relationship with deep time: not as distant and abstract but as an intimate and compelling element woven into our everyday lives.[51]

A fire made disastrous by the conflicting long-run ecological temporality of Australian ecology and settler colonialism; chunks of limestone buried under trees as a monument to the unknown future; domesticating deep time in the Mongolian landscape; the ways that violent interchange between the inner and outer Earth has shaped time itself; being hounded across the wetlands of East England and out of time; a confession to the future, bringing that which is concealed into public consciousness. In each of these six articles, deep time is not an undifferentiated line stretching through what Walter Benjamin famously labeled "homogenous, empty time."[52] They each, in different ways, work to remind us that "the past and present do not denote two successive moments, but two elements which coexist" and that, moreover, can fold, rupture, or stretch.[53] They each show the multiplicity of deep time as it enchants, threatens violence, and haunts our present moment. Collectively, the articles illustrate how the environmental humanities can multiply our temporal registers to reveal deep time as productive, homely, and wondrous as well as unsettling, uncanny, and dangerous.

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51. See Irvine, "Deep Time."
52. Benjamin, *On the Concept of History*.
53. Deleuze, *Bergsonism*, 59.

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