

Introduction

ANTHROPOCENE FICTIONS AT THE SCALE OF A LIFETIME

Kneeling before a pear tree, Lucy Snowe, the reserved and melancholic first-person narrator of Charlotte Brontë's final novel, *Villette* (1853), bids farewell to an impossible romance. Resigned that her love for the merry and charismatic Dr. John will remain unrequited, Lucy buries the evidence that conspired to convince her otherwise: letters he wrote in a friendly (and professional) bid to soothe her long-overwrought nerves. Having "wrapped them in oiled silk, bound them with twine," and secured her precious clutch of mis-sives inside an airtight container sourced from "a sort of broker's shop; an ancient place, full of ancient things," she retreats to a garden in the grounds of the school at which she is employed (328). Within this garden, she stages the burial and memorial ceremonies she needs to reconcile herself to loss:

Methusaleh, the pear-tree, stood at the further end of this walk, near my seat: he rose up, dim and gray, above the lower shrubs round him. Now Methusaleh, though so very old, was of sound timber still; only there was a hole, or rather a deep hollow, near his root. I knew there was such a hollow, hidden partly by ivy and creepers growing thick round. . . . I was not only going to hide a treasure—I meant also to bury a grief. That grief over which I had lately been weeping, as I wrapped it in its winding-sheet, must be interred. (328)

Though Methusaleh's improbable survival gently ironizes the ephemerality of Lucy's infatuation, its advanced age also lends dignity to her human love. Lucy's intimate knowledge of the pear tree, of its own past scars (the hole having formed over a very old wound), and of its companion species (the ivy and creepers no doubt drawing nutrients from Methusaleh's capacious roots) maps a microcosmic geography sacred enough for her mournful purpose. The roll of recent letters, preserved for the future by moisture-repellent oiled silk, then wrapped in an ancient object from a store full of ancient objects, tactfully combines the old and the new into a relic from the present to be discovered by a future excavation. Still, the limits of Lucy's ritualistic tact are reached as a cool hint of perfunctory abstraction routinizes the solemn ceremony:

Well, I cleared away the ivy, and found the hole; it was large enough to receive the jar, and I thrust it deep in. In a tool shed at the bottom of the garden, lay the relics of building materials, left by masons lately employed to repair a part of the premises. I fetched thence a slate and some mortar, put the slate on the hollow, secured it with cement, covered the hole with black mould, and, finally, replaced the ivy. This done, I rested, leaning against the tree; lingering, like any other mourner, beside a newly-sodded grave. (328–29)

Carefully stratified layers of letters, silk, oil, jar, tree, rock slab, cement, soil, and ivy materialize a private grief hidden in Lucy's heart, forming a hybrid composite of man-made and natural materials hidden in the depths of the garden where roots and soil meet. Wielding masons' tools, Lucy in mourning becomes a builder, transforming the physical space around her.

By contributing a new knot of human disturbances to rock, earth, flora, and fauna, Lucy Snowe contributes to Villette's development from low-lying marshland into a modern, industrial metropolis lined with broad avenues artificially lit. Lucy deposits a new stratum of history to a space already deeply veined with human and natural histories, for Brontë bequeaths to Villette the urban geology of Brussels, where Charlotte attended and taught at the Pensionnat Héger-Parent. Located on the Rue d'Isabelle, which followed the original city walls and their fortified trenches, the school straddled the vertical and horizontal boundaries between the medieval Basse-Ville, or Lower Town, and the modern Haute-Ville, or Upper Town, constructed in the late eighteenth century. The now-sunken space could be accessed by descending the Escalier de la Bibliothèque, a long flight of stairs, such that the Rue d'Isabelle was literally below the new town, occupying a deeper stratum of Brussels. Confirming that

Charlotte knew this history, Elizabeth Gaskell, whose account emphasizes the organisms that flourished there, wrote,

In the thirteenth century, the Rue d'Isabelle was called the Fossé-aux-Chiens; and the kennels for the ducal hounds occupied the place where Madame Héger's pensionnat now stands. A hospital (in the ancient large meaning of the word) succeeded to the kennel. The houseless and the poor, perhaps the leprous, were received, by the brethren of a religious order, in a building on this sheltered site; and what had been a fosse for defense, was filled up with herb-gardens and orchards for upwards of a hundred years. (160–61)

Throughout the neighborhood's diverse history, each repurposing of the space organized living beings and building materials atop superseded infrastructures, only to deposit eventually its own seam of lithic and organic markers. A common thread of refuge unites these uses. Confirming this portrait of seclusion, Helen MacEwan notes that the school's walled garden protected it from the street, and that the land had been used by the guild of crossbowmen who guarded the city and maintained a secret passage in case of siege. McEwan concludes, "All these layers of history and legend surrounding the site of the Pensionnat and its garden—the medieval convents, the crossbowmen's exercise ground, the story of their secret underground escape passage—must have contributed to the Gothic atmosphere of Charlotte's novel" (80). Charlotte's decision to rename the Rue d'Isabelle the Rue Fossette certainly adds a morbid touch to her rendition of Brussels. Typically translated as "Little Ditch Street," connecting it to its ancient role as a trench for defense, it could also be translated as "excavation" or "grave," which vividly dovetail with Lucy's excavation of Methusaleh's hidden hole to dig a grave for her beloved's correspondence.

If she lives in "Little Grave Street," is Lucy buried? Such an interpretation is borne out by the legend of a nun haunting the school. As MacEwan explains, the slab covering the crossbowmen's passageway in the real-life Pensionnat Héger-Parent inspired *Villette's* legend that a medieval anchorite was buried alive beneath Methusaleh (79). Cool and skeptical, Lucy contextualizes the supernatural tale within *Villette's* history of urban development:

The ghost must have been built out some ages ago, for there were houses all round now; but certain convent-relics, in the shape of old and huge fruit-trees, yet consecrated the spot; and, at the foot of one—a Methuselah of a pear-tree, dead, all but a few boughs which still faithfully renewed their

perfumed snow in spring, and their honey-sweet pendants in autumn—you saw, in scraping away the mossy earth between the half-bared roots, a glimpse of slab, smooth, hard, and black. The legend went, unconfirmed and unaccredited, but still propagated, that this was the portal of a vault, imprisoning deep beneath that ground, on whose surface grass grew and flowers bloomed, the bones of a girl whom a monkish conclave of the drear middle ages had here buried alive. (117–18)

This richly textured garden sediments the living atop the dead, the flourishing below the dying, the organic beside the inorganic, tied together by soil composed of inert minerals capable of supporting life. The garden physically preserves histories of life and death at multiple scales: the biblically ancient tree, dying at a rate so slow as to be nearly imperceptible; the novitiate, whose death centuries ago seems more swift and certain than the tree's but is called into question by the ghost; the flowering and fruiting plants, with their annual rhythms of hibernation and resurrection; Lucy's love for Dr. John, newly deceased. Despite Lucy's unbelief, the nun visits her three times—as well she might, as Lucy's epistolary ritual may have desecrated her grave.

The sexual symbolism of the pear tree and the nun, killed for a “sin against her vow” (118), betrays Lucy's unease at her unfaithfulness as she falls in love with fellow teacher M. Paul Emanuel. Not coincidentally, the nun's first visitation occurs immediately after Lucy buries the letters—an act that unearths links between her recent past and the nun's distant past, itself linked to a still-deeper past tied to the ancient pear tree. Apparitions suggest that past is not past, which is why, even after the apparition is unmasked as a flesh-and-blood beau of a student, this discovery neither deflates Lucy's fears that the past will reanimate nor restores her faith that the school is a sanctified refuge. This fear and this profanation haunt her perambulations of the garden, which she now perceives as a graveyard whose organic contents are capable of rising again:

Pausing before Methusaleh—the giant and patriarch of the garden—and leaning my brow against his knotty trunk, my foot rested on the stone sealing the small sepulcher at his root; and I recalled the passage of feeling therein buried; I recalled Dr. John; my warm affection for him; my faith in his excellence. . . . Was this feeling dead? I do not know, but it was buried. Sometimes I thought the tomb unquiet, and dreamed strangely of disturbed earth, and of hair, still golden, and living, obtruded through coffin-chinks. (401)

Lucy's foot, virtually descending her personal "Escalier de la Bibliothèque" into the written record of her romantic history, plumbs pasts both earthly and human, written in rock and in ink.

The horror of "dream[ing] strangely of disturbed earth" is the threat of the Anthropocene. The recognition that humans have been the most powerful force influencing the Earth's geosphere, that we have been so for two hundred years, that we are realizing it belatedly—all are contained in the drama of Lucy's epistolary sepulcher. Lucy must face that her personal past persists though she buries it in the ground, where it interacts with the garden's other organic and lithic inhabitants. Sudden revelations that her actions and material traces will shape the future in ways she cannot predict, and that her life is intimately affected by the human and natural histories of the ecosystems she inhabits, reproduce at the microcosmic scale of a single human being the Anthropocene concept: the thesis that we live in a new geological epoch dominated by human activities that cause climate change, pollution, ocean acidification, biome destruction, mass extinctions, and increased incidence of catastrophic weather events. Following biologist Eugene Stoermer (who coined the term in the 1980s) and atmospheric chemist Paul Crutzen (whose publications popularized the term at the dawn of the twenty-first century), geologists, climatologists, and environmental scientists argue that the Holocene ended at the beginning of industrialization, which ushered in the new "human age." In 2017, the Subcommittee on Quaternary Stratigraphy Anthropocene Working Group, an advisory unit for the executive committee of the International Union of Geological Sciences, published its formal confirmation that sufficient evidence exists to establish a distinct geological epoch. It also reported that the precise moment and location of its onset—a consensus for its temporal onset, the Global Standard Stratigraphic Age (GSSA), and its spatial onset, the Global Boundary Stratotype Section and Point (GSSP), commonly referred to as the "golden spike"—could not yet be determined. The quarter century it took for the subcommittee to confirm the Anthropocene's existence indicates how hard it is to locate links that tie ecological shifts to human actions. The slow pace of geological change makes it difficult for some individual humans to perceive the causal networks that trace contemporary climatological and ecological disturbances to human actions two centuries ago. But, in the tapping of Lucy Snowe's foot at the base of an ancient pear tree, we can discern a glimmering of just such an awareness.

Charlotte Brontë wrote the Anthropocene at the scale of a lifetime. Beyond *Villette*, each of Brontë's novels offers a human-sized glimpse into the end of

the Holocene and the beginning of a new era. Brontë's protagonists are canaries in the coal mine of the Anthropocene, barometers whose experiences register multiple temporal scales of anthropogenic change, from the murky depths of geological deep time to the prehistoric processes by which humans began to reshape their environments permanently (including their degradation of forested uplands to produce the moors with which the Brontës are associated), and from the lived memories handed down by one generation of survivors to another to the constricted chronological palette of an individual human life or single annual cycle of seasonal changes. Individually, each of her novels depicts a protagonist becoming aware of, or actively resisting her awareness of, ecological change as she struggles to describe a newly toxic Earth. Collectively, Brontë's oeuvre charts an author who, clinging tenaciously to Holocene narratives of triumphant, beneficial human mastery over the nonhuman world, mourns the fall of an Edenic Earth but gradually constructs narrative techniques appropriate for representing human–nature interactions in impure, often dangerous landscapes. Brontë was perfectly positioned to do so because she grew up in a mill town in Yorkshire in the early nineteenth century. A clergyman's daughter, she was in contact with the families of factory hands. An inveterate walker, she would have seen the changes to the flora, fauna, and rocks of the moors around her. Indeed, she was a keen observer; as family friend Ellen Nussey recalled of her long walks, "Every moss, every flower, ever tint and form, were noted and enjoyed" (quoted in C. Brontë, *Letters* 1:598). These experiences are crucial for interpreting Brontë as a theorist of human-caused ecological change because the moors are anthromes—anthropogenic biomes¹—created by prehistoric deforestation, then shaped by grazing, hunting, resource gathering, afforestation, and enclosure, which were actively changing Haworth Moor during her life.² Consequently, she was one of the first novelists to witness and record the early environmental changes wrought by the Industrial Revolution. Scientific consensus first pinpointed the new epoch's GSSP and GSSA at the turn of the nineteenth century in England's industrializing North. Because Brontë lived at the most widely accepted temporal and spatial turning point at which humans became Earth's most powerful force, she constructs some of the first literary ecosystems animated by anthropogenic (human-caused) change. An attentive witness of the Anthropocene, Brontë synthesized her personal experiences of this new epoch with the warnings and images articulated by early ecologists and with local and national folklore about human interactions with the natural world. This mix of direct and indirect experiences of the nonhuman world were then subjected to Brontë's

idiosyncratic mixture of literary genres and inherited tropes—including the descriptive patterns and progressive teleologies of realist fiction; the mutually constitutive links between nature and imagination posited by Romantic poets; and the plot devices of female danger, spatial claustrophobia, and supernatural apparitions typical of the Gothic mode—and adapted them for a variety of fragile ecosystemic settings, including industrializing villages, urban gardens, diseased valleys, and devalued moors.

The rise of Anthropocene theory allows us to reexamine Charlotte Brontë as a keen observer of ecological change whose texts connect human actions and fates with those of nonhuman species and spaces. It reveals that Brontë's novels theorize how individual lives influence and are influenced by “natural” phenomena such as pollution, deforestation, urbanization, extinction, geological mass movements, and adverse weather events. By exploring the links between these ecosystemic events and her characters, Brontë's authorship practices constitute what Anna Lowenhaupt Tsing et al. consider the “arts of living on a damaged planet” and argue (in their collection of the same name) are vitally necessary:

Our era of human destruction has trained our eyes only on the immediate promises of power and profits. This refusal of the past, and even the present, will condemn us to continue fouling our own nests. How can we get back to the pasts we need to see the present more clearly? We call this return to multiple pasts, human and not human, ‘ghosts.’ Every landscape is haunted by past ways of life. (2)

To assert that Brontë knew how to live in and write about a damaged planet, that her protagonists are haunted by the ecological ghosts of the past, is not to assert that Brontë was an ardent environmentalist—her novels and letters were as likely to deprecate the moors as to rhapsodize over them—but to insist that she drew connections between the Earth's deep and recent past with such an agility that those who accept the Anthropocene hypothesis may want to pay renewed attention to her oeuvre. My insistence intends to ameliorate Jessie Oak Taylor's observation: “The most striking thing about reviewing the field of Victorian ecocriticism is that there is so little of it” (“Ecocriticism” 877). It also responds to Barbara T. Gates's call for “greening” literary studies by “broadening our scope of interest to include more works by women and more science writing” (“Greening” 13). Gates explains: “Since Charles Darwin sits so firmly at the middle of our century, it is primarily in scholarship on evolution that we Victorianists have led the way in green studies”; she prais-

es recent works interested in animal studies, in amateur natural history, and in the “darker side of the picture,” including the speciesism that pervades much nineteenth-century literature (11). I adopt this position by centralizing Victorian science writers who were not focused on evolution as key interlocutors for Brontë and by underscoring the troubling anthropocentric elements of her fiction. Charlotte’s literary ecosystems have fascinating dark sides: rather than craft perfectly pure landscapes, her texts unflinchingly include the banal, the ugly, the dangerous, and the anthropogenic. Just as Jeffrey Jerome Cohen’s *Prismatic Ecology* insists that ecology should not champion only the green—the normative color of ecology associated with thriving organic life—Brontë’s landscapes are gray, brown, and purple, some flourishing but many weakened or endangered. Some of them are toxic, aesthetically displeasing, subject to bad weather, or uncomfortable to occupy in ways peculiar to the Anthropocene.

Drawn to what is “poor, plain, obscure, and little,” like *Jane Eyre*’s heroine (292), Brontë did not fall into the trap of paying attention only to charismatic or marquee species dripping with anthropomorphic appeal.³ As Bruno Latour cautions, “everything perceived is nature. We may not pick and choose” (“Critique” 244). Not being choosy is central to multispecies ethnography, an approach in anthropological fieldwork and research informed by the Anthropocene. Multispecies ethnographers investigate human-nonhuman interdependencies in ways that are sensitive to climate change, biome destruction, and other anthropogenic phenomena that affect nonhuman organisms. They also privilege “[c]reatures previously appearing on the margins” and “new kinds of relations emerging from nonhierarchical alliances, symbiotic attachments, and the mingling of creative agents” (Kirksey and Helmreich 545–46). This is an apt characterization of Brontë’s approach to human-nonhuman interaction because Brontë does not essentialize animals but instead traces material networks of interspecies exchange, violence, and protection—necessary work for decentering the human in our planetary histories. As Bailey Kier argues, the point is “not to put animals or other things on a pedestal or to include them, but to begin to map our interdependencies in larger systems of relational re/production” (306). Investigating these systems helps to analyze why and how humans instrumentalize the nonhuman. Consider *Jane Eyre*’s pronouncement: “I am no bird; and no net ensnares me; I am a free human being with an independent will” (293). Rather than express affection or empathy, Jane defines herself against birds to negotiate her own species-being: to clarify the traits of the *Anthropos* so she may claim all of its endowments—in this case, free will.

This and other short-term human-animal interactions are at the heart of Brontë’s Anthropocene because they historicize species boundaries, showing

them as contested and contingent yet central for human assumptions about the extent to which they can, and should, control the nonhuman world. At the expanded chronological scale of geology, Brontë's oeuvre represents the inanimate world, including rocks, plants, and land formations, as spaces and forces that we "inhabit," rather than simply "observe as landscape or panorama," suggesting that her work can be productively investigated according to the "geological turn" in cultural studies and philosophy. Elizabeth Ellsworth and Jamie Kruse observe this turn in their introduction to *Making the Geologic Now*, which argues that thinking geologically allows scholars to investigate "infrastructures, communities, and imaginations to a new scale—the scale of deep time, force, and materiality" (25). Mark McGurl similarly documents the rise of "a new cultural geology:" "a range of theoretical and other initiatives that position culture in a time-frame large enough to crack open the carapace of human self-concern, exposing it to the idea, and maybe even the fact, of its external ontological preconditions, its ground" (380). McGurl names speculative realism and object-oriented ontology as examples, ultimately tying the rise of cultural geology to the spread of Anthropocene theory from the sciences to the humanities, whose methods illuminate how the concept "exacerbates and magnifies the dilemma of human agency, locating the blowback of the waste products of modernization on the blurry line between intention and accident" (383). *Charlotte Brontë at the Anthropocene* performs cultural geology by showing how Brontë grapples with the problem of human agency, posing questions about what it is, who has it, what its consequences are, how to trace the past actions that produce "these waste products of modernization," and how to prevent their recurrence in the present and future.

WHOSE SPIKE IS RIGHT?

AN OVERVIEW OF THE ANTHROPOCENE CONCEPT

The Anthropocene concept is the proposal that geologists formally declare a third epoch in the Quaternary period of the Cenozoic era. Geologists have argued that there exists enough distinctive stratigraphic evidence to recognize that the Anthropocene has succeeded the two already agreed-upon epochs of the Quaternary period, the Pleistocene and the Holocene. Its etymology, the "age of the human," suggests the rationale for the proposal: that human actions have so decisively altered the Earth's geosphere—its lithosphere, atmosphere, biosphere, and hydrosphere—that the species now constitutes a geological force. Erle C. Ellis refers to humans as "ecosystem engineers," ar-

guing that the “changes in the terrestrial biosphere made directly by human populations and their use of land represent the emergence of a suite of novel geologic processes in the Earth system comparable in scale with those used to justify the major divisions of geologic time” (1010–11). Stoermer has used the term since the 1980s, but Crutzen and Stoermer’s short piece in the *IGBP Global Change Newsletter* in 2000 and Crutzen’s 2002 piece in *Nature* drew broad attention to it.⁴ As Jon Erlandson and Todd Braje note, “It was not until Crutzen and Stoermer explicitly proposed that the Anthropocene began with increased atmospheric carbon levels caused by the industrial revolution in the late 18th century (including invention of the steam engine in AD 1784), that the concept began to gain momentum among scientists and the public” (2). Jill Schneiderman cites the establishment of scholarly journals devoted to the topic, including *The Anthropocene* (2013), *Elementa: Science of the Anthropocene* (2013), and *The Anthropocene Review* (2014), as a decisive sign of the “rapid escalation of engagement with the idea by the scientific community” that the human species had become “a new driver of earth systems” (171). In 2003, Crutzen and Will Steffen claimed, “In terms of key environmental parameters, the Earth System has recently moved well outside the range of natural variability exhibited over at least the last half million years. The nature of changes now occurring simultaneously in the Earth System, their magnitudes and rates of change are unprecedented and unsustainable” (253). But because natural variations in global temperatures and atmospheric carbon dioxide do occur, the burden of proof placed on the Subcommittee on Quaternary Stratigraphy’s Anthropocene Working Group was steep. As they deliberated, as Schneiderman points out, geoscientists offered other proofs of sufficient change in the lithosphere:

human-induced erosion and denudation of landscapes through agriculture, construction, and, indirectly, the damming of rivers equates to a distinct lithostratigraphic signal. Mineralogical, biological, and chemical evidence also offers distinct signals of a new geological epoch. . . . Human modification of the landscape is responsible for significant increases in terrestrial erosion and sedimentation and *has* produced mappable rock units of artificial deposits. Increased extinction rates since the Holocene began *have* diminished certain kinds of creatures in the fossil record. Burning of fossil fuels *has* changed carbon and nitrogen rates globally and caused particles from combustion to appear in sediments worldwide. (185–86)

Though official agreement with such assertive arguments was slow to come from the International Union of Geological Sciences, whose advisory body took until 2017 to publish an affirmative verdict, climatologists and ecologists also identified a number of non-stratigraphic physical markers of profound planetary change, including changes in the terrestrial biome that will eventually leave stratigraphic traces. Ocean acidification, rising sea levels, and loss of sea ice are cited as signs that humans have irrevocably changed the planet, while others suggest that a sixth mass extinction event is occurring or point to increases in extreme weather events.⁵

For humanities scholars interested in the Anthropocene concept, this proliferation of diverse types of physical data and scientific methodologies should not obscure the fact that scientists agree with an insight common in the humanities: that there is no unified “Nature” that can be considered apart from man. One of the most influential pieces on the Anthropocene, Dipesh Chakrabarty’s “The Climate of History: Four Theses,” opens “with the proposition that anthropogenic explanations of climate change spell the collapse of the age-old humanist distinction between natural history and human history” (197). James Proctor ponders the consequences of “the Anthropocene’s challenges to naturalness” for ecologists, who must make a case for action not based on traditional concepts of nature, which “is no longer as natural as it once was (or seemed)” (83), while geographer Jamie Lorimer stresses the profundity of this insight finding public acceptance, writing that the theory “represents a very public challenge to the modern understanding of Nature as a pure, singular and stable domain removed from and defined in relation to urban, industrial society” (593). The Brontë family—who lived at Haworth Parsonage, above them the moors, below them the factories belching smoke that floated upward back toward the parsonage and moors—were certainly faced with such a challenge. Crutzen’s 2002 article locates the GSSP and the GSSA very near them, around 1800 in industrial Britain. Terry Eagleton was prescient to claim in 1975 that the Brontës “were quite literally writing at the source of global industrial society. To be provincial writers at this particular time and place, ironically, was to spring from a setting of world-historical significance” (xii). In 2003, Crutzen and Will Steffen examined the climatological histories contained in polar ice to show that “records of atmospheric CO₂, CH₄, and N₂O show a clear acceleration in trends since the end of the 18th century,” justifying a location of the GSSA at “about that time, immediately following the invention of the steam engine in 1784” (251). Schneiderman agrees, summarizing,

Impacts of human activity on earth are discernible in the stratigraphic record going back thousands of years beyond the Holocene. However, extensive and roughly synchronous world changes to the earth system in terms of greenhouse gas levels, ocean acidification, deforestation, and biodiversity deterioration occurred . . . from the start of the Industrial Revolution. (190)

E. A. Wrigley elaborates on this link between an industrialization-caused increase in fossil fuel and a panoply of other effects that do not initially seem linked to James Watt's invention of the steam engine. Essentially, massive growths of human populations are possible in industrial economies, putting more pressure on ecosystems. With "the limits to growth inherent in organic economies no longer constrained productive capacity," Wrigley contrasts an industrial with an organic economy—ones whose industries are powered by human and animal labor:

mineral-based economies created in the wake of the Industrial Revolution were on a different footing. They had gained access to a vast store of energy bequeathed to them by events which had taken place hundreds of millions of years earlier. But, as a result, their economies were consumptible rather than fungible in character. A ton of coal, like a slice of cake, once consumed cannot then be consumed again. . . . [T]he initial character of the economies created by the industrial revolution makes them vulnerable in the medium term to a degree unknown in organic economies. (24)

Capitalists' solution for this vulnerability—constant growth—translated to a rise in dairy herds, beef cattle, and cereal crops, driving toward the synthesis of artificial fertilizers and the conversion of more land to agricultural uses. In the United Kingdom, Wrigley reports, coal energy consumption rose from 4,295,000 tons in the 1750s to 11,195,000 tons in 1800 (37).

Not all agree that the North of England at the beginning of the Industrial Revolution is *the* golden spike, that "one carefully selected place on earth where the best combination of stratigraphic signals can be found" (Schneiderman 190). Some propose the Paleolithic discovery of fire, the Neolithic growth of agriculture, the domestication of animals, the forest clearances of the Middle Ages, the early-twentieth-century invention of industrial nitrogen fixation, or the Great Acceleration of the mid-twentieth century, with its rise of chemical and nuclear weapons and widespread use of synthetic fertilizers.⁶ William Ruddiman's early anthropogenic hypothesis pinpoints preindustrial farm-

ing and biomass burning as the original source of anthropogenic effects on global climate, though he acknowledges that industrialization caused a rapid increase in the production of greenhouse gases. Ruddiman later clarified by positing three notable preindustrial increases in atmospheric carbon dioxide and methane: the rise of agriculture seven to eight thousand years ago, the intensification of animal husbandry five thousand years ago, and the genocides and pandemics caused by European exploration of the New World five hundred years ago.⁷ Though this latter potential spike is often euphemized as the “Columbian Exchange”—glossing over genocide with a cheerful rhetoric of reciprocal exchange that, at least, emphasizes the importation of new species both ways across the Atlantic—ethically driven reportage cites 1610 because it registers the precipitous change in carbon dioxide levels after the mass deaths of Native Americans.⁸ In “The Inhuman Anthropocene,” Dana Luciano warns, “Numerous cosmologies hold that the Earth will remember acts of intra-human violence, that the planet itself will testify to the brutality humans have inflicted upon members of their own species,” and attributes the Anthropocene to “the global dissemination of a specifically Western idea of humanism that posits itself as universal but endlessly defers the truly universal distribution of the benefits it confers, one that legitimates and covers over the violence, racial, colonial and otherwise, done in its name” (n.p.).

Luciano’s dizzying, yet defensible, leap from polar ice to structural racism illustrates why these spikes proliferate: the stakes are so high. Assigning responsibility for planetary collapse is a grim business. It is also multifold: a proliferation of golden spikes results from disciplinary differences. A geoscientist examines different kinds of evidence than an atmospheric chemist, paleoclimatologist, geologist, biologist, geographer, or cultural historian. This different data is then examined through different methods to answer different sorts of questions. When polar ice, fossils, global temperatures, or geochemical records are consulted, different spikes emerge. The theory of the Great Acceleration, for example, builds on empirical evidence related to marine overfishing, shrimp culture, paper production, and water use—variables for which control data does not exist before World War II.⁹ Without historical comparisons, the conclusion they draw is not falsifiable, and the evidence for the mid-twentieth-century spike cannot be weighed fairly against the thinner record that persists from two centuries earlier. More worryingly, Braje and Erlandson note, “specific thresholds, tipping points, or developmental indicators used to define the start of the Anthropocene are often directly influenced by the research agenda of the author” (118). Their use of the loaded

term “agenda” suggests an unwillingness to acknowledge broader disciplinary limitations, which would unmask the “neutrality” to which scientific research aspires. This threat must feel quite real to skeptics who read verdicts like Luciano’s that the “Anthropocene offers climate change not just periodicity but narrativity. And like any well-told story, it relies upon conscious plotting and the manipulation of feeling” (n.p.).

As a result, some scientists believe that “the drive to recognize the Anthropocene is political rather than scientific” (Schneiderman 171). Ellis and Trachtenberg agree that some scientists are wary of a concept that non-scientists find compelling for its emotional and narrative content. It is because the Anthropocene concept has “moral content at its core, rather than being only a scientific concept with a detachable moral significance” that it has gained traction with humanists, social scientists, and the public (n.p.). In their very title, “Is the Anthropocene an Issue of Stratigraphy or Pop Culture?,” geologists Whitney J. Autin and John M. Holbrook hint that there is only one possible answer to the question. Other scientists show greater receptivity to approaches deriving from the humanities and social sciences. Schneiderman, declaring that “the term has captivated popular and scholarly imaginations,” speculates that “the stratigraphic debate is much less interesting than dialogues about the Anthropocene in which scholars across disciplines are engaged” because the “acknowledgment of a new epoch can enable perception of systems of oppression that have led humanity down this path” (186, 187). Steffen et al. accordingly praise Anthropocene theories’ linguistic and social dimensions:

Virtually no analyses consider the psychological impacts or consequences of global change on individual humans and on their societies. Many in the scientific community may consider these aspects to be irrational and inconsequential. Yet, in the final analysis, it will be the human perceptions of global change and the risks associated with it that will determine societal responses. (*Global Change* 247)

Karl Butzer similarly believes that the risks of ecological disaster means that we should accept the Anthropocene hypothesis rather than wait for consensus settle on a golden spike. “Current popular interest is to be welcomed,” he insists, “particularly if it can be channeled into innovative academic nodes with committed students, faculty, and institutional leaders, to provide experienced scientific teaching and address genuine research projects” (1540). Butzer’s ultimate goal is to replace the golden spike with “a flexible, time-transgressive concept, rather than a firm time-frame, that should stimulate identification

and investigation of centers of early or unusual human disturbance” (1539). And Butzer’s disarmingly candid bid for help—“I presume that our word-smiths can suggest a more elegant way” to express the “divergences and discontinuities” that stymie scientific consensus (1541)—attests that the rise of Anthropocene theory has caused an intellectual crisis.

This intellectual crisis cannot be fully thought through without using the tools of the humanities to understand the risks and suffering associated with environmental change. Julia Adeney Thomas reflects, “it is impossible to treat ‘endangerment’ as a simple scientific fact. Instead, endangerment is a question of both scale and value” (1588). Consequently,

biology is not going to ease our responsibility to understand the human figure on the scales at which we can transform the political and social structures currently ratcheting up global warming. Instead, historians and others in the humanities and social sciences bear the responsibility of describing the values, political institutions, and economic activities that have pertained in past societies so that we can denaturalize present conditions and expand our thinking about possible options. (1605)

Doing so will not only help to resolve problems related to locating the GSSP and GSSA, but also to scale down Anthropocene theory and the phenomena it describes. This difficulty in scale motivated Timothy Morton’s *Hyperobjects* (2013), which deems climate change to be so large in both physical size and temporal existence that it defies understanding. Andreas Malm also characterizes it as a concept whose complex temporality resists thought. Relating the millions of years it took for fossil fuels to form both to the centuries of infrastructural development that enabled the Industrial Revolution and to the narrow timescale of a momentary crisis is difficult because the effects of fossil fuel dependence are delayed, making climate change “a messy mix-up of time scales. The fundamental variables of the process . . . operate over seemingly unrelated temporal spans” (8). Thomas similarly muses, “In considering the Anthropocene, all scales matter, but it is not clear that they all matter equally” (1589). Irresolution around the golden spike is a symptom of this scalar problem; each spike proposes a wildly different age for the new epoch—eight thousand years ago? Four hundred? Two hundred? Seventy? Despite these inconsistencies, the concept of the spike offers a productive way to pose questions about environmental destruction: Who did it? Why? When? Rather than trying to resolve on a single spike once, we should see their proliferation, paradoxically, as a sign that a sophisticated model of Anthropocene temporality

is developing. In this sense, the flexible account for which Butzer pleads already exists: debates over the golden spike show that Anthropocene theory is a powerful discourse that, when taken as a conceptual landscape of related theories, allows us to understand that climate change and ecological crises occur over a series of overlapping spatial and temporal scales.

SCALES AND DETAILS: REGIONAL REALISM FOR THE ANTHROPOCENE

Literature offers models for how different scales of temporal and spatial phenomena can be productively crafted into a single cultural object—a narrative—capable of recording local conditions at particular historical moments, registering human attitudes toward nonhuman organisms, and influencing how they view their environment. Stories do not stand apart from the rise of the Anthropocene, whether by that term we mean the intellectual concept or the ecological condition. This is why, to explain why “the humanities also offer virtual conceptual and methodological tools for grappling with ecological catastrophe,” Jesse Oak Taylor explains, “[w]ords, images, and stories are among the oldest of human tools” (*Sky* 16). He argues that fiction “helps reconcile the expansive timescales of evolution, climate, and geological change with those of human history and everyday life” (11). Tsing also reasons that “a rush of troubled stories is the best way to tell contaminated diversity” (*Mushroom* 34). Moreover, narrative structures the very concept of the Anthropocene; many consider it to be a story. Geographer Holly Jean Buck defines it as “a collection of multiple, related stories . . . adding up to something more than its pieces” (369–70). These recent insights refresh Donna Haraway’s 1989 dictum that scholars must “insist on value and story-ladenness at the heart of the production of scientific knowledge” and to regard science as “part of the field of practices that make meanings for real people accounting for situated lives” (*Primate* 3). Latour also outlines strategies for making meaning at a time when environmentalist arguments that rely on “producing indisputability” through the universally agreed-upon truths will fail. What is needed is the “slow process of composition” (“Manifesto” 478). Nature is no longer “always already there,” but an “assemblage to be slowly composed” by writing narratives that emphasize “discontinuity, invention, supplementarity, creativity” (477). Here, Latour dovetails with Rita Felski, who argues that literary studies should move beyond the hermeneutics of suspicion, which places the meaning of a text always outside of that text. Felski explains, “critics read against

the grain and between the lines; their self-appointed task is to draw out what a text fails—or willfully refuses—to see” (1). Both Latour and Felski turn back to reading and writing, asking us to pay attention to the details and patterns that shape powerful narratives. I turn the same way, relying here upon close reading and structural analysis.

Description, the abundance of which is a primary trait of Victorian realism, becomes of paramount importance. For Latour, a well-composed narrative activates public and scholarly interest in climate change by gathering empirical facts into heterogeneous narratives that refuse to resolve into a unity. What is needed is a “*stubbornly realist attitude*” that “reconnects scientific objects with their aura, their crown, their web of associations,” thereby acknowledging the importance of enfolding subjective emotion and perception into “realistic” narratives (“Manifesto” 231, 237). Proctor also advises paying “attention less to generalities of nature than the interwoven details that constitute our environment” (83). Haraway’s continued commitment to storytelling for withstanding ecosystemic collapse requires “establishing the reality and vivid specificity” of the Anthropocene by carefully situating narratives of ecosystemic change, which must emerge from “*this place, not just any place*” (*Chthulucene* 39). Butzer also values precise accounts of local experiences because “what is apparently true in one sector of a particular environment is not necessarily applicable in another” (1540). These resonant remarks connecting scholars from archaeology, ecology, science studies, and literary criticism suggest that detailed, localized, focused case studies are especially fruitful. This is not to say that it is impossible or uninteresting to connect each atomic unit of ecosystemic storytelling to broader regional trends and historical shifts, but to say that microscopic tools—such as single-author monographs—can contribute powerfully to the creation of multidisciplinary, multi-spike field of Anthropocene scholarship. Constructing locally embedded, historically specific narratives rich in thick description could constitute a genre of literary criticism that is properly Anthropocenic, in which subjective experience is shaped directly by personal experiences of the nonhuman world and indirectly through a variety of written and oral sources that provide authors with imagery and tropes to adopt, adapt, or reject in order to connect a local, individual experience of human-caused environmental stress with the broader spatial and temporal scales of the Anthropocene.

More specifically, investigating Charlotte Brontë provides this kind of deep, regional insight into Anthropocene theory’s initial GSSP and GSSA. As Wright observes, during the Brontës’ lifetimes, “two-thirds of the European

production of cotton textiles took place in the UK,” and the “comparable percentages for iron production and coal output were 64 and 76 per cent” (27). Within England, industrial production in the West Riding of Yorkshire “had far outstripped any rivals, causing both relative and absolute decline elsewhere” (115). Distributions of coal usage and steam power funneled migrating workers to particular neighborhoods, for the “impact of explosive growth . . . was not general to whole counties but restricted to limited areas within them” (167). These changes disproportionately affected Brontë country, in other words. Andreas Malm notes that the West Riding was ideally situated between woolen and cotton districts and saw a considerable boom when the Brontës were in residence. “Historically speaking, the Anthropocene could well have been called the Anglocene,” Malm argues, since England “accounted for 80 percent of global emissions of CO₂ from fossil fuel combustion in 1825 and 62 percent in 1850” (71, 12–13). Malm quotes these statistics in the service of seeking the origins of twenty-first-century climate in the nineteenth century; he concludes, “it is a matter of searching not for climate in history, but for *history in climate*” (6). Wrigley, too, points out, “We are awash in data on the disastrous effects but comparatively poor on insights into the drivers” of climate change (19). Jason W. Moore identifies one such driver by arguing that capitalism is “a way of organizing nature—as a multispecies, situated, capitalist world-ecology” (“Introduction” 6). Moore rightly castigates the “dominant Anthropocene perspective” (5) for ignoring capitalism’s ecological effects, but his mode of argumentation perpetuates the kinds of critique that Latour and Felski argue are no longer terribly useful. Labeling an idea or attitude is “bad” is not enough. I turn to Brontë to understand *why* destructive or maladaptive practices seem attractive for her characters, who belong to the British industrial communities that disproportionately hastened the end of the Holocene. As Lucy Snowe’s vision of buried letters rising again reminds us, disowning the past will not neutralize its effects on the present. What is needed is to understand how, and why, this “dominant Anthropocene perspective” came to be.

FEMINIST STRATEGIES AGAINST
THE ANTHROPOCENE DISPLACEMENT

Malm refers to one flaw in this dominant perspective as “the Anthropocene displacement”: the “category mistake” that reifies the actions of particular populations as simply human nature, thereby “ascribing actions to an entity that could not possibly have performed them” (Malm 270, 267). Correcting it

requires “replacing the vague ‘anthropos’ with the nations and companies, institutions and imaginaries, technologies and ideologies that are the true drivers of the Anthropocene” (70). Indeed, many accounts disregard how certain populations bear disproportionate responsibility for, or disproportionately bear the burdens of, ecosystemic change. Schneiderman explains that the term “does not acknowledge that some groups of human beings have had greater effects on the planet than others” because *how* the new epoch is written about “has the potential to obscure or reveal the agents of such change” (184). Naming it the Age of Man, moreover, reflects a certain “self-centeredness” (187). This terminological problem also leaves open the perverse possibility of glorying in the apparent triumph of the human as master of the world. Michael Ellis and Zev Trachtenberg observe, “the notion that humanity has attained the status of a force of nature [is] a comparison that some will find flattering, and others appalling” (123). Stacy Alaimo points out that “hand-wringing confessions of human culpability appear coated with a veneer of species pride” (“Shell” 90). Eileen Crist writes that the “poverty of our nomenclature” paints an “Promethean self-portrait” of humanity as

an ingenious if unruly species, distinguishing itself from the background of merely-living life, rising so as to earn itself a separate name (anthropos meaning ‘man,’ and always implying ‘not-animal’), and whose unstoppable and in many ways glorious history . . . has yielded an ‘I’ on par with Nature’s own tremendous forces. That history—a mere few thousand years—has now streamed itself into geological time, projecting itself . . . thousands or even millions of years out. (16–17)

Haraway similarly criticizes ways of writing that reduce all non-human organisms to “props, ground, plot space, or prey . . . [whose] job is to be in the way, to be overcome, to be the road, the conduit, but not the traveler, not the begetter” (*Chthulucene* 39). To ensure that humanity is not centered as the hero of a drama, slotting non-human organisms always into the predicate position, the human must be redefined so that “human exceptionalism and bounded individualism . . . become unthinkable” (30). To do so, it is crucial to examine sites, artworks, and texts that speak to the emergence of these attitudes, to their persistence, and to their influences on particular individuals occupying a certain anthrome at a specific historical moment.

Alaimo developed a methodology for doing so in *Exposed*, which “locates subjects as they engage in both ordinary and extraordinary practices” that “seek to make sense of the networks of harm and responsibility that entangle

even the most modest of actions.” Alaimo’s declaration that now “is no time for transcendent, definitive mappings, transparent knowledge systems, or confident epistemologies” (*Exposed* 3) is shared by the contributors of *Anthropocene Feminism*. As its introduction recalls, “Counter to the technoscientific desire for specificity, definition, and fact, we coined the term . . . as an experiment of provocation, expressing a survivalist ethos in regard to the masculinist and patriarchal urge to proclaim mankind an agent of major change” (Grusin xi). This collection recovers the intellectual prehistory of climate change to reveal how

the concept of the Anthropocene has arguably been implicit in feminism and queer theory for decades, a genealogy that is largely ignored, or, worse, erased, by the masculine authority of an institutional scientific discourse that now seeks to name our current historical moment the Anthropocene. By the same token, feminists, especially ecofeminists and feminist science studies have long argued that humans are dominating and destroying a feminized earth, turning it into standing reserve, capital, or natural resource to devastating ends. (viii–ix)

Feminist critics have implicitly developed Anthropocene theory because they reject the disembodied, universal, masterful model of the human being that these feminist thinkers see at work in some articulations of the concept. Lynne Huffer contextualizes these efforts participate in the recent “renaturalization” of feminist philosophy. Turning away from models of a disembodied *Anthropos* and from social constructionist models of gender, they turn toward “animals, the cosmos, subatomic particles and waves, the brain, and the energetic pulse of biological life as objects of feminist concern,” which model the world in ways that are “more complete,” “more accurate,” and “more ethically and politically promising” (65, 69). Kate Singer’s recent body of work on Romantic ecologies demonstrates the usefulness of such an approach to analyzing literature. In her identification of an affective materiality in Charlotte Smith’s poetry—“an affective flow that moves beyond human sympathy, sentiment, and sensibility, past psychological and even physiological emotion, and into more extensible forms of affect and materiality conversant with those of the nonhuman outer world” (176)—Singer applies new feminist approaches to embodiment as keys to understanding how Smith’s depictions of the South Downs provide important clues about the poet’s theses on the interrelations of gender, subjectivity, and the past. Emphasizing the materiality of writers’ connections with local ecologies is therefore a powerful feminist strategy for reexamining nineteenth-century literature as powerful responses to environmental change.