Fostering Community Engagement: On the Intersection of Climate Science Denialism, Politics, and Epistemic Criteria of Assent

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Abstract. This paper reviews and interrogates theories of climate science denialism, and climate science skepticism, from a Science and Technology Studies (STS) perspective, and proceeds as follows: (1) Compare work by Jasanoff & Simmet, and by Collins, Evans & Weinel, on post-truth rhetoric, theories of expertise, and managing climate science denialism. (2) Introduce particular boundary drawing norms that I view as promising in potentially persuading publics to support mitigation responses to climate change. (3) Review work by Jylhä and by MacWilliams on the politics and demographics of climate science denialists (4) Argue that recent work by Kenner provides a model for effectively engaging local communities in climate science epistemology which could be fruitfully extended using social science work reviewed in this paper. (5) Conclude that there is plausibly fruitful political negotiation to be done by engaging conservative people to envision desired futures and compare those visions with the emerging climate.

Keywords: climate change, denial, politics, epistemic, community, engagement, post-truth

1. On Post-Truth and Expertise

This section reviews some recent prominent views about how STS should approach climate science denialism. This paper follows Lewandowsky et al. (2015) in the view that there is broad scientific consensus on climate change, which Lewandowsky defines as "the agreement that (a) the Earth is warming and (b) most of that warming has been due to human greenhouse gas emissions"

(Lewandowsky 2015, 1). Opponents of these views, which I'll refer to as climate science denialists, have frequently emphasized scientific uncertainty in order to argue against regulations designed to mitigate climate change. The topic of scientific certainty, and uncertainty, is thus central to the analysis of climate science denialism. This section considers the production of public doxastic attitudes of certainty (or ignorance) through the employment of post-truth rhetoric, which eschews empirical contestation in favour of emotional appeals to authority.

The relation between post-truth rhetoric and climate science denialists has gained increasing attention from STS scholars. Collins, Evans & Weinel (2017) have argued, roughly, that the social constructivist turn in STS work, which emphasized continuities between science and politics, has "opened up the cognitive terrain to those concerned to enhance the impact of democratic politics on science but, in so doing, it opened that terrain for all forms of politics, including populism and that of the radical right-wing" (Collins 2017, 581). They have advocated that STS should respond to climate science denialism by emphasizing conditions of legitimate expertise, of scientific experts, in evaluating claims about climate science. STS, they aver, is expert in expertise. On this view, by limiting the people who are assessed to be experts in accordance with some norms of science, STS can make a uniquely valuable contribution to work on climate science (and other post-truth related topics).

By contrast, Jasanoff & Simmet (2017) have argued against establishing privileged epistemologies of expertise. They contend that the debates around climate change science, such as carbon taxes, have failed to adequately engage with everyday concerns of non-experts, such as "the experience of hardscrabble working lives with legitimate worries, grievances and desires divergent from those of a state perceived as unduly intrusive or an educated, expert elite" (Jasanoff 2017, 765ff). Crucially, Jasanoff & Simmet contend that topics which are taken up by post-truth rhetorics, such as climate science and related regulations, are actually stand-ins for

disagreements about the fundamental values of our society. In Jasanoff & Simmet's words,

> Americans' ignorance of each other across economic and class divides has created a world of blanket accusations about being on the 'wrong side of history'. This leads to a climate in which fundamental disagreements over values are treated as if they can be simply overridden and destroyed by facts rather than listened to and reasoned with to create a knowledge base that feels truly shared. Yet, what calls for attention in our present crisis – a crisis of democracy as well as a 'climate crisis' – is precisely this lack of shared imaginations about the future of American, and indeed global, society. (Jasanoff 2017, 765)

That is to say, per Jasanoff & Simmet, contests regarding climate science have failed to make adequate progress in changing legal structures precisely because the participants of the contest have failed to conduct sufficient political negotiations about what values to pursue as a body politic. Climate change activists, including those in STS, should aim to create 'shared imaginations' about the future which 'feels truly shared' to the participants. Appeals to an epistemic privilege of expertise would fail because the contest is political, not factual.

Jasanoff & Simmet is in broad conformity with a Foucault's (1972) account of scientific knowledge production as a ritual which encodes value and power. Consider the following quotation from Foucault on the topic of the production of knowledge.

> The history of ideas, then, is the discipline of beginnings and ends, the description of obscure continuities and returns, the reconstitution of developments in the linear form of history...it shows how scientific knowledge is diffused, gives rise to philosophical concepts...it shows how problems, notions, themes may emigrate from the philosophical field where they were formulated to scientific or political discourses. (Foucault 1972, 137)

That is to say, per Foucault, the history of ideas illustrates how notions and problems can migrate between domains of science and political discourses; science is political. Jasanoff & Simmet extend that Foucauldian analytical framework by emphasizing how the

rhetoric relating to climate science lies at the intersection of the scientific factual claim and fundamental questions of political value.

2. Promising Frameworks for Boundary Drawing

Jasanoff & Simmet note that the problem of identifying knowledge is ancient, and that the epistemology of science has gained renewed urgency in the face of harms associated with climate change and public contestation regarding what counts as legitimate climate science. This section reviews the rhetorics of climate science and discusses related STS theories of expertise. To give one example of the rhetoric of climate science denialism, consider a view articulated by Scott Pruitt, the Environmental Protection Agency Administrator, who said, "I think that measuring with precision human activity on the climate is something very challenging to do and there's tremendous disagreement about the degree of impact (…). So no, I would not agree that it's a primary contributor to the global warming that we see" (Chiacu & Volcovici 2017). That is to say, per Pruitt, disagreement amongst experts about human impacts on climate change are sufficient to warrant his conclusion that humans are not a "primary contributor to (…) global warming", and therefore governments should refrain from taking steps to limit greenhouse gases (*e.g.* a carbon tax).

By contrast, Oreskes & Conway (2010a) support a view that there is an overwhelming consensus among scientific experts that anthropogenic factors are a key contributing factor in climate change. They write that the scientific consensus on anthropocentric climate change is "unequivocal" (Oreskes 2010a, 169). Oreskes & Conway emphasize the crucial role of a group of scientists, including Bill Nierenberg and Fred Singer, allied with conservative think tanks, in generating scientific controversy regarding climate science. They cite a 1979 report on climate science by Nierenberg, Schilling & Nordhaus, produced for the US National Academy of Sciences under the Carter Administration. That report is, per Oreskes &

Conway, unusually disjointed in that, unlike past reports, the Nierenberg report was not signed, in total, by all authors. It has individually signed chapters, a point which they contend indicates the internal incoherence of the views of the authors. The executive summary, they report, "sided with the economists" who counselled against taking measures to limit CO2 emissions, not the natural scientists who counselled in favour of proactive policies to reduce CO2 emissions (Oreskes 2010a, 177). Oreskes & Conway present documents indicating that powerful interests, such as the energy lobby and "oil-rich states", actively sought to deceive public perceptions of climate science by paying for research that conformed with their profit interests. Summing up a troubling picture, they conclude, "[the] divergence between the state of the science and how it was presented in the major media helped make it easy for our government to do nothing about global warming...Scientifically, global warming was an established fact. Politically, global warming was dead" (*Ibidem*, 215).

3. The Politics and Psychology of Climate Science Denialism

Jasanoff & Simmet's call for STS work to engage politically with climate science denialists intersects with fascinating empirical research which shows that those who engage in climate science denial are typically white males with conservative political views, termed the 'conservative male effect', a topic of recent research. For instance, one empirical study of climate science denialism by Jylhä et al. found that "[the conservative male effect] can be explained by the endorsement of group-based social hierarchies as indexed by social dominance orientation" (Jylhä 2016, 184). That is to say, the prevalence of climate science denialism amongst conservative males is partly explained by their predisposition to endorse group-based social hierarchies. Such social science findings can help activists and theorists to better understand their audiences as they work to engage climate science denialists. As noted by Wibeck (2014), climate

change activists should be mindful that the public is not uniform, it is heterogeneous, and distinct target groups may respond differentially to various "interpretative frames" regarding climate change (Wibeck 2014, 401).

The relation between authoritarian politics and climate science denialists can be illuminated by Merton's (1942/73) seminal sociology of science. This paper extends Merton's account to illuminate contemporary debates about the boundaries between science, pseudoscience, and science denialism. Merton proposed that science has a socially constructed "ethos"; thus, Merton aims to describe, and prescribe, norms of scientific inquiry. Merton's warning about the dangers of fascist epistemologies of science intersects with the political challenges of our present post-truth era, with implications for theories of climate science denialism. Commentators have for years noted a global lurch to the political right which is demonstrated by Brexit and the election of Trump, whose platform included authoritarian policies which are discriminatory toward perceived outgroup members, such as political refugees and asylum seekers (Taub 2016). According to an analysis of voter demographics in the 2016 election by MacWilliams (2016), "Trump's rise is in part the result of authoritarian voters' response to his unvarnished, us-versus-them rhetoric" (MacWilliams 2016, 716). This section reviews research linking conservative voter's response to Trump's authoritarian rhetoric and policies with his administration's forceful climate science denialism and his initiatives favourable to the fossil fuel industry.

Groundbreaking reporting by Banerjee et al. (2016) describing a campaign by the oil company Exxon over a period of 40 years to discredit climate science. In conformity with the aims of that 40-year long campaign, there has been a proliferation of climate science denialists. These denialists are overwhelmingly allied with right-wing, and business-friendly, political positions. The profit motive of the fossil fuel industry is the most elegant and plausible explanation for that lengthy campaign. In this sense, ignorance about climate change was produced by the social structure of capitalism and greed,

transferred through popular media, itself subject to the influence of capitalism. Trump has nurtured connections with the fossil fuel industry, especially coal, and his administration has doubted that climate change is substantially anthropogenic, while the Environmental Protection Agency has sought to loosen regulations of climate change causing fossil fuel emissions and standards.

Oreskes et al. (2018) have extensively described the ways that fossil fuel companies designed and contributed to public controversy regarding climate science. A constellation of corporations and libertarian think-tanks worked together to construct ignorance through the publication of works by scientists which contradicted previous research on climate science. In their words, "during the early 1980s, anti-environmentalism had (…) taken root in a network of conservative and libertarian think-tanks in Washington (…) the CATO Institute (…) the Heritage Foundation (…) the Marshall Institute - variously promoted business interests and 'free market' economic policies, and the rollback of environmental, health, safety, and labor protections (…). Much of the funding (…) came from the fossil fuel industry [including] Exxon Mobil" (Oreskes 2018, 160). This paper follows Jasanoff & Simmet in viewing Oreskes' work as squarely in favour of establishing privileged epistemologies of expertise. We can see privileging of certain epistemologies in the key conclusion defended by Oreskes, namely that the scientists who have been prominent in contesting anthropogenic climate change have engaged in illegitimate knowledge production; they are illegitimate experts. Oreskes & Conway (2010b) sum up: "One reason that the public is confused is that people have been trying to confuse them, in large part by intentionally waging campaigns of doubt against climate science...It works because if people think the science is contentious, they are unlikely to support public policies that rely on that science" (Oreskes 2010b, 686) The work of distinguishing legitimate from illegitimate knowledge production has received voluminous attention; in the following section, I review some of that work which I find to be promising. My aim here is not to side with Collins, Evans

& Weinel in favour of expertise boundary drawing, and against Jasanoff & Simmet's injunction to dispense with such boundary drawing in favour of political negotiation. Rather, my aim is to note what I take to be promising suggestions for boundary drawing that could persuade anthropogenic climate change sceptics to reconsider both their politics and their beliefs about climate change.

Hansson (2017) has helpfully developed a taxonomy of forms of knowledge production which he describes as deviant. His aim it to counter climate science denialism, which contends that "poses a serious threat to human health and the long-term sustainability of human civilization" (Hansson 2017, 39). Following Hansson, this section distinguishes science from science denialism by articulating a theory of "deviant criteria of assent" (*ibidem*). For example, extending Oreskes, Hansson contends that climate science denialists have "fabricated fake controversies", an epistemically illegitimate activity (*ibidem*). Per Hansson, other deviant criteria of assent include:

- Cherry picking information – failure to evaluate the whole body of evidence.
- Neglect of refuting information – refusing to acknowledge new evidence that is contrary to previously embraced, intuitively appealing ideas.
- Lack of competence – climate science denialists typically lack academic credentials.
- Inability to publish in peer-reviewed media – climate science denialists have not been able to publish widely in peer-reviewed journals and media.
- Use of conspiracy theories – climate science denialists often evoke vaguely defined liberal conspiracies.

The granular epistemic framework that Hansson offers is in broad conformity with the kind of analysis of expertise advocated by Collins, Evans & Weinel. In addition to describing deviant criteria of assent, Hansson also sketches some demographic commonalities among science denialist activists; denialists are overwhelmingly

"male" and they frequently connect their climate science denial activities with "right-wing" political positions (Hansson 2017, 43ff). Following a Foucauldian analysis of power, we can view the alignment of right-wing political positions with climate science denialism as rooted in a complex, ever-shifting arrangement of interests that include political, economic, scientific, cultural, gendered, and racialized. These criteria of deviant can plausibly be used to engage publics in the kind of political negotiation endorsed by Jasanoff, offering publics a framework to refine their own criteria for evaluating knowledge claims. What do the social sciences tell us about the psychological characteristics associated with right-wing authoritarian politics and connections with climate science?

3.1. Audience Segmentation and Right-wing Politics

The psychology of people who favour right-wing authoritarian politics has been researched by Halperin & Bar-Tal (2011) in the context of Jewish interpretation of novel information in connection with the ongoing conflict with Palestinians. The role of openness to novel information is crucially important for people who hold right-wing political views. Briefly, Halperin & Bar-Tal, found that "unwillingness to be exposed to new information that may contradict already held views about the conflict restricts the views of society members and ultimately supports the continuation of the conflict [with Palestinians]. These members tend to use superficial analyses of incoming information and search for information consistent with already-held knowledge (Halperin 2011, 647). On this account, traumatic experiences, *e.g.* loss of human life, is predictive of fearful and defensive postures which are in turn predictive of information processing. Those who experience great pain are more likely to close-minded to new information which contradicts preconceived beliefs.

By way of positive suggestion, Halperin & Bar-Tal suggest one way to "unfreeze" widely held beliefs, namely by introducing novel

instigating beliefs which "show incompatibility between the desired future, on the one hand, and the emerging future and/or the current state and/or the perceived past, on the other hand" (Halperin 2011, 647). Shifting back to the present topic of science denialism, it follows that one way to unfreeze the science denialist claims is to demonstrate that there is a harmful emerging future which is incompatible with the broad values and aims such climate denialists. I here note that such potential to unfreeze the science denialist claims represents a promising avenue for further STS work which would embrace both Jasanoff's call to really listen to and negotiate with climate science denialists, while also embracing, in part, the call of Collins, Evans & Weinel to retain some place for privileged expertise (in this case, privileged expertise of the findings of Halperin & Bar-Tal, which provides an empirical basis for framing climate change discussions).

The potential for illustrations of harmful emerging futures to bring productive public attention (as opposed to avoidance) to climate change has been supported by a variety of other researchers. For instance, Henly-Shepard, Gray & Cox (2015) have worked with coastal island communities to raise awareness about hazards and risks associated with climate change, explore adaptation strategies, and foster social trust and learning of diverse stakeholders. Specifically, the research conducted "a series of iterative participatory modeling workshops using fuzzy-logic cognitive mapping (…) community committee represented, explored and actively questioned their beliefs about the natural hazards that their community faces (…) the modelling process allowed the committee to represent the communities' dynamic nature, run tsunami hazard scenarios to quantify potential direct and indirect effects, and explicitly compare trade-offs of competing adaptation strategies" (Henly-Shepard 2015, 109). Such community work to emphasize local risks associated with climate change are a promising opportunity for climate change activists to both leverage local pieces of knowledge about local climate change challenges, while informing the discussion in ways that have been empirically shown

to foster community engagement (as opposed to burnout, apathy, or avoidance).

3.2. A Model for Community Engagement

Work by Kenner (2018) of Drexel University's Center for Science, Technology, and Society in Philadelphia has aimed to help people to become aware of localized effects of climate change, such as increased incidence and severity of asthma attacks, and increased risk of heat stroke. Kenner's work illustrates the potential for climate change activists to further involve faith-based organisations and other community groups, as well as technologies such as phone apps in order to mitigate health risks associated with climate change (Kenner, 2016; Fortun et al., 2014). Such local community involvement expands upon Kenner's push for an embodied, transcorporeality approach to climate change and other environmental problems. Kenner has noted that, in her view, a key challenge is that climate science is not authoritative in the minds of many Americans. Her work seeks to highlight how some climate science has unhelpfully emphasized decontextualized phenomena, *i.e.* knowledge abstracted from felt time-space, thereby undermining the work of scientists and policymakers who need to gain public buy-in on the reality of global climate change. Thus, Kenner seeks to 'bring climate change home', joining Jasanoff in seeking to engage the political concerns of everyday folk and practising what Kinchy et al. (2018) have called 'engaged STS work' integrating the lived realities of communities with environmental justice and climate justice work. In this sense, Kenner's work rejects Oreskes & Conway's emphasis on expertise and scientific consensus, instead of focusing on those who have been sidelined by expert discourses of climate science activists.

4. Conclusion

In summary, this paper has discussed how research on climate science denialism can be informed by social theories of knowledge production and social influence, including those of Merton, Foucault, and Harding. I have sought to balance the calls of Jasanoff & Simmet to engage in political negotiation with the calls of Collins, Evans & Weinel to retain some notion of epistemically privileged knowledge production. Recent work by Kenner strikes that balance by engaging communities to generate awareness of localized effects of climate change and enable the kind of political negotiation that Jasanoff & Simmet advocate while integrating the practice of critically evaluating knowledge claims. I suggest that community engagement work like Kenner's could be fruitfully extended by integrating lessons from Halperin & Bar-Tal showing that widely held beliefs can be unfrozen by showing how some desired future is incompatible with an emerging future. There is plausibly fruitful work to be done engaging conservative white males to envision desired futures and compare with the emerging new climate. The following work by Jylhä and by MacWilliams may be better equipped to make sense of climate science denialism by understanding the fascinating associations between it and conservative political views. Finally, work by Hansson on deviant criteria of assent could be leveraged to help publics to identify deviant knowledge claims, enabling further informed evaluations of climate science denialist claims.

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