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The Anthropocene: A Narrative in the Making

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Introduction

Contemporary understandings of global environmental threats include two central aspects: first, threats are held to be anthropogenic in nature, and second, they are thought to be solvable through human action. One of the most powerful concepts launched to capture this duality and call to action is *The Anthropocene*. This concept, which made its international breakthrough in 2000 (Crutzen and Stoermer 2000), conveys the idea that human beings are living in a new geological era; an era created by humankind (Anthropocene) in contrast to earlier eras that were created by the forces of nature (Holocene). But the idea that humans are now making geological footprints is not the only or central meaning of the concept. Tightly connected to this concept is something much bigger and more seri-

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ous: the concern that human activities are now undermining Earth's life support systems (Rockström et al. 2009). According to this view, humankind is now facing its greatest challenge ever, and rapid and extensive societal changes are needed to stop this trend. This is a challenge for society in general but also for science, which has to produce relevant knowledge to facilitate and guide this social change (Zalasiewicz et al. 2010).

This narrative of Anthropocene has been institutionalised within the scientific community in a short period of time: networks have been formed, conferences organized, websites established, research programmes have been elaborated and journals have been launched with the aim of studying all aspects that pertain to the Anthropocene. There is a large internal scientific debate about the conceptual meaning of the Anthropocene. One issue is whether one can really speak of a new geological epoch, and if so, when (and through which methods) one can date its beginning (Edgeworth et al. 2015; Zalasiewicz et al. 2014). Another, as we have indicated, is whether, and to what extent, the fundamental functions of the Earth system have been transgressed (Rockström et al. 2009; Steffen et al. 2015b). A third issue concerns the need to develop new technologies and smart organization in order to build a way out of the impending environmental crises (Buck 2015). A fourth issue concerns the need to change the institutions and the fundamental values that support unlimited growth without considering its environmental 'bads' (Steffen et al. 2011b), as well as the need to build global governance systems that can handle global environmental problems (Biermann 2014). These are only a few of the issues raised but they show that the concept has inspired a proliferation of different questions and debates.

The concept has also spread largely outside its original scientific context and it has quickly gained a more affective tone in the last few years. For example, museums and galleries have elaborated exhibitions on what it means to live in the Anthropocene (Robin 2014). The most well-known is probably *Welcome to the Anthropocene. The Earth in Our Hands*, which during 2014–2016 was organised by the Deutsches Museum in Munich, Germany. The exhibition was extremely successful, with an average of 8500 visitors per month. In its closing month, more than 22,000 people visited it. The exhibition consisted mainly of a display of “anthropocentric objects” such as the steam engine, gasoline pump, telegraph, hairdryer, television, weather satellite and personal computer. Six thematic

areas—urbanisation, mobility, humans and machines, nature, food, and evolution—formed the structure of the exhibition, with 30 monitors showing bespoke films. Visitors were met by a number of statements such as “Anthropocene has arrived”, “You are Anthropocene”, “We are all responsible” and “Together we can change a lot”. But the visitors were also asked very open questions such as: “How does the world community govern itself?”, “Who is responsible for a product?” and “Is Anthropocene just?” The exhibition offered a complex picture of human development, showing that agriculture, trade, transport, industry and urbanisation have created enormous social and material progress, but that they also, in time, made strong footprints upon the earth, often of a seemingly irreversible kind. The exhibition does not associate Anthropocene with resignation and fatalism; rather with hope and possibilities. As the subtitle of the exhibition says: “The Earth in Our Hands”. The destructive power of humans is only part of the story, humans are also creative and intellectual and have the power to deliberately shape the world. As the curator of the exhibition states: “the Anthropocene has made us all into global actors” (Möllers 2014: 122). In a sense, it echoes earlier messages—about global environmental threats, limits to growth, and the possibility of alternatives development pathways—but, as we will explore in the next section, it involves new thinking making it a strong and dynamic narrative.

It is interesting to note that this usage and spread of the concept Anthropocene was not originally intended. It was spontaneously invented in a scientific conference by the Nobel laureate Paul Crutzen, and he and colleagues have since asked themselves why it is that this concept has not been discarded as a footnote in the history of geological ideas (Zalasiewicz et al. 2010: 2228).¹ Crutzen originally considered the Anthropocene to be too complex a concept to take off in the public domain: “I really thought it would be something only for the scientific community because it’s such a vast and complex topic. But obviously I underestimated the power of this idea. The Anthropocene idea is now animating many people in many places in new ways and I am very happy about that” (Crutzen quoted in Schwägerl 2014: 35).

Since its first mention in a scientific conference, the concept has made a remarkable journey, and is now widely adopted not only by many environmental scientists but also by cultural institutions, environmental

movements and governmental bodies. Its meaning is dynamic and changing—from defining a geological epoch, to conceptualising the current environmental predicament of humankind, to becoming also a workable buzzword aiming to direct attention, mobilise people and facilitate environmental action. At the same time, it is a subject of lively debate, not least due to the sense that the concept not only diagnoses the environmental state of the world, but also traces social causes and suggests possible future ways forward. The concept has inspired natural scientists, especially Earth scientists, to urge for a rapid and effective response in order to change current trends. Straying away from their disciplinary comfort zone, they have begun to ask probing questions about social agency, human responsibility and global governance. This extension of natural science into the social domain has, at times, evoked strong criticism from the social sciences, claiming that to a large extent the discussions are based on a simplified view of society that ignores much established knowledge in the social sciences (Baskin 2015, Cook and Balayannis 2015, Lövbrand et al. 2015, Malm and Hornborg 2014). However, the social sciences have not only criticised the concept, but also started to make use of it and offer substantial contributions as to its meaning, as we suggest below.

The Anthropocene is a hybrid concept that includes both nature and society, in which a geological epoch, an environmental state and human activities are intertwined. The concept may, if oriented towards sociological interpretation, provide the opportunity for social experimentation and disciplinary development in the social sciences—especially regarding areas of research where demarcations between nature and society (or between the natural sciences and social sciences) are blurred. In this sense the Anthropocene may be an important vehicle for increasing boundary-crossing between disciplines and for centring debates more firmly on social-environmental dynamics, a focus which environmental sociology has long supported (Catton and Dunlap 1980; Hannigan 2014; ISSC 2013; Lockie et al. 2014)

The Anthropocene has developed, however, to become more than a concept, bringing together a set of compelling narratives which involve large amounts of information, specific meanings and normative stances about what to do. It connects different actors' perspectives and practices,

and may also construct a shared understanding of a problem. We therefore consider in this chapter the implications for environmental social scientists. Relating to concepts that have originally developed in the natural sciences requires careful handling. When social science makes use of concepts originally elaborated by natural science, it experiences opportunities but also risks. The possibility for developing environmental social sciences in new directions lie in waiting, but these may not all be constructive directions in which to go. This chapter is therefore devoted to a critical and constructive discussion of the current meanings of the concept of the Anthropocene. It considers how this concept—understood as a set of narratives—can nourish environmental sociology and other environmental social sciences but also how we might think about developing the concept in line with social scientific thinking. In the next section we will therefore say something more about narratives and their functions. We follow this with a third section of the chapter where we explore the current focus and debate of the Anthropocene narrative. We find that the narrative has gradually included social scientific knowledges but that its adoption also involves risks; it steers our way of thinking in particular directions and may restrict sociological elaborations and explorations. In particular, we discuss how the narrative understands social change and human agency as well as how it oscillates between a reductionist and relational ontology. In the fourth section, we conclude by stressing the importance of looking at the constitutive aspects of our concepts, and at the implications a concept has for our political discourse, social arrangements and desirable futures.

Narratives: Ordering Social Reality

There is a close relation between our (changing) world and the language we constantly develop to explore it. Changes in the environment create a need to adapt language through giving old concepts new meanings and through inventing new concepts that better grasp changing circumstances, emerging questions and new findings. Conceptual developments, in turn, pave the way for modifying and changing environments. Thus, the socio-material dimension of conceptual change and the conceptual

dimension of socio-material change are two sides of the same coin. At the same time, the relation between concept and reality is not a closed but a contingent one. Some concepts are more apt than others for understanding a socio-environmental problem, and the fact that a concept becomes widespread and well-used does not necessarily imply that it is well-founded and formulated. A reason for this is that concepts have an important cultural and communicative function. They create space for intra- and interdisciplinary discussions between scientists and sometimes also transdisciplinary discussions between scientists and non-scientists.

Being interested in the relation between social and environmental dynamics means that environmental social sciences are constantly faced with the challenge of relating to concepts that are already part of environmental science discourse. To critically reflect on the relevance of certain concepts is not only important for an analysis to be conducted, but for the overall identity of a discipline. The reason for this is that concepts and their usage affect disciplinary self-understanding. For environmental sociology and some other environmental social sciences, a particular challenge has always been to avoid naturalisation, whereby certain conceptual meanings and social phenomena are taken for granted. An example has been the uncritical adoption of models of climate change dominated by natural science perspectives: when this happens, the environmental problem can become detached from its social context, reducing its meanings and acts of meaning-making (Dunlap and Brulle 2015; Hulme 2014).

Broad communicative concepts aimed at persuading a wide target group are often made up of, or constituted by, narratives. Narratives do not only condense large amounts of information and assumptions, they also assign meanings to them in order to direct attention and motivate action. In this respect, narratives can be seen as a kind of story-telling by communities or networks that attempt to deal with specific problems collectively (cf. Jasanoff 2012; Lidskog et al. 2010; Turner 2001). These stories are often based on symbols and analogies, for example in the form of significant and formative events and indexes and graphs that summarise complex and broad processes of change. A narrative gives a historical account of the problem, its causes and consequences, which motivates, guides and legitimizes decisions and actions. A narrative often also highlights the urgency of strong mobilisation and action but

rarely opens up examination of the assumptions on which suggested causal relationships and proposed solutions are based. If successfully distributed, a narrative is naturalised—in that it becomes taken for granted. The history of environmental narratives is full of a-sociological ways of thinking about social change, including managerial and technocratic perspectives about how to govern people and organisations. But from a sociological perspective, a crucial question is therefore how social change, human agency and political responsibility are understood in and through particular narratives. And so exploring the Anthropocene narrative means that, as well as its explicit content, assumptions underpinning the narrative, and their wider implications, require discussion and scrutiny.

Anthropocene: A Dynamic Narrative

Layers of Anthropocene

The narrative of the Anthropocene is dynamic and changing: new layers of meaning are constantly added to old ones. As we mentioned in the introduction, the original geological meaning has been complemented by a biospheric meaning and gradually also social and cultural meanings. The narrative of the Anthropocene has not only transgressed disciplinary boundaries but has also affected boundaries between science and society. Museums, galleries and artists, for example, are now taking part in its ongoing evolution. Thus, the narrative is still very much a concept in the making, involving a plurality of meanings, tensions and debates. We have chosen the metaphor of “layers” to give justice to the dynamic character and multiple meanings of this narrative. We hope thereby to avoid building a straw man—or a definition that is too static—which could easily be criticised from a social scientific perspective. We have read the first three volumes (2014–2016) of *Anthropocene Review* (in total 60 articles) and also a number of well-referred articles published by other journals. Based on this literature, we find at least four layers; a geological layer, a biosphere layer, a socio-economic layer and an ethical layer (for a more detailed discussion of the layers, see Lidskog and Waterton 2016).

A geological layer: The original idea of the Anthropocene is that there now is a geological period characterised by a human-modified earth stratum (the Anthropocene) distinct from the non-human deposits that have characterised earlier strata (the Holocene). This proposal has led to a vibrant and dynamic discussion amongst geologists concerning how to periodise history in a geologically sound way (Steffen et al. 2011; Zalasiewics et al. 2014). A central question discussed here is whether Anthropocene really should be defined as a new *geological* epoch (i.e. as a distinct stratal unit). Even if this has yet to be confirmed by the International Geological Congress, many geologists are busy hypothesising when this epoch began. Such preoccupations also inspire more fundamental critical questions: for example, as to whether a stratal approach in itself implies an overly linear and deterministic view of history.

An earth system layer: If the Anthropocene had only concerned the existence or not of a new geological layer, the narrative would probably have had a very restricted spread outside the scientific community of geology. The reason, on the other hand, why this original geological concept has made such an imprint in environmental discourse is that it signifies a much bigger and more severe change, concerning the sheer extent of human impacts on earth. Whereas humanity has always influenced its environment, what is taking place now is that human action has not only modified ecosystems but has started to transform them. It is no longer only restricted areas that are thought to be affected, but the entire planetary biosphere and its fundamental ecosystem functioning. The narrative of the Anthropocene connects in this respect to recent developments in the earth system sciences. Just as the Anthropocene is a fundamentally global concept, relating to the geological strata of the entire planet, earth system scientists have begun to explore and measure physical earth system dynamics on a planetary scale (Hamilton and Grinevald 2015, Williams et al. 2015) suggesting that humans are living beyond the regenerative capacities of various vital earth systems. Earth systems scientists see the designation of the Anthropocene as a warning and a call to action. They suggest that a trajectory away from the Holocene could lead to a very different state of the Earth, one that is likely to be much less hospitable to the development of human societies (Steffen et al. 2015a). Their concern is to steer development so as avoid driving the Earth system away from a

Holocene-like condition. They have consequently defined a number of physical earth system boundaries with quantified limits/thresholds to help delineate what they believe to be “a safe operating space for humanity” (Rockström et al. 2009; Steffen et al. 2011b; Steffen et al. 2015b). Earth scientists see an urgent need for a new paradigm which integrates human development within such boundaries (Steffen et al. 2015a).²

A socioeconomic layer: The discussion around planetary boundaries has inspired earth system scientists to make some strong pleas for social change and for political action. However, the discussion here involves rather little about drivers behind the development towards (or even crossing) these boundaries. On the other hand, there is discussion about relating earth system trends with socioeconomic factors. The most well-known example here probably concerns discussion around the metaphor of *the great acceleration*. This refers to the marked increase in human activities since 1950, resulting in a drastic increase in pollution (Hibbard et al. 2007; Steffen et al. 2007). Metaphorically speaking, this is seen as humanity “switching gears”, speeding up the tempo of “growth”, identifiable through rising trends of resource extraction and environmental emissions (Steffen et al. 2011a). A number of graphs—including the famous *hockey stick* graphic—summarise this dramatic increase in human activity and environmental destruction. Such sharply ascending figures have become iconic symbols of the Anthropocene (Fig. 2.1).

Originally, what we are calling the socioeconomic layer within the Anthropocene narrative did not primarily focus on any particular drivers or social causes, only summarily referring to abstract and uniform global forces such as “humanity”, “values”, “growth”, “consumption” and “trade” (see eg. Barnosky et al. 2014; Hibbard et al. 2007; Steffen et al. 2011b). This tendency has evoked strong criticism from social scientists, who have forcefully stressed that such language misleadingly portrays uniform planetary trends, thus obscuring a socially stratified and polarised world. To speak about global drivers, in terms of an abstract and homogenised humanity or to refer to a global social process without any actors behind these processes, conceals issues of power, agency and responsibility. However, social scientists have gradually started to contribute to the narrative, stressing that socio-economic patterns need to be complemented by socio-structural perspectives, which stress the social causes—structures

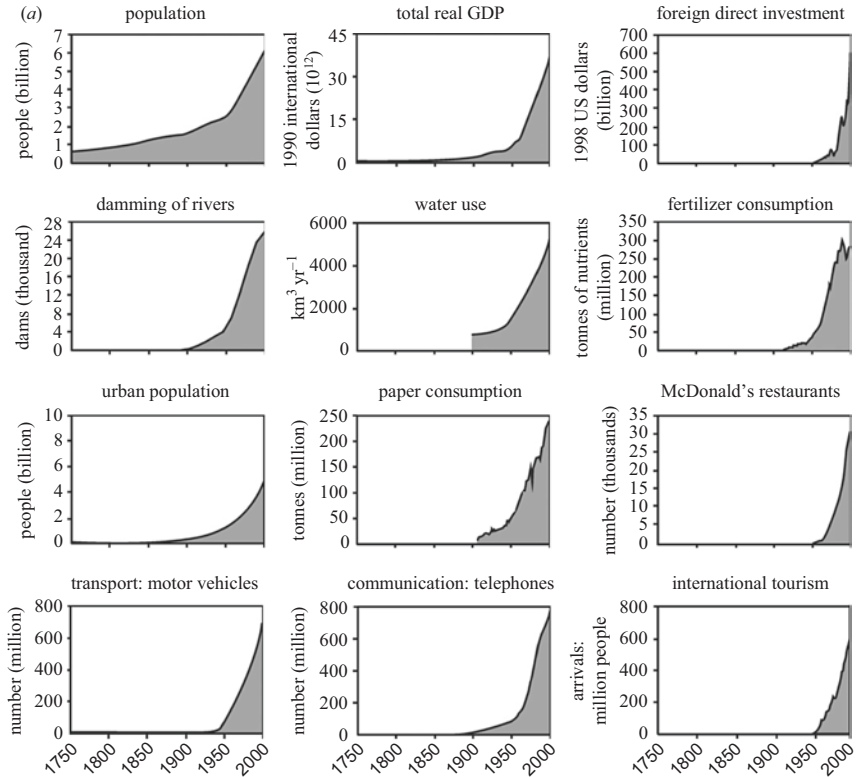


Fig. 2.1a The increasing rates of change in human activity since the beginning of the Industrial Revolution (source: Steffen et al 2011a: 851)

and actors—behind current development (Malm and Hornborg 2014; Neimanis et al. 2015). Furthermore, various contributions from social sciences and humanities also stress the importance of making theoretical and conceptual space for alternative developments and socionatural orderings (Buck 2015; Castree 2014; Gibson-Graham 2011). Here, cultural activities, such as exhibitions, galleries and cultural performances, are vitally important, not least to raise broad questions about, and inspire alternative imaginaries of, possible and desirable futures (see eg. Möllers 2014, Robin et al. 2014).

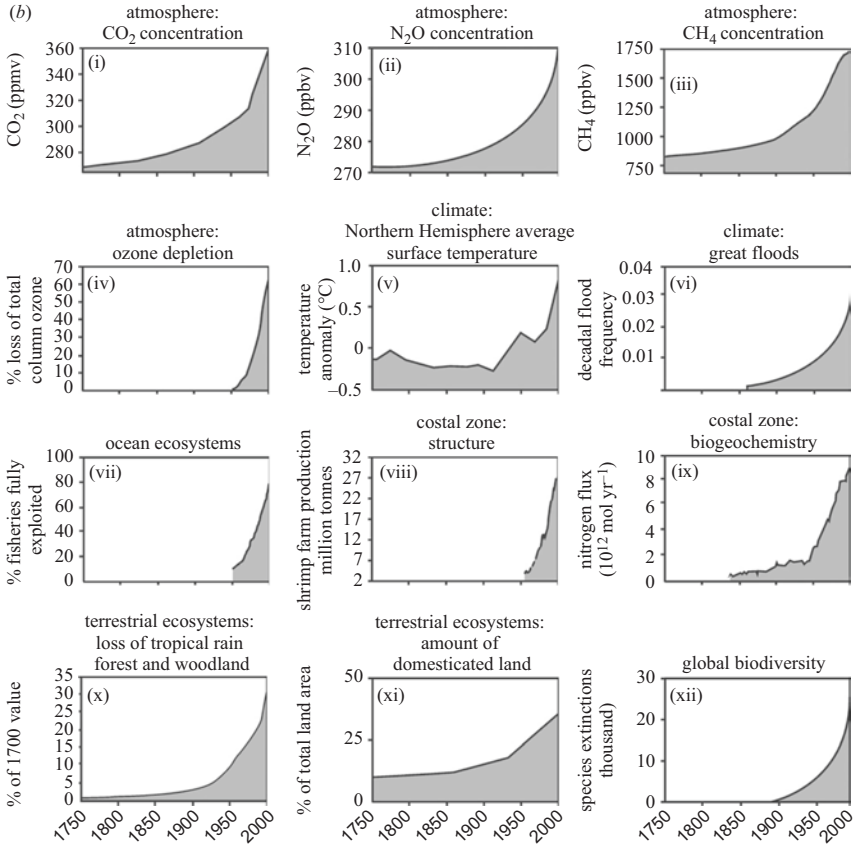


Fig. 2.1b Global scale changes in the Earth system as a result of the dramatic increase in human activity (source: Steffen et al 2011a: 852)

An ethical layer: Since its origins, the Anthropocene narrative has included ethical strands, or at least a normative imperative concerning the need to change the current trajectory that humanity, *writ large*, appears to be embarked upon. Based on an ethical imperative, the proposed directions for action are diverging. Some stress the importance of regulating technological innovations that lead to new products and new needs, whereas others attach their hope to the rapid uptake of new technological innovation—from smart cities and green technologies (Buck

2015) to a belief in large-scale technical solutions such as geoengineering (Lynas 2011).

Within this ethical layer, there has been a growing concern about the way that humanity and humans are enacted as a single, monolithic whole, through, for example, the Great Acceleration and the hockey stick metaphor. Instead, we are ethically obliged to understand and interpret the subject of the narrative—the Anthropos—as spatially and socially differentiated. We are charged to recall that it is only a small fraction of humanity that have caused the current environmental situation, and that the consequences of this—environmental bads—are unevenly distributed in time (across future generations) as well as space (in terms of regions, class and gender) (Biermann 2014; Lövbrand et al. 2015; Malm and Hornborg 2014, Schmidt et al. 2016; see also Roberts et al. this volume on the environmental justice concept). Along these lines some initiatives have been taken to make the great variation in human induced environmental impact more visible. An example of this is that the update of the great acceleration graphs (Steffen et al. 2015a) now includes differentiated graphs for OECD and non-OECD countries respectively. Obviously, this is only a first small step towards an understanding of society as stratified, implying in turn the need for a differentiated understanding of the causes of environmental damage. But what it hints at is the idea that humanity is stratified—economically, socially and politically—and that this has fundamental moral implications whereby issues of interregional and intergenerational justice come to the fore. Ethical thinkers thus claim that new kinds of concern arise when the story of “one earth” is related to narratives of “many worlds” (Chakrabarty 2014, Onuf 2013, Schmidt et al. 2016). The Anthropocene narrative itself therefore does not only convey an ethical situation: it *engenders* many ethical quandaries. These demand consideration when actors and institutions speak of making decisions and strategies to combat ongoing environmental destruction. When such decisions and strategies involve the development and implementation of unproven technologies (such as geoengineering) the stakes are even more intense, pulling ethics deeper into the domains of democracy, technology, innovation and governance.

Providing Space and Directing Attention

As discussed above, the Anthropocene narrative has gradually included social scientific knowledge. It does now include discussion of social causes as well as the social and ethical implications of the Anthropocene. It provides space for social experimentation and disciplinary development that may challenge earlier demarcations between nature and society as well as between the natural and social sciences. But concepts are not neutral tools, used to uncover reality and open it up for research. They are performative: they do something with the world they research and also with the discipline that makes use of them. We suggest it is therefore important to reflect on the implications of concepts and their usages, including those that seem to be promising and generative.

Being a dynamic narrative in the making, with different layers of meaning, involving various temporal and spatial scales, means that it is hard with any certainty to discuss the implications of the Anthropocene concept. With this uncertainty acknowledged, we will discuss some possible implications, seeing the Anthropocene narrative as providing both opportunities and risks for our general understanding of current environmental challenges and thereby also for environmental social science. Within the scope of this paper, we will restrict ourselves to a discussion of two important aspects: the narrative's view of social change and its relational ontology.

The need for *social change* is central to the Anthropocene narrative. Within it there is a strong plea for humanity to change track. But if the power to shape the planet has moved from nature to humans, as the narrative suggests, it is important to consider how agency is acquired and exerted. Hitherto surprisingly little attention has been devoted to this issue. Many contributions—not least from non-social scientists—seem to have an implicitly Socratic view of social change, implying that knowledge about the current situation is enough to mobilise such change. But, as described above, there are new layers of meaning added to the narrative, which introduce the need to think deeper about how society works. These contributions need to be supported and further developed in order to avoid fostering a naïve view of social change and human agency.

Human beings and social organisations are always and everywhere embedded in socio-cultural contexts. They appropriate the world—

interpret, understand and act upon it—on the basis of their embedding. To understand why certain activities and practices have been developed and how they are changeable, we therefore need to understand how the world looks from within, from the actors' contexts and positions. If not, there is a risk that the Anthropocene narrative will embrace a simplified and over-rationalistic view of agency that does not take into account how different contexts enable and constrain social actions. Another trend we can see is the increase in contributions to scientific journals that emphasise the social and cultural aspects of the changing planetary environment (see eg. Lövbrand et al. 2015; Neimanis et al. 2015, Palsson et al. 2013). Still, this aspect remains underdeveloped and much of the scientific discussion refers to humanity in universal and abstract terms (e.g. Rockström et al. 2009; Steffen et al. 2011a, 2015b). There is therefore still a need to acknowledge more fully the cultural diversity of the Anthropos. The Anthropocene exhibition described in our introduction is an example of the open and creative ways in which cultural institutions invite the public and researchers to explore, in specific and culturally differentiated terms, what it means to live in the Anthropocene (Möllers et al. 2014, Robin et al. 2014).

Human beings are not only embedded culturally, but also structurally. Agency is unequally distributed, that is, different actors have different degrees of power and differentiated opportunities for action. They also contribute to different degrees to today's environmental problems, implying that they also have different responsibilities in terms of solving such problems. As discussed above, the Anthropocene narrative has started to include a differentiated understanding of society but this is rarely given concrete meaning (Steffen et al. 2011a, 2015b). *It is above all a common planet and not a divided world that the narrative is centred around.* There is thus a risk that the narrative may have a de-politicising function by highlighting the urgent need for action and change, but failing to fully identify the different patterns and pathways that have led to the Anthropocene, the institutional changes needed, or the different amounts of power and agency that actors have. We refer again to the “great acceleration” which consists of a number of graphs showing a dramatic increase in human activities with substantial environmental emissions as consequences. Several articles mention various reasons for this development—such as technological innovation (the steam engine), and the commercialisation

of fossil energy and economic globalization (Rockström et al. 2009; Steffen et al. 2011b)—but no deeper analysis is made about this development. To merely suggest that humans consume too much, renders invisible the interests and responsibilities of many actors, not least those of nation-states and transnational corporations. The current situation is caused by a specific kind of (capitalist) society that is organized in certain ways that demand a constant increase in consumption (Bauman 2007; Shove and Spurling 2013). Some researchers have therefore suggested that the term Anthropocene should be replaced with that of Capitalocene because that makes it visible that it is not an abstract humanity but a specific form of social structure centred on capital accumulation that is the source of today's global environmental threats (Malm and Hornborg 2014; Johnson et al. 2014; Lorimer 2014; Moore 2016).

In some regards, the way that environmental challenges are evoked by the concept of the Anthropocene resonates with current social theorizing in environmental sociology. The idea of the Anthropocene is based upon a *relational ontology* where society and nature are co-constructed. Not only environmental problems and issues, therefore, but the environment *itself* is co-constituted by ecological and social processes (Dearing et al. 2015; Knight 2015; Zalasiewicz et al. 2010). This means also that it is virtually impossible to establish simple, linear links between cause and effect (Oldfield et al. 2014). Anthropocene stories continuously highlight the multiple, interdependent relations within nature, within different forms of materiality, within technologies and within social systems, but they also stress the interconnections between these domains. Thus, the narrative deepens our sense of the interrelatedness between nature and society (Palsson et al. 2013). This interrelatedness is what environmental sociology and many other environmental sciences actively seek. An important goal of environmental sociology, for example, is to collaborate with other disciplines in a way that treats social dynamics as seriously as environmental dynamics and in a way that brings interconnections and interdependencies to the fore (Lidskog et al. 2015).

In other ways, the narrative contains a number of contributions that have a *reductionist*, or at least a *hierarchical, ontology*. This is visible in the discussion on planetary boundaries, and its safe operating space for humanity. These boundaries are absolute, they are portrayed as “intrinsic

features of the Earth system ... exist[ing] independent of human actions or desires” (Steffen et al. 2011a: 860). To suggest that there are biophysical limits in nature may be comparable to suggesting that there are social limits in society (resulting, for example, in social disintegration if they are crossed). However, a one-sided emphasis on biophysical limits implies a standpoint close to a “biology first model” (which environmental social sciences frequently face) whereby the natural sciences define the environmental problems and then the social sciences are invited to help to develop knowledge and find solutions to these pre-defined problems. Using our metaphor of layers, there is a risk that these layers are seen as hierarchically ordered, where the geological and Earth sciences layers are seen as more fundamental than the socioeconomic and ethical ones. To state that “the evidence so far suggests that, as long as the thresholds are not crossed, humanity has the freedom to pursue long-term social and economic development” (Rockström et al. 2009: 475) opens up for discussion whether other core values such as democracy, human rights and justice can be trumped by reference to planetary boundaries. One response to this has been to complement the biophysical boundaries with socio-political ones, claiming that the goal should be “a safe *and just* operating space for humanity” (Dearing et al. 2015, Hajer et al. 2015, Raworth 2012). Thereby, the current challenge is broadened, suggesting that society currently transgresses both sets of boundaries, facing both human inequality and deprivation *and* environmental degradation. This scenario demands far greater efficiency in resource use for meeting human needs, *and* far greater equity in its global distribution. It also implies that, instead of seeing the layers as unidirectional and hierarchically ordered, they should be viewed as fundamentally interrelated and mutually influencing each other; they are folding, mixing, imploding into each other.

Conclusion: Conceptual Innovations and Implications

As discussed here, the Anthropocene narrative makes a diagnosis of the current situation, describes its causes, and stresses that urgent action is needed in order to avoid a global environmental catastrophe. It also

points out that a universal we—“humanity”—can do something about it, because “we are the first generation with widespread knowledge of how our activities influence the Earth system, and thus the first generation with the power and responsibility to change our relationship with the planet” (Steffen et al. 2011b: 756). The Anthropocene narrative invites other disciplines to contribute to this task; to develop knowledge about the need and ways to change current human activities that threaten the life-support system of earth. This means that environmental social sciences have an important role to play, and a cross-disciplinary interchange has already been initiated (Lidskog and Waterton 2016; Lövbrand et al. 2015; Palsson et al. 2013).

Like many other modern conditions, however, the Anthropocene is not directly perceptible due to its very complex character. As for many other environmental challenges, the term itself is a shortcut for a very complex problem, observable only through scientific models and measures. The Anthropocene narrative folds in, as part of its great effort to make environmental changes visible and understandable, cultural limits and biases of understanding. These do not only involve beliefs about how the world is, but also how it ought to be. Thereby the Anthropocene narrative does not only shape understanding of the current situation but also that of possible and preferable futures. But its view of the world, and the limitations that are inevitably built into that, are not always made explicit or discussed.

What we suggest here is that narratives are not simply the discursive counterpoint to material reality, they are also a constitutive part of this world, deriving from particular situated perspectives (Law 2004, Jasanoff 2012). They *do* something with the world they explore—they are navigational (directing our attention), normative (shaping our priorities) and performative (reproducing and maintaining specific kinds of representation and action). Concepts embody tacit assumptions about the constitution of both the social and natural world, including ideas about their separateness and/or their entanglement. Any concept that grasps the history of the environment includes not only a story about how and why we have arrived at the current environmental situation, but also some thoughts on how to get out of it. Explicitly or implicitly, such a concept conveys understanding of environmental challenges, human life, societal

organisation and social change. A narrative naturalises a set of ideas, makes them appear as visible common sense, simultaneously rendering other ideas invisible. Narratives guide our attention and reveal as well as conceal activities, actors and responsibilities. Therefore, an important set of questions to be raised include: what is the narrative of the Anthropocene doing to us? What implications does the adoption of the Anthropocene have for our political discourse, social arrangements and desirable futures? And also, what are we doing with the concept of the Anthropocene?

In asking such questions, we acknowledge that environmental social sciences should not be working in isolation. Being interested in both society and nature means that we have to be interested in the knowledge production of both the social *and* natural sciences, and thereby also the concepts that are used within these fields. Our biggest challenge, therefore is to open up the concept of the Anthropocene with others. As social scientists, we are trained to identify and challenge the assumptions, the blind-spots and the naturalisations that support even the most compelling of narratives. We need to work out how, situated within this dramatic story, as we are, we can make those observations and pose those challenges in ways that help develop both the social and the natural sophistication of the concept.

Notes

1. The origin of the Anthropocene concept can be traced back to a conference organised the year 2000 by the International Geosphere-Biosphere Programme (IGBP). The session organizer focussed his contribution on the Holocene (the current geological epoch that began 12,000 years ago). Finally one of the participants, the chemist and Nobel laureate Paul Crutzen lost his patience, effectively announcing the end of this current era. As he later recalled: 'I said we no longer live in the Holocene, but in the Anthropocene. After that, it suddenly went very quiet in the hall. In the coffee break the only issue discussed was the Anthropocene' (Crutzen 2013, our translation).
2. *Planetary boundaries* was originally presented in an article in *Nature* (Rockström et al. 2009), where nine planetary boundaries were presented

with nine thresholds for various biophysical subsystems and processes. The article was updated, developed and revised in an article in *Science* 2015 (Steffen et al. 2015b).

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