

Paradigm Dressed as Epoch: The Ideology of the Anthropocene

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ABSTRACT

The Anthropocene is a radical reconceptualisation of the relationship between humanity and nature. It posits that we have entered a new geological epoch in which the human species is now the dominant Earth-shaping force, and it is rapidly gaining traction in both the natural and social sciences. This article critically explores the scientific representation of the concept and argues that the Anthropocene is less a scientific concept than the ideational underpinning for a particular worldview. It is paradigm dressed as epoch. In particular, it normalises a certain portion of humanity as the ‘human’ of the Anthropocene, reinserting ‘man’ into nature only to re-elevate ‘him’ above it. This move promotes instrumental reason. It implies that humanity and its planet are in an exceptional state, explicitly invoking the idea of planetary management and legitimising major interventions into the workings of the earth, such as geoengineering. I conclude that the scientific origins of the term have diminished its radical potential, and ask whether the concept’s radical core can be retrieved.

KEYWORDS

Anthropocene, ideology, geoengineering, environmental politics, earth management

INTRODUCTION

‘The Anthropocene’ is an emergent idea, which posits that the human species is now the dominant Earth-shaping force. Initially promoted by scholars from the physical and earth sciences, it argues that we have exited the current geological epoch, the 12,000-year-old Holocene, and entered a new epoch,

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the Anthropocene (Crutzen and Stoermer, 2000; Crutzen, 2002). This Earth-changing impact on the planet includes altering biogeochemical cycles (carbon, nitrogen, phosphorus, etc.), modifying terrestrial water cycles (through changing river flows, land-use changes, etc.), and driving extinction rates which are unprecedented since the dinosaurs.

Proponents typically take the concept well beyond descriptions of the magnitude of human impact. Paul Crutzen, an eminent scientist and early populariser of the term, has argued that '[t]he long-held barriers between nature and culture are breaking down. It's no longer us against "Nature". Instead, it's we who decide what nature is and what it will be. ... [I]n this new era, nature is us' (Crutzen and Schwägerl, 2011). Lynas takes the argument a step further: 'Nature no longer runs the Earth. We do' (2011: 8). This leads to a call for active planetary management.

The concept has now entered the *zeitgeist*, and 'The Age of Man' has been popularised in mainstream magazines such as *National Geographic* (March 2011) or *The Economist* (May 2011). The term is proliferating in academic discourse, across a range of scientific and applied disciplines, as well as in the humanities and social sciences. It has scientific respectability despite not yet being an accepted scientific term. In August 2013 there were no academic journals devoted to the subject; by April 2014 there were four! The conceptual horse has bolted, and yet there has, to date, been relatively little critical reflection on what is, undoubtedly, a 'big idea'.¹

This matters because the Anthropocene is a troubling concept. It radically unsettles the philosophical, epistemological and ontological ground on which both the natural sciences and the social sciences/humanities have traditionally stood. And yet in the scientific versions, the empirical observations are so enmeshed in value-laden assumptions and prescriptions that 'the Anthropocene' reveals itself as something beyond, or other than, a scientific concept.

In this article I critically examine the concept of the Anthropocene, as argued by its key scientific proponents, and ask what work it does. I argue that it is not simply a neutral characterisation of a new geological epoch, but it is also a particular way of understanding the world and a normative guide to action. It is, perhaps, more usefully understood as an ideology² – in that it provides the ideational underpinning for a particular view of the world, which it, in turn,

1. A critical literature around the Anthropocene is beginning to emerge; some are critical of the concept itself, while others engage critically with the issues the Anthropocene throws up. Crist, in a provocation, argues that Anthropocene discourse not only refuses to challenge human dominion, but is focused on making that dominion sustainable: that it is a manifestation of the 'human supremacy complex' (2013). Others have sought to understand the 'geoeconomy' which underpins thinking about planetary modification (Yusoff, 2013), or how it upturns the modern 'science-politics settlement' whereby natural science studies and speaks for objective Nature (Lorimer, 2012) or, at least, has unsettled established notions of human-environmental relations (Whitehead, 2014).
2. I wish to acknowledge feedback on an earlier draft by Robyn Eckersley, Ghassan Hage and Sundhya Pahuja, and thank the two anonymous reviewers for their helpful comments.

PARADIGM DRESSED AS EPOCH

helps to legitimate. As such, it is not so much a geological epoch as a paradigm or, more accurately, a paradigm presented as an epoch.

Although radical in its recognition of human impact upon the planet, I problematise four major moves typically contained within the concept. First, it universalises and normalises a certain portion of humanity as the human of the Anthropocene. Second, it reinserts ‘man’ into nature only to re-elevate ‘him’ within and above it. Third, its use of ‘instrumental reason’ generates a largely uncritical embrace of technology. And, fourth, it legitimises certain non-democratic and technophilic approaches, including planetary management and large-scale geoengineering, as necessary responses to the ecological ‘state of emergency’.

After the critique, I will consider whether the radical and emancipatory insights within the concept can be seized, and whether another, reframed Anthropocene is possible.

AN ANATOMY OF THE ANTHROPOCENE

The evidence of extensive human impact on a wide range of natural systems is now overwhelming, and not rehearsed in detail here. Anthropogenic greenhouse-gas emissions are high and rising, with growing impacts on even the remotest corners of the planet. The decline in biodiversity is dramatic and suggests we are now in the midst of the ‘sixth extinction’. Our land-use patterns and ecosystems have been profoundly humanised (Vitousek et al., 1997; Steffen, 2010).

Most proponents of the Anthropocene rely on the work of the Stockholm Resilience Institute, and the metaphor of ‘Planetary Boundaries’. This attempts to estimate physical limits on a number of variables – boundaries which we cross at our peril (Rockstrom et al., 2009). There is also heavy reliance on another metaphor: the argument that, since 1950, we have witnessed a ‘Great Acceleration’ in resource use, agricultural intensity, economic output, overload of sink functions in the Earth system, and so on. If we have crossed a threshold and entered a world of accelerating impacts, we appear to have done so as part of a dramatic increase in economic growth, commodity production and consumption since World War Two.

These popularisations, and their underlying scientific research, also feed into the debate about when the Anthropocene began, currently under consideration by the International Commission on Stratigraphy (ICS). There are, simplifying somewhat, three broad views on dating: a sceptical, an early (or agricultural) and a contemporary (or industrial) view. The Sceptics are not convinced that that the term ‘Anthropocene’ is scientific or scientifically justifiable

I use ‘ideology’ in the sense that Manfred Steger does in his book *Globalisms* (2009: 6–9). This, in turn, draws upon the work of Carver, Freedon, Gramsci and, especially, Ricœur.

or useful (Smith and Zeder, 2013), even suggesting that it is ‘pop culture’ (Autin and Holbrook, 2012). The Early Anthropocene argument largely associates the proposed shift in epoch with the emergence of human settlement and agriculture, a few thousand years ago (Ruddiman, 2005). The Contemporary view initially linked the beginning of the Anthropocene to the commencement of the industrial revolution around two hundred years ago (Crutzen and Stoermer, 2000); increasingly, however, the contemporary view, and overwhelmingly the dominant view of the Anthropocene’s proponents, dates the commencement of the epoch to around 1950, linking it to the ‘Great Acceleration’, and with the radioactive global residues of nuclear-weapons testing, regarded as the physical ‘golden spike’ that stratigraphers like to identify when dating an epoch. Crutzen too has, reportedly, come around to this view (Voosen, 2012).

What hangs on the different dating proposals? An early, Agricultural dating suggests a belated recognition of humanity’s long-standing ability to shape nature, and how substantially it has done so over thousands of years. Nothing fundamentally new is implied. By contrast, a Contemporary dating suggests a relatively new and unusual condition. It implies thresholds rapidly being crossed, and feeds into contemporary perceptions of precaution, risk and ‘manufactured uncertainty’ (Beck, 2009), as well as into observations about the accelerating pace of globalisation and change. It sits easily with the idea that we are in an exceptional time, needing exceptional, emergency responses.

Jan Zalasiewicz, who chairs the Anthropocene working group, acknowledges that the term ‘is novel not just as a time unit, but novel, indeed unprecedented, as regards its analysis and consideration’ (Zalasiewicz et al., 2010: 2229). Crutzen himself is reported as having said that the real value of the term is not in revising geology textbooks, but that the term will be ‘a warning to the world’ (Kolbert, 2011).

In truth, the debate surrounding the adoption and dating of the epoch has little to do with geology or stratigraphy. Indeed, the quest for this endorsement is mainly a reflection of our desire for the imprimatur of scientific authority (Szerszynski, 2013b). The Anthropocene does not need to be an object of scientific inquiry by geologists and stratigraphers, or even a formally-recognised geological epoch, in order to have an impact. But to remain a lively concept across a range of disciplines, it does need to be contemporary. It has to be novel, it has to be now.

This places us in the realm of political, cultural or historical time, rather than geological time. Or, rather, we imply that these timeframes have become intertwined. We are obliged, then, to also consider other characterisations of the contemporary period, not only those drawn from the natural sciences. The Contemporary dating largely coincides with the global rise to dominance of the United States, the spread of consumer capitalism, and the massive expansion in the size and spread of global markets – often shorthanded as ‘globalisation’. It is a period, and condition, that has been variously labelled ‘Late Capitalism’

PARADIGM DRESSED AS EPOCH

(Jameson), ‘Hypermodernity’ (Lipovetsky, Virilio), ‘neo-liberalism’ (at least since the mid-seventies), ‘market globalism’, and variants of these.

Analytically speaking, the characterisation of the epoch as ‘Anthropocene’ involves a descriptive claim and an ascriptive claim. The descriptive claim, as we have seen, is that humans now have a dominant earth-shaping influence on the planet. This is the least controversial of the claims. The ascriptive claim is that the magnitude of this impact is recent and ongoing, and can be ascribed to, or at least associated with, the acceleration of industry and output since 1950.

But the characterisation of the epoch, at least by proponents from the natural sciences, is typically accompanied also by a prescriptive claim – often quite precise – outlining what an appropriate response might be to humanity’s new role, and how we, as a species, might engage differently with nature. Two typical examples illustrate this. Crutzen argues that

[a] daunting task lies ahead for scientists and engineers to guide society towards environmentally sustainable management during the era of the Anthropocene. This will require appropriate human behaviour at all scales, and may well involve internationally accepted, large-scale geo-engineering projects, for instance to ‘optimize’ climate. (2002: 23)

Ellis and Haff call for a ‘postnatural’ science paradigm which points to ‘the future of Earth science as an applied discipline with the human future in the balance’. They would like to see Earth-science graduates take an oath to help them

be more influential in guiding the public, our decision makers, and our students toward more successful management of human systems, the only Earth systems that truly pose a serious threat to the future of humanity. (2009: 474)

The idea of the Anthropocene, as presented by some leading scientific advocates, thus seems to come attached to a number of prescriptive claims and normative assumptions: in particular, an embrace of planetary managerialism and the ‘rule of experts’. Framing situations as ‘problems’ implies the need to find ‘solutions’, and a strong preference is shown for hi-tech and large-scale technological initiatives. Underpinning these is a revised account of nature which involves, in particular, support for the idea that we now inhabit a world beyond nature (a point to which I will return).

These and similar assumptions can be found in the work of the International Geosphere-Biosphere Programme (IGBP), part of the Earth System Science Partnership (ESSP), and its successor, the Future Earth Initiative.³

In June 2012, ahead of the Rio+20 conference, a short, beautifully visualised, ‘semi-official’ video was prepared by a range of scientific bodies meeting at a ‘Planet Under Pressure’ conference in London. Titled ‘Welcome to the Anthropocene’, it presents a range of evidence of human impact on the planet

3. See <http://www.igbp.net/> and <http://www.icsu.org/future-earth>.

and concludes: ‘This relentless pressure on our planet risks destabilisation. But our creativity, energy and industry offer hope. We have shaped our past. We are shaping our present. We can shape our future.’ The case for this approach is eloquently summarised by Lynas. We already are unwittingly engineering the planet when we drive our cars, plough our fields or cast our fishing-nets. Better to engineer intentionally and manage the planet. ‘The Age of Humans does not have to be an era of hardship and misery for other species; we can nurture and protect as well as dominate and conquer. But in any case, the first responsibility of a conquering army is always to govern’ (2011: 11–13). A revealing analogy! What is being suggested goes well beyond what has been called ‘ecological modernisation’ (Mol and Sonnenfeld, 2000). We now, it seems, have granted ourselves an epoch-given right (or duty) to govern and manage the planet.

Certainly there are differences of tone among the various accounts. There are those of a ‘Promethean’ persuasion who see the Anthropocene as something to be embraced. For example, Ellis argues that:

The only limits to creating a planet that future generations will be proud of are our imaginations and our social systems. In moving toward a better Anthropocene, the environment will be what we make it. (2013)

Then there are those who stress the existence of biophysical limits, and often a more humble outlook regarding the place of humanity. For example, implicit in the call by Steffen et al. (2011b) – that humanity’s management of the planet should aim to return it to the Holocene – is a sense that the Anthropocene gives us cause to step back. We might label this approach the humble, ‘Aidosean’ Anthropocene, after Aidos, the Greek goddess of shame, modesty and humility.

Whilst there are differences in tone between the humble and the hubristic accounts of the Anthropocene, they remain points on a common spectrum; all are ‘post-nature’ in some sense, and are technophilic and planetary-managerialist in orientation. The argument that the science shows us to have entered a new geological epoch is generally packaged with a set of debatable, conventional and undoubtedly extra-scientific values.

In short, the Anthropocene is more paradigm than geological epoch, and may be understood as *paradigm dressed as epoch*.⁴ It is, first and foremost, a frame, a way of understanding the world. In practice we are debating a worldview, under the guise of debating whether or not to baptise a new geological epoch.

4. In similar vein, Dibley (2012) has labelled it both ‘epoch and discourse’. The term ‘paradigm’ is preferred here to capture both the way in which the term is used in relation to the sciences, and its slightly different meaning in the social sciences.

PARADIGM DRESSED AS EPOCH

THE CONCEPT AT WORK

What work is the concept of the Anthropocene doing? It is undoubtedly a radical idea (in the sense of ‘getting to the root’): it clearly points to the scale and anthropogenic nature of what we typically label ‘the global ecological crisis’.

But it is also troubling in more problematic ways. To explore this, I will first ask: who is the human of the Anthropocene? I will then look at the concept’s implicit and explicit account of nature, its approach to science and technology, and its apparent affection for non-democratic, managerialist and expert-led interventions in response to the ecological ‘state of emergency’.

WHO IS THE HUMAN OF THE ANTHROPOCENE?

If the new agent of the Earth’s changes is primarily the human species, or at least contemporary humanity, we must ask who is this human, this *anthropos*? Szerszynski has asked which types of human – maker, consumer, helmsman – we imagine (2012). I will ask, rather: which particular humans do we have in mind, what baggage does the term ‘Anthropocene’ come with, and what are the effects of this characterisation?

The concern is that the Anthropocene label tends to universalise and normalise a small portion of humanity as ‘the human of the Anthropocene’. It treats humans transhistorically. It does not distinguish between different societies, either spatially or temporally. Which humans, exactly, or which agents or structures, have brought us to this epoch? And what exactly has driven the Great Acceleration since 1950?

It is not especially novel to link extreme planetary impacts with the unfolding logic of industrialisation (capitalist or non-capitalist), or with our reliance for energy on fossil fuels, or with the externalising, expansionist tendencies of the capitalist market, or merely with the fact of a ninefold growth in output since 1950 (Speth, 2008). The implication of such diagnoses is that we should question our attachment to the dominant modes of industrialisation, markets and business-as-usual approaches.

No wonder some have asked why this putative epoch is not called the ‘capitalocene’ (Moore, 2014) or the ‘econocene’ (Norgaard, 2013). Why not think of it as the Shiva-cene, after the Indian deity’s characterisations as ‘destroyer’ and ‘transformer’; or, following Crist (2007: 52), reflect on biologist E.O. Wilson’s invocation of the Eremozoic, the Age of Loneliness or Emptiness, in order to acknowledge the existential impact on humanity of the immense losses resulting from the major extinction event that is underway. If we were to use any of these terms then the implicit diagnosis is different, and a different set of normative solutions or prescriptions suggest themselves.

Characterising the contemporary moment as the Anthropocene, then, is really only justifiable if we hold that our current predicament is fundamentally a consequence of our biology, of our nature as a species: a position not explicitly argued by proponents.

By labelling the epoch ‘Anthropocene’, and the driver – the cause of the massive impacts on the biosphere – as humanity, a particular dynamic is invoked. Impacts which have been driven by (and largely for the benefit of) a minority are attributed to all of humanity. Humanity is made one with modern Enlightenment man, the man for whom ‘progress’, ‘growth’ and ‘development’ are the dominant goals. The Indian subsistence farmer, the African herder and the Peruvian slum-dweller become part of one ‘humanity’ with the inhabitants of the rich world, despite clearly being very differentially responsible for ecological devastation and planetary overshoot.

In short, the term ‘Anthropocene’ reveals the power of humans, but it conceals who and what is powerful, and how that power is enacted. It draws ‘the human’ into ‘nature’ but not the multiple and unequal social values, relations and practices of power that accompany actual humans. Particular forms of human behaviour, individual and collective, are thereby universalised, essentialised and made natural.

ENDING NATURE

Raymond Williams famously argued that the word ‘nature’ is perhaps the most complex in the English language, and contains, ‘often unnoticed, an extraordinary amount of human history’ (1980: 64). Many issues are enmeshed in the term, from the empirical ‘nature’ in the world ‘out there’, to the concept of ‘Nature’ with its history, politics and complexity, then to the associated Nature-Culture binary which frames much of western thinking and scientific practice (cf. Merchant, 1980; Cronon, 1995; Latour, 2004); and it is difficult to disentangle them.

We know, too, that the terms ‘Nature’ and ‘Culture’ are not universal categories, nor is there only one understanding of how they are connected. A range of alternative ‘ontological routes’ exist, including those fundamentally incommensurable with the dominant perspective of the contemporary West and modernity, the ‘Naturalist’ approach, as Descola labels it (2013). Thinking through ‘nature’ is not straightforward, but it is essential to any coherent concept of the Anthropocene.

Central to the Anthropocene is the idea that what we have previously understood to be the ‘natural world’ has been so shaped by humanity, that in some sense we are beyond nature. Nature and the Earth are now socially constructed, or at least are predominantly so. This is a significant claim, empirically and conceptually, and one with important ethical, epistemological and ontological

PARADIGM DRESSED AS EPOCH

implications. And yet accounts of nature by key scientific proponents of the Anthropocene are either cursory, surprisingly crude or simply absent. They generally show little awareness of the immense body of thought, emanating from the social sciences and the humanities, about the meaning and politics of nature, or why this might be relevant.

Zalasiewicz et al., for example, state fairly neutrally that ‘the Anthropocene 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’ (2010: 2231). They do not elaborate. This view does, at least, provide grounds for engagement with thinkers from within the Naturalist tradition, interested in ideas of hybridity and the production of N/nature, where the ‘social’ and the ‘natural’ are ‘so closely entwined that these labels make little sense’ (Castree, 2005: 232).⁵

Crutzen’s most extensive account of the underlying assumptions about N/nature within the Anthropocene concept is in a popular piece co-authored with Shwägerl. They cite von Humboldt’s 200-year-old notion of the ‘world organism’, tellingly noting that the term is from an ‘eminent German scientist’ and not ‘an esoteric Gaia guru’, and they argue that Humboldt’s ‘message suggests we should shift our mission from crusade to management, so we can steer nature’s course symbiotically instead of enslaving the formerly natural world.’ They argue that

[t]he long-held barriers between nature and culture are breaking down. It’s no longer us against ‘Nature.’ Instead, it’s we who decide what nature is and what it will be... Living up to the Anthropocene means building a culture that grows with Earth’s biological wealth instead of depleting it. Remember, in this new era, *nature is us*. (2011, my emphasis)

As expressed by Crutzen and Shwägerl, nature is seen as having little or no remaining autonomy and agency. It is dependent on ‘our’ good management and goodwill.

Leading ecologist Erle Ellis is known for showing the global extent of human transformation of the terrestrial biosphere, and has argued that ‘biomes’, a fundamental category in ecology, should really be called ‘anthropogenic biomes’ or ‘anthromes’ (Ellis et al., 2010). As a leading proponent of the Anthropocene, on the Promethean side of the spectrum, he largely sidesteps the question of nature and its value, whilst nevertheless holding implicit views. He is sceptical of talk about ‘limits’ and ‘planetary boundaries’. ‘It was not planetary boundaries, but human system boundaries that constrained human development in the

5. Whilst the Anthropocene concept has some superficial similarities to more established variants of ‘post-nature’ thinking, there are also important distinctions. For example, while the latter generally argue that nature has never *not* been hybrid, the Anthropocene’s scientific proponents suggest that only *now* (since the 1950s?) is the society-nature dualism obsolete (Castree, 2005: 225).

Holocene, the geological epoch that we have just left. We should expect no less in the Anthropocene' (Ellis, 2012).

In an article for *New Scientist*, he argues that the return of the Holocene is no longer possible, sustainable or even desirable. It is no longer Mother Nature who will care for us, but us who must care for her. ... Clearly it is possible to look at all we have created and see only what we have destroyed. But that, in my view, would be our mistake. We most certainly can create a better Anthropocene. ... The first step will be in our own minds. The Holocene is gone. In the Anthropocene we are the creators, engineers and permanent global stewards of a sustainable human nature. (2011)

The unitary, universalist claims about nature which are being made in the range of quotes above, many with an apparent modernist dream of mastery, are in some respects surprising, given the nuance of actual studies by scientists of particular ecosystems, and the implicit or explicit recognition that something like multi-naturalism is at play. They go beyond some of the recent thinking about the environment with which one might have expected an affinity – that neither the old dream of mastery over nature, nor that of harmony with nature, can be sustained; that a post-nature environmentalism is needed, including revised wilderness- and conservation-strategies (Wapner, 2010; Marris, 2011).

Intriguingly, proponents of the Anthropocene seem to be declaring the death or end of nature in an empirical sense, given that it is so heavily shaped by humans. But they simultaneously cling to the idea of Nature in the conceptual sense – except that they have made Nature into a colonial dependency of humanity. Nature and Culture are unified, but under the rule of Culture. In most versions, the Anthropocene's proponents have an account of nature and of nature-culture which is not only crude but also leads, as I will suggest, to the normative prescriptions of planetary management.

There are a number of issues that a coherent theory of the Anthropocene would need to address. First, without wishing to minimise the seriousness of our ecological condition, it is possible to overstate the degradation of ecosystems, or imagine that the process is almost complete, or even focus too narrowly on the terrestrial and immediate atmosphere.⁶

Second, a unified conception of nature-culture, and even associated ideas of hybridity, do not capture the range of interactions that exist. Artifice and wildness are only the extreme ends of a long spectrum, such that '[n]ature in a rainforest or a coral reef, even with the marks of humanity, reveals elements of complexity and dynamism not seen in plastic pink flamingoes and jumbo jets' (Worthy, 2013: 76). Nature retains its exteriority, otherness and agency. As Virginie Maris has put it, 'the death of the unified, idealized and somehow sterilizing concept of Nature (with a capital 'N') leaves room for a much more creative and stimulating representation of nature, natures, and natural entities

6. It is also possible to overestimate the extent to which the physical power of 'nature' has or can be 'tamed'.

PARADIGM DRESSED AS EPOCH

and processes' (2013: 1). In a real sense then, there are many natures, many cultures and many nature-cultures – and thus, implicitly, many responses to our situation.

Third, Nature in the conceptual sense and nature in the empirical sense are not easily disentangled, and the 'death' or 'end' of either or both has ethical implications for humans that are not always obvious. These are issues explored by environmentalist Bill McKibben in his 1989 book *The End of Nature*. He acknowledges that nature is being deprived of its independence, and that the distinction between wild-ness and made-ness is dissolving; but he argues that only the existence of some independent nature gives us a moral point of reference: 'Nature's independence *is* its meaning; without it there is nothing but us' (1989: 54).

Fourth, it can be argued that the conceptual problem is less with the nature-culture distinction, and more with the hierarchy we impose on that distinction (Worthy, 2013). There may be value in retaining the analytical distinction between nature and culture, even as we acknowledge the made-ness of nature, and the embeddedness of humans in a more-than-human world.

We are left with a sense that, in arguing for the Anthropocene, a startlingly simplistic account of nature is adopted, one which is conceptually and empirically flawed. The Anthropocene concept appears to promote a dual movement in relation to nature. First, that nature which does exist is held to be largely a constructed or heavily-modified consequence of human activity. Deprived of exteriority, agency and otherness, nature is de-natured and we are held, in some sense, to be after or beyond nature. Second, humanity is re-inserted into 'nature' only to simultaneously be elevated within it and above it: 'In this new era, nature is us'. This does not enhance our understanding of how we and the world are mutually composed, as Latour might put it. Indeed, it deeply compromises our ability to engage with this heavily constructed nature. The death of nature is announced, but the unified and sterile old concept of Nature remains surprisingly alive even as it is humanised and colonised. Hence an emphasis on the human-constructedness of nature, and a relative silence on the nature-constructedness of humans and their societies.

Whilst the Anthropocene concept bears an apparent resemblance to McKibben's 'end of nature' arguments, it is also, in many respects, distinct. McKibben, for example, recognises the magnitude of the human impact, but retains respect, even awe, for its generative and regenerative capabilities, its power, autonomy and intrinsic importance (1989). By contrast, as the above quotations suggest, many proponents of the Anthropocene take a different approach. Tellingly too, McKibben concludes that '[w]e must choose to become God's creatures, instead of making ourselves gods' (1989: 198), whilst Lynas names his popular book *The God Species* (2011).

In de-naturing N/nature, its residual, 'sacred' aspects – traditionally the check against hubris and human overreach – are simultaneously removed.

Nature is seemingly ‘disenchanted’, even as it is re-enchanted with a modernist, universalised dream of human mastery. Metaphorically, God is removed, but structurally humanity is made into God. This is true in both the Promethean and the Aidocean accounts of the Anthropocene. They differ in that the former emphasises mastery *of* nature, while the latter is more inclined to emphasise mastery *of our relationship* with nature.

It is not surprising, therefore, that proponents of the Anthropocene concept generally conclude their accounts with the need for greater engagement with, and engineering and management of, our humanised Earth. This need not automatically be hubristic. It depends what one is working towards, and which values are being retained and contained in the concept. But the typical science-based characterisation of the Anthropocene is arguably hubristic, and leads to the conclusion, perhaps crudely expressed, of Nordhaus and Shellenberger: ‘The issue is not whether humans *should* control Nature, for that is inevitable, but rather *how* humans should control natures – nonhuman and human’ (2009: 135).

The answer is usually heavily reliant on planetary management, expertise and technology, to which I will now turn.

TECHNOPHILIA, PLANETARY MANAGEMENT AND THE RULE OF EXPERTS

Even the limited examples from the literature already cited suggest that the assumptions of proponents of the Anthropocene about managerialism, technology and expertise are transparent and explicit. In almost all major accounts of the concept it is assumed that responding to the end of nature, and the challenges of the Anthropocene, requires a trinity of techniques: clear *management* of the Earth and Earth-systems, guided by *experts* (and scientists/engineers in particular), using the most advanced *technology* possible (including large-scale technology).

The challenges themselves are typically framed by a sense of emergency. The great weight of accumulating scientific data is recruited, to show how the human species and its planet are at risk. Landscapes and seascapes are being transformed, boundaries are being breached, non-linear processes have been unleashed, system pressures are rising and tipping points are either happening or looming; and all of this is both unprecedented in human history and fundamentally anthropogenic in cause.

Certainly recognition of the made-ness of the natural world means acknowledging that this carries responsibilities for the relevant human societies, even a degree of conscious management. For leading proponents of the Anthropocene, the scale of management required is commonly seen, implicitly or explicitly, as global: since we face global problems, global management is

PARADIGM DRESSED AS EPOCH

needed to run the Earth in the Anthropocene. But what does it mean to frame policies within a global, universalist goal of ‘running the Earth’, and what condition are we trying to manage it towards?

Those of a more Aidosean inclination have spoken of the need to manage a return to the Holocene, or Holocene-like conditions, since this is ‘the only global environment that we are sure is “safe operating space” for the complex, extensive civilization that *Homo sapiens* has constructed’ (Steffen et al., 2011b: 747). This is the best way to manage the risks we face as we increasingly cross the planetary boundaries. The Prometheans, by contrast, argue that we should manage our way towards ‘a better Anthropocene’ (Ellis, 2011). The internal logic of the argument surely lies with the Prometheans. If humanity acknowledges and embraces its role as Earth-manager, and if we are indeed ‘post-nature’ and ‘nature is us’, then it is clearly impossible to return the Earth to the Holocene (or at least it would take millennia to do so). Why not aim for a ‘better’ Earth, or a more benign climate in which Norwegians are less cold, and Saudi Arabians less hot? For our purposes, however, the point is that the Aidosean and Promethean versions differ over the direction and goals of planetary management, rather than the need for it.

Managing the Anthropocene is also understood to come with special responsibilities for the scientific and engineering community (Crutzen, 2002). Only they are likely to have the knowledge, data and skills required in this new Age of Humans. At one level, one should not read too much into this, since the key proponents of the concept happen to be scientists and, not surprisingly, are more alert to the extent of their own knowledge and insights. Certainly scientists in the Anthropocene would have a key role as diagnosticians and, with engineers, as generators of specific technologies. But there is something troubling in the idea of scientists as both informants and saviours. Whilst policy needs to be informed by science, experience teaches that we should remain wary of the idea that policy can or should be guided by the science (Jasanoff, 1990; Pielke, 2007). As we know from the ‘climate wars’, the barriers to bringing down carbon-dioxide concentrations are almost entirely related to global and local politics, vested interests, deep-rooted values, economic structures and so on. For well over a decade they have been almost entirely unrelated to there being a lack of scientific data or new technologies (see Pielke, 2007: 71–2).

Proponents of the Anthropocene almost always draw a link between the concept and the need for (or, at least, the need to research and consider) large-scale technological interventions, and, in particular, geo-engineering. Geo-engineering, or climate engineering, involves the large-scale, intentional manipulation of the climate system, to regulate the Earth’s chemistry and the global temperature. The most commonly cited scheme involves solar radiation management by stratospheric aerosol injection: in practice, shrouding the upper atmosphere of the planet in a fine layer of sulphuric particles, on an

ongoing basis, with the aim of cooling the earth to offset the warming effects of rising greenhouse-gases. Most key articles from the scientific community which advocate the Anthropocene concept either endorse geo-engineering, call for the capability to be developed, or simply make it imaginable (for example: Crutzen, 2002, 2006; Ellis and Haff, 2009). A minority clearly find the idea uncomfortable and incompatible with planetary stewardship, even whilst retaining it as an option (for example: Steffen et al., 2011a).

A LEGITIMATING IDEOLOGY?

We now see the emerging shape of the mainstream Anthropocene paradigm, and its narrative. The idea (and the evidence) that humanity is now the dominant earth-shaping force combines with the data showing that the condition of the planet is serious, possibly terminal. Humanity and its planet are now in a critical and exceptional state. This both generates and draws upon an attraction to global-scale technological ‘solutions’ and earth management, under the guidance of the scientists/engineers best placed to understand, interpret and help shape the necessary interventions. These are responses aimed either at bringing us back from the brink, or at taking us to a new and better-managed future Earth. In both versions, the Anthropocene is both diagnosis and cure, both description and prescription.

It is important to note the deeply authoritarian and de-politicising tendencies of Anthropocene discourse. Proponents regularly talk of a ‘global sustainability crisis’ (Steffen et al., 2011b: 740) and a ‘climate emergency’, and suggest that humanity and its planet are now in ‘operating in a no-analogue state’ (Crutzen and Steffen, 2003: 253). This is not uncommon in much environmental discourse. But its effect, in the context of the Anthropocene, is that framing through exceptionality can legitimate the need for exceptional rule and authoritarian responses. This is enhanced by the promise of technology (machines, techniques, human-centred risk management) as the basis of action and ‘salvation’. The emphasis on ‘the rule of experts’, and the associated endorsement of a technocratic consciousness, depoliticises society and tends to reduce the political to the technical, justifying decisions on technical grounds. It also helps explain a related interest by many Anthropocene proponents in notions of Earth governance, which is not explored here.

This Promethean version is the one likely to be most attractive to the powerful and the privileged in the event that nature starts tipping, and as ‘the period of consequences’, to use Churchill’s memorable phrase, becomes increasingly apparent. It can also be thought of as ‘full-belly Anthropocene’, or

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the ‘Anthropocene of the rich’, to adapt Guha and Martinez-Alier’s resonant phrase (1997).⁷

Discourses of the Anthropocene certainly may have some ability to challenge the notion of human ‘progress’ and ‘the belief systems and assumptions that underpin neo-classical economic thinking, which in turn has been a major driver of the Great Acceleration’ (Steffen et al., 2011a: 861–2). But, as a concept, it appears overall to legitimate the dominant order, even if unintentionally. In my argument, it does this in three major ways: by universalising/normalising the affluent contemporary consumer as the human of the Anthropocene (thereby obscuring the social reality of unequal responsibility for impacts, and the pathological pursuit of endless and unequal growth); by its elevation and sacralisation of this particular humanity (reinserting it into nature only to re-elevate it within and above it as a force of nature); and by its ability to legitimise a range of major and potentially highly dangerous interventions into the workings of the earth, and some deeply authoritarian state practices, none of which are likely to be exercised in the interests of most of the world’s people.

In short, the Anthropocene has some of the features of an ideology, although perhaps not yet a hegemonic one in the Gramscian sense.⁸ Depending on the version embraced, it is more obviously compatible with (rather than potentially disruptive of) the dominant political ideology and power structures of our time: ‘market globalism’, in Steger’s phrase (2009).

ANOTHER ANTHROPOCENE?

From its origins with Crutzen and others, the term ‘Anthropocene’ has recognised both the earth-shaping role of humanity and also, implicitly and often explicitly, the need to understand and include the workings of humans and human systems (the anthroposphere?) as part of the quest by earth-system scientists to understand the workings of the earth itself. But this, in turn, means engagement with the social sciences. It also means that the term needs to make sense to, and be embraced by, social scientists, with their typically messy, contested and historically contingent ways of understanding the workings of human societies. Without this two-way traffic, the concept of the Anthropocene amounts simply to an intervention by geoscientists into politics.

7. This is *not* to suggest that the Aidosean Anthropocene can be thought of as the ‘Anthropocene of the poor’.

8. As this paper was being finalised I became aware of a forthcoming paper by Malm and Hornborg (2014) which uses different arguments to reach some similar conclusions. They label the Anthropocene a harmful ideology ‘more by default than by design, more the product of the dominance of natural science in the field of climate change and, perhaps, the general blunting of critical edges and narrowing of political horizons in the post-1989 world than of any malicious apologetics.’

It is one thing to acknowledge that the natural world cannot be studied independently of the social which helps to construct it. It is another to engage with the potentially radical implications of this insight for the scientific method and the authority of science. By bringing in the social, one brings in values, social systems, institutions, contestations and so on – including contestations of ‘facts’, or at least of which ‘facts’ might count. It also involves recognising that it is problematic to frame the environment as an object largely of natural science.

Palsson et al. have noted that there has been only partial progress in attempts to incorporate ‘the social’ into models of earth systems; to date these still seem ‘to assume an autonomous, reified social world, with inputs and outputs, whose causal mechanisms can be understood from outside, much as the natural sciences might represent natural systems’ (2013: 6). The Anthropocene, for all its shortcomings, contains radical implications for the sciences. Perhaps the Anthropocene is, paradoxically, the reverse of what its originators imagined: not the end of nature, but the end of science, or at least of a certain idea of what constitutes science? The concept implies that the centrality of humans also means the centrality of social relations and of values and of the practices of power, even within the practice and understandings of science.

Similarly, for the humanities and social sciences, the Anthropocene concept is troubling. It challenges the common practice of seeing the more-than-human world as largely a backdrop, a timeless context for what is being studied. It reinforces the ‘environmental’ turn in many disciplines, whilst simultaneously challenging as romantic many of the assumptions of environmentalists (to the extent that these are still held) regarding issues such as conservation. It also undermines the possibility that Nature might provide foundational grounds upon which to base politics, and suggests the need for new materialisms engaging with all ‘vital matter’ (Bennett, 2011).

Despite the critique of the idea of the Anthropocene in this paper, and the assumptions which underpin it, it must be acknowledged that something profound is being gestured towards, both empirically and conceptually. Given the extent of environmental disruption and system pressures, it is worth asking whether the concept can be recovered and reinterpreted. Should it be? Can it be detached from its present, legitimating function? A number of leading thinkers from the social sciences are certainly attracted to the concept, perhaps even while sharing many of the critical insights contained in this paper.

Dipesh Chakrabarty, for example, a leading post-colonial scholar – famously suspicious of the naturalising and universalising tendencies of Western thought – argues that the Anthropocene registers ‘a profound change in the human condition’ (2012: 15), which requires us to think beyond our existing understanding of the human. ‘[I]n becoming a geophysical force on the planet, we have also developed a form of collective existence that has no ontological dimension. Our thinking about ourselves now stretches our capacity

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for interpretive understanding. We need nonontological ways of thinking the human' (ibid.: 13).

Latour, too, makes the bold claim that the Anthropocene is '*the* most decisive philosophical, religious, anthropological and ... political concept yet produced as an alternative to the very notions of 'Modern' and 'modernity' (2013: 77, my emphasis). It is not about overcoming the established divide between the forces of nature and those of society, but about bypassing it altogether (see ibid., 78). The '*anthropos*' potentially designates 'what is no longer the 'human-in-nature' nor the 'human-out-of-nature', but something else entirely, another animal, another beast or, more politely put, a new political body yet to emerge' (ibid., 79).

In engaging philosophically with the idea of the Anthropocene, Latour has tried to breathe new life into Lovelock's notion of Gaia. 'It is because Gaia has a history that it cannot be compared to a machine and why it cannot be reengineered either' (2013: 66). Gaia is an entity which is 'unfortunately no longer '*disinterested*' in what we do. It has *interests* in our actions' (102).

Latour's observations are rooted in his general intellectual project, examining the practices of science, rebutting the 'modernist' dream that facts and values can be separated, whilst rejecting the post-modern turn, which for him is another form of modernism (1993, 2004). But his insight, that the concept of the Anthropocene brings Gaia, rather than humanity, to centre-stage, is especially important as a counter-narrative to the natural-scientific accounts of the Anthropocene. In a revealing allusion, he argues that humanity can no longer watch Nature and observe the coming of catastrophe. '[T]here is no spectator left; rather, it's just like in the Story of Pi: in the lifeboat, there is a Bengali tiger! The poor young castaway has no solid shore from which to enjoy the spectacle of how to survive alongside an untameable wild beast for which he is simultaneously the tamer and the meal!' (2013: 104). As Szerszynski has noted in a response to Latour's Holberg lecture: 'Is the Anthropocene the apotheosis or the end of human exceptionalism? Is this the age of the humanisation of planet or of the planetisation of the human?' (2013a: 2)

In short, some leading thinkers recognise a concept which unsettles the philosophical, epistemological and ontological grounds on which both the natural sciences and the social sciences/humanities have traditionally stood. And this, along with the fact that both the term and its meaning have not yet been stabilised in either domain, may be reason enough to critically engage further with the concept. There may still be merit in taking a step backwards to enable two steps forward.

As things stand, the issues opened up by the concept have been shut down too quickly, in the rush to develop prescriptions and solutions, and to adopt a particular perspective on 'what needs to be done'. In the process, we have witnessed the embrace of particular, and problematic, visions of technology,

planetary management and the role of expertise, and an insufficient consideration of social complexity, uncertainty, hybridity and agency.

There has been a similar tendency to move away from the questions of ethics and values thrown up by the Anthropocene, and recast these as debates around governance: governing the Anthropocene, and governing-technologies such as geoengineering. The governance aspect of the concept is not covered in this paper (see Lövbrand et al, 2009); it is enough to say that reducing the ethical questions opened up by the Anthropocene to matters of governance or regulatory frameworks, or climate policy, shows a similar inclination to move to 'solutions' before fully identifying the nature and meaning of the problem/epoch.

I have suggested in this paper that the sciences and the social sciences/humanities should not rush into a premature embrace of the Anthropocene concept. But if, equally, we are reluctant simply to reject the concept, and want to hold onto its important insights, or unearth its genuinely radical potential, then we need to engage with a number of tensions and questions.

First, can the concept do more than simply generate a critique of the nostalgic environmental position of 'getting back to nature' on the one hand, and the prescription of 'taking control' on the other? Second, in our rush to acknowledge the empirical made-ness of nature, are we too rapidly embracing a particular, and overly simplistic, idea of 'post-nature'? Does the problem lie with the nature-culture dichotomy itself, or the hierarchy we impose upon the division? And what other implications flow from this apparent turn, from a more boundless conception of the 'world' to a more inward-looking, measurable and finite 'earth'? Third, can the Anthropocene concept cope with the implication that the centrality of humans also means the centrality of social relations and of a multiplicity of values and of the practices of power, even within the practice and understandings of science?

But perhaps we first need to take a step back and reframe the question: what does it mean that humanity, unequally and differentially, is *now* the major earth-shaping force on the planet, affected by and also affecting the workings and trajectories of the biosphere, atmosphere and so on? The Promethean vision, the Aidosean vision, or, for that matter, any other less universalist vision which is sceptical of planetary management, will then become simply one possible answer, open for legitimate contestation, and not one assumed simply to 'flow from the science'.

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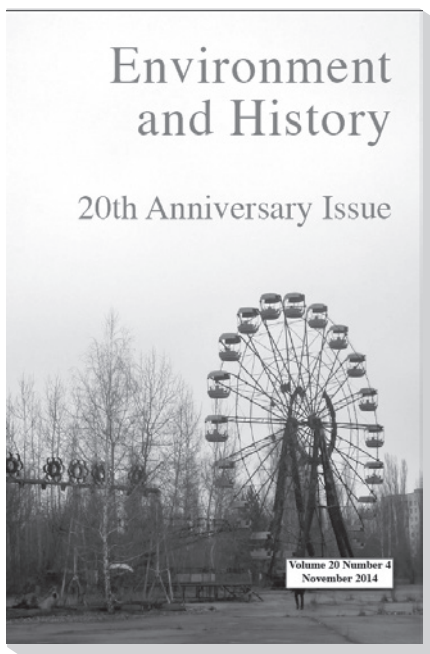
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