Rethinking Geopolitics: Climate Security in the Anthropocene

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Research Article

Abstract

Climate change has become a matter of security in recent policy discussions. The scale of the transformations we are living through is slowly dawning on policy makers. But the implications for both security and policy making in general of our new geological conditions, our living in the new geological epoch of the Anthropocene, have yet to be thought through carefully. The basic geopolitical premises in security thinking are now in need of a radical overhaul in light of the insights from Earth system science. Simplistic assumptions of environmental change leading directly to conflict are misleading at best and dangerous at worst. Climate security discussions now have to engage directly with global environmental change and with Earth systems science in particular. Climate security in the long run is not a matter of environmental change causing political difficulties, but rather a matter of contemporary political difficulties causing accelerating climate change. Climate change is a production problem, not one that can be managed in the terms of traditional environmental thinking; security thinking needs to focus on the implications of this rethinking of traditional geopolitical assumptions.

Policy Implications

- Climate security has to be thought through in terms of the new geological circumstances of the Anthropocene.
- Recognizing that we are making future environments is now key to the new geopolitics. We are literally shaping the future; business leaders and politicians now need to act on that premise.
- The new geopolitics is about what kind of world we are making; economies that don't further destabilize the climate are key to future security for all.
- Dealing only with peripheral political symptoms rather than the economic causes of climate change will dangerously postpone the necessary reinvestment in green economies.

Securing the climate

Recent reports from authoritative sources have repeatedly expressed alarm about the pace and scale of environmental change. Clearly extreme events, whether heatwaves in Russia, droughts in the US, floods in Pakistan, typhoons over Taiwan and The Philippines, unusually heavy rainfall in the UK or the extraordinarily intense air pollution in Beijing at the beginning of 2013, have attracted attention. The longer-term trajectories are, as a major World-Bank-sponsored study by the Potsdam Institute (2012) argued, seriously worrying given the rapid rise in atmospheric carbon dioxide levels. Major financial institutions are warning their clients that climate change may have major negative implications on their investment portfolios. The American military in particular is starting to think carefully about how to plan for contingency operations to deal with disasters and related political instabilities as well as protecting their facilities from the changing climate, and in the case of the Navy in particular, rising sea levels (Briggs, 2012). All this is now coming under the new rubric of climate security.

While this is encouraging in that climate change is getting some attention, and serious planning is underway to cope with some of the obvious symptoms, much of the discussion still rests on conventional assumptions about environment and the geopolitical context within which change will supposedly play out. At least so far, the discussion of climate security is about preparing to deal with some serious weather disruptions, political instabilities and the possible knock-on effects of food shortages in the poorer parts of the world. One recent report suggested that the possibilities of climate change difficulties might be at least as serious as the prospect of nuclear proliferation, and as such needs to be thought about in terms of a major military risk analysis (Mabey et al., 2011). But, as the rest of this article will argue, given how profoundly the Earth system is being changed, climate security now requires rethinking of the geopolitical premises that underlie conventional invocations of security.

What has not, at least so far, found its way into the discussion is a widespread recognition of just how profound the contemporary transformation of the Earth actually is. The literature on Earth system science, which deals with the whole Earth system and not just climate change, makes this increasingly clear (Steffen et al., 2011). While this understanding has found its way into some discussions of climate security (Campbell et al., 2007), the geopolitical implications need much more attention. As the Earth system science literature suggests, and commentators are increasingly coming to understand,[1] the scale of the transformation means that we are now living in a new geological epoch, the Anthropocene. Climate change may be the most obvious and pressing issue, but the larger picture of an Earth system in transition provides the context within which security now needs to be rethought (Barnosky et al., 2012).

The rest of this article is no more than a sketch of the implications of this new understanding of the biosphere for geopolitics. Thinking about security in these terms suggests very clearly that so long as climate is understood only as an environmental problem, security institutions, as well as state and corporate policy makers, will fail to tackle it appropriately. Environmental security, this article suggests, can no longer be just about protecting some parts of the Earth from human depredation or dealing with political disruptions in peripheral places (Floyd and Matthew, 2013). Now it has to be about what kind of world industrial humanity is making, and how to shape it so that civilization can persist in the new artificial circumstances of the Anthropocene. In John Urry's (2011) terms, we have to bring society into climate change. The implications of this are that traditional geopolitical thinking is now outdated, and working within its premises perpetuates habits of mind and modes of policy analysis that simply don't fit the new circumstances. Discussing climate security without thinking through the new geopolitical context of the Anthropocene will not deliver the kind of policies necessary for this century.

Geopolitics

Geopolitics has been about power at a large scale; about how the world is organized politically, divided into states, blocs, alliances, territories, jurisdictions and administrative regions. The term invokes gravitas: the big questions of who rules, and political affairs at the planetary scale. It is obviously about authority too and, as the current generation of geographers writing on these themes make clear, about how the world is represented, known, mapped and written about (Agnew, 2003). Crucially these discourses also usually presume the inevitability of rivalries between the great powers, and the unavoidable necessity on the part of state leaders to plot and plan strategies to 'play the great game' well, or suffer all sorts of unfortunate consequences. Since the end of the Cold War at least some of this has been changing, as globalization, the growth of international institutions and political arrangements such as the G20 suggest. Geopolitics is now also about fears of peripheral threats to metropolitan societies.

Change itself can be dangerous, as the many alarms about globalization suggest and the post-9/11 doctrines of global warfare have emphasized repeatedly. Now globalization and the implied fears of the new have been added to by the dawning realization that large-scale disruptions to the world's climate system are beginning. The changing weather patterns that global warming produces are bringing many more changes to the human order of things; if not the ultimate threat to us all (as we are sometimes told), then one that has the potential at least for new climate wars – some of which might, if careful planning and political cooperation fails, turn nuclear decades hence (Dyer, 2008). Harsh warnings that environmental insecurities may bring catastrophe, war, homeless hordes of humanity upsetting the social order and bringing chaos and disruption in their wake abound unless the political elites of our time change path soon (Welzer, 2012).

Apparently to many commentators this is a new geopolitical phenomenon requiring the mobilization of the security apparatus of many states and whole new arenas for security and governance, if not overt confrontation (Webersik, 2010). In part this is a reflection of how many aspects of metropolitan life are now brought under the ambit of security as a mode of governance. In part it is also a rhetorical strategy to try to gain the attention of policy makers who have frequently failed to grapple with the enormity of what has been set in motion. Now with the growing recognition of the scale of environmental change that is already in motion, it is clear that rethinking security has to involve reconceptualizing humanity's place in the larger order of things. Doing it requires that the most taken for granted premises in traditional geopolitical thinking be rethought precisely because we are altering the circumstances that give rise to geopolitical thinking in the first place. As the rapidly melting Arctic sea ice and the related matter of the growing frequency of extreme weather events make abundantly clear, we are starting to live in new climate circumstances, albeit the implications of which are as yet very unclear. Only focusing on the scramble for access to the resources that may become available once the ice melts, as traditional geopolitical thinking does (Fairhall, 2010), is to fail to tackle the larger implications of what is now in motion.

Remaking the biosphere

What is much less in evidence in all these pronouncements of new dangers requiring extraordinary measures is the important point that globalization is in many

ways precisely what climate change is about. The transformation of the biosphere that among other things uses fossil fuels to link distant peoples and places rapidly is precisely what is causing climate change (United Nations Environment Program, 2007, 2012). The new geological circumstances of our times, caught in the term Anthropocene, are a world increasingly of our own making. Decisions about energy systems and land use taken now have direct implications on how high sea levels will rise and how weather systems will shape agricultural possibilities in the coming decades. Juxtaposing climate change and geopolitics requires taking this new context very seriously; the traditional categories need a very substantial update. In some crucial senses they need to be inverted and the old causal arguments of environment shaping human action reversed: human actions are now changing the geopolitical context for future global political arrangements (Dalby, 2009).

Precisely because we are remaking the world, and creating the increasingly artificial circumstances of the future, confronting the old logics of geopolitics with these new conditions is a pressing necessity. If the maps of global politics that are invoked to deal with contemporary transformations are seriously misleading, then the possibilities of finding the appropriate route to the future are made much more difficult. Thinking carefully about both ecological transformation and the possibilities of new forms of geopolitics is what any consideration of the future world order now has to do (Pascal, 2010). But the danger remains, as it has for the last couple of decades, that old forms of security thinking and inappropriate mappings of power will be invoked in the face of new circumstances, and produce policies that aggravate rather than mitigate the difficulties.

The key point in all this is that juxtaposing climate change and geopolitics usually suggests political dangers arising as a consequence of weather disruptions, droughts, floods and heatwaves. Security is frequently invoked as a necessary response to these things, even if this is only a matter of dealing with symptoms. Indeed, such policies can only be about symptoms given the failure to deal with causes. The causes of contemporary climate change are, despite some residual claims to the contrary from the well-funded 'denial' campaigns, now widely understood to be anthropogenic. All the fossil fuels used to heat houses, move goods, run factories and keep the electronic interconnections running are showing up as increased carbon dioxide and (less directly) methane in the atmosphere. Carbon dioxide levels are now close to 400 parts per million, 30 per cent higher than in preindustrial times.

What this means in practical terms is that the current geopolitics is determining the future climate of the planet. Political and business leaders are effectively deciding whether there will be polar ice caps on the planet a couple of centuries from now by how they choose to tackle, or not tackle, carbon dioxide emissions. It is already clear that many glaciers will melt in the coming decades. Arctic Ocean summer ice is disappearing much more rapidly than conventional projections just a few years ago expected, with accelerated global warming the likely consequence. The key point is that in the next couple of decades the future shape of the planet's biosphere will be determined. At least whether we will continue to live in circumstances loosely similar to those that civilization has known so far or whether we will live in a rather different ecological condition is being decided, mostly by default on the part of economic and political elites.

We may have already crossed some key ecological thresholds, most obviously in terms of the Arctic ice and related permafrost melting, but reductions in greenhouse gas emissions in the next few decades should allow the planetary system to operate more or less in the conditions that gave rise to human civilization (Anderson and Bows, 2011). If those rapid reductions are not made, the circumstances in which humanity lives at the end of the 21st century will not look much like those that people knew in centuries past. Geopolitics is no longer just about playing the great game of state rivalry; it is also about literally remaking the playing field (Dalby, 2013). Keeping that crucial, but as yet not widely appreciated, point clearly in mind is key to any thinking ahead about coming decades and all discussions of security policy innovations. Climate cannot simply be added into traditional geopolitical formulations of security.

The Anthropocene

Earth scientists suggest that we now live in a new era of natural history, the Anthropocene; one marked by the emergence of a new series of geological, biological and climatological forcing mechanisms in the biosphere (Zalasiewicz et al., 2010). We have left behind the period of the Holocene, the relatively stable period of Earth history between the end of the last ice age and the appearance of industrial society. Human activities have introduced new biophysical factors into the biosphere and begun to change the physical parameters that determine the functioning of the major Earth system processes. The need for a new term comes not from a single historical innovation or ecological change but from the recognition that the total amount of human activity in all its diversity is now on such a scale that we are living in a qualitatively new era. In terms of the sciences of climate, geochemistry, geomorphology and ecology, it is no longer appropriate to think only in terms of 'natural' mechanisms to understand the processes that shape our habitat (Knight and Harrison, 2013). Hence a new geological period named the Anthropocene.

Steffen et al. (2007) have suggested that the Anthropocene can be divided loosely into three phases, the first

being the industrial revolution period from the late 18th century when carbon fuels were first used. The second period since about 1950 is in their terms the great acceleration, when petroleum-powered globalization became the key driver in the transformation of the biosphere. They express the hope that in the coming decades we will move into a period whereby humanity takes on its self-appointed task of managing the biosphere, and does so with a clear understanding that this is in fact humanity's role for the foreseeable future. The shape of this third period of the Anthropocene is precisely what the decisions taken in the next couple of decades will determine (Steffen et al., 2011).

Climate change and carbon dioxide levels are only one facet of the changes that matter. The artificial 'fixing' of nitrogen, the rapid increase in human appropriations of 'natural' productivity, the extinction of avian and mammalian species – not to mention the 'fishing down' of the oceanic fish stocks – all interact in fashions that we don't yet understand. What is clear is that many of these relationships work in nonlinear ways that will produce surprises in the future. Where the critical thresholds are we simply don't know for certain, although we discovered one relating to ozone depletion in the 1980s quite by accident. While there may well be negative feedback systems that counteract some of the perturbations, possibly in terms of the unknown future patterns of cloud formation, there is no reason to believe that the cascading interconnected nonlinear changes will be benign to the current arrangements of human civilization. Climate change is a security risk (German Advisory Committee, 2008).

It is important to emphasize that while climate change is getting much of the attention these days other environmental transformations are underway simultaneously, not least the disruption of the natural arrangements of phosphorous and nitrogen in the production of artificial fertilizer. Landscapes are still being transformed by the extension of agriculture and habitat loss continues apace, with all the resultant loss of species and reduction of biodiversity (UNEP, 2012). Earth systems science requires understanding of how all these processes fit together, and where the boundaries are within which the system can operate to maintain equilibrium. Much of this discussion has been summarized in the formulation of a 'safe operating space' for humanity (Rockstrom et al., 2009) where it is clearly implied that humanity has exceeded this space in quite a few directions.

It might be argued that the last half-century has had many environmental concerns that require a 'global' response, so this is nothing new. But the not-so-subtle point about the concept of the Anthropocene is that it is not any single environmental concern that matters now. It is the cumulative totality of these concerns, which are beginning to interact in all sorts of unpredictable synergies, that matters. In that sense environment as a simple category of concern has also been transcended: the preservationist and romantic premises of environmentalist arguments are now undercut by both the scale of human activity and the growing sophistication of scientific understandings of ecology.

Technical fixes can 'solve' many pollution problems, but grasping the totality of material transformations is now the pressing priority for anyone who thinks seriously about the future of humanity and our political arrangements. Ecology has a politics, and this is especially clear at the global scale where human actions are now increasingly an ecological change mechanism. One has to recognize environments as being actively constructed on various scales by their human inhabitants; simplistic assumptions about degradation as a cause of many things frequently confuse the science of ecology with the nostalgic aspirations of romantic varieties of environmentalism.

This new geological era requires a different understanding of environment and hence, crucially, of the changing social context of humanity. Naming our era the Anthropocene signals this epochal shift in human circumstances. It necessitates a rethinking of many other facets of human existence in line with the global ecological context; human security is now entwined inextricably with these larger processes (Scheffran et al., 2012). All of which makes thinking about geopolitics more complicated, but has the huge advantage of finally extricating the link between humanity and its context from residual formulations of environmental determinism, and crude arguments that geography is destiny and a matter beyond human control. The Anthropocene makes it clear that such 19th-century notions, while tempting to pundits who are unsure as to how to interpret contemporary events (Kaplan, 2012), are completely inadequate premises from which to discuss 21st-century geopolitics seriously (Dalby, 2013).

Changing political geographies

In the first decade of the 21st century, humanity became an urban species. Now for the first time the majority of a still rapidly growing population live in towns and have to be fed and supplied with the necessities of life there, frequently at great distance from the sources of supplies of food, fuel and fibre that are needed. New technological systems provide many of the key items that make urban lives possible and these systems require very different logistics from the rural, agricultural and land-based economies of the recent past. The transformation of human affairs by the extraordinary growth in industrial production and the speed of technological innovation need to be emphasized (UNEP, 2007).

Globalization is about this transformation of the human condition much more than it is about the apparently novel transboundary migration of people and products. In some ways the phenomena labelled globalization

are an artifact of the methodologies used by governments and scholars for tabulating and measuring things. Statistics are a matter of states usually, and this methodological nationalism is all too often replicated by scholarly investigations working with information in the forms that it is available, and often for the interests of those states too, rather than looking at the larger patterns (Ripsman and Paul, 2010). While there may be much higher levels of trade internationally and much larger quantities of electronic transactions than in the middle of the 20th century, it is also worth noting that there are now more than three times the number of states than there were when the United Nations came into being in the aftermath of the Second World War.

War preparation has morphed once again, this time from the large conscript armies of the centuries following the Napoleonic levee en masse, back to smaller professional armies relying on highly trained cadres, not the mass firepower of industrial production. The emergence of these professional high-technology militaries is combined with the relative decline in importance of territory to the accumulation of wealth, with notable exceptions relating to the sources for some mineral resources and, of course, petroleum. The potential for interstate warfare, where territory has so frequently been a cause of war, thus seems to be declining notably of late. Territorial boundaries are now relatively fixed, and while disputes continue over many boundaries, the wholesale eradication of states in processes of territorial aggrandizement is mostly a thing of the past (Vasquez and Henehan, 2011).

Contemporary literature on resource wars make it clear that war in the peripheries of the global economy take place where there are resources valuable enough to be worth fighting over, and where institutions of good governance to prevent such violence are lacking (Le Billon, 2012). It appears that the Gulf States might yet be vulnerable to this logic at a bigger scale. Given the importance of this region as a major source of petroleum for the global economy, the consequences are potentially disastrous yet hard to predict. A major shock to the international markets might be enough to cause chaos. Ironically, such a disruption to fuel supplies and the carbon-fuelled global economy would reduce greenhouse gas emissions, at least temporarily. Whether in a reprise of the 1970s and 1980s it might then facilitate rapid innovation and decarbonization of the economy is pure speculation, but how the dangers are represented in any such policy discussions would be key to how the transformation is handled.

Whereas earlier geopolitical narratives frequently invoked scarcity as a potential cause of conflict (Klare, 2008), it is very clear that climate change is not a scarcity problem. Even if parts of the disruptions in various places might appear to be about regional scarcities of water or appropriate growing conditions for food crops, the problem is too much carbon dioxide not a lack of some key material. Keeping this clearly in mind is important if discussions of the future geopolitics of climate change are to be contextualized appropriately. Peripheral instabilities are security symptoms, not the causes of climate change.

Political violence in the new, networked global economy is related to corporations and states with transboundary connections, and to struggles between elites and various protagonists in both the rural peripheries and the huge slums of southern metropoles, much more than it is a matter of national armies marching across state boundaries (Abrahamsen and Williams, 2011). The complex geography of the 'new wars' linking violence through connections in the global economy is tied into the 'war on terror' although, once again, the failure to think about the precise geographies of all this makes many local struggles appear to be part of larger ideological matters with all sorts of pernicious policy consequences (Kilcullen, 2009). This is not war of the traditional interstate variety that caused so much damage in the 20th century; it is much closer to a counterinsurgency campaign, familiar to those who study the latter phases of European empires (Bayly and Harper, 2008). But it is mostly violence in peripheral places; in what Thomas Barnett (2009) so acidly calls the nonintegrated gap in the global economy. Barnett's geography manages to ignore the crucial point that it is the global economy that is disrupting many peripheral places, both directly in terms of climate change and in terms of the rapid spread of market dislocations, which are a key part of the violence that is often wrongly attributed to solely local or environmental causes (Parenti, 2011).

If climate change is understood as a conflict multiplier (Campbell et al., 2007) and a security matter because of its effects on exacerbating social unrest, rather than as something that affects metropolitan societies, then the geography will mesh rather well with Barnett's (2009) formulation, and with the American military's concern with insurgencies and potential terrorist activities. Ungoverned areas and failed states are the primary concerns in many of the war on terror's strategic statements. While the post-Iraq American military is once again focusing in part on tackling conventional military foes, the concern with stability operations and using special forces against insurgencies remains an important part of military thinking.

Environmental security?

Indeed it is precisely the danger that conventional geopolitical thinking, of rivalries, state priorities for 'security', territorial surveillance and the violence of spatial exclusion, will be the discourses invoked to deal with environmental changes and potential disasters that stimulated some early critical voices in the environmental security arguments in the 1980s (Deudney, 1990). The

inappropriateness of the military as an institution for dealing with environmental matters was obvious, not least because the military as an institution uses huge quantities of resources, land and fuel and left a massive legacy of toxic and radioactive waste from the Cold War period. But now the climate security discussion frequently reworks the global war on terror's geographies of danger into the security script, adding to the earlier environmental security discussion, but with peripheral instabilities given a much more prominent place than earlier geopolitical fears of resource scarcities causing conflict (Welzer, 2012).

Fears of wars over scarce resources were a theme in the Brundtland Commission report of 1987, but the empirical research in the 1990s that tried to tease out the causal connections between environmental scarcities and political violence had great difficulty validating the initial Malthusian assumption (Kahl, 2006). Subsequent work clearly suggests that violence is more often related to control over valuable resources in impoverished areas than to environmental scarcities (Le Billon, 2012). Nonetheless, clearly food insecurity in urban areas is a matter that can cause political instabilities: discussions of the consequences of food shortages as a result of weather disruptions in 2012 made headlines frequently. The Arab Spring events are linked in part (but indirectly) to patterns of drought and migration in the region (Mabey et al., 2013). The failures of regimes to deal with these social changes are much more obviously the cause of political instability.

The perpetual scare stories about water wars have turned out to be mostly journalistic fantasy rather than a matter of historical record. While water conflicts on a small scale are frequent, there is no indication in the historical record of international warfare being caused by water issues (Wolf, 2009). Nonetheless, while small-scale violence and political strife are clearly related to land and food issues, starving people are rarely capable of organizing major military actions. Fears of wars between the global north and south over climate change or other environmental factors turn out to have no foundation in geopolitical reality, although they too make good headlines. The political differences over climate, aid and related matters are very considerable, but these have not been the cause of overt organized military action between north and south.

Nonetheless that does not mean that military agencies might not be turned loose on hapless migrants seeking shelter from floods, droughts and hurricanes if desperate refugees are portrayed as a threat to social order or national security. Publications in scholarly journals have suggested just this as the logic requiring that military agencies pay attention to matters of climate change (Smith, 2007; Busby, 2008). Think tanks in various places have elaborated scenarios of doom linking environmental change to an age of consequences and even climate cataclysm (Campbell et al., 2007; Campbell, 2008). But in so far as these remain tied to the traditional geopolitical specification of proximate metropolitan virtue threatened by external dangers in terms of migrants or instability caused by failed states and the dangers of terrorism, then the appropriate policy implications will not be drawn. Focusing on reducing carbon emissions is the key theme that needs priority; peripheral instabilities are in part symptoms of climate change, but they are not the cause of the contemporary transformation. Confusing cause and effect here may be politically convenient for xenophobic politicians. It is not sensible security policy in the Anthropocene.

Considering matters in terms of the Anthropocene, it is clear that a major cause of the problem of political instability is not peripheral peoples threatening peaceful metropoles but the consequences of metropolitan consumption working themselves out in those peripheries (Dalby, 2009). Looking at particular cases, recent scholarship has emphasized that even in cases of ecological 'collapse', which were much discussed in the debate about Jared Diamond's (2005) book of that name, societies that get into difficulties don't disappear as a result of simple indigenous scarcity phenomena but as a result of complex social processes, which are frequently tied to larger economic disruptions (McAnany and Yoffee, 2010). None of this is obviously a matter of 'national security' to western states. On the other hand Bangladesh, threatened with coastal inundation, sees greenhouse gas emissions as a grave threat to its national security, one that its military is powerless to do much about.

While this focus on military dimensions might be useful if policy makers pay attention to the long-term trends that the military might be powerless to prevent, as Mabey (2007) hoped might be the case, the larger danger is that such tropes produce a policy environment where the rich and powerful use force to keep the poor and marginal away from metropolitan areas. Reece Jones (2012) documents how the war on terror and the invocation of national homelands threatened by foreign dangers, however imprecise and inchoate, mobilizes resources for fence building and strengthens social distinctions between those understood to be natives and other people – not only in Arizona, but in India and Israel too. Building a fence round Bangladesh might appear to be much less than a logical response to al-Qa'eda, but the fear among those who watch climate change discussions is precisely that the gates in that fence might be closed the next time a major cyclone moves up the Bay of Bengal, displacing millions of marginal farmers in the low-lying coastal regions of Bangladesh (Ahmed, 2009). Migration has been the most basic adaptation measure people have used to deal with environmental change. Now, in the face of environmental change, the danger is that national security will be invoked to prevent people taking evasive action.

Spaces of security

The invocation of strategies of spatial exclusion as key to security – of keeping the bad guys out, or at least threats at a distance – works in other counterproductive ways in contemporary consumer culture. Privatized commodities are frequently seen as the way of protecting ourselves from numerous threats. In Andrew Szasz's (2007) terms, purchasing all manner of things allows us the illusion that we can 'shop our way to safety'. In the process spatial strategies of what he terms 'inverted quarantine' and suburbanization as distancing oneself from numerous dangers have changed concerns from protecting the environment to protecting individuals from particular hazards. But the general concern with ecological wellbeing is abandoned in the process. The point about ecological thinking is precisely that such strategies of spatial separation are at best temporary measures that in the long run damage environments.

At the larger scale this separation or 'drawbridge' strategy, invoking national security in the face of global disruptions (Ripsman and Paul, 2010), is also revealed to be counterproductive in terms of nation states in the long run. The Anthropocene emphasizes how interconnected humanity is, and that now the collective fate of our planet requires the illusion of separation to be abandoned. The geopolitical cartography of separate and rival Westphalian boxes is completely inappropriate as a series of assumptions if sensible geopolitical decisions are to be taken in the next couple of decades. However, it is a plausible strategy if the operant geopolitical specification of the world is one of competing separate spaces, and if the object is portrayed in sports metaphors as 'winning' such a competition in terms of being most powerful, first, or at least *primus inter pares*. Which of these geopolitical contextualizations is invoked is key to future global security policy.

Can leadership be changed from nationalist competition to a focus on the future and towards building things, moving people and living lives in ways that reduce the scale of human transformations of the biosphere? The Anthropocene makes it clear that the political leadership we now need is one where success is defined in terms of keeping carbon dioxide and other greenhouse gas levels within a range that will not lead to the biosphere changing states drastically to one that may be much less conducive to human life. This is precisely what the inventor of the Gaia hypothesis, James Lovelock (2009), fears is likely to happen in the next century unless drastic action is taken.

Such action is going to have to reconstruct the global economy along much 'greener' lines. The point about the Anthropocene is precisely that it directs attention to what humanity is making rather than to residual environmental matters as a putative cause of human difficulties (Steffen et al., 2011). It points to global change as a production problem, not a pollution problem. It does so because the simple point is that what we make now is the future ecological context for humanity; making things is also making ecologies. One is not a side effect of the other; they are one and the same process once one realizes the profound shift that Earth system science requires in terms of contemporary geopolitical discourse.

The Anthropocene requires rethinking the geopolitical premises underlying security. Otherwise the policy framework that has so far worked to protect the international financial and political arrangements that have caused climate change may perpetuate both the depoliticization of climate change and the ineffectual policies of mitigation that have caused the current crisis (Wallbott, 2012). Treating extreme-weather-related disasters as either a technical exercise or one that is susceptible to management by financial means, insurance, catastrophe bonds and related instruments fails to address the politics of their causation and as such remains a palliative measure that doesn't address the root causes of insecurity.

Rethinking geopolitics

Neither the Intergovernmental Panel in Climate Change in its first four assessment reports, nor the new edition of what is close to a definitive textbook on climate change policy and science, deals with either security or geopolitics in their discussions (Schneider et al., 2010). Juxtaposing these things has tended to follow the logic of asking how climate change might cause security problems, and in particular whether environmental change will cause conflict. This was debated at length in the 1990s and has been revisited extensively recently; the answer is that mostly it will not (Thiesen et al., 2011). The more important question is, as this article has argued, the reverse one: how does geopolitics affect climate change? What decisions elites make, and how they think about their place in the world, and hence how they should act in this world, are key to policies that will determine (among other things) whether the planet will have polar ice caps in centuries to come. The key point now is not what climate change will do for geopolitics, but what geopolitics does to climate change.

The most important geopolitical assumption has long been that the Earth is the given context for human struggles, the stage as it were for the human drama. In the last decade science has made it clear that this old assumption has been overtaken by events. Humanity is now a new geomorphic agent on the planet, and while relatively speaking we are a small force in comparison to the forces of nature, human actions are quite large enough to reshape how the biosphere is organized, and in the process decide (whether we intend to do so or not) what the climate will be and how acidic the oceans

will be in coming centuries, and hence how the stage for the human drama will be arranged.

Geopolitics has been about how great power rivalries play out. Now it is about writing the rules that bring us the future parameters of the planetary system. Adding this key point into traditional geopolitics is what considerations of world order for the next couple of decades require us to do. There is, of course, no guarantee that political and business elites will 'get it', nor that governance structures will evolve to deal with these issues. However, many trends seem to be moving that way nonetheless as activists and political entrepreneurs find new modes of changing things – modes that are frequently not subject to the central control of the putative 'great powers'.

The crux of geopolitics in the next generation is not the war plans of the great powers but their energy consumption plans, and the strategies they use to plan the future configurations of cities, food systems, infrastructure and buildings (McGregor et al., 2013). This may appear mundane and far from the traditional considerations of high politics, but it is in these decisions that the future configuration of global politics is being made – whether that is clear to decision makers or not. European politicians, and perhaps now their Chinese counterparts, seem to understand this at least some of the time, although in North America there are still powerful interests that are apparently determined to resist these changes; they are interested in both denying for as long as possible the significance of climate change and emphasizing the utility of force in dealing with political difficulties in peripheral places.

In so far as attempts to deal with climate change are being undertaken, it is now clear that to a very large extent efforts at its governance are going to have to transcend the traditional territorial control mechanisms of states (Held et al., 2011). Numerous attempts on the part of substate entities, municipalities, corporations and communities are taking the initiative to think through how to be carbon neutral or how to operate in ways that are sustainable (Hoffman, 2011). There are now substantial markets in carbon-related financial instruments, and while great scepticism is clearly in order in terms of how much short-term impact these may have, especially after the collapse of the price of carbon in the European trading system in 2013, nonetheless they do suggest modes of governance that are related to the practicalities of ecology much more than to the traditional rivalries of territorial states or the ambitions of empires (Newell and Paterson, 2010). Traditional military modes of warfare are useless in the face of many complex humanitarian disasters: human security is not about military predominance, it is about practical infrastructure provision and adaptation to unpredictable patterns. Security in these terms is about connection, presence on the ground and anticipation, not violent action after the fact (Beebe and Kaldor, 2010).

The flexibility and horizontal connections between entities, which are key to most understandings of ecology, are actually part of the architecture of some of the emerging modes of climate governance, as they are with nascent efforts to think about human security (Scheffran et al., 2012). As such, these modes of rule writing and monitoring may be more appropriate than the centralized surveillance systems of states or empires. This discussion of human security is showing some at least tentative indications that globalized communication systems and the recognition that we are better understood as part of the world, not geometric locations on a globe (to borrow Rob Walker's (2010) formulation), are beginning to shape postmodern authority configurations that look rather different from the geopolitical patterns of previous decades.

Whether these patterns strengthen and shape production decisions in the next few decades matters greatly as we move into a period where mitigation still has the potential to facilitate adaptation to climate change. Failure to make such innovations may have the counterproductive consequences of allowing political elites to invoke old-fashioned geopolitics to facilitate temporary violent fixes to some of the symptoms of climate change. But by no stretch of the imagination will such geopolitics be climate security in any sense that matters either for the poorer parts of humanity in this generation or for future generations.

Note

1. 'Welcome to the Anthropocene', announced *The Economist* on its cover on 26 May 2011.

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