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Abstract
There are close connections between scientific claims about the contemporary world and wider shifts in the terms of societal discourse. As history demonstrates time and again, scientists change our actualité not only through their technological inventions but also through the vocabularies and methods they employ to persuade those outside science to pay attention. Consequently, when Time magazine recently informed its many readers that “[n]ature is over”-one of “[t]en ideas that are changing your life”-it came as no surprise to discover science as its inspiration. In his article, Time journalist Bryan Walsh pointed to the idea-first advanced by Nobel Prize-winning atmospheric chemist Paul Crutzen and freshwater biologist Eugene Stoermer (2000)-that we now live in "the Anthropocene." But he could just as easily have referenced the research of laboratory scientists, such as the world-famous geneticist Craig Venter (2013). Where Crutzen and Stoermer suggested that the supposed ontological divide between humans and nonhumans has been unintentionally breached on a planetary scale, the likes of Venter have for many years sought to dissolve the divide in more controlled, localized circumstances. In different ways, these spokespeople for the material world tell us that nature, in its various forms, has lost its former naturalness—either by accident or by design. Whether "the Anthropocene" concept enters public discourse worldwide remains to be seen, but the current familiarity of "genetic modification" and "synthetic biology" reminds us of how esoteric scientific neologisms can, given time, become keywords in the everyday arenas of politics, commerce, and civil society.

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There are close connections between scientific claims about the contemporary world and wider shifts in the terms of societal discourse. As history demonstrates time and again, scientists change our actualité not only through their technological inventions but also through the vocabularies and methods they employ to persuade those outside science to pay attention. Consequently, when *Time Magazine* (2012) recently informed its many readers that ‘Nature is over’ – one of ‘Ten ideas that are changing your life’ – it came as no surprise to discover science as its inspiration. In his article, *Time* journalist Bryan Walsh pointed to the idea – first advanced by Nobel Prize-winning atmospheric chemist Paul Crutzen and freshwater biologist Eugene Stoermer (2000) – that we now live in ‘the Anthropocene’. But he could just as easily have referenced the research of laboratory scientists, such as the world-famous geneticist Craig Venter (2013). Where Crutzen and Stoermer suggested that the supposed ontological divide between humans and non-humans has been unintentionally breached on a planetary-scale, the likes of Venter have for many years sought to dissolve the divide in more controlled, localised circumstances. In different ways, these spokespeople for the material world tell us that nature, in its various forms, has lost its former naturalness – either by accident or design. Whether ‘the Anthropocene’ concept enters public discourse worldwide remains to be seen, but the current familiarity of ‘genetic modification’ and ‘synthetic biology’ remind us of how esoteric scientific neologisms can, given time, become keywords in the everyday arenas of politics, commerce and civil society.

If Walsh is right, then the things that certain biophysical scientists are saying (and doing) are pitching one of the Western world’s most foundational concepts into a state of crisis. For better or worse, ‘nature’ appears to have more of a past than a future (hence the scare-quotes). We have been here before, of course. In years gone by some environmentalists proclaimed ‘the end of nature’ (McKibben, 1989) because of anthropogenic climate change, while others – more focussed on ‘human nature’ – worried that invasive biotechnologies (like gene splicing) might lead to a ‘post-human future’ (Fukuyama, 2002). Meanwhile, less pessimistic commentators insisted that nature’s disappearance was relative, not absolute. For instance, journalist Michael Pollan’s 2001 book *The Botany of Desire* detailed humans’ co-evolution with four important plant species. In the period since these and other attempts to shape public thinking at the fin-de-millennium, it appears that few serious efforts have been made to slow down the evident worldwide denaturalisation of nature. Equally, though, there’s no compelling evidence that ‘nature’ has lost its semantic importance as a key signifier in both expert and lay discourse. It still performs very important work in various cognitive, moral and aesthetic registers; a great deal is still said and done in its name. To announce that ‘Nature is over’ is
hardly to secure the case. Instead, it is to suggest that a changing ‘reality’ demands alterations in those key terms designed to hold a conceptual mirror up to it. Profound questions consequently arise. Should humanity act rapidly to restore earth surface systems to their Holocene state before we cross ‘planetary boundaries’ and enter biophysical terra incognita? Like Venter, should we – instead – celebrate the liberatory potentials of a post-natural world in which we can, through ingenuity, edit out those formerly uncontrollable and negative aspects of nature (like ‘genetic diseases’)? Or should we internalise Pollan’s argument that even a thoroughly ‘anthropogenic nature’ retains plenty of wildness and agency, such that the ecological anxieties expressed by latter-day Fukuyamas and a die-hard McKibben (recent author of *Eaarth* [2010]) are over-stated and geneticists’ dreams of mastery hubristic? Is the death of nature real or exaggerated, a matter of degree or kind? Which scientists, if any, might we turn to for robust evidential answers to this question?

In addressing these and other critical concerns, most people outside universities are not – to hazard a large generalization – accustomed to hearing the voices of social scientists or humanities scholars. Yet at least 30 years before Crutzen, Stoermer, Venter and other scientists were suggesting nature’s incipient end, a few such voices (later growing to a chorus) were insistent that nature is not quite as natural as it seems. But their arguments were rather different from those advanced by McKibben, Fukuyama, Pollan and other public commentators 15-25 years later. In the mid-1970s a number of anthropologists, human geographers, science studies scholars, media analysts, sociologists and others critically examined claims being made about supposed ‘facts’ of nature by members of the scientific community. For instance, there were high profile neo-Malthusian assertions of imminent ‘limits to growth’ posed by finite natural resources in the context of global human population growth (Meadows *et al*., 1973). The concern was that scientists unwittingly smuggled contestable value-judgements about how the world (supposedly) is, and how it ought to be, in the guise of ‘objective’ and ‘rational’ representations of human biology or the non-human world (see, for example, Marshal Sahlin’s critique *The Use and Abuse of Biology* [1976]). Given the authority science enjoyed (and still, despite some credibility crises, enjoys), these scholars’ interventions were designed to prevent ‘science imperialism’ – that is, a situation where scientific metaphors, findings and conclusions illicitly structure the framing of societal ‘problems’ by non-scientists and the consequent identification of ethically acceptable ‘solutions’.

Underpinning all this were two convictions. The first was that it is a matter of convention--not necessity--that aspects of the material world come to be labelled ‘natural’. The second was that claims made about ‘nature’ said as much about those doing the representing as about the material world supposedly being made to speak ‘in its own voice’. In the case of science, the suggestion was that it both internalized and presented in its own idioms the cultural norms and desires of the wider society. Its various technical claims about ‘nature’ were thus said to be politics by other means, since all politics involves debatable decisions about the means and ends of
any collective endeavour. In this light, the various ‘natural sciences’ were presented as being social ‘all the way down’, despite appearances to the contrary.

Four decades ago no one in the social sciences and humanities could have anticipated just how rich and varied subsequent research into nature’s ‘social constitution’ would become. Ranging far beyond scientific representations and associated practices, this research has inquired into who speaks for nature, how, and with what effects. Among others, the discourses, images and artefacts of Safari park owners, genetic counselors, biotechnology companies, nature poets, environmental journalists and wildlife documentary makers have been subject to critical scrutiny. In the process an extraordinary range of theories and methods have been employed across a myriad of academic disciplines. There have been key debates between interlocutors, especially about whether and how far nature can be said to be a ‘construction’. Even if we should not unreflexively call it ‘nature’ anymore, some critics have worried that the materiality of the physical world has been underplayed in the determination of some to illuminate nature’s unnaturalness. As a result, there has been an ‘ontological turn’ of sorts, but one that eschews the resurrection of an old-fashion ‘naturalism’ or ‘realism’. Certain neologisms have been invented to help us navigate this need to both question ‘nature’ epistemologically while respecting the agency or physical intransigence of those phenomena the word names. Technoscience theorist Donna Haraway’s ‘natureculture’ is one of several examples, a concept she underpins with arguments and examples that question the idea of sui generis ‘social’ and ‘natural’ realms.

Consequently, Time’s announcement that ‘Nature is over’ no doubt appeared passé to the likes of Haraway and varied fellow-travellers such as Bruno Latour, the late Neil Smith, Andrew Ross or the literary critic Timothy Morton – but for reasons different from those detailed by Bryan Walsh. For these and like-minded critics what we call ‘nature’ never existed in the first place. Instead, what existed was a socially efficacious belief that ‘natural’ things were separable from ‘social’ relations, institutions and practices. To inquire into what is said and done on the basis of this belief, as well as what is concealed from view and not done, is to shed light on how Western societies are governed – and how they now seek to govern non-Western countries in the name of everything from ‘planetary management’ to brave-new-world promises of healthier, smarter human bodies and minds. Needless to say, not all those aware of these arguments have welcomed them. For instance, in the late 1990s the so-called ‘science wars’ broke out in the US between cultural analysts of science and practicing scientists bothered by at the suggestion that their representations were anything but metaphorical mirrors of nature’s ‘real’ characteristics (see Ashman & Baringer, 2001).

Despite their sustained and insightful attempts to ‘denaturalise nature’, the arguments of social scientists and humanities scholars have not registered strongly in the minds of most non-academic commentators – Walsh being a case in point. There
have been momentary exceptions (e.g. the North American debate about ‘wilderness’ inspired by historian Bill Cronon’s [1995] essay ‘The trouble with wilderness’); there have been some lasting achievements too (e.g. indirectly fostering activism geared towards advancing the rights of gay, lesbian and transgender people by rebutting the suggestion they are somehow ‘unnatural’: see Sandlinands, this volume). But, overall, and to offer some examples, the arguments contained in Haraway’s When Species Meet (2007), Latour’s We Have Never Been Modern (1993), Smith’s Uneven Development (1984), Ross’s The Chicago Gangster Theory of Life (1995) or Morton’s Ecology Without Nature (2007) remain alien to most political, commercial and third sector actors, let alone ordinary citizens. As a point of contrast, consider the significant impact the early animal rights philosophers had on societal discourse from the early 1970s. For various reasons, an academic like Peter Singer was able to inspire public debates that, in time, had legislative and practical significance for people and non-humans alike. Meanwhile, those who today emphasize the power of nature to constrain our lives can easily attract wider attention by rehearsing venerable arguments about imminent societal collapse (think of James Lovelock and Jared Diamond).

All this is unfortunate. The capacity to define societal understandings of what ‘nature’ is (and is not), whether nature is over, and what this implies for our sentiments and policies, is an extraordinary one. This is because nature has long been, and remains, a very special term in the Western lexicon. As Raymond Williams (1976) famously argued in his germinal book Keywords, nature is an unusually polysemic and polyreferential signifier. Not only does it have several distinct meanings, but these meanings are, by decision and convention, attached to a bewildering array of phenomena (and in ways that are often contradictory). As part of this, Williams emphasised that the meanings of nature were often present in discussions where the word itself was not necessarily used. Among nature’s ‘collateral concepts’, as we might call them, are ‘race’, ‘sex’, ‘biodiversity’, ‘genes’, ‘wilderness’, ‘animals’, ‘environment’ – among a great many others (see Castree, 2013). These concepts are not always synonyms for ‘nature’ but, in certain circumstances, they are vehicles for communicating some of its established meanings. Used together they comprise “formations of meaning” (Williams, 1976: 15) that, at any one moment, have a seeming solidity, though provide some room for semantic maneuver too. This much is obvious from reading several other essays in this book, such as those written by Stacy Alaimo and Vermonja Alston.

What is obvious too is that ‘nature’ and its collateral terms bridge the divide between expert discourse and everyday language. Unlike a neologism such as ‘post-humanism’ (say), they are ‘ordinary words’ used routinely by lay actors as they make sense of themselves and the world. But various professionals (and not just scientists) get to invest them with significance or, as ‘the Anthropocene’ idea suggests, to challenge their ‘common sense’ status. When this happens ordinary people may well notice. Consequently, to propose that nature is no more is to pull at one hugely
significant thread in the tapestry of Western discourse. In effect it is to challenge some or all of the family of collateral terms that Westerners have invented to order both understanding and behaviour. There is a crucial difference between this being done in an open and inclusive way and, even if by accident, undemocratically. When Williams famously noted just how complex the semantics of nature have been historically, he was seeking to emphasize the wide range of human projects that had used the term as a means of legitimation and persuasion. It is not the word’s complexity per se that is interesting, but what it signifies about a society’s politics, both ‘high’ and ‘low’. In philosopher Walter Gallie’s (1956) terms, if nature and its collateral terms are not, at any given moment in time, ‘essentially contested concepts’, then something is awry. One way of revealing the ‘unnaturalness’ of these keywords is to consider those cultures where terms like ‘nature’ are not part of the vocabulary.

The writings of all the various authors mentioned earlier are each, in their own way, attempts to preserve, modify or supercede ‘nature’ (and by implication the other keywords that share some of its principal meanings). These authors aim to derive normative lessons of wide societal application from claims that nature is about to disappear or that it never existed in the first place. Wittingly or not, they are engaged in a discursive contest over the basic terms that ought to guide thinking and action in a world chock-full of pain and possibility, success and failure. But what I am suggesting is that, in the main, social scientists and humanities scholars have been much better at talking to each other than to others who are wont to pronounce on nature, ‘race’, biology, evolution, sustainability, and all the rest. If these scholars believed in the importance of their ideas more might have been done by them to alter the wider discursive climate they have analysed symptomatically.

This may be about to change. If not, it arguably needs to – and this is where I would like to end this all-too-short essay. Science, in its various forms, is an indispensable component of modern life. Right now, and not for the first time, it is productive of conceptual ferment in the world outside science. But, in shaping societal thinking about the life and death of ‘nature’, it is but one resource among many. In a recent paper about the social uses of the idea of anthropogenic climate change, Marxist geographer Erik Swyngedouw (2010) detects contemporary science imperialism at work in Western environmental policy. He accuses leading politicians of ‘scientizing politics’. For him, they use the scientific ‘threshold’ of 2 degree Celsius additional atmospheric warming to forge a wide but thin social consensus based on a rhetoric of urgency (‘More nuclear power, more wind power, more ‘green investment’ NOW!’) – yet all the while doing far too little to reform neoliberal capitalism. Many would agree with his analysis. However, as Latour (2004) has argued, social scientists and humanities scholars need to supplement critique of this sort not only with invention (new ideas, new arguments, new evidence) but with intervention.

For forty years, people like Latour (and Swyngedouw) have been highly inventive, but there is another step to take. The question of nature is not simply an
issue of pointing to ‘the evidence’ and then deciding what overall balance of conservation, restoration, preservation and exploitation to aim for. Phrased more explicitly, whether nature is vanishing and what this signifies is not a question that science – or science alone – can tell us much about. This is a thought many non-academic actors, and not a few scientists, find challenging. People like me arguably need to prove our societal value by discussing nature beyond the comfortable arenas of peer review journals or university seminar rooms. We may then show people (including future Time journalists!) that ‘nature’ is, and should remain, a contested idea because it allows us to disagree about both the ‘questions’ and the ‘remedies’ we might otherwise assume to be obvious. Social scientists and humanists are not simply those who speak only to the soft ‘cultural’ questions (like the propriety of gene therapy), with nature an ontological playground where the men and women in white coats discover ‘hard truths’. An excellent example is Andrew Ross, whose new book on the unsustainable character of American urban life, Bird on fire (2013), inspired him to engage with people in Phoenix – the immediate subject of his monograph.

In this endeavour we (for I am one of them) will not be alone. Many artists, performers, novelists and film makers are today deeply preoccupied with ‘the question of nature’ in ways that are highly inventive. But so too are many scientists: despite my unfortunate tendency to gloss the differences here, there remain significant internal debates within science about the existence, character and value of ‘natural kinds’. If more of this variety can inform public discussions about the future of nature – ‘human’ and non-human – then we stand a chance of avoiding the sort of normative ‘reading off’ that once informed eugenicist policies and other measures that anchor themselves in supposedly ‘natural’ imperatives, deficiencies, limits or tendencies.

References