



'Maintaining planetary systems' or 'concentrating global power?' High stakes in contending framings of climate geoengineering



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ABSTRACT

'Climate geoengineering' is becoming an increasingly prominent focus for global discussion and action. Yet, in academic, policy and wider political discourse, the frequent shorthand term 'geoengineering' is routinely used in very broad, ambiguous and multivalent ways. This study aims to contribute to understandings of these divergent current framings of 'geoengineering' and their implications. It asks not only about disparate understandings of geoengineering itself, but also what these reveal about deeper political dynamics around climate change, science and technology. To this end, the paper applies Q methodology to analyse geoengineering as a subjective discursive construct, the bounds of which are continually negotiated and contested. Thirty-five participants from a variety of political and institutional backgrounds in the UK, US, Canada and Japan undertook a 'Q sort' of 48 statements about geoengineering between December 2012 and February 2013. Four distinctive framings emerged from this analysis, labelled: 'At the very least we need more research'; 'We are the planetary maintenance engineers'; 'Geoengineering is a political project'; and 'Let's focus on Carbon.' Results indicate a strong polarity around divergently construed pros and cons of geoengineering as a whole – underscoring the political salience of this term. But additional axes of difference suggest a more nuanced picture than straightforward pro/anti-positioning. The ambiguity of the term is argued to offer interpretive flexibility for articulating diverse interests within and across contending framings. The paper questions whether increasing terminological precision will necessarily facilitate greater clarity in resulting multivalent governance discussions and public engagement. It argues that the merits of any given form of precision and their policy implications will depend on particular framings. Much ambiguity in this area may thus be irreducible, with the challenges lying perhaps less in the ordering of discourse and more in reconciling the wider material political pluralities that this suggests.

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1. Introduction

Concepts of 'climate geoengineering' implicate a diverse array of technologies, in the broadest sense of this term (Jasanoff, 1995) – including radically new forms of social practice, institutional culture and political relation, as much as potentially enormous innovations in artefacts and worldwide infrastructures. Commonly referred to as 'geoengineering', these include technologies variously aiming at 'solar radiation management' (such as stratospheric aerosol injection and marine cloud brightening), and those aiming at 'carbon dioxide removal' (such as ocean iron fertilisation, or direct air capture) (Shepherd et al., 2009). Although the term geoengineering has become increasingly prominent in

discussions of these approaches in scientific, policy, and civil society circles, there is evidence of a growing sense that the label itself may be so broad and ambiguous as to be unhelpful, or even incoherent. Thus the recent report from the IPCC 'expert meeting on geoengineering' draws attention to what it holds to be a 'fuzzy' boundary between geoengineering and other approaches to dealing with climate change, and suggests that 'because of the longstanding ambiguity surrounding the term geoengineering ... the individual methods discussed might be referred to more specifically' (Edenhofer et al., 2012, p. 3). This refrain about the need to look at different technologies and approaches separately runs through many other reports on geoengineering, and yet many of them (like the IPCC report) retain the word geoengineering in their titles (Shepherd et al., 2009; GAO, 2010). In one such report by the US think tank, the Bipartisan Policy Centre (Long et al., 2011), debates around whether the term geoengineering 'was too imprecise...[or] too controversial' (Sarewitz, 2011, p. 7), actually resulted in the appearance of the additional (equally imprecise)

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term ‘climate remediation’ being used alongside geoengineering in the title.

Given the widespread awareness of the ambiguity of the term, and the difficulties this poses for meaningful (or accountable) governance interventions, is it the case that the term geoengineering can be said to have simply outgrown its usefulness? Or is it that, as has been argued to be the case for terms such as ‘sustainability’ or ‘sustainable development’ (Baker et al., 1997) it is the very ambiguity of the terms that provides the ‘interpretive flexibility’ (Pinch and Bijker, 1984) enabling them to serve as ‘boundary objects’ (Gieryn, 1983) around which contending actors can co-ordinate (Stirling, 2006). In this latter event, ostensibly negative properties of ‘ambiguity’ (unclear or uncertain meaning) and ‘multivalence’ (clearly contending meanings) may – provided other conditions are also satisfied – instead emerge (at least under some views) as potentially more positive. That an otherwise contending diversity of actors may in certain moments find such qualities ‘useful’ may lend such ambiguous and multivalent terms a surprising degree of resilience.

Rather than seeing either ambiguity or multivalence as ‘a linguistic veil which can be lifted to reveal the truth’ (Rydin, 1999, p. 468), and attempting to remove this by carrying out our own ‘boundary work’ (Gieryn, 1983) to define a sub-set of technologies or approaches as our object of study, a starting point is to adopt a more neutral position with respect to these properties. This study is thus distinct from previous work on frames and framing of geoengineering, much of which starts by offering a definition of geoengineering as the object of study (Sikka, 2012a; Luokkanen et al., 2013; Huttunen and Hilden, 2012; Scholte et al., 2013; Nerlich and Jaspal, 2012). Rather than treating geoengineering *a priori* as an object, a ‘novel controversial technology’ (Luokkanen et al., 2013) – or even a set of technologies about which there exists an array of sometimes conflicting opinions, or for which there is support or opposition – this study treats geoengineering as a discursive phenomenon, the bounds of which are continually being negotiated. This is in line with insights in much recent policy analysis, which draws attention to the fact that environmental conflict should not be understood as ‘a conflict over a pre-defined unequivocal problem with competing actors pro and con,’ but seen rather as ‘a complex and continuous struggle over the definition and meaning of the environmental problem itself’ (Hajer, 1997, p. 14). Focusing analytical attention on the inherently ambiguous, undifferentiated category ‘geoengineering’ (a term that has been referred to as a ‘quasi-stable meta-label’ (Porter and Hulme, 2013, p. 3)), is argued to be the best way to identify (rather than impose) the most significant axes for distinction, as these relate to key differences in divergent perspectives.

Rather than working to remove ambiguity and multivalence from the term geoengineering, then, this study shifts the focus to that of exploring the kinds of work that this term performs. Whether in spite, or because of, associated ambiguities and multivalence, this discursive function forms an important object of policy analysis in its own right – with potentially deeper and broader material political implications. The result is a perspective on the kinds of wider politics in play around contemporary debates concerning the role of knowledge and innovation under climate change.

1.1. Framing geoengineering

There exists a small but growing body of academic literature examining discourses and framing of geoengineering. This includes work focused on media framings (Porter and Hulme, 2013; Scholte et al., 2013; Luokkanen et al., 2013); framings in the academic literature (Bellamy et al., 2012; Huttunen and Hilden, 2012); framings within public discourse (Macnaghten and Szerszynski, 2013); the use of metaphor (Nerlich and Jaspal, 2012), and within

particular influential texts (Gardiner, 2011). A number of common themes have emerged in this work, for example the importance of ‘climate emergency’ as a framing device (Nerlich and Jaspal, 2012; Sikka, 2012b; Gardiner, 2013). But there also arise a diversity of findings regarding the relative openness or otherwise of the discourse around geoengineering, or the relative importance of strategic framing to the issue. Given that the term is arguably still unfamiliar to many people, some have argued that the ‘first impression, frame, and narrative has yet to be set’ (Leiserowitz, 2010, cited by Buck, 2013), or that there is a need for more active and strategic framing of the issue by scientists in particular ways (Buck, 2013). Others argue that the ways appraisals of geoengineering options have been carried out to date, provide evidence of a premature ‘closing down’ around particular ‘sets of values and assumptions with respect to the instrumental framing effects of contexts, methods and criteria and options’ (Bellamy et al., 2012, p. 28). In similar vein, others cite evidence from analysis of the metaphors used to describe geoengineering as indicative of ‘restrictions in the interpretive flexibility’ of the term (Luokkanen et al., 2013). Sikka takes a particularly strong view of the strategic nature of the framing of geoengineering to date, arguing that ‘special interests, including private corporations, conservative think tanks and scientists affiliated with both have drawn on a variety of discursive frames to limit, shape and mould the current debate surrounding geoengineering’ (Sikka, 2012a, p. 173). Conversely others have drawn evidence from an analysis of the changing frames of geoengineering apparent in English speaking newspapers in recent years, to argue that there is evidence of a progressive ‘opening up’ (Stirling, 2008) of the debate around geoengineering (Scholte et al., 2013).

This study falls broadly under the description of a frame-reflective analysis, as outlined by Schön and Rein (1995). As such, it complements and builds upon the corpus of work on framing of geoengineering by bringing a distinctive focus on the ambiguity and multivalence of the term, as outlined above. Within this study, frames are understood as ‘schemata of interpretation’ (Goffman, 1974, p. 21), or narratives of understanding that ‘help to render events meaningful and thereby function to organise experience and guide action’ (Benford and Snow, 2000, p. 614). Through selectively emphasising certain facets of a given issue over others, and linking interpretation with action, frames in and of themselves can be understood to perform particular functions (c.f. Entman, 2004). Crucially, frames have both ontological and normative dimensions in that they ‘link causal accounts of policy problems to particular proposals for action, and so link accounts of ‘is’ and ‘ought’ (Rein and Schon cited in Fischer and Forester, 1993, p. 11). Hoppe (1999) emphasises that frames are *necessary* for judgement and action, acting as ‘a sort of mental grappling hook’ (p. 207) to enable people to make sense of and act on a given situation. By thus deeply conditioning understandings of the fundamental entities, uncertainties, interests and values in play, the significance of these dynamics can extend far beyond discourse alone. By variously driving and shaping actors’ appreciations of the implications of their own commitments and those of others, as well as the broader possibilities and what may be at stake, these framings also shape ontologies of action. It is in such ways, that these discursive phenomena can hold powerful material implications for the exercise of social, political and economic agency towards the structuring of relations and deployment of various kinds of resource (Lukes, 2004; Gramsci, 1971; Foucault, 2002; Bourdieu, 1984).

2. Material and methods

This study used Q methodology, a form of discourse analysis with roots in social psychology (Stephenson, 1953), to examine framings of geoengineering. Q is an intensive, ‘small n’ methodology

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