

## Knowledge Pluralism

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### Abstract

In this chapter I reflect on the aspiration for climate governance from the perspective of knowledge and its relationship with different understandings of agency and democracy. I first offer a short historical perspective on the changing relationship between knowledge and culture in the context of enduring human attempts to bring order to the disorderliness of climate. I next consider the implications for climate governance of the dominant contemporary understanding of climate, namely as a physically interconnected global system. This form of knowledge elevates atmospheric carbon dioxide concentration and global surface air temperature as primary objects of political control and claims to render climate governable. I then reflect on forms of democracy that are either assumed or erased through these dominant processes of knowledge-making, arguing that institutionalised programmes of global change research pay insufficient attention to the difficulties of resolving enduring differences in citizen beliefs and values. Finally, I consider alternative frames of thought and action which do not place knowledge, least of all integrated knowledge, as the driver of climate governance and which suggest that global climate might not be a governable object.

## Introduction

In December 2011, atmospheric scientist Ken Caldeira of the Carnegie Institution of Washington, Stanford, resigned from his Lead Author position in the 5<sup>th</sup> Assessment Report (AR5) of the Intergovernmental Panel on Climate Change (IPCC). In explaining his surprise resignation Caldeira raised the following question:

‘I am all for scientific reviews and assessments ... however, it is not clear how much additional benefit there is to having a huge bureaucratic scientific review effort under UN auspices ... can anybody point to any important positive outcomes resulting from the IPCC AR4 process? Is there reason to expect a greater positive impact from the IPCC AR5 process?’ (quoted in Revkin, 2011)

This is indeed a question. What *has* been (what will be) the positive impact on policy, and ultimately on climate, of the four-year effort made by the 800 scientists and social scientists to produce AR5? Does governing the climate become any easier through sheer weight of knowledge? At the same time that Caldeira was resigning from the IPCC, Ban Ki-moon, Secretary-General of the UN, was raising the same question, but more obliquely, in his address to the international political negotiating community at the 17<sup>th</sup> Conference of the Parties in Durban:

‘It would be difficult to overstate the gravity of this moment. Without exaggeration, we can say: the future of our planet is at stake. The science is clear. The WMO [World Meteorological Organisation] has reported that carbon emissions are at their highest in history and rising. The IPCC tells us, unequivocally, that greenhouse gas emissions must be reduced by half by 2050 – if we are to keep the rise in global temperatures to 2 degrees since pre-industrial times. You are the people who can bring us from the edge. The world is looking to you for leadership’ (Ki-Moon, 2011).

‘The science is clear’ he said. But the politics are not. Knowing facts, or creating projections of the possible future, is not synonymous with enacting change in the world. In which case, as Caldeira asked, why another IPCC report? Why more knowledge? Dan Sarewitz has argued that there is already a surfeit of knowledge: ‘If humanity is unable or unwilling to make wise use of *existing* technical knowledge ... is there any reason to believe that *new* knowledge will succeed where old knowledge has failed?’ (Sarewitz, 1996: p.142; emphasis added). The recent move to coalesce an enlarged global change knowledge community through the Future Earth initiative (ICSU, 2014), launched at the Planet under Pressure (PuP) Conference in March 2012 in London, offered one response to Sarewitz’s problem of excess knowledge. It is not so much that there is a lack of knowledge, the thinking went, but that the knowledge that proliferates is of the wrong sort to drive effective political and social action. Instead, knowledge is needed about climate change that is ‘solutions-oriented, inter-disciplinary and participative.’

The convenor of the London PuP Conference conceives the relationship between knowledge and politics in a particular way: 'Achieving a sustainable world will require ... research ... to build the consensus required for effective action at national and global scales. *There is no other viable way forward*' (Stafford-Smith et al., 2012: p.6; emphasis added). Consensual knowledge (of the right sort) is believed necessary to build political consensus which in turn is believed necessary for enacting change in the world. The tone of this manifesto – 'there is no other way' -- epitomises the frustration of many in the knowledge community concerned about climate change. If knowledge drives political action (as they would understand it) and if there is no effective political action (as many would claim), then knowledge must be made to work harder – to be made more consensual - to overwhelm the political processes which stand in the way of change. If this cannot be achieved, then the alternative would be to suspend those obstructive processes of democratic politics in favour of something more authoritarian. Or as Jim Lovelock suggested a few years ago referring to climate change, 'It may be necessary to put democracy on hold for a while' (quoted in Hickman, 2010; see also Shearman & Smith, 2007).

In this chapter I reflect on the aspiration for climate governance from the perspective of knowledge and its relationship with different understandings of agency ('what causes the climate?') and democracy ('who decides, and how, what to do?'). In particular I suggest that the line of thinking summarised by PuP fails to do justice to the political realities of the contemporary world. The chapter proceeds in four stages. First, I describe briefly the changing relationship between knowledge and culture in the context of enduring human attempts to bring order to ('to govern') the disorderliness of climate. Second, I consider the implications for climate governance of the dominant contemporary understanding of climate, namely as a calculable and predictable physical interconnected global system. Knowledge becomes inseparable from power and for climate to be governed effectively a high premium is placed on making this knowledge global and consensual. I then reflect on the forms of democracy that are either assumed or erased through these processes of knowledge- and decision-making. Finally, I consider alternative moves which do not place knowledge as the *sine qua non* of climate governance and which suggest that global climate is perhaps the wrong object of governance.

### **Agency ... and Knowledge**

The idea of climate has deep and varied cultural origins since all human societies have had to find ways of making sense of the turbulent atmosphere in which they live. Neither is human anxiety about the performance of weather and climate anything new (Boia, 2005). Climate never quite performs in the way humans want it to; it is too hot or too cold, too wet or too dry, too unreliable or too tempestuous. The human imagination has therefore embraced different explanations for the capriciousness of their weather and this has led to different discourses of blame and weather control across different eras and cultures. Let me give a few examples (cf. Hulme, 2008).

In the sixteenth and seventeenth centuries European cultures frequently found explanation for adverse weather as an expression of God's will or as the work of the Devil. Some elements of society held witches directly responsible for the high frequency of damaging climatic anomalies during this era and some women were burned at the stake as a scapegoat; an unpleasant form of climate governance one might say. In November 1703 a severe gale devastated parts of southern England and the damage was vividly recorded by Daniel Defoe in his classic contemporaneous account 'The Storm'. This climatic disaster occurred as scientific empiricism and naturalism was first emerging across Europe, yet the dominant frame of causation remained theological; a national fast day was held on Wednesday 19 January 1704 to ask for God's forgiveness and blessing on the nation.

As meteorological instrumentation rapidly extended across Europe during the early nineteenth century, the idea of climate started to become detached from narrative accounts of place, identity and cultural meaning in favour of universal scientific descriptions. Standardised measurement enabled comparative analysis of climates in different places – often linked to imperial projects in the tropics – and the 'purification' of climate became part of the wider disenchantment of nature. For example, naturalistic explanations for the anomalous weather events of 1816 in Europe – the 'year without a summer' following the eruption of the Tambora volcano – were sought and the Swiss Natural Sciences Society even established a prize for the best explanation of the declining Swiss climate (Bodenmann et al., 2011).

This modernist project had repercussions for how climate could conceivably be 'governed' (Stripple and Bulkeley, this volume). As climate became disenchanting it became politicised. Secular explanatory frameworks emerged for how climatic misdemeanours could be attributed to the wrong sorts of political projects rather than to the expression of divine or satanic will. For example, the utopian socialist Charles Fourier writing in the 1820s observed that: 'Climatic disorder is a vice inherent to civilised cultures that disrupts everything due to the battle between individual and the collective interest' (Fourier, 1824; cited in Locher & Fressoz, 2012). Two hundred years ago climate thus became an object of political governance; land clearance, forest decline, rampant individualism all became tightly bound up with the fate of the climate (Locher & Fressoz, 2012). Without [political] 'association', Fourier would write, 'those great labours ... which are necessary to bring the earth and the atmosphere into a healthy condition are impossible.' This new scientific knowledge of meteorology also opened the way for more technologically-oriented projects of weather control and governance. Technological entrepreneurs in nineteenth century America, for example, believed that rain could be artificially induced by triggering explosions in mid-air, whilst in the immediate years following the Second World War American scientists pioneered cloud seeding techniques and even experimented with interventions to steer hurricanes away from landfall. These too, one might say, were crude forms of climate governance.

Today’s dominant explanatory framework for the vicissitudes of climate offers a thorough-going materialist account of climate. This framework is supported by Earth System science, by globalised flows of digital data and by representations of manipulated global climates in computer simulation models. Climate’s behaviour is believed to emerge from a deeply interconnected global physical system, a system which human activities are now influencing, physically but not meta-physically, in a variety of ways. Although this may be the dominant account of climate causation, in fact a more diverse matrix of worldviews remains in circulation, a matrix which supports different notions of agency. This plurality of cosmologies has been shown, for example, in Pacific cultures (e.g. Rudiak-Gould, 2014), but competing conceptions of agency with regard to the weather are not limited to non-western settings. The ultimate ‘causes’ of climate change are many and varied in the popular imagination and include physical process (whether human-influenced or not), the spirits, God, capitalism and Gaia. This supports a simple typology with respect to who has influence on the climate (Table 1). How people understand the relationship between agency and climate has a significant bearing on how climate may or may not be governed.

	Human agency matters	Human agency doesn’t count
Divine agency	Religious optimists	Religious fatalists
No divine agency	Liberal progressives	Fatalists, hedonists

Table 1: A simple typology relating notions of human and divine agency.

### Knowledge ... and Power

Despite this co-existence of different worldviews at a popular level, for most political and intellectual elites climate change is understood through a materialist paradigm. By understanding and enumerating climate system behaviour in this way, science has placed (global) climate in the line of various other projects of high modernism. As James Scott explains in his book *Seeing Like a State* (Scott, 1998), governments of the modern era have sought to exercise their powers of regulation and control through enumeration of an expanding array of subjects; thus a formalised cartography managed territorial disputes, the national census disciplined citizens of the state and the index of Gross Domestic Product (GDP) regulated the national economy. The scientific account of weather and climate, as distinct from earlier or contemporaneous non-materialist accounts of agency, opens the way for climate to be similarly governed by the state (or in the case of global climate by an association of states).

These moves have been theorised by Michel Foucault in the 1970s with his concept of governmentality. The two key developments involved here are, first, making indexical representations of the phenomenon to be governed and then, second, applying technologies of state intervention to manipulate that index towards a desired goal (Lövbrand et al., 2009; Stripple and Bulkeley, this volume). Entities, whether citizens, the economy or climate, have first to be enumerated (e.g. through the creation of digital knowledge) before technologies of control (e.g. pricing, regulation) can be exercised by the state. Knowledge and power therefore become tightly connected. How one knows shapes how one governs. Knowledge practices are tied to political rationalities that make the application of power seem both natural and inevitable (Turnhout et al., 2014; Turnhout et al., this volume).

Applying this logic to climate governance suggests that the global kinds of knowledge about climate that are brought forth by institutions such as the IPCC serve particular expressions of power. For example, the global temperature index, global warming potentials, the global carbon budget and Earth System models all become means through which certain forms of governing action become imaginable and executable (Hulme, 2010). Just as a well-functioning economy became defined in the 1950s in terms of GDP growth (Fioramonti, 2013), which became the target around which government economic policy focused, so a desirable global climate has become defined in terms of a stable global temperature. While the economy is governed to secure GDP growth of 2 to 3 per cent per annum, the climate is to be governed to stabilise global temperature at no greater than 2 degrees Celsius warmer than the nineteenth century level. This remarkable subjugation of climate-society relations to the index of 2 degrees carries repercussions. For example, as revealed in the earlier quote from Ban Ki-moon, human security becomes narrowly defined in terms of an indexed global climate and effective political leadership in the world is reduced to securing the 2 degree target. Indexing desirable climates to global temperature also opens the way for certain forms of technological adventurism to be imagined (Curvelo, 2013), for example the injection of sulphate aerosols into the stratosphere and the creation of a 'global thermostat' (Hulme, 2014a).

The forms of knowledge that are most needed to secure these climate governance objectives are then defined through circular reasoning. Scientific knowledge, and its attendant political rationality, defines the object of climate governance to be securing no more than a 2 degree rise in global temperature. The *same* forms of global knowledge, now under demand for ever greater precision, are then used by new global governance systems to regulate climate to this end. This then becomes the language that emerges from numerous transnational research programmes and initiatives: globalised knowledge, integration, action and solutions are knit together in institutionalised form and delivery. These knowledge programmes are to be the saviours of the planet.

Thus the Future Earth Initiative referred to earlier is echoed by the Belmont Funders Forum which calls for '... transdisciplinary collaboration to address the coupled environmental and socio-

economic solutions to environmental change' (Belmont Forum, 2012). Cornell et al. (2013), working for the European Science Foundation, argue for knowledge systems which can 'ensure effective interfacing arrangements for translating knowledge to action', while the International Social Science Council urges '... the social sciences to take the lead in developing a new integrated, transformative science of global change' (Hackmann and St.Clair, 2012). And the flagship Earth System Governance Project of the old International Human Dimensions Programme calls for 'a fundamental reorientation and restructuring of national and international institutions towards more effective Earth system governance and planetary stewardship' (Biermann et al., 2012: p.1306).

What is wrong with such programmes is that they start from a pre-defined and singular understanding of the nature and place of knowledge necessary in political life. Insufficient attention in these normative visions is paid to plural epistemologies or to political philosophy: i.e., to different cultural models of relating science and democracy or to the difficulties of reconciling divergent human beliefs and values, especially in transnational settings. Infrequently is there any direct questioning of *how* knowledge does and should relate to political debate and decision-making. Instead, the implicit assumption seems to be that: (i) knowledge leads to action; (ii) *more certain* knowledge leads to *more definite* action; and (iii) *more integrated* knowledge leads to *more joined-up* action.

These (mostly implicit) assumptions reveal at work the linear model of science-policy interaction (Balconi et al., 2010) which asserts that if researchers could only fill gaps in knowledge, or skilfully join knowledge together, decision-making and policy enactment would be easier to do (Beck, this volume). The world would surely be a better and more sustainable place. Development geographer Kathleen O'Reilly describes this position succinctly in the context of knowledge for sustainable development: '... if we knew just a bit more, success would be imminent ... there will come a point when we *will* know enough and then development interventions will deliver on their promised positive outcomes' (O'Reilly et al., 2011: p.2795; emphasis added). Confidence in this linear model, in the power of 'new knowledge' to enable wise choices to be made, was expressed back in 1990 by Sir John Houghton on the publication of the First Assessment Report of the IPCC: 'I am confident that the [IPCC] Assessment ... will provide the necessary *firm scientific foundation* for the forthcoming ... negotiations on the appropriate strategy for response and action regarding the issue of climate change' (IPCC, 1990: p.v).

### **Power ... and Democracy**

The Declaration that came from the Planet Under Pressure Conference in 2012 called for *one* integrated knowledge system, serving *one* over-arching goal, to be delivered by a *unitary* global governance system. The Earth System governance proposals emerging from this Conference and

from the later Future Earth initiative offer one form of (global) politics drawing upon one form of (global) knowledge. 'There is no other viable way forward.' The danger in such a singular conception of knowledge-for-policy is well expressed by Kathleen O'Reilly:

'If the will to know is deployed to gain knowledge for controlling others, *then the will to know is also a will to power*. Although the will to power may be couched in terms of 'doing good', it remains a desire to know the world in order to manipulate people's behaviour' (O'Reilly et al. 2011: p.2795; emphasis added).

How is assent and legitimacy to be given to such a unitary vision in an increasingly expressive, connected and plural world? There is a need for more open arguments about the forms of governance and politics – and hence the sorts of knowledge – that best serve the diverse and diverging human projects that proliferate around the world that have a bearing on climate change. Climate governance is not about creating the right forms of knowledge. It is thinking first about what forms of governance and democracy are desirable and needed. Politics precedes knowledge.

Elements of this debate have been joined by numerous STS scholars (e.g. Latour, 1999; Leuschner, 2012; Stehr & Grundmann, 2012). For example, Durant (2011) contrasted the positions of two prominent STS scholars, Harry Collins and Sheila Jasanoff. In essence, the question is how should liberal democracies structure public discussion and organise decision-making on matters which have a knowledge content (as in the case of climate change)? Collins' so-called '3<sup>rd</sup> wave' of science studies would bracket-out personal and cultural value commitments from knowledge claims, demarcating political from technical questions and thereby authorising experts to be unchallenged experts. Jasanoff is critical of such a stance, arguing for deliberation and participation across *all* relevant questions and for co-production between science and society from upstream to downstream concerns. Durant then suggests these two positions can be caricatured respectively by Rawlsian public reason and by Habermasian discourse ethics.

There is no easy resolution to this debate. There are weaknesses and dangers in both positions: capture by hegemony and elites on the one hand; dissolution into relativism and identity politics on the other. But failure to engage with the debate or to reflect on the different implications of the forms of knowledge being constructed about climate change is surely not an option. Yet many of the programmes cited above have failed to do just this, at least on the radical political terms outlined by Swyngedouw (2013). Instead, the questions concerning climate governance to be deliberated *before* knowledge gets made take us a long way away from the linear model of science-policy interaction. They would include the following:

- How is 'expert' knowledge accommodated within the wishes of 'the people'?
- How are different versions of 'the good life' to be evaluated?
- Should cultural norms be deliberately engineered?
- What is the right balance between volunteerism and coercion?



- What forms of democracy – representative, participatory, centralised - are most desirable?
- What is wrong with authoritarian environmentalism?

If the political nature of knowledge assessments such as IPCC or Future Earth is not explicitly recognised, then knowledge will become contested on ostensibly non-political grounds. It is even possible that the consensual knowledge-making practices of the IPCC have actually made climate governance harder rather than easier (Hulme, 2013; Pepermans & Maesele, 2014). Better to be up-front about the politics of representation in knowledge-making institutions, than to find knowledge claims standing in as a proxy for political contest and obscuring the legitimate debate about goals and process. As political theorist Chantal Mouffe explains in her book *On the Political*:

‘... the belief in the possibility of a universal, rational consensus has put democratic thinking on the wrong track. Instead of trying to design the institutions which, through supposedly ‘impartial’ procedures, would reconcile conflicting interests and values, the task for democratic theorists and politicians should be to envisage the creation of a vibrant ‘agonistic’ public sphere of contestation where different hegemonic political projects can be confronted’ (Mouffe, 2005: p.3).

### **Can Global Climate Be Governed?**

The problems of governing climate have little to do with ‘gaps’ in knowledge which need filling or ‘disconnects’ in knowledge which need integrating. The problems are procedural and deliberative: How to decide what to do when worldviews and value systems clash, whatever knowledge we may possess at any given moment? In contrast to John Houghton’s confidence about the ‘firm foundations’ that he thought the IPCC was laying down in 1990, Jean Goodwin, Professor of Rhetoric at Iowa State University, has a different take on the matter: ‘Maybe those of us who favour doing something about climate change should admit that our policies aren’t going to have a ‘firm foundation’ ... and start arguing about values and solutions instead’ (Goodwin, 2009; emphasis added).

Addressing these arguments is a task of democratic theory and political philosophy. These disciplines ask difficult questions about how democracies should be ordered and, if not democracy, then what other forms of political organisation and representation are desirable for the Anthropocene. Such confrontations cannot escape dealing with normative issues where knowledge-thickening (Davey, 2011) rather than gap-filling is the most we can achieve: issues such as goodness, justice, well-being, democracy and teleology. They will not be resolved through merely discovering more knowledge. Reasoning together in public to make ‘actionable knowledge’ must allow for the expression of contrasting value commitments, however inconvenient this may be.

This takes us towards the idea of ‘non-modern steering’ (Rip, 2006) rather than of a high modernist project of governance, a reflexive activity in which it is more important to make spaces for learning than to make knowledge for solutions. This would suggest drawing upon elements of radical democracy, deliberative democracy, civic republicanism and political pragmatism, aspects of which I have alluded to thus far. Let me finish by suggesting two directions which strike me as promising responses to climate change, not least because they are able to pursue active projects in the world without making exclusionary commitments to singular forms of knowledge.

The first is towards what has become known as climate pragmatism (Prins et al., 2010; Atkinson et al., 2011). Climate pragmatism draws attention to the virtues of knowledge pluralism and political pragmatism. Pluralism offers checks and balances to scientific and political projects alike. It recognises the inevitability of competing values and goals and concedes that a world of more than 7 billion people cannot move together. Such a world will not agree on a single thermostat setting for the planet nor on a universal governance system (Hulme, 2014a). The corollary of epistemic pluralism is pragmatism. Philosophical pragmatism forgoes the goal of establishing an ultimate truth in favour of working with merely satisfactory truths, while political pragmatism suggests a cautious and flexible approach to defining the problems we decide to tackle.

Pragmatism is thus content to recognise and name problems like climate change as being neither definable nor solvable. It reframes the object(s) to be governed. Instead of seeking to govern global climate, pragmatism is content to pursue multiple and clumsy solutions to regularly reframed problems in order to achieve merely incremental gains. ‘Once we conceive of the [climate change] problem in its parts and not only its entirety, new avenues will be opened up for negotiation. This is what we need most right now: successes, even smallish ones, and new approaches that promise more successes’ (Barrett, 2010). A pragmatic approach to climate-society relations does not set out to govern climate, least of all through centralising narratives, knowledges and policy frameworks. It approaches the risks and dangers of a changing climate in ways which are more open to multiple forms of governance, knowledge and democracy. Policy interventions become deliberately fragmented and piecemeal (Prins et al., 2010). This is in the spirit of Lindblom’s ‘muddling through’ (Lindblom, 1959).

But there is another possible direction of movement which takes us even further away from the high modernist project of global climate governance driven by a universal rationalist knowledge. While many of the transnational global change research programmes mentioned above call for ‘political action’ and ‘changes in the behaviour of citizens’, they seem strangely reticent to enter into the knowledge worlds of politics, cultures, religions and beliefs (Castree et al., 2014). This latter knowledge seeks out meaning, purpose and identity, which for many provide the well-spring for motivated action in the world. Such personal knowledge engages in complex ways with the positivist knowledge favoured by the transnational knowledge institutions. Absent in most of the cases of programmatic research I have mentioned is an enthusiastic embrace of the humanities or a

reflective engagement with individual and collective human beliefs. Living with climate change is about rather than knowing, agonism not consensus, qualities before techniques, processes not ends and emergence rather than control. How we live culturally matters more than asserting technologies of control (cf. Jasanoff's 'technologies of humility'; Jasanoff 2007). As Stirling explains in the context of the rhetoric of green transformation, 'Recognising that [the processes of transformation] are more like the dynamics of low culture than high policy ... the[y] ... might be thought of more as the 'culturing' than the controlling of radical social change' (Stirling, 2015: p.??).

Rather than putting science, economics, politics or the planet at the centre of the story of climate change, I am suggesting that an understanding and expression of human purpose and virtue are placed at the centre (Hulme, 2014b). This of course sits awkwardly with those who believe that the dangers of climate change can be diffused only through various programmatic policy interventions guided by 'actionable knowledge'. But living with climate change raises issues that are humanistic before they are political or scientific. This was recognised by the European Science Foundation's RESCUE (Responses to Environmental and Societal Challenges for our Unstable Earth) project when they concluded that the Anthropocene '... creates a completely novel situation posing fundamentally new questions, including issues related to ethics, culture, religion and human rights, and requiring new approaches and ways of thinking, understanding and acting' (ESF, 2012: p.13).

Responding to the idea of climate change in this way is about cultivating the human imagination and developing an acute sense of good character as the *telos* of Man, rather than it is about governing the climate through the instruments of reason and technology. The call from Rio+20 for a global conversation about 'the world we want' (UN, 2012) was perhaps at least a step in this direction. Before setting out on any project of global climate governance, the prior question needs to be asked: what is the *telos* of Anthropos--what is the goal of humankind? What are 'the aspirations of all citizens' as the call from Rio+20 puts it? Is the goal (human) survival – at any cost? Is it sustained economic growth or maximising human longevity? Is it securing social justice or promoting some notion of political freedom? The answer(s) will of course be plural, but what I am suggesting is that any system of governance needs a more explicit Aristotelian contemplation on the good life, the nature of well-being and the cultivation of virtue (cf. Hulme, 2014b). The challenge to be faced becomes less to make 'the world we want' than it is to be 'the people we want to be'. Learning to govern ourselves might be a more necessary project than the ambition to govern the climate.

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