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"Stories of Making and Unmaking": Deep Time and the Anthropocene in New Nature Writing

ABSTRACT

New Nature Writing reflects many of the anxieties which are becoming increasingly prevalent in the Anthropocene, an era which necessitates temporal leaps between the present moment, the deep past, and the deep future. Coming to contextualize our impact on the planet in the Anthropocene era in such expansive, geological terms poses profound challenges to the ways we have conventionally framed our wider place on Earth. When viewed through the lens of deep time, our impact on the planet has been comparatively brief, but we are scarcely beginning to comprehend its lasting effects. While the scale of the environmental problems we have created often seems insurmountable, this chapter argues that writing which helps us to think about deep time and acclimatizes us to its vast scale can itself serve as a way for us to grapple with the immensity of the problems we face. Through a consideration of the writing of new nature writers Robert Macfarlane and Kathleen Jamie, it looks at how their engagements with deep time challenge the feelings of helplessness that the scale of the environmental crisis can sometimes burden us with. By arguing that coming to terms with the Anthropocene is to come to terms with a changing narrative we tell ourselves about our role on the planet, it considers how New Nature Writing is playing a crucial role in this narrative shift more specifically, as it explores different ways for us to reimagine our relationship with the more-than-human world in the Anthropocene era.

Keywords: Anthropocene, deep time, New Nature Writing, temporality, Robert Macfarlane, Kathleen Jamie.

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As awareness of the Anthropocene has gained ground, questions surrounding how we might come to terms with a concept which is so broad in scope and has such lasting implications have come to the fore. Whilst the term is by no means universally accepted, its capacity to serve both as a shorthand for and an acknowledgement of our role in global climate change has undeniably helped instigate debate in recent years.[1] When viewed through the lens of deep time, our impact on the planet has been comparatively brief, but we are scarcely beginning to comprehend its lasting effects. Coming to contextualize our impact on the planet in the Anthropocene era in such expansive, geological terms poses profound challenges to the ways we have conventionally framed our wider place on Earth. As Rob Nixon has put it: "[T]he Anthropocene hypothesis shakes the very idea of what it means to be human" (2370). To come to terms with the Anthropocene is to come to terms with the changing narrative we tell ourselves about our role on the planet: it is to face up to difficult truths and to imagine ways we might move forward with the weight of these truths. It is at this juncture in which New Nature Writing finds itself as it explores ways of envisaging these immense changes and seeks to (re)imagine our relationship with the more-than-human world in the Anthropocene era.[2] Through an analysis of recent writing by new nature writers Robert Macfarlane and Kathleen Jamie, this chapter will argue that New Nature Writing brings together deep time and the Anthropocene in surprising and often illuminating ways which provide us with alternative ways of thinking about and framing these new temporalities. It will demonstrate how New Nature Writing is playing a crucial role in the narrative shifts so inherent to our understanding of the Anthropocene, and show how the genre's engagements with deep time can contribute vital new narratives for our times, which can help us consider humanity's future inhabitation of the earth in the broader context of the Anthropocene era.

In the opening essay from her 2012 prose collection, *Sightlines*, entitled "Aurora," Kathleen Jamie recounts a trip taken to Greenland to see the northern lights. She describes finding herself in an unfamiliar landscape and being confronted by the "vast, unnerving scale" (2) of the land, and being surrounded by icebergs which "give nothing, suggest nothing but a white nihilism" (7) and suggest "nothing but colossal, witless indifference" (10). Here Jamie underscores the tension between the human tendency to reach for and create narratives to help us understand things which are so much bigger than we are, against the difficulty of imparting meaning on things which tend to resist representation, often precisely because they seem to operate on scales so different from our own. Furthermore, this also provides a useful narrative analogue for the challenges which come from trying to conceptualize deep time in writing in terms of the broader scales it occupies. However, despite the difficulties that come with trying to describe the scale of such a landscape and the elements contained within it, Jamie notes how there are some narratives of sorts which emerge from it, and which can, intriguingly, be read. When referring to the extraction of ancient ice cores, she notes:

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[1] For a more in-depth discussion of Anthropocene terminology, see Benjamin Kunkel's article "The Capitalocene."

[2] Whilst most writers associated with New Nature Writing are resistant to the label, it nevertheless serves as a useful shorthand for writing which engages with the complexities of our relationship with the more-than-human world in the Anthropocene era. Whether it represents a departure from the nature writing which preceded it is a contested issue, however. See Graham Huggan's "Back to the future: the 'new nature writing,' ecological boredom, and the recall of the wild" or Jos Smith's *The New Nature Writing* for a more extensive exploration of the genre and its associated issues.

> The icecap is two miles deep. In 2003, a team who'd spent seven years drilling through the Greenland ice to fetch up core samples at last hit bedrock. The ice at the bottom of the core is 20,000 years old. They were bringing the deep past out of its silence, waking it up to ask it about change. (17)

Here Jamie evokes both temporal and spatial scales which are somewhat difficult to comprehend: we tend to engage with the idea of distance as a measurement which goes across, rather than down, and especially not to such a depth; the fact that drilling the ice core took seven years to do certainly helps us to understand the immensity of such an undertaking, and that's before we even try to comprehend the age of the core itself. Jamie notes how these cores contain narratives from the past which are not only visible in the present, but which hold potential messages about the future too, as they contain the narratives which can help us understand broader-scale concepts such as climate change and the key role we have played in it. In this way, the compressed narratives they contain can serve as projections for possible futures we face and so could act as a potential catalyst for change.

When describing her experience of observing the natural phenomenon of the northern lights elsewhere in the essay, Jamie writes:

> We are standing with heads tilted back, marvelling.
> Luminous green, teal green, the aurora borealis glows almost directly overhead. It intensifies against the starry night like breath on a mirror, and it moves. Across the whole sky from east to west, the green lights shift and alter. Now it's an emerald veil, now with a surge it remakes itself into a swizzle which reaches toward some faraway place in the east. (12)

Jamie's description here reflects her sense of wonder in response to this phenomenon, but it can also be viewed as a moment which Philip Hoare argues "jerk[s] us out of our complacency." Although Hoare is referring to the perseids meteor shower here, it works equally well when paralleled with Jamie's observations. Hoare argues:

> Throughout the year, at key moments, as we move through the orbits of fragmentary heavenly bodies, we can lie outside, on the grass or a beach, and watch the sky erupt. . . . Nature is suddenly disrupted, and the disruption has nothing to do with us, and our notional dominion. It is a spectacle older than us, setting our existence in salutary perspective. . . . Such events still remind us that not everything is within our grasp or control.

Hoare's description is replete with examples which negate the notion of our own centrality here: his reference to "our notional dominion" is an excellent shorthand for how we might come to place ourselves in the wider scope of deep time, particularly in the age of the Anthropocene. Whilst this can be complicated by the fact that the Anthropocene is also an acknowledgement that we can impact the more-than-human world on a truly mammoth scale, natural phenomena such as these also serve as important reminders that we are not at the centre. Indeed, although we may necessarily be at the centre of our own lives, events such as these, if we are attentive to them, can unsettle this perspective and place us as far smaller elements in a far wider scheme than our own comparatively fleeting lives. Such narratives can serve as a reminder "that not everything is within our grasp or control" (Hoare), and so help acclimatize us to the idea of deep time by taking us out of ourselves.

Elsewhere in "Aurora," Jamie notes how the Vikings "used to navigate by raven" (4), which leads her to wonder: "Maybe ravens had brought [the Vikings] here, too, in their Greenlandic voyages, a thousand years ago. A thousand years. The blink of an eye" (5). This blurring of temporal scales is particularly effective, with Jamie acclimatizing us to temporal slippages where time expands and contracts, both to the timespan of millennia, and a single blink of an eye. Similar temporal leaps appear elsewhere in Jamie's work: in her *Findings* essay "Darkness and Light," she describes visiting the Neolithic chambered cairn of Maes Howe in Orkney at the winter solstice and compresses the sense of multiple eras passing into one paragraph, from the Neolithic to the present day. When describing the history of the cairn, she notes:

> The Vikings went away, leaving many messages, but Maes Howe was again half-forgotten, a fairy place, a strange mound on a heath. Generations lived and died. We invented electric light, the internal combustion

> engine, we exploited oilfields, developed telephones and TVs, to dispel the winter dark—and now at solstice we come, as no one has done for nigh on 5000 years, to witness a little beam of sunlight creeping through the darkness onto a stone wall. (16)

If we can relate to the idea of being human thousands of years ago, then thinking of how comparatively close to us previous civilizations are in the broader temporal scheme could further help acclimatize us to the more distant pasts required when thinking about deep time. This paragraph serves as a further narrative analogue for comprehending multiple layers of time, with Jamie's temporal compression of these ages and events into a single paragraph providing a useful way of thinking of deep time itself, and the temporal compression required when imagining such broad scales of time. Though Jamie's paragraph here compresses millennia rather than the mega-annums which we more readily associate with deep time, it still evokes concepts of time far broader than our lived experience of it, which in turn helps us to more readily imagine displacing ourselves into the past, and so to imaginatively project ourselves into possible futures too. In this way, it allows us to adjust to a more expansive sense of the past and future.

Glaciated landscapes provide a further means to reflect on the farther reaches of time as their morphology has been shaped by glacial activity which took place often tens of thousands of years ago, so they also more readily lend themselves to an imaginative displacement into another time. In his 2015 text *Landmarks*, Robert Macfarlane notes: "In the Scottish Highlands I find it easy for thousands or millions of years to fall away in a glance. Out on the prow of one of the rock buttresses that lean over the great valley of Lairig Ghru, I can envisage some version of the glen as it was in the Pleistocene" (274). Whilst glaciated landscapes may seem less subject to the sort of rapid visual transformations of urban environments which change on a far more human timeframe, as Macfarlane shows here, an imaginative viewing of the vestiges of the deep past which still shape certain contemporary landscapes can allow us to tangibly comprehend the connection between the deep past and present. The vast stretch of years fall away, and this understanding of the entanglement of deep past and present could and should lead us to consider how present patterns of human behaviour, through their disruption of processes which move through geological time, will continue to have consequences into the deep future, for human generations and generations of shifting landscapes to come.

Jamie also seeks to bridge the gap between the deep past and present when observing a similar glacial landscape, to demonstrate their closeness and by extension their connectedness. In the opening essay in *Surfacing*, "The Reindeer Cave," she conducts a similar displacement to Macfarlane by overlapping her own present experience in the valley with an imagined exploration there in a previous ice age. She writes: “To reach the caves, you climbed a grassy slope a hundred-and-fifty feet above the river. You try to imagine stepping from the cave-mouth onto ice and moraine” (2). On a narrative level, Jamie’s use of a more inclusive second person pronoun here encourages a shift from more singularly anthropocentric ways of engaging with the more-than-human world. Her attempts to distance herself from such anthropocentric perspectives notably emerged in her earlier review of Macfarlane’s 2007 text *The Wild Places*, where she criticized him for perpetuating the trope of “the lone enraptured male” (“Lone”). Whilst Macfarlane’s recent work admittedly represents a shift from this position, Jamie has more consistently, and indeed more self-consciously, sought to test the limits of her own anthropocentricism. She has argued: “I look at a page I’ve written, see that I’ve used the word ‘I’ 17 times and go back and reduce it by two thirds” (Personal correspondence 2), elsewhere adding that: “I want to have [my readers] stand shoulder to shoulder with me, so I can say ‘Look at this, can you see what I see? Let me show you.’ I want to reveal the world in its wonder, and have readers as co-discoverers. I don’t want to show off” (Introduction). Following Zechner, in its attempts to destabilize anthropocentric perspectives, much New Nature Writing seeks to place human beings “on a par with the world they encounter” (167). Just as Jamie seeks to place her readers on her “par” too, she also avoids foregrounding her perspective over the more-than-human world she is encountering in her writing. Jamie’s reluctance to place herself at the centre helps encourage considerations of perspectives beyond our own, where an individual’s experience is framed as just one part of a much wider narrative taking place over a much broader temporal spectrum. Whilst clearly still grounded in human experience, such an approach can help to place us in a connective web of which we constitute just a small part, and can further accustom us to such expansive ideas as deep time as it places us within a narrative framework of something considerably larger than our selves.

In a further complication to questions of anthropocentrism in relation to deep time and the Anthropocene, later in “The Reindeer Cave” Jamie adds: “[T]hat last ice-grip, the one which ended ten thousand years ago and created the land we know. Ten thousand years—in the great scheme of things, we’re living through a warm bank holiday weekend” (*Surfacing* 2–3). Whilst the use of the first person plural here represents a further shift from more singularly anthropocentric positions, I would argue that even more crucial here is Jamie’s attempt to humanize these epochal stretches of time by making us think of them in an even greater chronological context, but one which is then translated back into a more relatable human one too. As one of the chief difficulties with coming to comprehend expansive concepts such as deep time and climate change is the sense of distance and abstraction they can evoke, making such abstract concepts feel more connected to us by humanizing them in this way can challenge the feelings of helplessness that the scale of the environmental crisis can sometimes burden us with.[3] Whilst humanizing these concepts remains a position which is inescapably anthropocentric in origin, it is one which seeks to primarily connect us to these more expansive and abstract ideas, rather than to distinguish or separate us from them. There are undoubtedly limitations to using this more human scale as a means for understanding deep time, especially when engaging with concepts which extend so far beyond the human, but such an approach should not be so readily dismissed if it can help us come to terms with ideas which are so abstract in scope, particularly if it can both help us to envisage alternative paths forward which recognize our agential role in the Anthropocene and to accept the limits of our control over it. Even so, Zechner identifies a tension in relation to these anthropocentric positions by pointing out how Jamie's writing "illustrates the difficulty of putting a non-anthropocentric approach . . . into a consistent ethical framework" (177). In fact, I would argue that the absence of a consistent ethical framework is present in much New Nature Writing and is reflective of the broader difficulties we face when trying to come to terms with the Anthropocene more generally as we struggle to express the scale of what is going on. Indeed, as Stef Craps puts it: "[W]e are somewhat at a loss as to how to adequately navigate the emotional terrain of environmental breakdown" (3). Nevertheless, even if New Nature Writing may lack a consistent ethical framework, finding ways to accept and move forward with the weight of the knowledge of our Anthropocene reality makes these explorations more vital and necessary than ever.

However, although it can be humbling to acknowledge that the glaciated landscapes described by Jamie and Macfarlane here can change on scales which go beyond human timeframes, we must also accept that in the Anthropocene era, many of these landscapes are changing at an acutely alarming speed precisely because of human activity. As Andri Snær Magnason has argued, "Earth's mightiest forces have forsaken geological time and now change on a human scale. Changes that previously took a hundred thousand years now happen in one hundred" (9). Whilst such new temporalities take time to adjust to, such a shift in temporal velocity demands immediate action if we are to respond to these changes in a way that goes beyond simply bearing witness to them. Jamie, for instance, has argued that "[n]owadays in 'nature' or 'the environment' we are far from consoled. It's in nature we find the most frightening changes. The more alert nature-writers . . . are energised by that truth" ("*Four Fields*"). New nature writers do not simply bear witness to or report these "frightening changes": in my view, being "energised by the truth" is rooted in the motivation to challenge the seeming inevitability of our unsustainable path in the Anthropocene.

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[3] These expansive concepts also constitute examples of Timothy Morton's concept of "hyperobjects," which he defines as "things that are massively distributed in time and space relative to humans" (1).

For writers navigating the more-than-human world in the Anthropocene era, the prevalence of plastic surfaces in their writing in ways which are deeply troubling to both encounter and acknowledge and exemplifies precisely the sorts of "frightening changes" Jamie refers to. When walking along the coastline in northern Norway, Macfarlane notes:

> It is low tide, and the sand of the bay is strewn with jetsam, almost all of it plastic. . . . Fishing buoys, toothbrushes, bleach bottles, tangled fishing nets, thousands of unidentifiable shards.
>
> I feel sick as I walk the wrack-line and its litter, appalled by the contrast with the plateau, implicated by my part in the scene. This was once all oil too. Oil—the "monstrous transformer"—is in all of these things, vital to the manufacture of the plastics that we first synthesized only a century ago. (*Underland* 319–20)

Macfarlane's visceral response and sense of disgust at the sight is important, but so too is the fact that he doesn't exempt himself from the wider blame, as he also reminds us of the complex web of dependency on oil, within which almost all humanity is complicit, to varying degrees. For Heather Houser, evoking disgust could prove effective in inciting a reaction in the reader, arguing that it can be viewed as "a conduit to engaging with human and nonhuman others as it counteracts forms of detachment that block environmental and social investment" (120). Such a rhetorical technique can challenge feelings of disconnect from the more-than-human world, and particularly those which are evoked by the scale of the damage we have done, by drawing our attention to our complicity in this damage, regardless of how difficult it may be to confront. By acknowledging this sense of complicity, Macfarlane moves beyond simply bearing witness and provides us with a way to face up to these frightening changes, which can serve as a further way of being "energised by the truth." Indeed, Macfarlane has argued that "menace and anxiety have always stimulated cultural production, and loss has always stimulated desire" ("Go Wild"). The very idea that humans are motivated to create from loss goes some way in explaining why New Nature Writing has had such a resurgence in recent years, and thus enables the genre to act against the broader sense of loss so integral to the Anthropocene era. He later adds:

> Nature is no longer only a remote peak shining in the sun, or a raptor hunting over birch woods—it is also tidelines thickened with drift plastic, or methane clathrates decomposing over millions of square miles of warming permafrost. This new nature entangles us in ways we are only beginning to comprehend. . . . The more we struggle to distance ourselves from the Anthropocene, the more stuck we become. (*Underland* 321)

By reminding us that the consequences of our exploitation of the more-than-human world now occur everywhere on the planet, and on scales we are barely capable of grasping, new nature writers help us face up to these uncomfortable realities and come to terms with the scale of them as well.[4] In this, they respond to James Bradley's call for writers to "find ways to communicate ideas that are not just uncomfortable and frightening but actively difficult to comprehend" too.

Fossil fuels are substances which take millennia to form and the widespread and long-term environmental impacts that have emerged from our comparatively recent exploitation of them exemplify the complex Anthropocene entanglement Macfarlane refers to. They are also integral to the production of plastic, a material which is now so ubiquitous it is coming to form part of the Earth's geological strata which will remain into the deep future. Though often conceived of for single, ephemeral use, plastic's pervasiveness in the Anthropocene now requires us to think of deep time, because the time it takes to break down vastly outweighs this fleeting usage period, as Farrier argues:

> A typical disposable plastic container is in use for around 60 days before it's thrown away. Yet this brief period falls on a line that runs from the deep past to the deep future: the 3.4 million years since the raw materials (oil) began to form, and the 10,000 or more years it could take for the plastic to degrade. ("Sands")

This perplexing temporal bind reflects how plastic forms part of our changing Anthropocene narrative and makes us question the sort of relationship we have and indeed want to build with the more-than-human world, particularly when such seemingly insignificant, throwaway items have such a lasting impact. As Farrier asks: "Is it our intentional signs and symbols that leave the most lasting marks, or our unintentional traces?" ("Sands"). He argues that "it's in the encounter with everyday objects, surfaces and textures that we get the best sense of [the Anthropocene's] scope and scale," adding that "[p]lastics, which began being mass-produced in the middle of the 20th century, give us back the world as the West has been taught to see it—pliable, immediately available, and smoothed to our advantage" ("Deep Time"). To challenge narratives that the more-than-human world exists for our benefit is to challenge the myopic sense of short termism and the assumption of human control so integral to this world view, because the lasting impact of such seemingly insignificant items fundamentally challenges the notion of the "traces and marks" our Anthropocene imprint will leave behind.

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[4] For instance, recent studies have detected microplastics in the depths of the oceans, on "remote" mountain peaks, and inside of us too. See Barrett et al., Allen et al. and Cox et al., respectively.

There is nevertheless a strange duality in the Anthropocene, as it both confirms the mammoth imprint we have had and also confirms how we are, as a species, comparatively fleeting in the much wider temporal arc of deep time. Macfarlane notes how

> There is a dangerous comfort to be drawn from deep time. . . . What does our behaviour matter, when *Homo sapiens* will have disappeared from the Earth in a blink of a geological eye? Viewed from the perspective of a desert or an ocean, human morality looks absurd—crushed to irrelevance. . . . We should resist such inertial thinking; indeed, we should urge its opposite—deep time as a radical perspective, provoking us to action not apathy. (*Underland* 15)

There is a tangible sense of urgency to Macfarlane's words here, and an alertness to the dangers of "inertial thinking" and the ways in which it might encourage apathetic responses to environmental crises, even when we acknowledge that such expansive concepts as deep time and the Anthropocene are difficult for us to fully comprehend. This urgency is compounded by the fact that for numerous climate change deniers, our comparatively fleeting passage on earth is used as a justification for not intervening, as they put recent changes in climate pattern down to natural variations beyond the scope of human control. In a counter to such positions, Macfarlane argues that "to think in deep time can be a means not of escaping our troubled present, but rather of re-imagining it; countermanding its quick greeds and furies with older, slower stories of making and unmaking" (*Underland* 15).

In his own writing, Macfarlane's reflections on past human histories help with this "re-imagining" of our present. When visiting a cave adorned with ancient paintings in Norway in his 2019 text *Underland*, Macfarlane layers his own present-day explorations of the cave with his own imaginings of those who visited it at various moments in the past. He writes:

> A summer's night 3,000 years ago. At this latitude, in this season, darkness scarcely exists above ground. Low tide, calm sea. A small group of figures follows the shore, stepping from rock to rock. . . . Up where the tunnel wall overhangs them, the figures halt, make their preparations. Rock is to be the painter of rock. In a cup of stone they crush haematite and mix it with spit, earth and rainwater to make a red paste.
> The painting begins. (273–74)

Macfarlane's description here acts as a form of patient, measured storytelling which unfolds in a way not entirely dissimilar to the narratives depicted in the cave art pictures themselves. In this way, it makes his present-day narrative form part of an "older, slower story of making" too. Macfarlane's temporal layering here is similar to Jamie's descriptions in Maes Howe, though whilst Jamie's descriptions compress multiple eras into a single paragraph, Macfarlane's overlap an envisaged single past event into the present. Both perspectives demonstrate how comparatively little the places themselves have changed despite the time that has passed, and both writers again humanize these broader stretches of time by describing events which we can still envisage taking place today. The act of painting on cave walls for Macfarlane and the witnessing of sunlight entering Maes Howe at the solstice for Jamie are events or moments which unfold at roughly the same pace now as they did then. In this, both Jamie and Macfarlane further challenge the aforementioned "quick greeds and furies," and subsequently encourage a "re-imagining" of "our troubled present" (Macfarlane, *Underland* 15) by helping us to reconsider our position in the broader scheme of things.

Furthermore, Macfarlane's use of the present tense in these cave narratives not only creates a sense of the past becoming present, but also accentuates the immediacy of his present-day explorations in them. By layering different perspectives and histories onto his own in this way, the narrative of *Underland* leaps between different times: to look at the text's structure is to see a form of layering not entirely unlike geological layers, so that the text takes on its own layers of strata. The cumulative effect of the narrative therefore presents the reader with a narrative analogue of sorts for an (albeit much compressed) experience of deep time. Bradley has argued that "[n]ot only must we confront the inhuman scale of transformation that is taking place around us, its temporal, physical and moral enormity, we must find new ways of making sense of its complexity and interconnectedness," and Macfarlane's approach here could be read as a way in which the narrative structure of the text responds to this sense of "complexity and interconnectedness," too.

When describing the progress of two cave-explorers elsewhere in *Underland*, Macfarlane observes that "[t]ime reverses space—the deeper in they get, the younger the cave-space. The journey into darkness is a journey to the present. The sea has taken thousands of years to win each yard of stone" (275). Macfarlane's descriptions of these caves, which are the result of slow, hard-won processes of weathering and erosion, enact what Jamie calls a form of "temporal recalibration" (*Findings* 11) which reflects the approach that thinking about deep time necessitates. Jamie's own description of the experience of working on an archaeological dig similarly unsettles the chronological, linear experience of time which we are accustomed to. Of the dig, she writes: "To add to the odd sensation of inhabiting several different times, there was also this process of dismantling; of running the narrative of construction backwards" (*Sightlines* 61). Though not explicit engagements with deep time, both Macfarlane and Jamie's descriptions provide alternative temporal perspectives and re-imaginings of the boundaries we conventionally associate with time, which could again help accustom us to the challenges of envisaging such an expansive concept as deep time, too. Furthermore, these "temporal recalibrations" also reflect what Bradley has argued is "a disruption of unitary narrative" characteristic to writing in the genre. He adds that they unsettle "our assumptions about narrative time in an attempt to articulate an awareness of the inhuman scale of what is taking place around us" which can be considered as part of a further attempt to come to terms with our Anthropocene influence. Helping us to comprehend the distance of time involved in these human histories both reminds us of our comparatively fleeting existence, and makes these pasts seem somehow closer, which could again help acclimatize us to the more distant pasts required when thinking about deep time.

As the chapters of *Underland* progress and we read proverbially deeper into the narrative, the locations that Macfarlane travels to go deeper underground, and we as readers subsequently become more embedded in the narrative framework of deep time. The earlier chapters of the text begin with Macfarlane's present-day explorations in the Mendip Hills in Somerset, and by the penultimate chapter, he has reached one of the deepest locations in the underlands of the planet that it is humanly possible to access and has some of his most profound reflections on humanity's legacies into the deep future. In this way, the text itself reflects Macfarlane's initial assertion that "deep time is the chronology of the underland" (15). Visiting a nuclear waste containment facility in Finland which lies 1500 feet below the earth's surface and which he calls "an experiment in post-human architecture" (399), he notes how it was intended "to outlast not only the people who designed it, but also the species that designed it. It is intended to maintain its integrity without future maintenance for 100,000 years, able to endure a future ice age" (398). In this way, as the text draws to a close, it looks towards the deep future by considering the legacy of what we will leave behind us. As deep time is frequently considered in terms of the past, this reminder of the deep future is also important, since it encourages us to shift our accustomed way of thinking about deep time too.

Engaging with the fleeting nature of human existence in the wider scheme of things, even when placed within an anthropocentric narrative framework, provides us with one of the most relatable ways to envisage deep pasts which existed long before us, and to envisage possible futures which will take place long after we have gone. As Jorie Graham argues, however, envisaging these possible futures poses its own mammoth challenges:

> [H]ow [can we] make the "deep future"—seven to ten generations hence—feel actually connected to us, right down to this very minute of our lives. . . . How can you expect a person to find, let alone feel and act upon, the fine thread that truly connects their very next choice to a life 1,000 years hence which might not in any way resemble what we know of as human life? (38)

As writers work with the imagination, they are well placed to help us feel this sense of connection to the deep future, even when it may seem necessarily abstract. The diverging and converging temporal scales that Jamie and Macfarlane employ help us to envisage a deep future which is connected to us in the present in at least two ways: first, by acclimatizing us to leaping between temporal scales, and second, through the imaginative displacement of the self that their switching between temporal scales necessitates. Such an approach can help shift us out of the present and, by extension, challenge the predominant short-term perspectives and the more anthropocentric ways of seeing our place in the world. New nature writers' engagement with leaping temporal scales, along with their ability to envisage possible futures is of particular use in a contemporary context, as it could provide a means to counter the short-term mindset inherent in the current late capitalist economic model, which is particularly damaging to the environment, in both the short and long term. Being able to face up to our immense impact in environmental terms through an understanding of our place in the wider scale of deep time could therefore be viewed as a challenge to this predominant and damaging strain of capitalism, by encouraging us to think of, and within, this longer view.

Macfarlane argues that “Philip Larkin famously proposed that what will survive of us is love. Wrong. What will survive of us is plastic, swine bones and lead-207, the stable isotope at the end of the uranium-235 decay chain” (*Underland* 77). Macfarlane’s contrasting imagery of our long-term Anthropocene legacy here is particularly abrupt as it startles and shocks the reader through its contradiction. He adds that “the half-life of uranium 235 is 4.46 billion years: such chronology decentres the human, crushing the first person to an irrelevance” (*Underland* 409). Knowledge of this requires a radical questioning of what it means to be human, and both deep time and the idea of the Anthropocene can fundamentally unsettle our sense of self and our sense of centrality in this way. This is arguably one of the best ways we can think of deep time as the “radical perspective” Macfarlane suggests (*Underland* 15), because in going so far beyond the human, it can also help us rethink our place on the planet on a far wider scale.

Both Macfarlane and Jamie provide us with alternative ways of thinking about temporality which help us reach a better understanding of deep time. The new temporalities they engage with encourage us to face up to the problematic legacy we have already left behind, but also to consider the legacies we might leave in the future too, which is of particular importance as we come to terms with the changing narrative we are telling ourselves in the Anthropocene. As Macfarlane puts it: “[A]t its best, a deep time awareness might help us see ourselves as part of a web of gift, inheritance and legacy stretching over millions of years past and millions to come, bringing us to consider what we are leaving behind for the epochs and beings that will follow us” (*Underland* 15). This also helps us respond to Bradley’s call that we “find new ways of making sense of [the] complexity and interconnectedness” of the Anthropocene, because in considering deep time as a way to connect to a wider sense of ourselves, it also enables us to connect to the idea of species and epochs far beyond us. Acknowledging the role we are having as agents of geological change in the Anthropocene era is a deeply unsettling but necessary task, and New Nature Writing’s engagement with this may yet help us to effectively envisage the scope of the possible and alternative futures that may take place, and so help us come to terms with this monumental change.

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