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Unsustainable Borders: Globalization in a Climate-Disrupted World

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Climate change and the responses to it reveal starkly different assumptions about borders, security and the ethical communities for whom politicians and activists speak. Starting with the contrasting perspectives of international activist Greta Thunberg and United States President Donald Trump on climate change this essay highlights the diverse political assumptions implicit in debates about contemporary globalization. Rapidly rising greenhouse gas emissions and increasingly severe climate change impacts and accelerating extinctions are the new context for scholarly work in the Anthropocene. Incorporating insights from earth system sciences and the emerging perspectives of planetary politics suggests a novel contextualization for contemporary social science which now needs to take non-stationarity and mobility as the appropriate context for investigating contemporary transformations. The challenge for social scientists and borders scholars is to think through how to link politics, ethics and bordering practices in ways that facilitate sustainability, while taking seriously the urgency of dealing with the rapidly changing material context that globalization has wrought.

People are dying. Entire ecosystems are collapsing. We are in the beginning of a mass extinction. And all you can talk about is money and fairytales of eternal economic growth. How dare you!

—Greta Thunberg, address to the United Nations, September 23, 2019

The future does not belong to globalists, the future belongs to patriots.

—Donald Trump, address to the United Nations, September 24, 2019

Borders, Boundaries and Planetary Politics

The contrast between the passionate plea for serious action on climate change and extinction by Swedish and international activist Greta Thunberg and United States President Donald Trump's insistence that the world is a matter of discrete states is stark. The implicit geographies are so very different; the boundaries that matter to Thunberg are those of the earth system; those of Trump are traditional invocations of separate states, of territorial borders and the identities that they supposedly contain. Their respective contextualizations implicitly demand very different modes of conduct; one a matter of acting

quickly to head off global scale disruptions, the other to insist that nothing has changed and that traditional stories of nations and rivalries are the appropriate framing for statecraft.

Time matters greatly here and is related to implicit theories of change; Thunberg had been reading the earth system science, and the 2018 IPCC report on limiting global warming to less than 1.5 degrees; clearly Donald Trump had not. Thunberg understands the urgency of acting to prevent rapid destabilizing climate change,

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apparently Trump supporters do not; their preoccupations with national rivalries implicitly assume relatively stable environmental conditions into the future, or at best minor inconveniences as climatic zones slowly move, hence not a matter for policy priority or serious engagement.

This politics mirrors the division of labour in the contemporary academy where so much of social science simply assumes a relatively stable climate and an abundant supply of energy to power contemporary economies; modernity requires as a premise a quiescent earth (Clark & Szerszynski 2021). Much of the economic analysis of probable future climate change likewise assumes relatively simple and gradual geographical relocation of climate zones (Keen 2020), not the destabilization of the climate system and the potential for rapid shifts and major discontinuities that earth system science indicates are likely in the short-term future (Steffen et al 2018), if greenhouse gas levels and other environmental disruptions continue to increase as they have done over the last few decades.

Crucially, much of the discussion in the social sciences concerning climate, growth, progress and related matters implicitly assumes that the future will be more or less a continuation of the recent past; "continuationism" is its dominant mode of thought (Albert 2020). But the new formulations of planetary politics and the discussion of the Anthropocene make it clear that this is a very dubious assumption. Much of the discussion of globalization has been about social and political integrations and differentiations, about novel topologies as the links between places and products generate ever more complicated supply chains. What has not been integrated into the discussion frequently, even in the field of international relations (Burke et al 2016, Simangan 2020), is the simple but profound fact that all these processes of globalization, the extraction of resources, the building of trading systems and the extension of mass consumption, involve dramatic material transformations of the planet. These transformations are destabilizing the climate system and introducing increasingly severe perturbations in how numerous ecological systems function, while dramatically enhancing the risks to these new global economic activities and the humans dependent on them for subsistence (Simpson et al 2021). This new contextualization reveals numerous contradictions in terms of how borders and boundaries now function and, highlighted by the urgency of dealing with both climate change and the accelerating extinction crisis, requires a reconsideration of borders and bordering practices in light of the novel material circumstances that globalization has made (Dalby 2020). This essay does just that.

The recent re-articulation of national territories and the related presupposition of the inevitability of state rivalries in a competitive arena are in many ways a "return of geopolitics" and a rejection of the earlier promises of globalization (Bergeson & Suter 2018). But, that said, the United Nations action summit on climate in September 2019 where Greta Thunberg vehemently admonished national

leaders for their failures to act in the face of accelerating ecological disruption, focused once again on promised contributions by particular states to reducing greenhouse gas emissions. As in the Paris Agreement of 2015 (Falkner 2016), the role of sovereign territorial states is reasserted as the mode of governance to tackle an issue that plainly has little to do with national borders. This is also consistent with the standard practice of considering adaptation to climate change as a matter of mostly national adaptation rather than global initiatives (Benzie & Persson 2019).

The contradictions between global change and national jurisdictions, a long-term theme in environmental politics, keep piling up, and now earth system science has made it clear that the global economy is endangering a number of key aspects of the earth system, and unless course changes are initiated soon, potentially disastrous disruptions will result (Rockstrom and Gaffney 2021). As Greta Thunberg (2019) and her friends in the Extinction Rebellion (2019) movement recognize all too clearly, time has run out for dealing with climate change and the ecological havoc that is being unleashed by fossil fuel combustion. While President Trump reasserted the importance of territorial borders, both in his rhetorical excesses and in practical matters by imposing tariffs on numerous international trading relationships, Thunberg and friends understand that what is much more important is that the "planetary boundaries" that approximately demarcate a safe operating space for a complex human civilization, are being breached or soon will be by current economic patterns (Steffen et al 2018).

Invoking national sovereignty and attempting to reassert control by using border crossings as a prominent mode of rule allowed Donald Trump to deny any responsibility for the fate of Swedish teenagers; and to simultaneously ignore the insistence, by President Xi Jinping of China and numerous other leaders, that the states that have historically done most to cause climate change should be those who lead in dealing with the problem. With the accession of the Biden administration in 2021 American policy has shifted, and the urgency of dealing with climate change has been accepted as at least the rhetorical premise for re-engaging with international efforts to deal with climate. Domestically this framing was used in the US in 2021 to push some innovations forward, but the questions of how to do this continue to run into jurisdictional boundaries many of which are premised on assumptions of a stable earth and fixed geographies.

Thinking through these issues, invoking globalization, ecology and other modes of framing in an attempt to get some purchase for governance on the issue, in contrast to the persistence of territorial modes of jurisdiction, emphasizes the incommensurability between topographical modes of reasoning in terms of jurisdiction, and topological modes of activity where long-distance connections and indirect consequences are what matter. All of which is now dramatically heightened by the need to act quickly on greenhouse gas emission reductions. The

numerous online Globaia.org images of the Anthropocene are about connections between distant places, not about matters of territorial delimitation. They reiterate the much earlier renditions of earth as a blue marble without territorial divisions, the emblematic images from the NASA astronauts' photographic activities half a century ago.

While all this is a very old argument in terms of environment—of the earth as one but the world as many—and of ecological phenomena being mostly oblivious to national borders (Christoff and Eckersley 2013), the urgency of both the extinction crisis and accelerating climate change make these issues especially pressing (Pattberg & Zelli 2016). In Merje Kuus' (2020, 1189) apt phrasing: "The guiding question in political geography is not as much about what boundaries are or ought to be but how particular imaginaries and practices of bounding shape political practice in a concrete everyday way". These bounding practices shape contemporary framings of global politics, suggesting that, in the novel contextualization of the Anthropocene, there are three overarching representations, those of an "endangered world", an "entangled world" and an "extractivist world" (Lovbrand et al 2020). Roughly speaking Greta Thunberg is concerned about the first two and horrified by the third, whereas Donald Trump ignores the first two and celebrates the third.

The contrast between Trump's and Thunberg's political claims are very much about different geographical framings and about the role of boundaries, and which ones matter most and to whom. Crucially the two figures also have very different implicit assumptions about time. For Trump what matters is the nation and those defined by citizenship in a particular place through time. For Thunberg this is no basis of any ethical claim on politics; the people that matter in her formulation are her generation and those yet unborn, for whom a very different set of boundaries, those of a functional earth system, are what matter. Time is of the essence in dealing with climate because greenhouse gases are rapidly accumulating in the atmosphere. For Trump time in this sense is irrelevant, the stage for international rivalries is pretty much stable, and all that matters is how effectively the game is played. For Thunberg what is most worrisome is whether there is going to be a recognizable stage at all by mid-century if fossil fuel use is not rapidly constrained. It is why she insists politicians pay attention to the scientists; globalization scholars, this essay contends, need to do likewise for the same reason.

To elaborate on the implications of the contrasting invocations of bounding practices in these political discourses the rest of this essay first turns to a discussion of boundaries and borders, emphasizing that there are numerous implicit spatial assumptions in many of the discussions of sustainability, and that globalization now requires an explicit engagement with the importance of long-distance and sometimes indirect tele-connections in the rapidly changing earth system. Because of this

"fortress conservation" models and territorial strategies for dealing with ecology are often counterproductive (Duffy 2014), and this is increasingly important in a world facing accelerating ecological disruption. The subsequent section then focuses on issues of change and mobility and the key point about the novel conditions of non-stationarity, where environmental change means that the past is no longer an accurate indication of the range of likely future conditions. Thinking in these terms requires recognising that in some crucial senses both borders and people are mobile (Konrad 2015). Thus boundaries have to be thought of as mobile and flexible, not linear and fixed. All this requires efforts on the part of border scholars to think about large scale ecological change as part of how boundaries are enmeshed in larger transformations, as discussed by way of conclusion below in terms of Eckersley's (2017) formulation of geopolitican democracy. This is but one attempt to engage with the crucial political implications of understanding societies as part of a dynamic earth, rather than a superficial matter on a relatively stable substrate that can be taken for granted. Time is of the essence if globalization is to be understood, as science now suggests it has to be, as a process of dramatic material transformation of the planetary system.

Territories, Jurisdictions, Sovereignties

The politics of the Anthropocene, where all sorts of innovations are needed (Biermann & Lovbrand 2019), is still frequently caught in territorial traps where the geographical imagination is of separate spaces rather than of areal differentiation in an inter-connected system (Agnew 2003). The former set of assumptions feeds into limited claims to responsibility, ones bounded by state borders. But scaling this matter of responsibility up to a matter of a global polity raises the key questions of whence the source of legitimate authority in the face of the depredations of "globalization" (Shah 2012). The indirect and distant consequences, in terms of climate disruptions and ecological impacts, adds pressing urgency to these discussions; clearly security in any meaningful sense for most of the world's peoples is not what borders can provide. The fantasies of using territorial strategies to control change persist nonetheless, as populist politicians in many places, and the Brexit campaigners in Britain in particular, understand all too well (Agnew 2020).

Whether "globalism" as a reinvented cosmopolitanism is either possible, or might be efficacious in the face of the reactionary politics epitomised in Donald Trump's dismissal of globalists, is a key question for our times (Deudney 2018). To think in these terms requires reimagining the planet as a single place in which actions are interconnected and consequences cannot be evaded by the invocation of geographical separation. It also requires understanding that the functions of borders frequently happen far from frontiers; and border controls instigated by the United States in particular now operate on many borders, not just those of the state ostensibly

in question (Miller 2019). But, given the rapid ecological changes now underway, borders too are not as stable as the traditional notions of territorial jurisdiction at least implicitly assume.

Not least they fail to provide security precisely because of the invocation of national prerogatives over any larger obligations. The Westphalia system of separate and frequently rivalrous states might be an effective solution to some questions of political identity, but it provides a major obstacle to tackling climate change when thought of in terms of territorial sovereignty and exclusive jurisdictions (Harris 2013). Borders also operate to invent fictitious sovereignties for financial matters as frequently as they stipulate who or what can cross borders (Bullough 2019). Migration controls are a matter of policing not only at the frontier, but in airports and on the streets of many cities where migrants move. Bordering things turns out to be a matter of governance practices that frequently do not appear at the geographical border but effectively operate as bordering practices far from geographical frontiers. Preclearance arrangements for many traded items are situated far from frontiers to ensure the continuous circulation of key commodities in the global economy (Cowen 2014).

Technical criteria for trade are embedded in packing plants, food storage arrangements, and electronic codes in the internet. The rules and procedures that govern numerous technical practices, and the agencies that oversee them, have given rise to a partly autonomous processes now simply called global governance (Zurn 2018). These processes in terms of climate have produced numerous efforts at market "solutions" and the commercialization of "ecosystem services" in the form of carbon sequestering "offsets" and numerous projects linked to green development funds and "Reducing Emissions from Deforestation and Forest Degradation" (REDD+) programs (McCall 2016). These require global arrangements to link emissions in one place with efforts to "sink" them elsewhere, and in the process involve complex modes of trading, certification and jurisdictional demarcation related to ecological function within bordered spaces (O'Lear 2016). While climate needs urgent attention the modes of governance that are invoked are still based on territorial demarcations, whether in terms of national determined contributions under the Paris Agreement (Falkner 2016), or those smaller scale designations of areas providing ecosystem services in REDD+, or the numerous attempts to re-engineer spaces under the rubrics of climate adaptation (Sovacool & Linner 2016).

As ecological change accelerates in the next few decades, rapid adaptations to new circumstances have to be part of the planning for transitions to more sustainable modes of life. This is the case even if serious efforts are made to rapidly reduce carbon dioxide emissions; there are already enough greenhouse gases in the atmosphere to ensure further warming and substantial disruptions in terms of more extreme weather. While conservation

practices have frequently involved in situ protections of specific ecosystems, or such things as the management of resources in terms of harvesting regulations, the new understandings of earth systems require that these processes be scaled up to deal with global interconnections (Dauvergne 2016). This insight is key to the logic of the United Nations Framework Convention on Climate Change and the Convention on Biodiversity as well as numerous attempts to manage toxic substances and ozone depleting materials. But clearly the use of resource extraction as a mode of economic development has long won out over larger claims to sustainability, environmental management efforts notwithstanding.

This is not surprising. As Ken Conca (2015) notes, after independence from European empires post-colonial state leaders clearly understood the importance of natural resources in the global economy. What they lacked was any clear understanding of the global environment, nor the limitations it might place on various modes of economy in the long-term future. Invoking sovereignty and insisting that resources were a matter of national jurisdiction, not something to be controlled by international agencies, was an entirely sensible policy to attempt to resist the re-imposition of neo-colonial control from abroad. While sovereignty makes for good politics on many issues, it is now a problem that plagues numerous efforts to grapple with environmental matters. Borders do not provide environmental security in many cases, with some of the protocols on transnational trade of particular substances being a partial exception. Sovereignty also assumes a long-term political entity (Elshtain 2008), one effectively a permanent fixture on what is understood as a stable geographical configuration of natural features. But as climate change in particular is making abundantly clear—with shifting climate zones, increasingly unreliable weather patterns, and inexorable sea level rise—these assumptions of stability are no longer sensible as a basis for intelligent public policy. Some small low-lying states face elimination due to climate change induced rising sea levels.

Counterintuitively what is most important now is securing the ability to adapt to new circumstances, a flexibility that runs counter to the basic assumptions of territory and property as the bedrock for institutions to deal with numerous threats, and conservation as species preservation in particular places. As species migrate and rainfall patterns move, such ingenuity will be needed to think through innovative adaptive responses to environmental disruptions. These are of course mostly antithetical to the popular impositions of border restrictions as an attempt to "take back control" in the face of rapid change (Agnew 2020).

The urgency of tackling rapid global change requires that the supposed solutions to governance problems be interrogated in light of the novel insights that earth system science is making available (Zalasiewicz et al 2019). Failure to do so will undercut attempts to think about long-term sustainability. There is a danger that

climate change dominates the discussion to the exclusion of numerous other important matters. But given the simple facts that climate is stressing environments, and food production and water supplies very directly, this is perhaps unavoidable. The 2018 Intergovernmental Panel on Climate Change report on a 1.5 degrees climate changed world makes it clear that rapidly reducing the emissions of fossil fuel combustion products into the atmosphere is crucial to the solution of many other issues. In stark contrast the Trump administration saw national security for the United States in terms of increased fossil fuel production despite the long-term dangers both in terms of climate and the difficulties of changing energy systems in the future (Selby 2019).

A parallel set of considerations applies to efforts to use territorial strategies to enforce conservation practices. While parks, ecological reserves and protected areas are standard policy tools used in attempting to at least mitigate the environmental disruptions caused by industrial development and related urbanization, agricultural and resource extraction processes, these practices have often had pernicious and counter-productive effects, once again because of implicit and sometimes explicit attempts to use territorial strategies to prevent migrations and exclude people from designated areas (Buxton & Hayes 2016). While the attempts to counter poaching of endangered species by the use of armed park wardens have laudable aims in trying to prevent the elimination of many animals, the dynamics of political conflict in rural areas have fed into the militarization of conservation (Duffy 2014). The presence of weapons and the arming of rural populations does not necessarily lead to the ends that these projects ostensibly seek: "For example, militarised conservation tactics in specific contexts in South Africa often resemble apartheid-era counterinsurgency practices, where efforts to win the support of local people also coincide with tactics of intimidation and use of violence" (Duffy et al 2019, 68). War and conservation are uneasy bedfellows and the militarization of environmentalism may end up making things worse especially because the dispossession of local populations frequently makes the processes of imposed rule appear fundamentally unjust and thus undermines the long-term legitimacy of what might be seen as urgent necessities.

This is not least because the discourses around poaching turn park rangers into heroes and local populations into villains while often disrupting survival strategies using local ecological resources. In a similar vein at the larger scale some of the environmental problems facing local people in the Lake Chad region in Africa in recent years are as a result of military actions closing national frontiers in attempts to contain insurgencies. One of the unintended consequences has been to make adaptation more difficult precisely by preventing people moving to access economic resources to deal with fluctuating environmental conditions (Vivekananda et al 2019). Once again spatial strategies of security compound environmental difficulties for people whose mobility is restricted.

At the larger scale these same notions of "fortress" responses to environmental insecurities feed into larger formulations of environmental and more specifically climate insecurity where peripheral disruptions and potential migrations are portrayed as the danger to metropolitan prosperity (White 2014). This frequently obscures the causal sources of disruptions which lie with the massive use of fossil fuels in the global economy not intrinsic attributes of rural areas or the political difficulties in countries in the Global South. Contemporary environmental disruptions follow the long-term patterns of European colonization and the displacement of indigenous peoples and societies in many places, and, as Dauvergne (2016) has shown so clearly, modern environmentalism is incapable of dealing with either the colonial legacy or the scale of contemporary disruptions.

When these difficulties are refracted through notions of security, and the criminalization of poachers or migrants, coupled with the strengthening of border controls, the failures to confront the long distance and long-term consequences of contemporary modes of consumption are obscured by a politics of "them and us", with "them" as a threat to "our" supposed entitlements. These geopolitical formulations, only most obviously the widespread use of the argument that climate change is a conflict multiplier in conditions of political fragility (see Klare 2019), invoke geographical designations that obscure the teleconnections and economic linkages that are a key part of contemporary dislocations. Once again, a spatial imaginary of division, of North and South, is reinforced with narratives of resource scarcity driving conflict and requiring either containment or interventions in distant places to provide extended security. Southern population growth can easily be blamed for climate change, despite the obvious point that it is consumption rather than numbers of people that are at the heart of the fossil fuel use which is key to climate change. Immigrants and pollution come from somewhere else in these formulations, requiring violent control of movement; the links to white nationalist racial politics are quite direct (Huntgren 2015). Add in formulations of scarcity as the source of conflict, a theme that runs through much of the climate security discussion, and the potential for violence increases as the sources of environmental danger are reformulated as external threats to domestic prosperity, and hence as disruptive forces that need to be controlled "over there" and "at the border" to protect our lifestyles "here".

The converse of this argument is also important, as states invoke sovereignty as a way of pushing back against global efforts to constrain damaging forms of extractivist economic activity. In many cases this involves international efforts to work with Indigenous peoples to protect their lands from the depredations of resource extractions, the legal enclosure of their territories and the disruptions of their water sources and food supplies. These dynamics were highlighted in mid-2019 once again when attention turned to the fires in the Amazon basin where farmers

routinely use fire to clear forest prior to using the land for agriculture and grazing, frequently at the cost of indigenous inhabitants. International opprobrium was directed at Jair Bolsonaro, the Brazilian president who seemed unwilling to act to constrain the conflagrations despite widespread fears of further damage to the forest. The violence on this frontier where at least some Indigenous peoples try to protect their land, and the movements of landless peoples try to gain sustenance, is not new: ecology is tied into long historical patterns rural dispossession in the Global South (Athanasiou 1996). Chico Mendes, a key spokesperson for the Brazilian rubber tappers was famously assassinated in 1988, but the violent removal of environmental activists, frequently linked to claims of external meddling in domestic politics, adds another important dimension to the issue of the role of borders and violence in global environmental politics (Matejova et al 2018). Here national sovereignty is another mode of fortress thinking about a supposedly autonomous entity to be protected from external influence.

And yet just as such bordering practices are being enforced, simultaneously the economics of the contemporary world make it clear that supply chains that stretch around the world do not operate on such territorial considerations; vulnerabilities here are a matter of disruptions in numerous places, and frequently not specifically at borders and only sometimes because of the invocation of sovereignty. Rising concern about the financial risks that climate change presents to corporations has been linked to the commodity chains that supply products for the contemporary global market place; adaptation is about much more than in-situ policies within individual jurisdictions (Hedlund et al 2018). Coupled to this is a growing concern about agriculture and looming disruptions of climate change, where adaptation in the Global South where farmers are heavily dependent on rain-fed agriculture may be especially difficult (Vogel et al 2019). As climate disruption causes difficulty in terms of planting crops and having them mature with suitable weather, the social dislocations resulting from agricultural distress may be large. Migration from rural to urban areas by people in search of sustenance, new economic opportunities and shelter is the most obvious mode of climate adaptation.

Understanding the need for climate adaptation as only a matter of internal affairs for individual states ignores these teleconnections in the global system, both in terms of these economic interlinkages and in terms of the trans-border effects of climate change (Benzie & Persson 2019). Other effects relate to ocean fisheries, vector borne diseases, increased storms, droughts and economic and social knock-on effects from all of these in the global economy where long commodity chains and supply systems are vulnerable to disruptions. As international court cases are starting to emphasize, the worst offenders in terms of nation-states and carbon emissions are not those frequently suffering the worst effects of climate change and hence cases are being brought against governments and corporations that

have facilitated the combustion of fossil fuels despite clear awareness of the risks and consequences (Byers et al 2017). Trans-boundary liability claims are the corollary of the arguments for loss and damage at international climate negotiations, matters that the developed nations have studiously refused to deal with seriously, precisely because of the possible implications that those states who historically caused most of the climate change might be held directly accountable for their actions. Once again, time matters in globalization.

In addition to the direct effects of climate on agriculture and commodity chain disruption there are of course second-order effects as a result of climate policies undertaken by numerous states (Simpson et al 2021). Effectively tackling climate change requires drastically curtailing the use of fossil fuels, and in so far as demand reductions in one state affect the production in others, these have trading consequences. How the shift from fossil fuels to renewable energy systems will change the global political economy and with what consequences is far from clear, but if climate is to be tackled effectively these shifts will have to happen, and quickly (Global Commission 2019). Is it possible to anticipate future trade restrictions on fossil fuels, with border checks to ensure that these soon-to-be controlled substances (Burke & Fishel 2020) are not smuggled across national frontiers in violation of trading restrictions!? As climate change action becomes ever more urgent such considerations are looming and will inevitably have implications in terms of what happens at borders, wherever their rules actually are implemented.

Mobilities, Connections, Migrations

All of this is now ever more complicated precisely because of the disruptions of climate change. Sustainability in environmental matters, resource extraction, agriculture, and key issues of irrigation water supply, are premised on overall system stability and assumptions of what hydrologists sometimes call stationarity (Milly et al 2008). While rainfall and temperature vary from year to year, the range within which they fluctuate has been roughly stationary. The past may not indicate precisely what is coming in any particular year, but it has given a very good indication of the range of likely events. These have been key to planning developments, in particular infrastructure like dams and bridges where design criteria frequently include the ability to be able to cope with a one-in-one-hundred-year extreme event. Construction of such infrastructure has been key to development strategies and competition between states to enhance economic growth. In Peter Dauvergne's terms (2016) technical innovation and promises of improved management, the "environmentalism of the rich" were seen as adequate responses to any unfortunate side effects of this mode of development.

But not anymore. As rising sea levels, increased scale and severity of floods, storms and wildfires are making clear,

the stationarity assumption is giving way to an understanding that the world is being rapidly changed. The sheer scale of development and the growth of the global economy is not only causing local disruptions, pollution events and resource problems, but now has begun to change how the earth system as a whole operates (Steffen et al 2018). We are headed into a much less stable set of geophysical circumstances than the world has known through human history, and the rivalries and geopolitical power plays of the future will increasingly play out in less predictable geographical circumstances.

This new situation of an increasingly artificial world being remade by the global economy, captured by the term Anthropocene (Lewis & Maslin 2018), literally the geological age of humanity, suggests that past environmental conditions are no longer a reliable guide as to the range of likely conditions in the future. The corollary is that species will move and hence ecosystem boundaries too are increasingly mobile. Stable borders neither constrain environmental change nor economic innovations, but now in these new conditions they too are increasingly mobile, thus raising profound geographical questions about bordering strategies in these conditions of non-stationarity (Kareiva & Fuller 2016). Conservation and preservation efforts, which have long been premised on places staying the same, now confront the challenge of how to act when stable background conditions are no longer available and when geographies of the past are not reliable as indicators of suitable conditions for many species struggling to adapt to fluctuating ecological conditions. Questions of sustainability now add a very substantial new challenge to global governance (Dalby et al 2019), and in ecological terms conservation strategies now often have to consider how to facilitate the migration of species to more conducive climates rather than trying to keep places in a stable state.

The scale of contemporary disruptions now means that discussions of sustainability, and more precisely, the discursive strategies of sustainable development that have long been used to evade the environmental consequences of conventional development, have to be rethought quite fundamentally. Conventional strategies, based on the massive use of fossil fuels to power human activity have now become, in Dryzek and Pickering's (2019) pithy formulation, "pathological path dependencies". Getting off the path to ever-larger fossil fueled activity is now the challenge for development practitioners; their strategies now have to attempt to secure a functional planetary system for all of humanity if they are to be meaningful activities. The alternative, epitomized by Trumpian patriots, is for the rich and powerful to try to use a fossil-fueled economy to quite literally burn their way to continued prosperity in a system where more and more poor people are rendered vulnerable precisely by such activities (Dalby 2018). The geopolitical nightmare looming if the path dependencies of the present are not effectively changed is of ever larger disparities in a crowded world where violence is increasingly used to control poverty and quell

resistance to further depredations of what remains of the natural world (Wallace-Wells 2019).

While much of scholarship on borders concerns terrestrial frontiers, climate change in particular draws attention to the importance of maritime boundaries, and the rapid changes that are induced by the inundation of shorelines by rising seas. For the atoll states of the Pacific and Indian Oceans as well as numerous low-lying states with vulnerable coastlines, the immediate practical issues are that the borders between land and sea are moving as inundation accelerates. The necessity of recalculating maritime boundaries as a result of the shifting baselines, no longer fixed demarcations as has often been assumed until recently, raises numerous legal questions about transit, economic zones and mobile jurisdictions. These borders are quite literally in motion and, like other bordering practices they emphasize the importance of understanding borders as dynamic entities, not just fixed linear features (Konrad 2015).

Thinking about borders as mobile raises the question of border policy priorities. As Stover (2018) provocatively suggested in the case of Trump administration policy, money spent on border walls might be altogether better spent on climate change given the huge cost of dealing with the imminent inundation of real estate in Florida. The cost of relocating communities in Alaska and Louisiana has also raised issues of climate adaptation, although these are not usually considered in terms of border policy. In the next phase of the Anthropocene, where fixed demarcations of numerous things can no longer be taken for granted, then perhaps mobile borders in terms of geomorphological change need attention as a matter of border management too. Non-stationarity applies quite directly to the location of many borders in the rapid ecological changes currently underway.

The demarcation of territorial waters and exclusive economic zones depends on baselines drawn from coastal features. But where rising sea levels cause inundation and erode coastlines then those baselines are no longer fixed. Where maritime boundaries bisect straits and narrow passages between states, and the shorelines are retreating, then implicitly the jurisdictional demarcations are also in motion. By this logic, as Florida slips below the waves, Cuba's maritime boundary will migrate northwards as Florida's recedes. Or at least it will unless measures are taken to ensure that at least some parts of Florida, or the Keys, are artificially built up to remain above the waves.

However, while the law on maritime boundaries does not necessarily follow directly from land boundaries, nonetheless the apparent necessity of modifying their location as coastal features are inundated will undoubtedly keep maritime lawyers very busy in coming years (Arnadottir 2017). Treaties relating to exclusive economic zones do not establish full sovereign rights, as in boundary demarcations between territorial states, but in the case of territorial states rendered uninhabitable by

rising seas, numerous issues will arise as to what happens to maritime boundaries following the elimination of the state as a territorial sovereign entity, and with it the shore-based territorial seas and economic zones.

For the residents of such states, eliminated by inundation, the legal issues relating to their citizenship may be of more direct concern because they are forced to move. The inadequacy of assumptions of stable physical geography as the backdrop to human activities, and as the context for permanent sovereign states, are paralleled by the inadequate assumptions that people can be defined in terms of stable geographies. The ecological dynamism of the Anthropocene transformation unsettles the implicit assumptions of people as place based, and as such makes mobility a key condition of life rather than its exception (Baldwin et al 2019). This reframing of the human condition raises profound ethical questions too because territorial arrangements are no longer simply assumed as a given context (Williams 2006). This is related to climate justice quite directly, not least because those who invoke the efficacy of borders are frequently those who have indirectly, through their combustion of resources and other materials, caused the disruptions that accelerate migration in the first place. If people are inherently mobile then how migration is viewed is very different in terms of borders, than if assumptions of fixity underpin matters of governance and jurisdiction. This is especially so now that coastal boundaries are moving and ecological adjustments to changing climate patterns relocate plants, animals and their ecosystems as well as traditional geographic patterns of storms, floods and droughts.

Viewed from the perspective of those forced to move by contemporary ecological disruptions, borders are frequently precisely the problem for their security (Jones 2016). At least they are where attempts to cross them run into policies to exclude migrants, either because of xenophobic politics or administrative incompetence, or both. Where climate migrants are represented as refugees, as people without inherent citizenship rights, this is all the more difficult for those seeking safety in new lands; despite the aspirations of the new United Nations Global Compact for Safe Orderly and Regular Migration. The recent record of European and North American states, formerly destination states for many migrants from poorer places, is worrisome. Borders are being hardened, making refuge for vulnerable people much more difficult (McLeman 2019).

The converse situation is that those who can move are in some senses environmentally privileged, allowed access to spaces that evade the most direct consequences of environmental disruption in enclaves of affluence (Park & Pellow 2019). While this is in some cases tied to the confused politics of racial supremacy and the invocation of anti-immigrant sentiments, those who frequently invoke these tropes are frequently precisely the mobile affluent population who benefit from the labour and activities

of those whose mobilities are restricted. These multiple contradictions of nativist environmentalism inform such novels as Paolo Bacigalupi's dystopian account of the South West United States in *The Water Knife*. Restricted mobilities are now a matter of architectural practicalities in the real world in an increasing number of places as affluence allows access to luxury suites, and manufactured spaces where pollution and environmental disruptions are technologically excluded (Graham 2016).

Making these connections explicit helps challenge the simplistic assumptions that often focus on the abstracted conceptualization of climate refugees, or climate migrants, obscuring the complex social situations that many marginalized peoples find themselves in while simultaneously silencing the racial dimensions of much of the discourse (Baldwin 2016). Simple invocations of borders obscure the patterns of mobility and the social and economic factors that shape the options and adaptive strategies that people use in the face of ongoing economic and ecological disruptions, which are but two ways of focusing on the transformations of the Anthropocene, caused by the rapid expansion of the global economy and its colonizing practices in numerous places. This is why contemporary border studies aims to convey the multi-scalar, mobile, a-territorial, and multi-faceted social constructions that borders really are (Correa-Cabrera & Konrad 2020). Yet, the simple invocations are what resonate, and they are the "go to" definition for many vested power elites.

Arguably the most pernicious point in this discussion is that adaptation to changing environmental circumstances is frequently a matter of moving to more conducive situations. This most basic mode of adaptation is in danger of being thwarted and migrants criminalized when they try to move to facilitate their survival. Mobility is the human condition, and attempts to thwart it render the geopolitics of climate change a violent process. Those forced to move are doubly victimized, by being forced to move in the first place then by being punished or rendered as a security threat when they attempt to cross borders without proper visas and legal protections. As McLeman suggests,

A reframing of this discussion is now in order. Rather than simply debating the need for special treatment for climate migrants, the prospect of greater numbers of people seeking to move because of climate change might be leveraged as an argument for establishing greater rights, protections and opportunities for all migrants as part of larger efforts to meet the SDGs and build adaptive capacity at wider scales (2019, 916).

Hence the contemporary political importance of calls for climate justice in the face of accelerating hazards and disruptions. Assuming bordered spaces as the ontological given, and mobility as a violation of this, is a profoundly dangerous mode of geopolitics in the Anthropocene ecological conditions of non-stationarity.

Local and Global: Geopolitical Futures?

The classic assumptions of political communities within and dangers outside no longer work in the face of accelerating climate change in particular and the transformations of the Anthropocene in general. Neither do assumptions of progress, the inevitable benefits of expanded technological capabilities and the possibilities of autonomous states with democratic rulers able to determine the important rules whereby citizens will conduct themselves. While in some senses the global climate crisis requires a reworked notion of cosmopolitanism (Deudney 2018), a shared sense of a collective humanity, this alone is now not enough in terms of how to rethink politics in a world where bordering practices, no matter how violent or stringent, are unable to control the key ecological changes that endanger specific locales in various ways, and in the future, the conditions necessary for a large-scale human civilization.

This is not only about climate change, important though it is as a driver of transformation. Humanity is increasingly living in artificial circumstances as a result of machines, buildings, and infrastructures—a growing technosphere in the living earth system (Haff 2014). While numerous new surveillance technologies are becoming available, both on the large scale as cheap satellite launch vehicles make new opportunities for earth monitoring, and the “internet of things” proliferates data generation in numerous modes, there is no guarantee that smart monitoring of ecological phenomena will help if it merely perpetuates existing modes of extractivism (Bakker & Ritts 2018). Without substantial efforts tackling the more fundamental political economy of extraction and the deleterious consequence of waste production, not only in terms of greenhouse gases but also in terms of toxic waste and the problems of plastic pollution too, all the data in the world and lots more border controls will not tackle the major threats of breaching the planetary boundaries. While some controls on the trade of toxic materials are in place, the issues of ocean plastic pollution and greenhouse gases cannot be dealt with by traditional boundary practices (Mitchell 2015).

Humanity is entangled in connections—ecological, economic and political—that require us to understand ourselves within a system that the rich and powerful among us are rapidly changing. This requires thinking well beyond the conventional categories of international relations, which despite the looming existential crisis facing humanity, remains preoccupied with a political imagination of bounded spaces, rivalries and a growing global economy (Burke et al 2016). Novel forms of planetary politics, less constrained by these inherent territorialities, would seem to be urgently necessary as soon as the earth system analysis, and the detailed projections as to what the future holds in terms of climate change, are invoked (IPCC 2018). And yet opposition to attempts to discuss these matters in terms of global governance is quickly mounted not least because of the entirely sensible fear that such formulations empower technological elites

to attempt to manage the planetary system according to their stipulations as to what might be a desirable future. Fears of an imperial politics here, of geoengineering plans and artificial efforts by the rich and powerful to constrain human life in ways likely to be inequitable and violent, challenge notions of politics constituted at a global scale (Chandler et al 2017).

How bad future climate disruptions will be depends on how much the global economy is restructured to reduce the use of carbon fuels and the more destructive modes of resource extraction and agricultural practices in coming decades. But these matters cannot be effectively dealt with only by defensive local struggles that once again invoke a bounded community in need of protection from extractivist forces external to its borders (Routledge 2017). Traditional notions of sovereignty usually implicitly assume autonomy as a virtue, but Anthropocene insights, in common with contemporary border studies, render simplistic assumptions of separation impossible as the premise for policy. In so far as exclusivist logics of self-determination presuppose separation, they are always in danger of occluding the key connections that make particular places.

A more connected notion of political action, one understanding that humans are interconnected profoundly with each other and with both the biosphere and the growing technosphere has to be the basis of what Robyn Eckersley (2017) calls geopolitical democracy. Geopolitical, as opposed to cosmopolitan, in recognition of the mutual enmeshment of humanity and the rest of the earth system. Borders between peoples, and those that supposedly separate people from the increasingly artificial habitat that is the current earth system, are unsustainable in any serious engagement with what needs to be done politically now to shape the future of the Anthropocene in ways likely to reduce the risks for future generations. In summary:

Therefore we cannot simply substitute the political fantasy of rational Earth systems steering led by scientific elites with a political fantasy of local or national self-rule led by political forces which are ignorant of their vulnerability to (and roles in producing) the life-threatening changes to Earth systems processes that are underway (Eckersley 2017, 995-6).

Simultaneously on the other hand: “The minimization of world risks depends on a local understanding of how local practices are inserted into, and bear upon, larger Earth systems processes and vice versa” (Eckersley 2017, 996). Neither local autonomy nor global engineering will do for any serious democratic politics of the present; a much more reflexive politics sensitive to at least some of the key insights of the Anthropocene discussion would seem to be essential. But none of this will work without a careful consideration of the implicit geographical categories invoked in thinking about who decides about what where.

While governance so frequently focuses on territories, sovereignties and jurisdiction, the key to the future of the earth lies much more obviously in decisions about production than it does in traditional notions of protection which so frequently invoke bordering practices (Dalby 2020). Decisions as to whether to invest in fossil fuels or in the rapidly emerging new technologies of electric generation and electric vehicles matter in shaping the new context of the earth system, regardless of the precise geographical location where these decisions are made. While the Paris Agreement operates on the basis of sovereign states making nationally determined contributions to the larger task of emissions reductions, it is noteworthy that this reassertion of the rights of territorial jurisdictions doesn't include an explicit mention of fossil fuels as the primary cause of climate change. Grappling with production decisions, and the political economy of fossil fuel investments in particular, can no longer be neglected in how planetary politics is considered and these matters do not fit well within the disciplinary boundaries of the social sciences (Conway 2020). Likewise in many ways the Paris Agreement and related high-profile international arrangements are empty agreements (Dimitrov 2020), incapable of effectively governing a world where the decisions that matter most are taken elsewhere, in corporate boardrooms and in the processes of drafting investment policies, while the governance focus remains on institutions, procedures and metrics, rather than on the causes of the dramatic material transformations of the planet.

Border scholars, as with contemporary analysts of notions of territory (Peters et al 2018), now need to think much more about the changing geophysical context within which they operate, and how the politics of global environmental change complicates matters; nations increasingly have to be considered as not having borders in the traditional sense (DeSouza 2015). This also requires considering the issues of non-stationarity explicitly—maritime borders in particular are increasingly mobile. A stable geographical backdrop, while always partly a convenient fiction for border studies, is now untenable as a starting premise for either analysis or policy prescription; the earth system sciences are making it abundantly clear that the dynamism of the earth system is now the appropriate context for thinking about governance. Planetary politics demands nothing less of both globalization and border scholars; rapid material transformation of the earth system makes time a key part of these deliberations too. In terms of climate policy it is in very short supply.

The converse of this is that discussions of governance, and novel versions of green thinking in the Anthropocene context in particular (Biermann & Lovbrand 2019), also need to think more carefully about the spatial categories in their analysis, and the jurisdictional questions that persist despite the necessity of trying to think in planetary terms. Globalization is a profoundly material process, and planetary social thought requires that this be taken seriously in thinking about borders too. Failure to

contextualize bordering practices in this manner facilitates the simplistic invocation of patriots as those who will control the future; in so far as they do, and attempt to arrest change by violently bordering spaces, they will make everything more difficult. Fences and walls may be useful for some things, but despite the rhetorical excesses of would-be patriots, they are useless against many of the disruptions already set in motion by processes that now endanger key planetary boundaries.

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