

# Encountering the “Anthropocene”: Setting the Scene

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There are few concepts that have made such a rapid career as the “Anthropocene.” Coined barely two decades ago by Paul J. Crutzen and Eugene Stoermer (2000), the Anthropocene has become one of the most influential, most cited, but also most controversial terms in environmental policy, theory, and practice. In global change research, where the concept was invented, the Anthropocene encapsulates the unprecedented changes to the earth’s biosphere following the industrial revolution and the past sixty years of economic activity, consumption, and resource use (Steffen et al. 2004; Brondizio et al. 2016). In contrast to the past 12,000 years of relative climate stability – known to geologists as the Holocene – the Anthropocene symbolizes the profound and accelerating human transformations of the earth’s climate and environment. Demonstrated changes in atmospheric composition, stratospheric ozone, the climate system, water and nitrogen cycles, marine ecosystems, land systems, tropical forests, and terrestrial biosphere are all taken as indications that modern civilization is altering the functioning of the earth system at a rapid speed (Steffen et al. 2011 and 2016). In the Anthropocene, we are told, humans are no longer spectators of a natural drama to which we have to adapt. The fundamental and irreversible human imprint on natural systems and processes has turned us into a geological agent and master of a world increasingly of our own making (Dalby 2014).

Despite the rapid elevation and uptake of the Anthropocene in scientific discourse, however, it remains an ambivalent and contested formulation that has given rise to a multitude of unexpected, and often uncomfortable, meetings and conversations. In geology, scholars are debating the stratigraphic evidence of the proposed “geology of mankind” (Lewis and Maslin 2015; Waters et al. 2016), with an international working group of the Subcommission on Quaternary Stratigraphy exploring whether the human signature in the earth’s strata is significant enough to formalize the Anthropocene as a “material time-rock unit” within the geological time scale (Zalasiewicz et al. 2017). In the social sciences,

scholars have engaged in parallel debates over “the Anthropos” that propels this new social geology. Rather than accepting the scientific staging of the Anthropocene as the unintended outcome of a unified humanity – a planetary “We” – social theorists have highlighted the unequal geographies, political-economic relations, insecurities, and bodily labors that underpin the current era in planetary history (Malm and Hornborg 2014; Lövbrand et al. 2015; Moore 2016; Harrington and Shearing 2017). Across the humanities, philosophers have drawn upon the Anthropocene to further rethink the Western division between natural and human history (Chakrabarty 2009) and to imagine new ways of becoming “human” in connection with earth and its multiple ecologies (Gibson et al. 2015; Haraway 2016; Clark and Yusoff 2017). At a time when human societies are “irrevocably folded into the Earth’s systems” (Dibley 2012: 143), the Anthropocene has become an urgent call to vitalize traditional concepts of ethics, care, and virtue (Rose et al. 2012).

How, then, can students of environmental politics contribute to these multiple and often contested Anthropocene encounters? Can we just carry on with politics as usual in view of the profound and possibly irreversible transformations of the earth’s climate, oceans, terrestrial systems, and species? Or does the Anthropocene proposition prompt a reconsideration of the assumptions and practices upon which our scholarship rests? These questions are important motivations for this book. We note that the Anthropocene disrupts concepts central to the study of environmental politics, such as nature, environment, power, democracy, and justice. The rapid unmaking of nonhuman life-forms raises uncomfortable questions about the possibility of wild nature untainted by humans, the capacity of technology to fix the damage done, and the ability of our political institutions to govern the environments we make and give voice to those who suffer from the environments we destroy. Some have argued that our scholarship needs a new language and novel analytical categories to grapple with the world that we are continually remaking. Familiar concepts such as *nature* and *environment*, which have long served as building blocks for elaborated arguments, theories, discourses, and ideologies (Meadowcroft and Fiorini 2017: 3), now fail to capture the scale and complexity of earth system transformations (Biermann 2014; Galaz 2014) and the “social nature” that is turning upon us (Burke et al. 2016).

In this volume we take this challenge seriously by examining how established political categories and assumptions in green political thinking hold in view of the Anthropocene formulation. We refer to *green political thinking* neither as an ideological position (Dobson 1990) nor as a coherent theoretical project (Barry 1999). Instead, we ask what it means to “think green” at a time when nature no longer functions as a stable backdrop for political analysis or as a given source of moral instruction (Wapner 2013; Trachtenberg 2015). Our volume is not the first to

address the politics of the Anthropocene. Numerous publications have invited us to explore what this new epoch in planetary history means for political thinking and practice (e.g., Dalby 2009; Biermann 2014; Galaz 2014; Arias-Maldonado 2015; Purdy 2015; Nicholson and Jinnah 2016; Harrington and Shearing 2017; Hickmann et al. 2018; Arias-Maldonado and Trachtenberg forthcoming). In this expanding scholarship, disagreement prevails over the political potency and usefulness of the Anthropocene concept as such. While some welcome this new term as an invitation to rethink conventional philosophical and political categories (Wapner 2013; Clark and Yusoff 2017), others insist that it encapsulates everything that is wrong about contemporary environmentalism and planetary eco-managerialism (Lepori 2015; Luke 2015).

This book does not take sides in this debate, but pursues a different aim: to examine how the Anthropocene formulation has been encountered by environmental politics scholarship over the past fifteen years, and the various analytical struggles and confrontations that it has given rise to. Here, the word “encounter” does not only connote an unexpected meeting, but also combines elements of discovery, exchange, struggle, and even conflict (Walters 2012: 5). The core argument of the volume is that the Anthropocene has left profound traces in multiple political terrains and provoked unexpected, and often critical, conversations about some of the most pressing issues of our time. Where these conversations will lead us is too early to tell. The politics of the Anthropocene remain emergent, ambiguous, complex, and risky. It is at this uncomfortable juncture, however, filled with troubling contradictions, that we expect green political thinking to develop and thrive in the years to come.

### **Has Nature Really Ended? The Anthropocene in Science, Philosophy, and Literary Fiction**

The Anthropocene is a term that has brought with it grand debates about what it means to inhabit a planet radically transformed by human activity. For many, it marks an existential moment for modern civilization and its promise of human emancipation from the shackles of nature (Dibley 2012; Tsing 2015; Hamilton 2017). Zalasiewicz et al. (2010: 2231) stage the Anthropocene as a new phase in planetary history when natural and human forces are so intertwined that the fate of one determines the fate of the other. It is a dangerous era, we are told, when humanity is undermining the planetary life-support systems upon which we depend (Steffen et al. 2004; Rockström et al. 2009). The proposition that our social, economic, and political processes now are woven into, and coevolve with, some of the great forces of nature is at once ambitious and ambiguous (Hamilton et al. 2015). On the one hand, it suggests that humans have turned into earth-shaping

agents with the power to “heat the planet and to cool it right down, to eliminate species and to engineer entirely new ones, to resculpt the terrestrial surface and to determine its biology” (Vince 2014: 6). On the other hand, it radically unsettles the epistemological and ontological ground upon which this human world-making project rests and invites humility in face of our dependence upon earth and its multiple ecological systems (Baskin 2015; Tsing 2015).

In this volume, several chapters engage with the challenging claim that wild and untainted “nature” is coming undone. In a time when late modern society is altering the biosphere and its environments at a rapid speed, many seem to agree that the grand separation between nature and society, inherited from the Enlightenment era, no longer holds. The entangled relationship between human and nonhuman worlds is fostering novel understandings of nature, humanity, and the earth.

### *The Anthropocene and the Earth System Sciences*

The functioning of the earth is changing, and we as humans are the change-makers. This is the radical finding from the global change research community that paved the way for the formulation of the Anthropocene at the turn of the millennium. In an edited volume from 2004, leading representatives of the International Geosphere-Biosphere Programme conclude that “profound transformation of Earth’s environment is now apparent, owing not to the great forces of nature or to extraterrestrial sources but to the numbers and activities of people” (Steffen et al. 2004: 2). In Chapter 2, Noel Castree illustrates how this grand claim is linked to developments within the earth system sciences during the past thirty years. The chapter lays out in great detail how this “science of integration” has affected ecological thinking and resulted in a radical reinterpretation of the relationship between humanity and nature. The “earth system,” comprised of the tightly linked atmosphere, hydrosphere, biosphere, and lithosphere, is today no longer understood as external to human societies. The magnitude, spatial scale, and speed of human-induced change to the earth’s biogeochemical processes and cycles have collapsed the modern distinction between nature and culture. This is what makes the Anthropocene proposition such an arresting one, suggests Castree. Nothing, it seems, is immune to human influence any more. Humans have entered the “engine room” of the earth system and are now drivers of the “planetary machinery” (Schellnhuber 1997; Steffen et al. 2004).

This recognition has profound ontological implications. Within the earth system sciences, Castree finds that the conception of nature as external – a totality beyond the realm of human influence – is increasingly outdated. Nature is a thing of the past, a trait of the Holocene against which “epochal change” is evaluated. In geology, efforts to assemble and assess geological signals in sediments of

human changes to the earth system are still ongoing, and it is too early to tell whether these signals (e.g., novel minerals and materials, geochemical signals reflecting industrial development, changing atmospheric composition) will persist throughout geologically significant time intervals (Zalasiewicz et al. 2017). Even so, notes Castree, geologists have now achieved sufficient scientific momentum that the possibility of the Holocene's end is considered a realistic one. Enter the Anthropocene – a post-natural world where humans have a dominant earth-shaping influence.

What should social scientists do with this daunting prospect brought to us by our scientific peers? Castree predicts that existing ideas about political actors, subjects, and institutions will be challenged in the years to come. The colossal ontological implications of nature's ending reset the compass for any attempt to understand "the political." However, he also cautions against a passive acceptance of the epochal claims of earth system science and insists that social scientists demystify the scientific facts that underpin the Anthropocene. Time has certainly come to "geologize" political thought and hereby engage more thoroughly with the material dynamics of our changing earth (Clark and Gunaratnam 2017). However, such engagement also requires that we "politicize" the unfolding social geology that results from our encounters with the Anthropocene.

### *The Material Philosophy of the Anthropocene*

The proposition that nature has morphed into human environment has brought the environmental sciences and humanities together in interesting and unexpected ways. In Chapter 3, Manuel Arias-Maldonado explores at length the intersections and tensions between Anthropocene science and new materialist philosophy. While these bodies of scholarship share an interest in the Anthropocene, their entry points to this new geological era differ rather dramatically. Firmly grounded in the Enlightenment tradition, earth system science approaches global change as a mounting empirical demonstration of the damage done to the earth and its complex life-support systems. When Crutzen and Stoermer announced the "geology of mankind" in 2000, they could draw upon century-long scientific observations of human alterations to the global environment (Crutzen and Stoermer 2000). New materialist scholars, for their part, are also interested in the very materiality of our changing environment. However, embracing key insights from post-structuralism and social constructivism, they bring with them a view of the material world in which modern dualisms such as body/mind or nature/culture are transcended and part of a relational and ever-changing flux. Old passive nature, as described by the mechanistic tradition, is here replaced by lively and vibrant matter in constant transformation (Bennett 2010).

This view, notes Arias-Maldonado, drives new materialism to the controversial claim that agency is distributed across a vast range of entities and processes. In contrast to earth system science – which often is accused of cultivating the exceptional human powers that have brought about the Anthropocene in the first place (Baskin 2015) – new materialist philosophy ascribes generative powers and inventive capacities to a whole “political ecology of things” beyond human control (e.g., wind, rain, nonhuman species, technological artifacts) (Bennett 2010; Burke and Fishel, Chapter 5). By challenging the human subject as the center of all things, work in this field seeks to foster greater humility and responsibility towards the earth and its multiple life forms (Gibson et al. 2015). The Anthropocene is thus not the culmination of modern civilization or human rationality but a sign of our limited powers and inevitable embeddedness in the web of life.

While new materialists hereby depart from the anthropocentrism that informs Anthropocene science, Arias-Maldonado notes that both traditions converge in a hybrid ontology of nature-cultures (Arias-Maldonado 2015). In the Anthropocene, a neat separation between natural and human history is no longer possible or desirable. In place of this Cartesian dualism, a hybrid world is unfolding, where social and ecological processes are deeply entangled and interconnected. When earth system scientists and new materialists speak of “the end of nature,” claims Arias-Maldonado, it is this hybrid ontology that they have in mind (Arias-Maldonado 2015). Despite the grandeur of the statement, it is a simple idea: nature can no longer be defined by its independence from human beings and society. This is an important ontological claim that challenges the social constructivist scholarship that has influenced environmental thinking in recent decades. It is not the cultural construction of nature but the ultimate materiality of it that signifies the Anthropocene, suggests Arias-Maldonado (Arias-Maldonado 2015). He thus foresees that a material version of constructivism will shape our thinking of environmental politics in the years to come. Such a tradition directs attention to the force of things/matter (e.g., animals, plants, minerals) in political life and opens up new possibilities for imagining the relationship between scientific and political practices (see Burke and Fishel, Chapter 5). At a time when nature and society are deeply entwined, a post-natural understanding of environmental politics and nature conservation is unfolding.

### ***Anthropocene Traces in Literary Fiction***

Contemporary stories of planetary transformation do not only circulate within the environmental sciences. In Chapter 4, Alexandra Nikoleris, Johannes Strippel, and Paul Tenngart encounter the Anthropocene through modern literary fiction. By engaging with the expanding field of climate fiction (“cli-fi”), they suggest,

we can better explore what led us to the Anthropocene, what it means to be here, and where we should go next. Fiction has the power to narrate everything that can go wrong, claim Nikoleris, Stripple, and Tenngart. Fiction can take effects to their extremes, whether it is an earth without insects or a spaceship on its path to certain death. By following particular persons in particular contexts, literature lets us experience the global implications of the Anthropocene through a situated specificity that is often not our own.

Following the eco-critical tradition in literature and cultural studies (Glottfelty and Fromm 1996), this chapter makes use of literary protagonists as inspirational examples to give planetary visions of global environmental change a “sense of place” and “an ethics of proximity” (Heise 2008). Through Robinson’s *Science in the Capital*, for instance, Nikoleris, Stripple, and Tenngart give us a glimpse of how we may transcend an excessively “rational” modern society and enter into a world where spiritual and emotional connectivity guides our actions. The reader learns that doing something about climate change could be the starting point for a better society and new forms of humanity. The story tells us that no matter how well humans try to plan the evolution of socio-ecological relations, it is not desirable to be in total control. Rather than perfect planning, we need to rethink our relationship with the earth and its inhabitants, not as stewards but as cohabitants.

Many of the novels analyzed in this chapter reject both the idea of humans being outside nature and the notion that humans and nature are so intertwined that they are inseparable. Nature proceeds, prods back, reacts in unforeseen ways to what humans do, claim Nikoleris, Stripple, and Tenngart, showing that while humans might now be a geological force, it is far from being the only one. Several of the characters that we get to know in this chapter imagine and embrace a “zoopolis” that can sustain close interrelationships between humans and animals, new forms of connectivity, different social arrangements, and new forms of being political in a hybrid world. The political effects of this expanded Anthropocene imagination are, of course, difficult to trace. Narrating global environmental change through the lives of fictional individuals does not bring us closer to any direct political responses. As illustrated in this chapter, eco-critical accounts of the Anthropocene can, however, participate in the search for stories and images of an environmentalism that links global patterns of connectivity to local places, ecologies, and cultural practices (Heise 2008).

### **Anthropocene Politics: Revisiting Familiar Categories and Concepts**

Many scholars have presented the Anthropocene as a turning point or rupture in the history of earth, life, and humans that demands we set accustomed understandings aside and develop original political thinking (Bonneuil and Fressoz 2015;



Hamilton 2017). In the second section of this volume, several authors respond to this invitation by revisiting established political concepts in view of their encounters with the Anthropocene. These chapters demonstrate that the hybridity, complexity, and nonlinearity of contemporary socio-ecological relations bring profound challenges to established conceptions of power (as conceived in International Relations) (Burke and Fishel, Chapter 5); political time (Galaz, Chapter 6); democracy (Mert, Chapter 7); and the eternal quest for global justice (Baskin, Chapter 8). While political theory may have been late in responding to the fundamental ontological reorientation postulated by the Anthropocene (Hamilton et al. 2015), these chapters demonstrate that green political scholars certainly have taken up the challenge.

### ***Thing-Power in World Politics***

In Anthropocene discussions, environmental change and globalization merge into one (Dalby 2009). The flows across boundaries of people, goods, fuel, and pollution create new forms and degrees of interdependence among formally sovereign countries, extending to areas beyond national jurisdiction, such as the high seas and Antarctica (Biermann 2014). As local actions become linked to social, economic, and political processes on transnational or even global scales, we also see growing problems of displacement, distancing, and disconnection between decision-makers and “environments,” between perpetrators and victims, between consumers and producers (Christoff and Eckersley 2013: 11). New configurations of power are one major consequence, which stand at the center of Burke and Fishel’s contribution (Chapter 5).

In a world where social and ecological systems are increasingly entangled, traditional conceptualizations of power are radically outdated, claim Burke and Fishel. The essentially and often purely anthropocentric theorization of power in world politics makes it almost impossible to see power as something that operates systemically, structurally, anonymously, and accidentally; as something that can bring about unintended effects and consequences; and as something that can also account for the impacts of nonhuman agency. In the Anthropocene, they argue, eventually nonanthropocentric power will resist anthropocentric power in its complexity, its nonintentionality, and its heterogeneity. Yet, a novel focus on the power of nonhuman agents, argue Burke and Fishel, leads also to profound consequences for political practice, and eventually for political ethics. A new focus on what they call “thing-system power” requires us to go beyond traditional bargaining among state governments and their diplomatic representatives. Instead, activism, resistance, and subversion are becoming equally important, as well as novel ways of representing nonhuman agents (animals, ecosystems, and so forth) in what Burke



and Fishel envision as “cross-national and ecosystem-centered deliberative democracy” (however this might concretely evolve in global political institutions and agreements).

Given their broad and far-reaching vision, Burke and Fishel remain inherently skeptical of the chances of reform within the context of existing intergovernmental treaties, agreements, and institutions, which grant – in their view – still too much freedom to states to control and exploit the ecosystems within their jurisdictions. A new theory of power, claim Burke and Fishel, is hence needed – along with a new practice of politics that becomes much more radical, subversive, and resistant than what most current organizations in civil society and social movements are known for. Burke and Fishel’s vision can hence be seen as a radical interpretation of the consequence of our encounters with the Anthropocene – even though the concrete implications of this radical critique remain to be elaborated in future research.

### ***Reconsidering Political Time***

The Anthropocene creates novel interdependencies not only across space, but also across time. The notion of historic responsibility, central to the politics of climate change, has since the 1990s created ties of responsibility between present generations and the activities of their ancestors. The history of fossil fuel burning in Europe has, argue many developing countries, resulted in a climate debt that industrialized countries now should repay by extra mitigation efforts. As demonstrated in Victor Galaz’s contribution to this book (Chapter 6), the Anthropocene also links current people with future generations over many centuries. Sea-level rise, for example, is expected within a time-range of a hundred years and more, necessitating planning horizons that exceed the lifetime of present generations. This “deep-time” horizon of the Anthropocene gives the democratic legitimacy of environmental policies an intergenerational dimension. What rights and responsibilities do present generations – and their representatives in parliament – owe to their unborn successors? Contemporary debates on climate engineering offer a case in point; that is, purposeful modifications of the earth system by means of, for instance, aerosol injections into the atmosphere (which would block parts of the sun’s light and hence cool the planet), massive planting of fast-growing trees or crops to increase uptake of atmospheric carbon dioxide (combined with later sequestration and storage of the carbon), or direct capture of carbon from the air through massive deployment of air capturing devices. Whatever the merit of such technologies – none of which is yet sufficiently understood – all would only be employed at scale in the second half of this century, and they would need to be functional for many decades afterwards. In other words, the current discourse on climate engineering is nothing less than a debate on the type of large-scale

technologies that the next generations, inevitably, would need to employ in order to keep the climatic conditions sufficiently stable. This linking of past and future generations within current political decisions is one of the key characteristics of the Anthropocene condition. Current political systems – as well as the field of political science – are poorly equipped to deal with these novel challenges of politics in “deep time.”

Victor Galaz (Chapter 6) adds another, equally fascinating element of the role of time in the Anthropocene: “ultra-speed.” More and more of the key processes of modern societies are taken over by powerful computers, which operate at the speed of split seconds. Major transactions in global markets occur in just tiny fractions of a second, following complex algorithms that become every day more influential in shaping our lives. Warfare is computerized and follows reaction times of fractions of seconds. Major infrastructures in heavily urbanized spaces are equally functioning according to the algorithms of “ultra-speed.” Again, political systems and political scientists still have to grapple with the new condition of “ultra-speed” decisions, which might be equally challenging to the “deep-time” context in which the Anthropocene places human societies and politics.

### ***New Scalar Challenges for Democracy***

The Anthropocene also poses novel and profound questions for democracy. This concerns, for one, democracy at the national level and the key functions of the state (Eckersley 2004). Novel complexities and uncertainties may grant a more prominent role to experts and technocrats, reducing the influence of citizens. The deep-time character of problems requires new types of democratic legitimacy for actions that affect future generations. Increasing needs of adaptation to earth system transformations could support authoritarian discourses, and the increasing reliance on private governance raises new questions about the democratic legitimacy and accountability of such new steering mechanisms. Not the least, the global character of the Anthropocene, with all its resulting interdependencies, erodes the steering capacities of governments. This has raised the question of whether the United Nations, built in its core around notions of sovereign equality of states and inter-governmental diplomacy, is still the appropriate model of global governance in the twenty-first century, in particular with a view to the Anthropocene challenges. Reform proposals abound, from the introduction of weighted majority voting to the establishment of a world parliamentary assembly, or a global forum of civil society as a second chamber next to the United Nations General Assembly, or a global deliberative assembly (Biermann 2014, chapter 5).

This new reality is the starting point of Ayşem Mert’s contribution in Chapter 7. The Anthropocene implies that new polities are emerging across the world which

cannot be captured by traditional democratic procedures and norms. These emergent polities present a challenge to the contemporary democratic imaginary, particularly because they involve future generations and nonhuman agents. To address the questions of the Anthropocene, we need to rethink democratic dynamics and institutions, claims Mert. The measures with which the question of democracy has been addressed at the global level thus far have been largely based on the democratic principles of the nineteenth and twentieth centuries. Mert proposes, instead, to understand the Anthropocene as a new scale in democratic theory. The ideals and foundations of democracy were once before rearranged when the scale of the nation-state required a new and different democratic imaginary than that of the Greek city-states. The debates during the French and American Revolutions were similar to those of our time: What is the right scale and method for decision-making in view of a new and larger *demos*? Rather than democratizing existing modes of global governance, Mert invites us to imagine a whole new “post-natural” democracy that can adequately address governance at the planetary scale.

### ***Challenging the Western Development Story***

Finally, politics in the Anthropocene has to operate in a global situation of large inequalities in resources and entitlements. In a world where the richest 20 percent of humanity account for 76.6 percent of total private consumption, while the poorest 20 percent consume just 1.5 percent (World Bank 2008: 4), global environmental change is deeply tied to global landscapes of inequality. While wealthy people who contribute most to environmental degradation see their advantages multiply, they are seldom asked to take responsibility for the impacts on distant people and places. How is this profound disconnect between those who make decisions that generate environmental risks and those who suffer the consequences reflected in mainstream writings on the Anthropocene?

In Chapter 8, Jeremy Baskin responds to this question by tracing some of the most important texts in the scientific Anthropocene discourse, from the original accounts by Paul Crutzen through to the more recent work on the “Great Acceleration” and the professional *Welcome to the Anthropocene* video that was produced in 2012 to inform the United Nations Conference on Sustainable Development in Rio de Janeiro. Baskin finds that scientific advocates of the Anthropocene pay little attention to politics or power relations (also Biermann et al. 2016). Most texts in this field ignore, or evade, the profound inequalities within human societies that mark the Anthropocene, for instance by ascribing responsibility to (anonymous) processes such as the “industrial revolution” or “globalization,” yet without naming the political, social, and economic inequalities that resulted from such processes and the political agency that stood behind them.

Baskin also sees a common trend in Anthropocene discourse towards technical and managerial responses to the impacts of global change, as opposed to a more fundamental discussion of political, social, or economic reform. In the end, argues Baskin, key documents in the Anthropocene discourse remain linked to a traditional development narrative that makes possible the adoption of “Promethean proposals” such as solar radiation management. Radical alternatives, such as “degrowth” thinking, however, are less represented in the mainstream Anthropocene texts that Baskin analyzes. Instead, argues Baskin, what is needed now is to see “development” as part of the problem rather than of the solution. He hence concludes with an emphatic call for alternatives-to-development thinking, for degrowth approaches, and for the convergence towards a more equal world – reflecting here similar conclusions in this book by Burke and Fishel (Chapter 5), Fremaux and Barry (Chapter 9), Wapner (Chapter 11), and others.

### **The Ethics of Political Research in a New Era: Radicalizing and Pluralizing Modes of Engagement**

Over a decade ago, Will Steffen and colleagues (2004) proposed that the challenges of a rapidly changing earth demand entirely new forms of scientific knowledge creation. In order to understand the dynamics of the planetary life support system *as a whole*, environmental scientists need to put the pieces together in innovative and incisive ways and invite the social sciences to new forms of interdisciplinary collaboration and knowledge integration (Steffen et al. 2004). Their call became part of what today is known as “earth system science” – “the integrative meta-science of the whole planet as a unified, complex, evolving system beyond the sum of its parts” (Hamilton 2016: 94). More than a decade later, policy relevance has surfaced as an increasingly important mandate for environmental research. In order to effectively respond to the mounting environmental challenges of our times, scholars are today invited to codesign solutions with societal stakeholders and thereby begin the transition to global sustainability (Future Earth 2013: 10).

How should green political scholars respond to these calls for coordinated and solutions-oriented Anthropocene research? Do the epistemological foundations of our scholarship still hold in a time of intensified global environmental change, or does our entry into a post-natural era prompt a rethinking of established practices of political research and ethics? These questions have been intensely debated in recent years and are addressed in several chapters of this volume. Some contributors insist that political scholars should maintain critical distance from the scientific assumptions of the Anthropocene and instead direct analytical energy to their political origins and effects (Castree, Chapter 2; Baskin, Chapter 8). Others call for a deeper political and ethical sensibility towards the complex social geology of the

Anthropocene (Wapner, Chapter 11). To paraphrase Clark and Gunaratnam (2017: 148), can we really “politicize the Anthropocene” without also opening “the political” to climate, geology, and earth system change?

In this volume, most authors seem to agree that the study of politics cannot simply carry on when confronted with the daunting prospects of a world radically transformed by humans. At a time when nature no longer offers a stable background to political analysis, new scholarly investments, responsibilities, and, indeed, possibilities await us. The Anthropocene requires, in short, a radical revision of our scientific undertakings.

### ***Radicalizing Green Political Thinking***

First, the Anthropocene proposition gives new energy to long-standing tensions between radical and more reformist wings of environmentalism. Sustainable development, which after the 1992 Rio Summit became the beacon and promise of global environmental politics, is today increasingly challenged for its failure to deliver structural transformation of industrial capitalism and the consumer culture that drives global environmental change (Blühdorn 2015). One decade ago, Jacob Park and colleagues declared this Rio model of environmentalism dead (Park et al. 2008). To many environmentalists, the eco-modern promise of sustainable development through technological innovation and market expansion has become a source of major disappointment, and a legitimizing strategy of economic globalization rather than environmental protection (Dauvergne 2017). Enter the Anthropocene.

In Chapter 9, Anne Fremaux and John Barry approach the Anthropocene as a reason to radicalize green political thinking and hereby reinstate the critical edge of environmentalism. To that end, they caution against an uncritical acceptance of nature’s ending. New materialist constructivists have, they claim, offered eco-modernist champions of “the good Anthropocene” (Asafu-Adjaye et al. 2015) a new rationale for the technical domination of nature that has characterized the late modern era. By referring to the nonhuman world as “socio-nature” or “techno-nature,” it is possible to justify a continued capitalization of nature as a “natural” fact. Recent proposals to govern climate change through large-scale geoengineering typify such anthropocentric hubris and point to the dangers of technological responses to global environmental concerns.

To Fremaux and Barry, nature can never be merely a social product. Nor is it a simple raw material that passively awaits human inventiveness and ingenuity. Nature must instead be approached as a complex system that reacts in surprising and unpredictable ways to human intervention and disturbance. The great challenge that lies ahead, claim Fremaux and Barry, is therefore not the further

humanization of the planet but rather, the introduction of restraint and precaution in our political responses to environmental change. What needs to be managed and controlled is not the earth and its various biophysical entities and processes, but humanity’s relationship to the earth. This clear focus on human self-governance brings green politics and ethics “back in” to Anthropocene conversations.

In order to counter the dangers of a planet radically transformed by humanity, Fremaux and Barry search for an environmentalism that is guided by precaution and respect for the nonhuman world. Such environmentalism challenges the excesses of capitalism and consumerism, and invites green political scholars to actively engage in democratic contestation and debate around alternative visions of the good (green) society. In contrast to the exhausted paradigm of sustainable growth and innovation, Fremaux and Barry welcome a new generation of green political thinking that fosters the utopian and critical impulses of environmentalism. At a time when the scale and speed of environmental transformations are accelerating in unprecedented ways, the Anthropocene should be used to revitalize the critical and normative features of green political theorizing and hereby articulate radical alternatives to the profit-oriented development, corporate-run solutions, and consumer-led responsibility of eco-modern society (Dauvergne 2017: 151).

### *Pluralizing Modes of Engagement*

The profound challenges of the Anthropocene have in recent years affected how environmental research is conceived and practiced across a diversity of disciplines. Some would even suggest that the Anthropocene has brought about a scientific revolution and fostered entirely new ways of thinking about and studying the earth (Hamilton 2016). In Chapter 10, Silke Beck traces how this paradigm shift is interpreted and received, especially by scholars involved in the global research platform “Future Earth: Research for Global Sustainability.” This ten-year initiative was developed by a confederation of national research agencies to redirect the integrated study of the earth system towards global solutions. In particular, Beck interrogates what Future Earth’s mandate to “coproduce” knowledge with societal stakeholders means for social science.

Beck finds that coproduction has become an epistemic instrument that promises to intensify the impacts of environmental research by making Anthropocene findings “usable” and “actionable.” To many, this solution-oriented turn of global environmental research represents a major shift, a reorientation from autonomous, curiosity-driven basic research to applied research designed to facilitate society’s transition towards sustainability. This shift has many critics. Beck reports from heated debates where scientists have voiced concern that their freedom, autonomy, and creativity are at stake. Social scientists have, in turn, pointed to the political

risks and implications of a solutions-oriented research agenda. If informed by too narrow an understanding of global environmental problems, coproduced science will inevitably restrict the types of policies and institutions that can be imagined in response. Optimistic ideas that more and better coproduction will automatically achieve better outcomes may thus fail and, paradoxically, lead to their opposite (Lövbrand et al. 2015).

Rather than seeking to direct science towards predefined solutions, Beck concludes that we must let knowledge creation free in an Anthropocene era. The outcomes and impacts of knowledge production are always open-ended, unpredictable, and uncertain. Such uncertainty may seem risky when confronted with the mounting challenges of a world transformed by human activity. However, unpredictable knowledge can also create transformative breakthroughs that change social ways of thinking and acting, claims Beck. Green political scholars who seek to constructively engage in such transformative processes can no longer find comfort in their ivory towers. Effective analyses of green political futures require an active engagement with contemporary sociopolitical developments. This does not, of course, imply that scholars of environmental politics should passively accept the contemporary quest for usable and actionable research. In order to turn the Anthropocene into a critical political event, it is important, claims Beck, to safeguard an analytical space where it is possible to revisit and debate the cultural and social assumptions that inform how we collectively make sense of and respond to a changing environment. To Beck, this means pluralizing the modes of engagement and the reflexively engaged roles available to the social sciences in the continued study of nature's and society's entanglement.

### *Extending Ethical Responsibilities*

If we take seriously the proposition that humans have deflected the earth from its geological path, the Anthropocene is more than a political event. It is also an ethical condition that introduces new responsibilities to scholars of environmental politics (Hamilton et al. 2015). In Chapter 11, Paul Wapner reflects upon this new scholarly condition in view of the global inequalities and planetary injustices following global environmental change. The Anthropocene is not ethically neutral, claims Wapner. It extends contemporary injustices into the future, when societies may need to deal with mass migration from coastal plains following sea level rise, threats to food security, and possibly entirely novel political debates on climate engineering. "Climate suffering" might increase the pressures that already exist for the poorest, with 800 million people today lacking sufficient food. This condition of inequality, injustice, and suffering cannot leave political science and the political scientist untouched.



Wapner suggests two kinds of adjustment to this new ethical condition. First, he calls upon political scholars to embrace normative work and a critical stance in their research. In the shadow of the Anthropocene, Wapner argues, value-neutrality appears as a luxury. In essence, human transformations of the earth challenge the basic assumption of modern science: the idea that scientific research and personal values must be kept apart, separated by strong “firewalls” of university-based training, the structure of funding programs, journal acceptance policies, and tenure track commissions that value scientific “excellence” but not personal conviction. This separation, claims Wapner, must change. Time has come for researchers to embrace their normative commitments and let them direct, guide, and discipline scholarship. Of course, Wapner is quick to add that ethically informed scholarship does not mean “jettisoning methodological rigor, turning scholarship into moral exhortation, or relaxing the standards of honest inquiry . . . It simply entails infusing one’s scholarly aims with ethical momentum and deploying tools of research in the service of understanding and building a more humane Anthropocene.” In Wapner’s words, political scholarship was never completely free from normative sensibilities but always looked down on them as impediments to quality work. The Anthropocene calls for looking up at them.

In addition, Wapner argues, political scholars need to expand their object of analysis by considering the more-than-human dimension of life that includes other animals, plants, microbes, minerals, and general ecological features of the earth. This, again, is one of the consequences of the Anthropocene: even though “humanity” has become the defining species in this conceptual innovation, the Anthropocene does not imply complete domination. To Wapner, the Anthropocene represents an age when humans and nature are conjoining forces that move towards a coevolutionary future. Nonhuman agency is still pervasive, and invites us to consider and take responsibility for an entire assemblage of living and nonliving things.

## Conclusion

Nothing is more powerful than an idea whose time has come, once wrote Victor Hugo. The proposition that we have entered into a geological era of humanity’s own making is, indeed, such an idea that contains many of the questions, provocations, and passions that have inspired green political thinking over the past decades. In this book, we ask ourselves how significant our encounters with the Anthropocene are for the study of environmental politics. Does the Anthropocene formulation present a rupture in our thinking about nature, humanity, and the earth; a true turning point that prompts a rethinking of green political thought and practice? Or are contemporary Anthropocene debates a continuation of

a long-standing and still unfolding research agenda? The chapters included in this volume do not offer any firm answers to these questions. The manifold Anthropocene encounters made here suggest that the “geology of mankind” remains an ambivalent and emergent idea with multiple interpretations and political trajectories. As noted by Dibley (2012: 144), the very concept contains an “element of indecision.” The Anthropocene is a discourse that speaks of both human mastery and retreat, of ecological collapse and restoration, of political crisis and possibility. While this ambivalence remains a central trait of contemporary Anthropocene debates, we find at least three reasons why these debates should engage scholars of environmental politics in the years to come.

Firstly, it is clear from the chapters included in this volume that the Anthropocene formulation has introduced *a new sense of urgency* to our scholarly pursuits. If we take seriously the proposition that the earth is being radically transformed by human activity, the Anthropocene is not about politics as usual (Burke and Fishel, Chapter 5). Instead, it prompts thorough scrutiny of contemporary political practices, norms, and institutions, and their ability to respond to the profound environmental challenges of our times. Take climate change as an example: a world comparable to the one we live in today is only feasible, we are told, if global mean warming is limited to less than 2 – if not 1.5 – degrees above preindustrial levels. Climate modelers have demonstrated that this goal requires that we reach negative emissions by the second half of this century – that is, that we then remove more carbon dioxide from the atmosphere than is released through fossil fuel burning and land use change. In order to meet this ambitious climate target, carbon dioxide removal programs are now being explored at unprecedented (global) scale. Vast areas of agricultural land would need to be used for crops that sequester carbon from the atmosphere – only to be stored away for centuries. These dire prospects signal that climate change is more than ever a matter of *earthly* politics. Nature is being reassembled at the largest possible scale, and political thinking has to come to terms with the geopolitical implications (Biermann 2014; Dalby 2016; Burke and Fishel, Chapter 5).

Secondly, the Anthropocene leaves us with *a novel type of unease* – about humanity’s role in the world, about the kinds of environments we create, about the deep inequalities in causation and suffering, and about the planetary eco-managerialism that may follow. The elevation of “the human” into a geological agent with the capacity to determine the future of the planet is challenging and troubling at once. It signals that modernity’s emancipatory quest now has reached a point where the possibility of any pristine, simple nature is irretrievably gone (Castree, Chapter 2). Through technological advancement, the spread of hyper-consumerism, and carbon-intensive forms of economic globality, the species-life of humans is now so entangled with the earth’s biogeochemical cycles that life is no

longer simply biological (Dibley 2012: 147). “Nature is us,” as proclaimed by Crutzen and Schwägerl (2011). Many chapters in this volume challenge this grandiose claim and point to the risks of overemphasizing human agency and control. The Anthropocene is indeed a discourse inescapably entangled in notions of reason and liberty inherited from the Enlightenment era, and the managerial and eco-colonial impulse is therefore close at hand. As noted by Last (2017: 163), speculative geoengineering proposals such as cooling down our planet through solar radiation management draw upon and reinforce stereotypes of “imperialist man” as the engineer of his own destiny. In an effort to take control of the unfolding ecological crisis, this new geological agent is now granting himself an epoch-given right (or duty) to govern the planet for the benefit of humanity as a whole (Baskin 2015: 14; Fremaux and Barry, Chapter 9).

As the Anthropocene becomes a field of technological intervention, the questions for green political scholars are mounting. Who will take responsibility for the worlds that we make, and those that we destroy, in our efforts to govern contemporary socio-ecological relations? How do we make sure that ongoing and future transformations of the planet do not create, or reinforce, global landscapes of inequality and injustice? Does salvation lie with a cosmopolitan epistemic community, with multilaterally negotiated treaties, and the products and services provided by environmental markets? Can liberal environmental institutions and established practices of political representation foster inclusive debates about the future of the earth? Questions of this sort resonate with a long-standing and thriving green political scholarship and are thus far from new. However, as demonstrated by the chapters in this book, the Anthropocene adds new temporal and scalar dimensions to these questions and invites environmental scholars to critically interrogate the politics of a world transformed by humans.

Thirdly, the Anthropocene therefore also calls for *new ethical commitments* and novel ways of engaging with the objects of our study – nature (if it still exists), the environments we create, and our many socio-ecological relations, from local to global levels. As economy, ecology, and politics unite with growing intensity, complex patterns of environmental risks may reinforce unequal relations of political and economic power (Purdy 2015: 46). As outlined by Wapner (Chapter 11), the Anthropocene is not ethically neutral, but rife with social and ecological injustices. The age of humans should more accurately be termed the age of some humans. Any effort to understand the political dynamics of the Anthropocene will therefore require careful consideration of what is at stake, for whom, and where. While this new era in planetary history is closely tied to a Western development tale of human liberation and progress (Baskin, Chapter 8), it is also a sobering lesson in humility (Eckersley 2017). The complex interdependencies that characterize this new era in planetary history are now inspiring scholars to transcend the idea that the

nonhuman world is devoid of meaning, value, and agency, and to cultivate new imaginaries of community, recognition, representation, and answerability (Gibson et al. 2015; Eckersley 2017; Burke and Fishel, Chapter 5). This expanded notion of environmental ethics and democracy is taking shape at a time when nature no longer works as a natural reference point for our scholarly pursuits, or as a given source of moral and political instruction (Wapner 2013). Instead, a post-natural version of environmentalism is unfolding, in which the very meaning of nature is open for debate.

It is too early to tell where this new generation of green political thinking will end up. As demonstrated in this book, the Anthropocene is an uncertain and risky proposition that calls many of our taken-for-granted assumptions, categories, and concepts into question. The vocabulary, ethics, and aesthetics of this hybrid era lack the stability and reassurance offered by more familiar narratives such as sustainable development or ecological modernization. While the ambivalence of the Anthropocene may frustrate scholars concerned with the mounting environmental challenges of our times, it can also be seen as an invitation to revisit and vitalize concepts central to green political thinking – nature, politics, power, democracy, justice, liberalism. The chapters included in this volume take important steps in that direction. The Anthropocene encounters made here draw upon a long tradition of green philosophy, ethics, and political theory. However, as old ideas are refashioned in response to changing ecological circumstances, novel tensions, contradictions, and disagreements come to the fore. To engage with the many ambiguities of the Anthropocene is challenging. It demands that political scholars take seriously scientific claims about nature's ending, but also critically interrogate their epistemological, political, and ethical foundations and implications. To some, this may appear as a dangerous distraction. However, as demonstrated by the chapters in this book, encountering the Anthropocene can also be an analytical possibility that may push green political thinking in unexpected and productive directions.

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