

“What sorts of knowledge for what sort of politics? Science, sustainability and the challenges of democracy”

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This is of course a timely moment to be offering this speech. All I need do is mention Rio de Janeiro. 1992. 2012. Plus 20. [SLIDE 2]. And there is another city which has gained almost similar iconic status in the encounters between global environmental knowledge and politics: Copenhagen [SLIDE 3]. 2009. March. December. COP15. And as I understand it, the events of that year are the origin of this lecture series on sustainability.

We also have these hot-button issues: Climate change. Biodiversity loss. Global Sustainability. [SLIDE 4] All three have spawned - or are possibly in the process of spawning – new forms of global knowledge assessments. The IPCC – now long in the tooth and battle-scarred. IPBES – the Intergovernmental Panel on Biodiversity and Ecosystem Services - which was approved by governments in Panama earlier this year. And then a proposed Intergovernmental Panel on Global Sustainability: for example, Owen Gaffney of the IGBP Secretariat in January 2012¹ “... *If evidence supports the notion that sustainable development is a necessity rather than an ideal to aim towards ... then a regular state of the planet assessment carried out by an Intergovernmental Panel on Global Sustainability is a must.*”

And then we have the recent move to coalesce a global change knowledge community through the Future Earth initiative², launched at the Planet under Pressure Conference in March this year in London.

But there is problem with this proliferation of new knowledge-making/assessing activities around the challenges of sustainability. It is, simply put, that there is a surfeit of knowledge. Dan Sarewitz captured it well a few years ago ... [SLIDE 5a] “*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?*”³

The tone of London’s Planet under Pressure Conference epitomises the frustration of many in the knowledge community concerned about sustainability: there seems no shortage of technical

¹ <http://www.earthsummit2012.org/blog/item/269-ipgs-owen-2>. He went on to write: “*At the core of such an assessment, which must have political legitimacy, should be policy-relevant information relating to systemic risk management at the planetary level.*”

² ESSP = WCRP, IGBP, IHDP and Diversitas, now merging into a bigger entity called Future Earth.

³ p.142 in Sarewitz, D. (1996) *Frontier of illusion: science, technology and the politics of progress* Temple University Press, 256pp.

knowledge ... but little evidence of reduced or smarter consumption. The pressures on the physical fabric of the planet, and its material flows, remain. This frustration then leads to perhaps unwelcome interventions, as in Jim Lovelock's suggestion a couple of years ago that '*It may be necessary to put democracy on hold for a while*' or more recently Mark Stafford-Smith's claim [SLIDE 5b] that: "*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*".⁴

No—other--way.

In this brief talk I want to reflect on what I see lies at the heart of this frustration with politics and democracy in the context of environmental knowledge: namely, how do we understand the relationship between knowledge and politics⁵.

There seem three main positions to adopt [SLIDE 6]:

- Do we envisage a managed boundary, separating knowledge from politics - as in the rhetoric of policy-relevant, but policy neutral knowledge? (In which case where is this boundary? Who establishes it? How does it change?)
- Or do we, perhaps implicitly, see knowledge as driving – if not determining – environmental policy? (In which case what is the role of politics?)
- Or, conversely, do we recognise – and hence can we welcome - the intrusion of politics into the making of environmental knowledge?

It is this last position which I wish to advance today.

So let me lay out my core argument at the beginning ... which is that insufficient attention is paid by the global change knowledge community to the multiple ways in which knowledge is political ... and therefore insufficient attention to the corollary that questions of representation in knowledge-making are just as important as questions of representation in politics.

More precisely, my point is that how knowledge is made, assessed and presented carries normative and political implications. The oft-repeated phrase 'Policy-relevant, yet policy neutral' masks these implications and such masking leads to the covert – rather than the overt - politicisation of science, a criticism to which, at times, the IPCC, for example, has been vulnerable.

Far better is to reveal and contest the normative dimensions of knowledge-making. Knowledge and politics are intrinsically linked : Plato and Aristotle recognised this two and a half thousand years ago; so too 400 years ago did Francis Bacon. Fifty years ago we saw it with Cold War science and

⁴ p.6 in Stafford-Smith,M., Gaffney,O., Brito,L., Ostrom,E. and Seitzinger,S. (2012) Interconnected risks and solutions for a planet under pressure – overview and introduction *Current Opinion in Environmental Sustainability* 4, 3-6

⁵ This is not exactly the same as what is referred to as the science-policy interface, which is less concerned with the politics of representation.

today, too, with global change science. Making and assessing knowledge is inevitably a political project.⁶ And so the global change knowledge community needs to be reflexive about what this means for representation.

The key questions - whether about climate change or global sustainability - then become such as these: [SLIDE 7] How is the knowledge of 'experts' balanced with the wishes of 'the people'? How are different versions of 'the good life' evaluated? Should cultural norms be deliberately changed? 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?

Elements of this debate have been joined recently by STS scholars⁷ in the pages of the journal *Social Studies of Science*. To give a flavour of this, let me contrast the positions of two STS scholars, Harry Collins (Cardiff) and Sheila Jasanoff (Harvard), as summarised recently in an article in this journal by Darrin Durant (Toronto)⁸. [SLIDE 8]. In essence, the question is how should liberal democracies structure public discussion and organise decision-making on matters which have a knowledge content? Collins' so-called '3rd 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 somewhat caricatured by Rawlsian public reason and by Habermasian discourse ethics.

I will not claim any easy resolution to this debate: there are weaknesses and dangers in both positions – capture by hegemonies and elites on the one hand; dissolution into relativism and identity politics on the other.

But no-one seriously concerned about sustainability – whether scientist, citizen, citizen scientist or scientist citizen – should avoid these questions. To do so is to be anti-political.

However one approaches the question of relating knowledge to politics, there remain these normative questions ... which are questions, not of science but of public interest: What sort of political representation do we wish in knowledge-making processes? Who is entitled to determine

⁶ The framing of knowledge has implications for the types of policy interventions likely to be considered. For example IPCC adopts the device of 'global temperature' as the definitive descriptor of 'the problem'; or whether it is CO₂ or CO₂-equivalent, alters the focus of policy deliberation; or the idea of GWPs, or putting adaptation into play analytically alongside mitigation ... all these things 'direct' the policy gaze.

⁷ This also is the subject matter of Bruno Latour's 1999 book *Pandora's Hope*, Leuschner, A. (2012) Pluralism and objectivity: exposing and breaking a circle *Studies in History and Philosophy of Science* 43, 191-198 and Stehr, N. and Grundmann, R. (2012) How does knowledge relate to political action? *Innovation – The European Journal of Social Science Research* 25(1), 1-16.

⁸ Durant, D. (2011) Models of democracy in social studies of science *Social Studies of Science* 41(5), 691-714

this? And who governs this representation? Whether dealing with climate change, biodiversity or more widely with global sustainability these questions must remain in the foreground.

So with this as my preamble, let me turn first to the question of knowledge itself before exploring these questions a little further. What sorts of knowledge are we dealing with; and how do we conceptualise gaps in knowledge?

In his 1959 Cambridge University Rede Lecture⁹ *'The Two Cultures and the Scientific Revolution'*, C P Snow famously contrasted two knowledge cultures: namely, the sciences and the humanities [SLIDE 9a]. Snow lamented the widening gulf he saw developing between these two traditions of knowledge, even while he argued strongly – in that post-War ascendant, modernising era - that it was the sciences which held out the greatest prospect of benefiting humanity. Yet despite his valorisation of science, Snow would certainly have resisted the claims of 'scientism' – [SLIDE 9b] i.e., the claim that scientific knowledge is the only valid and necessary form of knowledge¹⁰.

To Snow's two cultures we must add a third in the form of the social sciences – a grouping of disciplines which Snow ignored completely, but which Harvard psychologist Jerome Kagan helpfully juxtaposes with the sciences and humanities in his 2009 book *The Three Cultures*¹¹ [SLIDE 10]. One of the motivations for Kagan's book was his recognition of the danger to society when the ideological hand of a dominant perspective becomes too heavy. For Kagan, this ideological danger was the dominance of scientism.

And we can push this typology further by calling upon Matt Nisbet's argument, made a couple of years ago with ecological colleagues¹², in which he recognised four knowledge cultures [SLIDE 11], with the creative arts and professions sitting alongside philosophy and religion. To do justice to the human experience of reality, he argued, we need *"to bridge the great wellsprings of human understanding – the natural and social sciences, philosophy, religion and the creative arts – to 're-imagine' how we live on Earth."*

So in recognising the different sorts of knowledge which matter with respect to global sustainability, I would want to lay out this set of (at least) four knowledge categories [SLIDE 12]:

- Scientific and social scientific knowledge : method-centred (mobile)
- 'Local' (or indigenous) knowledge : place-centred (holistic)
- Tacit knowledge : implicit (hard to transfer)
- Self-knowledge : reflective (inner)

⁹ 7 May 1959, Cambridge, The Rede Lecture (annually since 1858) by C P Snow: *'The Two Cultures and the Scientific Revolution'*.

¹⁰ As revealed in this recent claim by Richard Dawkins: *"But what we do know is that if there is a question about the universe that science can never answer, no other discipline will"* Dawkins,R. (2012) Dangerous knowledge *New Statesman*, 7 May, p.35

¹¹ Kagan,J. (2009) *The three cultures: natural sciences, social sciences and the humanities in the 21st century* Cambridge University Press, Cambridge, 310pp.

¹² Nisbet Nisbet,M.C., Hixon,M.A., Moore,K.D., and Nelson,M. (2010) Four cultures: new synergies for engaging society on climate change *Frontiers in Ecology and Environment* 8(6), 329-331

I include self-knowledge here specifically because it may be seen as one of the goals of reflection and learning promoted by the humanities disciplines: 'Know thyself' was the ancient inscription at the Temple of Apollo at Delphi, an aphorism widely used by Plato in his soliloquies on Socrates in the 5th century BCE. It is also a central idea in Melissa Lane's excellent recent book *'Eco-republic: Ancient Thinking for a Green Age'*¹³ in which she explores the classical idea of virtue, both individual and civic.

But we also need to reflect not just on knowledge, but on knowledge gaps. How do we (or how should we) think about and define gaps in knowledge? Here, let me also suggest four different frameworks which might be used to think about knowledge gaps.

- *The first of these is the linear view of knowledge* [SLIDE 13a]. This heuristic emerges from a particular view of science and is epitomised by the IPCC and its desire to 'reduce the uncertainties in predictions'. Knowledge here is progressive, ignorance is finite and **discovery** leads to ever more complete understanding. Interestingly, this view parallels the 'God of the gaps' thinking in theology: as humans know more and more about the physical world, there is less and less need, so the argument goes, for any causal agency for God, until eventually He is discredited altogether [SLIDE 13b]. It is a popular heuristic which religious apologists have worked hard to dislodge: it assumes a particular view of God, just as in science the equivalent heuristic assumes a particular view of knowledge.
- *A second view of knowledge gaps is that they are contingent* [SLIDE 14]. That is, knowledge is **constructed** as a result of social processes and imperatives. As these change over time so the credibility of what is known, and the urgency of what is not known, also changes. Rather than knowledge progressing in a straight line – ever onward and upward – processes and products of knowledge are often convoluted and entangled¹⁴.
- [SLIDE 15]. *A third view might approach knowledge gaps as a result of poor connectivity*. What is needed is better **integration** of existing knowledge. Integrating different knowledge is a form of gap-filling as we seek to build ever more faithful replicas of reality in our minds or in our models. The recent Planet under Pressure Declaration places huge faith in this form of gap-filling, desiring to 'integrate across all disciplines, domains and regions'.
- *A final approach to gaps in knowledge might be to cover them with layers of meaning* [SLIDE 16]. This heuristic is most likely to be adopted by the humanities and may be seen, metaphorically, as a **thickening** of knowledge: adding layers of meaning and significance to our understanding of reality. The humanities are not on a search to discover new

¹³ Lane, M. (2011) *Eco-Republic: ancient thinking for a Green Age* Peter Lang, Oxford, 245pp.

¹⁴ And with regard to uncertainty, as Sheila Jasanoff has more than once remarked, it is certainty that is the anomaly in human experience and which needs explanation, not uncertainty.

knowledge, or even to connect together existing knowledge. Rather the humanities are engaged with issues which will never admit a technical solution – issues like justice, goodness, humility and democracy. They frequently involve normative questions which can only be differently or more deeply understood ... not solved. In this approach, knowledge ‘accumulates’ rather than ‘progresses’, or as philosopher Nicholas Davey puts it: “*It does not progress by overcoming the problems of previous generations, but rather thickens and extends an understanding of the issues involved.*”¹⁵

We will see shortly why I think this latter approach is so important for the challenges of sustainability, but let me summarise thus far.

Not only are there multiple sorts of knowledge which have a bearing on our understanding of global change, there are also multiple ways of conceiving of deficiencies in knowledge [SLIDE 17]. I have suggested that the conceptions which are dominant in the IPCC and Future Earth are either about linear processes of discovery – e.g. ‘narrowing uncertainties’ – or are about connecting (all!) disciplines together – universal integration for a ‘knowledge of everything’. However, there are other ways of thinking about knowledge gaps: either in terms of blind spots which are socially constructed, or else as sites for the thickening of human understanding of normative concepts such as justice, equity, goodness, democracy, well-being, etc. And it is here that I come back to the questions I posed at the start: how do we conceive of the relationship between knowledge and politics in the context of sustainability?

To put this more broadly: Is the problem of responding to climate change or biodiversity loss that we do not have enough knowledge *in toto* (the linear view). Or maybe it is that the knowledge that we do have is not sufficiently connected (the integrationist view)? Or rather – and this is what I want to suggest - is the problem that we have not attended sufficiently to the difficult normative and cultural dimensions of the relationship between knowledge and politics?

Of course, many calls for new knowledge-making have alluded to this relationship. The original mandate from HMG for the Tyndall Centre, which I established in 2000, claimed “*This research will help us find sustainable solutions to the challenges of climate change*” (‘actionable knowledge’ in other words); or Mark Stafford-Smith’s recent call at Planet Under Pressure for ‘*a rapid step change in the evolving relationship between science and decision-making*’¹⁶ again alludes to actionable knowledge.

But too infrequently is there any direct questioning of how knowledge does and should relate to political debate and decision-making. Instead, the implicit assumption too often seems to be that: (i) knowledge leads to action; (ii) more certain knowledge leads to more definite action; and (iii)

¹⁵ p.305 in Davey,N. (2011) Philosophy and the quest for the unpredictable pp.303-312 in *The public value of the humanities* (ed.) Bate,J., Bloomsbury Press, 319pp.

¹⁶ Stafford-Smith,M. (2012) Change the approach to sustainable development *Nature* 483, 375 (22 March)

more integrated knowledge leads to more joined-up action. These assumptions reveal the linear model of science-policy interaction at work¹⁷.

This is perfectly captured in this 2007 headline [SLIDE 18a] from *The Guardian* newspaper following the publication of the IPCC AR4 WGI report: “UN’s vast report will end the scientific argument. Now will the world act”¹⁸ ... and also [SLIDE 18b] in the Danish Prime Minister’s call at the 2009 Copenhagen Climate Change Congress: “*Politicians can only act on what we know, and therefore your contribution is central.*”¹⁹ The linear model asserts that if researchers could fill the gaps in knowledge, decision-making and policy enactment would be an easier thing to do – and the world would be a better and more sustainable place. Development geographer Kathleen O’Reilly puts it 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*”.²⁰

Confidence 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 IPCC FAR [SLIDE 19a]: “*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.*” But Sarewitz’s challenge to us is to turn our gaze away from making firmer and newer scientific knowledge and ask questions about why enacting change is so hard to accomplish, particularly on the scales of action we are dealing with in climate change. Jean Goodwin, Professor of Rhetoric at Iowa State University, has a different take to Houghton on ‘firm foundations’ [SLIDE 19b]: “*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.*”

So as I end, I want to ask: ‘What does it mean to act? By whom; for what ends; by what means; and with what legitimacy?’ When the PuP call goes out ... “*Integrated science at the international level is certainly the way to go. This is urgent: the planet calls for action now*”²¹ or when the 2009 Copenhagen Climate Change Congress declares ... “*Inaction is inexcusable*”²², what forms of (in)action are being foreseen?

The critical issue then is what forms of political actions are authorised by the different sorts of knowledge that we have (now) or hope to have (in the future)? The problems of making an adequate response to sustainability have little to do with gaps or disconnects in knowledge which can be filled or integrated. The problems are procedural and deliberative: How to decide about

¹⁷ See for example Scoones (2009) and the knowledge politics of the IIASTD.

¹⁸ *The Guardian* newspaper, 27 January 2007, London

¹⁹ Mr Anders Fogh Rasmussen (Danish PM), 12 March 2009 at the final plenary session of the Copenhagen Climate Change Congress

²⁰ p.2795 in O’Reilly, K. et al. (2011) Symposium: geographers and/in development *Environment and Planning A* 43, 2788-2800

²¹ Artaxo, P. (2012) Break down boundaries in climate research *Nature* 481, 239 (19 January 2012)

²² Copenhagen Climate Change Congress, ‘Key messages from the Congress, 12 March 2009

what to do when worldviews and value systems clash, whatever knowledge we may possess at any given moment.

Addressing these problems is a task of democratic theory and political philosophy. They 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.

The Planet Under Pressure Declaration calls for one integrated knowledge system, serving one over-arching goal, to be delivered by a unitary global governance system. But what conceptions of power, knowledge and human rights are being expressed in such a totalising vision? The danger in such a singular conception of ‘knowledge for policy’ is well expressed in the words, again, of Kathleen O’Reilly [SLIDE 20]: *“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.”*²³

The Earth System governance proposal of Planet Under Pressure offers one form of (global) politics drawing upon one form of (global) knowledge. But how is assent and legitimacy to be given to such a 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.²⁴

This cannot be ‘discovered’ through more knowledge. Such confrontations cannot escape dealing with the normative issues where, I have suggested, knowledge-thickening rather than gap-filling is the most we can achieve: issues such as goodness, justice, well-being, democracy and teleology. Reasoning together in public to make ‘actionable knowledge’ must allow for the expression of contrasting value commitments, however inconvenient this may be.

So how might my argument translate into something practical and immediate? In closing, let me take the example of IPBES. The presenting challenge for IPBES is how to create authorised knowledge connected to human values in an increasingly diverse and yet enduringly common world? How to work with plural ontologies, cultures and ethics through multiple modes of expert, non-expert and political representation?

IPBES should not adopt an IPCC-like singular scientific framing of the biodiversity problem with a focus on standardized assessments and peer-reviewed science. Yet as some have already recognised, the notion of ‘biodiversity’ itself as it is currently being framed within IPBES has problematic overtones. This framing involves three elements: first, it promotes a science-based understanding of biodiversity that requires the standardization of biodiversity knowledge; second, through the use of the concept of ecosystem services it makes the value of biodiversity apparent to

²³ O’Reilly op. cit.

²⁴ Rip (2006) and non-modern steering: making spaces for learning rather than making knowledge for solutions.

economists; and third, it aims to make these values commensurable (and thus exchangeable and commodifiable) as units for larger market and policy transactions.

This framing will be meaningful only to some of the potential range of actors and the implicit model of policy in this approach assumes that all the key actors will assent to top-down, standardised instrumental science tailored to the idea of global institutions as being synonymous with 'the policy world'. If this path is followed, the danger is that IPBES, like the IPCC, could omit large, diverse, and important sectors of global society and stakeholders.

Instead, I would wish to offer these three linked principles for IPBES which are more in keeping with the argument I have made here this morning [SLIDE 21]:

- Building trust between key knowledge holders and knowledge brokers and motivated stakeholders is more important than building a knowledge consensus.
- Rather than designing an assessment process to drive knowledge convergence, deliberative processes should recognise, welcome and enshrine divergence and plurality. Less integration and more dissensus allowing conflicting values and norms to reflect the messiness of the world. Ambiguity, ignorance and disagreement - rather than consensus and quantified uncertainties - become operating principles.
- The scale- and context-dependency of relevant knowledge must be built into the operating and governance structures of IPBES. This implies a move away from a global-centric knowledge paradigm.

If the political nature of assessments such as IPBES is not explicitly recognised, then knowledge will become contested on ostensibly non-political grounds. Better to be up-front about the politics of representation in knowledge-making institutions, than to find a proxy political contest taking place using the language of science. As political theorist Chantal Mouffe put it in her book *On the political* in 2005: ". . . 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."²⁵

[SLIDE 22]

²⁵ p.3 in Mouffe,C. (2005) *On the political* Routledge, London