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**Moving climate change beyond the tragedy of the commons**

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The *Tragedy of the Commons* argued that global human population was on a path of unsustainable growth through the use of a parable of over-grazing of livestock on common land (Hardin, 1968). The concept of ‘the tragedy of the commons’ largely assumes that individuals are solely motivated by self-interest, an assumption increasingly at odds with insights across the social sciences (Van Vugt, 2009). The original article, and idea of the Tragedy, has had a profound influence on science and policy across all environmental issues. In the five decades since its publication, a concerted scientific response by multiple disciplines, synthesised in Elinor Ostrom (1990), has deepened the analysis of the causes of environmental overexploitation. Such work has documented commons dilemmas and assembled evidence that collective action can be mobilised at various scales to avoid tragedies in population, in overfishing, in resource consumption, and in land degradation. Many argue that global climate change represents the ultimate Hardin-style tragedy: the global commons of the atmosphere cannot realistically be enclosed or effectively managed, and power asymmetries and concentrated benefits from fossil fuel use mean that irreversible thresholds will be crossed before the costs are fully realised (Jamieson, 2014).

Yet this pervasive framing of climate change as a commons tragedy limits how we confront the climate challenge. Insights from two key areas of political and behavioural sciences are expanding the potential solution space by highlighting how climate change is a dilemma of decision-making and moral values rather than simply a global resource – or global commons – tragedy. First, collective decision-making is as much about managing risks to political systems and their legitimacy, so-called second order risks, as it is about managing the physical and material risks of climate change as documented by science. Second, emerging psychology research demonstrates the range of moral

underpinnings that can be mobilised for effective collective action on climate change. These insights shift emphasis away from a commons tragedy to more complex set of governance challenges.

Here we reflect on the relevance of Hardin's thesis fifty years after its publication to today's global challenges, and particularly in the context of the IPCC Special Report on 1.5 degrees which highlights a rapidly closing window of little more than a decade to transform the relationship between society and climate (IPCC 2018).

### **Second order risks**

To date, much climate change science has been focused on first order risks – the impacts of weather extremes and climate disruptions, or the costs of pathways to decarbonisation. Policy is often assumed to seek technical solutions to address these first order risks as they occur or are predicted. Yet mounting evidence suggests that second order risks, which refer to reputation and authority of management actors, dominate how key actors take decisions and prioritise actions. These second order risks include the blame and threats to legitimacy that individuals (e.g. political leaders) or organisations (e.g. governments or businesses) need to manage in order to maintain power and efficacy, and are often thought of as reputation management. Political scientists highlight how reputational risk forms the pervasive logic of organisations and is re-shaping and re-defining risk management agendas as the cornerstone of good governance (Power et al., 2009).

The influence of second order risks explains apparently maladaptive behaviours and decisions. The response of governments and local authorities to extreme weather events such as floods, for example, shows how decisions on recovery and long run adaptation are distorted by having to manage second order risks. After severe storms battered the southwest of the UK during winter of 2013-14, the wettest winter in 175 year records and attributable to underlying climatic changes (Schaller et al., 2015), there was considerable pressures on local government to re-build coastal defences rather than implement longer term proactive adaptation strategies (Brown et al., 2017). Responses to the perceived emergency prompted new alliances between different authorities, organisations at different scales and different domains of work, and between public and private sector. These new partnerships in turn amplified the significance of second order risks for different governance actors. This all took place in a context of budget cuts and greater demands for accountability in public funding, stimulating short-term fixes rather than long-term adaptation.

As climate governance becomes increasingly focused on multi-stakeholder collaboration, resultant shifts in public and private responsibilities move emphasis from managing first order risks – the traditional domain of biophysical sciences and engineering – to second order risks, which require negotiation with new partners (Kuklicke and Demeritt 2016). This is highlighted in the IPCC Special Report (IPCC, 2018), which stresses that meeting the challenge of a 1.5 degree temperature increase requires new forms of multi-level governance that includes non-state actors. The report recognises that this in turn needs enhanced capacities and accountability. This requires reframing climate change not as a simply a physical threat but as an issue that threatens the legitimacy and stability of governance systems and actors.

### **Moral positions**

Research from psychology and ethics shows that people's behaviour and attitudes, including those towards climate change, are fundamentally shaped by a diversity of moral concerns (Lakoff, 2010) (Figure 1). For example, moral foundations theory highlights universal moral pillars such as protection from harm, fairness, loyalty (in-group, patriotism, and duty), respect for authority and tradition, and purity (Feinberg and Willer, 2013; Adger et al., 2017). These pillars help to form the foundations for a diversity of moral framings of and associated discourses on climate change (Feinberg and Willer 2013). For example, Rossen et al. (2015) surveyed Australian adults about their stated beliefs around climate change, finding that those who claimed to be sceptical of climate change did so because of the perceived moral need to maintain the status quo (Rossen et al., 2015). In effect, this population justified their beliefs as moral due to their respect for authority and for the status quo as an overriding imperative. But for others, libertarian moral underpinnings about the rightness of free markets explained their scepticism.

### **Figure 1 here**

Critically, viewing climate change as a moral, rather than a technical resource scarcity issue can help to provide more impactful climate change framings. Across societies, conservatives tend to consider purity, respect for authority, and loyalty as more important than progressives do (Rossen et al., 2015). Understanding the importance of these moral priorities provides opportunities to frame climate change issues in ways that tap into the diverse moral foundations relevant to conservatives. Additionally, a moral perspective on climate change can also help explain why many prevalent arguments fail to resonate with climate sceptics.

Although protection from harm and fairness tend to be ranked equally highly by both progressives and conservatives, the latter's perceptions of fairness tend to be viewed through a lens of moral hierarchy that places humans above nature and the rich above the poor (Lakoff 2010). So, while the impacts of climate change on the Earth's biodiversity (Hughes et al., 2018) and the world's poor (Hsiang et al., 2017; Bathiany et al., 2018) regularly make headlines and raise public consciousness, these are unlikely to be considered unfair to climate sceptics as these popular framings of distributional impacts are not in line with their moral hierarchy. Morals matter, and appropriately appealing to the diversity of moral values could substantially reduce opposition to climate change science and policies. Reframing climate change for its moral consequences is not just the domain of religious or other leaders.

### **A new framing**

Hardin's analysis relied heavily on an over-grazing parable, in effect a moral tale of the collective tragedy caused by the 'rational' greed of individual cattle herders. We are not advocating a new parable: any over-simplified story is clearly problematic. But the power of parables is in their ability to illustrate a moral issue. Indeed, the subtitle of Hardin's article, was that the population problem he analysed 'has no technical solution: it requires a fundamental extension of morality' (Hardin, 1968, p. 1243). We assert that addressing climate change requires building the necessary system of moral frames, and fundamental changes in governance systems to better manage both first and second order risks.

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**Figure 1 Diverse moral foundations underpinning attitudes to climate change**

