Cultural Theory's contributions to climate science: reply to Hansson

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Abstract

In his article, 'Social constructionism and climate science denial', Hansson claims to present empirical evidence that the cultural theory developed by Dame Mary Douglas, Aaron Wildavsky and ourselves (among others) leads to (climate) science denial. In this reply, we show that there is no validity to these claims. First, we show that Hansson's empirical evidence that cultural theory has led to climate science denial falls apart under closer inspection. Contrary to Hansson's claims, cultural theory has made significant contributions to understanding and addressing climate change. Second, we discuss various features of Douglas' cultural theory that differentiate it from other constructivist approaches and make it compatible with the scientific method. Thus, we also demonstrate that cultural theory cannot be accused of epistemic relativism.

Keywords Mary Douglas · Aaron Wildavsky · Cultural theory · Climate change

In a recent article in this journal, Sven Ove Hansson (2020) asserts that anthropologist Dame Mary Douglas and political scientist Aaron Wildavsky have contributed to both climate science denial and epistemic relativism. The former Hansson defines as "denial of the overwhelming scientific evidence of a significant ongoing anthropogenic greenhouse effect that will have serious negative effects on the future climate" (p. 1). The latter involves believing that "claims by natural scientists … should be treated as mere

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social constructions, rather than as reports on the actual state of the natural world" (pp. 1 & 5), i.e., science denial in general. According to Hansson, Douglas and Wildavsky are guilty on both charges by having developed sociocultural viability theory or, for short, cultural theory (Douglas, 1982; Thompson et al., 1990; Wildavsky, 2006). Hansson also equates climate science denial to the rejection of scientific knowledge regarding HIV/AIDS (p. 19) and the carcinogenic effects of tobacco (pp. 18 & 22) as well as to the embrace of creationism (p. 19) and 19th- and twentieth-century racism (p. 3).

Hansson's viewpoint stands in contrast to how others have appraised cultural theory's utility for addressing climate change and other environmental challenges. According to Arild Underdal, a former Chair of the Scientific Steering Committee of the International Human Dimensions Programme on Global Environmental Change, cultural theory has produced one of the "two main cures" for the threat of climate change (Underdal, 2017, 169). He has also suggested that the theory's cure may turn out to be the more effective one (Underdal, 2010, 388). The U.S. Environmental Protection Agency sees value in the approach as well. The agency uses cultural theory's concept of clumsy solutions (Verweij & Thompson, 2006) for structuring its participatory processes (Environmental Protection Agency, 2022; Stahl & Cimorelli, 2020). In the Netherlands, the National Institute for Public Health and the Environment, as well as the Environmental Assessment Agency, use cultural theory for the purposes of policy planning (de Vries & Petersen, 2009; Ludwig & Kok, 2018; Offermans, 2012). National governmental agencies are not the only organisations that employ the approach. The sustainable trade initiative IDH –a social enterprise that works with 600 companies and other stakeholders to reach the Sustainable Development Goals– has made cultural theory's notion of clumsy solutions a cornerstone of its activities (Oorthuizen et al., 2018). UNESCO's climate change adaptation strategy for its world heritage sites has been informed by the same concept (Perry, 2015; Perry & Falzon, 2014).

In addition, various scholars have noted that the 2015 Paris Agreement resembles the international climate change treaty that had long been advocated by cultural theorists (Mathur, 2016, 75; Beumer et al., 2018, 710; Dixon & Hood, 2020). These authors have not claimed a causal link between cultural theory and the Paris Agreement – and neither would we. However, Hansson's criterion for causal influence is less strict than is standard in the social sciences and involves assuming that "someone who publicly argues for a standpoint or opinion contributes to its dissemination and adoption" (p. 3). By this modest standard, cultural theorists have influenced the international treaty that is currently in place to achieve a climate neutral world by the middle of the twenty-first century.

Finally, there are the professional achievements of Steve Rayner (who was James Martin Professor of Science and Civilization at Oxford University when he passed away in January 2020). Throughout his career, Rayner pursued two goals: developing cultural theory and improving climate change policies. He pursued these aims jointly: his work on cultural theory informed his thinking about climate change policy and vice versa (e.g. Rayner, 1991; Thompson et al., 1998; Thompson & Rayner, 1998). In his argument that cultural theory induces climate change denial, Hansson ignores Rayner's body of work. This is odd given that Rayner was not only a founding parent of cultural theory, but from 1997 to 2007 was also Lead Author for the Third and Fourth Assessment Reports of the Intergovernmental Panel on Climate Change (IPCC), which received the 2007 Nobel Peace Prize and which Hansson (p. 11) seeks to shelter from cultural theory.

At this point a question may arise. How can a social theory that has been used to such good effect in the efforts to analyse and address climate change and other environmental challenges also be implicated in (climate) science denial? The answer is obvious: this is not possible. As we demonstrate below, Hansson is wrong on both counts: cultural theory neither furthers climate science denial nor has anything to do with denial of science or 'epistemic relativism' in general.

First an explanation of why we feel called upon to respond to Hansson's criticisms, which are ostensibly lobbed at the contributions to cultural theory made by Douglas and Wildavsky (who passed away in 2007 and 1993, respectively). Each of us has collaborated extensively with one or both of these scholars on the development of this approach (Douglas et al., 2003; Douglas & Ney, 1998; Thompson et al., 1990). Indeed, Verweij and Thompson are Douglas's "two co-authors" left unnamed by Hansson (p. 10). Furthermore, we have applied cultural theory to the governance of climate change (e.g. Verweij et al., 2006a). Hansson (pp. 10–11) quotes and refers to several of our publications.

We do not suggest that Hansson only or mainly discusses Douglasian cultural theory. This theory is one of an array of quite divergent approaches in "social constructivism, the strong programme, deconstructionism and postmodernism" that Hansson (p. 1) criticises. Our reply is limited to the theory we have contributed to, which contains several features that make it different from the other approaches criticised by Hansson. Below, we first show that the evidence that Hansson presents for cultural theory's alleged contribution to climate science denial is invalid. Thereafter, we also demonstrate that cultural theory is incompatible with epistemic relativism.

1 Cultural theory and climate change

The theory of sociocultural viability has been widely applied to climate change. These applications mainly fall into two categories. First, Douglasian cultural theory has been employed in a plethora of statistical analyses of the ways in which citizens in various countries perceive the problem of climate change (e.g., Böhm et al., 2019; Cambardella et al., 2020; Chuang et al., 2020; Goebbert et al., 2012; Guy et al., 2014; Hornsey, 2021; Jones & Song, 2014; Komendantova & Neumueller, 2020; Leiserowitz, 2006; McNeeley & Lazrus, 2014; Morss et al., 2020; Nowlin & Rabovsky, 2020; Price et al., 2014; Thaker et al., 2020; Xue et al., 2016). These studies have typically found that cultural theory's fourfold typology of ways of organising, perceiving and justifying social relations (consisting of hierarchy, egalitarianism, individualism and fatalism) adequately captures these different perceptions. Second, Douglasian cultural theory has been used to argue that the 1997 Kyoto Protocol was an ineffective international policy tool with which to curb climate change and should be replaced with an alternative international regime that combines a non-binding international treaty with a manifold of domestic measures to make renewable energy cheaper than fossil energy (e.g., Rayner & Malone, 1997; Verweij, 2001; Verweij et al., 2006a).[1] In none of these publications, nor in any other cultural theory texts that we are aware of, do the authors engage in

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[1] The 2015 Paris Agreement closely resembles the international treaty we argued for in that it is global, sets ambitious goals and is based on voluntary commitments by states (Dimitrov et al., 2019, 3).

climate science denial. How then does Hansson manage to present "empirical evidence" that cultural theory facilitates such denial? In various inventive ways.

First, of the nine cultural theory publications that Hansson cites, three are not. Howarth and Sharman (2015) has nothing to do with cultural theory. Only a single cultural theory publication can be found amongst its 124 references, which it only mentions once (p. 246). Wildavsky's posthumously published *But Is It True?* (1995) does also not use cultural theory. Wildavsky explicitly says so in the book: "Now I wish to argue that although moral-cultural theories explain risk perception and may well determine government policy, these theories (mine as well as theirs) are out of place in determining risk consequences" (p. 440). A third publication concerns an introduction (Wildavsky, 1992) to a book by a climatologist that Hansson has found. It is a bit more difficult to assess whether this represents a cultural theory analysis or not. (Of the 44 books that Wildavsky wrote, 8 develop or apply cultural theory.) On the one hand, the title of this introduction invokes a term –'egalitarian'– that is also used in cultural theory. On the other hand, the introduction does not describe, refer to or mention the theory. Even the terms 'egalitarian' or 'egalitarianism' (or any other central concepts of cultural theory) are not mentioned in the text. Moreover, almost all organisations criticised by Wildavsky are not egalitarian as defined in the theory. On balance, therefore, this third publication is also not a cultural theory-based analysis but rather an expression of Wildavsky's personal (and well-known) libertarian political beliefs.

A fourth publication singled out for criticism by Hansson is Douglas and Wildavsky's *Risk and Culture* (Douglas & Wildavsky, 1982). This is a more understandable target given that the book was criticised for underplaying environmental concerns as soon as it came out (Winner, 1982). Yet it was published in 1982, i.e., well before global warming became a topic of concern for anyone outside of climatology. Unsurprisingly, the book does not concern climate change. Furthermore, it has often been criticised by other cultural theorists (Rayner, 1992, 91–92; Tansey & Rayner, 2009, 60–61; Perri 6, 2008, xxv) who have regarded it as an inaccurate application of the approach. Moreover, Douglas (1985) herself acknowledged these and other criticisms a few years after publication of the book and sought to make amends in a subsequent publication (Fardon, 1999, 146–147).

Thus, only five cultural theory publications remain. To accuse these publications of climate science denial, Hansson has to twice move his goalposts from the natural sciences to different fields of study. First, he homes in on a sentence in Verweij et al. (2006a), p. 20; also in Verweij et al., 2006b, pp. 839–40) in which, Hansson claims (p. 11), the Intergovernmental Panel on Climate Change (IPCC) is "dismissed" for being "erosive of democracy". This is misleading in several ways. To start, we do not "dismiss", but criticise, the IPCC. These are different things: few personal and professional relationships would endure if criticising equated to dismissing. In no cultural theory publication has anyone advocated for the dismissal of the IPCC. Indeed, one co-author of Verweij et al. (2006a) –Steve Rayner– had been a long-standing member of the panel at the time of publication. Our critique of the IPCC is also unrelated to denying "the overwhelming scientific evidence of a significant ongoing anthropogenic greenhouse effect that will have serious negative effects on the future climate". One of the main tasks of the IPCC is to provide policymakers with scenarios of global emissions of greenhouse gases during the course of the twenty-first century and their

environmental and social impacts. This is a far more complicated scientific exercise than the one of establishing that a welter of human activities adds to the already existing greenhouse gases in our atmosphere, thus warming the planet. The former necessarily involves the social sciences, as the IPCC's models have to make assumptions regarding population growth, economic progress, technological change, trends in consumption and production patterns, etc. (Watson, 2005). Moreover, the IPCC's scenarios are inherently political. Not only because the Assessment Reports presenting these scenarios are carefully vetted by senior diplomats of the states involved, but also because the IPCC cannot avoid highlighting some future scenarios at the expense of others and because the IPCC suggests policy response options (Havstad & Brown, 2017). All of this brings in a much wider set of disciplines than climatology, thus making the IPPC's future scenarios fair game for criticisms from both social and natural scientists. The argument we made in that one sentence was that the IPCC future scenarios were insufficiently pluralistic, i.e., should represent a wider range of policy preferences. We were not the only ones voicing such concerns. At the time, a heated debate raged among natural and social scientists (including IPCC Lead Authors) about how to reform the intergovernmental body (Heffernan, 2010; InterAcademy Council, 2010; Tollefson, 2007). The IPCC agreed with some of these criticisms and acted upon them (Beck, 2011, 304). In 2009 its Chair wrote (Intergovernmental Panel on Climate Change, 2009, 18):

> The reports of the IPCC are implicitly based on the hypothesis that the climate problem is perceived in the same or at least in a similar way all over the world. However, this is not the case. The perception of the risks of climate impacts and of possible solution strategies is subject to different cultural backgrounds. Therefore, a stronger dialogue with the social and cultural sciences is required in WGIII to be able to assess the climate problem as a global problem in spite of existing social and cultural differences.
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> …
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> In the future, the IPCC should assess and communicate risks in such a way that civil society, policy-makers, and business can discuss practicable and consistent alternatives and include them in the collective decision-making process. Hence, the IPCC needs to strengthen its position of an *"honest broker"* that presents policy-relevant alternatives without prescribing decisions for politics, civil society, and business. The exploration of available alternatives should be supported by *expert workshops* that would allow the business community and civil society to share their knowledge with the scientific community. [Italics in original.]

This is precisely what we were advocating.[2] Calling for reforms that the IPCC has tried to undertake is not climate science denial.

Hansson's second prong of attack is equally misleading. He writes: "In a 2003 paper, Mary Douglas and two co-authors declared themselves neutral between climate science and its opponents, saying that "we do not assume that one group's predictions are inherently more rational or accurate than another's"" (p. 10). Thus, he falsely

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[2] Not just in writing: in 2000, two of us presented our ideas at an IPCC Expert Meeting in Karlsruhe (Ney & Thompson, 2000; Thompson, 2000).

suggests that this paper (and another one he quotes) is an analysis of differences in viewpoints about climate science between the majority of climatologists and their few critics. But they are not that at all. Rather, these papers predict that how citizens and political actors perceive the problem of climate change and its resolution tends to fall into four policy perspectives. That prediction falls squarely in the domain of the social sciences and has been empirically confirmed. Moreover, it formed the basis of our proposals for combating climate change in a far more effective way than had hitherto been done – proposals that closely match today's efforts to curb global warming.

In sum, Hansson defines climate science denial as the rejection of the long-established fact that there is human-made and hazardous global climate change. But he then chides cultural theory for advocating a reform of the IPCC –a reform the IPCC has striven to implement– and for offering an empirically validated analysis of how citizens and political actors perceive the issue. His conclusion that this constitutes climate science denial is absurd.

2 Cultural theory and science

Hansson also claims that Douglasian cultural theory is based on epistemic relativism, which he defines very loosely as the belief that "claims by natural scientists... should be treated as mere social constructions, rather than as reports on the actual state of the natural world" (Hansson, 2020, 1). This charge of science denial is again misleading. The theory of sociocultural viability is a constructivist approach (in that it posits that patterns of social interaction shape, and are shaped by, fundamental beliefs and norms), but it contains several elements that distinguish it from other such frameworks. These elements ensure that cultural theory is compatible with, makes use of, and is grounded in the scientific method. As Hansson does not mention these features of the theory, we do so below.

First, cultural theory is based on the assumption of 'constrained relativism' (Thompson & Tayler, 1986). That is, the theory recognises the vast sociocultural diversity of human life across time and space, but posits that this diversity is, in part, the result of ever-changing combinations of a small set of elementary ways of organising, perceiving, experiencing and justifying social relations in each and every social domain. This assumption distinguishes the theory from other constructivist approaches, and allows it to be objective about subjectivity. As one of us wrote over thirty years ago (Thompson et al., 1990, p. xiii):

> Our view is that this rigid dichotomy between interpretation of meaning and scientific explanation is unjustified. It is true that human beings create meaning. But it is also true that it is possible to make statements of regularities that help in explaining and even predicting (or retrodicting) the human construction of meaning. Subjectivity need not rule out regularity as long as different sorts of people feel subjective in similar ways regarding similar objects.

Cultural theory has borrowed the assumption of a limited set of elementary forms from the natural sciences. Furthermore, it is in line with current insights in neuroscience (Verweij et al., 2015). According to neuroscientist Stanislas Dehaene (2009, 304):

> The human capacity for invention is not endless but is narrowed by our limited neuronal construction set. If human cultures present an appearance of teeming diversity, it is because an exponential number of cultural forms can arise from the multiple combinations of a restricted selection of fundamental cultural traits.

Finally, the notion of constrained relativism renders the theory falsifiable. To date, cultural theory has been tested and confirmed with the help of a variety of research methods, including experiments, survey-based statistical studies, social network analysis, agent-based modelling, Q methodology and participatory action research – as well as a welter of case studies undertaken with qualitative tools (see Johnson & Swedlow, 2021; Verweij et al., 2020). Hence, rather than denying the possibility of finding empirically valid generalisations across time and space, sociocultural viability theory is firmly rooted in the scientific method and constitutes an attempt to establish scientific facts (Ellis, 1993a, 93–106; Perri 6 & Richards, 2017, 46–49).

Not only is sociocultural viability theory itself steeped in the scientific method, it also recognises that social actors can be swayed by facts and observations. It does so through its 'theory of surprise' (Thompson et al., 1990, 69–81). This is another trait of the theory inspired by work in the natural sciences, namely C.S. Holling's (1978) research on adaptations in ecosystems. Richard Ellis (1993b, 114) explains this trait as follows:

> Culture is a prism that biases the way one experiences the world, not a prison that shuts one completely off from that world… Cultural biases may be likened to scientific theories. Both are resistant to change; anomalies are explained away, pigeonholed, ignored of just not seen. Neither life nor science can stand still while each piece of evidence that might contradict an accepted idea is tested… But cultures, like theories, cannot exclude reality altogether. Although cultures (like poorly formulated theories) build in lots of self-protection, reality can and does intrude. They may predict consequences that prove false, create blind spots that lead to disaster, or generate expectations that go unfulfilled. As evidence builds up against theories, or cultures fail to pay off for their adherents, doubts build up, followed by defection. A persistent pattern of surprises forces individuals to cast around for cultures (or theories) that can provide a more satisfying fit with the world as it is. Conceiving culture in this way prevents one from turning the individual into a pawn in the hands of disembodied languages or norms. Cultures are not passively received and internalized but instead are continually negotiated and renegotiated by individuals.

In other words, according to cultural theory, adherents to a particular way of organising, perceiving and justifying social relations (or "cultures") compare the claims about nature, human nature, risk, time, space, etc. that are part of their preferred way of life with their experiences in and perceptions of the outside world. They are willing to abandon their beliefs once they learn that the outside world is repeatedly at odds with these observations. Scientific findings can and often do play an important

part in this learning process. Hence, in addition to the "cultural construction of nature", cultural theory has long recognised the "natural destruction of culture" (Thompson, 1984).

Cultural theory has been applied to social and political controversies in which opposing sides advance competing scientific and ethical claims and in which scientific dissensus prevail (e.g., Swedlow, 2017). In these cases, it would be disrespectful of natural science if social scientists or philosophers decided to side with some natural scientists rather than with others. It would often also be impossible to do so: which decision rule would social scientists and philosophers follow? If they wanted to follow 'the majority of scientists', how would they establish the relevant population of scientists? Moreover, the history of science provides numerous examples of scientific debates in which the majority of scientists was not initially right. In any case, adjudicating debates within the natural sciences is not cultural theory's goal. Rather, faced with scientific and normative dissensus, its goal is to understand the institutional bases of these disagreements (Cerroni & Simonella, 2014), so as to help uncover policy solutions that make all stakeholders better off than they would otherwise have been.[3] Cultural theory has also been applied to social and environmental controversies in which a number of stakeholders refuses to accept scientific facts, such as the efficacy of childhood vaccinations (Song et al., 2014). When it comes to such controversies, cultural theory can be used to identify ways in which this refusal can be overcome through more effective and targeted communication (for applications to citizen's perceptions of climate change, see Leiserowitz, 2003; Akerlof et al., 2016).

Hence, cultural theory does *not* argue that "claims by natural scientists... should be treated as mere social constructions, rather than as reports on the actual state of the natural world", as Hansson (pp. 1 & 5) asserts. Douglas (1990, 8) is crystal clear on this point:

> Note that the reality of the dangers is not at issue. The dangers are only too horribly real, in both cases, modern and premodern. This argument is not about the reality of the dangers, but about how they are politicized. This point cannot be emphasized too much… In the preindustrial world life expectancy is short, often not more than 48 years; mortality rates are high for everyone, but infant deaths may be over 25 percent. Death of women in childbirth is very high. Starvation, blight, and famine are perennial threats. It is a bad joke to take this analysis as hinting that the dangers are imaginary. The risks in the industrial world are equally real. The cross-cultural argument would not work if the dangers were fictive.

In his overview of a wide range of cultural theory publications, Perri 6 (2008, xxiv) is equally unambiguous:

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[3] Hansson's claim that cultural theory holds that "a compromise should be struck between the consensus view on climate change and the contrarian view" (p. 17) is incorrect. Rather than advocating a compromise, its proposed policy approach to climate change aims to ensure that all stakeholders are better off than under the Kyoto Protocol. In addition, cultural theory does not distinguish between two policy perspectives ("a consensus view" and "the contrarian one"). Finally, Hansson here confuses the (long settled) scientific debate about whether climate change is happening with the (very lively) public debate on how to address this challenge.

[I]f relativism entails any of the following propositions, then it should be clear from the summary above that the theory implies none of them:

1. that biased thought styles are incommensurable in the sense that they cannot be compared, cannot be explained, or that those who frame risks from within them literally cannot understand any communication from those within other frames;

2. that there is no determinate reality about probability and the severity of putative harms;

3. that there is no procedure that would suffice, within the institutions of science, in at least many empirical cases, to decide between claims about risks made from within different biases and framings.

In these respects, the theory is probably best described as an example of what Bloor (1991 [1976]) calls a 'weak programme' in the sociology of knowledge.

Cultural theory is therefore not "epistemically relativist" as defined by Hansson (Rayner, 1991, 85). If it had been, then surely its use would not have been advocated so regularly by those who recognise the need for increased cooperation between the natural and social sciences to tackle climate change (Haasnoot et al., 2012; Holm & Winiwarter, 2017; Jorgenson et al., 2018; Lahsen et al., 2015; Loginova & Batterbury, 2019).

3 Conclusion

In this rebuttal, we cite 35 publications that make use of Douglasian cultural theory and address climate change. These include the five papers that constitute Hansson's empirical case against this approach – given that the four others he mentions either do not use cultural theory or do not concern climate change. If not for lack of space, we could have cited many more. None of these publications display climate science denial or science denial. Still, we lay no claims to omniscience and therefore cannot prove a negative. Hence, we cannot rule out that one or several publications exist that invoke cultural theory and deny the existence of humanmade climate change. But as we demonstrate above, if these existed, then they would not be based on a correct interpretation of the theory of sociocultural viability.

Declarations

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