

# The Ends of the World: International Relations and the Anthropocene

Millennium: Journal of  
International Studies

1–21

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DOI: 10.1177/0305829816638745

mil.sagepub.com



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## Abstract

The concept of the Anthropocene – the geological epoch defined by human action – has so far remained largely absent from International Relations (IR) analyses. This is perplexing given the monumental stakes involved in dealing with planetary change and the discipline's overriding focus on crisis. This silence may exist, however, because contemporary studies of international relations are troubled by the Anthropocene, which shifts basic assumptions about how humans live in the midst of perpetual danger, harm, and risk. It also presents us with the prospect of failure in existential terms, if indeed we are living in (and causing) 'the sixth mass extinction'. The focus of this article, therefore, is threefold. First, to consider the challenges to environmental IR that the Anthropocene concept presents; second, to probe what it means for IR to respond to the end of nature; and third, what is required of IR to deal with the prospect of mass extinction. It is argued that Earth system changes wrought by human action require the discipline to demystify its own ontological, epistemological, and ethical approaches that are culpable in ushering in the Anthropocene. Doing so may allow IR to provide necessary insight into the contemporary and historical effects of the state system as an enabler of planetary change, and the future possibilities for global politics within the Anthropocene.

## Keywords

anthropocene, environment, security

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## Introduction

Since the end of World War II and the dawning of the Cold War, dramatic human-driven shifts in the functioning of the Earth system have occurred. A variety of measureable trends show how the structure and makeup of the system are now being altered to the extent that they no longer resemble anything seen in tens of thousands (and in some cases millions) of years. As a result of human action, we are observing remarkable developments, including the precipitous warming of the oceans and of surface temperatures, atmospheric increases of nitrous oxide, acidification of the oceans, land use loss to agriculture, and a massive decline in biodiversity. Together, these trends point to a new era in the history of the Earth.

The dawning of the age of the human – the Anthropocene – has generated intense, sustained debate over the last decade. From disciplines as seemingly varied as climatology, geology, philosophy, and visual arts, scholars have taken up the task of thinking through the new Anthropocene age. This has meant pursuing multiple pathways of measurement, critique, and reflection on the origins of the Anthropocene, its current character, and what types of futures it foretells. While the geological evidence remains under debate for officially declaring the existence of the Anthropocene, a remarkable volume of scholarship has recently emerged that accepts its general premise – that humans are geological agents – and tries to figure out how and why it matters. For as much as the Anthropocene teaches us about the science of the Earth, it also reflects attention back to the human. At a fundamental level, it troubles the intellectual and psychological conceptions of who we are as humans and how we relate to the world around us.<sup>1</sup> Even in the study of deep time and geological shifts, we cannot escape ourselves.

What then can the discipline of International Relations (IR) contribute to our understanding of the Anthropocene? And conversely, what does the Anthropocene mean for the study and practice of global politics? Such large questions cannot be adequately answered in one article, but it is possible to probe the implications for greater detail, and encourage further study and reflection. This article, therefore, offers a preliminary assessment of the Anthropocene from the perspective of IR. Its central argument is two-fold: First, International Relations has largely failed to engage the Anthropocene challenge. Second, given the wealth of information emerging that shows the scale and types of impacts that humans have on the world, this is no longer sustainable. That is, IR must reconsider some of its core understandings – particularly the relationships between the normative categories of humanity, the international system of states based on sovereignty and non-interference, and the natural world. It must abandon its atomistic theories of the international, and begin thinking much more deeply about ideas of human entanglements with the larger world within which we exist.

Such a move can be accomplished without abandoning IR's central foci, which we might faithfully limit to war, security, and the effects of an anarchical international society on states. Each is significantly impacted by the cumulative effects of environmental

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1. Andrew J. Hoffman and P. Jennings Deveraux, 'Institutional Theory and the Natural Environment: Research In (And On) the Anthropocene', *Organization and Environment* 28, no. 1 (2015): 8–31.

change, but also by the emergent awareness of Anthropocene entanglement. To borrow Morgenthau's phrase, 'the struggle for power and peace' is not going to disappear once the International Commission on Stratigraphy returns its verdict on whether we are now, officially, in the Anthropocene epoch. However, if IR remains wedded to Holocene thinking, defined most acutely as the separation of humans from the world, it would be a disaster; both reflexively, and for the world. Therefore, we must force IR into an uncomfortable place, and consider the enmeshing of natural and social processes. Given the stakes of the Anthropocene, and the fact that global political and economic processes enacted most intensely by Western powers are now deeply implicated in the current and future state of the world, IR perspectives have much to add.<sup>2</sup>

The Anthropocene marks a significant moment for the discipline. The old world – the Holocene – which has been so instrumental in creating and sustaining IR – is now gone. Much like how the discipline was transformed in previous generations as a consequence of catastrophes and globally significant events such as the breakdown of balances of power in Europe, the onset of the nuclear revolution, or the ending of the Cold War, it is now possible to see the Anthropocene as a defining marker for the discipline. It may lack the sudden cognitive and physical rupture of those world-defining events, but the revolution-in-slow-motion that is the Anthropocene is no less substantial.<sup>3</sup> It similarly calls for IR to correct its own denial in the face of ongoing (and future) ecological shifts, as well as its own failure to think beyond the narrow anthropocentric, state-led, economic boundaries, which together work to solidify the world of a bygone age.

Take ocean acidification as an example. It has already increased by 26% from pre-industrial levels, and is projected to increase to 170% from pre-industrial levels by 2100.<sup>4</sup> Even a modest reduction in the pH balance of the surface oceans will lead to the reduction in growth and development of a range of marine organisms (particularly in lower latitude regions of the world), leading to a redistribution of fisheries yields, and accordingly, a reduction in food security (and human security). It will also result in an estimated economic loss of \$1 trillion annually by the end of the century.<sup>5</sup> Some studies have concluded that due to ocean acidification and other related stressors (e.g. biodiversity loss,

2. Depending on their interests, scholars might begin examining the effects upon the theories and practices of security, or how institutional dynamics and change are affected by the Anthropocene, or the interplay between, complex system risks, ecological tipping points, technology, and global governance. These are only a few examples out of a great many that can be conceived. A good starting point would be to read Victor Galaz, *Global Environmental Governance, Technology and Politics: The Anthropocene Gap* (Cheltenham: Edward Elgar, 2014).
3. In geological terms, the changes are swifter than any that have come before.
4. Secretariat of the Convention on Biological Diversity, 'An Updated Synthesis of the Impacts of Ocean Acidification on Marine Biodiversity', eds. S. Hennige, J.M. Roberts, and P. Williamson (Montreal: Technical Series No. 75, 2014).
5. Intergovernmental Panel on Climate Change (IPCC), *Climate Change 2014: Synthesis Report* (Geneva: Intergovernmental Panel on Climate Change, 2014); Kristy J. Kroeker et al., 'Impacts of Ocean Acidification on Marine Organisms: Quantifying Sensitivities and Interaction with Warming', *Global Change Biology* 19, no. 6 (2013): 1884–96; M.O. Clarkson et al., 'Ocean Acidification and the Permo-Triassic Mass Extinction', *Science* 348, no. 6231 (2015): 229.

overfishing, etc.) all marine fish species could potentially be extinct by 2048.<sup>6</sup> No matter where the world lands in terms of these scenarios, there will be significant political and ethical ramifications. To carry on under these extraordinary conditions as though the nature and character of global politics will not change along with the weather, is a dangerous form of denialism and moral failure.

Accounting for the Anthropocene means much more than the individual or cumulative effects of environmental change. It reflects a new reality, where humans, non-humans, things, and materials co-exist in complex relations of life and non-life. It also reflects distinct forms of failure and denial: in particular the failure of states (specifically those of us in the 'West') to adequately respond to overwhelming scientific evidence that warns us to adjust our ideas and behaviour, and prepare for a future unlike the past. In addition, given the monumental stakes involved, the Anthropocene represents the potential failure of modern human societies to preserve and sustain themselves and other forms of life. All of this also reflects the failure of IR to think of a different world; not in a utopic sense of building a perfect political community, but of thinking through the realisation that we exist in a world that is far more complex, interactive, and varied than IR has yet imagined. No longer can the discipline deny these interconnected risks, threats, and physical effects, or maintain an obsolete image of the world built upon clean divisions between humans, states, and global systems. Given its claim to examining the 'global,' International Relations is no longer simply a sub-discipline of political science and economics, but is also of the geophysical sciences.

Discussing the various ways in which the Anthropocene and IR can co-habitate is not a simple task. Therefore, this article presents the Anthropocene abstractly, as something that upsets core ideas of *the world* upon which IR has long depended. The argument that the ideas and practices of IR are entangled with the natural world proceeds in three sections. The first section highlights how the Anthropocene heralds the discovery of a 'new world' for IR. It suggests that 'the environment' has played a minimal role in IR, generally ignored or incorporated into approaches that instrumentalise the Earth and its natural resources as important only so far as they compel or inhibit state-defined strategic goals. The second section argues that the Anthropocene represents the end of the 'world-as-nature'. That is, for IR to contribute to contemporary debates about the global environmental change, it needs to shift its ontological and ethical boundaries and incorporate the diverse entanglements of humans, non-humans, things, and natures. The third and final section suggests IR should think much more deeply about the end of 'the world-of-being', or mass extinction. For a discipline that came of age during the Cold War underneath the threat of nuclear annihilation, and is fixated on 'existential' security threats, the extinction problem remains undertheorised.

### *The Anthropocene Provocation*

What started as a relatively innocuous neologism by the geoscientists Paul Crutzen and Eugene Stoermer (who had actually used the term since the 1980s), has transformed into

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6. Boris Worm, Edward B. Barbier, Nicola Beaumont, et al., 'Impacts of Biodiversity Loss on Ocean Ecosystem Services', *Science* 314, no. 5800 (2006): 787–90.

a worldwide phenomenon.<sup>7</sup> Crutzen and Stoermer formally introduced the term ‘Anthropocene’ in 2000, to ‘emphasize the central role of mankind in geology and ecology’, and to illustrate the growing impact of human activities on Earth and atmosphere, at all scales.<sup>8</sup> According to an increasing number of academics – both scientists and non-scientists – industrialisation has produced Earth system changes and altered environmental processes to such a degree that the biophysical conditions of the Holocene epoch (lasting roughly the last 11,000 years) are no longer valid descriptions of the modern world. It is not simply that humans are outpacing geology as the drivers of global Earth changes; it is that they are the geological record.

Human activities have injected new biophysical factors into the biosphere, modifying the physical parameters that determine the functioning of major Earth systems.<sup>9</sup> The result is not only climate change, which attracts the majority of attention, but also other environmental transformations which similarly threaten the ‘safe operating spaces’ of humanity.<sup>10</sup> As Steffen et al., observe:

The atmospheric concentrations of the three greenhouse gases – carbon dioxide, nitrous oxide and methane – are now well above the maximum observed at any time during the Holocene... There is no evidence of a significant decrease in stratospheric ozone anytime earlier in the Holocene. Nor is there any evidence that human impact on the marine biosphere, as measured by global tonnage of marine fish capture, has been anywhere near the late 20th-century level at any time earlier in the Holocene. The nitrogen cycle has been massively altered over the past century... Ocean carbonate chemistry is likely changing faster than at any other time in the last 300 million years and biodiversity loss may be approaching mass extinction rates.<sup>11</sup>

And yet, there exists robust debate about whether there is enough geological evidence to fully warrant declaring a shift from Holocene to Anthropocene.<sup>12</sup> The bureaucratic body The International Commission on Stratigraphy has established an Anthropocene Working Group that is looking for ‘golden spikes’ in the geological record that will allow for an official declaration of the Anthropocene as a distinct geologic epoch. Unsurprisingly, this process and debate has grown highly politicised. Beyond the technical difficulty of

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7. Paul Crutzen and Eugene Stoermer, ‘The Anthropocene’, *IGBP Newsletter* 41 (2000): 17–18; Paul Crutzen, ‘Geology of Mankind’, *Nature* 415, no. 6867 (2002): 23.
  8. Crutzen and Stoermer, ‘The Anthropocene’, 17.
  9. Simon Dalby, ‘Rethinking Geopolitics: Climate Security in the Anthropocene’, *Global Policy* 5, no. 1 (2014): 3.
  10. Will Steffen, Katherine Richardson, Johan Rockström, et al., ‘Planetary Boundaries: Guiding Human Development on a Changing Planet’, *Science* 347, no. 6223 (2015).
  11. Will Steffen, Wendy Broadgate, Lisa Deutsch, et al., ‘The Trajectory of the Anthropocene: The Great Acceleration’, *Anthropocene Review*, OnlineFirst, 16 January 2015. Available at: <http://anr.sagepub.com/content/early/2015/01/08/2053019614564785>. Last accessed March 8, 2016.
  12. Whitney J. Autin and John M. Holbrook, ‘Is the Anthropocene an Issue of Stratigraphy or Pop Culture?’ *Groundwork: The Geological Society of America* 22, no. 7 (2012): 60–1; Julia Fahrenkam-Uppenbrink, ‘Should We Define the Start of the Anthropocene?’, *Science* 348, no. 6230 (2015): 87–8.

accurately finding geological markers, the search for the Anthropocene reflects deeply political questions about its start date and who is actually responsible for its emergence.<sup>13</sup> Many thoughtful commentaries have argued that the term Anthropocene, by implicating humanity as a singular force of nature, masks deep divisions and inequalities of sex, race, geography, and class. The Anthropocene was not created equally; it was made by a specific subset of humans, namely, those on the frontlines of modernisation: white, wealthy, rich males of European heritage. For these reasons, a variety of new labels have been proposed as a way to more accurately reflect the specific characteristics of the human age, including the 'Capitalocene',<sup>14</sup> the 'Anthrobscene',<sup>15</sup> the 'Oliganthropocene',<sup>16</sup> or the 'Manthropocene'.<sup>17</sup>

Beyond the question of who is responsible, the social and geological critiques of the Anthropocene have become enmeshed in the significant debate surrounding when it started. Most studies emphasise one of three markers for the start date: 1) the earliest detectable human impacts; 2) the earliest widespread impacts; and 3) historic events such as the Industrial Revolution. However, in an influential 2015 article published in the journal *Nature*, climate scientists Simon Lewis and Mark Maslin reject those proposals on the basis that they are not derived from a globally synchronous marker. Cumulatively, they certainly affect the Earth system, but none of those options represent a singular marker in the global geological record (on an annual/decadal scale).<sup>18</sup> Beyond that, the first two options are politically naïve, because they equate the existence of humans with the Anthropocene. That is, simply by being, humanity has remade the Earth and caused climate change, biodiversity loss, etc. This drains the term of its political potential, reducing the Anthropocene to an inevitable outcome of human existence, rather than the result of conscious and unconscious political choices made by modern human societies. It also belies the fact that Crutzen created the term as a way to highlight the damaging choices that humans have made to get us to this point.

Lewis and Maslin settle on two main contenders for the Anthropocene start date. Both reflect global political processes. The first option is found in the impacts from 'the Great Acceleration', which refers in geological terms to the unprecedented and major

13. In early 2016, the AWG recommended that the Anthropocene be traced to the mid-twentieth century interval, between 1945–1960. See Colin M. Waters et al., 'The Anthropocene is Functionally and Stratigraphically Distinct from the Holocene', *Science* 351, no. 6269 (2016): 137–48.

14. Jason W. Moore, *Capitalism in the Web of Life* (London: Verso, 2015); Donna Haraway, 'Anthropocene, Capitalocene, Plantationocene, Chthulucene: Making Kin', *Environmental Humanities* 6 (2015): 159–65.

15. Jussi Parikka, *The Anthrobscene* (Minneapolis: University of Minnesota Press, 2015).

16. François Gemenne, 'The Anthropocene and Its Victims', in *The Anthropocene and the Global Environmental Crisis: Rethinking Modernity in a New Epoch*, eds. Clive Hamilton, Christophe Bonneuil, and François Gemenne (New York: Routledge, 2015), 168–75.

17. Kate Raworth, 'Must the Anthropocene be a Manthropocene?', *The Guardian*, 20 October 2014. Available at: [www.theguardian.com/commentisfree/2014/oct/20/anthropocene-working-group-science-gender-bias](http://www.theguardian.com/commentisfree/2014/oct/20/anthropocene-working-group-science-gender-bias). Last accessed October 5, 2015.

18. Simon L. Lewis and Mark A. Maslin, 'Defining the Anthropocene', *Nature* 519 (2015): 171–80.

expansions in human populations, together with the creation of new, long-lasting materials; from minerals to plastics, to persistent organic pollutants and inorganic compounds.<sup>19</sup> The marker for the Great Acceleration is the global fallout from nuclear bomb tests. Based on measurements of radionuclide fallout captured by tree rings and glacier ice, this hypothesis would mark 1964 – the peak year of radioactivity – as the year the Anthropocene began. The second spike, and ultimately the one Lewis and Maslin settle on, is ‘the 1610 “Orbis” dip’ in atmospheric CO<sub>2</sub> which reflects the low point in a decades-long dip in CO<sub>2</sub> caused by the death of more than 61 million people in the Americas from colonial violence and disease brought upon the Native inhabitants. The annihilation of the Native American population caused a significant decline in farming and other human activities that reduced pre-industrial CO<sub>2</sub> levels to their lowest in 2000 years. This global event also contains within it another auxiliary marker. It represents the emergence of the first global trading network, which connected Asia, Africa, Europe, and the Americas, and allowed for the mixing of biota, known as the Colombian exchange. The globalisation of foodstuffs, including corn, livestock, and wheat, as well as the accidental mixing of other foreign and non-invasive/invasive species of flora and fauna, radically re-organised life on Earth.<sup>20</sup>

In the Orbis spike reading, the Anthropocene emerges with the discovery of the new world, and as the authors write, ‘implies that colonialism, global trade and coal brought about the Anthropocene’.<sup>21</sup> It demonstrates how social processes built upon unequal power relationships, economic growth, and globalised trade, are determining factors in the functioning of the Earth system. Indeed, both events – the Orbis hypothesis and the zenith of nuclear testing – represent the capacity of humans to enact violence, war, and destruction. The Anthropocene entangles political, economic, cultural, technological, and material processes, bridging oft-divided critical discourses of social science and humanities with the natural sciences.

## The End of Holocene IR

What then, does it mean to speak of the end of the world and the Anthropocene? What does it mean to speak of the Anthropocene as the harbinger of things always already here? In some ways we have arrived at the edges of the known and knowable world. But once we get past the changes in geological layers that scientists are currently studying, just what exactly is different? And if things are different, why are they important?

This section highlights the history of environmental IR and suggests that the Anthropocene displaces conventional approaches that draw from an image of the world as an unmoving and uninteresting landscape. Declaring novelty may at the outset appear to run counter to prevailing notions of environmental politics and security as finally getting their dues as important components of IR analyses. It may also belie the rather rich

19. Ibid., 176. ‘The Great Acceleration’ intentionally echoes Karl Polyani’s ‘Great Transformation’. See Will Steffen, Wendy Broadgate, Lisa Deutsch, et al., ‘The Trajectory of the Anthropocene: The Great Acceleration’, *Anthropocene Review* 2, no. 1 (2015): 81–98.

20. Lewis and Maslin, ‘Defining the Anthropocene’, 174.

21. Ibid., 177.



history of environmental security. One can go back to the early years of IR – post-World War One – and find mention of the environmental conditions that are central to the success or failure of battles and war.<sup>22</sup> However, the contemporary character of environmental security arose principally at the end of the Cold War, with Richard Ullman's criticism of the narrowness of Cold War era national security. In his article 'Redefining Security', Ullman argued that,

defining national security merely (or even primarily) in military terms conveys a profoundly false image of reality ... First, it causes states to concentrate on military threats and to ignore other and perhaps even more harmful dangers ... And second, it contributes to a pervasive militarization of international relations that in the long run can only reduce global security.<sup>23</sup>

The first wave of environmental security made the case for placing the environment within the national (i.e. United States) security discourse, arguing that wars over scarce resources and social breakdowns caused by environmental decay were imminent. The most popular and influential of these narratives was Robert Kaplan's 'Coming Anarchy' thesis, which has been repeated in a number of popular publications. It echoed the dangers posed by the confluence of environmental collapse and the anarchic international system.<sup>24</sup> Thus, much of this first-generation literature was begrudgingly accepted within IR because it coincided with a rising public awareness of environmental problems, and it cohered with the traditional agenda of the subject, focusing on war, conflict, and on the state as the referent object.<sup>25</sup> However, though it emerged as part of the broadening cluster of new security topics (which included debates on economic, societal, human security), and despite the emergence of methodologically sophisticated studies like Thomas Homer-Dixon's *Environment, Scarcity, and Violence*,<sup>26</sup> its influence on the larger debates and theories in IR remained marginal.

22. Raymond G. Gettell, *Introduction to Political Science*, Rev. ed. (Boston: Ginn and company, 1922).

23. Richard H. Ullman, 'Redefining Security', *International Security* 8, no. 1 (1983): 129; other preeminent articles that pushed this agenda include: Jessica Tuchman Matthews, 'Redefining Security', *Foreign Affairs* 68, no. 2 (1989): 162–77; Norman Myers, 'Environment and Security', *Foreign Policy* 74 (1989): 23–41; Gwyn Prins, 'Politics and the Environment', *International Affairs* 66, no. 4 (1990): 711–30; Ian Rowlands, 'The Security Challenges of Global Environmental Change', *The Washington Quarterly* 14, no. 1 (1991): 99–114.

24. Robert Kaplan, 'The Coming Anarchy', *The Atlantic Monthly* 273, no. 2 (1994): 44–77; Robert Kaplan, *The Coming Anarchy* (New York: Random House, 2000).

25. Barry Buzan and Lene Hansen, *The Evolution of Security Studies* (Cambridge: Cambridge University Press, 2009); Úrsula Oswald Spring, Hans Günter Brauch and Simon Dalby, 'Linking Anthropocene, HUGE and HESP: Fourth Phase of Environmental Security Research', in *Facing Global Environmental Change: Environmental, Energy, Food, Health, and Water Security Concepts*, eds. Günter Brauch et al., (Berlin: Springer Berlin Heidelberg, 2009).

26. Thomas Homer-Dixon, *Environmental Scarcity and Violence* (Princeton: Princeton University Press, 1999).



As awareness rose, together with the institutionalisation of environmental concerns into regional and global bodies, IR and environmental politics evolved into a tolerant, though still largely distant, relationship. Today, none of the top 30 IR journals, organised by impact factor, focus specifically on the environment, a small range of specialised academic journals, most notably *Global Environmental Politics*, have emerged in recent years to inject insight into the complex relationships between global politics and environmental change. Further, a number of new studies are broadening and deepening our approaches to environmental IR. Some have examined the role of natural resources like oil and water on interstate behaviour.<sup>27</sup> Others expand our methodologies for dealing with complex environmental questions.<sup>28</sup> There are even a small number of articles that have emerged recently that deal directly with Anthropocene politics.<sup>29</sup> However, while the environment has moved into a privileged position near the forefront of mainstream IR, it has been largely presented as another wicked problem that demonstrates yet again the difficulties in managing state interests in a competitive and anarchic 'world'. The environment, therefore, is rendered as a managerial 'problem' that can be studied and ordered according to the familiar and accepted methodologies and theories of IR. Alternatively, the subject is presented as distant and unfamiliar to those who have been groomed to think about world politics in a certain way. The logic often being that the environment is better left to other, more appropriate disciplines like geography or the natural sciences.

Given the recent and uneven intellectual history of environmental IR, the emergence of the Anthropocene concept is a watershed moment for IR scholars. But the geological, historical, philosophical, and aesthetic components of the Anthropocene may look wholly different than what IR is used to dealing with. It is perhaps for these reasons that IR remains so far outside contemporary debates on the Anthropocene. While over 1000 articles on the Anthropocene have been written since the term was first coined in 2000,<sup>30</sup> IR remains remarkably silent. The 2015 International Studies Association (ISA) Annual Conference, the largest annual event in the discipline, contained over 6000 presentations.

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27. Jeff Colgan, *Petro-Aggression: When Oil Causes War* (Cambridge, Cambridge University Press, 2013); Cameron Harrington, 'Toward a Critical Water Security: Hydrosolidarity and Emancipation', *Canadian Foreign Policy Journal* 21, no. 1: 28–44; Mark Zeitoun and Naho Mirumachi, 'Transboundary Water Interaction I: Reconsidering Conflict and Cooperation', *International Environmental Agreements: Politics, Law and Economics* 8, no. 4 (2008): 297–316.
  28. John Urry, *Global Complexity* (Cambridge: Polity Press, 2003); Neil E. Harrison, ed., *Complexity in World Politics: Concepts and Methods of a New Paradigm* (Albany: SUNY Press, 2006); Michele Acuto and Simon Curtis, *Reassembling International Theory: Assemblage Thinking and International Relations* (New York: Palgrave Macmillan, 2014); Jairus Grove, 'Ecology as a Critical Security Method', *Critical Studies on Security* 2, no. 3 (2014): 366–9.
  29. Simon Dalby, 'Rethinking Geopolitics: Climate Security in the Anthropocene', *Global Policy* 5, no. 1 (2014): 1–9; Simon Dalby, 'Climate Geopolitics: Securing the Global Economy' *International Politics* 52, no. 4 (2015): 426–44; Frank Biermann, *Earth System Governance: World Politics in the Anthropocene* (London: MIT Press, 2014).
  30. As of 14 March 2016, there were approximately 1,700 articles listed in Google Scholar with 'Anthropocene' in the title. Web of Science listed 425 such articles and Scopus listed 550.

Only one paper abstract explicitly mentioned the Anthropocene. This, despite the fact that, according to the latest TRIP survey of IR Scholars, the most important foreign policy issue the world faces over the next ten years is global climate change. Curiously though, the same poll revealed that only 2.44% of the 3977 scholars surveyed listed the international/global environment as their main area of research.<sup>31</sup> The discrepancy reveals that IR has failed to grasp the complex environmental components that comprise global politics. With the creation (or perhaps ‘discovery’) of the Anthropocene, we are at the precipice of something simultaneously very old, and something entirely new. We are at the edge of the old world (in IR).

## The End of Nature

Beyond the discovery of the new human age, the Anthropocene compels us to acknowledge the end of the world-as-nature. That is, it tasks us with contemplating a post-natural IR. Outside of IR, contemplating the meaning of nature has proven to be a provocative topic for some time. Classic studies like Clarence Glacken’s *Traces on the Rhodian Shore* (1967), Lynn White’s ‘The Historical Roots of our Ecologic Crisis’ (1967), and William Leiss’s *The Domination of Nature* (1972), all sketched the intellectual history of humanity’s relation to nature.<sup>32</sup> They emphasise the long Western tradition of viewing man as master over nature and the belief that human progress was dependent upon the possibility of exploiting nature within a mood of indifference.

Bill McKibben’s popular 1989 book, *The End of Nature* also advanced the discussion, particularly for its primarily American audience, arguing that humans had ended nature by ‘destroying’ it.<sup>33</sup> The central thesis of McKibben’s book was that, because of large-scale climatic changes enacted by humans, no place on Earth can be considered ‘natural’. Everything is different from what it naturally would be, becoming a type of ‘artifact’.<sup>34</sup> However, as environmental philosophers and conservation biologists put it, given the fluidity of constantly changing landscapes, this type of thinking has us ‘forever chasing moving objects’.<sup>35</sup> Some have therefore pushed back against McKibben’s view, because ‘nature’ itself has never existed. In particular, the combination of advances in complexity theory and a return to the creative cosmology of philosopher Alfred North Whitehead has

31. Teaching Research and International Policy, *TRIP 2014 Faculty Survey Report*. Available at: [https://trip.wm.edu/reports/2014/rp\\_2014/](https://trip.wm.edu/reports/2014/rp_2014/). Last accessed March 20, 2015.

32. Clarence J. Glacken, *Traces on the Rhodian Shore: Nature and Culture in Western Thought from Ancient Times to the End of the Eighteenth Century* (Berkeley and Los Angeles: University of California Press, 1967); Lynn White Jr., ‘The Historical Roots of Our Ecologic Crisis’, *Science* 155, no. 3767 (1967): 1203–7; William Leiss, *The Domination of Nature* (Montreal and Kingston: McGill University Press, 1994 [1972]).

33. Bill McKibben, *The End of Nature* (New York: Anchor Books, 1989).

34. Steven Vogel, ‘Environmental Philosophy after the End of Nature’, *Environmental Ethics* 24 (2002): 23–39.

35. Adrian D. Manning, Joern Fischer, Adam Felton, et al., ‘Landscape Fluidity – A Unifying Perspective for Understanding and Adapting to Global Change’, *Journal of Biogeography* 36, no. 2 (2009): 193.

inspired a new generation of scholarly work to re-think the relationship of potentiality between humans and the world. Whitehead's appeal to 'avoid vicious bifurcation' of the mind and matter (or humans and nature) has generated appeals to, instead, take heed of the creative 'events' that compose the universe.<sup>36</sup> This entails overcoming the 'fallacy of misplaced concreteness', developing instead a positive attachment to the *vitality* of the cosmos whilst understanding that it is not predesigned for us, nor susceptible to our control.<sup>37</sup> We live in an entangled universe, constantly undergoing a process of creative becoming. Bemoaning the loss of wilderness as a pristine, balanced, and unmoving type of landscape (as some like McKibben are guilty of) belies the dynamic processes of the Earth system that demonstrates upheaval, movement, and messy connections. It perpetuates a type of essentialism to human action, marking it as distinct from every other creature or process on Earth. No one would argue that humans are the only species to transform landscapes. And while the Anthropocene does mark the human as exceptional in terms of its impact, it also teaches us to break down the ontological dualism between human and nature that drags with it so much environmental damage.

What it means to speak of nature is of course not easy. The critic Raymond Williams famously described nature as 'perhaps the most complex word in the [English] language'.<sup>38</sup> Nature refers at once to the essential quality of *something* as well as to the material world, including, or not including, humans. It derives in part from the Latin root *nasci* – to be born, where another familiar IR concept, *nation*, also emerges. From these roots has sprung the persistent tendency to personify nature theologically, as a type of Mother Earth – an abstract goddess from which the bounty of life emerges. This has rendered the world as something pure, static, and unmoving. This view, held so deeply in modernity, allows humans (via science) to become, as Descartes famously declared, 'masters and possessors of nature'.

Another component of nature is found in the original IR trope of the 'state of nature', used to portray the world without humans, or conversely, humans without the social world. From Hobbes to Rousseau onwards, to most 'traditional' theories of international relations, the world primarily exists as either the backdrop to the human drama, or as an ideal of purity to which humans should strive to emulate. Whether one retains optimism or pessimism regarding the abilities of humans to negotiate peace and achieve security, the world itself is emptied of agency. It exists primarily to satisfy or thwart the endeavours of *homo sapiens* to construct moral and rational political orders. Therefore, for most IR scholarship, a drought, or a hurricane, an oceanic garbage patch, or a lithium mine pit, offer limited and unremarkable appeal. On occasion these may be sites of international political contestation and thus deemed worthy of comment, but there has been little desire to identify and incorporate these as more complex assemblages of social and ecological life – as representatives of Anthropocene politics.

36. Alfred North Whitehead, *The Concept of Nature* (Mineola: Dover Publications, 2004 [1920]).

37. William Connolly, *The Fragility of Things* (Durham and London: Duke University Press, 2013), 147.

38. Raymond Williams, *Keywords: A Vocabulary of Culture and Society* (New York: Oxford University Press, 1976), 219.

However, the Anthropocene brings with it the end of the world by rupturing the primary binaries upon which international relations has largely depended. This means breaking down the categorical barriers between human and non-human (natural) realms, and allowing for the messy forms of complexity and entanglement that comprise systems.<sup>39</sup> Viewing the world through the prism of the whole Earth system is to observe the cumulative interactions, overlaps, and intersections between groups of elements. Langmuir and Broecker write, 'The various parts of the Earth system – rock, water, atmosphere – are all involved in interrelated cycles where matter is continually in motion and is used and reused in the various planetary processes. Without interlocked cycles and recycling, Earth could not function as a system'.<sup>40</sup> The complex, interlinked set of exchanges between various parts of the Earth system includes humans, non-humans, and things. For the Earth system scientists who have carried the Anthropocene banner, this exchange between humans and the world 'represents a new phase in the history of both humankind and of the Earth, when natural forces and human forces became intertwined, so that the fate of one determines the fate of the other. Geologically, this is a remarkable episode in the history of this planet'.<sup>41</sup>

This breakdown points to the co-production of nature and social life. Nigel Clark writes that humans and nature are now increasingly seen as, 'heterogeneous compositions – forged out of complex, shifting permutations of human and physical ingredients'.<sup>42</sup> Nature and human society are not the same, but neither are they wholly different. They are entangled in ways that are irreversible, complex, productive, and hybridised. In the words of Carolyn Merchant, nature is 'rambunctious'.<sup>43</sup> According to Manuel Arias-Maldonado, we would do well to realise that,

[N]atural history is also social history, that is, one that has spread the human influence in so many ways that it is now difficult to tell whether man is *absent* or not from a given natural process or a certain natural entity. It is certainly reasonable to ask whether domesticated animals, human-designed rivers, or managed ecosystems are still natural.<sup>44</sup>

It has become impossible to neatly separate the human from nature, and vice versa. This entanglement does not refer simply to co-existence between humans and the natural world, but to a deeper type of engagement, all the way down with other humans, beings,

39. Emilian Kavalski, ed., *World Politics at the Edge of Chaos: Reflections on Complexity and Global Life* (Albany: SUNY Press, 2015).

40. Charles Langmuir and Wally Broecker, *How to Build a Habitable Planet* (Princeton: Princeton University Press, 2012), 20.

41. Jan Zalasiewicz, Mark Williams, Will Steffen, et al., 'The New World of the Anthropocene', *Environmental Science and Technology* 44, no. 7 (2010): 2231.

42. Nigel Clark, *Inhuman Nature: Sociable Life on a Dynamic Planet* (Los Angeles: SAGE Publications, 2011), 9.

43. Carolyn Merchant, *Autonomous Nature: Problems of Prediction and Control from Ancient Times to the Scientific Revolution* (New York: Routledge, 2016).

44. Manuel Arias-Maldonado, 'Spelling the End of Nature? Making Sense of the Anthropocene', *Telos* 172, (Fall 2015): 83–102.

things, and processes. The concepts of self and other fade away. This eclipse of the old forms of mechanistic determinism requires us to think about writing new types of history, and constructing new discourses that can incorporate the idea that everything is simultaneously human and natural.

How this translates into the realm of IR is an unsettled question. One way has been to emphasise the agency of objects and nonhuman actants. Playing off Bruno Latour's project *Making Things Public*, two recent IR volumes *Making Things International I, and II*, incorporate materiality into the world of IR, exposing how the strange assemblages of things, humans, and non-humans, configure the practices and understandings of war, diplomacy, security, and the economy. Mark Salter explains in the introduction to the first volume,

Environmental regimes cannot be understood without giving agency to the non-human actants that make up the biosphere. Global economic relations cannot be understood without reference to the independent agency of algorithms that act too quickly for human oversight or interference. The economy is not an external object, but a set of assumptions, processes, and practices. Security cannot be understood solely as a set of speech-acts, but also requires guns, tanks, drones, tear-gas, badges, and fences. In each of these areas, there are non-human actants that fundamentally alter the condition of human possibility, in ways that are unpredictable and irreducible to their constituent elements.<sup>45</sup>

In tandem with the 'materialist turn' has been the growing focus on 'the posthuman' in IR. Encapsulated in recent work by Erika Cudworth and Stephen Hobden, a posthuman approach to IR emphasises that 'humans' and 'humanity' are socially and culturally constituted categories.<sup>46</sup> They argue that, to speak of posthumanism does not mean we should reorient the hierarchy that places humans at the top of ethical considerations, or that we need to expand beyond anthropocentrism, though these ideas are present. Rather, we need to see ourselves as ambiguous beings, existing in tandem and combined with, non-humans. It means identifying and advocating for 'hybrid' and 'cyborg' ontological forms where mixtures of human and non-human components exist. This requires us to view categories like nature, the individual, society, and the international, as 'relational achievements, power-laden constructions emergent from "assemblages" [of] interacting "actants" – not all of whom are human or alive'.<sup>47</sup> For Cudworth and Hobden, the three primary impacts of posthuman IR are: 1) a shifting of the agency-structure debate by including the agency of non-humans; 2) an incorporation of complexity theory into the structures of world politics, via a focus on non-linearity, causality, and unpredictability (i.e. small actions may beget large outcomes), and; 3) a demonstration of the embedded

45. Mark B. Salter, 'Introduction: Circuits in Motion', in *Making Things International I: Circuits and Motion*, ed. Mark B. Salter (London: University of Minnesota Press, 2015), 2–3.

46. Erika Cudworth and Stephen Hobden, *Posthuman International Relations: Complexity, Ecologism, and Global Politics* (London: Zed Books, 2011).

47. Jamie Lorimer, 'Multinatural Geographies for the Anthropocene', *Progress in Human Geography* 36, no. 5 (2012): 593–612.

hierarchies of power both within human systems and particularly between human and non-human systems.<sup>48</sup>

All this forces us to think of the world as not inert matter only moved through physical laws, but as something acting upon us. Bringing the non-human into IR means researching how 'non-human' entities such as animals,<sup>49</sup> microbes,<sup>50</sup> devices,<sup>51</sup> materials,<sup>52</sup> and terrain,<sup>53</sup> factor into our ideas and practices of global politics. One way, as philosopher Jane Bennett explains, would be to consider the material and quasi-agentive role of micro-nutrients that produce health or disease, and how they can trigger global crises, or how the confluence of processes comprising storms and droughts, can impact international security.<sup>54</sup> As Cudworth and Hobden explain, examining war through the prism of post-human IR could lead to a greater focus on how the human soldier itself is an amalgamation of non-human 'parts', including night vision goggles, amphetamines, drones, etc. It also could emphasise the ways in which animals have been absorbed (e.g. the war horse) and vegetation strategically degraded, in the practice of war.<sup>55</sup>

As it often is, the recent materialist and posthuman turns have arisen because a small number of graduate students and lecturers drifted afield into disciplines other than traditional IR.<sup>56</sup> Believing that Science and Technology Studies, cultural studies, and critical geography can inject a deeper sense of the entanglement between nature and global politics, these scholars have initiated a budding movement that provokes and disturbs seemingly settled norms of what it means to speak, read, and act, international relations. As Latour reminds us, the connections between politics and nature are always ever-present. 'Never, since the Greeks' earliest discussions on the excellence of public life, have people spoken about politics without speaking of nature... Conceptions of politics and conceptions of nature have always formed a pair as firmly united as the two seats on a seesaw...' <sup>57</sup>

48. Erika Cudworth and Stephen Hobden, 'Of Parts and Wholes: International Relations Beyond the Human', *Millennium: Journal of International Studies* 41, no. 3 (2013): 430–50.

49. Erika Cudworth and Stephen Hobden, 'Civilisation and the Domination of the Animal', *Millennium: Journal of International Studies* 42, no. 3 (2014): 746–66.

50. Stefanie Fishel, 'Microbes', in *Making Things International I: Circuits and Motion*, ed. Mark Salter (Minneapolis: University of Minnesota Press, 2015), 156–70.

51. Ben Noys, 'Drone Metaphysics', *Culture Machine* 16 (2015); Lauren Wilcox, 'Drone Warfare and the Making of Bodies Out of Place', *Critical Studies on Security* 3, no. 1 (2015): 127–31.

52. Audra Mitchell, 'Thinking Without the "Circle": Marine Plastic and Global Ethics', *Political Geography* 47 (2015): 77–85.

53. Derek Gregory, 'The Natures of War', *Antipode* 48, no. 1 (2016): 3–56; Cameron Harrington and Emma Lecavalier, 'The Environment and Emancipation in Critical Security Studies: The Case of the Canadian Arctic', *Critical Studies on Security* 2, no. 1 (2014): 105–19.

54. Jane Bennett, *Vibrant Matter: A Political Ecology of Things* (Durham: Duke University Press, 2010).

55. Cudworth and Hobden, 'Of Parts and Wholes', 449.

56. Rolf Lidskog and Göran Sundqvist, 'When Does Science Matter? International Relations Meets Science and Technology Studies', *Global Environmental Politics* 15, no. 1 (2015): 1–20.

57. Bruno Latour, *The Politics of Nature* (Cambridge: Harvard University Press, 2004): 28.



## The End: Confronting Failure, Denial, and Extinction in IR

Despite the seemingly strange and foreign attitudes that accompany the Anthropocene, it also focuses attention on some of the discipline's core concerns, namely, security and survival. It forces us to confront how conceptions of security and survival are often denied by the unpredictable nature of climate change and its impact on the complex functioning of the Earth system. In particular, IR narratives must consider how global politics are enacted and enmeshed with the ongoing, diverse extinction events across species, and their connection to the prospects of existential risks borne by humans in the Anthropocene.<sup>58</sup> This will not necessarily widen the scope of IR into intellectual incoherence, but it will create new opportunities for ethical responsiveness and new types of political engagement.<sup>59</sup>

According to many Earth scientists, the Anthropocene announces a period of extreme upheaval and existential risk for most living things on Earth. A refrain now common is that the world is on the cusp of a great dying, a mass extinction event not seen in 56 million years.<sup>60</sup> Since the dawn of the industrial revolution, anthropogenic emissions of carbon dioxide (CO<sub>2</sub>), predominantly from burning fossil fuels, have increased the concentration of CO<sub>2</sub> in the Earth's atmosphere by approximately 40%. Because of their ability to trap heat, the future trajectory of CO<sub>2</sub> emissions indicates that by century's end the world will be warmer by 2–4 degrees Celsius, despite the global pledge at the 2015 Conference of the Parties to the United Nations Framework Conventions on Climate Change (COP 21) climate summit in Paris to limit global warming to 1.5 degrees. According to the Intergovernmental Panel on Climate Change (IPCC), this anthropogenic interference threatens the integrity and survivability of vulnerable systems, particularly arctic sea ice and coral-reef systems. It will also increase the number and severity of extreme weather events (e.g. heat waves, droughts, hurricanes), and cause extensive biodiversity loss with an associated loss of ecosystem goods and services.<sup>61</sup> Finally, with increased warming, some ecosystems are at risk of abrupt and irreversible changes. Traversing so-called (and often unknown) 'tipping points' may lead to the loss of human life and cultural heritage, but it may also lead to catastrophic changes and disasters on a larger scale, leading to ecosystem collapse and the failure to maintain life. These abrupt ecological changes will exert corresponding stresses on existing

58. Nick Bostrom has been at the forefront of thinking through the global political and ethical ramifications of existential risk. See Nick Bostrom, 'Existential Risk Prevention as Global Priority', *Global Policy* 4, no. 1 (2013): 15–31; Nick Bostrom and Milan M. Čirković, eds., *Global Catastrophic Risks* (Oxford: Oxford University Press, 2011).

59. Audra Mitchell, 'Beyond Biodiversity and Species: Problematizing Extinction', *Theory, Culture, & Society* (2016). OnlineFirst, December 1, 2015. Available at: <http://tcs.sagepub.com/content/early/2015/12/01/0263276415619219.full.pdf+html>. doi: 10.1177/0263276415619219.

60. Elizabeth Kolbert, *The Sixth Extinction: An Unnatural History* (New York: Henry Holt & Company, 2014), 36.

61. Intergovernmental Panel on Climate Change, *Climate Change 2014: Impacts, Adaptation, and Vulnerability: Summary for Policymakers* (Cambridge: Cambridge University Press).



governance systems (and regional strategic assessments) that may not be equipped to rapidly adapt.<sup>62</sup>

Current extinction rates 'are 1,000 times higher than natural background rates of extinction and future rates are likely to be 10,000 times higher'.<sup>63</sup> The last time extinction rates were this high was 66 million years ago, during the Cretaceous-Tertiary (K-T) mass extinction event. This event, likely caused by a combination of large meteor impact (Chicxulub) in the Yucatan, Deccan volcanism in India, and a resulting impact winter preventing photosynthesis, was Earth's fifth mass extinction.<sup>64</sup> At that time 75% of all species, including the dinosaurs, perished.<sup>65</sup> This time around, human activities are the main cause of the accelerated rates of species extinction. These changes include the conversion of ecosystems into agriculture or urban areas; changes in frequency, duration or magnitude of wildfires; and the introduction of foreign species into land and freshwater environments. Combined with the increased speed of climate change, up to 30% of all mammal, bird, and amphibian species will be threatened with extinction this century.<sup>66</sup> Given the stakes involved and the unique spatial and temporal threats created in the Anthropocene, there is a need to assess how so-called 'natural processes' will impact the fortunes of people and states under an anarchical system. More profoundly though, there is a need to reconsider the logic of the traditional security problematique – ensuring the promise of safety and survival – in an age of extinction. It also demands that we deal with the prospect of failure for the human species and the experience of failure for non-human animals, plants, and ecosystems. This requires both dissolving the image of humans as unbounded and outside nature, while simultaneously acknowledging the diverse, entangled nature of humans with the multiple subjects also threatened with future catastrophe.

One way this might be possible is to revisit the discipline's recent past and update dominant discourses on existential threats for a new age. For a discipline that found its voice in the midst of the Cold War – when apocalyptic visions of nuclear war and its environmental effects were commonplace – IR may again need to look at the debates on the moral, political, and technological components of extinction and their impact on our ideas of security. The prospect of sudden nuclear annihilation and the onset of a nuclear winter were driving forces behind the growth of IR during the latter stages of the Cold War. The doomsday logic and devastating technological capability of nuclear weapons compelled a range of policy reactions – missile defense, nuclear modernisation, threat

62. Oran R. Young, 'Arctic Tipping Points: Governance in Turbulent Times', *Ambio* 41, no. 1 (2012): 75–84.

63. Juriaan M. De Vos, Lucas N. Joppa, John L. Gittleman, et al., 'Estimating the Normal Background Rate of Species Extinction', *Conservation Biology* 29, no. 2 (2015): 452–62.

64. Gerta Keller, 'The Cretaceous–Tertiary Mass Extinction, Chicxulub Impact, and Deccan Volcanism', in *Earth and Life*, ed. John A. Talent (Heidelberg: Springer Netherlands, 2012), 759–93.

65. David A. Raup and J. John Sepkoski Jr., 'Mass Extinctions in the Marine Fossil Record', *Science* 215, no. 4539 (1982): 1501–3.

66. Johan Rockström, 'A Safe Operating Space for Humanity', *Nature* 461, no. 24 (2009): 474.

de-escalation and/or war avoidance.<sup>67</sup> Nuclear apocalypse was a motivating factor for the creation of a rich body of work, first emanating from Peace Research, which emphasised new individual and global forms of security. Likewise, the Copenhagen School's conception of securitisation, one of the most important developments in security studies over the past three decades, is premised upon a discursive focus on existential threats and the resultant politics of emergency.<sup>68</sup> Since Buzan and Wæver's original formulation, a wealth of literature has emerged on the nature and effects of securitising (or the failure to securitise) the environment in general, and climate change more specifically.<sup>69</sup>

Drawing on past literature on existential threats and prospects of survival can have important effects for thinking through our responses to the Anthropocene. However, the new age requires that we avoid the past tendency to universalise threats and emergencies, and instead, learn to incorporate the plurality, diversity, and entanglement, of risks, emergencies, and extinctions. The Anthropocene offers a similarly catastrophic threat landscape as nuclear winter, but offers a different vision of extinction – one that is 'slow, dim, barely discerned and yet violently effective'.<sup>70</sup> Thus, part of the failure within IR likely stems from the problematisation of agency in the Anthropocene.<sup>71</sup> It forces us to not only consider the breakdown of the human-nature divide and how it effects our perception of the unified agent, but also to consider whether humans (let alone individual persons) are even capable of intervening, or – if we take seriously the notion of entanglement – *intervening*. This reflects two central problems to responding politically to extinction in the Anthropocene: its complexity and its scale.

First, extinction itself is not a singular process. According to Claire Colebrook, the Anthropocene forces us to confront different types (or 'senses') of human extinction: the fact that humans will become extinct, the fact that humans cause other species' extinctions, and finally the fact of self-extinction, where we are destroying that which makes

67. There was a vibrant debate in the 1980s regarding the science and political effects of nuclear winter scenarios. See R.P. Turco, O.B. Toon, T.P. Ackerman, et al., 'Nuclear Winter: Global Consequences of Multiple Nuclear Explosions', *Science* 222, no. 4630 (1983): 1283–92; Starley Thompson and Stephen H. Schneider, 'Nuclear Winter Reappraised', *Foreign Affairs* (Summer, 1986); Brian Martin, 'Nuclear Winter: Science and Politics', *Science and Public Policy* 15, no. 5 (1988): 321–34. Naomi Oreskes and Erik M. Conway, *Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming* (New York: Bloomsbury Press, 2010).

68. Barry Buzan, Ole Wæver and Jaap de Wilde, *Security: A New Framework for Analysis* (Boulder: Lynne Rienner, 1998).

69. Rita Floyd, *Security and the Environment: Securitisation Theory and US Environmental Security Policy* (Cambridge: Cambridge University Press, 2010); Maria Julia Trombetta, 'Environmental Security and Climate Change: Analysing the Discourse', *Cambridge Review of International Affairs* 21, no. 4 (2008): 585–602.

70. Claire Colebrook, *Death of the Posthuman: Essays on Extinction Vol. 1* (Ann Arbor: Open Humanities Press, 2014), 40.

71. Colin Wight writes, 'rarely is it clear what agency is, what it means to exercise agency, or who and what might do so', in Colin Wight, *Agents, Structures and International Relations: Politics as Ontology* (Cambridge: Cambridge University Press, 2006), 178.

us human.<sup>72</sup> The diffuse forms of extinction operate at varying, interconnected scales, impacting the ways in which they are felt, experienced, or predicted. Responding to extinction encompasses inherently complex, non-linear, and unpredictable forms. And in the end, these responses and interventions are themselves never fully human. We are thus presented with the uneasy prospect of being unintentionally responsible for cascading extinction events that we cannot prevent, slow, or stop.

A second, related problem for IR, reflects a more practical concern: mass extinction – via its monumental and miniscule temporal and spatial scales – is foreign to human agency. The timeframe of the Anthropocene is indeed nothing more than a blink in geologic time, but trying to construct a political response for a cumulative series of events over the course of a century, let alone a millennia, is a tall task indeed. This difficulty is compounded by the uncertainty, unpredictability, and the inequality of climate change. The world is slowly, ponderously, and inadequately, preparing for a world that will be 2°C warmer by the end of the century. But, what if the world is 4°C warmer, as some studies now predict?<sup>73</sup> This shifting degree of magnitude is likely to: lead to the tropics becoming uninhabitable; guarantees the melting of the Greenland and Antarctic ice sheets; the subsequent rising of the oceans by upwards of 70 metres;<sup>74</sup> diminishing crop yields, which threaten food production and human health; loss of biodiversity; the spread of vector-borne diseases; and water scarcity. Even if governments of the world are successful at limiting warming to between 2–3°C, the long-term impacts will be severe. Over the next 2000 years, 20% of the world's population would be forced to move from coasts that will be swallowed up by the sea. Cities including New York, Calcutta, Shanghai, and Rio de Janeiro would be submerged under water.<sup>75</sup> Responding to this would require a total rupture of global migration norms and policy. The Anthropocene seems to demand the impossible.<sup>76</sup>

For IR to respond to the mass extinction problematique, it has to acknowledge both the complexity and the unique spatial and temporal scales of the Anthropocene. To think about agency in preventing (or delaying) mass extinction requires IR to open itself up to new ways of being and seeing the world. Rather than seeing doomsday scenarios as politically demotivating, encountering entanglement opens up the range of ethical and

72. Claire Colebrook, *Death of the Posthuman: Essays on Extinction Vol. 1* (Ann Arbor: Open Humanities Press, 2014).

73. Steven C. Sherwood, Sandrine Bony, and Jean-Louis Dufresne, 'Spread in Model Climate Sensitivity Traced to Atmospheric Convective Mixing', *Nature* 505 (2014): 37–42.

74. National Snow and Ice Data Center, 'Contribution of the Cryosphere to Changes in Sea Level'. Available at: [https://nsidc.org/cryosphere/sotc/sea\\_level.html](https://nsidc.org/cryosphere/sotc/sea_level.html). Last accessed November 16, 2015.

75. Peter U. Clark et al., 'Consequences of Twenty-first-century Policy for Multi-millennial Climate and Sea-level Change', *Nature Climate Change*. Published online 8 February 2016. Available at: <http://www.nature.com/nclimate/journal/vaop/ncurrent/full/nclimate2923.html>. Last accessed February 8, 2016.

76. See the special theme issue of *Philosophical Transactions of the Royal Society* 369 (2011), entitled 'Four Degrees and Beyond: the Potential for a Global Temperature Increase of Four Degrees and its Implications'.

political responses that can be made possible. What types of interventions can be imagined and made? The Svalbard Seed Bank (the ‘Doomsday Vault’) offers one site of preparing for a radically new future. Established in 2008 and buried deep in the Norwegian Arctic, the vault is meant to preserve a wide variety of plant seeds and their genetic makeup as insurance against regional or global upheavals. While not technically established to deal with mass extinction, it does have the capacity to hold upwards of 4.5 million seeds for hundreds of years (some seed varieties will last for thousands of years). This genetic ‘Noah’s Ark’ is a specific international intervention meant to protect and preserve – through agricultural memory – human and biological life in the face of catastrophe.<sup>77</sup> Depressingly, it only took seven years for the first withdrawals from the bank to take place, as the Syrian civil war prompted ICARDA, the Syrian seed bank, to request the return of 130 of 325 boxes it had deposited.<sup>78</sup> It may be that the most interesting site of global politics lies in the permafrost at the end of the world.

## Conclusion

According to Latour, we are all climato-skeptics.<sup>79</sup> Regardless of the level of our individual climate enlightenment, we all act in states of relative denial, indecision, and ignorance. Part of this problem lies in the fact that the Anthropocene resembles what Timothy Morton calls a ‘hyperobject’ – something that is massively distributed across space and time relative to humans. One only sees pieces of a hyperobject at a given time.<sup>80</sup> Stratigraphers excluded, we cannot wake up and point to the Anthropocene.

But the Anthropocene is a problem of, and for, IR. It reflects the numerous failings of the contemporary interstate system and the ongoing denial of the deleterious effects of the carbon economy that emanate from it. IR has indeed contributed much – from examining the difficulties in building effective environmental regime complexes to the murky role of climate change in conflict.<sup>81</sup> However, the absence of IR in contributing to the debates on the Anthropocene itself point to something more complex and disquieting, namely the myopic tendency to view humans, nature, and security, as divisible strata that encounter one another instrumentally. Such views reflect old-fashioned forms of

77. The Svalbard facility is not the only one of its kind, though it is certainly the largest and most secure. Seed banks exist around the world and were first used during World War II.

78. Ross Andersen, ‘Rescuing Ancient Seeds From a War-Torn City’, *The Atlantic* (September, 2015). Available at: [www.theatlantic.com/science/archive/2015/09/rescuing-ancient-seeds-from-a-war-torn-city/406978/](http://www.theatlantic.com/science/archive/2015/09/rescuing-ancient-seeds-from-a-war-torn-city/406978/). Last accessed February 18, 2016.

79. Bruno Latour, *Facing Gaia: Six Lectures on the Political Theology of Nature*, Gifford Lectures, Edinburgh, February 18–28, 2013. Available at: <http://www.ed.ac.uk/humanities-soc-sci/news-events/lectures/gifford-lectures/archive/series-2012-2013/bruno-latour>, see the 32:50 mark of Lecture 5: War of the Worlds: Humans against Earthbound.

80. Timothy Morton, *Hyperobjects: Philosophy and Ecology After the End of the World* (Minneapolis, University of Minnesota Press, 2013).

81. Robert O. Keohane and David G. Victor, ‘The Regime Complex for Climate Change’, *Perspectives on Politics* 9, no. 1 (2011): 7–23; Nils Petter Gleditsch, ‘Whither the Weather? Climate Change and Conflict’, *Journal of Peace Research* 49, no. 1 (2012): 3–9.

modernism and materialism, ones that helped contribute to the crises at the heart of the human age. Overcoming this myopia will be a central task for IR in the years to come.

Given its history in describing the uneven global processes of modern politics, IR is seemingly well-placed to engage the Anthropocene, which emerges directly from those processes. Further, IR's commitment to tragedy as the centrepiece of politics is reflected in the 'apocalyptic tone' so prevalent in Anthropocene studies.<sup>82</sup> Yet, the Anthropocene also presents IR with a 'worldly' problem. It forces IR to think of what Audra Mitchell refers to as mundicide: the harm to, and potential end of, multiple worlds.<sup>83</sup> Such thinking is inherently complex and requires a broader and deeper level of ecological reflection than we currently see.

This article has offered a preliminary view of the Anthropocene for IR. It has argued that entanglement and relationality are crucial components for understanding the new age and that the Anthropocene takes IR to the 'end of the world' in three interlocking ways. First, it pushes IR to abandon its Holocene origins and confront radically new understandings of the world and the human role within it. It suggests that, while mainstream studies of environmental politics offer distinct utility for understanding complex problems, much richer theoretical and empirical investigations on the Anthropocene are required. This means that IR will need to better engage with ongoing debates and discussions in other disciplines, particularly those outside of political science. Secondly, it argued that the Anthropocene ushers in the end of the 'world-as-nature'. Such a view, where nature exists as a stable canvas upon which the acts of great power politics is performed, has been fundamentally altered via the Anthropocene concept. New approaches to IR, including but not limited to, new materialism and posthuman IR, offer considerable hope that we might begin reconstructing core ontological, epistemological, and ethical concerns in the discipline. The final section highlighted the problem of extinction in the Anthropocene. It suggested that apocalypses, existential crises, and extinctions need to be (re)absorbed into IR analyses in order to cope with the scalar and temporal magnitude of the Anthropocene.

Some may question whether any of this is possible, or whether IR is the appropriate discipline for such debates. Perhaps it should only absorb certain components of the Anthropocene – the legacies of imperialism, the abiding structure of the world system as an inhibitor to climate action, the prospects of climate wars, etc. – and leave the rest to others better equipped. This is all acknowledged. However, my aim at this stage has been to disrupt, unsettle, and push a discipline whose denial of the Anthropocene may render it an idiosyncratic vestige of an earlier, failed age.

## Acknowledgements

The author thanks the editors of this Millennium special issue as well as the participants of the 2015 Millennium Conference at the London School of Economics. He acknowledges the valuable

82. Jacques Derrida, 'Of an Apocalyptic Tone Recently Adopted in Philosophy', trans. John P. Leavey Jr., *Oxford Literary Review* 6, no. 2 (1984): 3–37. See also, Jairus Grove, 'Of an Apocalyptic Tone Recently Adopted in Everything: The Anthropocene or Peak Humanity?', *Theory and Event* 18, no. 3 (2015).

83. Audra Mitchell, 'Only Human? A Worldly Approach to Security', *Security Dialogue* 45, no. 1 (2014): 5–21.

feedback received from two anonymous reviewers, Barry Buzan, Clifford Shearing, and his colleagues in the Global Risk Governance Programme at the University of Cape Town.

### **Funding**

This work is based upon research supported by the National Research Foundation, South Africa (NRF), 'Global Change, Society, and Sustainability (GCGC): Fulcrum institutions for socio-ecological resilience', Grant No: 78642.

Any opinions, findings, conclusions or recommendations expressed in this material are those of the author and therefore the NRF do not accept any liability in regard thereto.

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