The Anthropoceneans

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What does it mean for us to be citizens of the Anthropocene, both individually and collectively? This essay tries to answer that question in order to stimulate a wider conversation about how we should respond to and shape the socioecological transformations ahead of us.[1]

There are a number of different Anthropocenes in current conversation (Dibley 2012; Castree 2014), from the one being considered for formal definition as a geological epoch by a working group of the International Commission on Stratigraphy, to the hashtag Anthropocene on Twitter, into which every kind of human influence on the planet is furled. The Anthropocene identified and named by Paul Crutzen and Will Steffen and elaborated in several papers (Steffen et al. 2011) is most often depicted with exponential graphs of different variables, from carbon dioxide levels to the number of McDonalds restaurants. There is debate about the actual timing, but the shape of the curves is always one of exponential growth in recent times and into the future. This Anthropocene has quite specific characteristics, including the influence of humans on global systems, high levels of uncertainty and surprise, and the likelihood of future changes being very rapid. It is the one I am focusing on here; it projects into the lifetimes of current young people almost unimaginable scales of change, certainly rendering many aspects of our current modes of living impossible.

The problems ahead of us can be summarised quite simply. Our most immediate challenge is not how to make scarce resources last longer, but how to keep the most problematic carbonaceous resources in the ground. The evidence is that we need to keep 60-80% of the fossil fuel reserves already listed on world stock exchanges in the ground to have a chance of avoiding global warming of 2^{o}C (Carbon Tracker 2013), the so-called 'unburnable carbon scenario'. Pricing in the risk to current investments of these 'stranded assets' (coal, oil and gas) would lead to a new financial crisis. Climate scientists now recognise that cumulative emissions are the most robust measure to which policy targets should be directed (Allen et al. 2009; Zickfield et al. 2009; IPCC 2014). Put another way, we need to decarbonise at the rate of 9-10% per year for at least a decade to avoid 2 degrees of warming (Anderson and Bows 2008, 2011). There is no historical precedent for how to do this; the 2008 Global Financial Crisis led to only a 1.4% decrease, which was quickly reversed. Or, if business as usual proceeds, we are on track for 4-6^{o}C of warming with an increase in extreme events and fundamental changes in underlying conditions. So the possibilities seem to include 'planned economic recession' (Anderson and Bows 2008: 3880) or economic collapse forced by climate change.

Either way, we must imagine that drastic changes to everyday life are in the offing. The evidence is mounting that we are well past the point where climate change response can be a planned, gradual transition. It is much more likely that profound and unwanted change in the next few years will make a mockery of current policies on climate change and other issues (productivity, health, education). These are terrifying thoughts, given that humans are not good at voluntary restraint, and given the way all our lives and wellbeing in the more affluent parts of the world are tied into and dependent on a fossil fuel economy. And of course climate change – never a freestanding entity - is interacting with other issues including population

growth, food insecurity, ecological degradation and geopolitical conflict (Millennium Ecosystem Assessment 2005; State of the Environment 2011 Committee). So, while climate change is by no means the only issue of the Anthropocene, the scale and urgency of the decarbonisation challenge gives it a certain kind of priority over the next few decades.

The news is not good. It feels as though we are hurtling down a hill without any brakes, through an unfamiliar landscape, to an uncertain destination. This essay aims to be a thought experiment around some near-to-worst case scenarios. As Gibson et al. (2015) have done elsewhere, I am trying to stretch and in places invert our thinking, in order to imagine alternative possibilities. For the purposes of this experiment, the following are assumed:

- Sometime in the next few decades, whether by force or choice, we will have to decarbonise so dramatically that many aspects of contemporary life will no longer be possible.
- We have enormous vernacular capacities, not always where we think they are.
- The past also provides some imaginative resources to deal with what we currently think of as catastrophe, if we can free ourselves of teleological and progressivist framings of history.

While writing this piece, I wondered several times at the effort going into imagining the unimaginable. What is the role of stretching ourselves to scenarios that seem very far from the present, and is that the best use of time? Given that considerable effort is going into researching geoengineering possibilities, including Solar Geoengineering and Carbon Dioxide Removal (Bellamy et al. 2012; Pidgeon et al. 2012; Corner et al. 2013), it is incumbent on scholars to ponder some social extremes as well as technological ones. Researchers presenting at a recent workshop on the subject of geoengineering (http://www.iagp.ac.uk/) all

professed hope that such technology would only ever be used as a last resort. We would all prefer not to have to think about this stuff.

So what might it mean to be a citizen of the Anthropocene? And how will that differ from the Holocene? We did not know it, but to be a Holocenean has been to live in relatively benign conditions, at least compared with the much harsher Pleistocene, and within an envelope of a certain amount of stability and predictability. The most important characteristic of the Holocene from a human point of view has been that it enabled agriculture. This mode of subsistence facilitated all the changes that led to the Anthropocene, and continues to underpin societies that we imagine, using descriptors such as postindustrial, to have somehow freed themselves from the constraints of growing food. Yet agriculture is itself a hugely variable package that scarcely even hangs together as a concept (Head 2014).

And how will being an Anthropocenean differ from being a modern? A key characteristic of the Enlightenment tradition has been that of a hopeful future, the possibility of striving for improvement, both individual and collective. Yet the progressivist view of the future that inspired modernity has helped create the problem. And the preservationist, conservationist response that has animated many of us for a number of decades, is insufficiently powerful to deal with current and projected reality. For example, there is increasing recognition that climate change will challenge Australia's already stretched National Reserve System (including National Parks as well as other tenures whose primary role is biodiversity conservation), based as it is on present conditions and biotic distributions. Projections of future habitats, comparing future environments with the most similar current environment from anywhere on the continent, show many examples of the lack of current analogues (Dunlop et al. 2012). Our previous conservation ideas and practices do not serve us well

enough. On the other hand, many of the capacities we need are ones we already have. They are not necessarily where we think they are, and they do not necessarily have a green or environmental label.

But first, who is this we, the Anthropos? I am implying we the human species, but it is not that simple. If the moderns had the hope of progress and improvement, the reality was dramatically unequal, and the hope of progress and improvement for many was built on other people's suffering. The histories of capitalism and colonialism have shown us this, such that in no country of the world have we managed to build societies with both low per capita ecological footprints and highest levels of human well being. So, a number of scholars are now arguing that the 'species' concept is a category mistake in the way we think about the Anthropocene. Malm and Hornborg (2014), for example, argue for the very specific role of capitalism in driving the global transformations; they and others have used the term Capitolocene. The spatial and temporal variability within the human, and attention to economic particulars is a very important caveat, for social justice reasons among others. But I think it would not be useful to jettison the 'human' category completely; it is the locus of many people's feelings of responsibility to make the world a better place.

That responsibility, however, comes with a myriad of contradictions. If we humans made the Anthropocene, we also made something that is now out of our control. We are not at the centre of things – the earth does not actually care whether we survive or not. But if we are such a powerful agent in transforming the earth, then we are in a way at the centre, or at least the top of the stratigraphic column. Note also that I am using the word citizen fairly loosely, to include both individual and collective qualities. I am not here concerned with what all this

might mean for modes of governance and for formal political structures; that discussion is needed too.

In what follows I outline some characteristics of what it might mean to be a citizen of the Anthropocene, an Anthropocenean. This list is necessarily speculative and cannot yet be comprehensive, but it is offered as a stimulus to further reflection and debate. An important general question for ongoing consideration is to what extent we have these qualities, characteristics and skills already, or will have to develop them anew. In the process, I hope the current and potential contributions of geographic thinking will be clear.

1. Anthropoceneans acknowledge their grief

First I want to argue that grief and climate change are inextricably entwined. An under-acknowledged process of grieving – with all its complexity, diversity and contradiction - is part of the cultural politics of responding to climate change in the affluent West (Albrecht et al. 2007, Hamilton 2010, Norgaard 2011). A number of authors have identified grief in conservation thinking. In his farewell editorial after a decade at the helm of the journal *Restoration Ecology*, Richard Hobbs (2013) identified different patterns of grieving – between those clinging to the hope of a pristine past, and those accepting of a more messed up future - as one of the sources of disagreement in biodiversity conservation science. Hobbs talked of conservation biologists being constantly assailed with loss, and noted that the recognition of this has a long history (Windle 1992). Grief will be our companion on this journey – it is not something we can deal with and move on.

There will likely be a number of dimensions of grieving beyond those associated with species extinctions (Van Dooren 2014). Scholars have drawn attention to grief and mourning

associated with the loss or change of loved places, as climate change transforms the places themselves, or disrupts the patterns of social life that interact with them (Hastrup 2009, Barnett and Campbell 2010, Drew 2013). In other examples extreme events create trauma at the time and a great deal of emotional labour in dealing with their aftermath (Team and Manderson 2011, Whittle et al. 2012, Eriksen 2014). More generally, Rose encapsulates what she calls Anthropocene Noir – 'the story without a known ending; the looming sense of fatality; the creeping awareness that nothing can be put right' (Rose 2013: 7). In interviews with Sami reindeer herders, Furberg et al. (2011) identified 'a sense of grief for the future'.

On this reading, grief is not something that we can get 'beyond', rather it has to become part of our lives and politics (Anderson 2006). The specific expressions of grief will be variable and much more discussion is needed as to how it can be incorporated more creatively into everyday life. But the evidence from the psychological and psychoanalytical literature is clear that the first step is to acknowledge this companion. If part of what we are grieving for, and what we must farewell, is our modern selves, it follows that a necessary intellectual and practical task is to imagine new kinds of selves.

2. Anthropoceneans live in uncertainty without stress

Anthropoceneans need to be able to live in uncertainty. Of course, in many ways human life is always uncertain and fragile, but the loss of a hopeful future means we need to confront our existential uncertainty in different ways. Many of us will need to find home and community in less fixed ways. For example, those of us who live on coasts subject to sea level rise, and shifting boundaries of land and sea, face loss of attachments to place. Or, perhaps, we can build new attachments framed around a more mobile, changing sense of place. We will need

to work through important tensions in relation to mobility. On one hand the hypermobilities of late modernity are a key contributor to greenhouse gas emissions; on the other hand sea level rise and other changes mean that whole societies will need to be on the move (Urry 2011).

Further, we have a real evolutionary uncertainty, the knowledge that adaptation to today's conditions could bring you undone if those conditions change dramatically tomorrow. Plus we have the uncertainty inherent in non-linear systems. The last twenty-five years or so has seen the rise of non-linear dynamics in a range of scientific disciplines – ecology, hydrology, climate modeling, to name a few. But the findings of complexity theory, and the arguments for specifiable uncertainty, are still in contest with a reductionist and determinist view that science is predictive. This is a tension, and arguably a burden, for the IPCC and the climate change debate more broadly, which has been forced into a framing about the settledness of science.

So on the one hand the broad trends are more than clear. On the other hand hydrologist Keith Beven and others have been reminding us about epistemic uncertainty. Epistemic uncertainty is different to the randomness or the statistical uncertainty in various models. It includes several types of inherent uncertainty; the Rumsfeltian things we don't know we don't know yet, the uncertainties relating to interactions between variables, and the uncertainties arising from non-linear change. We cannot let these uncertainties paralyse us. For Beven, 'this means making decisions about the nature of different sources of uncertainty while lacking sufficient information to do so' (Beven and Alcock 2012: 5).

One scientific response (the wrong one, according to Beven) has been to try and scale down global models of prediction too far; X river will do this, precipitation will fall this much in the Y region in the next few decades, sea level will rise by Z centimetres. Beven and Alcock ask, 'would it not be better to formulate decision-making in a way that does not depend on model predictions?' (Beven and Alcock 2012: 4). This argument resonates with calls for more transformative adaptation under conditions of 4^{o}C of warming (Stafford Smith et al. 2011). And it offers big challenges to our governance framings and our understandings of justice, built as they are on notions of stability, predictability and balance.

3. Anthropoceneans understand how they are embedded in the earth

Anthropoceneans understand the many ways we are embedded – materially, ontologically, historically, biogeochemically – in the processes of the earth. In Australia, research has brought this to our attention more clearly by showing the many traditions of indigenous people. The combination of palaeoecological and archaeological research, together with the emerging political voices of indigenous people, challenged the view of pristine wilderness on which many of our conservation ideals rested. In Australia we increasingly understand that we are also embedded spatially, in multifunctional landscapes with many overlapping land tenures and understandings.

The notion of being somehow embedded in the earth makes sense to people. It is widely expressed at the vernacular scale in people's experiences, as documented by a whole variety of cultural geographic research, including our own work among urban householders (Gibson et al. 2013). But caveats are necessary. Sustainable interventions in networks of storage and distribution, such as water, are strongest where people actively understand and participate in those networks (Head and Muir 2007). But there is emerging evidence of considerable

friction in effective application of sustainable technologies under 'set and forget' modes of operation, with continued connection to broader configurations of unlimited supply (see Moy 2012 on water tanks, Gill et al. in prep. on solar hot water systems). Understanding of 'where things come from' and the networks that support us needs to fostered.

Anthropoceneans understand that their embedding is not all local. Philosopher Val Plumwood (2008: 139) put forward the idea of 'shadow places', which bring to light the many unrecognised 'places that provide our material and ecological support, most of which, in a global market, are likely to elude our knowledge and responsibility'. On the positive side, the complexity of global connections means there are also many points of action and political intervention.

4. The Anthropoceneans are good at sharing

This will not be a utopian equality, as human instincts to provision their own at the expense of the other will surely prevail. But there will be a forced reduction in the levels of inequality seen in late modernity, as the capacity to build up huge wealth through global capital disappears. Extreme events will only partially discriminate along axes and gradients of current wealth and capacity. For many, this will mean they have to accept the generosity of strangers in a way they have never had to do before. For others, it will mean sharing things we usually understand in very individualistic terms, like jobs. Jackson and Victor (2011), among others, have argued that a systematic reduction in working hours is one of the ways by which we could make deep emissions cuts without the suffering that would accompany forced recession.

5. Anthropoceneans live in diverse families and communities

One of the strongest themes in our household sustainability research is that family and social relationships are key drivers of household decision-making, even in environmentally conscious households (e.g. Farbotko and Head 2013, Gibson et al. 2013). The family will continue to be central, but its form will likely become increasingly diverse. Multi-generational, temporary alliances, interconnected in multi-layered ways with the surrounding community are already evident (Klocker et al. 2012). It is likely that a more clannish kind of collective will be both effective and something that people are comfortable with.

6. The Anthropoceneans will have a different orientation to time and its 'use', compared with the Moderns.

As Moderns, we have gradually worked towards seamless time; always on and always effective. This has interacted in particular ways with mobility, such that we can cross the globe in precisely predictable ways. The Holocenean part of us, particularly the agricultural one, works with rhythmic seasonal changes, or their failure. Anthropocene time will have lots of friction, unpredictability, be harder to mediate with technology (or maybe will necessitate new technologies of mediation). We will need to be prepared for interruptions and changes of plan.

We will also need to spend a higher proportion of our days on the necessities of life. As fossil fuel use becomes less possible, and before renewables kick in sufficiently, material standards of living – as currently measured - will surely decrease. Our own labour will need to be substituted for fossil fuel and the cheap labour of distant others. Provision of food and water will likely take more hours of the day, leaving less time for commerce, formal education, cultural pursuit. Or, better perhaps, the provision of necessities will reshape trade, knowledge and culture. We can expect some reduction in the various specialist divisions of labour on

which modernity has been built. Mothers of young children may laugh that this is what their day looks like anyway – dealing with young people's immediate needs for sustenance.

There is already evidence of shifts in social temporalities built around previously predictable events such as the coming of autumn mushrooms and winter snows (Norgaard 2011). In other cases it is recognised that there are no 'normal' years; Saami reindeer herders say that 'One year is not another's brother' (Tyler et al. 2007: 196). Contexts where people are well used to coping with fluctuating and uncertain conditions will come under increasing pressure, and it will not necessarily be clear where the thresholds of coping might be. In Australia, for example, we can ponder the pressures on stretched volunteer capacities as bushfire seasons extend at either end of summer, into spring and autumn.

7 The Anthropoceneans have changing relationships to materials

The Anthropoceneans will need to retrieve old and develop new relationships to materials. Skills and sensibilities towards material repurposing will be highly valued (Carr and Gibson 2015). Wasting food and other commodities will be socially unacceptable. Revised systems of storage will be needed at different scales – within the home, at a community level. We will need and develop new aesthetics - towards the reworked and recycled, frugal but without being mean, suffering or pinched. It is interesting to consider which kinds of creative practices will be strengthened.

But, like all other humans throughout history and prehistory, Anthropoceneans mediate life through their interaction with materials and material objects. We will need to broaden our understanding of technology to encompass not just high tech but also low tech. So – in contrast to some of the ways we conservationists currently think about these issues - it will

not be anti- or un-material. Material stuff will be just as important as it has ever been to people.

8 Anthropoceneans live with abundance as well as scarcity

Australian ecosystems have been described as boom and bust ones. They have evolved to cope with huge variability, particularly in the availability of water. This variability is projected to increase under climate change – more intense droughts, more excessive floods. We might want to think more about ourselves and our systems as becoming adapted to such conditions – what might it mean to become a boom and bust society? It's not just about less stuff – sometimes it will be about more stuff. Water is one example. In relation to wheat we have started to argue that we need to think of it as something that belongs in Australian ecosystems (Head et al. 2012). The plant is rather good at boom and bust. Most of the people who grow it are also good at boom and bust. It is the financial instruments and the economics of the infrastructure – of both wheat and water - that are currently too stable and inflexible.

We are a Holocene subspecies. Our lives have been made possible by agricultural production, and we need to accept this. Agriculture is going to look different in the future, but going back to subsistence farming is not going to cut it for whole populations. There is a major intellectual task ahead in imagining new kinds of agriculture and horticulture; what bundles of practices (Denham et al. 2009) can we reconfigure to match more unstable conditions?

9. Anthropoceneans step forward, not back

This is not a time to remove ourselves from the world. The Anthropoceneans step forward, not back. It is now clear that the metaphor of treading lightly on the earth does not actually help operationalise turning around this titanic. Uncertainty has led us to frame the debate in terms that conceptually step back: the 're' words reduce/restrain/ restore. These words emphasise concepts of frugality, precaution and localness. These are all good things, and it may be that small and local is where we have to start, but it is not going to be enough. We are going to need things that are transformative, that take courage, that harness abundance.

We criticise climate deniers for failure to act. But how many of our conservationist positions are in fact too conservative, too rooted in preserving the past? What are the technological changes that we are going to have to embrace? What are the human interventions that will be required? I am not appealing to technofixes here, although there will surely be some.

Finally, we need to ponder which of these characteristics we already have, and which need to be developed further. A number are consistent with a more optimistic reading of modernity; sharing for example is part of what makes a good modern, indeed a good human. In other instances we can usefully become differently modern (Head and Gibson 2012). A more hopeful rendering is that, in searching for new senses of self, it is not necessary to confine ourselves to previously articulated 'green' identities, for several reasons. First, as I have outlined, much environmental thinking is too closely aligned to the past, and insufficiently nimble for more unstable futures. Second, many of our collective capacities may not be overtly 'environmental' at all, rather they go under the umbrella of strengthening what we have called the 'social' fabric in as many ways as we can. And finally, if we had not already accepted it fully, the Anthropocene surely disrupts any lingering notion that we can think of the environmental and social realms as separate and separable.

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[1] Many of the ideas and arguments in this essay are explored in greater depth in my book in preparation *Hope and Grief in the Anthropocene: Re-conceptualising human-nature relations* (Routledge UK). Questions of grief are also explored in Head, L. 2016 'Grief, loss and the cultural politics of climate change', a chapter in H. Bulkeley, M. Paterson and J. Stripple (eds) *Towards a Cultural Politics of Climate Change: Devices, Desires and Dissent*.