1 Is climate change the most important challenge of our times?

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Summary of the debate

This debate tackles the overarching question that frames the whole book, namely what is the significance of climate change for today's decision-making and political action in the world? **Sarah Cornell** argues that climate change *is* the most important challenge of our times because it now sets the global context for all the other social and ecological challenges the world faces. Unmitigated climate change puts at risk all other human development accomplishments and measures of wellbeing. Conversely, **Aarti Gupta** argues that only by addressing the more fundamental 'inequality crisis' of our times do we have even a hope of effectively addressing the climate crisis. In a context of persisting inequalities, characterising climate change as the most urgent challenge might even be potentially dangerous.

YES: Because climate change is changing everything (*Sarah E. Cornell*)

Introduction

In our times it has become clear that Earth's climate is changing as a consequence of people's activities. The state of scientific understanding of the climate system has been routinely deliberated and detailed in successive assessment reports of the Intergovernmental Panel on Climate Change (IPCC, 2014). These reports also assess the social and ecological impacts of a changing climate and the implications of climate adaptation and mitigation activities. The 'bare facts' are that anthropogenic (human-caused) greenhouse gases are currently accumulating in the atmosphere. The main greenhouse gas is carbon dioxide from fossil fuel use. Landscape changes such as deforestation, agriculture, wetland drainage and the large-scale restructuring of coastal zones are also important sources of carbon dioxide and of methane and nitrous oxide, the two other main greenhouse gases. Emissions of these gases are increasing year-by-year and their concentration in the atmosphere is rising (Hawkins, 2019, gives clear visualisations of the changes).

As the atmosphere's chemical composition changes, so too do its physical properties: the higher the concentration of radiatively active gases in the atmosphere, the stronger the greenhouse effect and the warmer Earth's surface, and ocean, becomes. These processes are well understood and can be predicted with high scientific confidence. At the heart of today's climate modelling are calculations of fluid motion and exchanges of heat between atmosphere and ocean. The ice sheets, land surface and life itself are also involved in shaping Earth's climate, so advances in climate research have progressively included representations of these dynamics too, resulting in the current generation of multi-component Earth system models (Simmons et al., 2016).

In short, climate change is a global and increasingly well understood phenomenon. But why should climate change be seen as more important than any other environmental, social or political issue of our times? I will present five arguments about the importance of climate change from the perspectives of different fields of knowledge, spanning different timeframes and scales.

The argument

Climate change changes the conditions for life on Earth

The importance of climate change can be seen when we set it in the context of our understanding of Earth as a living planet: climate changes are associated with fundamental shifts in how Earth functions. In the field of Earth system science, one of the most productive—and at times contentious—ideas of the last century is the Gaia hypothesis (discussed in Kleidon, 2004). This is the idea that life on Earth operates as an active and adaptive 'control system' for the whole planet, tending to maintain stability in the climatic and geochemical conditions that are conducive to life itself. Seen from a planetary perspective over the long time-scales of geological change and the large spatial scales of macroecology, life is part of a kind of co-evolutionary dance with the physical world. Whether or not the feedback interactions between life and its abiotic environment are ultimately self-regulating and generally stabilising, it is well accepted that life both shapes and is shaped by Earth's climatic conditions.

The IPCC's Fifth Assessment Report (2014) acknowledges that climate change amplifies the risk of fundamental shifts in all components of the climate system. The IPCC's remit is to be policy relevant, so much of its discussion of climate impacts has a rather human-centred and near-term emphasis. Yet current climate change is also intensifying Earth's largest scale and long-term processes, involving ice sheets, ocean circulation, the water cycle and the living biosphere. Climate change is altering the global cycles and complex biophysical and biogeochemical feedbacks of the elements of life—not just carbon, but also nitrogen, oxygen, sulphur and more (van de Waal et al., 2018).

Understanding these macro processes is still a major scientific challenge. It involves piecing together evidence found in observations of different components of the Earth system. This evidence includes long time-scale palaeo-records such as ice cores and seafloor sediments, as well as near real-time observations. Thresholds of change are unlikely to be fully predictable (see **Chapter 2**), even though it is clear that the faster Earth warms and the hotter conditions get, the more abrupt some of the shifts are likely to be.

Climate change affects all living beings

Climate change is also a vitally important ecological challenge, if we take a perspective focused on the smaller scale of organisms and their interactions. Organisms differ in the ways they adapt and in their ability to adjust to different (and now often more changeable) conditions, so today's diverse ecosystems will respond to climate change in a variety of ways. But put bluntly, living beings will either adapt to changing conditions, move to places where conditions are more favourable—or die if they can neither adapt nor move.

The observed effects of climate on ecosystems are increasingly well-documented scientifically (see a collation of recent research in PLOS & Atkins, 2016). Climate-driven ecosystem impacts are summarised in global assessment reports (e.g. IPBES, 2019; IPCC, 2014) and in studies supporting the UN Convention on Biological Diversity (www.cbd.int/climate). Climate change is already driving wholesale shifts in ecological regimes. Organisms are migrating to higher latitudes or higher altitudes, where temperatures are cooler. Range shifts change the assemblages of organisms that make up ecosystems and thus change the ways that ecosystems function. Range shifts of pests and diseases are a particular concern because they can drive very rapid disruptions. Effects of climate change on one species can also ripple through the food web.

Figure 1.1 shows how phenological changes, or shifts in the timing of life cycle events, can differ for different species. For example, caterpillar populations peak earlier than they used to because insects tend to respond rapidly to warmer conditions. Chicks are not hatching earlier however, because for birds egg laying is prompted by springtime day length more than by temperature. This means that fledgling chicks now have their highest food demands when their preferred food source is no longer abundant. Will species be able to adapt—or evolve—fast enough to keep up with such complex changes in their environment?

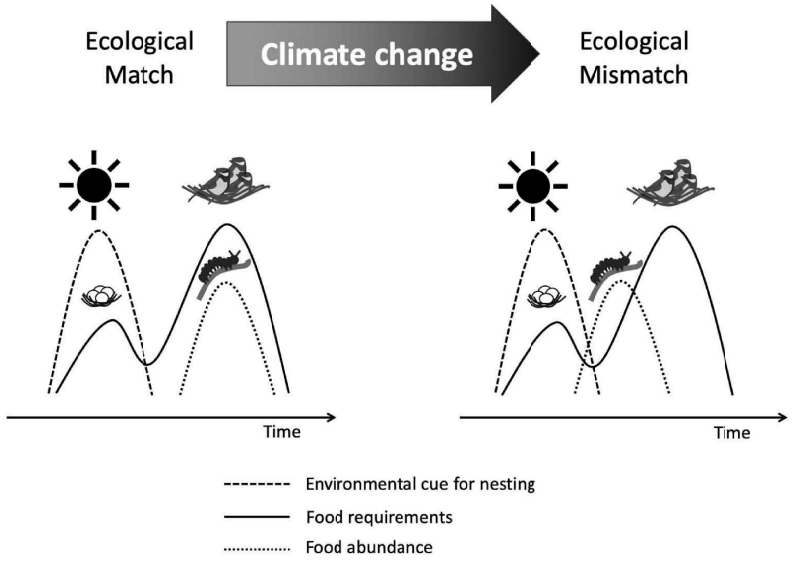

Figure 1.1 Climate change can create phenology mismatches in ecological systems (adapted from Stenseth and Mysterud, PNAS 99(21): 13379–13381; 2002; © 2002 National Academy of Sciences, USA). Great tits are one well-documented example: the environmental cues that trigger egg laying are no longer synchronised with the prevailing environmental conditions when chicks are reared and when birds' energetic demands are the highest

Some species and ecosystems (coral reefs and polar ecosystems, for instance) are conspicuously climate sensitive and are often described as 'highly vulnerable'. Coral bleaching and ice-melting at today's rates are severe threats and they are largely irreversible. But so too are other changes that are less visible to our human eyes, yet are no less important from an ecological viewpoint. Even though much of science and policy places life into categories, typologies and classifications, climate change is driving interconnected shifts in ecosystems and altering the diversity of life at all scales. Also, ecosystems are not hermetically sealed units. Whenever one ecosystem is 'lost', the ecological connections that are unravelled then start their re-weaving of the whole web of life of which our own species, *Homo sapiens*, is part. We may not need to face a mass extinction event to discover that we are maladapted to newly emerging ecological conditions.

Climate change has impacts on people

We should also look at today's climate change from the perspective of people's needs and wellbeing. While some climatic changes might actually make life easier for some, coping with current changes is already a major challenge for many people. Many studies document how climate change is a significant contributor both to present-day impacts and, likely, to future risks to people's survival and wellbeing all around the world. Changing temperatures, rainfall, storminess and other climate-related hazards have immediate effects on people's health, safety, welfare and livelihoods. The IPCC (2014) frames the key climate risks in terms of reduced food and water security, adverse effects on health and livelihoods and systemic risks linked to the breakdown of critical infrastructures. It also recognises the losses of ecosystem goods, functions and services because of disruptions to ecosystems and biodiversity.

These changes span across world regions, so the economic costs of current climate impacts are enormous—and rising. The World Bank's Shockwaves report (Hallegatte et al., 2016) focuses on climate change and poverty reduction, but its pervasive message is that issues of poverty, prosperity, productivity and equity cannot be isolated in today's highly globalised and interdependent world. Vulnerability to climate change is one among many systemically linked vulnerabilities. Importantly, climate change is one issue where good, targeted action will be a cost-effective way to steer towards many other societal goals.

Climate change is tightly linked to societal change

History shows that when climate changes, options also change for what societies can do. That is not to say that climate controls or determines social conditions and development trajectories. But seen from a 'longue durée' perspective of history and archaeology, climate change has always and everywhere been an important factor in the existential challenges and opportunities faced by the world's societies (Lane et al., 2018 provide a multidisciplinary reflection).

The traces of the profound importance of climate change can be uncovered in the emergence, sustainability and 'collapse' of societies. Climatic influences are evident in the location and layout of cities, in trade routes, arenas of war and other patterns of settlement and movement (see **Chapter 4**). Ancient ruins and many of today's technologies alike can be read as the enduring marks of societies' efforts to deal with sea-level rise and retreat, booms and busts of natural resource flows, the crises of climate-related

plagues and weather extremes and the sometimes equally disruptive challenges of slower but cumulative environmental change.

We can expect the same of current and future global warming. Many physical processes of climate change are now locked in for centuries to come, even if strong action is taken to reduce greenhouse gas emissions. In coming years, societies worldwide will have to deal with altered ecosystems, food and hydrological systems, infrastructure, landscapes and livelihoods. The IPCC (2014) observes that social systems may be fundamentally transformed not just by climate impacts, but also by climate mitigation and adaptation actions. Mitigation pathways to stabilise climate (whether at 1.5ºC, 2ºC or higher) will require anthropogenic emissions of GHGs to be drawn down to zero or below; and achieving the lower temperature targets will require rapid and wide-ranging social, technological and economic changes. Whether today's societies can pursue resilient and sustainable pathways as they navigate unprecedented environmental conditions is a wide open question.

Climate change is our challenge, in our times

Today's technologically equipped societies have the scientific capacity to detect and attribute human-caused climate disruption and (crucially) to predict many aspects of the future climate with high confidence. Climate science—actually a field combining multiple areas of expertise—has provided a sophisticated understanding of the causes, effects, impacts and risks of climate change. It confirms that today's climate change differs in some key ways from changes in the past. In particular, it shows that people's collective activities are driving global heating and that there is scope for societies to take action to limit the rate and magnitude of climate change. New challenges for scientists and citizens alike come with this current power to anticipate and attribute climate change. Climatic changes of today's magnitude are not just of scientific interest; it is also important for wider society to know about them. Initiatives like NASA's Climate Apps (NASA, 2019) translate Earth observations and scientific insights into publicly available appealing and informative maps and charts of environmental conditions. Since 1990, the IPCC's successive scientific assessment reports have intensified their messages to policymakers about the need to prioritise climate action. And the tone of concern remains, despite the attenuation of their messages that comes from the need to achieve international political consensus on the wording.

Industrialised technology-dependent societies have an especially important role to play in responding to climate change. Allocating historic responsibility may be fraught with ethical challenges (see **Chapter 10**), but regardless of past contributions to the climate problem the people in these societies today contribute by far the most to the drivers of climate change. And yet shrinking this large climate footprint is difficult, even seemingly unimaginable to some people. At present, many responses to changing climate conditions are actually fossil energy-intensive (for instance, installing more electrical air conditioners for thermal comfort), creating problematic reinforcing feedbacks where efforts to cope with hotter conditions contribute to more global heating. Another, often problematic, example is carbon offsetting, where rich countries, companies and individuals can continue their high-emission activities by buying offsets or credits to support carbon-reducing projects elsewhere. These schemes do not actually reduce overall emissions, and some kinds of offset schemes—such as monoculture forest plantations—are not always good for the environment or the local communities involved (again, these

shortcomings are documented in successive IPCC assessment reports; e.g. IPCC, 2014). Even though technology enables many current societies to be buffered against the impacts of climatic changes, too often it simply externalises one society's impacts to other places. In this way, maladaptation and mismanagement of mitigation actions can aggravate today's climate change problems.

The issue of whether climate change is the *most* important challenge of our times is obviously value-loaded and so needs careful reflection. Climate change is increasingly recognised as both important and urgent, not just in academia but also in growing areas of business, policy and society at large. And there is growing awareness that the cost of failing to reduce emissions is rising, whatever measures of wellbeing are used to define 'cost'. Some have argued that other issues are more important than climate and should be prioritised for investment and action now (for example, this is Danish economist Bjørn Lomborg's position[1]). However, this perspective implies that society's issues are all separate, distinct and rankable, rather than all playing out together in the context of a changing climate.

The globalised and interconnected cultural and economic systems of our times mean that climate risks are now changing everywhere, at all scales and in all timeframes. It is difficult to defend the idea that particular sectors or places are vulnerable to climate change while others are not. (Of course, particular groups of people may actually be *made* vulnerable by political choices, because such decisions leading to exclusion, marginalisation and inequity also happen regardless of climate conditions.) Short-term cost-effectiveness considerations no longer represent simple trade-offs with long-term societal investments for sustainability. There is growing consensus and rising concern that the projected future dangers of climate change are already intensifying and are putting other human development accomplishments at risk. In short, in these challenging times, climate change really needs to be taken into consideration in all other decision-making contexts.

Conclusion

Is climate change the most important challenge of our times? This is not the kind of question that can be assessed, answered and explained through a reliance on general scientific laws. The question is an empirical one, in the sense of being aware of our experiences of these times. The nineteenth century educator and philosopher William James argued that 'an idea is made true by events'. So we might argue from this perspective: the idea that climate change is a pressing challenge has now been articulated from many different perspectives, just five of which I have flagged here. The worldwide stream of observations, experiences and events is making it empirically true that climate change *is* the most important challenge we face.

But *should* climate change be the most important challenge of our times? This is a normative question, opening the issue up to debate, choices and action. It is definitely now *our* challenge, whether we are acting as individuals, societies, scholars, policymakers or market actors—and of course most people have several such roles and identities at any given time in everyday life. People may face a great deal of dissonance among these various roles when making assessments of whether climate change is important enough to shape action. The task of both personal and collective sense-making about climate change involves questioning and weighing up what we think we know against experiences and observations, wherever they may come from. Even if we may

not feel challenged ourselves at this time and in our locality, it would be a perverse kind of deliberate blindness to ignore both the realities elsewhere and the complex global tangles that connect those realities to us. And we should remain aware that denial and the suppression of different perspectives have long been tools of the powerful in framing important issues as unimportant.

Climate change demands attention to local and global, ecological and societal, analytical and ethical perspectives—and more—all at once. Rigorous relevant scholarship is needed more than ever, because the multidisciplinary perspectives and predictive powers of science in our times connect with issues that are well beyond the traditional scope of academia alone. The English word *science* is often taken to mean the state of knowledge, particularly about the physical and technical worlds. In a rapidly changing world, we need to shift to a more active process of 'knowledging'—as in *Wissenschaft*, the German word for science—which holds this dynamic sense of knowledge making and sharing. Fundamentally, climate change is playing out as the ultimate knowledge-and-action challenge. And that involves us all.

NO: Because we cannot address climate change without addressing inequality (*Aarti Gupta*)

Introduction

Climate change is one of the most complex challenges facing human societies in the twenty-first century. Yet what *kind* of challenge is it? In this essay, I argue that climate change is, at its core, a political challenge. If so, the most fundamental questions of politics (*who* gets what and *why*) need to be addressed head-on in considering solutions to this pressing challenge. This is particularly true in light of the increasingly dominant claim that climate change is a looming *collective* challenge, an urgent crisis threatening 'all of humanity'. But humanity in the twenty-first century is far from a homogenous mass, where individuals have equal impact on—or access to—resources and life opportunities. To the contrary, structural inequalities are growing between and within societies (UN-DESA, 2016).

This essay argues, therefore, that *growing inequality* is the greatest challenge facing humanity in the twenty-first century. Without explicitly acknowledging and addressing multiple forms of inequality, we cannot hope to forge an effective—let alone fair—global response to climate change. As Myles Allen, one of the lead authors of the IPCC's 2018 Special Report on 1.5°C points out, 'one of the most insidious myths about climate change is the pretence that we are all in it together'.[2] Taking this line of argument further, I posit here that in the face of the persisting structural inequalities within which the climate problem is diagnosed and responses are forged, it can even be dangerous to characterise climate change as the most important challenge facing us.

Why dangerous? Because a climate crisis or emergency framing can be used to justify the taking of extraordinary measures. These *could* be emancipatory, with climate change serving as a clarion call for fundamentally changing course and reorganising the dominant (and unequal) modes of production and consumption that fuel the current climate crisis. Yet in a world of obscenely unequal access to resources, wealth, power and economic and political opportunity, extraordinary measures are more likely to mean the opposite. They could signal the setting aside of hard-fought gains for equal rights and access to economic and political opportunity by the historically marginalised within and

across societies. And this could be done in the name of climate actions deemed necessary to meet a challenge ostensibly facing us all, but in which much of humanity is not consulted in devising so-called emergency solutions.

The above considerations underpin the 'No' position taken here to the question posed in the title of this chapter. I consider three potential risks of casting climate change as the most compelling challenge facing us today: (a) the risk of *setting aside distributive justice considerations*, as hindrances that impede an urgently needed, swift and effective collective response to climate change; (b) the risk of *setting aside democratic decision-making procedures*, in favour of authoritarian or technocratic approaches seen as essential to forging a timely and effective response; and (c) the risk of *considering reliance on unilaterally deployable, highly controversial and risky techno-fixes*, such as **solar climate engineering**. I address each of these risks below.

Climate change and inequality: twin challenges, inextricably linked

A crisis framing around climate change does not usually start from identifying the multifaceted, structural inequalities underpinning the climate crisis (but see Klein, 2014). It starts from diagnosing the nature of the climate problem primarily in terms of its atmospheric and biogeochemical impacts and consequences, which are seen as potentially catastrophic for all and hence urgent to address. Such analyses see climate change as threatening all other human accomplishments and as a threat multiplier, or '**wicked problem**' (see Hulme, 2009: 334–337, for a nuanced discussion of the merits and limitations of this latter notion).

In such a framing, a primary challenge becomes how to most efficiently address the direct cause of climate change: emissions of greenhouse gases. Understood thus, proposed solutions to the problem of climate change focus on how to best harness human ingenuity, science and technology, corporate power and state authority to reduce greenhouse gas emissions and simultaneously adapt to the worst ravages of climate change, so as to get ourselves out of a collective and looming mess. The crucial and less explicitly addressed challenge, however, is how to do the above in the context of the structural inequalities that underlie both the climate crisis and responses to it (Klein, 2014; Paterson, 2018). This relates fundamentally to diverse views on what should constitute 'climate policy' in the first instance. As a slew of progressive political analysts have suggested, any problem diagnosis of climate change needs to extend well beyond greenhouse gas emissions and their management (e.g. Holmberg, 2017). As Becky Kelley, president of the Washington Environmental Council, explains, 'viewing climate change as an environmental [issue] is way too limited. Climate policy is not environmental policy. *It is everything policy.* It is transformational, societal, policy [concerned with] economics and social justice' (emphasis mine).[3]

In what way is climate policy 'everything policy'? Critical political economy perspectives have long located the drivers of climate change in capitalist (unequal) structures of production and consumption (e.g. Paterson, 2018). From such a perspective, effective responses necessarily need to target such underlying drivers, including structural inequalities. At the very least, envisioned solutions to the climate crisis should encompass, *inter alia*, a living wage, access to education and health care and steady and gainful employment (UN-DESA, 2016; Holmberg, 2017, 2016). It is in this sense that climate policy is 'everything policy', a notion that also underpins growing policy and scholarly debate on

the need for a 'just transition' to a low carbon economy (e.g. Newell and Mulvaney, 2013).

Such an expansive framing of the climate crisis is exemplified, for example, by the much-debated Green New Deal recently advocated by Democratic congresswoman Alexandria Ocasio-Cortez and her supporters in the United States Congress. Here, combating climate change and combating structural inequalities and securing more equal economic opportunity are seen as fundamentally intertwined. This was also the resounding message of the *gilets jeunes*—Yellow Vest—protests sweeping France during 2018–19, the message that inequality and climate change are inextricably linked. One problem cannot be effectively—let alone fairly—addressed without addressing the other. This holds within national contexts, as the examples reveal, but also globally (Rao and Min, 2018, UN-DESA, 2016).

And herein, I argue, lies the fundamental challenge that the looming climate crisis poses. If we accept the link between climate change and inequality, then what institutional and governance mechanisms do we have at hand to tackle it? How likely is it that we will want to do so? Are there historical precedents for overcoming large-scale inequalities while meeting intertwined global challenges—whether ecological, political, economic, or threats to global peace and security? Naomi Klein takes on the task of examining these opportunities and possibilities in her provocatively titled book about climate change—*This Changes Everything* (Klein, 2014)—a trenchant critique of the links between the climate crisis and capitalism. For example, she documents that for the politically and economically marginalised it is economic disadvantage that has historically been the hardest to counter. Using slavery as an example (but this holds also for the women's rights and civil rights movements), history shows that securing equal legal and political rights for the marginalised is easier than reducing unequal economic opportunity.

Yet it is this latter imperative that, I posit here, makes climate change such an intractable challenge—*not* primarily because its biogeophysical dimensions are worrisome, complex and fraught with uncertainties, nor even because it is a 'wicked' multisectoral issue. It is intractable because of the extreme political difficulty of tackling the structural inequalities underpinning the climate crisis in the first instance. If, however, inequality and climate change were to be recognised as inextricably linked, with political acknowledgement that the two need to be addressed together, climate change *could* serve as a powerful rallying cry for fundamental transformations of currently unequal global systems of resource access and use and unequal access to power and opportunity (Klein, 2014; see also Rao and Min, 2018). Yet, it remains to be seen whether such a radically different political agenda will find sufficient support.

It should be noted that vulnerabilities of the poorest and the most marginalised to the adverse *effects* of climate change do not go ignored in an 'urgency' framing of the climate problem. Indeed, such vulnerabilities are frequently emphasised when framing climate change as the most pressing challenge facing humanity. As part of such a framing, mainstream analyses of the climate crisis routinely evoke unequal impacts, capacities and vulnerabilities of the poor and the marginalised to the worst ravages of climate change. What is much less acknowledged however, including in policy responses, are the historical trajectories of colonialism and extractivism between and within states that have fuelled cycles of poverty and environmental degradation. These have allowed the rich (whether states or individuals; see **Chapter 10**) the capacity to pollute the environments wherein the poor primarily reside, as only one example of these relationships (see Holmberg, 2017, for a more detailed analysis). Thus, even as *inequality of impacts* (primarily biophysical, but increasingly also social impacts) are widely evoked in mainstream discussions of climate change, there is little acknowledgement of inequality as a significant *driver* of climate change (UN-DESA, 2016).

Such considerations will increasingly come to the fore in light of the 2015 Paris Agreement's aspirational and ambitious temperature target of keeping average increase in global temperatures to below 2°C, while pursuing efforts to limit the warming to 1.5°C. It is widely acknowledged that temperature increases higher than 1.5°C above pre-industrial levels will disproportionately impact on the poorest, most vulnerable and most marginalised in the world. But an equally valid question, one not posed often enough, is: who will bear the burden of striving for 1.5°C, particularly in light of vastly unequal emission trajectories (e.g. Chancel and Piketty, 2015)? Will the impacts of addressing climate change also come to be laid disproportionately at the feet of the most vulnerable? (How) do these dynamics change when climate change is cast as the most important threat facing humanity? In portraying climate change in such a way, what gets de-emphasised? And what comes to the fore?

My aim here is not to offer one specific take (mine) on the questions asked above. Instead, I suggest that it is the *posing of these questions* that is of singular importance. It is through asking such questions that we can begin to ascertain the diverse perspectives on the collective urgency of the climate challenge and suitable responses to it. Doing so makes apparent that the answers will be very different. They will depend upon problem diagnosis, worldview and positionality in terms of vulnerabilities, capacities and exposure to harm (see Hulme, 2009 for an early and extensive discussion of how we collectively talk about climate change). Thus, any notion that we can all agree that climate change is self-evidently the most important challenge of our times needs to keep this reality in mind.

In the absence of such awareness, we can too quickly embrace 'solution' pathways that in the long run exacerbate, rather than alleviate, the climate crisis for all. In the remainder of this essay, I consider two potential further risks in framing climate change as the most important challenge facing us today. First, that it might privilege more authoritarian or technocratic decision-making processes, rather than messy, slow and unpredictable democratic ones; and second, that it might privilege the use of speculative, high-risk and unilaterally deployable climate engineering options as the most 'viable' way out of a climate crisis.

Democracy in an age of climate: the tyranny of urgency?

The growing urgency around climate change has been accompanied by intensifying debate about the merits of democratic approaches to addressing this multifaceted challenge (e.g. Stehr, 2016). This debate is salient not only in national contexts, but also in global settings where the question of democracy in the Anthropocene looms large. As Amanda Machin has suggested, the notion of humanity as a disruptive geological force points to an 'irresolvable political paradox'. This is reflected in the fact that *boundaries* are inherent in the notion of a political demos such as the state, even as an Anthropos-framing implies a homogenous humanity *transcending* political boundaries. As she explains, this paradox calls for a 'lively democratic politics in which the demos is always prompted to reimagine itself and ask, who are "we" in the Anthropocene?' (Machin, 2019: 1). When assessing the implications of framing climate change as the

most important challenge currently facing 'us', this is an important first-order question that needs to be asked.

The issue of democracy has come to the fore because some prominent (and worried) climate scientists, among others, have contemplated setting aside democratic decision-making procedures in the interest of taking quick and effective policy action in the long-term interest of all. Expressing the pessimistic view that democratic systems will never deliver effective action in time, their underlying rationale is that the intractable nature of the climate problem requires such an anti-democratic move. For example, environmental philosopher Dale Jamieson suggests that climate change

> is the largest collective action problem that humanity has ever faced…[but] we have not designed the political institutions that are conducive to solving them … Sadly, it is not entirely clear that democracy is up to the challenge of climate change.
>
> (Jamieson, 2014, quoted in Stehr, 2016: 2)

This sentiment has been echoed by other prominent climate scientists and thinkers, including James Hansen and James Lovelock. A common refrain is to compare climate change to war, with the argument that in such exceptional circumstances democracy is inconvenient (Stehr, 2016 contains an extensive overview of these diverse perspectives; see also Brown, 2014).

Yet does an effective response to climate change require setting aside democratic procedures? Many scholars and political commentators emphatically argue the opposite. In their defence of democracy, they note the potential risks inherent in what Strobe Talbott, ex-President of the Brookings Institution in the United States, refers to as the 'tyranny of the urgent'.[4] In this political move, one problem comes to be elevated as being the most urgent, above all others, thus requiring immediate attention even if this means setting aside normal decision-making procedures.

Rather than evoking the benefits of authoritarianism (see **Chapter 14**), climate scientists questioning the merits of democracy are more likely to (implicitly) advocate for reliance on *technocracy* instead; i.e. relying on scientists and scientific input in devising solutions, rather than leaving these to emerge from messy democratic political processes. Yet, as Stehr (2016) and others have noted, this elevating of experts and expertise to the pinnacles of power, in the guise of delivering technocratic solutions, is counter to the very notion of climate change as a fundamentally *political* challenge.

The contested political nature of climate change can be strikingly illustrated by the controversial topic of climate deniers (in the USA and elsewhere) and their view of the role of democracy in public life. In his discussion of the climate crisis and democracy, Brown (2014) shows the current gulf between, on the one hand, climate scientists advocating for technocracy and, on the other, populists (or climate deniers) categorically rejecting climate science as yet another source of established power. In analysing these dynamics and their implications for democracy, Brown (2014) advances the provocative premise that

> rejectionism [of climate science] is not simply an unwillingness to face the 'inconvenient truth', but a political reaction against those *who would use truth to eliminate politics*. In this respect, those who reject mainstream climate science may inadvertently promote a more democratic approach to climate science and policy.
>
> (Brown, 2014: 141, italics added)

This provocative claim merits much more scrutiny (see also **Chapter 15**). But the general point is that while climate science has an important role in political debates, it cannot, as Brown states, 'determine which policies best represent the needs and values of diverse human communities around the globe' (p. 141). This resonates with the notion that, ultimately, climate change is an idea and an opportunity to imagine diverse futures and how we want to live (Hulme, 2009). The challenge remains how to democratically *and* collectively imagine these myriad desired futures—and move towards the realisation of them.

Climate change and looming techno-fixes: the hubris of climate engineering

There is another risk inherent in an urgency framing of climate change. This is the risk that claiming that climate change is the most important challenge facing us today can be used to justify research into, and potential future unilateral deployment of, speculative, untested and controversial climate engineering technologies. Advocates of such technologies increasingly suggest that solar climate engineering—deliberately reflecting some amount of incoming solar radiation back into space through technological means—might be the only 'viable' way out of an otherwise intractable collective climate disaster (see **Chapter 8**). They further argue that climate engineering is a technology essential to contemplate for the sake of the most vulnerable, arguing that those least responsible and most vulnerable are *owed* solutions like climate engineering in the face of a looming crisis not of their making.

Such an 'equity' rationale to pursue climate engineering, advanced by some of its advocates, has been heavily criticised because it inverts justice concerns relating to these technologies. It frames the poor and marginalised as passive, grateful recipients of what are in reality speculative, controversial and risky large-scale interventions. Because of their historical responsibility for the climate crisis, the rich are portrayed as global risk managers *for* the poor (Flegal and Gupta, 2018), with this responsibility now being exercised by offering solutions such as climate engineering. This is a highly problematic move. Such a framing ignores the privileged position of the technology's advocates in providing—and profiting from—such untested and risky options. Such technological adventurism will also likely exacerbate inequalities and worsen, rather than mitigate, the long-term consequences of the climate crisis (e.g. Preston, 2016).

Conclusion

In this essay I have argued that casting climate change as *the* central challenge facing humanity risks creating a post-political, post-equity and post-democratic world. In such a world, in order to act quickly against this 'global' threat to humanity writ large, long-standing distributional justice concerns are marginalised, democratic procedures set aside and/or controversial and high-risk techno-fixes relied upon. Yet, in the context of the twenty-first century's extreme and growing inequality, who will pay the price of such outcomes? All these are fundamentally political moves, even if they are often framed as *setting aside politics* in order to take decisive and effective action against climate

change. Yet herein lies the central error. In order to effectively address the compelling, complex and multidimensional problem of climate change, we need *more* democratic and just governance, not less. It is precisely securing *this* goal—just and democratic governance—that is the most important challenge of our time.

Further reading

Chancel, L. and Piketty, T. (2015) *Carbon and Inequality*. Paris: Paris School of Economic Study.

This study presents the evolution of the global distribution of greenhouse gas emissions amongst the world's citizens from 1998 to 2013 and examines different strategies for a global climate adaptation fund based on efforts shared among high emitting individuals rather than between high-income countries. Results depend not only on within-country inequalities, but also on consumption-based GHG emissions of different countries. Available at: http://piketty.pse.ens.fr/files/ChancelPiketty2015.pdf.

Connors, S. and Pidcock, R. (2018) 'Frequently Asked Questions', in: *Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty*. Geneva, Switzerland: World Meteorological Organisation. Available at: www.ipcc.ch/sr15/faq

This web resource offers a useful set of short and clear answers to key questions about climate change, about the consequences of different levels of warming and about the likelihood of the world's future development path delivering these levels. A good primer for the whole book, it is also useful in thinking through how states and non-state actors can deliver on different climate goals.

Newell, P. (2019) *Climate and Development: A Tale of Two Crises*. University of Sussex.

This Institute of Development Studies lecture from the University of Sussex (available on YouTube) looks at the intertwined histories of development and climate change and argues that only a very different approach to development can help to address the climate crisis we currently face. Available at: www.youtube.com/watch?v=2a8xOgl1K0E.

Schmidt, G. and Wolfe, J. (2009) *Climate Change: Picturing the Science*. New York: W. W. Norton & Co.

This book shows how human-caused climate impacts are already observable and how societies around the world are responding to climate challenges. It brings together many technical aspects of climate change science into the scope of people's lived experience, making it a rich resource for the wider understanding of climate science.

Schneider, S.H. (1996) *Laboratory Earth: The Planetary Gamble We Can't Afford To Lose*. London: Weidenfeld & Nicolson.

This book, written 20 years ago, explains many of the concepts of Earth system science and describes the co-evolution of life and the climate system over long timeframes. Schneider also wrote engagingly and informatively about the social and political challenges of climate change. Techniques for global change modelling and Earth observation have advanced greatly since then, but the book's main insights are robust and are worth reading.

World Economic Forum (2019) *Global Agenda Reports*. Cologny, Geneva, Switzerland.

Global Agenda reports offer diverse perspectives on the most pressing challenges facing the world today. See, for example: *Why income inequality is bad for the climate*. Available at www.weforum.org/agenda/2019/01/income-inequality-is-bad-climate-change-action/ and *Emissions inequality: there is a gulf between global rich and poor*. Available at www.weforum.org/agenda/2019/04/emissions-inequality-there-is-a-gulf-between-global-rich-and-poor/.

Follow-up questions for use in student classes

1. Can we claim objectively that climate change *is* the most important challenge facing humanity, or is such a claim always a subjective value-judgement?
2. Reports about options for climate adaptation (including IPCC, 2014; e.g. Table 2.3) often include statements such as, 'poor people and women are most at risk from climate change'. What does this framing imply about people's adaptation options and about the assumptions embedded in such reports about today's and future societies?
3. Given the likely societal costs and disruptions of overhauling worldwide energy, food and transport systems to mitigate climate change, is being concerned about climate change actually an 'anti-human' outlook?
4. Do you agree that climate change and inequality are inextricably linked? Why or why not?
5. Should democracy be abandoned if it prevents quick action on climate change? And what notion of democracy would you be abandoning?

Notes

1 See: www.lomborg.com/. Accessed 24 July 2019.
2 Available at: https://theconversation.com/why-protesters-should-be-wary-of-12-years-to-climate-breakdown-rhetoric-115489?utm_source=twitter&utm_medium=twitterbutton. Accessed 25 June 2019.
3 Available at: https://thinkprogress.org/washington-carbon-tax-campaign-7ce90a306e7f/#.1nsxkugbj. Accessed 25 June 2019.
4 Available at: www.ft.com/content/c14645d2-a8f8-11dd-a19a-000077b07658. Accessed 25 June 2019.

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