
Introduction

Thinking differently about the future

Tracing the origins of the Anthropocene and the fossil fuel economy

Today, the life support systems of this planet are in serious decline. Both the stocks and flows of key elements, such as carbon, nitrogen, phosphorus and silicon, have been so badly affected by human-driven pollution activity that the Earth is no longer shaped by natural geological changes. Instead, scientists warn, the planet is moving rapidly into a biologically less diverse and climatically more dangerous state of existence (Steffen, Crutzen & McNeill, 2007). By far the most important factor contributing to these developments is the rise and ongoing expansion of the fossil fuel economy. Some 70 percent of global energy-related carbon dioxide emissions today are generated by fossil fuel production and consumption (IEA, 2018). This, however, is not a new phenomenon but, rather, one that has been emerging steadily for years. Neither is it a coincidence that the mass distribution of coal-burning technologies from the late eighteenth and early nineteenth centuries onward coemerged with a new geologic age known as the Anthropocene.¹ The Anthropocene defines a period in the planet's geological history when, for the first time, a peculiar breed of *Homo sapiens*, industrial capitalists, became primary agents of change, altering the Earth's surface, oceans, atmosphere and nutrient cycles to unparalleled degrees (Crutzen & Stoermer, 2000). With the further growth of fossil fuel-based energy systems and their associated technologies throughout the nineteenth and twentieth century (e.g., the invention of internal combustion engines), this pattern of destruction would continue to develop, triggering unprecedented ecological effects, including the threat of widespread ecosystem collapse.

To understand how this state of affairs emerged, it is necessary to look at its historical dynamic. In particular, the way specific actions and events would cumulatively allow what had been a fledging capitalist economy to achieve global supremacy. For instance, the decision to substitute firewood and charcoal as daily energy sources for coal from the eighteenth century on account of its abundance and easy extraction from near-surface sites. With the invention of the coal-burning rotary steam engine circa 1776 by James Watt (considered by many to be the

quintessential tool of the Industrial Revolution), coal's commercial valuation as capitalism's first 'black gold' would be secured, fueling the rapid expansion of its new manufacturing industries and transportation technologies in ways that would transform society forever. Watt's steam engine linked coal to the inauguration of a new phase of global capitalist development but, also, a new phase in relations between humans and the carbon cycle (Crutzen, 2002: 23; Malm, 2016: 233). Coal was now needed in abundance to fuel the engines of capitalism's newly forged global interests, to transport resources from the continents, to dispatch its manufactured goods, and to secure the navigational supremacy of the colonial empires. So valuable was coal as an energy source during this period, its discovery often precipitated the colonial occupation of new territories. Commenting on the British occupation of Labuan from 1846 (an island off the north coast of Borneo), one newspaper described how the island 'appears to be one great coal field, for every large river intersects a coal-bed; and it seems only necessary to see and mineral is found'.²

Commitments to fossil-powered energy systems would continue to develop in the years that followed (e.g., the discovery of petroleum and gas energy sources, as well as the diesel-powered engine, etc.). By the mid-twentieth century, the harmful effects of mass fossil fuel consumption on the biophysical and biological systems of the planet (Steffen et al., 2011: 844–845) were beginning to show. The burning of fossil fuels would now give real definitional force to the destructive tendencies of the Anthropocene age and, simultaneously, the material basis of capitalism's violence against nature.

At no point in this development process was 'humankind' *the* agent responsible for inducing changes that would, in time, become the single largest threat to all planetary life. Rather, from the start, fossil-fuel-inspired geological changes were the product of the decisions and actions of a wealthy minority, and little, it seems, has changed in the years since. Just 100 companies worldwide today are responsible for 71 percent of total greenhouse gas (GHG) emissions (The Carbon Majors Report, 2017). When one considers that, globally, 1.2 billion people do not have access to electricity (International Energy Agency, 2017b), that the GHG emissions of one-sixth of the global human population are close to zero, or that the difference in modern energy consumption between a subsistence pastoralist in the Sahel and a high carbon consumer living in the West is thought to be larger by 1,000-fold (Smil, 2008: 259; Satterthwaite, 2009: 564), is it really appropriate to use species-wide descriptive categories to explain the 'causes' of climate change? Why, Malm and Hornborg (2014: 66) ask, does official policy discourse on climate change continue to speak of 'human inspired' climate change and consistently underscore how a qualitatively novel order of exploitation as the fossil fuel economy came into being or even why it continues to dominate climate change issues to this day? What we do know is that this economy was not created by chance. Neither does it continue to burn because it is indispensable to our lives. Rather, the primary agents promoting the fossil fuel agenda of today (e.g., the so-called oil shale revolution, deep-sea drilling projects, mining of coal

through mountain top removal, etc.), as in the past, are amongst the wealthiest, most politically influential, and ecologically destructive. From its earliest years, the wealth and pollution generated by this economy were unevenly distributed and predicated on major divisions between peoples and power (capital accumulation, labor exploitation, class inequalities, colonial domination and widespread natural resource destruction). Inequality has, therefore, been a stable component of fossil-fuel-inspired climate change from the start. Yet the dominant viewpoint is that, historically, these developments were an essential part of humanity's progression towards more 'advanced' stages of civilization (see, for example, International Energy Agency 2017a). Rising concentrations of ozone in the troposphere, the pollution of rivers, oceans and so forth are framed as 'unfortunate side effects' of otherwise universally beneficial processes of industrialization and capitalist expansion. The more autonomous agency is accorded to climate change, the more passive symbolic formulations of its causes prevail (Fowler et al., 1979), and little attention is given to specific agents of harm – those, that is, whose largely unhindered operations have disproportionately contributed to the further advancement of the Anthropocene.

In the years since Crutzen and Stoermer (2000) first introduced their account of the Anthropocene age to the international community, the exploitation of energy from detrital carbon has continued to climb. In March 2015, scientists reported that monthly global average atmospheric concentrations of carbon dioxide exceeded 400 parts per million for the first time in 3 million years (since the mid-Pliocene era), a figure subsequently surpassed in September 2016 when concentrations increased to 403.3 parts per million (UN World Meteorological Association, 2016). With global energy use per capita projected to increase by another 12 percent by 2035 (BP Energy Outlook, 2035), the expectation is that concentrations of carbon dioxide will rise again (by roughly 40 percent according to the U.S. Energy Information Administration, see *Scientific American*, 2010). The impact of these changes, scientists argue, will be catastrophic, prompting further disruptions to average temperatures of air and water (Hamilton & Grinevald, 2015), as well as to the ecology of the world's oceans (which absorb an estimated 22 million tons of carbon dioxide every day [see NOAA, 2006]).³ Today, all aspects of the Earth's natural features are being transformed by carbon-climate-actor interactions and their warming effects with a level of force that, potentially, is far greater than our abilities to control them.

As average global temperatures edge closer to a 1.5°C increase above preindustrial levels, lesser quantities of ecological goods and greater quantities of ecological harms are being transferred to newer generations. At the start of 2016, scientists reported that 2015 had been the hottest year in modern history, roughly 1°C warmer than the preindustrial average. That record was broken again when in early 2017 scientists concluded that average temperatures for 2016 had, in fact, been hotter still (NASA, 2017). Land and ocean temperature percentiles for January–December 2017 painted a similar picture, providing stark evidence that the 'climate tide is rising fast' (NOAA, 2018). The maize harvest failures in Africa left 6 million people on the brink of starvation in 2016 and, according to experts at

the UK Met Office, are a worrying indication of how staple crop failures will become a more regular occurrence in the future, as temperatures rise and drought conditions deteriorate further (McKie, 2017). Already, the frequency of drought in dry subtropical regions has risen sharply (e.g., Cape Town's recent water crisis), affecting the most vulnerable sections of the population most (including children, the elderly and the disabled; see UNICEF, 2015). Similarly, extreme heat has fueled more regular wildfires across the United States, Central Europe and Australia. All evidence suggests that temperature extremes will prove increasingly difficult to avoid in the years ahead, placing more and more of the world's populations at the front line of climate change's devastating effects. The likely consequences of a 2°C rise in average global temperature will be serious, according to the Intergovernmental Panel on Climate Change Working Group III (2014b) and hard to control if dramatic changes are not introduced in the way we consume and produce energy. Many critical thresholds, however, have already been reached. Contamination of groundwater, oceans, food chains, and the atmosphere with toxic chemicals has reached dangerous levels of saturation (see National Geographic, 2009). The products of many years of high carbon living linger all around us in the atmosphere, the soil and oceans (potentially for millennia, according to scientists; see Frölicher, Winton & Sarmiento, 2014).

In a recent report to the UN General Assembly (February 2016), the Human Rights Council pointed to the fact that 'we are running out of time to avoid [climate change's] worst effects' (2016: 9, A/HRC/31/52). Unfolding pollution scenarios offer us a glimpse at a future of 'steering failure' when climate change no longer responds to efforts to control it (Klein, 2014). If attempts to reduce the amount of carbon dioxide and other greenhouse gases emitted into the atmosphere continue to fall short of what is required to reduce global warming, a 4°C rise in global mean surface temperatures will become a real possibility. At this point, the window of opportunity available to retrieve a functioning climate system will have passed (see IPCC, Climate Change, 2014b, Contribution of Working Group III). A key concern of the Paris negotiations in December 2015 was finding ways to prevent such temperature rises and steering the current energy system onto a safer path in the years ahead. Whether or not such an objective will be achieved remains to be seen. A 4°C rise in average temperature is certain to bring levels of danger we are entirely ill equipped to deal with (IPCC Working Group II, 2014b). At this temperature, tipping points will have been permanently passed and powerful feedbacks unleashed. Total yields of stable food crops, such as wheat, rice, and maize will decline steadily (International Scientific Congress on Climate Change, 2009; Intergovernmental Panel on Climate Change Working Group II, 2014b: 488), as will the amount of water stored in the soil. Extreme heat stress will reduce plant photosynthetic and transpiration efficiencies, negatively impacting root development and further exacerbating food insecurity (Intergovernmental Panel on Climate Change Working Group II report, 2014b: 796; Cropwatch, 2016). Chemical, physical and biological processes that modulate the functioning of the Earth will begin to break down and upward of 40 percent of species life will

face extinction (see, for example, Barros et al., 2014). Such predictions have a definite ‘nightmarish quality’, as McKinnon (2012: 2) rightly observes. But if we are aware that global temperatures are being pushed beyond safe thresholds and that abrupt, unpredictable and potentially irreversible changes will follow, why are the real sociogenic sources of escalating climate change not being challenged?

CO₂ emissions from fossil fuel combustion and related industrial processes are and have always been the single largest contributor to global climate changes (Raupach & Canadell, 2010: 210). In spite of the growing magnitude of dangers posed by these pollutants, insufficient effort is being made to control them (e.g., the promotion of coal and nuclear energy as ‘cleaner fossil fuels’; see Harvey’s [2017] account of arguments presented by U.S. delegates at the Bonn climate talks, November 2017). Whilst all parties at this stage are clear as to the enormity of problems facing the international community and the necessity of reducing rates of CO₂ emissions, sustainable options are not being pursued with sufficient vigor or within a time frame adequate to offset the likelihood of future disaster. Rather than affirming commitment to a partnership model of resource justice and taking responsibility for harms already inflicted, the tendency has been towards the continuation of practices of ‘dis-saving’ (Rawls, 2001: 118). That is, depleting aggregate reserves of essential resources to levels insufficient to preserve safe living conditions into the future. How are we to explain the rational basis of these actions and a more general discounting of humanity’s well-being as a lasting possibility (Nordhaus, 2007: 201–202)? The needs of the capitalist present, it would seem, have begun to take precedence over all other concerns. Traditional assumptions guiding the distribution of resources, most notably the importance of constraint, are openly compromised by the rising energy demands of a global economy (total energy consumption is expected to increase by a further 28 percent on present-day levels by 2040; see IEA, International Energy Outlook, 2017) or, at least, defined in terms more compatible with a narrow set of economic interests. Notions of fairness are conditioned by specifications as to which time frame and peoples matter most (i.e., the present). Principles of equity and sufficiency are overshadowed by market imperatives and the ‘need’ to take advantage of resources that are ‘accessible’, using all necessary means to secure their immediate availability (deep-sea drilling, hydraulic fracking, etc.).

For those critical of these arrangements, the truth of ongoing climate destruction must be defined in more specific rather than general terms (Loria, 2015) and issues avoided up to this point confronted more readily. For instance, if powerful economic and political interests fully back the continuation of a fossil fuel model of development for the future (e.g., see Institute for Policy Studies, 2013 on the World Bank’s financing of new hydraulic fracking projects), how likely is a 40 percent reduction in global emissions by 2030 (Paris Agreement, 2015)? Is the stabilization of levels of carbon dioxide in the atmosphere really possible if fossil fuels still account for 77 percent of global energy in 2040, as the U.S. Energy Information Administration (EIA) confidently predicts?⁴ Clearly, these are not reconcilable objectives, so how do we explain a nonrecognition of this

fact? This book draws attention to the sociologically pertinent nature of these issues, in particular, how they evoke issues of exclusion, misrecognition, denial and inequality but, also, moments of critical reappraisal and a commitment to transformative action on the part of some. All will be explored in the context of deepening inequalities arising between generations in the distribution of the burdens of global climate adversities.

A sociological approach to intergenerational justice

While considerable attention has been devoted to the topic of intergenerational justice by political philosophy (e.g., Barry, 1999; Hiskes, 2009; Gosseries & Meyer, 2009; Tremmel, 2009) and to a lesser extent, political science (e.g., Sarat, 2014), in general, emphasis has been on how relations between present and future generations are governed by a series of duties that ought to be honored as a matter of right (Hiskes, 2009: 1). This is thought to be especially true of environmental relations and ‘lifetime-transcending interests’ (Thompson, 2009: 33). For instance, the provision of resources that make the flourishing of humanity, and indeed planetary life more generally, possible across time. This book seeks to bring a more distinctly sociological perspective to bear on these issues whilst acknowledging the value of various contributions to this discussion to date. Chiefly, its focus is on how intergenerational justice is interpreted by societal actors in response to ‘live’ ecological and related social, political and legal issues. It notes how the normative features of capitalist living, as well as their ecological and social costs are posed as subjects of fundamental dispute today. The societal value of this struggle ultimately shapes how and to what degree commitments to long-term environmental security can remake societal relations and change the cultural model by which we represent ourselves and act in a climate-challenged world (what Touraine [1988] refers to more generally as ‘historicity’ or the capacity of social actors to act upon society with a view to changing it).

Amongst the first cogent sociological collections to address climate change issues as inherently social and view their representation as intimately entangled with wider societal dimensions was that edited by Bronislaw Szerszynski and John Urry (2010). Here contributors focus on the multiple social, political and cultural processes that sustain high carbon living over time, noting how these include not only routine social practices (e.g., see Shove, 2010) but also cultural viewpoints that prevent the exploitative logic of capitalism being subject to widespread critique (Beck, 2010). Urry examines how peak oil intersects with climate change to disrupt the notion of humanity’s linear progression to better futures. In *What Is the Future?* Urry (2016) takes up many of these issues once again, paying particular attention to the performative dimensions of climate dystopias and the need to actively support the realization of more sustainable futures. How the project of democratization, even emancipation from ‘catastrophic futures’ (ibid.: 33–53) might be realized, however, is not explored by Urry. In *The Metamorphosis of the World*, Ulrich Beck (2016) notes how climate change, potentially, may trigger

a societal ‘metamorphosis’ that, amongst other things, alters the way issues of justice and equality across territories, regions and generations are conceptualized and acted upon (e.g., see Beck 2016: 187–198). Beck, however, does not explore how the ‘generations of the homo cosmopolitanus’ (e.g., those with no memory of a world without the threat of climate change) actually respond to climate change concerns. Indeed, the political protests of this generation are dismissed by Beck ‘not least because they are not unified by an idea of a better future’ (Beck, 2016: 190), a viewpoint this book wishes to challenge. The analysis presented here sets out to examine how youth and fellow climate justice campaigners seek opportunities (especially those presented by law) to move society towards more sustainable outcomes and to redefine democracy as a partnership that is forged across generations. It notes the important contribution these actors make to collective processes of learning about the justice dimensions of climate change. More often than not, learning is generated by actors in dispute, as well as in communication with wider observing publics. Yet this inherently social aspect of climate justice has not been granted sufficient attention to date – a matter of some concern given the extent to which the societal significance of justice ideals (human rights and democratic principles) is radicalized by youth around the world today.

Intergenerational justice on climate change matters has become a project for real sociopolitical and legal change and must be acknowledged by sociological research as such. Youth emerge as societal carriers of alternative visions of climate justice, a development perhaps unforeseen by many. Traditionally, the tendency amongst social science communities has been to underestimate the contribution of youth to political discourse or policy debate on these and a series of other issues (Alderson, 2013: 7). The reality, however, is that youth ‘are much involved in political campaigns, often with humour, costumes and elaborate posters against war, injustice, fracking’ (Alderson, 2016: 135) and, more recently, against Donald Trump (e.g., orange ‘Trump Baby’ blimp, London protests, July 2018). As youth collaborations assert their voice across a range of concerns today, sociology is forced to take notice (see, for instance, Elliott and Earl [2018] who document an increase in levels of youth engagement in political campaigns in the United States, the majority of which occur outside of the formal political sphere; also see Crossley, 2008; Fletcher Fominaya, 2013; Roberts, 2015).

Youth are acutely aware of present environmental problems and the fact that they will be disproportionately affected by them in the future (those under the age of 24 constitute 41.6 percent of the current global population, see IndexMundi, 2018). Preceding youth mobilization on these issues are processes of critical reflection on and cognition of wrongdoing. It is the latter that enables a reconceptualization of prevailing societal ‘structures, processes, social values and practices’ (Jennings et al., 2006: 47) as a threat to future well-being. Yet such crucial stages of recognition, critical diagnosis and consensus building have not been granted sufficient sociological attention to date. Knowledge of what *ought to be* (e.g., justice across generations) only becomes societally transformative when it acquires ‘capacity building’ qualities. That is, when it begins to inform the social

actor's critical analysis of, reflection on and struggle against the visible and sometimes less visible action sequences and cognitive structures that perpetuate inter-generational inequalities and long-term ecological destruction.

If youth are not aware of structures of domination or of their own critical capacities to change them, there is little likelihood of justice principles empowering them as 'the oppressed' (Freire, 1970). This book is really an exploration of how this process of critical learning unfolds today amongst youth and future justice campaigners who challenge governments to take immediate action to address climate change and safeguard the future. It considers how these actors attempt to build stronger critical societal awareness of wrongdoing and, in the process, empower themselves as agents of social change (Purdey et al., 1994). As a process of 'emancipation' from states of unknowing or denial of ecological, social and political inequalities, the process of empowerment encompasses a crucial reassessment of relations between generations as relations of domination and a commitment on the part of mobilized youth (but other future justice campaigners also) to change them. The following analysis is but a first step towards addressing these issues, as they arise across differing national and international settings today. It considers how sociological insights on power, exploitation and social agency might move research on these issues forward and generate a deeper, empirically grounded interpretation of the ways ecological crisis triggers the processes of societal learning.

The aim is to advance a more critical account of how mobilized citizens, especially youth, interpret their role as custodians of sustainable futures and as members of 'inter-temporal democratic polities' (Bohman, 2014: 128) who challenge various inequalities and search for the sociogenic roots of society's democratic transformation (e.g., see Skillington, 2017: 231–260). Also, the book examines how these actors see themselves as carriers of a different societal vision of climate justice to that which systematically undervalues the needs of anything other than the capitalist present. Youth insist that justice be defined in terms more relevant to the 'deep time' of planetary well-being, that is, in a manner that sees our existence as intricately intertwined with multiple others located across space and time. This means redefining relevant contexts for the application of principles of justice and norms of democracy beyond just the here and now, incorporating a view of the democratic community as a partnership across generations (e.g., see Intergenerational Foundation, 2018). In the chapters that follow, the critical normative grounds of this argument will be explored in more depth, as will the part played by specific actors in moving debates on climate justice forward legally, socially and politically.

Arguably, one of the more interesting sociological aspects of these justice campaigns is the extent to which their initiators assume that democratic change is utterly realizable within the parameters of the existing legal framework and pursue corrective action on that basis. Youth collaborate with international legal experts to press for the further elaboration of certain shared institutional expectations of justice (e.g., human rights commitments to health, development, freedom of participation, as well as compliance with international agreements

on emissions reduction targets). Always, emphasis is placed on the violation of moral expectations of justice, in particular, the notion that youth are entitled to inherit a safe and healthy world and to challenge the current lack of symmetry in rights-based recognition. The assumption, consistently, is that law is capable of addressing their grievances. Not only those of the individual legal subject of the child (e.g., the rights of the child to ‘survival’, ‘development’ and to be heard in any judicial proceedings affecting their future, see UN Convention on the Rights of the Child, 1989) but, also generation-based injuries, that is, injuries generated through the knowing imposition of harm and the endangerment of the welfare of today’s youth and generations to come through ongoing pollution practices. Such injuries are said to give rise to two types of inequalities. The first, synchronic inequalities, arise between generations living within the same society (in terms of the economic as much as environmental burdens generated by cumulative environmental problems, including lost agricultural production, damage to infrastructure by increased flooding and storms, rising costs of health, food or water crises, all borne disproportionately by youth). The second type, diachronic inequalities, arise more gradually across time on account of the temporal direction of accelerating pollution levels and their long-term effects on health and environmental living conditions.

Because generation-based injuries arise slowly, youth insist that formulations of legal justice not be interpreted in a manner that is time specific or in a way that serves only the interests of those who exercise political and economic power in the present. ‘The equal and inalienable rights of all members of the human family’ (Universal Declaration of Human Rights, 1948) are said to transcend the temporal frame of the present and include all generations of humanity. A lack of knowledge of the specific identity of future peoples, youth argue, no longer provides sufficiently rational legal grounds for dismissing efforts to extend the principles of democratic justice to unspecified ‘future others’ (e.g., see Foundation for the Rights of Future Generations, 2018). Such rights interpretations may run contrary to the type of individualistic reasoning that still dominates traditional liberal interpretations of rights (where emphasis is placed on the living human subject), but there is a growing receptivity to such ideas in courtroom settings around the world (a development explored at length in Chapter 4 of this book). Sympathetic court judges acknowledge the constitutional validity of these actors’ defense of the ‘climate rights’ of a ‘non-identifiable group of persons needing protection’ (i.e., future generations) or the ‘general interests’ of humanity, present and future.⁵ In that, law acknowledges the contribution of youth to more contemporary explorations of how human rights law might better respond to the changing social, ecological and legal circumstances of justice today.

Ecological crisis and societal learning

For more than a decade, sociological perspectives on the cosmopolitan have challenged the discipline to adjust its analytical perspectives beyond borders of

a social, cultural, legal and political kind and to account for processes of ‘cosmopolitanization’ occurring across territories, nationalities, regions, and cultures (e.g., Beck, 2006: 19). As a kind of involuntary or unforeseen transformation of everyday experiences and knowledge of the world, cosmopolitanization defines the course of all major sources of societal change today. In the case of climate change, the main stimulants to a decline in ecological circumstances do not apply differentially to some and not to others. All are exposed to the same forces of ecological destruction. Unavoidably, the global planetary sphere becomes the primary reference point when assessing not only the nature of the threat (Beck, 2002: 25–26) but also mechanisms needed to avoid future catastrophe. The understanding, therefore, is that an avoidance of danger requires a more globally sensitive perspective on climate change, one that is not limited to the present time frame or a purely nation-state outlook (Beck, 2009: 161). The cosmopolitanization of climate risks sparks an intense debate on where the boundaries of the just society ought to reside. For some, extending justice considerations to distant others (including future generations) is an indulgence we cannot afford given the present problems (e.g., growing water scarcity, drought, more frequent extreme weather events, etc.). For others, it is one we cannot avoid given the degree to which our endangerment is interconnected with that of others across time. Whatever our perspective on these issues, deepening climate problems force all to reflect more self-consciously on how we act upon the world and shape its future. For Beck, this has been one of the few advantages of cosmopolitanized risk. It compels a more ‘cosmopolitan realist’ approach to climate change (Beck, 2010: 10) and an acknowledgment at some fundamental level that the Westphalian order cannot deliver on promises of justice (for instance, its failure since international negotiations began to impose responsible limitations on major sources of ecological destruction). Indeed, justice procedures typically associated with this order seem more and more limited in their ability to address what are today transnationally situated problems. Ecological, social, political and territorial boundaries are no longer coterminous. A justice order that assumes that they are cannot succeed in the long term (Skillington, 2012: 1207).

A planetary frame of reference proves ever more difficult to avoid (Beck, 2016) as issues of pollution and resource scarcity become globally relevant. Climate change ushers in a cooperative imperative that runs far deeper than the politically constructed borders of the Westphalian sovereign state system can accommodate. Yet justice continues to be defined in largely state-centric terms. ‘Normal justice’ (Fraser, 2008) procedures are failing in the performance of basic regulatory functions, most notably, the protection of citizens from sources of serious harm (including the threat of ecological destruction, war, terrorism and displacement). However, the understanding also is that such failings do not arise solely from forces beyond states’ control. In terms of the performance of democratic representational functions, problems arise. Most of those whose interests are deeply affected by climate change are excluded cohorts (e.g., populations under the voting age and generations not yet born). As the democratic deficits of ‘normal

justice' procedures grow more stark, the realization is that the current Anthropocene age is one of radical inequality. Major inconsistencies emerge between those who actively shape ecological futures and those who pay the ultimate price for current acts of ecological destruction. Such inequalities have a distinctly imperialistic structure, according to Beck (2015: 1), on account of the extent to which the victims and perpetrators of climate harms do not overlap (generationally speaking). The span of affectedness of today's pollution practices reaches far beyond the present time frame (e.g., see Fang et al., 2013) and is predicted to have a detrimental 'forcing effect' (NASA, 2017) on future climate conditions. As pollution levels continue on a steady upward trajectory, the expectation is that opportunities open to future generations to avoid ecological devastation will eventually disappear. Yet present misspendings of future peoples' environmental capital continue, and, as they do so, inequalities between generations expand.

To be able to enjoy their status as independent and free subjects, newer generations must be guaranteed a sufficient threshold of resource availability (adequate supplies of essentials such as freshwater and stable food sources, arable lands, as well as a clean and safe atmosphere) as much as other types of capital (e.g., infrastructure, technology, material savings). Responsible levels of natural resource saving, however, are not guaranteed. Expectations of fairness and proportionality in the distribution of key resources are increasingly at odds with current practices. A large-scale expenditure of nonrenewables, such as oil, coal, uranium and gas, make their long-term availability highly unlikely. Their depletion triggers detrimental ecological effects certain to reverberate for centuries (NASA, 2017). Youth come together around shared sentiments of frustration with governments regarding the ongoing mismanagement of long-term capital. Unfolding crises compel a critical diagnosis of the present as one of enduring system failure and political disappointment. Across regional and national borders, there is a synthesis of experiences of ecological degradation, employment insecurity, increasing poverty, debt and exclusion from decision making on issues that deeply affect the lives of all. As interpretive energies rise, inequalities lose their quasi naturalness and are subject to more critical thematization. Anger is expressed at the way the decision to continue with fossil fuel energy pathways is made by a few and not by a democratic majority. Ongoing orientations towards institutional closure ensure that decision making on the best energy options for the future is not subject to broad public approval. The will to change harmful practices must, therefore, come from below, amongst those whose long-term safety is gravely jeopardized by poor regulatory arrangements. If current ecological practices can be shown to affect peoples living in the future most severely, then relations of justice can no longer be legitimately confined to the present. However hypothetical they may be at present, future generations are deeply relevant to current deliberations on justice (Skillington, 2015).

Increasingly, the demand is for a justice framework that responds to knowledge of anthropogenic climate destruction by extending traditions of democracy, freedom and right to a broader range of subjects. The realization is that prevailing

models of justice are in need of revision, bound as they are by spatially and temporally limiting frameworks (Delanty & Mota, 2017: 20). This includes a revision of various ontological assumptions as to who is entitled to make claims to justice in this era of deepening ecological, social and economic problems (individuals, communities or generations whose interests and needs are threatened), to whom should justice considerations be extended (bounded political communities or wider transnational ones), and in what settings ought questions of justice be addressed (legal, political or social contexts)?

Claims to redistribution, for instance, traditionally understood in economic terms, are extended to a consideration of the distribution of the burdens of global climate change. New contingencies (e.g., disappearing territories), as much as enduring exclusions (e.g., communities of the developing world and future generations) call for a more open, cosmopolitan approach to distributive justice. A democratically ‘enlightened anthropocentrism’ (Chakrabarty, 2017: 41) is one that is sensitive to the globally relevant nature of these issues as they affect various cohorts (e.g., climate displaced populations, future generations, ecosystems) and contexts across time (endangered habitats, semiarid regions of the world, etc.). Youth insist that deliberations on these issues eventuate in more binding decisions that force major polluters to conform to democratically agreed-on emissions reductions targets and sustainable development measures for the future (e.g., see Earth Guardians, 2018).

In many ways, mobilization on these matters is driven by a greater consciousness of the present-ness of the dangers of ecological collapse, dangers that are no longer mere future trajectories (e.g., more regular and severe hurricane cycles, storm surges, prolonged drought and water shortages). The by now routine presence of ecological problems awakens a deeper sense of urgency in terms of the need for cooperative action and far-reaching institutional reform (Beck, 2003; Beck & Sznaider, 2006; Calhoun, 2010; Beck & van Loon, 2011). As pollution levels soar, ‘really existing relations of interdependence’ (Beck & Sznaider, 2006: 9) acquire a whole new degree of relevance. Suddenly, shifts in the carbon composition of the global atmosphere are of deep concern to all. Climate change and its adverse consequences, in being inescapable, require a level of global solidarity not witnessed before (e.g., an ethos of resource sharing in and across time rather than one of resource competition) and a distinctly cosmopolitan ‘quality of mind’ (Ossewaarde, 2007: 808) when addressing the evolving nature of relations between peoples and the rest of nature (Skillington, 2018). For others, it is more comprehensively a ‘cosmopolitan imagination’ (Delanty, 2006: 252, 2012; see also Delanty & Mota, 2017: 18) that is needed, one that envisages the growing interdependencies of all living systems on this planet as an opportunity to reconfigure the global relevance of sustainable development pathways. The fact that such pathways are not being pursued to any sufficient degree and that critical opportunities are tragically misspent is interpreted by youth as a blatant violation of their constitutionally grounded rights to a safe future.

Insights on the nature of social and geological worlds: the emancipatory potentials of the Anthropocene

Knowledge of the Anthropocene thus proves to have a strong societal significance over and beyond its power to define a new epoch in geological terms. Its advancement generates a greater desire for social, political and legal change but also, according to Chakrabarty (2009: 212), a new account of history. The desire is for a perspective on history that re-embeds nature-altering practices, especially those associated with industrial-capitalist developments, within the deeper time scales of the planetary system. In the process, the relationship between cause and effect is formulated in more expansive terms than the here and now. These changes have major implications for how society conceptualizes geological change and construes the relationship between past, present and future (Chernilo, 2017; Chakrabarty, 2015, 2017). Traditional assumptions regarding the relationship between presence (e.g., of victims of climate harms) and truth (proven acts of destruction), for instance, are subject to revision. The understanding now is that presence is no longer a prerequisite for the imposition of harm (for instance, the discovery that greenhouse gases cause centuries of sea level rise and atmospheric pollution; see Chu, 2017). If the relationship between climate harm and effects can no longer be formulated as linear, with effects emerging as they do across multiple time frames, how are we to construct the boundaries of the just society and identify its most relevant subjects? This, in turn, raises a series of further questions on how we have traditionally conceptualized nature as largely passive in relation to the destruction imposed upon it (Chakrabarty, 2015: 204) and how we have conventionally formulated the justice dimensions of these practices (Chernilo, 2017). The Anthropocene necessitates a fundamental shift in perspectives on justice, as much as understandings of geological change. The work of Hornborg (2017) and Malm and Hornborg (2014) on the exploitative dimensions of the fossil fuel economy and its ongoing contribution to climate change makes this point abundantly clear (see, also, *The Lancet*, 2017).

As potentially catastrophic as the Anthropocene may prove to be, its advancement thus also provokes a moment of ‘world disclosure’ (Honneth, 2000: 116–127), when the micro foundations of global climate destruction are shown to be closely aligned with vested power interests and highly exploitative asymmetrical flows of cheap labor and natural resources to sites of concentrated power. Knowledge of the Anthropocene triggers societal learning potentials, as increasing numbers realize that the endurance of planetary life depends crucially on a collective capacity to address major sources of exploitation and harm. In this sense, the Anthropocene offers important insights on the nature of social, economic and political worlds, prompting new interpretations of ‘right’ and ‘wrong relations’, ‘good’ as well as ‘bad’ practices, and altering how the boundaries of the ‘just society’ are commonly drawn. Sociological research points to the importance

of these developments (e.g., Strydom, 2015: 240), noting their contribution to a wider debate on how democratic traditions might be reinvigorated in response to a growing range of interrelated social, ecological and economic problems (e.g., see Chernilo, 2017). Attention shifts to those cultural and political components of modernity with the potential to address the calamitous forces that chiefly capitalist interests have unleashed onto the world. In particular, how ideals of equality, freedom and right might be better utilized in light of the fact that inequalities between peoples are expanding both regionally and intergenerationally (see Report of UN Secretary General, ‘Intergenerational Solidarity and the Needs of Future Generations’, 2013). The transformative capacities of the existing ‘basic structure’ (Rawls, 1999: 3–4) of justice are critically reassessed as citizens increasingly turn to law in the hope of initiating a more comprehensive program of intergenerational solidarity, sustainable development, as well as legal responsibility for environmental destruction. The realization is that justice must be redefined in deeper terms (temporally, spatially and intergenerationally) and current legal, political and social configurations subject to newer interpretations in response to rapidly changing circumstances.

The following chapters examine these processes in detail, noting how a growing awareness of the devastating impact of climate change contributes to this more critical dialogue on the need for action. Chapter 1 considers how a greater awareness of unprecedented levels of carbon pollution, resource scarcity, plastics in oceans, food and water sources, and so forth provokes a change in both the subjective experience of capitalist convenience living and the objective truth of its cumulatively destructive effects. Both, in turn, inform a critical diagnostic of the societal present as marked by inequalities that have been progressively expanding over time. Chapter 2 considers how these are interpreted specifically as intergenerational inequalities by future justice and youth campaigners. It notes how these actors challenge the settled convictions of prevailing short-term policy thinking and pressurize governments to extend principles of justice to newer subjects (e.g., future generations) and to problem areas exacerbated by declining climate conditions. Chapter 3 assesses how debate on these issues has opened up a new space of argumentation exploring the rights status of present youth and generations to come. It outlines some of the main arguments put forward in favor as well as against the development of a new normative framework of rights and responsibilities protecting the welfare of ‘overlapping generations’ of the Anthropocene. Chapter 4 documents the legal advocacy role played by youth coalitions across the world today, insisting upon a stronger institutional representation of their rights to a safe and democratic future. It looks at how claims to injury give real normative force to these actors’ demands for accountability and a legal reform of existing regulatory arrangements governing the relationship between peoples and nature (Bernstein, 1992: 15–30). Chapter 5 accounts for those changes that have already been introduced in recognition of duties owed to future generations, while Chapter 6 considers prospects for the development of a more pluricentric approach to climate justice (encompassing a focus on the needs of the present and the future). Such an approach, it will argue, is entirely achievable within the parameters of the

existing democratic legal order for two reasons chiefly. First is the extent to which both state constitutional and international legal systems remain open to new iterations of rights eligibility and subject relevance (for instance, the principle of openness embedded in various state constitutions, EU treaties and international law; see Brunkhorst, 2014: 455; Skillington, 2017: 246–247). The decades since 1945 have seen a progressive constitutionalization of international law and the further development of a two-tier governing structure consisting of elected government representatives and the ‘peoples for whom these governments act’ (Fassbender, 1998: 532). If the latter continue to interpret legal rights in terms more conducive to the needs of the planetary system as a ‘generative commons’ (Commons Abundance Network, 2018), then government will come under increasing pressure to adjust its justice perspective accordingly. The expectation is that ‘cosmopolitanised states’ will continue to respect the nation-transcending imperatives of universal law but at the same time remain primary implementers of new applications of these rights (Beck & Levy, 2013: 13).

Second, a pluricentric approach to climate justice is in keeping with the basic principles of intergenerational solidarity celebrated in the founding moments of the United Nations (e.g., UN Charter, 1945) and, in subsequent years, of the European Union (e.g., the Treaty on European Union, 1992).⁶ The formation of both were witnessed by multiple generations who had experienced the horrors of war and persecution and now demanded the transformation of democracy both within and beyond the borders of their nation-states (Levy & Sznajder, 2006: 666). The understanding was that postwar and, in time, postcommunist generations would not only ensure that democracy continues into the future but that it would be organized in such a way that the present does not compromise the realization of basic liberties in the future (Bohman, 2014). Today this understanding of democracy (as intergenerational), as well as institutional commitments to its realization, continue to develop. Youth, in particular, have come to the fore of public debate exploring how the justice obligations of an explicitly intergenerational democratic institutional order can be made better to speak to the facts of deteriorating environmental conditions and endangered futures (e.g., by challenging practices of nonaccountability and closed-door policy). The critical attitude, cultivated historically through successive democratic revolutions and the Kantian mind-set of peoples who have fought repeatedly to liberate the future from oppression (Brunkhorst, 2014: 436), still encourages exclusions, inequalities and deprivations to feature strongly in public discourse on major challenges facing newer generations. It is precisely this critical attitude, as it is expressed in relation to the cross-generational impacts of deepening climate problems, that is the chief focus of this book.

Notes

- 1 At the end of August 2016, the International Union of Geological Sciences convened an international team of scientific experts to consider whether, in fact, humans have, through excessive pollution practices, pushed the planet into a third phase of the Quaternary period (2.6 million years to the present). Overwhelmingly, the opinion of committee members was that, yes, the age of the Holocene has ended and we have entered a

new phase of the Quaternary. According to atmospheric scientists Paul Crutzen and his colleague Eugene Stoermer (2000, International Geosphere-Biosphere Program), what distinguishes the ‘Anthropocene age’ is the progressively more central role played by humans in altering the planet’s atmosphere, nutrient and carbon cycles (see also Raupach & Canadell, 2010). While the source of these changes are thought to be dispersed across centuries, the period of ‘great acceleration’ in the advancement of the Anthropocene is said to be the 1950s onward, when global populations began to rise steadily and a broader range of harmful pollutants were released into the environment, including radiation from coal-fired and nuclear energy production, the widespread use of nitrogen and phosphorous in fertilizers and the release of micro plastic particles into waterways and food chains. Not only has the discovery of the Anthropocene triggered a lively debate among geologists and environmental scientists, it has also provoked a dialogue among researchers in various social science and humanities fields as to the implications of these developments for society more generally.

- 2 See *Allen’s Indian Mail*, ‘Coal Fields of the Archipelago’, 29 April 1856. Quoted in Malm (2016: 229).
- 3 Forty percent of carbon dioxide emitted remains in the atmosphere for 100 years, 20 percent for 1,000 years and the final 10 percent for 10,000 years (Union of Concerned Scientists, 2017).
- 4 See EIA’s International Energy Outlook 2017. The expectation is that natural gas will remain the fastest growing fossil fuel in projections. Globally, natural gas consumption increases, on average, by 1.4 percent each year. ‘Abundant natural gas resources’, including supplies of ‘tight gas, shale gas and coal bed methane’, are expected to preserve ‘the strong competitive position of natural gas’ (EIA, International Energy Outlook 2017, Executive Summary: 1; also EIA, 2016) into the foreseeable future. Similarly, oil consumption has continued to rise steadily (from 3.8 billion tons in 1965 to 11.1 billion tons in 2007; see IEA, 2017b).
- 5 See ELAW (2015) Proceedings of the Hague District Court case, *Urgenda v. The State of the Netherlands* (June 2015), especially points 4.4 and 4.6, available at <https://elaw.org/nl/urgenda.15> (accessed June 16, 2018).
- 6 See, for example, the Preamble of the UN Charter (1945) and its commitments to ‘save succeeding generations from the scourge of war, which twice in our lifetime has brought untold sorrow to mankind’. The Treaty of the European Union (1992) similarly recalls ‘the historic importance of the ending of the division of the European continent and the need to create a firm basis for the construction of future Europe’.

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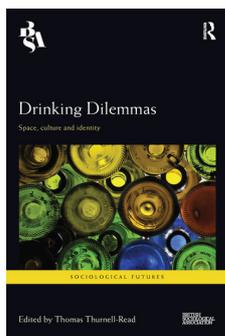
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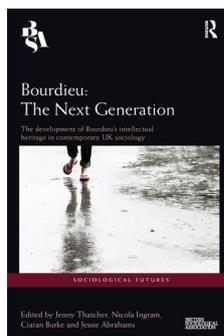
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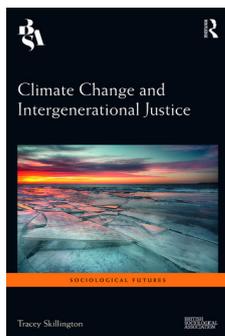
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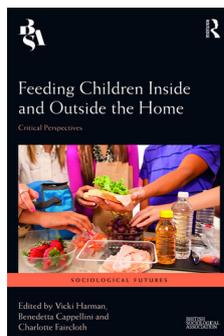
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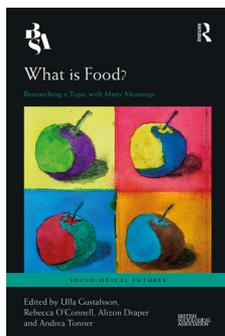
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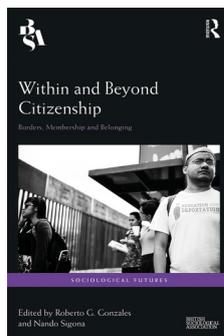
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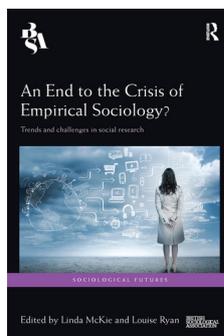
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