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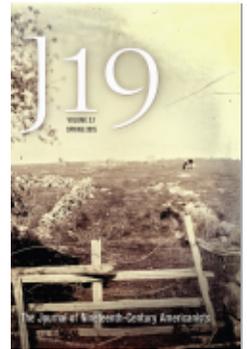
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## Tracking Prehistory

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7. The designs of the Firestone Plantations Company were a perverse instance of what I have elsewhere called the subjunctive mood of antebellum systematicity, in *Secularism in Antebellum America* (Chicago: University of Chicago Press, 2011). See also Timothy Mitchell, "Economicity: How the Future Entered Government," *Critical Inquiry* 40 (Summer 2014): 479–507.

8. On this kind of surreal temporality, see Daniel Oldier, *The Job: Interviews with William Burroughs* (New York: Penguin Books, 1989), 28.

9. Dipesh Chakrabarty, "The Climate of History: Four Theses," *Critical Inquiry* 35 (2009): 197–222.

10. Michel Foucault, "The Order of Discourse," in *Language and Politics*, ed. Michael J. Shapiro (New York: New York University Press, 1984), 108.

## Tracking Prehistory

**Dana Luciano**

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The mere idea of a footprint might not strike many as monstrous. Specify a dinosaur footprint, though, and that impression will probably shift. Dinosaurs, after *Barney* and *Dinosaur Train*, have become some of our friendliest monsters, lovable pets for the Pebbles and Bam-Bams within us all. Their fossilized prints are tourist attractions; at the Dinosaur Footprints Nature Reserve in Massachusetts, or Dinosaur State Park in Connecticut, visitors view *Eubrontes giganteus*, tracks from the early Jurassic period, now the official state fossil of Connecticut. Yet despite their usefulness for geological tourism and pedagogical fantasy, dinosaurs remain monstrous: alien and remote, sometimes massive, sometimes ferocious, and always, for all their familiarity, inaccessible.

That footprints can linger for millions of years after their creators have vanished stands as a fearsome reminder of our own impermanence. The estrangement impelled by the prehistoric footprint highlights its monstrosity as a matter of time, and time itself as always potentially monstrous. The track's deeply sedimented time unsettles through its intrusion into our own—an uncomfortable proximity shadowing endurance with evanescence, duration with annihilation.

The study of prehistoric footprints, a subfield of paleontology, began in the first half of the nineteenth century. In 1834, the footprints of an unknown beast, dubbed *Chirotherium*, were sighted near Saxony. In 1835, hundreds of prehistoric tracks were found in the Connecticut River Valley; analyzed most assiduously by the geologist-theologian Edward Hitchcock, the tracks captivated geologists on both sides of the Atlantic. Fossilized footprints had been sighted before, but their emergence as

geological phenomena required prior theorizations of deep time and of extinction by James Hutton and Georges Cuvier, respectively.

Recognizing prehistory's footprints, then, meant not only reckoning with a massive hole in time but also abandoning both biblical time frames and beliefs in species continuity, undermining ideas central to Western knowledge. Much—perhaps too much—has been made of Christian consternation over how geological time disrupted religious time. More, however, could be said about how prehistoric time disrupted itself, about the challenges posed by its massive unevenness, gaps, and weightiness, often so intense that the modern quest for stability through scientific self-knowledge might seem like a game of chance played in deep time. Prehistory entered the nineteenth century as, in effect, its dispossession.

\* \* \*

Is it possible to write a history of a time that dispossesses, one monstrous in its implications? If so, it would draw upon the complex historicity of monstrosity. Cultural-studies accounts endow the monster with an historical specificity: far from transcending time, monsters emerge from and reflect their constitutive conditions. But to say that the monster, as Jeffrey Jerome Cohen observes, is “an embodiment of a certain cultural moment” is also to show the multiplicity and uncertainty of moments: the *zeitgeist* that re/births the monster is itself monstrous, a “Time Ghost” haunted by its own alterity; it “inhabits the gap between the time of upheaval that created it and the moment into which it is received, to be born again.”<sup>1</sup> It persists, Cohen affirms, without identity, repeatedly returning as an interruption of particular presents; hence the study of monsters “must concern itself with strings of cultural moments, connected by a logic that always threatens to shift.”<sup>2</sup> If Cohen is right about how the monster displaces the moment it embodies, exposing its not-one-ness, we can recognize the monstrous time revealed by the dinosaur track as invoking, in turn, an interrupted historiography, a gathering of immensely dispersed moments that resist resolution into a singular narrative.

\* \* \*

The long-extinct beasts that fascinated the nineteenth century were not the first to haunt the obscurity of the deep past. Dragons and krakens, basilisks and titans competed for that position long before geology entered the field. Yet if there have always been creatures whose origins lie

in the dim recesses of time, their nineteenth-century manifestations interrupted the present differently thanks to the fractures they, authorized by science, signaled.

Geologists sought to ameliorate the trauma of the geological timescale by subsuming it under the law of progress, finding confirmation for the present order in the deep past. The process of stratigraphy, developed in the early nineteenth century by the British geologist and civil engineer William Smith, drew upon an emergent understanding of fauna sequencing gleaned from the fossil record. Scientists sought to correlate each new discovery with existing stratigraphic knowledge and to systematize each successive era, using deep time to make visible “one grand line of succession.”<sup>3</sup> Yet they were confronted by that line’s perpetual incompleteness. Charles Lyell’s three-volume *Principles of Geology* (1830–33) is often credited with making earth history legible and orderly. Adele Buckland points out, however, that Lyell’s insistence on the fossil record’s insufficiency meant that “geologists could never hope to know the pattern or shape of earth history, epic, progressive, or otherwise.”<sup>4</sup> That no other remains of *Eubrontes giganteus*, nor of other prehistoric creatures whose tracks bestrew the Connecticut Valley, have been located seems to prove this point.

Distinct from the vagueness of the primordial, the time-before-time that served to ground modernity, the fossil marks a particular kind of historical time that complicates how we frame the historical. It materializes the return that Jacques Derrida called hauntological: the presence of absence, of non-self-identity, prior to every claim to presence. Derrida’s specters, Steven Shaviro contends, repeat and transform his earlier articulations of trace by rendering this disruption the effect of a “residual, quasi-material insistence.”<sup>5</sup> Prehistory returns as something more than modernity’s chimerical fantasy: it presses upon modernity, affirming its complex imbrication within it. Incessantly shifting, repeatedly shifted, it is too massive to be moved, but refuses to stay securely in place.

\* \* \*

The creatures that made the Connecticut Valley tracks existed roughly two hundred million years before their nineteenth-century discovery, in the period geologists now call the Early Jurassic. They left prints in the mudflats of what was then a swampy, subtropical region, which hardened into sandstone as the earth cooled. Most were dinosaurs, ranging in size from five inches to over twenty feet long. The dinosaurs were social

animals, traveling in packs, as the groupings of tracks attest. (This paleontological observation contradicts what W. J. T. Mitchell identifies as the thoroughly cultural dinosaur-image, a distinctively American and largely twentieth-century phenomenon that bespeaks a rugged, rapacious individualism.)<sup>6</sup>

In geology's "heroic" period, numerous near-complete fossilized skeletons of gigantic beasts—mastodons, mammoths, giant sloths, and previously unknown species, including a number of the genera (*Megalosaurus*, *Iguanodon*, *Hylaeosaurus*) that Richard Owen grouped together in 1842 and named dinosaurs—were located, analyzed, and reconstructed on both sides of the Atlantic. Scientists hoped to find some of the bones belonging to the Connecticut Valley prints, not least to settle whether the prints were made by prehistoric birds, as Edward Hitchcock maintained, or, as many suspected, by the giant lizards Owen described. In 1845, Charles Darwin wrote to Hitchcock, "How sincerely I wish that you may live to discover some of the bones belonging to these gigantic birds."<sup>7</sup> Behind Darwin's sincerity lay his suspicion about Hitchcock's "bird" theory: birds, he and others believed, had not yet evolved in the early Jurassic. Hitchcock might surrender his theory, they thought, if confronted with other traces of the creatures. But Darwin's wish that Hitchcock might *live long enough* to make this discovery indexed part of what made prehistoric tracks so fascinating and yet so ominous: the temporariness of all life, embodied in death, hyperbolized in extinction.

Hitchcock did not, in fact, live to find those bones, nor have they been located since. Their failure to appear underscores another way that absence weighs upon the present; emphasizing the finality of loss across deep time, the monstrous illegibility of the past rubs uncomfortably against the ephemerality of its latter-day interpreters.

\* \* \*

Though geological time's massiveness should, in theory, have "denationalized time," as Wai Chee Dimock contends, in practice, geology effectively supported a nationalist US imaginary.<sup>8</sup> It replaced, Thomas Allen notes, America's recent historical connections to Europe with a deep and unique geological past.<sup>9</sup> The "inevitable" processes associated with natural history also propped up such policies as Indian removal and westward expansion. Instead of diminishing intrahuman distinctions, then, the geological timescale was called upon to support an emergent temporalization of racial difference. The term "prehistory," developed in the con-

text of archaeology, originally designated the study of “primitive” or preliterate human cultures that left behind no written documents. Geologists did not hesitate to align the deeply racialized notion of the primitive or savage with the prehuman era. In his 1858 treatise *Ichnology of New England*, Hitchcock declared of the gigantic prehistoric birds he believed had made the Connecticut Valley prints that the largest species were “worthy to be leaders of their respective tribes, if size and physical power be the ground of distinction among animals, as it is among savages.”<sup>10</sup> But prehistoric monstration proved an ambivalent technology of racial management. Linking racial others and extinct species granted white supremacy a geological alibi. Yet the “savage” bridge between prehistory and civilization also rendered the latter vulnerable to infection by the monstrous past, underscoring that the monster’s “difference is only relative,” even when buttressed by millions of years.<sup>11</sup>

The merely relative difference of prehistoric monsters is emphasized by the many ways they have been imagined as persisting into the present. Thomas Jefferson hoped that Lewis and Clark’s expedition would uncover evidence of the continued existence of mastodons, whose extinction he discounted by citing Delaware legend.<sup>12</sup> In an 1844 report, Hitchcock proposed that Captain Cook’s claim to have sighted a bird’s nest of a “most enormous size” off the coast of New Holland might prove that the prehistoric *Dinornis*, whose fossilized remains had recently been found in New Zealand, might yet live.<sup>13</sup>

Prehistory’s persistence offered a powerful imaginary lure. Geology textbooks delighted in theatrical stagings of geological history, offering, in pictures and prose, “restorations of the deep past” that brought dead time vividly back to life.<sup>14</sup> Many envisioned this past in brutal conflict with the present. Speculation on its return informed a fantasy genre we might designate the “prehistoric fold” tale, which capitalizes on the impossibility of modern civilization and prehistoric savagery by making them co-present. In Jules Verne’s 1864 novel *Journey to the Center of the Earth*, a mineralogy professor discovers that the earth’s interior hides such a fold, tenanted by dozens of now-extinct species.<sup>15</sup> The novel’s narrator, the professor’s nephew, is as terrified as his scientist-uncle is exhilarated by the scenes they witness; scariest of all is the sight of a gigantic humanoid he tries to convince himself must have been an ape, because the thought of humans in this setting, “entombed” within the earth among mastodons and pleiosauri and cut off from their kin on the surface, is unbearable.

Critics have aligned the genre with a number of distinctly modern anxieties that might be summed up in a single fear: the modern world's inability to master time, and the social forms it is supposed to uphold. In the prehistoric fold, modernity encounters time's capriciousness as well as its capaciousness. The fantasy of progress is unsettled by the wild extravagance of the time-before, the savage excesses of uncontrolled life. Nineteenth-century geologists labored to convince their readers that prehistory contained no monsters. "The structure of all the fossil forms of animal and vegetable bodies," Samuel St. John wrote in his midcentury textbook *Elements of Geology, Intended for the Use of Students*,

links them all into one grand, harmonious system, worthy of the great Contriver . . . "The animals of the antediluvian world," says Sir Charles Bell, the distinguished anatomist, "were not monsters; there is no *lusus* or extravagance. Hideous as they appear to us, and like the phantoms of a dream, they were adapted to the condition of the earth when they existed."<sup>16</sup>

But lingering traces of a Romantic conception of life as "a power independent of structure," as Denise Gigante describes it, a power without restraint and capable therefore of generating monsters, returned in visions of the prehistoric fold, resistant to the laws of progress.<sup>17</sup> As an "unthinkable excess of the living principle" that haunted the nineteenth-century scientific imagination, monstrosity, Amit Rai contends, was bound up with the origins of biopower.<sup>18</sup> Despite—or because of—the stratifying, systematizing work of religiously inclined geologists, who strove to deny the excesses of the deep past, monstrosity returned, in the prehistoric fold, as the power that drove modernity.

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In *Principles of Geology*, Charles Lyell speculated that geological time might contain a cyclical dimension. Illustrating the correspondence between the earth's surface and the temperature of the globe, he described the changes a cooling earth had seen and hypothesized that a return to prehistoric climates would extinguish present-day life forms and revive past ones:

Then might those genera of animals return, of which the memorials are preserved in the ancient rocks of our continents. The huge

iguanodon might reappear in the woods, and the ichthyosaur in the sea, while the pterodactyle might flit again through umbrageous groves of tree-ferns.<sup>19</sup>

This passage provoked Henry de la Beche, an English geologist and illustrator who vividly depicted prehistoric scenes based on the fossil discoveries of Mary Anning and other dinosaur hunters, to regroup and render a parodic *post*historical scene. In the sketch, titled *Awful Changes: Man Found Only in a Fossil State—Reappearance of Ichthyosaura*, a waistcoated and bespectacled ichthyosaurus lectures to younger dinosaurs who have just discovered a fossilized human skull. The ichthyosaurus muses on the strangeness of the creature's anatomy, asserting that it would have "belonged to the lower order of animals" because of its small jaw and "insignificant" teeth: "Altogether it seems wonderful," he adds, "how the creature could have procured food." The monstrous joke of *Awful Changes*, its inversion of prehistoric and present times, was common enough in geology's "heroic age." Once geologists began to reconstruct fossilized skeletons, imagining how prehistoric worlds might react to ours provided a playful check to human vanity. If dinosaurs' appearance to humans, in prehistoric fold tales, served to horrify, depictions of prehistory looking back at us suggested that they wouldn't much like us either.

The sketch also suggests the contingency of our own gazes. The ichthyosaurus Professor is hilariously wrong about Man, because it reads the fragmentary fossil from the perspective of its own life world, never imagining the opposable thumbs that permitted small-jawed humans to devise other means of obtaining food. Though it pokes fun at Lyell, the sketch confirms one of his

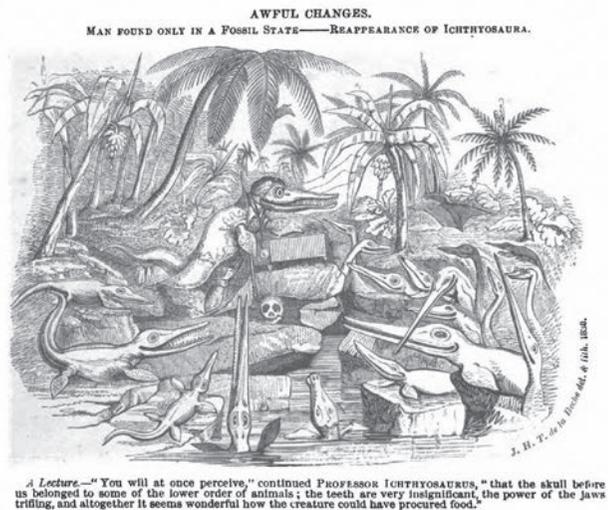


Figure 1. Henry De La Beche, *Awful Changes*, 1830.

most important observations: the incompleteness of the fossil record, the partiality and randomness of those “memorials” preserved in stone, renders the whole of prehistory unknowable, except when seen through our biases. Prehistory itself, then, constantly, mockingly shows us our limitations. Even as the progress of science increased mankind’s store of knowledge, the distorted mirror of prehistory reminded us not to become overly enamored of our own reflections.

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De la Beche’s jocular human-extinction fantasy might seem less funny in the midst of what some scientists describe as the sixth mass extinction event in the earth’s history.<sup>20</sup> The fifth, at the end of the Cretaceous period, vanished the dinosaurs, along with an estimated 78 percent of then-extant species. Today, species are being wiped out at alarming rates. Many of these extinctions result from anthropogenic influence on the planetary environment. Global transit has had a devastating effect: the introduction of geographically distanced species, via trains and ships and planes, to unfamiliar habitats wrecks havoc on local ecosystems. Yet the most ominous effect, most scientists agree, is increasing planetary warming, largely resulting from carbon-climate feedback, including widespread use of fossil fuels. The very term “fossil fuels,” as Rob Nixon observes, conveys the peculiar doubleness of our moment, our “living on borrowed time—borrowed from the past and the future.”<sup>21</sup>

The dinosaur’s footprint speaks to us not only of the past, therefore, but of the time to come. Time is once again monstrous, but in a different way. For Derrida, the speculative nature of the future, its radical unknowability, renders it a monstrosity.<sup>22</sup> But we might well say that our own time is more fearsome still. A deep-time perspective, comprehending long-term geological and climatological impacts is needed to address and arrest the changes that are undeniably taking hold, and that may, if unchecked, add humans to the list of endangered species. As Dipesh Chakrabarty observes, though, this perspective is almost unimaginable under current political systems, which have trouble seeing even fifty years into the future.<sup>23</sup>

Emissions drawn from the deep past cut the present off from itself, stranding it in a fog of denial and inaction. Our lovable dinosaurs—the cartoon friends enabling us to imagine our own adorable inner cavemen—take on a distinctly nostalgic cast in this light. Even the terrors of the prehistoric fold fade in comparison to this latest, potentially last, tem-

poral turn: the resurrection of prehistory's remnants to fuel the excesses of a civilization seemingly bent on self-destruction. If the weight of the human ecological footprint—already overstraining global biocapacity by as much as 30 percent—is not reduced, de la Beche's dinosaurs might yet have the last laugh. The ultimate monstrosity of the dinosaur's footprint, then, would be the way it reflects and predicts our own.

## Notes

1. Jeffrey Jerome Cohen, "Monster Culture (Seven Theses)," in *Monster Theory: Reading Culture* (Minneapolis: University of Minnesota Press, 1996), 4, 25n1, 4.

2. *Ibid.*, 6.

3. William Smith, *Stratigraphical System*, x, quoted in Noah Heringman, *Romantic Rocks, Aesthetic Geology* (Ithaca, NY: Cornell University Press, 2010), 172.

4. Adele Buckland, *Novel Science: Fiction and the Invention of Nineteenth-Century Geology* (Chicago: University of Chicago Press, 2013), 111.

5. Steven Shaviro, "Specters of Marx," *The Pinnocchio Theory*, posted February 8, 2006, accessed March 10, 2014, <http://www.shaviro.com/Blog/?p=474>.

6. W. J. T. Mitchell, *The Last Dinosaur Book: The Life and Times of a Cultural Icon* (Chicago: University of Chicago Press, 1998).

7. Charles Darwin to Edward Hitchcock, November 6, 1845; quoted in Nancy Pick and Frank Ward, *Curious Footprints: Professor Hitchcock's Dinosaur Tracks and Other Natural History Treasures at Amherst College* (Amherst, MA: Amherst College Press, 2006), 41.

8. Wai Chee Dimock, *Through Other Continents: American Literature across Deep Time* (Princeton, NJ: Princeton University Press, 2007), 28.

9. Thomas Allen, *A Republic in Time: Temporality and Social Imagination in Nineteenth-Century America* (Chapel Hill: University of North Carolina Press, 2007), 168.

10. Edward Hitchcock, *Ichnology of New England* (Boston: William White, 1858), 179.

11. Andrew N. Sharpe, *Foucault's Monsters and the Challenge of Law* (London: Routledge, 2010), 23.

12. Mitchell, *The Last Dinosaur Book*, 116.

13. Edward Hitchcock, "Report on Ichnolithology, or, Fossil Footmarks," *American Journal of Science and Arts* 47, no. 2 (July–September 1844): 314.

14. Ralph O'Connor, *The Earth on Show: Fossils and the Poetics of Popular Science* (Chicago: University of Chicago Press, 2007), 357.

15. See also Arthur Conan Doyle's *The Lost World* (1912) and Edgar Rice Burrough's *The Land that Time Forgot* (1915).

16. Samuel St. John, *Elements of Geology, Intended for the Use of Students* (New York: G. P. Putnam, 1851), 290.

17. Denise Gigante, *Life: Organic Form and Romanticism* (New Haven, CT: Yale University Press, 2009), 220.

18. Amit Rai, "Of Monsters: Biopower, Terrorism and Excess in Genealogies of Monstrosity," *Cultural Studies* 18, no. 4 (July 2004): 552.

19. Charles Lyell, *Principles of Geology: Being an Attempt to Explain the Former Changes of the Earth's Surface, by Reference to Causes Now in Operation*, vol. 1 (London: John Murray, 1830), 123.

20. Elizabeth Kolbert, *The Sixth Extinction: An Unnatural History* (New York: Henry Holt, 2014).

21. Rob Nixon, *Slow Violence and the Environmentalism of the Poor* (Cambridge, MA: Harvard University Press, 2011), 69.

22. Jacques Derrida, "Passages: From Traumatism to Promise," in *Points . . . Interviews, 1974–1994* (Stanford, CA: Stanford University Press, 1995), 386–87.

23. Dipesh Chakrabarty, "The Climate of History: Four Theses," *Critical Inquiry* 35, no. 2 (Winter 2009).