The emergency that wasn't: cultural cognition and the politicisation of climate science.

1. Introduction

Both the evidence for anthropogenic climate change and the dialogue between science, the public and politics has increased steadily since the late 1970s. By contrast, controversy within the scientific discourse has substantially diminished as increased technological capability, notably computing power, has reduced uncertainties. By the early 2000s, little scientific disagreement remained (Oreskes, 2004). More than 97% of actively publishing climate scientists concur that climate-warming and other climate changes during the past century are due to anthropogenic transfer of carbon stocks from the ground to the atmosphere (Cook *et al.*, 2013, 2016) and nearly all the leading scientific organizations worldwide have issued public statements endorsing this position. Over the last 30 years calls by scientists to curb CO_2 emissions have been ardently repeated, not least through the mechanisms of the 1992 Rio Summit, the 1997 Kyoto Protocol, and the 2015 Paris Agreement (Ripple *et al.*, 2017). But despite political commitments, emissions have continued to increase. Responsively, the scientific message has grown louder, more urgent and emotive. In its most recent scientific Special Report, the IPCC[1] concluded "Limiting global warming to 1.5°C would require *rapid, far-reaching* and *unprecedented* changes in *all aspects of society*" and in 2019, 11,000 scientists endorsed an article published in the journal BioScience, stating "*We declare..unequivocally that planet Earth is facing a climate emergency… a sustainable future…entails major transformations in the ways our global society functions."* (Ripple *et al.*, 2019; IPCC, 2018). The emotive urgency of the scientific message has been echoed and bolstered by a visible subset of the public, particularly the youth, via campaigns such as *Extinction Rebellion* and Greta Thunberg's *School Strike for Climate* movement. Against this backdrop of overwhelming consensus and urgency, how is it that the science of climate change has consistently remained, at least politically, one of the most controversial scientific issues of our time?

2. Knowledge deficit and distortion and the rise of neoliberalism

Historically, the conventional explanation for the controversy has emphasized a sceptical public, distrustful of scientific findings due to i) a deficit of understanding about the science of climate change and science more generally (Miller, 2001) and ii) the exploitation of this knowledge deficit through the deliberate distortion and politicisation of scientific information. As Lenzi (2019) points out, the very epistemology of science: its openness to challenge and revision and its transparency on quantifying uncertainty, is frequently misunderstood to mean the science of climate change is ambiguous. It is in this philosophical gap, that the deeply embedded power of the fossil fuel industry (Oreskes and Conway, 2010; Weber and Stern, 2011); political/financial short-termism and media-bias has flourished (Gunningham, 2019).

Leaked documents have frequently revealed deliberate strategies by fossil fuel interests to locate 'expert' sceptics, identify thinktanks and media moguls that would question the scientific consensus of anthropogenic climate change. The five largest publicly-traded oil and gas companies (ExxonMobil, Royal Dutch Shell, Chevron, BP and Total) invested ~$1Bn during the 3 years following the 2015 Paris Agreement on misleading climate-related branding and lobbying (InfluenceMap, 2019). This spend (mostly targeted at delaying, blocking or controlling climate related policy) sits alongside careful campaigns of positive decarbonisation messages with an apparent goal to maintain public support whilst simultaneously holding back binding policy via direct lobbying and the funding of sympathetic thinktanks. A successful tactic of the "climate change denial countermovement" (Dunlap and McCright, 2015) has been to shift from questioning scientific consensus to denigrating

[1] Intergovernmental Panel on Climate Change

the urgency of its findings, using language such as 'climate alarmists' alongside describing themselves as 'sceptics of climate catastrophism' and/or highlighting the economic costs of mitigation (Dunlap, 2013; Kasser *et al.*, 2009).

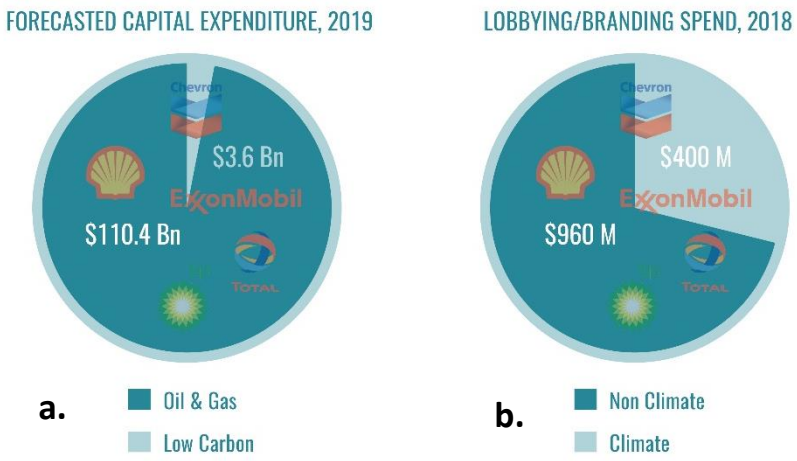

Fig 1: *Oil and gas company spend on a) low carbon investments vs fossil fuel investments and b) spend on pro-climate branding/lobbying vs opposing binding climate policy (InfluenceMap, 2019).*

Between 2006-2010 UK political parties were more progressive than the public utilising *preference shaping* over *preference accommodation* to when it came to the public's views on climate change (Carter, 2014). The decarbonisation of the economy is, however, particularly vulnerable to increasing right-wing populism and post-truth politics since its success is ultimately determined by market implementation and socio-political processes (Fraune and Knodt, 2018). Reflecting these trends, recent years have seen right-of-centre parties becoming retrogressive in their response to climate science. Since 2015, despite commitments to being the 'greenest government ever', the Conservative government dismantled climate initiatives implemented in the preceding decade including solar power subsidies, incentives for low-emission vehicles and the zero-carbon homes plan (Lawrence *et al.*, 2019). This mirrored a strengthening of neoliberal economic ideas favouring free market deregulation, a trend strongly influenced by right-wing thinktanks such as the Legatum Institute and the IEA[2], whom have also published material questioning climate-science findings. Whilst thinktanks have always played an important part in shaping UK government policy, the growing number of connections between the Conservative government and ultra-free market thinktanks has grown substantially in the last decade (Plehwe, 2014). More recently the political left have advocated for strong state intervention to support climate change mitigation under a pro-scientific banner. Polarisation has ensued. In an analysis by CarbonBrief on parliamentary reference to climate change, Labour, the Liberal Democrats, the Greens and the SNP collectively racked up 339 references to a climate "crisis", "emergency" or "catastrophe", the Conservatives have only used these terms 32 times (Gabbattis and Tandon, 2019). The same report found that while 576 MPs use twitter, only 64 of them (12%) follow climate scientists, of which 42 are Labour MPs.

Funded by donations from fossil fuel magnates, billionaires and oil companies, international umbrella organisations such as the Atlas network deliberately strategize to multiply the number of neoliberal thinktanks, providing an impression of widespread support for fringe climate-science views subsequently echoed in media outlets. This multiplication effect is amplified in new media, the content distribution of which is interminably scalable. In an analysis of the digital footprint of 386 climate change sceptics with the same number of expert scientists, Petersen *et al*., (2019) found that

[2] Institute of Economic Affairs

the former were featured in 49% more digital media articles than scientists. Capable of tailoring newsfeeds to preferences and prejudices, social media platforms then disproportionately replicate highly politicised, or misleading information, creating so-called 'echo chambers' which insulate individuals from exposure to alternative views, accentuating polarisation.

3. Cultural bias and the politicisation of public opinion

As political polarisation of climate-science has grown, embedded value-bias has increasingly influenced the interaction of publics with media-messaging on climate-change. Empirical evidence drawn from US studies suggests 'belief' in high-risk anthropogenic climate change is a stronger indicator of an individual's left-right (liberal-conservative) leaning than any public deficiencies in science education (Kahan, Jenkins-Smith and Braman, 2011). These data bear out the predictions of 'cultural cognition theory' which argues that individuals selectively assess risk in ways that draw on shared values within their own cultural group (Kahan *et al.*, 2011). Political polarisation of the public, reflects a gradation between egalitarian communitarian values on the left (perceive less rigid social organisation, favour collective action and state intervention) and hierarchical Individualists on the right (tie authority to social ranking, disapprove of collective interference with individual actions). The more an individual endorses the latter, the more they are likely to downplay the risks highlighted by climate change science (Kahan *et al.*, 2012, 2011).

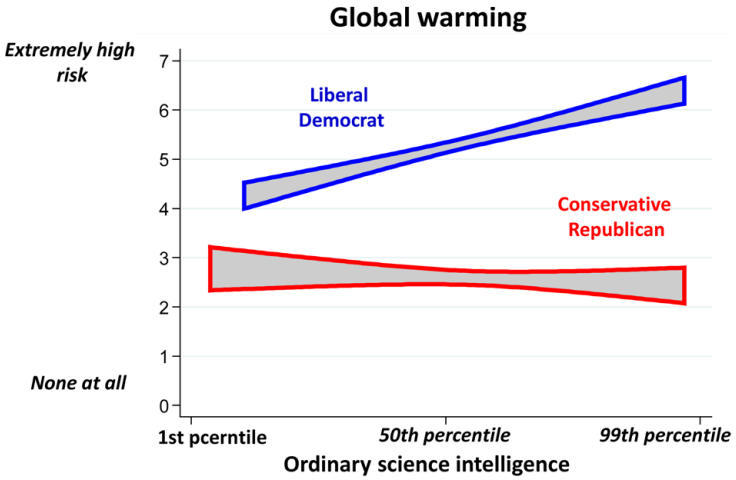

Fig 2: *Risk perception of climate change, science literacy (Ordinary Science Intelligence) and political identity. N =1800, April-May 2014. Shaded areas represent 0.95 confidence intervals (Kahan, 2015).*

Evidence suggests the UK public also interpret information and expertise in partisan ways that similarly reflect their political ideology (Clements, 2012; Poortinga *et al.*, 2011; Whitmarsh, 2011). While UK public opinion polls record a significant jump in general public consensus over the last year with 80% of the public in March 2019 indicating they were fairly concerned (45%) or very concerned (35%) about climate change (BEIS, 2019), the weight of opinion on the risk-severity has a clear cultural influence with 64/59% of Labour/Liberal Democrat supporters saying they are very concerned, compared to 42% Conservative supporters. Similarly, 70/69% of Labour/Lib Dem supporters believe the UK should achieve net zero emission more rapidly than by 2050, compared to 37% of Conservative supporters (Dickman and Skinner, 2019).

Produced and reinforced by political polarisation, demands for political/societal response on the left have grown in effectiveness. *Extinction rebellion* and *global climate strikes* have employed deliberate strategies of civil disobedience to push for action that unites behinds the science. Such non-violent movements arguably need only 3.5% of the population to mobilise (Chenoweth and Stephan, 2011) to reach a social tipping point (Gladwell, 2000) stimulating governmental response. In the UK, the

latter has included 2 parliamentary debates and the declaration of a 'climate emergency' (Gunningham, 2019) but whether or not policy commitment meets the demand for real action from these (dominantly left-wing) public voices under an increasingly right-wing government is yet to be seen.

Interestingly, empirical data (Kahan, 2015) also suggest that contrary to the 'deficit model' of society's engagement with science, the greater an individual's level of scientific education/comprehension, the more polarised their views on the risk of climate-change become (fig 2). This reflects a greater aptitude, when faced with cognitive dissonance, to search out or restructure information to support an individual's cultural predisposition (Lewandowsky *et al.*, 2012), a process facilitated by the era of unchecked new media and post-truth politics. Cook et al., (2017) have argued that an information deficit, or more likely, a misinformation surplus, accounts for a proportion of the gap between scientific and public views after the effects of cultural bias have been accounted for (fig 3). But Kahan (2015) and others argue that public messaging on climate change that endeavours merely to fill the deficit, or which is guilt or fear-based (e.g. in relation to consumerism) (Corner, Markowitz and Pidgeon, 2014) unintentionally accentuates the controversy by predisposing individuals to view climate-change mitigation as a direct attack on their identity and values (Nilsson, von Borgstede and Biel, 2004).

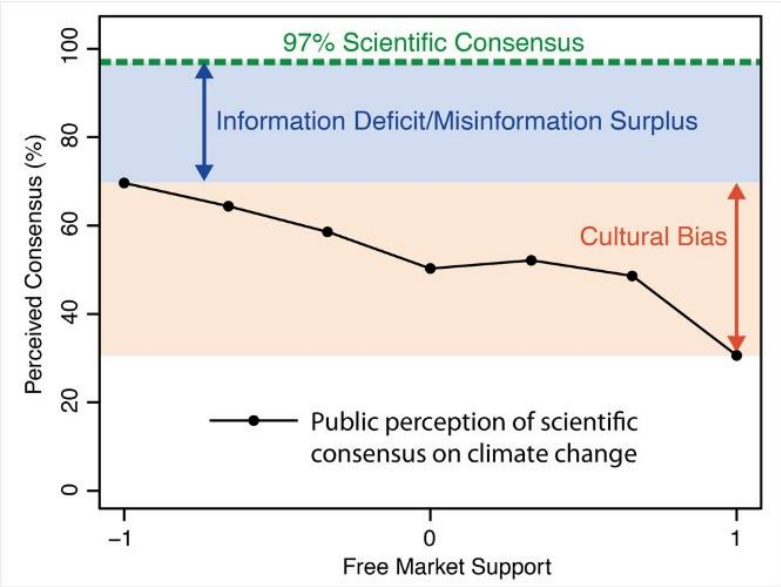

Fig 3: *Impact of political values on public perception of climate change consensus in the US. N = 200, 2013 (Cook, 2014).*

In line with new norms in science communication that embrace dialogue, consultation and participation (Wilkinson and Weitkamp, 2016), deliberation may offer the best chance of alleviating controversy from climate change mitigation policies (Niemeyer, 2014; Hobson and Niemeyer, 2011). Deliberative public consultation in Ireland involving 99 randomly selected Irish citizens, resulted in consensus support for 13 Irish assembly proposals to tackle climate change including those (e.g. higher taxes) thought to be politically infeasible (Lenzi, 2019). The success of such initiatives lies in kerbing cultural bias through establishing community cohesion. Dryzek, (2009) argues that these deliberative norms need to be engendered within society more broadly but up-scaling the deliberative process, is not fast or straightforward.

Others (e.g. Kahan, 2015; Lenzi, 2019) suggest de-escalating the polarisation that props up the controversy gap between mitigation-commitment and real action requires some form of 'nudging'.

Nudge-theory endeavours to steer individuals in particular directions by accepting "*the cognitive architecture of choice that faces citizens and work with – rather than against – the grain of biases, hunches and heuristics*" (John, Smith and Stoker, 2009, p.363). E.g. 'Identity affirmation', avoiding messaging that forces individuals to choose between their cultural identity and what is known by science (Kahan, 2015) is achieved by reframing the issue. E.g. Highlight the capability of human ingenuity via geoengineering/technological solutions or emphasise the possibility of 'stranded assets' under free market economics. Ensuring 'pleuritic advocacy' i.e. diversity of cultural values among communicators and experts, also renders information less easily rejected (Lenzi et al., 2019).

4. Conclusion

The science of climate change has entered a spiral of politicization and scientists themselves are increasingly becoming 'political actors' (Dryzek, 2011). In the UK, the controversy of climate science has moved beyond consensus-debate towards questioning the risk-magnitude and/or mechanisms of mitigation. Fuelled by strategic campaigns by fossil fuel interests and neoliberal thinktanks (Oreskes and Conwy, 2010; Weber and Stern, 2011) funded by those with vested interests in a deregulated economy, political and cultural factionalization has grown. Polarised public opinion on climate change science, finds its roots not in 'scientific illiteracy' but in a value-laden political predispositions. Alleviating the public and political polarisation that impedes action on climate change (as witnessed at COP25) requires a tranche of approaches from science communication professionals including increasing public engagement in deliberative processes and protecting citizens from having to choose between scientific knowledge and their own cultural/political identities within society. Without these, "*rapid, far-reaching* and *unprecedented* changes in *all aspects of society"* will remain an unlikely mitigation outcome.

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