

GEOPOLITICAL TRENDS IN THE NEAR FUTURE: WELCOME TO THE ANTHROPOCENE!

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SUMMARY

Geopolitics is about how the world is understood politically at the planetary scale. It is simultaneously a term that refers to great power rivalries and the knowledge and representational practices that legitimate that mode of rule. Now in the face of climate change the premises for thinking about human politics have been dramatically changed, even if many political elites and scholars have yet to face up to the changed circumstances for geopolitical thinking and practical matters of ruling a biosphere that is being transformed by human action. Where geopolitics in the past provided the context for thinking about human actions, in coming decades the political decisions that are made will shape that human context fundamentally. Anthropocene thinking changes the parameters of geopolitics, but it remains to be seen whether institutions capable of making intelligent decisions about such matters as whether the planet will have polar ice caps in coming centuries will emerge in the coming decades.

NOTE

This paper is a companion piece to a lengthy forthcoming analysis co-authored with Hans Guenter Brauch and Ursula Oswald Spring on “Geoecology” as a framework for re-thinking security in the Anthropocene (Brauch, Oswald Spring and Dalby, forthcoming). It also complements a critique of the “Victorian” geopolitical themes that have recently reappeared in contemporary geopolitical commentary (Dalby 2010 (available at <http://http-server.carleton.ca/~sdalby/papers/papers.htm>)). The subtitle to this paper is a phrase I have been using for years, long before it appeared as a sub-heading in Slavoj Zizek’s (2010) recently published meditations on “Living in the End Times”!

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It's not predicting the future that matters, but being prepared for it.

Pericles (as cited by the German Advisory Council, 2008)

Our prevalent maps are elegant, highly detailed, and generally sufficient to forestall vertigo among the more privileged, but the dragons of the unknown world are no longer just decorous motifs in the margin. In fact, they increasingly suggest that it is becoming as futile to look for politics where it is supposed to be as it is to look for the sources of lasting authority down the barrel of a gun.

R.B.J. Walker After the Globe, Before the World p. 87.

GEOPOLITICS

Geopolitics is about power at the big scale, about how the world is organised 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's 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. Geopolitical discourses presume a single world system designated in knowledge practices derived from the European conquest of much of the planet in recent centuries (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. Popular culture reprises these themes in numerous computer simulation games and movies, novels and television programs; geopolitical themes are tied into identities in all sorts of mundane practices of culture that invoke common sense and the obvious geographies that contextualise human affairs in quotidian vocabularies (Dittmer 2010).

These formulations are frequently about dangers and threats to those identities. It apparently is a dangerous world out there, one where change may bring attacks or hazards of many sorts; security is always in jeopardy unless eternal vigilance is practiced, and even then there are no guarantees in a world of tabloid geopolitics where moral tales of virtue are connected directly to the specification of numerous threats to social order (Debrix 2008). Change itself can be dangerous as the many alarms about globalization suggest, and the post 9/11 doctrines of global warfare have repeatedly emphasized.

Now globalization and the implied fear of the new have been added to by the dawning realisation that large-scale disruptions to the world's climate system. Global warming promises 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 turn nuclear decades hence (Dyer 2008). Environmental insecurities may bring catastrophe, war, homeless hordes of humanity upsetting social order, and bringing chaos and disruption in their wake. Apparently to many commentators this is a new geopolitical phenomenon requiring the mobilisation of the security apparatus of many states and whole new arenas for confrontation.

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 links distant peoples and places together rapidly is precisely what is causing climate change. The new geological circumstances of our times, caught in the term the Anthropocene, now being used by earth scientists for our current circumstances living in a world where humanity is a new geological force on planet earth, is a world increasingly of our own making. Juxtaposing climate change and geopolitics requires taking this new context very seriously; the traditional categories need a substantial update.

Precisely because we are remaking the world, and creating the increasingly artificial circumstances of the future, it seems that 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 of world order now has to do. 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.

But 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 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, now widely understood to be anthropogenic.

What this means in practical terms is that current geopolitics is determining the future climate of the planet. Political leaders are deciding whether there will polar ice caps on the planet a couple of centuries from now. It's already clear that most other glaciers will melt in coming decades, the key point is that in the next couple of decades the future shape of the planet's biosphere will be determined. We probably have already crossed some key ecological thresholds, but reductions in greenhouse gas emissions in the next

few decades may allow the planetary system to operate more or less in the conditions that gave rise to human civilisation.

Geopolitics is no longer about just about playing the great game of state rivalry; it is also now literally about remaking the playing field. 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 policy innovations and related matters. But indeed it seems that if geopolitics remains about rivalries between states, as the Copenhagen climate change debacle in December 2009 indicates, it will continue to hinder the cooperative ventures needed to deal with climate change. This in turn raises the key unanswerable question of the location of the appropriate political authority to make the necessary changes needed for living in the Anthropocene.

To elaborate this argument the paper turns first to reflect on some key geopolitical changes in recent decades. Then it briefly summarises the discussion about the Anthropocene, the new context for understanding humanity's fate before discussing the changing geographies of power and the possibilities for surprise in the geopolitical system in the near future. Later sections point to the inadequacy of existing formulations of climate change in contemporary geopolitical commentary before reprising the lessons from the two decade long discussion of environmental security. The final two sections raise the question of which geopolitical discourses will structure future discussions of climate change and ponder the possibilities of ecological modes of thinking as the basis for political organisation in a post-modern world. Such modes seem to be a necessary requirement in considering the big questions in the next couple of decades, because what is new in geopolitics is the ability of humanity to shape its collective fate in ways unimaginable to earlier generations caught in a geopolitical vocabulary that took the biosphere for granted and assumed that politics was merely about who ruled, not a matter of deciding what kind of earth will be ruled.

TRAJECTORIES

Before thinking forward a couple of decades to 2030 and then beyond, some retrospection is useful, if for no other reasons than it is a useful corrective to assuming that linear projections into the future are necessarily useful, and providing some timelines for comparison allows for useful contextualisation. What is clear is that things change, and frequently do so in unpredictable ways even if long-term trends such as the use of carbon fuels seem to defy interruptions caused by specific political events. While specific events may not be possible to foresee, larger political transformations are perhaps more amenable to analysis.

Looking back four decades to the early 1970s, Neil Armstrong had just walked on the moon and back on earth Richard Falk was working on a manuscript that was soon to be published as This Endangered Planet (1971). The photographs of the earth taken by the Apollo program's astronauts became the icon of the age; the notion of a whole earth was obvious once one saw those "blue marble" photographs. It was the time prior to the first United Nations "earth summit", the 1972 Conference on the Human Environment, where

the unofficial report to the conference specified matters in terms of “Only One Earth” (Ward and Dubos 1972). Vietnam was the locus of warfare then, notions of such things as cellphones and the Internet were matters for Star Trek fans, not serious investment activities on Wall Street. Détente was in the air as were the first tentative openings by American politicians to a China that had been recently convulsed by the political violence of great leaps and cultural revolutions. East Pakistan was about to secede from Pakistan and become Bangladesh. The earth’s atmosphere contained approximately 325 parts per million of CO₂.

Looking backwards, perhaps the most important decades in terms of climate change and geopolitics were actually the 1970s and 1980s. Geopolitical events in the mid 1970s quickly pushed the discussion of shortages, and in particular the matter of petroleum to fuel industrial society, onto centre stage in a way that is loosely analogous to the events in the first decade of the twenty first century. In October 1973 Syrian and Egyptian forces attacked Israeli forces on the Golan Heights and on the Sinai peninsula, lands that the Israelis had conquered six years earlier. Fearing that the Israelis would be overrun, American military equipment, weapons and ammunition were hastily flown to Israel to prevent its defeat. Partly in response, the Arab members of the Organization of Petroleum Exporting Countries (OPEC) suspended oil shipments to states supporting Israel. Dramatic price rises followed and OPEC flexed its newly found political muscle. European states in particular faced fuel shortages and talk of wider shortages fed into "the Limits of Growth" arguments. But the 1970s "energy crisis" was a matter of political constraints instead of fears of natural limits.

During the Carter administration in the United States in the late 1970s these concerns added emphases to discussions of conservation and the need for new technologies to reduce dependence on oil. While there were national policies to stockpile petroleum supplies initiatives were also taken to reduce imports and reduce vulnerabilities to supply disruptions. Conservation discussions suggested that energy could be used much more carefully. Smaller cars with more efficient engines were suddenly popular. In the United States the policy response was to phase in a series of restrictions on the fuel efficiency of cars, but allow manufacturers to meet the overall goal of a "corporate average fuel efficiency" (CAFE) rating by whatever mix of vehicles they chose. As the CAFE standards increased gradually more efficient vehicles were introduced and average car fuel efficiency improved noticeably through the 1980s in the US. But these standards did not apply to light trucks and the loophole allowed what subsequently became known as sports utility vehicles (SUV) to evade the restrictions (Paterson 2007).

Of particular note in the 1970s was the attempt to rethink energy policy by Amory Lovins who suggested the possibility of what he called a “Soft Energy Path” (1976, 1977). He suggested that what people in North America needed were comfortable rooms, easy to use sources of energy for cooking and other domestic tasks, efficient non-polluting vehicles and power for industrial processes. They didn't necessarily need nuclear power or petroleum imported from politically unstable areas, the Middle East in particular. Working backwards from the end use to which the energy was put to find the most ecologically sensible way of getting warm rooms, cooked food and other necessities, he

showed that the huge centralised grids and distribution systems were costly and ecologically disruptive. Solar panels, properly designed vehicles and buildings could work well with a tiny fraction of the energy used on average in the 1970s. These technical fixes were, he argued, the answer to both ecological disruptions and the security anxieties caused by worries over both imported oil and nuclear proliferation (Lovins and Lovins 1982).

As the 1970s turned into the 1980s, three decades ago, further geopolitical events shaped the environmental discussions at the largest scale. The Iranian revolution and the subsequent hostage crisis in Tehran where American diplomats were held prisoner until after Ronald Reagan had defeated Jimmy Carter in the 1980s presidential election, led to a further spike in oil prices and more alarm about energy supplies in the West. Coupled to renewed concern of the dangers of the Cold War; the Reagan administration commenced a nuclear weapons buildup and proceeded with the deployment of new nuclear missiles in Europe ostensibly to prevent Soviet attacks there. The Reagan administration emphasised economic growth and abolished much of the Carter administration's research program on alternative energy. Conservation was no longer a priority and opening up new oilfields and pipelines got priority over such things as CAFE standards. A collapse in the price of oil and numerous domestic economic difficulties in the 1980s stymied innovation in the U.S. Subsequently the Reagan administration was to send the U.S. Navy to protect oil tankers in the Persian Gulf during the long drawn out Iraq-Iran war. Securing supplies from abroad was deemed more important than changing domestic consumption patterns. The Carter doctrine morphed into a long term concern with American control of the Gulf and its petroleum supplies, a legacy that has increasingly shaped geopolitical matters since (Klare 2008).

Two decades ago the Berlin Wall had just come down, the end of the cold war had arrived, and somehow, perhaps against the odds, remembering the dangers of the early 1980s the world had survived what might have become not just the immediate disaster of a major nuclear war, but subsequent dramatic climate disruptions too. Alarm over burning rainforests and the very hot summer of 1988 in the United States combined with warnings from scientists that the warming planet was caused by human actions. The 1988 conference on the global atmosphere in Toronto made it clear that urgent action was needed and the IPCC was established to collate the rapidly growing science on climate change. American forces were about to become a permanent fixture in the Gulf as Saddam Hussein's invasion of Kuwait triggered interventions there. Richard Falk's (1971) ideas of 20 years earlier blossomed into a much larger discourse of that became known as environmental security. Sceptics were concerned that this might be a seriously misleading mode of policy analysis (Deudney 1990). Politicians looking ahead were quoting the Brundtland Commission's prognostications on "Our Common Future" and thinking ahead to what was to become the second "earth summit" the United Nations Conference on Environment and Development held in Rio de Janeiro in June 1992. What had been matters of the care and maintenance of planet earth in 1972 had now become a matter of global dangers requiring that we "manage planet earth" as cover of the special issue of the Scientific American put it in 1989. The atmospheric concentration of CO₂ was slightly over 350 ppm.

Since then many further changes have materialised, not all of them predictable in those heady days after Berlin was reunited. The extraordinary growth of the coastal part of China's economy, where it became the factory for so many of the world's consumer items, was only the glimmer of a possibility. The fears of atmospheric change, crystallised following the discovery of the ozone hole in the mid 1980s over the South Pole, were clearly articulated at the July 1988 Toronto conference on "The Changing Atmosphere". These themes have subsequently been articulated as the major crisis needing human attention, not that nuclear dangers have disappeared either as the constant angst about an Iranian bomb project remind us. The global economy turned out to be much more fragile than the exuberant prophets of de-regulation had apparently understood in the 1990s, but whatever the economic indicators may say, the transformation it has wrought is so great that earth system scientists have taken note and started to worry greatly about what has been set in motion. Now the earth's atmosphere is close to 390 ppm CO₂.

Through all this the relentless expansion of the use of fossil fuels has continued, and while there is much alarm about the imminent arrival of "peak oil" in terms of climate change, the real problem with "peak oil" is that it hasn't yet arrived. If it really had arrived in the 1970s when the OPEC embargo temporarily disrupted petroleum supplies to the global economy, and set in motion policy innovations that were subsequently largely abandoned in the 1980s, then we might be well on our way to a post-carbon economy and not much worried about climate change. At least we would be if the response had been technological innovation, the adoption of renewable energy and a "soft path" in Amory Lovins' terminology, rather than a reversion to a "hard path" based on coal, nuclear power and petroleum extraction in vulnerable difficult environments.

But this didn't happen, and we are now facing ecological disruptions and petroleum dependency coinciding with economic globalization. Indeed these processes are in many ways simply different ways of looking at the contemporary transformation of the biosphere. Climate change is certainly the most high profile part of these changes, but the loss of habitat for wildlife, deforestation, destruction of fish populations and numerous other transformations have made it clear that the last few decades have changed the human condition very considerably as we became an urban species (United Nations Environment Program 2007). The next two decades will in part be shaped by how widely it is understood that these changes are now the context for human decision-making, and that we are in new circumstances where human decisions taken will literally shape the face of the planet for millenia to come. The new circumstances require a new geopolitics, a set of human decision-making processes for life in the new geological circumstances we have made. These processes will determine the level of CO₂ in the atmosphere two decades hence.

THE ANTHROPOCENE

Earth scientists now 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 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. Hence a new geological period named the Anthropocene.

Steffen, Crutzen and O'Neill (2007) have suggested that the Anthropocene can loosely be divided into three phases, the first the industrial revolution period from the late eighteenth century when carbon fuels were first used. The second period since about 1950 is in their terms the great acceleration, when petroleum powered globalisation has become the key transformation of the biosphere. They express the hope that in 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 begin to determine.

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 non-linear ways that will produce surprises in the future. Where the critical thresholds are we simply don't know, although we discovered one relating to ozone depletion in the 1980s quite by accident. The emerging consensus is that a figure of approximately 350 ppm of carbon dioxide is about as high as we can safely go, without shifting the basic parameters of the climate system into some new unpredictable arrangement, but we passed that threshold as the cold war ended. There may well be negative feedback systems that counteract some of the perturbations, but there is no reason to believe that the cascading inter-connected non-linearities will be benign to the current arrangements of human civilization.

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 isn't any single environmental concern that matters now. It's the cumulative totality of these that 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 its arguments 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 what 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 an increasing ecological change mechanism. One that has to recognise environments as actively constructed on various scales by their human inhabitants; simplistic assumptions about degradation as a cause of many things confuse science and environmentalism in many places.

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. It 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 nineteenth century notions, while tempting to pundits who are unsure as to how to interpret contemporary events (Kaplan 2009), are completely inadequate premises from which to discuss twenty first century geopolitics seriously (Dalby 2010).

CHANGING GEOGRAPHIES

In the first decade of the twenty first 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 fiber 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 emphasised. So too does the changing pattern of international rivalries, the patterns of militarism, the propensities for warfare, and arenas of conflict.

Globalization is about this transformation of the human condition much more than it is about the apparently novel trans boundary migration of people and products. In some ways the phenomena labeled 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, than looking at the larger patterns. While there may be much larger amounts of trade internationally and much larger quantities of electronic transactions than in the middle of the twentieth 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 World War Two.

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 (Vasquez 1993), thus seem to be declining notably of late. Coupled with the emergence of the United Nations framework of the territorial covenant (Jackson 2000), and the stable borders norm as a key part of global governance arrangements, great power wars of territorial acquisition seem to be becoming part of the past, even if some lesser powers have yet to take this norm so seriously (Zacher 2001).

Although, that said, as this is written in mid 2010 the potential for major military action in the Middle East remains high, while the decision makers in Washington seem oblivious of many dangers. Indeed the Middle East seems to be the exception to most of the generalizations about warfare, and it is so ironically because of the presence of petroleum there in abundance, precisely the substance that is at the heart of difficulties concerning climate change. Contemporary literature on resource wars make it clear that war in the peripheries of the global economy take place where there resources valuable enough to be worth fighting over, and where institutions of good governance to prevent such violence are lacking (Le Billon 2005). 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 de-carbonization of the economy is pure speculation, but how the dangers are represented in any such policy discussions would be key to the transformation.

The fuel for globalization, literally in terms of jetfuel and oil for ship propulsion, the substances that makes it possible, is a key ingredient in climate change. Ironically the problem with climate change is that the much worried about “peak oil” hasn’t yet occurred. If it had done so, and the world was now well on track to a post-petroleum energy transition to non-carbon fuels, we might be much less concerned about climate change. Whereas earlier geopolitical narratives frequently invoked scarcity as a potential cause of conflict, it is quite clear that climate change is an abundance problem not a scarcity one, 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. Keeping this clearly in mind is important if discussions of the future geopolitics of climate change are to be appropriately contextualised.

In terms of how geopolitics is understood it is also worth considering that many of the large wars that are the subject matter of security have been inter-imperial struggles, despite the interesting sleight of hand that registers these things as international relations. Caught in the logic of the United Nations, and the assumptions of American thinking that it is a nation state, not an empire, the discipline of International Relations has long had this blindspot. The great powers have nearly always been imperial entities, much more

than they have been nation states, and the political geography of this appears to matter much more than the conventional discussions of international relations seem to admit. Now this is more complicated because territory is much less important in contemporary political economy; capital and technology matter much more than real estate, notwithstanding repeated American media expressions of fears of rising Chinese interests in various parts of Africa in particular.

Political violence in the new, networked global economy is related to corporations and states with trans-boundary connections, and struggles between elites and various protagonists in the huge slums of Southern metropolises much more than it is a matter of national armies marching across state boundaries. 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). It’s not war in the traditional inter-state variety that caused so much damage in the twentieth century, its much closer to a counter-insurgency campaign familiar to those who study the end of European empires in various places, or perhaps the pacification campaigns Julius Caesar undertook in Gaul. But it is mostly violence in peripheral places, in what Tom Barnett (2009) so acidly calls the non-integrated gap in the global economy.

Putting all these geographical shifts together suggests that the categories needed are not those of physics, the balance of power, levels of analysis and control over precisely demarcated territories, but rather those of electronics in terms of networks and flows, and perhaps more importantly those of ecology, of self organising systems and assemblages, of information transfer, adaptation and innovation to changing environments. All of this seems to be at least partly borne out by the emerging understanding of climate governance where the spectacular failure of states elites in Copenhagen in late 2009 has allowed the numerous other attempts at governance to gain more prominence; clearly authority over climate governance is not a matter of central administration and imperial fiat, however much some politicians might wish it were so. Quite where authority might now lie isn’t so clear; but in present circumstances the temptation to reassert it using violence seems to be considerable in Washington in particular.

SURPRISES IN A DYNAMIC SYSTEM

This changed context is not difficult to sketch in general terms. States are still important players in matters of security, but in the face of global environmental changes and the transformations wrought by technological innovations and rapid urbanization in many places, the assumptions of central control over peripheral areas are not so easy to unquestionably accept as the appropriate premise for geopolitical prediction. The implicit and sometimes explicit geographical formulation of the Bush administration’s global war on terror, and its more recent formulation as the long war to eliminate tyranny on earth, suggested forms of military global panopticon, and a diplomatic arrangement whereby the United States remained the leading player in coming decades (Dalby 2009a). In Ronnie Lipschutz’s (2009) phrasing this is architecture for “Imperium”. The

presupposition is of rivalry, struggles for dominance between “great powers” and a single hegemon shaping the conditions of global order. Even the more thoughtful analyses of contemporary circumstances that suggest a new configuration of powers suggest a multi-polar world rather than a more decentralised one (Hiro 2010).

The long discussion of empires and whether the United States is one, and if so how its strategy might perpetuate its control over the middle east, is paralleled by fears that the “long war” in that region might be another case of imperial overstretch, and may finally end nastily and quickly. Niall Ferguson (2010) has recently warned about the possibilities of a quick end to the American adventures in the Middle East reminding his readers that empires frequently end rapidly, not slowly. Nonetheless it is also important to note that rapid endings and the resultant reconfigurations of power may be much less apocalyptic than the traditional assumptions of barbarian chaos as the alternative to imperial power suggest. Growing Federal deficits suggest that the American presence in South West Asia is not permanent, although should taxing arrangements change, the funds for such a presence may yet be forthcoming.

The nightmare scenario hanging over all this in the short run is of course the possibility of an Israeli attack on Iran, whether after an attempt to neutralise Lebanon and Syria, or prior to it, or an American strike designed to induce enough chaos to cause regime change in a way that the protestors in the streets failed to accomplish in mid 2009. Events such as this are impossible to predict. Clearly the alarm about an Iranian nuclear weapon program provides the best available pretext for such action, but all sorts of events may precipitate a conflagration in the region that disrupts petroleum supplies and triggers another shock to the international financial system. In its current fragile state with Europe and the IMF having trouble dealing with Greece and the other marginal European economies a global panic over oil supplies might well be enough to force the complex adaptive system that is the global political economy into another rather different configuration.

Unlikely events, even the mundane eruption of a volcano in Iceland, can as the airline disruptions of April 2010 suggest, have profound but unpredictable effects. The impact of the petroleum gushing simultaneously from the seabed in the Gulf of Mexico in 2010 likewise may change the parameters of what is considered acceptable risk in terms of offshore drilling. At least until this particular disaster has run its course. Hurricane Katrina, not a notably severe storm, had dramatic repercussions because the dykes and protective infrastructure was inadequate despite numerous warnings for officials of the need of upgrades and appropriate preparation. Complex events run unpredictable courses and responses are frequently ad hoc and improvised. While the increasing vulnerability of urban populations is now understood (Graham 2010), nonetheless the important point in all this is to note that analysis in terms of ecological adaptation may be much better in terms of understanding these events than attempts to understand such phenomena as matters of security threats requiring the imposition of order by military force. Physics metaphors may work for considerations of “kinetic activity” to use contemporary military parlance, but they are not a useful guide to ecological systems and contemporary urbanisation might be much better understood in terms of its adaptability and innovative

capabilities than as a matter of mechanics. Adaptive systems are better able to respond to changes in systems and this too matters in terms of thinking ahead to future decades.

One of the most important themes in the discussion of climate security is precisely that surprises are likely and that non-linear changes in the system are to be expected. The assumption that the planetary climate system is relatively stable is nonsense, as a brief look at the geological record makes very clear. The world is a dynamic place and the potential for climate surprises is considerable. Failures to take this seriously and begin the transformation of carbon economies into ones reliant on other energy supplies over the last generation means that now the world faces changing environmental conditions in coming decades which may or may not be disastrous in particular places. In part the nature of what transpires now has more to do with how politics plays out than with weather events; hazards turn to disasters, or not, mostly dependent on how infrastructure and social systems are structured to deal with shocks and disruptions. This key insight is why the German Advisory Council on climate change (2008) invoked the line from Pericles used as an epigraph to this paper.

GEOPOLITICS AND CHANGE

Which brings us to the crux of the matter, because preparing for the future depends on assumptions that one brings to the discussions and what matters most in all this is how the world is represented, who is presented as potentially endangered where and with what consequences. In so far as the rich and powerful care about who rules much more than what is ruled over, and many decision makers so far at least have shown little real urgency to consider the long term consequences of climate change, the assumptions that the past will be more or less a reliable guide to the future seems to hold. The whole point about climate change and its potential impacts is precisely that the past is not a reliable indicator of future possibilities and that planners need to think much more carefully about uncertainties especially when thinking about infrastructure (Pascal 2010).

This is made much more complicated when the classic questions of geopolitics are added into this discussion. The story lines in geopolitics are about rivalries and the struggle to be in charge; primacy or pre-eminence seems to be all that really matters. The endless discussions of potential geopolitical conflicts in the Arctic reproduce the tropes of military fronts, spatial control and imperial rivalry in an arena where all this is unlikely, unless of course such coverage turns into a self-fulfilling prophecy where politicians fall back on traditional modes of activity because they are unable, or perhaps unwilling to imagine alternative possibilities. In the media coverage of global affairs, and in much of the foreign policy commentary that passes as scholarly analysis of these things, who wins in negotiations seems to be much more important than what is actually accomplished in the agreements. Actual improvements in many environmental matters are a much less prominent concern than whose diplomatic skills were most in evidence and how such things changed the diplomatic pecking order. Thus it was in the huge “Earth Summit” in 1992 (Dalby 1996), and the pattern seems to have been replicated in Copenhagen in 2009 where coverage focused on the antics of leaders far more than on the importance of what might be decided.

Some of these posturings clearly matter, especially if China is finally understood as a developed state, a great power, and a negotiating partner, rather than as a state in need of aid to deal with the environmental consequences of hasty economic development. Geopolitical identities matter in terms of expectations and how politics works, but figuring out how the new circumstances of the Anthropocene might actually change the logics of geopolitics requires precisely the insight that things are changing the geopolitical assumptions about the future cannot simply rely on the models of rivalry from the past. The narratives of the rise and fall of great powers suggests an inevitability to a process where technological innovation and changing modes of economy are important, but so too is military acumen and the willingness to use force to accomplish objectives. That humanity might now change the environmental parameters such that technologies actually change not only the military dimensions, but the whole context for considering geopolitics, technology and energy, has not yet penetrated far into mainstream geopolitical discourse. The sooner it does, the better for all concerned.

One much commented upon discussion of the geopolitical future, and one that explicitly engages with the assumptions of rising powers and the challenge to the United States that these present, is editor of *Newsweek* Fareed Zakaria's (2009) *The Post American World*. His occasional references to climate change hint at the monumental change climate change might bring while clearly revealing the distinct limits the traditional geopolitical imagination imposes on the thinkability of climate change as a political phenomenon. In chapter two, an analysis of the problem of plenty in the world, a situation where global production systems and rapidly expanding economies are changing many things, Zakaria notes that rising population will need further increases in crop yields around the world to feed eight billion people by 2025. While population tripled in the twentieth century he tells the reader that water use increased sixfold, and as the poorer countries start using water at rates approaching North American standards then stress will increase. "Violent clashes over water have already broken out in Africa and the Middle East. Historically, populations have moved to find water; if water sources dry up in the future, tens of millions of people will be forced to start moving." (Zakaria 2009: 30). The next paragraph follows up the implication that water sources may dry up due to climate change. But why poorer countries would necessarily use water in the profligate wasteful manner that North Americans do, especially in the face of climate change, isn't so clear.

Zakaria notes that the oft quoted 2007 Intergovernmental Panel on Climate Change report underestimated polar icecap melting in particular; he recognises that these official projections of the impact of global warming are not telling the full story. This is emphasised again in suggesting that there are now many more cars and planes than anyone anticipated in the early 1990s, and that electricity demand is rapidly increasing. The Chinese automobile fleet is projected to be five times larger in 2020 than it was in 2003, not to mention growth elsewhere. His two brief paragraphs on climate change end with the ominous sentences: "Coal is cheap, and plentiful, so the world relies on it to produce most of its electricity. To understand the impact of global warming, consider this fact. Between 2006 and 2012, China and India will build eight hundred new coal-fired

power plants – with combined CO2 emissions five times the total savings of the Kyoto accords” (Zakaria 2009: 31).

But then the discussion of climate change just stops. The next section of the chapter on plenty talks about the difficulties of dealing with globalization because politics remains, so he claims, relentlessly national. He does note that emerging powers are not likely to be dictated to in terms of responses to climate change; Kyoto was a Western idea. Assuming that the rest of the world would sign on once the leading powers had worked out a framework for dealing with climate change is, he suggests an old way of thinking that is no longer useful in a world of rising new powers (Zakaria 2009: 37). Likewise he suggests that a much broader political coalition that stretches well beyond states into the private sector, NGOs, cities and the media, will be needed to tackle the issue; states don't, he argues, have much room for maneuver. But how such a climate change coalition, with “more subtle and sophisticated ways to effect change” (Zakaria 2009: 38) might emerge is not discussed. Indeed Zakaria doesn't seem to recognise that in many ways such governance structures have already emerged even if they haven't registered as such in the geopolitical discussions as yet (Newell and Paterson 2010).

On the one hand Zakaria recognises that things like the collapse of ice sheets and resulting sea level rises creates novel types of threat that don't operate along traditional geopolitical lines. So the impacts of climate change might be disruptive. On the other hand he reproduces a common claim in climate debates - especially in the United States - that if India and China's coal use continues to rise in the way it has in the last 20 years, then all the actions by other countries to limit emissions will be rendered irrelevant. But what might eventuate should this pattern continue doesn't get taken up in detail. How such economic “metabolisms” might change the international system isn't investigated. The possibilities of China's rapid development of solar panel and windmill industries of late isn't considered in terms of the trading or economic growth implications. The simple point is that Zakaria hasn't thought through how climate change disrupts the conventional narratives of geopolitics; his closing paen to American cultural innovation doesn't think through how a solar future might change the patterns of geopolitics, nor the reliance of the global economy on petroleum with all the potential political difficulties that follow. Neither does he point out that the “great power” most dependent on petroleum is the United States; changing this matters greatly for the future.

Another of the current champions of globalization, Tom Barnett, and in particular his book *Great Powers: America and the World After Bush* (2009), is closer to an appreciation of the possibilities, but his insight into all this is a passing comment rather than an integral part of his argument. His discussion of climate change suggests that adapting to rising sea levels is not difficult given the flexibilities of economic markets for expensive land, and the abilities of societies to adapt to flooding. Drawing on Bjorn Lomborg's (2007) argument in *Cool It*, Barnett suggests that economic growth and the social benefits that it brings far outweigh what he insists will be the large scale economic costs of cutting CO2 emissions, given that they are key to the economic prosperity that has been lifting millions out of poverty in the last few generations. He is more concerned that the campaign against climate change may upset the integration of the global

economy than he is worried about the long-term implications of global warming. If climate change campaigners turn a moral crusade into a protectionist movement or, perhaps even worse in his opinion, into something that tries to limit economic growth then the future is a dismal replay of many of the problems of the past. On the other hand things might get better ...

[i]f global warming forces a new Core-wide dialogue on technology and development, then Al Gore will have served his grand strategic purpose: replacing a divisive American grand strategic focus with a unifying one. The problem for now is that global warming, being logically far down the list of immediate global challenges, provides the aging West and especially tiring America the dangerous opportunity to short circuit that integration effort in the name of a superseding crusade for humanity's future. (Barnett 2009: 367)

But if economic growth leads to a global middle class demanding democracy then the possibilities for a wonderful future for humanity loom, at least in Tom Barnett's geopolitical vision of possible futures, they do.

What is missing in both Barnett and Zakaria's discussions is the long-term significance of production decisions, and what kind of "metabolism" various polities will emphasise. The problem for Zakaria is that he hasn't worked the logic of climate change into geopolitics. Barnett has got most of the way there, but hasn't thought through what to do about the very long term which might mean that his optimistic view of the possibilities of that global democratic middle class. If that social group confronts a rapidly changing natural system that, because it has carelessly used carbon fuels to make itself affluent, hasn't prepared the infrastructure, food supplies or energy systems it needs to deal with rapidly changing context in an Anthropocene that looks little like the relatively stable Holocene that gave birth to human civilization and eventually the carboniferous capitalism that is contemporary globalization, will it be able to cope?

It's precisely the fear of rapid and unpredictable onset events that worries climate change scientists in the short term, and the unknown possibilities of a world without ice caps and a climate very different from our existing one, in the long term. But while it is clear to anyone who pays attention to the climate science that humanity will decide in the next couple of decades whether in the long run the planet will have polar ice caps, and sea levels approximately where they have been for the last couple of thousand years, it is also clear to anyone who pays attention to geopolitics that political leaders haven't figured out that this is indeed what their actions are deciding.

ENVIRONMENTAL SECURITY – ONE MORE TIME?

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 of the environmental security arguments in the early 1990s (Deudney, 1990). The inappropriateness of the military as an institution for dealing

with environmental matters was obvious, but so too the military as an institution uses huge quantities of resources, land and fuel and it left a massive legacy of toxic and radioactive waste from the cold war period.

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 did suggest that violence was more often related to control over valuable sources of resources in impoverished areas than over environmental scarcities (Le Billon 2005). The perpetual scares of water wars have turned out to be journalistic fantasy rather than a matter of historical record. Nonetheless, while small scale violence and political strife are related to land and food issues, starving people rarely are capable of organising major military actions. Fears of wars between the global North and South over climate change or other environmental factors turned out to have no foundation in geopolitical reality, although they too make good headlines.

Nonetheless that does not mean that military agencies might not be turned loose on hapless migrants seeking shelter from floods, droughts and hurricanes if the context is portrayed in such a way that desperate refugees are presented as a threat to social order or national security. Some recent 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 2009). Think tanks in various places have elaborated scenarios of doom linking environmental change to an age of consequences and even climate cataclysm (Campbell 2007, 2008). But in so far as these remain tied to the traditional geopolitical specification of proximate virtue threatened by external dangers than the appropriate policy implications will not be drawn.

On both the largest scale considering the Anthropocene and climate change it is clear that the cause of the problem is not peripheral peoples threatening peaceful metropolises, but the consequences of metropolitan consumption working themselves out in those peripheries (Dalby 2009b). Looking at particular cases recent scholarship has emphasised 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, frequently ones tied into larger economic disruptions (McAnany and Yoffee 2010). None of this is obviously a matter of “national security” to Western states. On the other hand, threatened with inundation, for Bangladesh greenhouse gas emissions are obviously 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) hopes 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 their “islands” of affluence in a larger “sea” of poverty and environmental

degradation (van Houtum and Pijpers 2007). Such scenarios are the stuff of contemporary science fiction novels and movies. The British rendition of all this in the movie Children of Men, is noteworthy because its dystopian geographical representation of an island fortress using violence to exclude the poor is encapsulated in the designation of abject others in a generic category of the ‘fugee. The apocalyptic tone of this movie, as with larger cultural themes of our age (see Zizek 2010), is not helpful, but coupled to the territorial strategies of national security thinking and political logics of disconnection it is a rendition of precisely what has to be resisted if ecological thinking is to inform discussions of security.

While Children of Men might be an extreme scenario, there are worrying signs of closing borders, and the “drawbridge syndrome” taking over many national discussions. In a recent paper Reece Jones (2009) documents how the war on terror and the invocation of national homelands threatened by foreign dangers, however imprecise and incoherent, mobilises resources for fence building and strengthens social distinctions between those understood to be natives and other people, not in Arizona, but in India! Building a fence round Bangladesh might appear to be much less than a logical response to Al Queda, 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. 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.

The invocation of strategies of spatial exclusion as key to security, or keeping the bad guys out, or at least threats at a distance, works in other counter-productive ways in contemporary consumer culture. Privatised 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 strategy, of “pulling up the drawbridge to exclude revolting peasants” is also revealed to be counter productive in terms of nation states. The Anthropocene emphasises how interconnected humanity is, and that now the collective fate of our planet requires that the illusion of separation 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. It is however a plausible strategy if the operant geopolitical specification of the world is one of competing separate spaces, and if the object of what is portrayed in sports metaphors is “winning” such a competition in terms of being most powerful, first, or at least *primus inter pares*.

The focus on commodities and the illusion that they allow one to escape the larger contextual matters of environment is also related to the status hierarchies that contemporary consumer society perpetuates. Status, and social standing is in part about conspicuous consumption, and the competitive rivalries in these human endeavours are not unrelated to the geopolitical rivalries where politicians compete for status and recognition in the social system of diplomacy and international accomplishment. While communicating status, and displaying acumen is part of the human condition, the issue now is how such “Geltung” to borrow Phil Wagner’s (1996) summary term, can be formulated in ways that facilitate sustainable modes of political action, and ones that move social matters of global politics towards building things, moving people and living lives in ways that reduce the scale of human transformations of the biosphere, and in particular keep carbon dioxide and other greenhouse gas levels within a range that will not lead to the biosphere changing states drastically to a new equilibrium that may be much less conducive to human life. This is precisely what James Lovelock (2009), the famous inventor of the Gaia Hypothesis, fears is likely to happen in the next century unless drastic action is taken.

But neither drastic cuts to carbon fuels, like those that Tom Barnett fears, nor the interventions by the military, is going to reconstruct the global economy. The point about the Anthropocene is precisely that it directs attention at what humanity is making. 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 is the 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 realises the profound shift that earth science requires in the terms of contemporary political discourse. Here the trends in the next two decades suggest a reformulation of the context within which politics happens that could, but isn’t necessarily going to be, more dramatic than what has happened so far in the great acceleration. In so far as this reformulation of geopolitics happens it will be because scholars in other disciplines work through the innovations of the last decade and begin to shift the focus or how politics is understood, and policy justified.

GEOPOLITICAL DISCOURSES

There are dangers in pre-maturely assuming novelty in terms of globalization when it comes to national security (Ripsman and Paul 2010). Self-help is still more important than multi-lateral arrangements, at least so far, but trends to integration may yet win out; they are most likely to do so in so far as the geopolitical premises structuring national security discourse emphasise the common fate of human societies in the Anthropocene. Geopolitical discourse matters, and in so far as scholars can convince policy makers that a shared biosphere is the appropriate context, rather than one divided into separate territorial boxes, then the possibilities of slowing greenhouse gas emissions and accelerating the investment in non-carbon fuel systems and technologies that do not require large energy inputs, are enhanced. The political patterns of cooperation shown by international leaders in response to at least some of the economic crisis of 2008/9 suggest that slowly some of these contextual assumptions are changing. In the Middle East too

geopolitical assumptions are shifting as it becomes clear to contemporary leaders that the United States can neither effectively rule the region nor bring peace to Palestine.

Precisely because we live in the Anthropocene, political decisions have material consequences, and learning to live with the clear recognition that we have taken our fate into our own hands, and are actively deciding the future of the biosphere whether we realise it or not, is key to geopolitics in coming decades. While the full impacts of this may not play out in the next two decades, the sooner such thinking finds its way into discussions of politics, security and human affairs the better in terms of preparing to deal with what may be coming in an increasingly unpredictable future. Whether this brings the first inklings of what might be called sustainable security policies remains to be seen; but to get there requires much more up to date cartographic aids than the nineteenth century choropleth map of the world divided into boxes shaded different colours (Kearns 2009). This may have been a useful aid to imperial administration but it is not the kind of maps of interconnections that are now so necessary to understanding the human condition, and its ecological context that climate change requires we pay attention to between now and 2030. Nonetheless the danger of using territorial strategies, based on such cartographic imaginations as an attempt to respond to the migrations set in motion by climate change, is precisely what the Children of Men dramatised.

To use the terminology from Steffen, Crutzen and O'Neill's (2007) periodization of life in the Anthropocene, we are in what amounts to the fourth generation of the period of the "great acceleration". For the first generation, in the immediate aftermath of the Second World War the ecological consequences of carboniferous capitalism were not necessarily clear, but by the second, in the 1970s and 1980s climate science was making things obvious. The third generation, in the aftermath of the cold war effectively ignored the problem while talking endlessly about it. The fourth generation, in the period from now out to 2030 is faced quite literally with making the decision as to whether the earth has polar icecaps a couple of centuries hence. The geopolitical consequences are unknowable. But the context in which they will play out is what is now being decided. Such discussions are not what routine geopolitics is understood to be about at all; hence the difficulties of how to think about geopolitics and climate change together; what is crucial is to recognise that these are two facets of the same issue, not separate matters that can be dealt with by different knowledges and political practices.

These insights in turn suggest that it is far from clear who the most important actors now are in many human affairs, nor who the most important may be in particular circumstances in the future. Clearly the geopolitical patterns of the last few years have suggested that new states are becoming more important. The long history of empires and great powers suggests likewise that technical innovations, and the ability to master new modes of energy use are also important. In the face of climate disruptions, or the more immediate danger of energy supply disruptions should a war destroy or substantially disrupt the petroleum infrastructure in the Persian Gulf, possessing an energy infrastructure not dependent on petroleum will likely be a major advantage. But this is a supposition, not a prediction. Amory Lovins' ideas of a soft path in the 1970s were rejected as petroleum consumption rose and, while efficiency improvements have made a

substantial difference, and the logic of thinking about an American energy strategy not dependent on petroleum from afar impeccable, higher corporate priorities won out over sound public policy. The opportunity to choose to take the route less travelled, to use Lovins' phrasing, now has further impetus from anti SUV campaigners, climate change and peace activists in addition to clean up crews dealing with petroleum on the beaches of the Gulf of Mexico in mid 2010, but the necessary policies require a major rethink of geopolitical priorities (Paterson and Dalby 2009).

GEOPOLITICS TO ECOPOLITICS?

Neither the IPCC in its first four assessment reports, nor the new edition of the closest thing 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. While this was debated at length in the 1990s and the answer is mostly it won't, the climate change discussion hasn't effectively engaged this earlier literature (Floyd 2008). But the more important question is in fact the reverse one, how will geopolitics affect climate change? Because what decisions elites make, and how they think about their place in the world, and hence how they should act in this world, is key to policies that will determine among other things whether the planet will have polar ice caps in centuries to come. The key point is not what climate change will do for geopolitics but what geopolitics does to climate change!!

For the last two decades critical geopolitics has posed questions concerning how the earth is written and read, and how policy is made and justified on the basis of simple assumptions that are profoundly important. The most important of all is the assumption that the earth is the given context for human struggles, the stage as it were for the human drama. But science in the last decade has made it clear that this old assumption has been overtaken by events. Humanity is now the largest geomorphic agent on the planet and we are literally reshaping how the biosphere is organised, and in the process deciding, whether we intend to do so or not, what the climate will be in coming centuries and how the stage for the human drama will be arranged. The next couple of decades will decide what that stage looks like because the rapidly rising carbon dioxide levels in the atmosphere may cause the climate system and the oceans to cross "tipping points" and reconfigure in new and unpredictable ways.

Geopolitics has been about how great power rivalries play out. Now it is also 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 elites will "get it", nor that governance structures will evolve to deal with these issues, but it seems as though many trends are moving that way nonetheless as activists and political entrepreneurs find new modes of changing things, modes frequently not subject to the central control of the putative "great powers". But in so far as attempts to deal with climate change are being undertaken it is now clear that to a very substantial extent

efforts at governance are escaping the traditional territorial control mechanisms of states. 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 (Newell and Paterson 2010). 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, 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. Traditional military modes of war fighting too are useless in the face of many complex humanitarian disasters; human security is not about military predominance, its about practical infrastructure provision, and adaptation to unpredictable patterns (Beebe and Kaldor 2010). Security in these terms is about connection, presence on the ground, and anticipation, not violent action after the fact.

The flexibility and horizontal connections between entities, 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. This reprises earlier formulations from the World Order Models Project in the 1980s and 1990s too (Dalby 1999). As such these modes of rule writing and monitoring may be more appropriate than the centralised surveillance systems of states, or empires. Here too Anthropocene culture may be showing some at least tentative indications that globalised communication systems and the recognition that we better understood as are part of the world, not geometric locations on a globe, to borrow Rob Walker's (2010) formulation, are beginning to shape post-modern authority configurations that look rather different from geopolitical patterns of previous decades. Whether these patterns strengthen, and begin to shape production decisions in the next few decades, matters greatly as we move into a period where mitigation still has the potential to greatly facilitate adaptation to climate changes. Failure to make such innovations may have the counter-productive consequences of allowing political elites to invoke old-fashioned geopolitics to facilitate temporary violent fixes to some of the symptoms of climate change. But if this is what happens it will be repeating history both as farce and simultaneously as global tragedy.

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