Guest editorial

Performing environmental change: the politics of social science methods[†]
Introduction

Social sciences—from behavioural economics to social psychology—are increasingly enrolled in policy, market, and activist endeavours in the area of environmental change. In fields as diverse as sustainable architecture and lifecycle management, social scientific expertise is gaining recognition as a contributor of models, methods, and devices for addressing environmental issues by intervening in practices and shifting arrangements, and in both popular and professional literatures social science is now frequently presented as a critical resource for the measurement, prediction, and facilitation of technological, ecological, societal, and organizational change. The lifestyle magazine *SEED* summarized it succinctly in a lead article on "how social science can help save us from climate change", provocatively entitled "The last experiment": "It is up to social science to make us act in environmentally conscious ways" (Zax, 2009). At first sight, this situation seems to disturb a familiar assumption in social studies of the environment: namely, the idea that the social sciences play a rather marginal role in the policy and research area of 'the environment', which has after all long been dominated by the 'hard sciences' (Wynne, 2010). Can we begin to assume that the relevance of social science approaches to environmental change is becoming established, and that the period of the marginalization of social science and social aspects in environmental issues is coming to an end?

This theme issue finds its starting point in the realization that the very posing of this question renders newly relevant a set of political, epistemic, and ethical issues that are peculiar to the social sciences. Various *general* concerns regarding the capacities of social methods to intervene in the world now take on special salience in relation to the area of environmental change *in particular*. Especially important here is the long-standing debate about the limits and potential of the social sciences' capacity to actively inform, facilitate, and help manage social change, and also the debate about the roles that social methods and techniques of measurement, modelling, visualization, and prediction play and might play in the performance of change. The coining and development of the sociological concept of the 'performativity of methods' has been one of the principal recent contributions of the interdisciplinary field of the social studies of science and technology (STS) to this debate (Law, 2004; Muniesa et al, 2007). For several years now it has been recognized that this concept is of special relevance to the field of environmental studies (Verran, 2012; Whatmore and Landstrom, 2011). In relation to environmental issues, the capacity of methods to both inform and affect the constitution of the phenomena purported to be measured or described raises a set of distinctive questions both in relation to the long-established claim about the limited influence of social science in this area, as well as in view of the heterogeneous and 'lively' character of environmental affairs (Latour, 2004; Marres, 2012; Murphy, 2006; Yusoff , 2013): issues like air pollution, plastic bags, floods, climate change, domestic energy use are marked by

dynamics that cut across nature, technology, aesthetics, publicity, medicine, sociality, and so on, raising the question of whether an appreciation of this circumstance allows for a different understanding of what constitutes 'environmental change'.

Recent work in STS has focused on the performativity of economic methods and financial techniques in particular, and insofar as this is so it should be noted here that it is most emphatically not only the science of economics, but equally those of psychology, geography, organizational studies, and sociology that are invoked as part of policy and design processes in relation to the environment and sustainability today. As such, indeed, environmental change also offers an intriguing area for exploring the recalibration of various scientific hierarchies in times of change, as well as to reexamine the case for a performative conception of social science methods including but certainly not limited to economics. However, to grasp the issues at stake here, both intellectually and politically, we feel it is important to take a step back and first consider the problematics associated with social science approaches to environmental change from a wider angle.

While it may be true that social scientific approaches to environmental change are increasingly prominent, some major problems have arisen in relation to the capacity of their methods to help take the environment into account as part of social life and effect change. Various methods and technologies for integrating 'environmental' concerns into everyday practices, infrastructures, and wider societal processes have acquired a starkly 'problematic' status in public and political life. This notably includes some of the very devices of environmental change to which scholars writing from a performative perspective have directed empirical attention: the European Emission Trading Scheme, smart grid technology, sustainable housing, and the critical load approach (Asdal, 2008a; Callon, 2009; Marres, 2013; Shick and Winthereik, 2013).

In each of these cases, social science theories and methods (eg, the design of stakeholder-markets; the facilitation and measurement of behaviour change) have been put forward as devices that take part in shaping the world and, in each case, their contribution has been subject to critical scrutiny and decried as wittingly or unwittingly contributing to the making of a surveillance society, the commodification of nature, the subsumption of political participation by an individualistic culture of consumption, and so on. We would like to suggest here that it is not only important for social scientists—including those of a performative bend—to appreciate this problematization of social methods and approaches as worthy of reflection in and of itself. But also that this provides an interesting opportunity to reconsider and provide a reorientation to ongoing efforts to render social studies of science and technology and environmental studies mutually relevant.

How to take nature into account? Contributions between STS and environmental studies
One of the notable ways in which the mutual relevance of environmental studies and STS has been established is through the concept of hybridity (Braun and Castree, 1998; Castree, 2003; Whatmore, 2002). In the last ten years or so, environmental studies have drawn on STS in order to elaborate the claim that nature and society are inextricably entwined: the 'externality' of nature to society has been shown to constitute a fiction. This claim is not only an epistemic one but also has political and ethical import: in order to articulate more durable ways for environmental concerns to be addressed, the argument goes, we have to begin by acknowledging that 'environmental' entities – say a rare species of snail, or a river—do not exist separately from social ones—such as religious rituals or industrial standards—but are always-already entangled with such entities and practices. We would certainly not want to dismantle the basic argument, but it is nevertheless striking that recent programmes of environmental change appeal to almost the opposite intuition: proliferating sustainability initiatives and wider endeavours to take 'the environment into account' start

from the assumption that nature continues to be 'left out', or 'remains absent' from social practices and processes. Within this broader context, it seems to us, the assumption that the entanglement of natural and social is already accomplished—as the proposition of hybridity suggests—carries with it certain risks, including the risk that we may miss out on important empirical and analytical work. Indeed, it may be rendered problematic in this context.

Assuming a more agnostic position regarding the relation between 'nature' and 'society', we might observe that *it requires a lot of work* to insert 'nature' or environmental issues as a relevant concern into social and political practices and institutional processes (Asdal, 2008a), and that these efforts frequently fail: from the highly imperfect pollution standards designed to protect public health (Murphy, 2006) to the 'carbon labels' supposedly developed to insert climate change as a consideration into shopping practices (Moor and Lury, 2011) and the problematic recycling standards established for plastic bottles (Hawkins, 2011). The proposition that supposedly natural entities are actually 'hybrids', then, should not lead us to assume that nature (or natures—see below) or the environment are already being taken into account in social practices. All too often, attempts to produce more durable relations between environmental and social entities and practices do *not* come to fruition, and in this specific sense their entanglement *cannot* be taken for granted. In at least some respects, then, entities carrying the label 'nature' here *are* all too often left out of the equation. In the above cases at least, it would be a mistake to assume that the 'externality' of nature can be suspended, on the sole grounds of its metaphysical or ontological implausability: in empirical practice it takes a lot of work to establish relations between environmental entities and social practices or assemblages—and this recognition obliges us to trace by analytical and empirical means the different aspects or 'tastes' of nature that might be left by the wayside in projects to take 'the environment' into account—for instance, in accounting practices.

This seems especially crucial to us, insofar as, theoretically and historically speaking, social science has actively contributed to this situation in which it has become possible to practice environmental accounting without actually taking nature or natures into account, and to continue to ignore their relevance to the constitution of social practice (Hinchliffe, 2001; Latour, 2004; see also Whatmore and Landstrom, 2011). However, this circumstance does not necessarily need to be framed as an either–or situation: we want to stress the importance of specificity and of tracing *how* particular environmental entities are taken into account, or articulated to this purpose, and how nature-objects and environmental issues might be modified or transformed as part of trajectories and practices of 'accountability' (Asdal, 2011; Neyland and Woolgar, 2013; Verran, 2012). In exploring such modifications empirically, we might then come to realize that nature or the environment has, at least sometimes, been left out of the equation. In efforts to render social studies of science and technology and environmental studies mutually relevant, we then suggest that we examine not only the hybrid character of environmental phenomena and the role of social science methods in enabling the explication of the entanglements of the natural and the social, but also the ways in which both environmental and social entities and practices come to be modified in ostensible efforts to establish more durable relations between them, and the limits, failures, and issues becoming apparent in this process.

One notable example we have discussed in other work is everyday and policy applications of carbon accounting (Marres, 2011). In practice, carbon accounting often involves the use of conversion charts: one megawatt of energy is translated into a given amount of CO_2 emissions using a nominal conversion table. As a consequence, such practices do not necessarily take into account the environmental particulars of energy production, supply, and demand, nor the actual arrangements and processes in play in the particular situation under scrutiny (on this point see also MacKenzie, 2009). To be sure, conversion tables tend to differentiate between types of energy use—eg, will you be taking a train or a bus?—but the more general point

still holds: in these cases environmental phenomena—whether these be defined in terms of climate change, or the damage done by fossil fuel extraction and emissions—are translated into a branch of energy accounting. This is not to say that such versions of energy accounting may not act back on and in environments. But it is clearly *not* an empirical environmental entity—the emissions of power plants, the atmosphere, the climate—that is taken into account here. Rather, what these accounting practices accomplish is to render energy more central to economic, social, and bureaucratic processes: they confer value on energy generation and use, as the site where societal, economic, and environmental change may converge. This is of course in itself not a small accomplishment. However, if we approach these dynamics from the standpoint of environmental studies, we must consider the implications for the relations between various underdefined 'natures' 'out there' and the social practices 'in here'.

It is not exactly a surprise, then—nor is it inappropriate—that it is economic sociologists, rather than environmental sociologists, who most prominently have turned carbon accounting into their area of expertise. However, if it is not necessarily the specificity of environmental problematics that guides the enactment of, and/or the studies of, environmental accounting, where does this leave the environment? We then ask: what is involved in efforts to take the environment into account through accounting devices and other social scientific methods and techniques (such as, for instance, awareness; see our discussion of Gabry's work below)? What modifications and transformations of environmental and social practices and entities ensue? Posing these questions is to bring STS and environmental studies into relation around a distinctive effort: to come up with an affirmative answer to the question may enable us to attend—rather than prevent us from doing this—to the specificity of environmental issues, as distinct from but related to economic, social, political, and ethical ones. We too would like to pay special attention to the role of social scientific *methods* in efforts to take the environmental issues into account, but in doing so we would also like to open up the range of social methods deemed relevant to these efforts. While most well-known social methods of environmental change derive from social scientific disciplines like accounting and social psychology, we explicitly also want to include in this social methods developed in other fields, most notably the creative fields of art and design (see below).

Performativity and environmental change: what politics of methods?

In this theme issue we want to outline ways of reorienting the interrogation of the role of social methods in environmental change, along two axes in particular: first, to pose the 'insertion' of environmental considerations and issues into social processes and practices *as a problem* and, second, to open up the range of social methods and devices considered relevant to the performance of environmental change. Indeed, we consider this second move critical to begin addressing the aforementioned problem. In doing so, we take as our starting point current debates on the politics of social methods, in social studies of science and technology, economic sociology, environmental studies as well as in design, environmental art, and social theory. We would like to briefly review some of these debates here, in order to clarify why they are relevant to understanding environmental change, and vice versa, what is intellectually interesting about environmental change as an empirical site for examining the politics of social methods, broadly conceived.

As already mentioned, the performativity of scientific methods has been of long-standing interest in STS, going back to the laboratory studies of the 1970s, which famously emphasized the performative capacities of scientific instruments, according to which methods do not just enable the observation, analysis, and description of phenomena, but help to strengthen their reality (Knorr-Cetina, 1995; Latour and Woolgar, 1979). This proposition has in recent years received special attention in economic sociology, where it has been deployed to contest the conventional sociological critique of economics. Rather than saying that 'simplistic' economic

assumptions do not do justice to 'complex' social reality, sociologists of the performativity school proposed that the theory and methods of economics actively participate in the making and remaking of social actors and formations. According to this argument, the methods of economics, as well as the various sociotechnical devices involved, take part in the articulation of the actors, actions, and arrangements, as well as the issues at stake.

In some respects, it is only a small step from the economic methods studied by economic sociology to a broader range of social methods deemed relevant to the enactment of environmental change. With the rise to prominence of carbon calculation as a principal modality of environmental policy, in the European context, in both the profit and governmental sector, economics has of course become a major source of models and expertise in relation to the environment. The 'performativity thesis', implying that social science methods not only render existing objects and issues measurable and describable, but take part in transforming and formatting social and material realities, has directed attention to these methods and the settings in which they are employed, as crucial topics for environmental studies. However, it is equally important to recognize that, in relation to environmental change, the question of how methods organize, format, and enact the phenomena they disclose for analysis implicates many different social disciplines besides economics. Indeed, it seems to us that a broadening of the focus to include other social methods, such as social psychology or ergonomics, may have significant consequences for how we formulate, understand, and deploy the aforementioned performativity thesis.

When social psychologists are brought in to contribute to the design of sociotechnological systems of behavioural change, say to configure devices for influencing 'energy behaviours' in sustainable social housing projects, their methods too may well acquire performative capacities (Derksen et al, 2012; see also Marres, 2013). Similar questions can be posed about the deployment of social science expertise to contribute to the organisation of public and political processes of opinion-making and decision making in relation to environmental issues, in the form of deliberative methods and models of stakeholder governance (Asdal 2008b; Blok, 2007). And what about designers and artists bringing in aesthetic skills, sensibilities, and a spirit of adventure to devise experimental contraptions for environmental awareness, like experimental 'smart' toasters to be installed in people's kitchens which know when other people are having their toast (Braun, forthcoming; Michael, 2012)? On what conditions could such knowledge and instruments qualify as 'social methods' too? To begin addressing such questions, this theme issue brings together empirical studies of diverse social methods and their roles in the enactment of environmental change. It explores the performativity of different social methods, from the organization of public consultation events to the design of carbon budgeting procedures, and examines the particular claims, aspirations, and effects associated with them as regards the performance of environmental change. What is environmental change made to be through social methods? How are nature-objects and issues depicted and transformed?

We would then like to test the possible scope for adopting a more symmetrical understanding of the relevance of different social science methods in relation to environmental change, placing economics, political science, design, and art on a more equal footing, as far as their social study is concerned. We would like to test what possibilites there are for redressing the highly asymmetric situation in which economics and accounting methods have emerged as the principal vehicles for the 'socialization' of environmental change.

The many politics of social methods: from surveys to participation
Of course, there is nothing new in the fact that social science methods are deployed to further societal change. The now common methods of social scientists, such as surveys and public opinion polls, each have long histories, and the application and design of such methods to further progressive ends feature more or less prominently in these histories (Tonkiss, 2004).

Even sociologists who today are linked to 'grand theory' were in their time eager to develop methods for pursuing different forms of empirical social research. Ferdinand Tönnies, for instance, best known for his double notion 'Gemeinschaft' and 'Gesellschaft', spent a large part of his professional life attempting to establish so-called 'sociographic observatories' and pursuing a method he called 'sociography'. In trying (in vain) to argue for this approach, Tönnies used Max Weber's earlier efforts and notes as the legitimation. Max Weber himself had tried to initiate newspaper and public opinion research as well as to use survey methods to map the working conditions of the working class (Oberschall, 1965, pages 109–110).

Weber's concern when wanting to use survey techniques in order to map the conditions of the working class was not to liberate the workers, but to figure out whether the working class was in solidarity with the state. Weber´s perspective, as that of many others, was a state perspective. Which is also to say, our concern in this theme issue with the question of how social methods assist in the enactment of social change was definitely not on his agenda. However, to view the deployment of social methods in environmental change in this historical context, however broadly sketched, does raise a question that authors in this theme issue are concerned with—the question of which actors and which issues social methods become attached to [see the contributions by Göran Sundqvist (2014) and by Steve Hinchliffe, Les Levidow, and Sue Oreszczyn (2014)]. In the American and British traditions, social research was much more closely linked not only to reform, but to what we could call an activist agenda. Here, methods like the survey were applied by social workers, philanthopists, public health workers, and charity workers who had social reform as their primary objective, but who undertook the collection and publication of social data on slum conditions to this end (Oberschall 1972; Savage, 2010; Turner, 2003). One could say, then, that a certain performative politics has been implied in the deployment of social methods from the very beginning: the portrayal of social settings and groups with the aid of survey methods took part in the constitution of social problems.

At the same time, a link between social methods and activism and social change can by no means be taken for granted. Indeed, in subsequent developments in social research, methods like the social survey were explicitly stripped of their activist aura, and replaced with the 'neutral' frame of scientific method, in the promotion of focus groups, polling methods, and so on. At the same time, methods like the focus group and the opinion poll came to be celebrated precisely for their capacity to inform government (Osborne and Rose, 1999), and many of the methods that are deployed today to involve publics in environmental issues implicitly or explicitly draw on these scientifically framed methods for capturing and aggregating people's views, preferences, and so on (Lezaun and Soneryd, 2007). Göran Sundqvist's (2014) contribution to this theme issue speaks in interesting ways to this topic of the seemingly nonpolitical political capacities of social scientific methods in his study of procedures for increasing public participation in technoscientific conflicts.

Investigating engagement with the issue of radioactive waste management in two different geographical settings, Sundqvist outlines precisely the tension between a narrow conception of 'methods as governance' and a more open-ended politics of method: more precisely, between procedures through which nuclear stakeholders try to frame public participation as a means to achieve acceptance for an already-defined expert agenda versus procedures that are not, from the outset oriented towards governance, and may be deployed towards activist ends. However, as Sundqvist demonstrates, such efforts are fragile and may easily fail: something which is linked also to the severe epistemic difficulties that arise in endeavours to develop procedures that do not reinforce the division between nature (framed as phenomena and problems to be addressed by experts) or the social (framed as issues that can be handled by the public). Hence, as we have stressed above, hybridity is not always enacted in practice,

but may, on the contrary, be carefully undone through the very procedures for participation in environmental governance.

While our discussion here can only provide a very brief sketch of the issues, this short overview should help to make clear that there are a lot of different politics to social methods. Importantly, their political capacities do not only pertain to the latent, partly contradictory capacities of nonpolitical scientific methods to intervene in government and mobilize publics (sometimes called subpolitics). They are equally closely associated with progressive visions of a politics of research that seeks to enable collective action upon issues by making and spreading knowledge about them. It is this broad and in some ways diffuse range of politics plural, which we take to be the horizon for the investigations presented in this theme issue: several papers presented here explore efforts to reconnect the investigation of the politics of methods in the subpolitical sense, with efforts to deploy social methods in the progressive activist sense, including that by Steven Hinchliffe, Les Levidow, and Sue Oreszczyn (2014). Their paper investigates the possibilities for deploying a performative understanding of the politics of knowledge in the pursuit of progressive research practices and agendas. This understanding, they propose, allows us to usefully add to existing research practices insofar as they may open up a space for taking the environment and concerned actors into account in more productive and enabling ways. Their contribution, then, explicitly sets out to explore and experiment with research practices that stay close and are more attentive to those directly affected and involved in the issues at hand, arguing that this also offers a more promising approach to taking the environment into account.

Other contributions make deliberate moves to broaden the range of social methods that may serve as environmental awareness devices. Jennifer Gabrys in her contribution (2014) discusses how the challenge of "making energy visible" may be addressed through a variety of material practices and contraptions, which seek to enable and enhance versions of engagement as a precondition for any form of change. Hence the question she asks, and that we might all ask, in relation to the politics of social methods and environmental change is how energy, or the environment (or nature-objects) is being materialized or rematerialized in practice. In contrast to many other contemporary accounts of the relation between social science methods and the environment, which often rely heavily on the idiom of efficiency, Gabry proposes another take on this altogether, suggesting the notions of 'hesitating practice' and 'speculative qualities' as potentially more generative for environmental awareness.

Other contributions engage more directly with aforementioned work at the intersection of economic sociology and STS. In some sense, this work offers an 'unavoidable' exemplary for studies of social methods and environmental change, as one of the key notions deployed in this area is precisely that of 'market devices'. This STS concept (borrowing and adapted from Michel Foucault on the dispositif by Callon et al) then also reflects an empirical reality, in that precisely devices designed to intervene and work upon 'markets' have achieved a dominant position in the area of environmental governance and change, not least in the form of the carbon markets noted above. But we can and must nevertheless still ask: what exactly is the relevance of such 'market devices'—as analyzed in the social studies of finance—for the study of environmental issues? As we suggested, devices of environmental change may call for new and possibly different analysis of the performativity of devices and methods. But in what ways? Put more generally; what happens when not just market methods and devices, but the analysis of the performativity of methods, shifts to other contexts and settings? The question of how market devices take part in performing 'realities', or issues, becomes a different question if the aim is to understand how social science methods participate in performing *change*; and in particular rather diffuse, 'environmental' forms of change.

The objective in paying attention to a wide range of social science methods is certainly not to establish a new hierarchy of methods once and for all: we do not believe that *some* methods or *some* versions of expertise are essentially or necessarily qualitatively better at taking the environment into account, or more caring in relation to the environmental issue, than others. Our point is a different one: if we are to render social studies of science and technology and environmental studies mutually relevant, the relevant problems to explore do not only concern social methods, as such, but equally the environmental issues upon which such methods operate and the settings through which they are made to act on 'environmental' phenomena such as behaviour, awareness, or performance. To our two previous arguments— (1) for a symmetrical valuation of social methods, and (2) a broadening of the range of social devices and appoaches taking part in environmental change—we then add the environmental specificity of methological invention—to the environmental specificity of interventions of and by methods as our third point. In investigating this, we think it fruitful to draw not only from the STS tradition—which has been so important in rendering us sensitive to the materiality and performativity of methods—but equally from the literature that has sensitized us to the ways in which objects are being modified and transformed as they move (by way of a heterogeneous set of practices) from one context, setting, or practice to another (Barry, 2006). The implication is that the specificity of the sites and settings for enacting environmental change matter and their particular capacities for articulating environments as account-able require further investigation.

The importance of the setting is underlined by Kristin Asdal in her (2014) contribution, which is a study of a particular office, namely a Ministry of Finance. As Asdal demonstrates, 'the environment' may indeed be radically transformed as an issue moves from one context to another; by way of accounting methods the climate issue can be, for example, transformed into an oil issue—as became the case within the setting of a Ministry of Finance. Hence, in exploring the politics of social science methods, we must take care not to take the very object—that is, 'the environment', for granted. Moreover, she gives a particular formulation to the general idea that methods are not neutral, proposing that there is a problematic at work in the broad area of environmental change which Asdal designed as 'interested method': methods for taking environments into account come with agenda's built into them; they frequently fail ostensibly and indeed do so remarkably often. This is an additional reason to attend much more closely to the specificity of environmental issues.

It is clear, then, that we cannot simply extend the perspective on the devices of the market, to the devices of the environment. Indeed, as one of us has proposed elsewhere, the very relations between economy, nature, society, and politics may be put at stake through the deployment of social devices and methods of environmental change (Marres, 2011). When studying the deployment of social methods in relation to environmental change, we then have to examine what kinds of relations are being produced between different regimes or ontologies, including those of science and society. In his contribution to this issue, Anders Blok (2014) addresses precisely this topic, but with a twist, as he refuses to take as given that there are essential differences between the ways in which various social sciences, such as economics and anthropology, formulate the project of environmental change. Blok argues that we too readily accept that economics is a universalizing and globalizing practice, whereas anthropology localizes. In an effort to undo this schema, his paper seeks to demonstrate how economics as well as anthropology work by way of both globalizing and localizing moves. Taking this comparison further, Blok alerts us to the fact that in enabling such moves, both economics and anthropology offer crucial social methods for taking nature into account, and we might add, for 'doing' environmental issues.

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