

Apocalypse Nicked!

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Page count: 24

Figures:2 (submitted separately)

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Apocalypse Nicked!

nicked, *adj.* 2. *Brit. Colloq.* Stolen. Oxford English Dictionary

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[H1]Abstract.

Warnings about climate tipping points are now commonplace. This article identifies some of the political factors behind the rise of tipping point rhetoric. It argues that the success of tipping point rhetoric can be explained by its consonance with two enduring tropes, millenarianism and appeals to a delicate “balance of nature”. Tipping point rhetoric was initially used to advocate greater action on mitigation but it – and the millenarian narrative in particular - has been used to argue for an entirely different solution to climate change: that of geoengineering.

[H2]Keywords

tipping points, climate emergency, millenarianism, Cultural Theory, geoengineering

[ext]we are on the precipice of climate system tipping points beyond which there is no redemption. (Hansen 2005, 8) [end ext]

[H1] Introduction.

Talk of tipping points is now commonplace in climate science and policy and also in the media. Concerns that the prevailing linear models of climate change could be wrong were first voiced in the late 1980’s. Scientists started to warn that environmental changes would not be smooth, gradual events, but sudden “sharp jumps” (Broecker 1987,123). Since then, warnings of abrupt, non-linear climate change effects have been commonplace rhetoric for environmental campaigners and scientists alike (e.g. Mastrandrea and Schneider 2001; Alley et al. 2005). Abrupt, non-linear climate change effects are considered more pernicious because they will shock human and environmental systems that will in turn struggle to adjust.

¹ Clare Heyward, University of Warwick, Steve Rayner, University of Oxford. This work was conducted as part of the Climate Geoengineering Governance Project (<http://geoengineeringgovernanceresearch.org>) funded by the Economic and Social Research Council (ESRC) and the Arts and Humanities Research Council (AHRC) - grant ES/J007730/1 Clare Heyward additionally acknowledges financial support from the Leverhulme Trust and prior to then, the Oxford Martin School.

As the concept of abrupt climate change effects became accepted, it was linked to the concept of tipping points, which had its origins in describing social change (e.g. Gladwell 1996).

Tipping point rhetoric has three elements, all captured by the much-quoted statement from James Hansen (above). The first is irreversibility: once passed there is no return. The second is abruptness. The third is catastrophe -the change will have dire consequences for human well-being. Examples of “tipping elements”, features of the climate system that could pass a tipping point (Lenton et al. 2008, 1786), include, loss of permafrost, loss of Arctic sea ice, the release of volumes of marine methane hydrates, and decreases in the volume of the Greenland and West Antarctic ice sheets, Amazon and boreal forest die-back, and changes in the El Niño Southern Oscillation amplitude and frequency (Lenton et al. 2008).

The tipping point trend in climate discourse commenced in earnest in 2001, when Hans Joachim Schellnhuber invoked the concept in a Linacre Lecture at Oxford University (Sciencewatch 2009). The term subsequently began to appear in the science policy literature as climate scientists used the concept when communicating climate change to policy-makers and the public (see Russill and Nyssa 2009). Lindsay and Zhang (2005) made the first mention of tipping points in a scientific article and subsequently the term became increasingly used in scientific literature and general climate discourse. For example, the twenty-year anniversary of the *Rio Earth Summit* prompted reflection about the progress made and further warnings about the possibility of passing climate tipping points (Barnosky et al. 2012). Delegates at *Planet Under Pressure*, a major scientific conference in March 2012, were repeatedly told about the dire state of the global environment and the need for new thinking and urgent action (Rayner and Heyward 2013).

These recent developments are examples of an enduring trend of using claims about the natural world to justify political ones (ibid). For example, the claim that “Human societies must now change course and steer away from critical tipping points in the Earth system that might lead to rapid and irreversible change” (Biermann et al. 2012) is a contestable political claim about the appropriate response to climate change. Even granting that non-linear changes are involved, it could be argued that scientific research and climate policy need not *necessarily* be focused on avoiding tipping points. For example, emphasising averting a possible physical catastrophe could obscure less dramatic, but very real and severe problems that will occur in some of the world’s poorest countries due to “ordinary”, linear, gradual anthropogenic climate change.

This is not to say that tipping points and abrupt changes have no basis in scientific fact. Geological records show that abrupt climate changes have happened (Alley et al. 2005), the greatest being the Younger Dryas, where temperatures dropped and glacial conditions returned in the Northern Hemisphere (Alley 2000). We merely suggest that increased concern with abrupt changes is not simply a response to improvements in scientific understanding of critical earth systems. The decision to highlight tipping points is an example of “stealth advocacy” (Pielke Jr 2007) by those concerned about lack of progress in curbing global GHG emissions. The rise of tipping point rhetoric has political roots. In this chapter we highlight some of the factors behind the success of tipping point rhetoric in climate discourses and some of the political consequences of its success, using the interpretative framework of Cultural Theory.

[H1] Cultural factors behind the success of tipping point rhetoric.

Cultural Theory is an anthropological framework which has been fruitfully applied to climate politics (see e.g., Rayner 1995a&b; Thompson and Rayner 1998; Verweij and Thompson 2006; Hulme 2009). The success of tipping point rhetoric can be at least partly explained by its appeal to two enduring cultural tropes: millenarianism and a view of nature as being delicately balanced. Both are associated with an “egalitarian” worldview or “cosmology” (Rayner 1982; Thompson 1987). However, the tipping point rhetoric and the rhetorical strategy associated with the egalitarian cosmology has been adopted by holders of a rival “hierarchical” cosmology but used to justify a very different kind of response to climate change. To show this, we firstly present a brief introduction to Cultural Theory, largely following Thompson et al. (1990), and outline two long-standing cultural tropes upon which tipping point rhetoric is based. We then show how key elements of the rhetoric was adopted and deployed for very different ends.

[H2] A brief introduction to Cultural Theory.

Cultural theory identifies four idealised ways of viewing the world and hypothesises that individuals will draw on one of these four cosmologies when constructing arguments and advocating action. These four cosmologies are: hierarchical, egalitarian, individualist and fatalist. They are differentiated according to two factors: social network characteristics (*group*) and the extent of social differentiation (*grid*). The group factor is linked to the desire

to maintain in-group/out group boundaries. The grid factor is the degree of individual control (or conversely, external constraints) an individual has.

Each cosmology tells a different story about human nature, individual-group relations, the natural world, danger, blame, responsibility and distributive justice. For example, the archetypal hierarchical context is a group with high internal differentiation and strong collective identification. The hierarchical cosmology holds that human nature has the potential for evil and disorder and needs to be controlled by inculcation of strong social norms. It values conformity with group norms and respects authority and institutions. The egalitarian context also has a high group identification factor, but the internal character of the group is different, with a strong desire for social equality and distaste for internal differentiation. Each individual is regarded as having equal power to steer the group's actions, external attempts to impose norms are distrusted, and large institutions are regarded as corrupting. Like the egalitarian worldview, the individual world view rejects attempts to constrain actions by recourse to social status (class, gender, age, etc.) However, unlike the egalitarian world view, it sees humans as fundamentally rational and self-interested, with more interest in their own gain than group membership. The individualist setting is typically a network where competition between equals is rewarded. People operating in an individualist mode have a high sense of personal agency. This last element is absent for the fatalist context. As the name suggests, the fatalist worldview holds that individuals are constrained by forces external to them, but unlike the hierarchical context, there is no sense of belonging to a collective. Due to the lack of agency the fatalist voice is not present in political debates, but their cause might be taken up by one of the other voices. The three politically active voices are depicted below.

[[Figure 1 here.]]

Cultural Theory does not claim that an individual holds to one particular cosmology in all situations and at all times. In fact, as individuals move between different social contexts they are likely to adjust their rhetoric accordingly (Thompson et al. 1990). Accordingly, the cosmologies are best viewed as sets of argumentative resources which can be used to critique existing social arrangements. It is this power of critique and prescription that is of interest here. Initial uses of tipping point rhetoric and political prescriptions drew upon the enduring narrative of *millenarianism*.

[H2] Millenarian thinking.

Millenarian thinking has been found in cultures and societies across the world and throughout human history. Originally it was a feature of religious narratives, where a powerful supernatural force (God, or ancestors) acts to reward the devout and dutiful and usher in a new age of peace and justice. *Secular apocalypticism* (Barkun 1986) is a more recent phenomenon with *green millenarianism* being one of its more prominent manifestations. Owing an intellectual debt to Thomas Malthus (Linner 2003), green millenarianism began in earnest with the rise of the environmental movement in the 1960s. The seminal text of the decade, *Silent Spring* (Carson 1962) told a story of humanity's use of pesticides destroying nature. Soon after, *The Closing Circle* (Commoner 1972), *The Population Bomb* (Ehrlich 1971) and *The Limits to Growth* (Meadows and Meadows 1972), all warned of impending crisis due to toxic waste build-up, famine, and severe resource shortages respectively. Proponents of these views appealed to the authority of modern science to justify a given course of action. It should come as no surprise then that, following in this tradition, apocalyptic framings are frequently encountered in discourses of climate change (Buell 2010).

[H2] General features of millenarianism.

Millenarian narratives share four key structural features (Rayner 1982). These are: (1) the *end of history* (2) that an *external force* will bring about the end, and (3) *time compression* - the end is imminent. These three features are used to construct a story about (4) the need for *behavioural change*. A brief elaboration follows.

[H3]1. The end of history.

One feature of millenarian thinking is that the current era is transient. Millenarian thinking traditionally posits a final purpose. The current era is one (albeit the penultimate) of an unfolding series of steps to that end-state. In much religious apocalypticism, the final state will be one of guaranteed peace and prosperity (material and spiritual) for all (Cohn 1957). Humanity is urged to prepare physically, mentally, and/or spiritually for the new era. Another form of apocalyptic thinking is *cataclysmic forewarning* (Wojcik 1997). Most green millenarianism and some religious prophesies (e.g. in the Old Testament) take this form. The end of the epoch threatens desolation and suffering on a vast scale. However, it can be avoided through human effort. Accordingly, the message of green millenarianism is that

humanity (or large sections of it) must change its ways in order to avert catastrophe. However, the actions undertaken will ultimately bring about a new era for human societies with the promise of flourishing lives for all.

[H3]2. External force.

The second feature of millenarian thinking is the presence of a powerful external force that will bring the current epoch to its end by delivering justice. For example, in religious apocalypticism, the end of the epoch is to be brought about by God, either to punish the sins of humankind, or redeem as part of the divine plan. Green millenarianism replaces God or spiritual powers with a quasi-divine Nature. The appropriate attitude to nature is one of awe, wonder and reverence at the powerful force capable of producing sublime beauty or terrible destruction. If humanity adopts the wrong attitude towards this powerful but alien force, it will react by wreaking catastrophe on humankind.

[H3]3. Time compression.

A continual refrain in millenarianism is that the end of the epoch is imminent and that action in preparation for, or to avert the catastrophe is urgently required. In religious apocalypticism, when the anticipated day of judgement passed, predictions were often quietly revised to another date in the near future. In green millenarianism, humanity is exhorted to act before it is too late and the forces of nature are set on a new path. The fact that environmental change is often slow and gradual does nothing to lessen the sense of urgency. Even if the catastrophe will occur decades or centuries in the future, action is needed now in order to avoid it.

[H3]4. Behavioural change.

Millenarian rhetoric ultimately aims to promote behavioural change. Humanity is admonished for its current failings and encouraged to pursue a different path. Most millenarian accounts prescribe that material goods must be redistributed, or in some cases rejected outright. Conventional activities aimed at securing those goods must cease. In religious apocalypticism, this change is regarded as essential preparation for the new era of very different forms of social and spiritual relations. In narratives of cataclysmic forewarning, such as green millenarianism, the rejection and redistribution of key material goods is necessary in order to avert the impending catastrophe. In both cases, the momentous

nature of the changes required means that resistance is to be expected, but it is permissible to overcome it in order to achieve the desired ends.

[H2] The egalitarian influence.

In Cultural Theory, millenarianism is associated with an egalitarian cosmology. It has been shown that a high group, low grid structure can be maintained by adopting the compressed conceptions of time and space, which are key structural features of millenarianism (Rayner 1982). The course of action advocated in the face of an apocalypse is thus the egalitarian demand to reduce and equalise consumption. “Small is beautiful” expresses the egalitarian ideal. A steady state economy, frugality, self-control (including in reproduction) and simplicity in an individual’s personal life are favoured. These help maintain the lack of internal differentiation desirable according to the egalitarian cosmology: all group members should have the same command of resources. Moreover, scaling back human impact is the only way to avoid catastrophe, according to the egalitarian view of the balance of nature.

The idea of a balance of nature is traceable at least as far as the ancient Greeks. It posits an equilibrium point between natural factors. Despite academic criticism (e.g. Kircher, 2009), this age-old metaphor persists in the public imagination, although there is significant variance as to how the balance of nature is understood (Zimmerman and Cuddington 2007). Holling (1987) elaborated four conceptions of nature, which were incorporated into the four main cosmologies of Cultural Theory by Michael Thompson (1987). The myth of stability is associated with the individualist cosmology. Nature is robust, justifying a laissez-faire attitude to managing the natural world. There is no need to regulate human activity because deviations from the equilibrium point will be temporary and natural systems will shift back. The egalitarian cosmology holds the opposing myth of instability. It holds that nature is ephemeral and that perturbations will trigger the collapse of a delicately poised balance. Meanwhile, in the hierarchical cosmology, nature is mostly capable of withstanding human activities, but there are limits and it is important to know where they lie. Finally, the fatalist conception of nature is that it is capricious and entirely unpredictable (Thompson et al. 1990).

[[Figure 2 here]]

The egalitarian conception of nature thus lends support to millenarian thinking by supporting the idea that sudden change to a radically different state of affairs is to be expected.

The similarities between this conception of nature and the idea of tipping points should now be evident. Tipping point rhetoric thus exhibits the main features of green millenarianism. A catastrophe is looming and it is the end of the era of humanity using nature's resources carelessly and greedily, disturbing the delicate balance. The forces of nature will react to centuries of mistreatment and react in ways that will make humanity quake unless immediate action is taken. For example, Europe's politicians were told by Tony Blair and Jan Peter Balkenende: "we have a window of only 10-15 years to take the steps we need to avoid crossing catastrophic tipping points" (quoted in Watt 2006) and the New Economics Foundation argued in 2012 that action is needed in the next 50 months (Simms 2012). Unless greenhouse gas (GHG) emissions are curbed, the positive feedbacks mechanisms will proceed prompting the onset of one or more tipping points (Romm 2011a; b).

Statements such as these are not scientific predictions, due to the uncertainties involved in forecasting what is likely to happen. Additionally, there is a vast number of factors that could affect eventual outcomes, prompting many scientists talk about "projections" only. Instead, the conditional aspects, plus the behaviour changes advocated makes them akin to cataclysmic forewarnings found in both religiously-motivated and secular apocalypticism. Humanity is on the path to disaster unless intended audiences makes profound changes in the way they live. The egalitarian voice claims that humans must respect nature's fragility and make only modest demands upon it. Most popularly advocated is to start dramatically cutting the use of fossil fuels upon which industrialised economies are based.

[H1] The success of tipping point rhetoric.

Tipping point rhetoric is not only the latest variant of green millenarianism but also the most respectable. This form of apocalyptic rhetoric is not confined to isolated or oppressed groups but promulgated by eminent scientists and world leaders. What factors can account for this success? The following offer at least a partial explanation. First, tipping point rhetoric is emotive. Newspaper articles about environmental disaster, complete with awe-inspiring images of icebergs calving or a landscape of dense green forest, can do much to stir public imagination and make climate change more tangible. Tipping point rhetoric also has a sense of drama, provided by the idea of the delicate balance of nature and the ancient narrative of millenarianism.

Secondly, this picture cannot easily be challenged; the global climate is extremely complex and significant uncertainties remain about key climate mechanisms. Even those who dislike the rhetoric acknowledge that the presence of tipping points cannot be ruled out. Indeed, as the next section explains, there is greater acceptance of tipping point rhetoric than might be expected. Indeed, we might say that tipping point rhetoric is the latest way of expressing the dominant *hegemonic myth* of climate change discourse, namely that the planet is fragile, vulnerable and alone (Rayner 1995a). A hegemonic myth is not a shared episteme or worldview, but a rhetorical theme that sets the terms of debate and within which even opposing arguments must be framed to be admissible to a discourse, despite how they will seek to subvert it once admitted (Thompson and Rayner 1998).

According to Cultural Theory, a lack of challenge is to be expected from the politically inactive fatalist perspective. We might expect contestation from those in the individualist corner, who are quick to decry “scaremongering” when it means that they will no longer be allowed to behave as they choose. Indeed, individualism is the world view most associated with climate scepticism (). It is noteworthy, however, there is little challenge to the hegemonic myth from the hierarchical cosmology. At first glance, tipping point rhetoric seems to form a middle ground between the egalitarian and hierarchical cosmologies but this middle-ground is rather narrow. Those who hold a more hierarchical cosmology can accept the hegemonic myth, but use it to promote their own preferred strategy. They can accept the basic concept of tipping points and elements of the millenarian narrative, but the ending of their story and their prescribed behavioural changes differ from those who hold an egalitarian view. Rather than rely solely on mitigation, there is an additional response: research into geoengineering should be conducted.

[H2] Millenarianism in pro-geoengineering rhetoric.

In the last half-decade growing number of scientists calling for concerted research into various techniques of *geoengineering*, the “deliberate large-scale manipulation of the planetary environment” (Shepherd et al. 2009:1). Out of all the justifications of pursuing geoengineering research (see Rayner et al. 2013), one of the most prominent and powerful has been the “climate emergency” argument (see for example Crutzen 2006; Blackstock et al. 2009; Victor et al. 2009; Caldeira and Keith 2010; Long et al. 2011; Goldblatt and Watson

2012; Victor et al. 2013). A climate emergency is a rapid and drastic physical change in the Earth's climate, which could have extremely pernicious effects on human well-being. One particular form of geoengineering, sulphate aerosol injection into the stratosphere to diffuse sunlight, is thought to be fast-acting and therefore the means of averting a climate emergency. Hence, it is argued, there is a pressing need for research into that particular geoengineering technology.

The climate emergency argument borrows from the green millenarian narrative in three ways. First, the climate emergency narrative maintains the green millenarian feature of positing the possible end of an epoch and the dawn of a new era. Secondly, this era is brought about by the realisation that external natural forces will react to humanity's behaviour unless humankind adopts an appropriate relationship with the natural world. It is another cataclysmic forewarning: humanity can be saved from the crisis providing appropriate action is undertaken. However, the concept of nature invoked and humanity's appropriate relationship to it is different. Instead of the egalitarian view of nature as ephemeral and delicately balanced, advocates of the climate emergency argument adopt the perverse/tolerant view associated with hierarchical context. On this view, tipping points indicate that nature is extremely complex and mismanagement can lead to disaster. However, there is some scope for manoeuvre and good management of natural processes is not impossible. The climate emergency argument thus coheres with the egalitarian worldview and challenges the individualist cosmology by postulating that there are limits to nature's resilience. Ultimately, however, it rejects both individualist and egalitarian cosmologies by postulating that Nature can (and should) be carefully managed and done so by suitably qualified experts. In this narrative, the control over the Earth's biological, chemical and physical systems offered by geoengineering marks the completion of the transition to the Anthropocene. As in the green millenarian story, rightful order is achieved, but here, humans achieve their destiny as the stewards of nature.

Secondly, the shift from talking of dangerous climate change to "climate emergency" immediately adds a sense of urgency characteristic of millenarian thinking. Proponents maintain that whereas the occurrence of any possible "climate emergency" might be many decades away, action – in the form of research into stratospheric sulphate aerosols – is needed *now*. This could be because (i) a tipping point, which would trigger a climate emergency, could be passed in the near future; (ii) the technologies needed, either to avoid the passing of

a tipping point, or to cope with the effects of doing so, will take years to develop (testimony from Ken Caldeira to the United States House of Representatives Committee on Science and Technology, quoted in Gordon 2010); (iii) technical limitations must be investigated (Blackstock et al 2009) either to guard against the temptation to deploy initially promising but ultimately unsafe and undeveloped technologies (Caldeira and Keith 2010); or (iv) to avoid “moral hazard”, the temptation to delay mitigation in the hope that this form of geoengineering will make it unnecessary (Keith et al. 2010).

Those who use climate emergency arguments geoengineering have thus adapted the green millenarian narrative, keeping key elements of its powerful rhetoric. There are some differences: climate scientists who use the emergency argument say that an emergency *could* happen, not that it *will* happen unless behaviour is changed. They are also careful to use the narrative to propose another type of response to climate change, not to displace entirely the case for mitigation. Finally, in keeping with the different ending to the hierarchical narrative, a different redistribution of resources is called for. In order to safeguard humanity against a possible catastrophe, more research funds should be provided to the scientific elite.

[H1]Political Consequences.

The framing of the natural world as fragile and vulnerable, based on the egalitarian view of nature, has long been one of the hegemonic myths in climate discourse (Rayner, 1995a). As such, it is accepted by anyone who wishes to participate in the discourse. Thus “climate sceptics” or “climate deniers”, by holding that nature is robust, reject this myth and are in turn cast out by those who accept it. Within the climate discourse the success of this myth is also evident in the side-lining of adaptation policies because they were thought to go against the “tread lightly” prescription associated with the myth of fragility (Pielke et al. 2007). Tipping point rhetoric is now one of the dominant ways in which this hegemonic myth is expressed. Hence, despite its egalitarian origins, it is accepted by those of a hierarchical persuasion. However once an agent’s acceptance of any hegemonic myth confirms them legitimate participants, they begin to posit different elaborations and exceptions according to their own specific views and to advance their own interests and solutions (Thompson and Rayner 1998). Egalitarians and hierarchists do not contest the existence of tipping points, but rather their *significance*. For the egalitarian worldview, tipping points show that nature is ephemeral and that a collapse is on its way. For the hierarchical voice, tipping points are

indicative of what *can* happen if nature is not properly managed. They are a pathological symptom, real and dangerous enough, but not an essential aspect of the world. Tipping point rhetoric thus serves both a green millenarian position and an alternative millenarian account invoked in the rhetoric of advocates of geoengineering research. Both use millenarian rhetoric, promising a new era and justifying urgent action accordingly, and both use the idea of catastrophe to argue for their own worldview and preferred response.

The ascendancy of tipping point discourse has several political consequences. First, history suggests that apocalyptic rhetoric is often used as justification for more authoritarian rule, so we might expect those who invoke tipping points to argue for political change. There is some evidence for this, as we will show shortly. Secondly, the time compression inherent in the millenarian discourse would lead us to expect that the claims of the necessity of urgent action will be contested. While, again, there is some evidence for this, there is less contestation than might be expected when millenarian narrative is used by the hierarchist voice. This leads to the third consequence of the success of tipping points: this particular green millenarian rhetoric has been used by advocates of geoengineering research to advance solutions quite inimical to conventional environmentalist ideals and to the egalitarian cosmology upon which they are based.

[H2] The tendency towards authoritarianism.

Tipping point rhetoric can potentially lead to more authoritarian modes of decision making. In green millenarianism, if very severe mitigation is required, then it might be that regulation of personal consumption is necessary. The possibility of eco-authoritarianism has always loomed over green politics. However, given the general egalitarian commitment to participatory democracy plus the fact that strict egalitarianism is rarely part of the “establishment”, but usually a subaltern voice opposing it (Thompson et al 1990), it is perhaps more likely that a more authoritarian form of governance will result from the success of the hierarchical use of the rhetoric. As Verweij and Thompson (2006) have observed, this has been evident in calls for global systems of observation, co-ordination and planning, such as the 2003 United Nations Human Development Report’s call for a “Life Observatory” (United Nations Human Development Programme 2003). This trend continues. In 2012, the *State of the Planet Declaration* called for a “new contract between science and society in recognition that science must inform policy to make more wise and timely decisions ...” (Brito and Stafford-Smith 2012). Meanwhile, from their claim that human societies “must

steer away from tipping points”, Frank Biermann and his colleagues argue that to do so requires “fundamental reorientation and restructuring of national and international institutions toward more effective Earth system governance and planetary stewardship”. (Biermann et al. 2012, 1306). They recommend, the “upgrading” of the UN Environmental Programme so that it becomes a specialist UN agency equivalent to the World Health Organisation, with “a sizable role in agenda-setting, norm development, compliance management, scientific assessment and capacity building” (Bierman et al 2012, 1306). Also recommended are measures to integrate sustainable development policies at all levels and to close gaps in global regulation, especially of emerging technologies, including geoengineering. Obviously, this form of expert authoritarianism should not be regarded as equivalent to dictatorship. Most scientific experts in the Western world profess to be democrats and see their role as advisory. (Indeed, Biermann et al. do acknowledge issues of legitimacy (2012, 1307)). It remains the case, however, that a transfer of political power is called for and that expert contributions should be taken much more seriously in the policy-making process.

In the case of geoengineering as a response to a climate emergency, we might expect that similar governance solutions will be advocated as the field matures. The climate emergency narrative vindicates the hierarchical view of nature and the corresponding ideal of management by experts who can maintain the boundary between climate stability and catastrophe. Additionally, widespread acceptance of climate emergency rhetoric could effectively cede the power to decide about appropriate action from the rest of the population. An early report stated that, “in a crisis, ideological objections to solar radiation management may be swept aside” (Lane et al. 1997, 12). Whether the greater fear is eco-authoritarianism or expert-authoritarianism, we should ask what transfers of political power are being advocated.

[H2] Pitfalls of time-compression.

The second danger is that as a form of millenarian rhetoric, the non-occurrence of anticipated events tends to be used by holders of a rival cosmology to discredit it. For thousands of years, the imminent end of the world has been proved to be not so imminent after all (for a truncated list of millenarian visions in the USA alone, see (Stewart and Harding 1999)). When prophecies fail, their proponents make revisions, while their opponents take the opportunity to mock them for their credulity. As tipping point rhetoric is being used both by holders of egalitarian worldviews and also by those who take a hierarchical position, the opponents to it

will be holders of individualist worldviews. Indeed, those who downplay climate change generally often espouse individualist values (Lieserowitz 2006).

Holders of individualist worldviews point out that disaster has not happened yet. Nor, they argue, is it going to. Not only is nature robust but humans are capable of adapting to any natural changes. Whatever the position taken on the facts of climate change, the real object of concern in the individualist viewpoint is the attempt to limit individuals' rights to use, and to profit from the use, of the Earth's natural resources. The time-compression introduced in the global warming debate means that each year a disaster *does not* happen is taken as further confirmation that it *will not*, just as every cold snap is taken as evidence that global warming itself is a sham and disproof of the hegemonic myth. Those who "believe in anthropogenic global warming" are merely the next set of doom-mongers. However, there is one important twist.

As those of a hierarchical and an egalitarian persuasion both appeal to millenarian rhetoric and accordingly emphasise urgency, we might expect both to be equally susceptible to the pitfalls of time compression outlined above. Instead, there is less contestation from individualists when millenarian rhetoric is promulgated from a hierarchical standpoint. Indeed, Weitzman (2009) argues that the costs of a climate emergency make it prudent to invest in sulphate aerosol injection research. Why might that be the case? One reason is that geoengineering turns out to be consistent with the individualist cosmology as it is with the hierarchical cosmology. Several participants in the climate change debates who have endorsed broadly individualist views in the past accept and endorse sulphate aerosol geoengineering research (e.g. Bickel and Lane 2008; Lomborg 2010). For the individualist, nature is robust, so large-scale interventions will not pose any major problems. Nor is there any problem in managing environmental systems for greater human benefit. For example, the individualist perspective might agree with statements such as "humans have long been co-creators of the environment they inhabit" (Schellenberger and Nordhaus 2012) or that gardening and geoengineering differ only in their scale (Keith 2000). The individualist voice does not object to the idea of geoengineering, so contesting the hierarchical use of tipping point rhetoric is less of a priority than contesting the egalitarian calls for redistribution. For the egalitarian green millenarians, this is a bitter irony. The solution proposed by their former rhetorical allies, those holding the hierarchical worldview, is now garnering support from another of their political opponents, the individualists. Tipping point rhetoric, the latest

variety of green millenarianism will have played an instrumental role in bringing about a solution that is anathema to the egalitarian cosmology. From the hierarchical point of view, we suggest, this has been a successful case of *stolen strategy* and one means of promoting a preferred response to climate change.

[H2] Stolen strategies

Stolen strategy is a concept similar to that of the more familiar “stolen rhetoric”. In Cultural Theory, a case of stolen rhetoric is when an individual uses, when discussing a specific issue, the rhetoric, the key values and concepts of one culture to support the position of another (Thompson 1990). Stealing rhetoric can be a deliberate manoeuvre: an individual will make shifts in discursive strategy to support his or her desired conclusion in a particular context (West et al. 2010). With this potential advantage comes the risk that using the language of a rival cosmology will undermine the individual’s current cosmology if too many exceptions are made. For example, the anti-abortionist who uses the egalitarian language of “the rights of the foetus” effectively abandons the hierarchical commitment that the community can differentiate between its members (Thompson 1990, 263). In addition to stolen rhetoric, there is also the concept of *stolen strategy*, where the “*means* corresponding to one cultural bias are used to achieve aims belonging to another bias” (Mamadouh 1999, 404 our italics). Stealing strategy carries risks similar to those of stealing rhetoric. We suggest that the hierarchical use of climate emergency rhetoric is best understood as an example of a *stolen strategy* in which case the hierarchical worldview remains the same, but the speakers take elements of a narrative normally associated with the alternative cosmology of egalitarianism. Climate emergency rhetoric shares similar features with the apocalyptic narrative *structure* of green millenarianism, but, as we have seen, it does not share its *content*.

If climate emergency rhetoric is an example of a stolen strategy, we might expect the hierarchist justification of geoengineering research to fluctuate as the political context changes. For example, it will be interesting to see whether climate emergency rhetoric wanes if governments and funding bodies agree to make substantial investments in sulphate aerosol injection. In the short term, we might expect the hierarchical justifications to occupy the middle-ground between the technological optimism of the individualist and the pessimism of the egalitarian. This would partly account for the oft-heard refrain that scientists endorse research but are agnostic on deployment and that research into all geoengineering technologies must include investigation of social impacts, including impacts on mitigation.

In the longer term, if geoengineering becomes part of the mainstream discourse on climate change, arguments offered in its support that are more congruent with the two “establishment” cosmologies (i.e. the individualist and hierarchical cosmologies) might become more common, and the frequency of climate emergency arguments may decline. In fact, there are signs that this is beginning to happen. A recent study about geoengineering framings in English-language newspapers suggests that there are diverse justifications for pursuing geoengineering (Scholte et al. 2013). Another study reports that the “metaphorical landscape” is already beginning to change (Nerlich and Jaspal 2012). Moreover, some advocates of geoengineering research have recently stopped using climate emergency arguments to make their case. This does not mean that the climate emergency argument is in permanent decline. It retains considerable potential to be used as a “trump card” should other arguments fail to be convincing. Moreover, we can expect the use of climate emergency justification to fluctuate according to political factors, e.g. the relative priority given to geoengineering in climate policy.

In light of the variety of justifications for geoengineering research consistent with the hierarchical cosmology, we might ask why was the climate emergency rhetoric adopted in the first place? Why not, for example, make an individualist appeal to the relative cheapness of sulphate aerosol injection – as others (e.g. Gingrich 2008; Levitt and Dunbar 2009) have done? We conjecture that climate emergency rhetoric was instrumental in persuading members of the scientific community to break their self-imposed taboo on geoengineering. In one of the most influential papers on geoengineering to date, Paul Crutzen stated that warming of Arctic regions might result in accelerated carbon dioxide and methane emissions, leading to positive feedbacks and warned that ‘Earth system is increasingly in the non-analogue condition of the Anthropocene’ (2006, 217). Crutzen’s paper was published before the concepts of tipping points and climate emergency were in common parlance but the non-linear conditions and his example of methane release have since been discussed in those terms. Also significant is the invocation of the Anthropocene. A new era is dawning and markedly different action is warranted. Both egalitarian and hierarchical worldviews take the concept of hubris seriously, leading to members of the scientific community being reluctant to recommend geoengineering research. Positing a new era and the threat of a possible emergency enabled the hierarchical voice to overcome that obstacle. In these new circumstances, sulphate aerosol geoengineering could (regrettably) be the best course of

action. In that case, scientists had better know what they are doing. Research is therefore necessary (Lawrence 2006).

[H1 Conclusion

The invocation of climate tipping points is a political strategy used in the discourse on climate change. Originally a concept promoted by environmental activists and concerned scientists in an attempt to galvanise action on mitigation, tipping points are now a key element in a new variant of green millenarianism. The narrative of a climate emergency displays key features of millenarianism and prescribes a course of action for avoiding environmental catastrophe. The narrative, the view of nature it depends on, and the prescribed action are all consonant with the egalitarian worldview of cultural theory. However, the concept of tipping points has also featured in another apocalyptic narrative, that of climate emergency rhetoric. This presumes a hierarchical view of nature and accordingly prescribes different actions. The foregrounding of catastrophe and urgency of the climate emergency argument gave it considerable rhetorical power compared to other justifications for geoengineering research. Climate emergency rhetoric put geoengineering on the climate policy agenda by suggesting that scientific investigation geared towards sufficiently high impact events was justified, even imperative. The possibility of drastic climatic events was used to break the scientific community's own taboo in order to advocate geoengineering research as part of the global response to climate change. Once sufficient momentum is created, the push towards geoengineering research can then be supported by both hierarchical and individualist viewpoints. The use of apocalyptic climate emergency rhetoric by climate scientists to justify research into geoengineering is seemingly a case of a successful stolen strategy.

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Figures.

Figure 1. A map of the three active cosmologies, after Rayner 1995b.

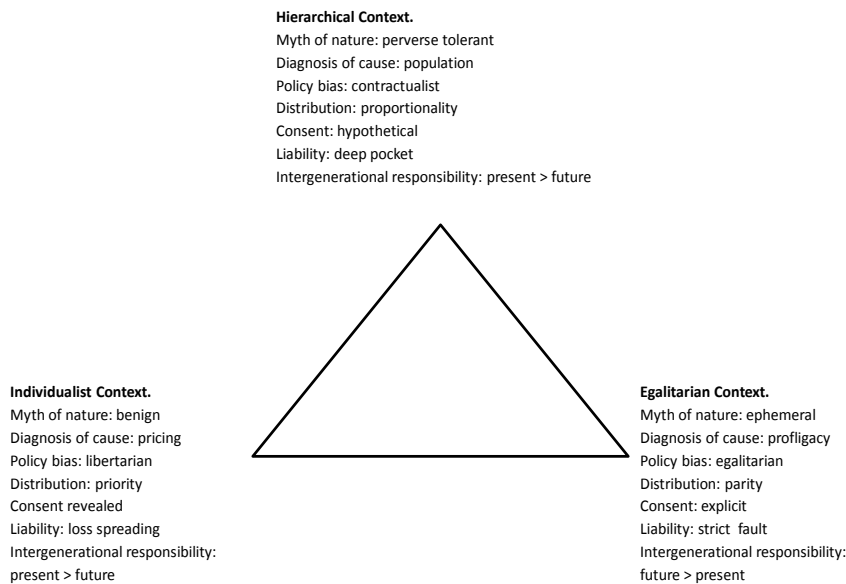


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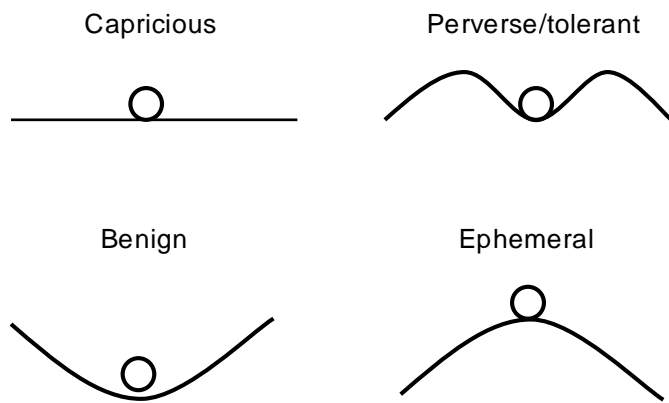


Figure 2 Myths of nature (Thompson 1987, after Holling 1986)

