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The IPCC and the Geographies of Credibility

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This volume is concerned with the historical and sociological processes by which status, authority and credibility have been gained, lost and perhaps regained in the long history of atmospheric and climate change knowledges. It is concerned with how different expert 'consensi' have emerged as authoritative statements at different times; with how narratives of climatic change have escaped the discursive clutches of their originators to become central – if often contested – objects of political concern; and with how any lost forms of scientific credibility or authority may be regained – not through the application of more or better science, but through reconsideration of the institutions from which putative consensi emerge.

It has become something of a truism in history of science to claim that 'science' is constituted by situated, local practices of knowledge production and of social warranting. We might say that science is made of places – we cannot understand either the cognitive content of scientific knowledge or its cultural authority without understanding the specific places and spaces where knowledge is constructed and circulates. Work on the historical geographies and sociologies of science has insisted on the mutual constitution of the cognitive, the social and the spatial, in studies for example of the gentlemanly laboratory spaces of Enlightenment-era natural philosophy (Shapin 1988; Withers & Livingstone 1999), and of the networks of privileged virtual witnesses who offered early experimentalists a source of epistemic and cultural reinforcement for their contested claims to reliable knowledge (Shapin & Schaffer 1985).

Geographers of science thus view science as a geographical phenomenon. Scholars such as David Livingstone (2003), Charles Withers (2010) and Richard Powell (2007), with periodic encouragement from the likes of Steven Shapin (2003), have come to position space as a constitutive element of scientific practice, and not just another 'factor' in the history of science, like class, race or gender. "Spatiality", argues Shapin (2003, 90), "is a necessary condition for there being such a thing as science ... Where else could science take place but in places, and how else could it travel but across spaces? Relevant differences and similarities between places are empirical matters, as are the means by which, and the efficiency with which, science travels across various spaces".

In this paper I explore this question of travelling science in the case of the Intergovernmental Panel on Climate Change (IPCC), the producer of the most comprehensive, influential and scrutinised assessments of the sciences of climate change. In so doing, I seek to link the question of travelling science to that of credibility. In Shapin's (1995) treatment of credibility, he positions it at the heart of the challenge of epistemology. He suggests that

science proceeds through the production of metonymic statements – “*x* stands for *y*”, and that “All testimony about states of affairs stand in a metonymic relationship to those states of affairs, and the condition of your knowing about these things – otherwise unavailable to you – is your accepting the legitimacy of that relationship. Accordingly ... you are dependent on some practical resolution to the problem of credibility” (ibid., 261).

By “practical resolution”, Shapin refers to the “contingent social and cultural practices” by which individual beliefs are translated into collectively-held knowledge. Credibility may arise from personal familiarity. It may mean deference to authoritative persons or institutions, or it may suggest an allegiance between particular scientific claims and particular cultural and political contexts. Credibility is, in this sense, distinct from questions of procedural validity (Bloor 1976). Like space, credibility is positioned by Shapin as a constitutive entity of scientific practice – the construction of science *is* the construction of credibility. Understanding the geographies of credibility is therefore inseparable from understanding the geographies of scientific knowledge.

Shapin is alert to the conceptual confluence of space and credibility. For shared belief to be constructed between or outside of expert groups, “it must travel great distances, in both physical and cultural space” (1995, 270). Where personal familiarity is lacking, Shapin suggests, the “inducements to distrust and scepticism” are high (ibid.). One doesn’t need to inquire deeply into the recent history of climate politics to see that it offers fertile ground for those interested in the phenomena of trust and scepticism in the boundary spaces of science and public policy (e.g. Hulme 2009; Jasanoff 2011; Beck 2012).

The production of credible metonymic statements about the state of the climate has always been a challenging task. As individuals, we are unable to perceive the subtle changes in atmospheric chemistry, thermal energy, and meteorological patterns which are the hallmarks – the traces – of both natural variability and anthropogenic climate change. Practical resolutions to the problem of credibility have therefore been at the heart of efforts to institutionalize the sciences of climate change, as I will show below. The problematic metonymics of climate change are rendered all the more acute as the horizons of knowledge and action extend far into the future, well beyond the capacity of individuals, unless they have built their own climate models or crystal balls, to test the legitimacy of statements that *future x* stands for *future y*.

This problematic raises questions of epistemic monopoly. For Zygmunt Bauman, certain esoteric objects of scientific inquiry “appear only under very special circumstances, to which no one else has access: on the screen of a multi-million-dollar accelerator, in the lens of a gigantic telescope” or, we might add, in the code and output of global climate models. Bauman goes on, “Only the scientists can see them and experiment with them; these objects and events are, so to speak, a monopolistic possession of the given branch of science... Being the sole owners of the experience which provides the raw material for their study, the scientists are in full control of the way the material is construed, processes, analysed, interpreted, narrated” (Bauman 1992, 72). However, this picture of “full control” over knowledge construction and framing is problematised by an institution like the IPCC – a hybrid space at the boundaries of science and politics. Here, scientists and government delegates gather in the same settings to scope-out reports, review their contents, and approve the final wording of the most high-profile and potentially consequential knowledge claims to emerge out of the assessment process. Together, these actors engage in what sociologist Clark Miller (2001) labels ‘hybrid management’ of the science-politics boundary.

Gaining it – authoritative hybrids and credible knowledge

The IPCC is an experiment. It is an experiment in bringing-together knowledge on an international stage about a global problem of unmatched complexity. It is an experiment in the social organisation of knowledge production. It is an experiment in attaining political credibility and legitimacy for knowledge claims seen as having far-reaching implications for the organisation of contemporary and future societies. Like all experiments, its boundaries – institutional, epistemic, cultural – are not pre-ordained but are products of social negotiation and settlement (Galison 1987). The Panel, while formally based in Geneva, is predominantly constituted as a decentred and constantly evolving network of volunteer authors who conduct most of their work remotely from both the organisation's centre and each other. A regular series of meetings at various levels of the organisation's vertical hierarchy facilitate progress and coordination, leading to the publication approximately every six years of a three volume report in print and online. Current knowledge about climate change is presented across three relatively stabilised themes – the physical science relating to climate change (Working Group I), the potential impacts of a changing climate on human and natural systems (Working Group II), and the possible mitigation strategies that may be adopted (Working Group III). Draft chapters are produced by nominated and approved authors according to a largely preordained structure, before being reviewed by fellow experts and government representatives and being subsequently accepted for publication. Five complete assessment reports have so far been published – in 1990, 1995, 2001, 2007 and 2014. These voluminous assessments have been interspersed with periodic 'special reports' on more focused topics, such as extreme weather (IPCC 2011).

The official constitution of the IPCC took place in Geneva, at the first meeting of the Panel in November 1988. The establishment of the Panel was a joint initiative of the World Meteorological Organisation (WMO) and the United Nations Environment Programme (UNEP), both subsidiaries of the UN, which itself formally recognised the action in Resolution 43/53, adopted by the UN General Assembly in New York on 6th December 1988. Shardul Agrawala (1998a) suggests that four main actors were key to the formation of the IPCC: the World Meteorological Organization (WMO), the United Nations Environment Programme (UNEP), the International Council of Scientific Unions (ICSU) and the United States Government. Despite the consensus expressed at the Villach climate science conferences of the mid-1980s (which Agrawala contends was as great as that which led to the Montreal Protocol on ozone-depleting substances), it was perceived by many that the political complexity of climate change was such that the Villach statements were insufficient to drive political action. In light of dissatisfaction with the Advisory Group on Greenhouse Gases (AGGG), a small advisory group set up in 1986 by WMO, UNEP and ICSU which was seen as underfunded and too distant from the policy process to be effective, calls were made – particularly by UNEP's Mostafa Tolba – for a more comprehensive international assessment effort. Following various formative interactions between the US and WMO's Executive Council (see Agrawala 1998a, 611) resolutions were made for WMO, in conjunction with UNEP, to work towards the establishment of an intergovernmental assessment body.

The 'intergovernmental' form of the assessment body was largely a result of US demands, which Agrawala (1998a) attributes to diverging opinions about climate change between various US government agencies and the Republican White House administration. An intergovernmental mechanism emerged as a "common denominator agreement" (ibid.,

612) between competing factions in the US.¹ Agrawala argues that the US administration (particularly the Department of Energy) was suspicious of any assessment conducted by experts who had not been governmentally accredited. The establishment of an intergovernmental mechanism also accorded with what appeared to be a reticence within the incumbent US administration to act on climate change immediately, and a desire to support more research before making political and economic commitments (ibid., 614). After much backroom negotiation between agencies in the US, a proposal was put to the WMO for a panel consisting of “representatives of countries making major contributions to various aspects of...climate change”, which should “allow for adequate representation of countries from all regions ... [while] ... representatives of ... international organizations should participate as observers” (US Draft Proposal, quoted in Agrawala 1998a, 615).

Over its first assessment cycle (1988-1990), the IPCC operated in effect as *the* global setting for the negotiation of the science and politics of climate change. Working Group III was essentially a space for debating the merits of policy alternatives, whereas its next manifestation in 1995 was the more prosaically framed ‘Economic and Social Dimensions of Climate Change’. A number of developing countries expressed a dissatisfaction at the first report’s ambiguous positioning at the boundary of science and politics, and were wary of the IPCC becoming the only setting where a climate change governance architecture would be negotiated (Miller 2009). The Intergovernmental Negotiating Committee was thus established in 1990 under the auspices of the UN, and was the institutional setting for the drafting of the UNFCCC (Bodansky 2001). This act of boundary making strengthened the IPCC’s self-identification as a scientific body, with a discursive firewall established between deliberation which was ‘policy relevant’ but ‘policy neutral’, never ‘policy prescriptive’ (Shaw & Robinson 2004).

These early negotiations and settlements produced an institution which is looked upon by many as a producer of robust, scientifically credible assessments of climate change which nonetheless offer useful inputs to policy processes (Hulme & Mahony 2010). The social authority of the IPCC was endorsed with the joint award of the 2007 Nobel Peace Prize to the IPCC and to Al Gore, in recognition of their respective services to raising worldwide awareness of climate change. However, this path to prestige was by no means smooth.

Losing it – the geographies of contested credibility

Since the early debates about the proper institutional settings for scientific assessment and political deliberation, the IPCC’s institutional history has been marked by credibility struggles and ongoing ‘boundary work’, or efforts to define, rhetorically and practically, the boundary between science and politics (Gieryn 1983; 1999). This boundary work has proceeded alongside, and has perhaps been most heated in relation to, efforts to *detect* a change in the climate system and to *attribute* that change to human activities. It is this work of parsing-out the natural and the social in obsessively repeated simulations of the climate system which has given rise to the IPCC’s headline claims, such as “[m]ost of the observed increase in global average temperatures since the mid-20th century is very likely due to the

¹ Agrawala also suggests that that the US’s insistence on such an organisation was a strategic move (by the US authorities and the WMO) to prevent UNEP’s Mostafa Tolba from exercising the kind discursive and political leverage over the climate issue which he had over the science and politics of ozone depletion (cf. Grundmann 2006).

observed increase in anthropogenic GHG concentrations” (IPCC 2007a, 5). For Bruno Latour, this delineation of the natural and the social is deeply political:

Researchers who establish a causal link between human action and global climate change ‘do politics’ in the sense of altering the associations – and thus directly the ‘social’ – that all beings establish with all other beings. They are thus engaged in a cosmology – a cosmopolitics – involving, in different ways, all the entities that previously did not count in the public understanding of problems (Latour 2012, 72).

But the science of detection and attribution not only re-constitutes the social. It also plays upon the modernist boundary between the natural and the social and emphasises a renewed ontology of climatic hybridity (see also Latour 2013, 8). In Latourian terms, the ‘cosmopolitical’ force of such claims is illustrated by the controversy which surrounded the detection and attribution chapter of the Second Assessment Report (SAR) in 1995, which was subject to criticism from actors concerned that the IPCC’s review process had been corrupted by authors making alterations to the chapter after its formal acceptance by government representatives (Edwards 1997; Edwards & Schneider 2001). Edwards & Schneider offer echoes of Polanyi’s (1962) scientific republicanism in their defence of the IPCC’s capacity for learning and development through ‘self-governance’. Yet the IPCC’s critics in this case embraced the quality assurance seemingly provided by peer review and governmental oversight, even though those sceptical of the reality and severity of climate change have often pointed to the intergovernmental nature of the IPCC as evidence of the political corruption of the scientific process (e.g. Laframboise 2012).

Outside of the IPCC process itself and concerns over the scientific veracity of assessments, commentators have critiqued the kind of monopolising tendencies described by Zygmunt Bauman (see above). For Tol (2011), the IPCC has exercised an unhelpful monopoly over climate change debates. For Miller (2009), what he calls the ‘unitary globalism’ of the IPCC has been achieved at the expense of a politics of climate which is able to embrace a variety of different knowledges and modes of reasoning about environmental risk and possible political responses. The IPCC’s unitary globalism has arisen from the discursive dominance of the natural sciences in the assessment process (Bjurström & Polk 2011), and from the construction of a linear, deterministic relationship between computer modelling and understandings of human responses to environmental change (Beck 2011; Hulme 2011; Nielsen & Sejersen 2012).

Myanna Lahsen (2004; 2007) translates these concerns into a Gramscian language of power and hegemony. The hegemony of certain scientific *framings* of climate change and potential response strategies for her is not just about disciplinary hierarchies. Rather, through her study of scientific and political communities in Brazil, she has shown how science is seen to function as a vector of hegemonic power, co-produced with the economic and political dominance of northern states. She draws attention to the suspicion felt by her Brazilian interview respondents of the narratives and framings put forward by the IPCC, particularly those relating to the Amazon rainforest, its fate under a changing climate, and the potential for using the forest as a ‘sink’ for accumulated greenhouse gases. This science is not seen as being an apolitical victim of political manipulation by hegemonic forces. Rather, the science *is* political. It ties together entities of the material world in new, contestable ways, and is the locus of a politics that would interfere with the political sovereignty and development rights of a country like Brazil (Lahsen 2007). Here, the construction of scientific credibility is not about the validity of climate modelling methodologies but about “inequities in national

capacities to produce and frame knowledge” (Lahsen, 2007: 178). It is about the postcolonial legacy of a “North-South divide” in political and economic power (Joshi 2013), and about the cognitive and normative priorities of diverse and dispersed communities of experts and decision-makers (Hulme 2010).

The leadership of the IPCC has always been aware of this challenge of international credibility. Following Stephen Hilgartner's (2000) work on the significance of performance and staging in the credibility of regulatory science, we can read the institutional history of the IPCC as a history of performative stagings. Following the relatively low numbers of developing country experts present in the preparation of the first IPCC report (Jäger 2009: 151), efforts were made to ensure better geographic representation. As early as 1989, action plans were drawn-up to widen participation, including the provision of financial support through a trust fund. The issue of participation was the only topic discussed at every IPCC Bureau session between 1989 and 1996, with the IPCC's first chair Bert Bolin famously remarking in 1991 that,

right now many countries, especially developing countries, simply do not trust assessments in which their scientists and policymakers have not participated. Don't you think global credibility demands global representation? (quoted in Agrawala, 1998: 628)

This oft-cited question represents an acknowledgement of the performative potential of broad participation, and an instrumental linking of participation to trust and credibility. Participation is not presented just as a means of widening the epistemic and deliberative profile of IPCC assessments by enrolling actors with diverse perspectives or worldviews, but as a means of ensuring broad governmental assent (cf. Fiorino 1990).

The process of recruiting authors² has thus become an important element of the IPCC's efforts to attain international, public credibility. Although much of the recruitment process takes place ‘backstage’ (to use Hilgartner's theatrical metaphor), away from public eyes, the presentation of IPCC products on the public stages of the popular media and the internet has increasingly featured statements and statistics describing the geographic diversity of the expertise represented in the reports. But, as Lahsen (2007) argues, this instrumental linking of participation and credibility may not hold true. The focus on widening participation obscures the deeper, structural questions of unequal scientific capacities. The act of participation does not necessarily lead to influence over report contents – indeed many scientists from countries like Brazil and India have reported feeling marginalised in the face of a ‘core set’ of dominant (usually Western) experts (Kandlikar & Sagar 1999; Lahsen 2004). And participating scientists may not always be trusted by their own governments, who may be wary of their co-option into styles of thinking which are not conducive to the defence of particular normative commitments or national interests (Lahsen 2007; Fogel 2004).

Lahsen's (2007) account ends by speculating that the distrustful deconstruction of IPCC science as a vector of hegemonic political power is “likely to surface and shape global environmental politics more” if countries like Brazil, China and India encounter growing pressure to make binding commitments to emissions reductions. She also notes that scientific controversies have not driven or featured in Brazilian debates about climate science and politics thus far. Although the deconstruction of evidential claims often extends as far as such

² Authors are selected by Working Group chairs from lists of nominations prepared mostly by governments, but also by non-governmental observer organisations.

claims challenge powerful and easily identifiable economic and political interests (Lahsen 2005; Oreskes & Conway 2010), moments of scientific controversy can also bring to light deeper questions about trust, authority, and the complicated intertwining of scientific knowledge and political action (Jasanoff 2004; Whatmore 2009). In short, controversies can lay bare the geographies of scientific credibility.

In the rest of this paper, I want to hone in on Indian responses to an error which was identified in the 2007 IPCC report. I'll draw on my own interviews with Indian scientists, policymakers, journalists and environmental campaigners, alongside documentary sources and media presentations of the controversy, to explore how the event re-animated a history of epistemic contestation around climate change. I'll also seek to draw out some insights into the symbolic and performative politics of representation and participation in the IPCC process, before concluding with a look at subsequent attempts to reform the IPCC process and to regain lost credibility.

'Glaciergate'

In 2007, the IPCC report on climate change impacts and adaptation stated that "glaciers in the Himalayas are receding faster than in any other part of the world, and, if the present rate continues, the likelihood of them disappearing by the year 2035 and perhaps sooner is very high" (IPCC 2007b: 493). This probabilistically hedged prediction caused a mixture of alarm, unease and puzzlement in scientific and political circles in India. A summary statement about glaciers decaying rapidly by the 2030s was removed from the *Summary* of the WGII report following a comment from the Government of India that "This is a very drastic conclusion. Should have supporting evidence otherwise need [sic] to be deleted".³

The statement was removed from the WGII summary and did not appear in the overall synthesis summary. However, the underlying claim about glaciers disappearing by 2035 remained in the report, and the claim garnered much media attention on its publication. Visual artists used the warning to frame creative efforts at generating awareness of the risks posed by climate change. John Kerry, then the US Senate Foreign Relations Committee Chairman, argued in a 2009 speech that the rapidly melting glaciers risked inflaming military tensions on the India-Pakistan border, with environmental change potentially undoing the recent diplomatic gains that had been made in the perennial border conflict⁴.

Around the same time as Kerry's speech, the Indian Environment Minister Jairam Ramesh set about trying to settle the unease surrounding the 2035 claim. He had picked up on glaciologists' uncertainty about the credibility of the claim, and commissioned a review of existing Indian studies of the Himalayan glaciers. The review reported a mixed picture of melting and advancing glaciers, and argued that no trend could be reliably attributed to anthropogenic climate change (Raina 2009). When this government review was reported on New Delhi Television, IPCC chair Rajendra Pachauri was invited to comment on the challenge posed to the IPCC claims about rapidly melting glaciers. Pachauri was dismissive, labelling the study "voodoo science", and calling into question its procedural rigour and scientific credibility. In a later newspaper interview, Pachauri described the Indian

³ WGII *Summary for Policymakers*, Government and Expert Review of Second Order Draft, August 2006.

⁴ *Hindustan Times*, Kerry warns of escalation in Indo-Pak tension due to climatic changes. 17 June 2009.

government as “arrogant” to question the link between climate change and rapidly melting glaciers.⁵

Pachauri’s response betrays an unwillingness to seriously engage with knowledge claims which run counter to those assessed, accredited and authorised by the IPCC process. The absence of the conventional vanguards of scientific credibility – peer review and what Pachauri called “scientific citations” – enabled Pachauri to dismiss the report as politically motivated, even though he reported being unclear as to what the Minister’s motivations were⁶. Pachauri dismissed media statements by the Indian report’s author as being reminiscent of “schoolboy science” and “climate change deniers”. For Pachauri the sole practical resolution to this credibility shortfall was the institutional mechanisms of scientific quality control which could cleanse these new claims of their political overtones and questionable epistemic underpinnings. Pachauri’s strident boundary work between credible and disreputable science would come back to haunt the IPCC hierarchy, as it emerged that the original 2035 claim had itself been based on some rather questionable, non-peer-reviewed sources, including a magazine interview with a glaciologist in 1999 (for a detailed analysis of the genealogy of the error, see Banerjee & Collins 2010).

As more errors were discovered in the 2007 report, including one concerning the percentage of the Netherlands lying below sea-level, the Dutch Environmental Assessment Agency (PBL) was commissioned by the Dutch Government to conduct a review of the WGII assessment. An over-reliance on non-peer-reviewed ‘grey literature’ was one point of critique, alongside the occasional opacity of expert judgement and hard-to-trace referencing (PBL 2010; see also Hajer 2012). In the Netherlands, anxieties in the political community about the credibility of IPCC assessments was dealt with both through forensic examination of the texts, and through the enactment of deliberative spaces in which dialogue between climate scientists, ‘sceptics’ and knowledge users could be enacted, such as weblogs and radio features. Maarten Hajer (2012) reports how the activities of the PBL in assessing the IPCC assessment drew ire from a large section of the climate science community who were wary of possible damage to the broader credibility of the IPCC. If the IPCC reports were to be so publicly poked and prodded for errors, then the general credibility of the IPCC as a producer of reliably metonymic statements about climate change could be thrown into doubt. The PBL, led by Hajer, countered that institutions like the IPCC needed to recognise that authority is constructed in modern, mediated societies through communicative, rather than just epistemic, acts (Hajer 2009). As such, it was only through public performances of deliberation, for example between a climate scientist and a famous sceptic on a public website, that authority could be restored. But as Jasanoff (2005) has made clear, the cultural practices by which knowledge is rendered as authoritative and reliable in the public sphere vary greatly across different countries. Let us then turn back to India, where responses to the unearthing of the Himalaya error were very different to those in the Netherlands. What is particularly interesting is how the idea of the IPCC representing “Western science” was locally mobilised in this moment of controversy.

Challenges to the so-called “Western science” of climate change have a long history in Indian environmental politics (e.g. Agarwal & Narain, 1991; Agarwal, Sharma, & Chopra, 1982; Parashar et al., 1996). Epistemic contestation has most often taken place around claims

⁵ *The Guardian*, India “arrogant” to deny global warming link to melting glaciers, 9 November 2009.

⁶ Prominent environmental campaigner Sunita Narain also expressed uncertainty about the Minister’s motivations – “the report [will] create a lot of confusion...I am not sure what Jairam is doing” (ibid.).

about India's contribution to global greenhouse gas emissions. Challenges have been made both to the accuracy of emissions estimates, and to the moral politics of discounting the historical contributions of Western nations to global emissions in efforts to divide-up the responsibility for cuts. As in Brazil (Lahsen 2007), "Western science" and institutions like the IPCC have been read as vectors of hegemonic power, with Indian politicians and scientists often suspicious of the political motivations underpinning certain ways of framing and narrating the science of climate change (Kandlikar & Sagar 1999; Biermann 2001). Jairam Ramesh, the Environment Minister from 2009 to 2011, traded on these suspicions in his response to the IPCC glacier controversy. In telling the *Guardian* that he was prepared to take on "the doomsday scenarios of Al Gore and the IPCC", he related that his "concern is that this comes from western scientists"⁷.

In November 2009, the *Hindustan Times* reported that "For the first time, the Indian government has challenged research that says global warming has hastened the melting of Himalayan glaciers"⁸. A few months later, another report paraphrased Ramesh as saying that "the Western countries", Ramesh felt, "used the IPCC report to pressurise India to come on board to accept mitigation targets, which was successfully rejected"⁹. In a foreword to an assessment report of the new Indian Network for Climate Change Assessment, dubbed by some an "Indian IPCC" (see Mahony 2014), Ramesh argued for the development of "indigenous capacity" in climate change measurement and modelling. He stated that "[w]e should not be dependent on external studies to tell us for example about the impact of climate change on our glaciers, on our monsoons, and indeed even on sea level rise. Indeed, recent evidence suggests the 'scientific consensus' on many of these is debatable" (INCCA 2010). At a launch of a government study of future Indian greenhouse gas emissions, Ramesh likewise remarked that "[w]e can no longer depend on derived science from the West"¹⁰.

It is not necessary to spend too much time considering whether the IPCC can be accurately characterised as "Western". Such broad-brush Occidentalism can never do justice to the complex geographies of climate change knowledge production, but it is important to point out that certain framings and narrations of climate change which can be found within IPCC reports reflect situated and contingent ways of framing the issue, which may not always be capable of global acceptance. For example, Fogel (2004; 2005) illustrates how the persistent presentation in successive IPCC reports of forest areas in the global South as 'empty spaces' ripe for the sequestration of biotic carbon has helped legitimate forestry projects which prioritise the offsetting of distant greenhouse gas emissions over the needs and desires of local residents. Scientific framings of such forests as exploitable resources erase local histories and politics, leading many politicians, scientists and activists in the global South to grow sceptical of the politico-epistemic entanglings of IPCC assessments of mitigation strategies. The persistent use of the notion of "Western science" as a discursive resource or leitmotif which periodically animates the politics of science in such debates raises questions about the geographies of scientific credibility. Sense cannot be made of this discourse without reference to the legacy of Western colonialism and its socioeconomic and environmental consequences. In the Indian context specifically, we cannot ignore the legacy of a political aesthetics of national autonomy which guided much pre- and post-independence

⁷ *The Guardian*, India "arrogant" to deny global warming link to melting glaciers, 9 November 2009.

⁸ *Hindustan Times*, Government quells panic over Himalayan glacial melt. 10 November 2009.

⁹ *Hindustan Times*, Won't let Pachauri down in IPCC: Govt., 16 March 2010.

¹⁰ *SciDev.Net*, Home-grown climate models 'set India's record straight', 8 September 2009. On the discursive co-production of epistemic and political sovereignty in Indian climate politics, see author (2014).

political thought and which played into Nehruvian policies of industrial import substitution and science-led developmentalism in the post-independence era (Zachariah 2005).

However, it is also highly significant that 2009 was a year in which momentum was supposedly building for a new global deal on emissions reductions at the Copenhagen climate talks. As Lahsen (2007) predicted, the politics of science was re-animated by heightened expectations of an international political deal on mitigation. At the time of the controversy, Jairam Ramesh was walking a political tightrope between seeking to engage proactively with the climate talks and key actors like the US, and seeking not to alienate a domestic political audience opposed to binding emissions cuts and sensitive to the erosion of national political sovereignty (Dubash 2013; Atteridge et al. 2012). By playing on a discourse of contested 'Western science', Ramesh could tap into this demand for sovereignty and autonomy, for a defence of the national interest, even as he edged closer to an international agreement on climate change mitigation.

The arguments about Western science being a political instrument stand in a complicated relationship to the question of participation in the IPCC process. Participation by Indian experts has always been relatively low (Kandlikar & Sagar 1999; Ho-Lem et al. 2011), and participating authors have reported feeling marginalised in the report-writing process, both in interviews with Frank Biermann in the late 1990s (Biermann 2001) and in my own interviews in 2012, in the aftermath of the 'Glaciergate' controversy. However, contra Biermann, there were also Indian authors who felt surprisingly empowered by the AR4 process, able to contribute on equal terms to the framing of report chapters and the broader setting of the terms of the debate. Nonetheless, this all serves to complicate any instrumental linking of participation to trust, credibility and acceptance. The chapter which featured the 2035 melting glaciers claim had an Indian glaciologist as a coordinating lead author, alongside colleagues from the Philippines, Japan and China. Yet the decidedly non-Western make-up of the author team didn't stop the political and media presentation of their report as something emanating from outside, from the "West".

The complications of these geographies of representation and credibility are made all the plainer when we consider the positionality of Rajendra Pachauri, the Indian chair of the IPCC, in this controversy. A formerly prominent Indian policymaker with involvement in climate change negotiations told me in an interview that "Pachauri is not very well received in India" among government actors, due to what he called "several manipulations". My respondent stated that "he [i.e. Pachauri] wrote" the 2035 claim. The implication was that Pachauri had badly (and personally) betrayed the national interest. But when asked whether Pachauri should step-down, my respondent argued that the IPCC is an international body, and that it is important to have an Indian voice in such a prominent position.

Here we can see echoes of Lahsen's (2007) argument that trust in individuals (cf. Shapin 1995) is not neatly determined by nationality, particularly in the case of government actors and their scientific compatriots. Despite Pachauri seeking to staunchly defend the territory of a trans-national, autonomous science, he also played upon his own subjectivity. In seeking to link the tirade of criticism to which he was subject in late 2009 to powerful corporate interests, he told the *Hindustan Times* that "I am the easiest target as I represent the poor and the most vulnerable"¹¹. In the end, the Indian government threw its weight behind Pachauri, with Jairam Ramesh telling Parliament in March 2010 that he had "full confidence"

¹¹ *Hindustan Times*, Did 'Himalayan blunder' help TERI get lucrative grants? 25 January 2010.

in the “Indian chairperson” of the IPCC, despite the government’s objections to the glacier claim being, as he put it, “upheld ... we were vindicated”¹².

Re-gaining it – institutional reform and cosmopolitan expertise

So how might this incident inform our understandings of the geographies of credibility in the case of the IPCC? For one, it forces us to recognise the complexities and ambiguities of participation and representation. Even though the IPCC associates authors with their home countries when listing and counting participants, there is an ambiguity about who or what is being represented by these actors (see also Scoones 2009). In an age of multiple, fluid and sometimes contradictory identities (Ellison 1997; Appiah 2005), any claim that the passport held by an author can lend their ideas the same kind of free mobility enjoyed by their bodies is sure to be problematic. This notion of fluid, cosmopolitan identities can perhaps also be used to make sense of the label of “Western science”, strategically applied here to a body of epistemic and normative claims whose authority is often deferred to, but whose credibility is often challenged as a science suited to certain national concerns.

Theodore Porter (1995) argues that numbers and quantification have been key means of attaining credibility across space – of producing mobile, credible knowledge. Since the climate science controversies of 2009-10, numbers have increasingly been employed to represent not just the state of the climate, but the degree of relevant agreement within the scientific community. Numbers like “97%” (Cook et al. 2013) have been used to capture the extent of scientific consensus. To paraphrase Porter, such numbers are hoped to unite a sceptical and divided polity – particularly those of the US and Australia – around a seemingly objective portrayal of scientific unanimity (cf. Bray 2010). Yet similarly intentioned statements about the sheer numbers of geographically diverse participants in the IPCC process are not by themselves solutions to the problem of global credibility, owing to the complexities I outline above. Neither is a simple procedural fix, which has been the dominant institutional response to the controversies of 2009 and 2010. In March 2010 the InterAcademy Council (IAC) – an international organisation of national science academies – was commissioned by UNEP to conduct a formal review of IPCC processes and procedures (see IAC 2010, 75). Although stating that “the IPCC assessment process has been successful overall” (ibid., xii), the IAC report, published on 1st September 2010, made a series of recommendations designed to improve the assessment process. These included:

- The establishment of an elected Executive Committee;
- The election of an Executive Director to head the Secretariat;
- Extra vigilance by Review Editors to ensure that review comments are adequately considered, and the reflection of any controversy in the final report;
- A more targeted process for responding to reviews, including a more appropriate division of labour between Review Editors and chapter authors;
- The use of the qualitative level-of-understanding scale in SPMs and Technical Summaries;
- The use of quantitative probability scales only where the evidence allows it;
- The enactment of a comprehensive communications strategy which could help avoid public statements “perceived as advocating specific climate policies” (ibid., 5); and

¹² *Times of India*, Government to fight attempt to unseat Pachauri, 16 March 2010.

- The adoption of a ‘rigorous’ conflict of interest policy covering the IPCC leadership, authors, review editors and technical support staff.

The recommendations of the IAC were broadly accepted (see IPCC 2010), and work is ongoing within the organisation to formally enact the IAC suggestions. However, the mandate, questions and recommendations of the IAC were restricted to a familiar instrumentalism which positions ‘sound science’ as separate from, but determinate of, good public policy (Demeritt 2006). To paraphrase Shapin (1995), practical solutions to the problem of credibility were sought through minor institutional reforms. This defence of the ‘science for policy’ *status quo* (Hajer 2012) highlights the strong investment made by both the scientific and diplomatic community in the structure and organisation of this kind of assessment process, and thus the dominant problem framings to which it has given rise. More fundamental questions – like the scalar politics of knowledge-making, epistemic pluralism and the need for institutional spaces geared towards more resolutely deliberative or agonistic forms of engagement with climate change (Machin 2013) – were conspicuously absent from the IAC agenda. Although increased transparency and accountability were recognised as a “growing obligation” (IAC 2010, vi; Beck 2012), this was the only real concession to the changes in the nature of political deliberation in the quarter-century since the IPCC’s establishment. The diversification since 1988 of the deliberative spaces in which climate change is constructed and contested as a governance problem was not recognised by the IAC review (Stevenson & Dryzek 2012). New communications guidelines, developed *in lieu* of the IAC recommendations, have renewed the commitment of the IPCC to communicating with its “primary audience” of national governments, with a clear firewall enacted between the IPCC and broader global publics. Although other assessments like the International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD) have attempted to enact deliberative spaces responsive to new, distributed systems of public deliberation (Scoones 2009), the IPCC clings to a conventional understanding of political representation and delegation, with publics defined as those who are tied to and contained by a sovereign nation-state (see Brown 2009).

Even before the staggered publication of AR5 began, a public debate was enacted on the future of the IPCC as an organisation. On blogs and in media interviews, participating scientists wondered whether the personal and institutional costs to the scientific community of producing IPCC assessments were worth the incremental changes in consensus knowledge which they represented¹³. The IPCC itself solicited comments from national governments on its own future, with suggestions ranging from a continuation of business-as-usual, through the provision of more frequent ‘special reports’, to the establishment of a public website where assessments could be updated in ‘real time’, without the expansive review process¹⁴. The Netherlands supported thoroughgoing changes of the latter variety, whereas Brazil and India did not contribute suggestions. Most governments promoted closer interaction between the scientific and political communities in order to generate more relevant, timely assessments of topics of political interest. However, the fate of the Panel’s credibility, in the eyes of many contributors, rests on the continued policing of the boundary between ‘policy relevant’ and ‘policy prescriptive’ science. A Task Group comprised of representatives from 44 governments and the European Union was thus set up in October 2013 to explore the future

¹³ E.g. *Scientific American*, Does the IPCC need to change? 7 October 2013.

¹⁴ ‘The Future of the IPCC: Collated comments from Governments’. Document prepared for the 37th Session of the IPCC, 14-18 October 2013.

of IPCC products and processes, and to look at ways to further the participation of developing country scientists.

This process, along with the preceding IAC review and recommendations, points to a strong governmental commitment to the epistemic constitutionalism which positions the IPCC as the most important arbiter of credible, politically-relevant scientific advice on climate change (Miller 2009). Credibility, in this view, is to be established through social relations which position scientists and government representatives in close contact, but with a clear firewall between acts of description and prescription. However, I have suggested in this article that the social relations of climate change knowledge-making render credibility a complicated compound of scientific and political concerns. We of course need to ask how we can design assessments capable of embracing knowledge needs at multiple scales and in multiple sectors of human activity. But we also need to ask whether a body like the IPCC is capable of doing justice to the multiple ways of reasoning about risk and environmental change (Jasanoff 2005; Miller 2009; Jasanoff 2011), when such ways of reasoning are inextricably bound up with local political cultures and normative priorities. Can the IPCC be both scientifically credible and epistemically cosmopolitan, in handling the normative content of different, sometimes contradictory ways of reasoning about climate change? Just addressing this question will require broadening the processes of consultation and learning beyond the epistemic communities currently invested in the IPCC.

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