



# After the Anthropocene: Politics and geographic inquiry for a new epoch

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## Abstract

Crutzen and Stoermer's (2000) naming of the 'Anthropocene' has provoked lively debate across the physical and social sciences, but, while the term is gradually gaining acceptance as *the* signifier of the current geological epoch, it remains little more than a roughly defined place-holder for an era characterized by environmental and social uncertainty. The term invites deeper considerations of its meaning, significance, and consequences for thought and politics. For this Forum, we invited five scholars to reflect on how the Anthropocene poses challenges to the structures and habits of geography, politics, and their guiding concepts. The resulting essays piece together an agenda for geographic thought – and political engagement – in this emerging epoch. Collectively, they suggest that geography, as a discipline, is particularly well suited to address the conceptual challenges presented by the Anthropocene.

## Keywords

Anthropocene, climate change, environmental politics, experiment, geophilosophy

## I Introduction: Into the Anthropocene . . .

Crutzen and Stoermer's (2000) naming of the 'Anthropocene' has provoked lively debate across the physical and social sciences. For some, the term provides traction for environmental politics, compelling recognition of the socio-historical causes of massively scaled environmental change (Dalby, 2007, 2013; Steffen et al., 2011). Others, however, urge caution,

suggesting the name places bloated emphasis on the *Anthro* as the primary force of change in the global environment (Clark, 2011). Still others insist the Anthropocene signifies the 'end of

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man' – or at least sedimented definitions of humanity – altogether (Yusoff, 2013a). These ongoing deliberations suggest that the Anthropocene is gradually gaining acceptance as *the* signifier of the current geological epoch, with debates over its meanings only just emerging.

Put differently, the 'Anthropocene' appears as a rough place-holder for an undefined and arguably unprecedented historical condition underpinned by environmental uncertainties, which demand critical reassessments of how material engagements take form, hold fast, and/or break apart in space and through time. Accordingly, engaging in what Castree calls 'anticipatory semantics' of the Anthropocene is necessary if we want to fill in its contours. But such moves do not come easily. Elevating social processes to the geological scale poses significant challenges to familiar notions of human-environment relationships and the politics that undergird them. In the words of Chakrabarty (2009), this newly named epoch signals 'the collapse of the age-old humanist distinction between natural history and human history'. As Morton (2010) suggests, the Anthropocene announces the end of a liberal human subject characterized by a *biological* and individuated self, and the subsequent rise of a distributed humanity that operates as a *geological* agent. And, just as definitions of the human seem less than stable in this new epoch, a whole world of things – atmospheric gasses, the luminescent qualities of jellyfish, transgenic corn, domesticated livestock, water bottles, etc. – similarly resist easy categorization. What conceptions and methodologies are adequate to this new epoch? What is the geographical landscape brought into being by the Anthropocene – is it one that erases difference in its universalizing of the human and naturalization of human history? Or does it help to bring to light the global inequalities of fossil fuel consumption and its effects?

Thus marked by conceptual and material 'messiness', the Anthropocene presents pressing challenges to contemporary environmental thought and practice. Entrenched political forms

predicated on substantive divisions between society and nature – namely, the politics of modernity (cf. Latour 1993, 2013) – appear woefully inadequate to the task of confronting unfamiliar conditions in the Anthropocene. We accordingly appear adrift in this new epoch, alienated not only from a world that refuses to submit to long-held conceptual frameworks, but also alienated from ourselves in relation to this strange and allegedly destructive thing called 'humanity', whose own origins are increasingly unclear (see Yusoff, 2013a).

The advent of the Anthropocene therefore presents a conjuncture: a moment pregnant with risks as well as generative opportunities. On one hand, the environmental politics of the past decade seem on track to fulfil Erik Swyngedouw's fears of a post-political future, with the 'Anthropocene' serving as the new 'opiate of the masses' (Swyngedouw, 2011). In support of this view, mainstream environmentalist responses to threats of climate change and ecological destabilization – including geo-engineering, investments in 'green' technology, and the expansion of environmental markets – seem only to promise further entrenchment of neoliberal economic policies. On the other hand, the blurring of social and physical boundaries sounds a call for alternative political, economic, and built infrastructures as well as the 'hybrid', 'more-than-human' knowledge practices that will be necessary to generate them (Gibson-Graham and Roelvink, 2010).

Having long understood that nature and society are linked through co-productive and co-evolutionary processes, the discipline of geography is uniquely suited to set an intellectual agenda in and for the Anthropocene (Braun, 2008; Braun and Whatmore, 2010; Castree and Braun, 2001; Harvey, 1996; Lorimer, 2012; Smith, 1984; Whatmore, 2006), but the challenges inherent to the Anthropocene will require considerable latitude, creativity, and unity between human and physical sciences as we work toward modes of environmental thought

adequate to this new epoch. We asked a group of scholars – emerging and established – to address the concerns laid out above in an effort to build momentum following the AAG 2013 sessions on the Anthropocene. The following questions were intended as a way to direct their contributions. (1) How does the ‘occasion’ of the Anthropocene pose radical challenges to the structures and habits of disciplinary thought in geography and beyond? What opportunities for experimental research and praxis does this new epoch subsequently pose for geographers? (2) How does the introduction of global, geological humanity as a singular subject challenge, complement, and/or modify critical environmental theory? (3) How might 21st-century environmental thought avoid a post-political future and remain open to politics of liberation and justice (in relation to class, race, sexuality, gender, etc.) without reducing them to matters of secondary or tertiary concern?

The essays that follow address these concerns and more, sparking a discussion we feel is crucial to the discipline. They also serve to highlight that what is at stake in ‘the Anthropocene’ is the identification and articulation of a world whose social, political, and physical parameters are changing faster than our capacity to process and analyse them. Just as 19th-century industrialization and 20th-century urban change gave birth to new forms of inquiry, the Anthropocene names a need for novel questions and methodologies that enhance our geographical, social, and political lexicon. Accordingly, the authors of the forum have begun to piece together an agenda for geographic thought – and political engagement – in this emerging epoch. Together, they spur us all to consider the relationship between biopolitics and the emerging ‘geopolitics’ of our new epoch; the patterns of inequality and difference emergent as part of the Anthropocene’s universalizing ‘anthro’; the limits of political subjectivity, agency, and technological managerialism; and innovative methods for socio-ecological practice. Simon Dalby begins

the series by considering geography’s unique role in the analysis of the Anthropocene. He identifies three areas of investigation that our new epoch renders increasingly pressing, including geographies of power and domination beyond the nation state and the making of the future across scales and sites of production. Sara Nelson and Jessi Lehman draw our attention to the need for alternative forms of inquiry. Like Lorimer and Driessen’s (2013) recent call for ‘wild experiments’, Nelson and Lehman argue for an experimental socio-ecological politics that encourages its practitioners to address unequal power relations, to reconsider the liberatory potentials of technologized natures, and to seek alliances beyond the walls of academia. Rory Rowan’s contribution compels us to consider the Anthropocene not *just* as a geologic designation, but also – and most significantly – as a ‘philosophical event’ that rattles long held conceptual conventions and thus requires critical appraisals of the political formations, subjectivities, and technologies that populate the Anthropocene. Stephanie Wakefield cautions us against considering the blurred boundaries between humans and non-humans in the urban environment as inherently ‘good’. Highlighting the increasing prevalence of ‘resilience’ thinking from within neoliberal paradigms, Wakefield insists that we attend not to the elements of more-than-human assemblages, but to how they are taken up and enrolled through *dispositifs* of power and technoscience. Finally, Kathryn Yusoff’s essay sets a conceptual agenda for inquiry into what she calls the ‘Anthropocenic “frack”’ in ontology that we are presently witnessing. Around concepts of Anthropogenesis, Genealogy, and Cohabitating with the Earth, she encourages the development of geopolitical praxes that incorporate *inhuman* time and materialities in ways that smear ‘the contours of capitalization’ and ‘fossil fuel affiliation’. Though the contributors responded to this forum’s questions by offering a broad diversity of theoretical and practicable perspectives, there is nevertheless an underlying

theme that sutures all: that geography, as a discipline, is well positioned to address the conceptual challenges presented by the Anthropocene, and that geographers – emboldened, perhaps, with a small measure of daringness – ought not hesitate to jump into the fray.

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## **II Geographic pedagogy in the Anthropocene**

The discussion of the Anthropocene, and the realization that some crucial parts of the Earth system are being changed rapidly in geological terms, has gradually made it clear to researchers and political activists that humanity faces changing circumstances as a result of human actions rather than ‘natural’ causes. We are now experiencing an epochal geological shift marked by human-generated ‘forcing mechanisms’ in the climate, oceanic acidification and widespread land-use changes with their resultant habitat disruptions. This requires rethinking many things simultaneously, both political and pedagogic. Thinking carefully about what to research, how to recontextualize matters, and what to teach is a pressing necessity for geographers in particular.

Environment is no longer the residual human context in Anthropocene formulations; it is instead what industrial capitalist humanity is now making in its carbon fuel powered global economy. Production, and how it is organized and planned, is now the key consideration. This is related to the political economy of neoliberalism and the implicit arguments that there is no alternative to persisting with the existing power structure. The future configuration of the biosphere is to a substantial extent being decided in corporate boardrooms, shaped in the design and planning offices of major corporations, and plotted in strategy sessions within major

investment institutions. This is one key place where geographers who are interested in the changing configurations of the planet now need to focus their research.

This is especially important because in geopolitical terms it is clear that states are, at least so far, failing to deal effectively with climate change. In the absence of better alternatives, the neoliberal logics of market rationality are frequently driving policy innovation (Newell and Paterson, 2010). There is a serious danger that such neoliberalism, combined with state habits of technological managerialism and rationalized by fear of catastrophic disruption, will produce what Swyngedouw (2011) so cogently warns about in terms of a violent and reactionary ‘non-political politics’ of climate change. But it is simultaneously clear that the sheer number of researchers and the possibilities of numerous new technological innovations have opened up new ways of building things and organizing societies that could produce a much more ecologically sensible future.

Yet the impetus to domination and control that animates so much politics is alive and well; being in charge is still more important to many politicians than the finer points of precisely whom or what they are in charge of! Geographies that provide tools for such domination, and the related geopolitical discourses that have frequently been used in the service of particular state rulers, are not what is now needed from the contemporary academy. The Anthropocene formulation makes it clear that such forms of knowledge are anathema to any geography that takes the long-term future of humanity seriously. How to do geography that avoids such things is not necessarily easy, but refocusing some traditional disciplinary strengths suggests a way forward.

One of the great strengths of the geography discipline is the emphasis on careful fieldwork, and the attention to contextual specificities in making any causal claims. Research on the ground, in particular, provides rich insights into

social processes and usually avoids the temptations of careless generalization, but 'global' processes are not so nearly amenable to this tradition of fieldwork research. Ecological processes are specifically local, but teleconnections of numerous kinds suggest their totality is a matter of geology when considered over the long term. Neither the global economy (which is an increasingly large part of the ecological system), nor the global ecological context (which is being remade by that economy) fits easily into the administrative framework of the state system. Again the geographies of this disjuncture are not new, but thinking about how to tackle pressing policy issues outside the conventional state architecture seems to be something that geographers could usefully devote much more effort to in coming years. Doing so without becoming enthralled by the technological promises made by large corporations should not be difficult.

Fieldwork within major corporations and financial institutions now seems to be crucial to understanding the forces that are shaping the future of the biosphere. Investigating, and helping marginal populations that are especially at risk as a result of droughts, rising sea levels, and severe storms remains important. But how corporate decisions are made, investments organized, insurance rates formulated, and industrial innovations facilitated or prevented needs detailed investigation. While these may not be the traditional places for fieldwork, and access is likely to be very tricky, such research strategies are, it seems, necessary if we are to use the traditional methodological strengths of our discipline to try to understand the geologically consequential decisions of our times. There is a useful precedent here in security studies, as Cohn's (1987) brilliant innovations in feminist anthropology demonstrated in the 1980s when she became a participant-observer in a nuclear strategy think-tank. This allowed her to unravel how forms of knowledge turned instruments of destruction into the providers of 'national security', and in the process how technical rationalities produced

policies that were antithetical to any notion of intelligent planetary governance. How climate is dealt with in corporate decision-making offers a loosely analogous situation.

More generally the neoliberal logics of academic management coupled with the relentless pressures to produce research papers pose questions for all of us in terms of how we manage to pick topics, study and write about them in ways that facilitate academic novelty, pedagogic success, and political relevance simultaneously. For at least a few years 'Anthropocene Studies' should have a valuable novelty in catching attention. Where geographers in the past frequently undercut their institutional position by facilitating 'environmental studies' programs, perhaps there is potential to recoup the losses with this new label? But disciplinary silos will not help us address the larger pressing questions of the future context for humanity. There is a hunger among students for opportunities to discuss the big questions about the future of the planet and how they might get involved in the processes whereby these decisions get made. Linking these big questions to the detailed research we do is not easy, but it remains a key part of being a professional geographer.

Clearly we need to think about the role of our discipline in the academy carefully, and how to pose the political questions that matter for the current generation, beyond the easy questions of identity politics, although starting with questions of how consumer subjectivities have become politically hegemonic is a useful way to engage in the classroom. This is not a matter for technical discussion, important though the practical matters of technology, energy systems, architecture, city and land-use planning are. It is about the processes whereby decisions about these things are taken and implemented and how policy problems, corporate regulation, and brute power play out in numerous places. Above all else, the focus on environmental change and the need to think about the human context as an increasingly artificial one – the key point of

the Anthropocene formulation – emphasizes the importance of thinking about production and questions of who decides what gets designed, produced, and built where, as well as how we are all convinced to purchase these things.

The crucial point in all this is to remember, despite the distractions of popular entertainment, that the Anthropocene is not a matter of imminent catastrophe, or extreme actions needed to fend off immediate apocalypse. The risk of articulating change in terms of danger is that inappropriate policies and actions are then justified and manipulated through the use of fear (Swyngedouw, 2011). While the military has a very useful role to play in alerting policy-makers to the dangers of climate change – and in some circumstances they have equipment that is useful in responding to disasters – turning environmental change into a threat to national security and impetus to control migration of the poor and marginal after a disaster will undoubtedly produce a violent dystopia (Dalby, 2013). The point about the Anthropocene is that it is the next time, not the end time, and hence focusing on making the future, rather than responding to danger, has to be the pedagogic priority.

The key theme of the Earth as humanity's home gets central billing in the contemporary discussion of the Anthropocene, and as such this ought to be geography's moment, but we will not be of much help in constructing a more sustainable future for humanity unless we confront the neoliberal logics that have structured much of the conventional discussion of responses to climate change so far. This political point may be the most important in terms of how we all respond to the problematique opened up by the Anthropocene. Focusing on changing social mores and insisting, as Taylor (1996) suggested a long time back, that conspicuous consumption is a problem, rather than focusing only on impoverished peoples in need of assistance, provides a pedagogic and research theme that links justice to the production question, while also allowing

us to articulate a progressive politics that evades the widely prevalent use of fear.

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### III Experimental politics in the Anthropocene

In the Anthropocene, we are always already living in the aftermath of the event. The delayed dynamics of climate change guarantee that the actions of previous generations have committed us to unavoidable environmental changes, eliminating once and for all the notion of a pristine Nature to which it might be possible to return. The fossil record, showing humanity's heavy hand, has already been written. But even if we have taken an irrevocable step beyond the stability of the Holocene, the nature of the Anthropocene is not entirely pre-determined. Rather, natures are being made and remade in unprecedented ways. In this light, we propose that the value of the Anthropocene thesis for ecological politics lies in the space it opens for experimental socio-ecological practices. Nature no longer needs to be critiqued; the only questions now are what is to be done, and how.

The Anthropocene presents two seemingly contradictory challenges to modes of thought predicated on a binary between 'nature' and 'society.' on the one hand, the prospect of humanity as a force of geological change eradicates any notion of an asocial Nature. On the other hand, humanity's agency as a geological force confronts us not as a product of our supposedly unique capacity as humans for intentional action (as described by Marx, 1867, in his comparison of the architect and the bee), but as an unintended consequence of our entanglements with myriad non-human forces – chief among them fossil fuels. The Anthropocene therefore simultaneously *expands* and radically *undermines* conventional notions of agency and intentionality. It is this conjuncture – where hopes

for alternative socio-ecological futures overlap with the recognition of humanity's indirect and partial agency, forcing us to contend with irresolvable uncertainty – that calls for an experimental politics of the Anthropocene.

Our vision of experimentation draws from recent work by Lorimer and Driessen (2013; see also Lorimer, 2012), in which they have explored new conservation practices that are adaptive to emergent events, iterative in their ability to learn from past successes and mistakes, and that try to precipitate, rather than prevent, ecosystem change. These 'wild experiments', Lorimer and Driessen argue, involve open-ended, uncertain, and political negotiations between people and wildlife. They occur in inhabited places and involve multiple forms of expertise, not all of which are human.

'Wild experiments' move beyond the conservationist paradigm that aims to protect an unchanging Nature to open up possibilities for the production of new landscapes and ecosystems, while recognizing the more-than-human agents at work in shaping socio-ecologies. While Lorimer and Driessen focus on such how experiments are transforming conservation practices, we suggest that this experimental mode of engagement in the production of new socio-natures has significance beyond the purview of conservation. Similarly, though our interest is piqued by the broad uptake of experimentation in and beyond the discipline of geography (see Last, 2012), we wish to distill and extend some insights concerning experimental practice to explore in particular how this notion might help us to rethink ecological politics in the context of the Anthropocene. We stress two points: (1) experimentation must be approached from the outset as a political project; and (2) the notion of experimentation prompts us to contend with the role of technology in ecological politics. Given that mainstream climate politics is characterized by techno-managerial forms of experimentation that have tended to foreclose political engagement, we see the need for experimental practices that define their goals in and through struggle.

As Lorimer and Driessen acknowledge, an experimental ethos of conservation brings up sticky political questions as to how experimental trajectories are identified, and how and by whom socio-ecological configurations might be deemed desirable or undesirable. We want to emphasize, therefore, that we understand experimentation to be first and foremost a *political project* – one faced with the difficult challenges of building solidarity and developing alliances across social and geographical difference. Who experiments, and on whom, are political issues. From drug trials to development initiatives, marginalized populations (both human and non-human) have frequently borne the risks of various types of experiments without realizing the benefits, and this legacy must be recognized and its repetition actively battled in forthcoming experimental engagements. Given the uneven geographies of vulnerability to climate change, the question of who has the privilege to experiment becomes all-important. Without democratic process, an experimental ecological politics could easily be understood as justification for the wildest geo-engineering experiments currently proposed by green capitalists, deepening current patterns of inequality and exploitation.

Experimentation therefore requires building collectivities capable of democratically identifying experimental trajectories, and ensuring that the potential benefits and negative impacts of experimentation are equitably distributed. Political practice has always involved experimentation and a necessary embrace of the unknown, as well as strategic and adaptive engagements with emerging and indeterminate situations. In considering the possibilities for experimentation, scholars and activists would do well to look to past and present social movements and ask what approaches to alliance-building and political organizing may be most conducive to an experimental project. But the Anthropocene also emphasizes anew the imperative to act on diverse timescales by building durable institutions of democratic engagement while also

responding to the real urgency of ecological crisis. An overarching question is: how do we establish organizing structures that are resilient and adaptive to changing circumstances, that respond to urgent situations without foreclosing political deliberation? Battistoni (2013) suggests the 'need to consider climate change a background condition for all politics', a unifying framework in which diverse political projects can find common ground as well as a 'lever to wedge open cracks of possibility'. The prospect that the very possibility of a future is at stake can free our political imaginaries, can open up avenues for action that might otherwise seem far-fetched (Battistoni, 2013). Such avenues must necessarily be experimental. We do not aim in the brief space available here to specify what this project should look like (in fact, we would stress that it is necessarily emergent from particular conditions), but only to highlight that any responsible practice will require negotiating these questions, and in doing so should attend equally to innovations in organizing strategy as to those in the sciences. Drawing on and extending the legacies of political organizing (such as HIV/AIDS activism in the 1980s, or the anti-nuclear movement; Battistoni, 2013) may enable truly experimental practices rather than simply promoting what Last (2012: 718) recognizes as an increasingly pervasive 'experimental aesthetic' that often actually serves the status quo.

A politics of experimentation challenges critical scholars not only to call attention to unequal power relations, but also to identify 'lines of flight' from these relations. Against the instrumental role of 'interdisciplinarity' for corporate-controlled research agendas, experimentation may involve a different kind of instrumental knowledge – even a kind of opportunism – aimed at identifying potential bifurcation points that might lead to radically new social-ecological configurations. Several scholars have begun to explore these possibilities, and in particular have begun to rethink the role of technology in an ecological politics (Last, 2012). If the Anthropocene

thesis undermines the understanding of nature in opposition to technology that has so long dominated environmentalism, ecological politics must confront the practical problems involved in directing technologized natures in liberatory ways. For example, Buck (2013) has argued that geo-engineering may present 'an inventive practice for the Anthropocene', with possibilities beyond its capitalist and technocratic incarnations. She argues:

The Anthropocene horror story of an über-technical world of whiter skies and precision climate management by elite forces . . . closes down imagination and limits critique along a particular storyline by taking for granted that human interference in natural systems is novel and terrible, and that a capitalist deployment of these technologies is inevitable. (Buck, 2013: no page)

Similarly, Johnson and Goldstein (2013) have explored how, despite its current enrollment in the production of militarized and capitalistic climate futures, 'biomimicry's posthumanist approach to nature and technology may offer conceptual and even technical grounding as we struggle for a truly liberatory, ecological-social-political metabolism with, through, and as nature'. Rather than embracing or rejecting technological solutions, an experimental ethos asks what it is possible to do with past, present, and emerging technologies: how they might be co-opted, reimagined, or profaned (Agamben, 2009).

As these scholars recognize, these questions cannot be answered from within the academy alone. Subverting the already-experimental tendencies of capitalism requires strategic and perhaps surprising alliances capable of implementing experimental practices in different, more equitable ways. It requires interdisciplinary engagements among critical scholars not only to bring different forms of expertise to a common problem, but also to create new objects of study, new concepts, and new instigations for thought – such as the Anthropocene concept itself. Yet this is not enough. Critical scholars must seek

alliances not only with scholars in other disciplines, but also with activists and communities already engaged in struggle. Moore and Russell (2011) have suggested that such alliance-building requires ‘finding [our] frontline’ – identifying the concrete and immediate ways in which our communities are impacted by (for example) climate change, organizing to articulate that frontline, and locating where our frontline overlaps with others’. The challenge posed by the Anthropocene to a politics of experimentation is not only to negotiate the difficulties of alliance-building among human constituencies, but also to account for ‘deliberations between multiple forms of agency, expertise and subjectivity – some of which are human, some of which require tuning into the diverse becomings of non-human forms and processes’ (Lorimer and Driessen, 2013: 3).

In the context of the Anthropocene, when the conditions of biospheric life are truly at stake, there can be no pretense of objectivity in an experimental practice; but, given the irreducible uncertainty of social-ecological futures, an experimental orientation seems to some extent unavoidable. The challenge is therefore to pursue such experimentation in a responsible way, to address the ‘fierce urgency of now’ without falling into oppressive or narrowly technocratic responses (Martin Luther King Jr., quoted in Battistoni, 2013). The Anthropocene, even as it threatens the very possibility of a future, frees us to look toward futures that may at present be beyond our imagination.

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#### IV Notes on politics after the Anthropocene

The Anthropocene is not a *problem* for which there can be a *solution*. Rather it names an

emergent set of geo-social conditions that already fundamentally structure the horizon of human existence. It is thus not a new factor that can be accommodated within existing conceptual frameworks, including those within which policy is developed, but signals a profound shift in the human relation to the planet that questions the very foundations of these frameworks themselves. Indeed, it is the sheer scope of the concept that gives it a critical edge over the idea of ‘global climate change’ – a phrase now so deeply embedded in the sclerotic discourses of chronically inactive international institutions that it appears specifically formulated to fall on deaf ears. The Anthropocene is therefore not simply a disputed designation in geological periodization but a *philosophical event* that has struck like an earthquake, unsettling the tectonic plates of conceptual convention. It is to these reverberations in the field of political thought that I turn attention here.

The recent popularity of the Anthropocene within the social sciences, humanities, and arts relies in part on the fact that it answers a certain subterranean yearning for a framework in which to address macro-scale concerns after the eclipse of ‘globalization’, a term that seemed to slip off the critical agenda as it sank into the sediment of our political unconscious. The Anthropocene hence presents an opportunity for critical thinking to reconnect with macro-scalar concerns in a way that escapes the ideological over-determinations of globalization while engaging with the deep ramifications of anthropogenic environmental change through an examination of the planet’s material processes. Whereas ‘the global’ suggests a relatively flat, anthropocentric conception of the Earth focused on the construction of social relations on the surface, ‘the planetary’, by contrast, points to a more complex, volumic, stratified understanding of an Earth constituted through dynamic geo-social entanglements. Accordingly, the Anthropocene creates opportunities to cast the planet itself as a key player in the drama of human politics rather than simply its stage.

This raises the question of what consequences an engagement with the planet has for political thought. What challenges might the Anthropocene present to political thought, and what forms of politics might be adequate to face them? In the space remaining I examine these questions with regard to three broad areas: the relationship between the scale and form of politics; the subject of the Anthropocene; and the relationship between technology and politics.

First, while it seems clear that the Anthropocene calls for thinking through the relationship between politics and the planet, it is important not to assume that a certain *scale* of politics maps naturally against a certain *form* of politics. More precisely, thinking about politics in planetary terms does not require a totalizing understanding of politics confined to technocratic dreams of a World State or reactionary Big Space geopolitics. How a planetary politics might be understood depends not simply on questions of scale (itself a social constituted and politically contestable concept) but on how the political is conceived. Hence, the Anthropocene marks an occasion to return to fundamental questions of political thought, but within an expanded conceptual horizon produced by a new planetary circumstance. To my mind the political is best understood as a terrain of contestation in which struggles take place on numerous fronts, across different geographic and temporal scales, the chance of successfully shaping social forces being increased if hegemonic alliances can be built across struggles. The Anthropocene potentially widens the scope of the political because understanding social forces as embedded in a dynamic relationship with geophysical forces opens up both as potential objects and sites of political struggle.

However, this is not to suggest that the scale of the challenges raised by the Anthropocene has *no* implication for the form of politics that might take shape in its wake. Indeed, the Anthropocene raises concerns of such vast geographic and temporal scope and depth that any response must involve questions of long-term

planning, sustained funding, and significant transnational cooperation and collective organization that effectively render certain forms of politics inadequate. This is especially, perhaps uncomfortably, true of conceptions of politics widely celebrated on the critical Left that emphasize temporary occupations, local direct action, or horizontal and non-representational modes of organization. Yet the Anthropocene seems to demand that some of the problems the critical Left prefers to shy away from, such as representation and institutionalized power, need to be faced anew unless the future is to be ceded to ever more intensive forms of capitalist exploitation, environmental degradation, and the possibility of mass unemployment, escalating food insecurity, resource wars, and increasingly reactionary forms of identity politics. This is not to claim that politics should be constituted around macro-scale concerns alone, but that these must make up a key element of any politics that recognizes the significance of the Anthropocene.

Second, there is the question of the subject of the Anthropocene and its implications for politics, already the topic of heated debate. Some have advanced the term *Capitalocene* as an alternative to Anthropocene on the grounds that the historically specific set of social relations structured around capital accumulation mark a more accurate genesis of global climate change than the activity of a singular, universal humanity, or *anthropos*. This argument has much to commend it, at once insisting that the Anthropocene not become a depoliticizing meta-abstraction that conceals the constitutive fractures of socio-political relations and highlighting the dominant role that the historical development of the capitalist world economy has had in producing it. I am, nonetheless, apprehensive for two reasons. First, the concept of the Capitalocene seems to emphasize social relations internal to the human sphere when perhaps the most important aspect of the Anthropocene is that it allows the distinction between the social and the natural, the human and the inhuman to be muddled by way of their

mutually constitutive intrusions. Second, even if it can be granted that capitalist social relations created the conditions for the Anthropocene, the Anthropocene's effects will be universal, shaping all future human communities (although unevenly) regardless of what new forms of social relations may replace capitalism. Even if we regard the Anthropocene to be *capitalogenic* it has something of a universal address, affecting the lives of everyone even if 'all' are not responsible for it equally. In this light, *anthropos* can be understood not as a pre-constituted identity but rather as the object of political contestation in the struggle to define the terms of future human existence on the planet.

In signalling a crisis in our fundamental conceptual categories and our relation to the planet, the Anthropocene appears to raise that old political question: *what is to be done?* However, it also complicates this question, throwing ideas of agency into a new, problematic light. The question of *what* then is coupled with its more difficult, demanding twin: *how is it to be done?* This brings me to the third area of concern: technology. Any attempt to address the long-term, macro-scalar challenges that the Anthropocene presents must be willing to engage with the question of the relationship between politics and technology. This is not to evoke a simple means-ends discussion but to recognize that socio-political formations are bound up with specific technological platforms and energy regimes, so that any alternative future politics must make technology not only a tool but a crucial terrain of struggle. Nick Srnicek and Alex Williams, authors of the recent *#Accelerate* manifesto, have been germane in questioning the critical Left's knee-jerk reaction to the question of technology and the ease with which discussions slip into well-worn critiques of 'enframing', 'instrumental reason', and 'apparatuses' that exclusively address technology's 'great danger' rather than its 'saving power' (Srnicek and Williams, 2013). The Anthropocene should not lead us to simply recoil in horror at the

effects of industrialization or remain paralysed by the sense that technological progress can only make things worse. A more open debate about technology and climate politics does of course not mean cultivating a naive technophilia or uncritically accepting geo-engineering's promise of sublime technical fixes, but rather acknowledging the key role technology must play in any attempt to secure a more socially just and ecologically sound future within the horizon of the Anthropocene. Facing trenchant socio-ecological challenges that afford neither clear exits nor 'pure' positions means jettisoning perspectives that reject technological intervention into complex environments in principle. The question then is not one of abandoning the critique of technology as such, or ignoring the interests served by particular technologies, but rather of making the subjectivities, relations, and forms of life that they might open or foreclose, produce, or negate, sites of political struggle. For example, a 'progressive' Leftist approach to the question of 'climate technologies' might require a program to establish rigorous institutional norms to effectively govern their use *and* a radical pluralization of the sites of decision-making and subjects empowered to decide – a difficult labour indeed. Yet the central point remains: political struggles need to be fought *over* technology rather than *against* technology. If technology is rejected or neglected as the object of political struggles, then our fate is left to the nostalgia of localist escapisms, the passivity of Leftist melancholia or the reactionary psychosis of Right-wing identity politics, all wholly compatible with the enormous adaptive capacities and increasingly catastrophic trajectory of capitalist economics.

The future of human existence on this planet (and likely off it) will be defined by the Anthropocene, yet this horizon still affords room to manoeuvre with regard to the forms of life that are possible. However, if these forms of life are to be the object of political struggle, and if the Left seeks to realize a post-capitalist future within the horizon of the Anthropocene, then it

must move beyond the limits of critical theory 1.0 and retool its existing conceptual armoury and political practices. This requires a willingness to leave behind conservative humanist pieties and the image of an Edenic nature spoiled by technology, and embrace instead the possibilities of an emerging hybrid-planet; a willingness to work pragmatically, with dogged determination and a spirit of experimentation, to secure more just and comfortable forms of life, even as these constitute a shifting frontier rather than a fixed goal; a willingness to be more modern, not less, and struggle, on many fronts, across a number of geographic and temporal scales for what that might mean.

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## V The crisis is the age

Literally ‘the recent age of Man’, the Anthropocene is the newly proposed name for the period in which humans became ‘geological agents’, leaving a stratigraphically more significant impact on the Earth than any other species. According to Paul Crutzen, this shift dates from the 18th century, when humanity became detached from the biological old regime through the combustion of fossil fuels, marking its Promethean rise. But the Anthropocene is not a hyperbolic narrative of a totalized humanity. Rather, it discloses the historical emergence of a *particular* figure of the human as it was *raised up to speak the voice of being*. The liberal subject that begins and ends with itself – that is, where the world ends – and assumes the task of ordering that world: only *this* human could ground an age by literally transforming the ground itself.

Neither epistemological illusion nor transcendental given, the liberal subject is the very real, historically contingent, product of concrete *dispositifs* of government administering western democracies for at least the past two centuries (Foucault, 2009). *Dispositifs* work not by imposing order on a pre-existing field but by

arranging and producing the terrain itself, through a double biopolitical movement that simultaneously posits a vision of life and constructs it. This life has long been that of the liberal subject, which formed an effective vehicle for governing in a moment when individual freedom was pronounced existence’s principal virtue. As humanity was detached from its conditions of existence – think enclosures – subjectification marked the moulding of beings into subjects who identified *with* that detachment, thus naturalizing the newly created life and forming its control.

Subjectification’s flipside was the creation of the non-human, an objective standing reserve of exploitable resources. The resulting humanist order, within which the transformation of mountains into coal providers and subsequent erection of the plants and distribution networks they powered, was at once connected to the liberal life these infrastructures sustained: street lights to prevent insurrections and crime, domestic appliances to shore up the home, cars and highways to transport good workers to and from work. Orderer but also orderable, the Promethean subject and the governable liberal subject are two faces of the same human, for each depart from the same lonely interior, the latter working endlessly to master its inner truth, the former working endlessly to master the world beyond its bounds.

From this perspective, the ‘Age of the Human’ can only be understood in biopolitical terms, as the name for the age of government, for the human to which the Anthropocene refers is but the product and vehicle of attempts to manage life, both human and non-human, that create the two in their separation.

The Anthropocene refers to this order, however, to call it a failure. Diachronically and didactically it equates climate change and ecological devastation with the processes of industrialization and humanism described above, suggesting that this order has been a disaster since its very inception. Perceived today as the source of climate crisis and obstacle to future

‘resilience’, what was once a ‘solution’ is now identified as the problem itself. Thus amid the pervasive discourses of crisis – economic, ecological, social – that today give sense and shape to our lives, the stratigraphers suggest that beyond these lie one that is more profound and unthought: with the Anthropocene, *the crisis is the age itself*. Read biopolitically, this crisis appears, like the rubble at the feet of Benjamin’s angel of history, as an accumulation of the *dispositifs* deployed to administer life, as well as the life they created. This crisis is not to come, one of the many apocalypses promised by film and ecologists alike; it is already produced, constitutive of the world in which we find ourselves today. So, alongside every barren mountaintop and every marine dead zone that stands as evidence of the Anthropocene, we should include the image of the liberal human that is their other half. Equally a disaster since its inception, today this human is in ruins both as orderer and ordered. Simultaneously inundated by disasters it is helpless to control and exhausted by the imperative to hold its self together, the subject’s crisis – disclosed so movingly by the outpouring of bodies into occupied squares across the world in 2011 – is part and parcel of that named by the Anthropocene.

So the crisis is the age. It is on this terrain of an exhausted paradigm – both historical and meta-physical – that a battle is underway. At stake is nothing short of the definition of life itself. Nowhere is this more manifest than in the city, where, we are now told, the past, present, and future disaster expressed by the Anthropocene is embodied. There, this verdict is providing epistemological support for a massive reorganization of government under the name of ‘urban climate resilience’: no longer a Promethean project of mastery but instead one of survival and disaster management. In New York, after Hurricane Sandy’s waters, we have been inundated again this time with depictions of the city as an out-of-date, brittle composite of aging infrastructure, disconnected subjects, and trashed waterways built in a hubristic era of humanist enframing.

In magazine exposés and mayoral press conferences, the story is told and retold: 200 years of modernist urban planning have separated the human and non-human and denied their true relationality, leaving us poor metropolitans the inheritors of devastated, vulnerable cities.

Turner (1983) wrote that civilizations rarely dethrone their most cherished principles until they have prepared adequate replacements. Turner was thinking of the collapse of the Roman empire, but if today ‘Man’ is given the same respect that the Romans showed their dying gods when they gave them offerings of garbage, this is because the replacement of Man-qua-principle-referent is underway, in the simultaneous positing and moulding of life as resilient eco-cybernetic systems. Toward this end, we are told that saving the city in and from the turbulent Anthropocene will require undoing its damage: those ‘enframed’ urban artifacts of modernity must be put back together. The aim here is to connect subject and object into complex systems capable of weathering – figuratively and literally – any and all disasters to come. Instead of barriers to keep water out (modernism), artificial oyster reefs in the Hudson River will let water in, reuniting city and nature to attenuate storm surges and the blackouts, floods, and logistical bottlenecks they generate. And from social media to neighbourhood preparedness, the resilient citizen will be less an individual than it will be a connected and communicating cyborg.

This is resilience qua *dispositif*. In the constantly threatened and threatening ‘new normal’, it hopes to bring everyone and everything – oysters as well as citizens and the smart grids and twitter feeds that sustain them – into a ‘democracy of things’ around a series of pervasive threats that they will all play a part in managing. Like the devastated Gulf Coast fishermen hired by BP to clean up the oil spill, this *dispositif* aims to enrol all of life in its latest crisis management operation, in which everyone and everything, human and non-human, will play the role of critical infrastructure. In the resilient vision, life

and its management will coincide in a 'city that is its own solution': a communication-saturated environment that organizes and reorganizes itself, in the face of – on the *basis* of – whatever crisis to come.

More than any other field, geography has long led the way in dismantling anthropocentrism, as seen most recently in the urban geographical view of cities as more-than-human 'cyborgs' or 'assemblages' (for an overview, see Braun, 2005). Yet resilience's reconnection of human and non-human in a new *dispositif* suggests that it is insufficient for geography to ask *what* – connection or not, the human or not. Indeed, the discourse of human-non-human hybridity is indistinguishable from that of New York City Mayor Bloomberg. Here recall the devastating punchline of Michel Foucault's research – vividly rendered, for example, in the final lines of *The History of Sexuality* – that the liberal subject was so powerfully governable, so effective as a vehicle for government because subjects envision the possibility of liberation *from* power in individual freedom. In short, in seeking their liberation, they were actually nourishing the very forms of their government. What the search for liberation was to liberal government, today's discursive celebration of urban natures is to resilience. Thus, while geographers applaud their liberation from an anthropocentric power, they risk being trapped within a discursive operation that champions a new *dispositif*.

Rather than *what*, what geography might ask is *how*. Not the 'death of man' and its order, yes or no, but *how*: *how will we put this age out of its misery?* Resilience responds to this question with its installation of a new *dispositif* to govern life, thus prolonging the disaster albeit by new, ecological means. But the uprisings of the last years pose a different answer. In the occupied squares and streets, an outpouring of subjective exhaustion gave birth to a constellation of worlds amid and through the repurposing of the Anthropocene's flotsam and jetsam. In the formation of collective kitchens to feed thousands in Zuccotti

Park or the building, stone by stone and hand by hand, of barricades in Taksim Square, are the beginning sketches of a new trajectory based not in government but rather in its profanation and the constitution of worlds in common.

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## VI The Anthropocene frack

The occasion of the Anthropocene might be understood quite simply as a revolution of the Earth: a moment of planetary change characterized by the realization of geomorphic power as a consequence of the social mobilization of fossil fuels. Such a revolutionary moment presents an incitement for geographers to rethink the disciplinary rift that often cleaves apart social and geophysical processes to open up paths of inquiry in human geography that need to grapple with the speculative or radically *pre-political* qualities that inhuman forces introduce. Despite the uncritical framings of Nature and Culture (Steffen et al., 2007), 'Man' (Crutzen, 2002) and the production of a universalist historical geography in the scientific discourse of the Anthropocene, the intention to register humans as a geologic force does motivate modes of thinking the human that have been all too often precluded: that is, thinking of the social as embedded in, and embodying of, forces and histories that exceed it and are unassailable by it. The extension of the social into the strata inadvertently produces new modes of subjectification that are geologic, thereby rendering social forces (and the 'bodies politic' of society) as composed, at least in part, of inhuman forces.

Thinking about what this inhuman (in)corporeality does in reconstituting the realm of politics is a challenge; both in how geopolitics becomes *mineralized* rather than just territorialized, and in how political geography begins to extend its purview of what it is to be a political subject beyond the immediate gratification of

certain forms of political agency. As yet, the geologic only enters politics in a minor way, as a material resource or a geopolitical provocation (Clark, 2012). In effect, the proposition of the Anthropocene introduces a form of criticality around biopolitics (and what constitutes the biopolitical) through its formation of a *geologic* identity. This focus on the mineralogical dimensions of life reconstitutes the geopolitical in more active geophysical ways, particularly in the consideration of how the geopolitical is sutured onto certain understandings of territory and technics of territorialization that do not take account of the geologic/geophysical as radically differentiating forces within those bodies politics. That is, fossil fuels are understood as a modality in the historic organization of bodies.

Elizabeth Grosz, in her formation of 'geopower', suggests that before there can be relations of oppression and power – what we might call the constitutive stuff of politics – there have to be relations of force that are inhuman, which can be harnessed and transformed into forces that order the human. Yet, she says:

Our everyday understanding of power both draws on and yet brackets out this primordial interface that sustains it in its ever-changing forms ... geopower, the relations between the earth and its life forms, runs underneath and through power relations, immanent in them, as their conditions of existence. (Grosz, 2012: 975)

The materiality of the Anthropocene makes manifest this collision between these social and geologic forms of power, as capitalization on fossil fuels has generated an identifiable territory in the Earth's strata. Yet this form of geocapitalization (that is also a historically constituted mineralization of the human through fossil fuels) is erased from our understanding of biopolitical life. The identification of the processes of fossilization that are immanent in the capitalization of fossil fuels explicitly generates a political geology of the 'urban strata' in the rocks. What is less clear is how political subjects of the Anthropocene

emerge within the context of these contractions and extractions of geopower.

There are three concepts that might be helpful to consider if we are to begin to generate a critique of the *forces and processes of fossilization* that are manifest and immanent in the planetary and corporeal bodies politic of the Anthropocene.

### *I Anthropogenesis*

The Anthropocene contains within it a new origin (and imagined ending) story for 'Man' (sic). Implicit in the understanding of humans as a geologic force is the formation of a new identity politics for the human – as geologic agent – that has material, temporal and geopolitical implications. This is a form of genesis that names a geomorphologic actor, fuelled by its capitalization of fossil fuels, operating at the scale of the planet, fusing together the *Anthropos* and the excavation of the Carboniferous in the geologic record as a new stratigraphic signature in the Earth's fossil record. This genesis does not just reconstitute the modes of historicism at stake in the identity narrative of humanity, but introduces an inhuman element that generates fissures in the geochronology of the human. This Anthropocenic 'frack' in the ontology is instigated through the fusing together of inhuman and human histories through the Earth, establishing the geologic as a constituting moment in the evolution of life. This historic geomorphic fusion forces the rethinking of political subjectivity through deep time and inhuman ontologies. Geopolitics must learn to entertain the geopower of the Carboniferous in its political thought, as a constitutive force in political formations. Fracking ontology, as such, would require the incorporation of inhuman time and materiality into both the historiography of the human and its material affiliations, while simultaneously keeping with a politics of differentiation (in terms of how capitalization on the forces of fossil fuels organizes the possibilities and potentialities of life). This requires a move away from a vital body

(and its adherence to biological forces) to consider modes of *geologic life* (Yusoff, 2013b) that are immanent in and extend the composition of the body through the incorporation of geophysical forces.

While anthropogenesis institutes a unitary human into the geologic record presupposing an understanding of humans as a singular population and genus, the challenge for geographers is to both trace and substantiate these differentiating and differentiated bodies politic through the strata and society, materially and discursively – particularly, to look at how the carbon substratum maintains particular modes of capitalization that are expressed in the ‘geo-social formations’ (Clark, 2013) of late capitalism; to unearth the material and mythical bedrock of the Anthropocene as a political geology that constitutes the organization of power and the social conditions for life.

## 2 Genealogy

If the Anthropocene is posed as a geological institutionalization of humanity as future strata, the origins of this identity can be found, according to its proponents, in the Industrial Revolution of the 1800s. Accordingly, what is being proposed is a genealogical account of the geo-social formation of fossil fuels, capital and populations. But, in its current form, the genealogy of the Anthropocene neutralizes the different temporal-spatial events of these formations – in terms of material engagements with fossil fuels, capitalization on the forces of geopower for political ends, and the inheritance of fossil fuels as a substantiating form of life. The origin of the Anthropocene ( $\approx$ 1800) and the time of the ‘Great Acceleration’ (1950) enact a material redistribution of responsibility across the planet as a spatiotemporal norm, smearing the contours of capitalization and erasing the specific fossil fuel affiliations that are at stake in the mobilization of geopower. This genealogical account might equally acknowledge the ‘great intensification’ of energy sources, which

released the potentialities of materials through chemical and atomic modes to redirect those forces in new ways. Thus, narratives of origins and endings raise genealogical questions that are also geographical questions about universalism, empire, race, migration, non-human and species-being, as well as biochemical and biographical questions about the (in)corporeality of the body. In short, geopolitics has just acquired an evolutionary supplement that needs to be traced through fossil fuels organization of bodies politic.

This new era of geomorphic subjectivity in the Anthropocene suggests the opening of subject positions to inhuman forces and genealogies to multiple origins. It is an opportunity to push thought beyond the boundary of life as *the* constitutive element; the inhuman as not a step beyond, but the human as radically inhuman, encouraging us ‘to examine the potentialities from which subjects are composed’ (Colebrook, 2008: 24, footnote 5). The challenge is to consider not just human origin stories and their unitary political compression in the rocks, but to use this imagination of geologic life to ontologically reconfigure an understanding of the human that can hold together (politically) multiple states and natal moments that are radically dissimilar and temporally discontinuous. Such an imaginative leap into the inhuman dimensions of subjectivity requires attending very carefully to the differentiating forces of the geologic (in terms of, sex, race, class, gender and modes of reproduction), and the crafting of a new geopolitics that can simultaneously attend to the fractures in political and philosophical concepts of the human, Earth and history.

## 3 Cohabiting with the Earth and questions of survival

Amid questions of genesis and genealogy in the social production of the Anthropocene, we might also think about what it means to cohabit with the Earth *as an Earth force* rather than as just a social one, to share in the geologic,

geophysical, atmospheric and oceanic forces *with the Earth*; in concert with Earth processes, times and matter (that have no single genesis) (Yusoff, forthcoming). If the 'nature' of this social geography is composed in part through the geologic and the mobilization of those geologic forces in the destratification of the Earth, then that social geography is also composed politically by and through the geologic. As the spectre of the fossilized trace of humanity looms large as an epic genealogical tale, it is useful to think, with Berlant (2011) and Povinelli (2013), about incommensurable forms of exhaustion that characterize certain proffered 'survivals' (particularly given the 'cruel optimism' offered in discourses of adaptation and resilience). If the Anthropocene is viewed as the stratigraphic trace of late capitalization, the conversion of the geopower of fossil fuels into geopolitical power is what is at stake rather than the fossil trace of humanity per se. In the identification of the particular modes of subjectification that are allied to the fossilizing force of late capitalism, a genealogical account of the geologic that passes *through* rather than *beyond* subjectivity might exemplify the subtle intimacies of fossil fuels and the political terms of their expiration. If the Anthropocene reads as an extinction statement memorialized in the rocks, then critical geographers might want to lodge themselves in the forces and flows of strata, develop a meticulous relation with the modes of capitalization and habituated inculcations in the fossil substratum, work to recognize the modes of exhaustion (planetary, ecological and social) that characterize those interventions in the strata, develop a geopolitical praxis that remakes 'intuitions for living through' (Berlant, 2011: 63) and persisting within the differentiated processes of fossilization, investigate modes of geologic expression (aesthetic, incorporeal, collective, axiomatic), avoid anthropocentric valorizations, examine the interface between social and geophysical stratifications, follow underground passages, and seek out flows of matter and energy beyond the

ordinates of the geologic. Step one: jump into the crack! This is an Earth revolution!

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