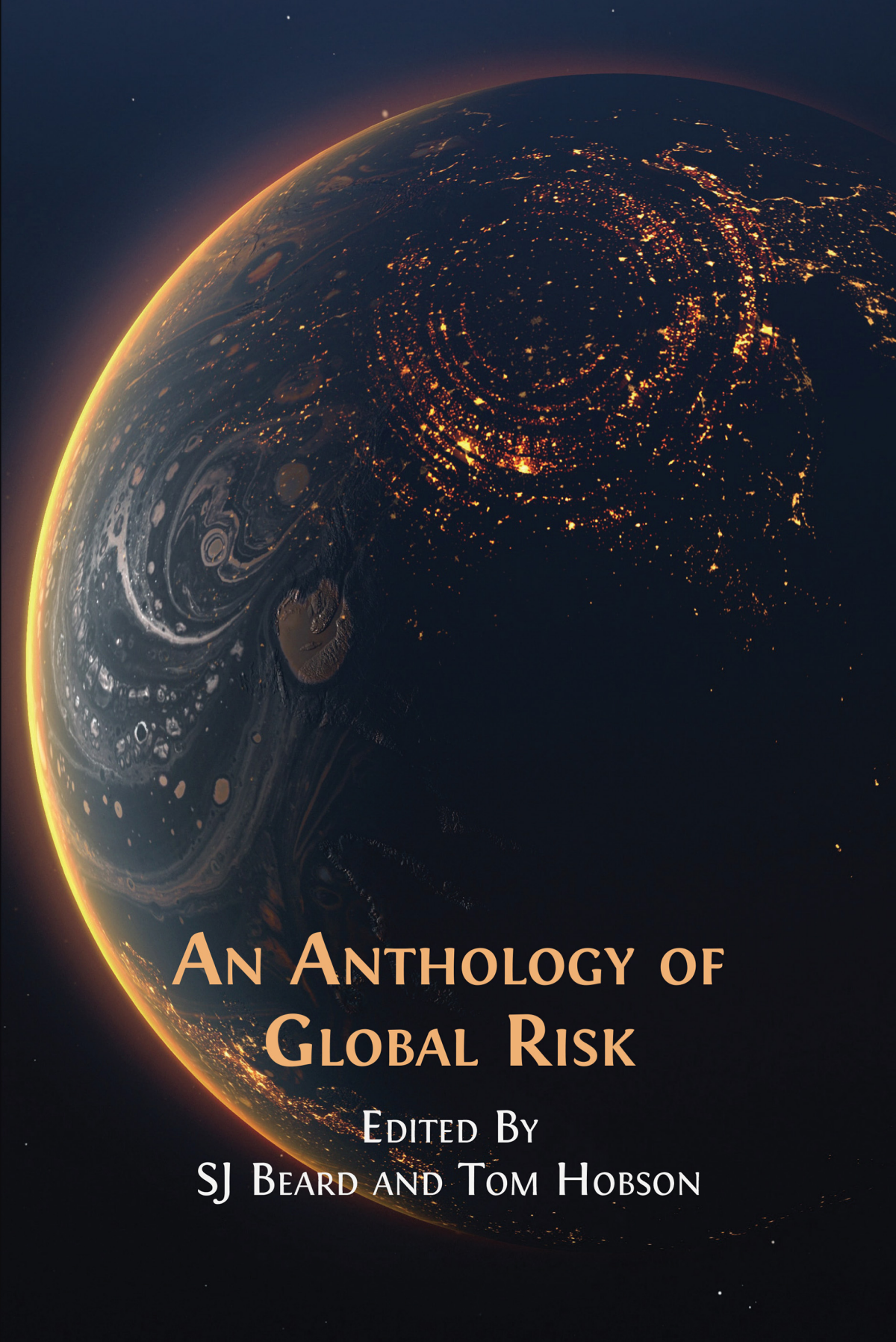

An Anthology of Global Risk

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14. Existential Change: Lesson from Climate Change for Existential Risk

SJ Beard and Luke Kemp

Highlights:

- In this short chapter the authors draw on several research strands and papers within CSER to offer a theoretical reflection on how to think about catastrophic climate change and what Existential Risk Studies can learn from climate change research.
- This is intended to build on the previous chapter, in which Catherine Richards, Richard Lupton, and Julian Allwood provide an empirical assessment of one highly concerning risk cascade involving climate change and highlight its potential contribution to global catastrophic and existential risk.
- Climate change is one of the most empirically well-studied risks and has deep links to pre-existing bodies of literature, such as disaster risk management, environmental studies, and food security.
- Drawing on these studies and more, the chapter reflects on how to frame research questions in existential risk, what causes catastrophic climate change to be neglected by climate and existential risk researchers alike, and how to incorporate assessments of response risk and co-benefits into thinking about catastrophic climate change.

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This short chapter brings together a number of important ideas and draws readers attention to other extant bodies of literature. The relative value of co-benefits approaches is discussed in other chapters in this volume, including Chapter 4, in more detail. The dangers of response risks are further discussed in Chapter 2.

1. Asking the Wrong Questions for the Right Reasons

Within Existential Risk Studies it is common to hear people ask the question "is climate change an existential risk?", and many who ask this question answer negatively, arguing that as a result climate change is not an important topic of research within the field. However, whether it is answered affirmatively or not, this question is misguided. There are three reasons for thinking this. Firstly, it makes little sense on a probabilistic level; whether something will be a threat to our collective existence is not a binary matter, it is a question of likelihood. However, many researchers within Existential Risk Studies mistakenly conflict existential risk with events that could be existential catastrophes. Secondly, climate change is not a single uniform process that will affect everyone in the same way; it is a set of diffuse impacts to different exposed populations, interacting with different vulnerabilities and exposures, and activating different risk cascades. As Richards et al. show, it will inevitably interact with a host of other threats (not only food security and societal collapse, but even factors such as the explosivity of volcanic eruptions or the emergence of zoonotic pathogens),[1] and these can interact with one another to create reinforcing feedback loops or "global systems death spirals".[2] Finally, "existential risk" is too vague and arbitrary a concept for the question to ever be answered. All the definitions of existential risk that have received the greatest public attention thus far, such as Toby Ord's, focused not in terms of an impact on humanity at any point in time but rather in terms of "the loss of long-term future value";[3] either referring to the author(s) particular vision of a high-tech intergalactic utopia, or a fuzzy undefined idea of "our potential".[4]

Other authors have practised attribution substitution and sought to answer an easier question such as "will the direct impacts of climate change make the Earth uninhabitable?" as a proxy for existential risk,[5] or suggested agricultural impossibility as a proxy for civilisational collapse

at a given level of temperature rise.[6] These are certainly more tractable questions, but they are also entirely different questions, and there is a danger in thinking that answering them is sufficient to assess the overall level of climate risk.

We are better off reverting back to the common-sense definition of existential risk as the risk to the existence of a given object, and specifying whether the object under threat is humanity as a whole (extinction risk), global industrial society (collapse risk), or something else entirely. We should be thinking of an overall level of risk emergent from a particular socio-ecological system, and how much climate change influences this level.[7] And the question we should be asking about this risk is what contribution, under certain scenarios, climate change will make, bearing in mind that it will almost certainly be operating in tandem with many other drivers of risk.

Considering this revised question can also help to rectify a recurring problem in the climate risk literature: using mean global temperature rise as the sole threat indicator. Authors and activists alike have frequently made a direct link between the level of warming and the likelihood of global catastrophe, with 4–6 °C being most frequently used as this terrible threshold.[8] However, global surface temperature is only one of the climate change induced factors we need to worry about. 3 °C of warming above pre-industrial levels could be entirely manageable if it occurs in a world of adaptive technologies, high levels of multilateral cooperation, wealth equality, trust in institutions, and the safe management of other planetary boundaries. It could also be catastrophic in a world where other planetary boundaries are transgressed, the international order is riven with conflict, lethal autonomous weapons are in mass production, and societies are scarred by inequality, low trust, and polarisation. Understanding the contribution of climate change to Global Catastrophic Risk requires a more sophisticated approach which looks beyond the direct impacts of a given level of warming to think through fully formed climate scenarios. We believe that, when conceived of in this way, the risks associated with climate change are more appreciable and it is far harder to argue that understanding them is unimportant; however, even if others disagree with this assessment, we still maintain that this is the right way to think about the problem.

2. Catastrophic Neglect

Given how poorly questions about catastrophic climate change are often framed, it is hardly surprising that it has been a highly neglected subject of study, not only among existential risk researchers but also among climate change researchers. Even at the basic level of temperature rise scenarios, we give far more attention to studying the impacts of lower-end warming rather than high-end warming. Text-mining of IPCC reports shows that mentions of 3 °C and above is underrepresented relative to its likelihood (and impact),[9] a finding that has been verified by both literature sampling and the reports of popular authors trying to summarise the climate risk science.[10] If anything, this trend appears to have worsened over time with subsequent IPCC reports.1[11] The use of complex risk assessments to study climate scenarios has also been neglected: looking at compound hazards is already rare,[12] let alone considering risk cascades and integrated climate catastrophe assessments. Yet catastrophic climate change remains high on the public and political agenda, creating both a perception that this is a risk receiving far more attention than it is, and also an intellectual vacuum that is easily filled by poor quality research, ranging from speculative doom-mongering[13] to overly simplistic neoclassical economic models.[14]

There are four key reasons for this oversight of extreme global climate risk. First is international climate policy. The 2015 Paris Climate Agreement on Climate Change has channelled scientific attention toward the agreement's goal of limiting warming to 2 °C above pre-industrial levels and pursuing efforts to stabilise it below 1.5 °C, as these are now the publicly stated goals of climate negotiations (even if they are highly unlikely to actually be realised). Second, analysis of high-end warming scenarios and complex risk assessments are simply harder to do. The higher the warming gets, the more difficult it becomes to study, as these scenarios are more displaced for the current climatic niche. Moreover, complex climate risk assessments involving multiple factors are far more challenging than a hazard-centric analysis focusing on only the direct impacts of mean global temperature rise. Third, climate scholarship has had a strong incentive to "err on the side of least drama".[15] Climate change has long been the target of fossil-fuel industry campaigns to sow doubt, not just on attempts to assess climate

change's catastrophic potential but even the fundamental science, and this creates incentives for conservative science that builds consensus and does not risk exploring divergent hypotheses.[16] Finally, many fear that discussing extreme risk could cause people to dwell too much on worst case scenarios, breeding fatalism and paralysis. However, this concern is misplaced; meta-analyses over hopeful vs. fearful messaging are mixed,[17] and in any case this is a false dichotomy. One of the most referenced pieces for those concerned about the paralytic effect of fear does show that hopeful messaging is more poignant than fear but also that "worry" is even more effective than hope.[18] The difference between worry and fear is one of degrees; the latter could even dissipate into the former over time. Furthermore, research should not be a PR exercise aimed to sway the public, in open democracies we have a duty to do honest risk assessments combined with clear recommendations for what can be done.[19]

Of course, these factors are only compounded by the consensus procedures of the IPCC, which seeks to synthesise scientific evidence for political purposes but is still often held up as a neutral arbiter of climate science. While useful, these procedures tend to produce lowest common-denominator outcome, which is precisely what is not needed when exploring extreme risks.[20] This is an important point of reflection for any future efforts to build similar bodies aimed at bringing scientific research to bear on the governance of other global risks.

3. The Risks and Rewards of Responding

Climate change is inherently tractable and we already have the technologies we need to stop creating it, albeit without the institutions to fairly distribute them with a sufficient level of urgency. However, responding to risks like climate change can incur risks of its own. Indeed, the IPCC, in its risk concept notes to the sixth assessment report, does not just discuss the usual three determinants of risk, hazard, vulnerability, and exposure, but also identifies "response risks".[21] Others have suggested that response should be added to the classic list of determinants.[22] In some cases, responses may be far worse than the initial perceived risk, that is, they are iatrogenic: the treatment is worse than the disease.

Existential risk is especially prone to response risks due to its scale, severity, and often speculative nature. For instance, at the extreme a speculative fear of dispersed weapons of mass destruction could justify a mass surveillance state.[23] In general, there is always the potential for concerns over global risk to justify a Stomp Reflex — the abuse of emergency powers which inappropriately empower those atop a hierarchy and shield them from scrutiny. [24] This is also true for climate change

Reacting to climate change could lead to emergency responses, such as stratospheric aerosol injection (SAI), in an attempt to manipulate the quantity of solar radiation hitting the earth and thus counter some of the impacts of climate change. Existing data on the direct impacts of SAI and its contribution to systemic risk or triggering other hazards is sparse. Preliminary analysis suggests that the greatest problem is the latent risks of "termination shock". If a calamity such as a nuclear war deactivates the system for a prolonged time, then this could significantly accelerate warming. Hence SAI shifts the risk distribution by likely lowering the level of risk in an average scenario but fattening the tail or "worst-case" scenarios depending on how SAI is deployed, to what degree it is used, and what geopolitical and ecological world it is dispersed into.[25] On the other hand, there are also frequently neglected co-benefits of climate mitigation policies, such as the public health benefits of eliminating coal smoke and other pollutants from our air.[26]

Such problems of response risk are perhaps the most neglected. Yet they are precisely what the study of existential risk needs to grapple with. This could include by using robust decision-making procedures, such as the minimax principle, to aid in selecting policy options under uncertainty or using deliberative democratic processes to combine diverse perspectives and co-create effective policy responses.

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