Environment and Planning A 2014, volume 46, pages 2110 – 2124

doi:10.1068/a140048p

From climate issue to oil issue: offices of public administration, versions of economics, and the ordinary technologies of politics

Kristin Asdal
Centre for Technology, Innovation and Culture, PO Box 1108 Blindern, NO-0317 Oslo, Norway; e-mail: Kristin.Asdal@tik.uio.no
Received 27 January 2014

Abstract. Economics does not come in only one version. In order to understand the emergence of carbon markets, this paper turns to the offices of politics and administration and argues that carbon markets ought to be seen as an effect of different versions of economics. Hence, the paper suggests that, in analysing and exploring the emergence of carbon markets, it is not sufficient to focus on market devices. We must study a wider set of devices, such as modelling practices, planning documents, and paper trails. The basis for this analysis is a study of a particular office, the Norwegian Ministry of Finance. The paper traces how, within this office, the climate issue was transformed into an oil issue and how accounting and planning technologies took part in enacting the macroeconomy, rather than the environment, as an endangered object. Hence, when studying the performativity of economics, the macroeconomy must be included, the paper argues, and so must the study of the issue that is being enacted. In pursuing the analysis in this way, the paper seeks to demonstrate that the emergence of carbon markets pertained to not only an emergent climate issue but also to an emergent oil issue.

Keywords: performativity, climate issue, environment, economics, public administration

The issue of climate change, carbon economics, and carbon trading has increasingly entered the agenda of the social sciences (Boyd, 2009; Boykoff et al, 2009; Damro and Méndez, 2003; Lovell and Liverman, 2010; Nelson, 2008; O'Riordan and Jäger, 1996; Randalls, 2011a; 2011b; Stern, 2007). Likewise, a number of science and technology (STS) and accounting scholars have helped put the climate issue and its relation to economics and accounting practices on the agenda (Callon, 2009; Cook, 2009; Hopwood, 2009; Lohmann, 2006; 2009; MacKenzie, 2009). This body of work can be linked to a wider argument in the turn to economics in STS in recent years: namely, that economics is performative. A traditional approach in economic sociology has been that the models and theories that economists are pursuing are not correct: that is, they do not represent a truthful version of reality (for instance, the theory of the economic man and rational actor). The performativity argument is different: the question is not so much whether economic theories are correct, but rather how such theories *become* correct or, more precisely, how they take part in formatting and shaping actors and the economy in accordance with economics.

In line with this approach, Donald MacKenzie (2007) has argued that, in researching the issue of climate change and its relation to economics, the question ought not so much be why political actors choose one method or solution as opposed to another; rather, we should turn to the specifics of how, for instance, carbon markets are constructed. This can in turn be linked to an issue that goes to the heart of actor-network theory: namely that, rather than trace the contexts or the interests that lie behind specific forms of action, we should trace the ways in which the action is enacted—that is, how worlds are made and remade (Asdal, 2012; Callon and Law, 1982). This and related approaches have led to important scholarly

contributions, but, significantly, such approaches tend to work with *one* version of economics (which is thought to be performative) or a singular version of politics (ie, neoliberalism).[1]

However, economics does not come in only one version. If we are to understand the emergence of carbon markets, we need to explore the relational space of different versions of economics and how these may conflict or interact with one another. Second, it must be kept in mind that carbon markets are not simply theory or market products. Rather, markets are the product of administrative and political practices (see also Foucault, 2007). Hence, the emergence of carbon market economics cannot be reduced to a question of the performativity of only one version of economics: namely, carbon economics.

In order to study the emergence of carbon markets, this paper turns instead to the offices of politics and administration and argues that carbon markets ought to be seen as an effect of different versions of economics. In analysing and exploring this, we need to focus not only on market devices (Callon et al, 2007), but also on a wider set of devices, such as modelling practices, planning documents, and paper trails. However, this is itself not sufficient. If we are to understand both the emergence of carbon markets and more widely the question of environmental change, we must also include the materialities of politics and administration in more extended ways and explore which objects (and subsequently which issues) that enter, emerge, or start to circulate within offices of politics and administration. That is, we ought not take for granted that it is 'the environment' or 'the climate' that is, or becomes, the most relevant issue in carbon economics.

Technologies of politics: between governmental rationalities and 'the device'

Empirically, this paper analyses the practices of the Norwegian Ministry of Finance and the efforts from within this ministry to take an emerging climate issue into account. But how are we analytically and theoretically to grasp such questions? That is, how are nature objects and environmental issues, such as the climate issue, being taken into account? The Foucauldian tradition of governmentality studies and approaches within the broad field of STS offer related but in some instances contrasting analytical approaches. This paper draws on both of these traditions and argues that there is a need for a recombination.

In the following I will first present the governmentality tradition in contrast to the more recent focus on 'devices' in STS. It could be argued that it is farfetched to make clear-cut distinctions between governmentality-inspired approaches to the study of politics and related approaches in STS, as they are so intimately intertwined and have so much in common. Moreover, STS approaches have to a large extent built on and developed from the Foucauldian tradition (eg, Law, 1986). The point here is not to deny such exchanges but rather to encourage them. However, drawing attention to differences may sharpen the focus on how we choose to approach our research object.

In its focus on indirect ways or tactics of rule, the Foucauldian governmentality tradition reinvented the study of the state. Michel Foucault's so-called governmentality lectures in the late 1970s (Foucault, 2007 [1978]) offered a relational, historically oriented approach. One of Foucault's influential arguments was that the problem of the state had been overstated. The approach nevertheless remained linked to the study of forms of government, paying special attention to the long arms of the state; hence the means of government that went beyond a narrow definition of the state.

This approach, as well as earlier related work by Foucault, has inspired a range of studies interested in understanding planning processes and public administration. One influential example is James Ferguson's book *The Anti-politics Machine:* "*Development*",

[1] For a significant effort to try and open up this approach to politics in relation to the climate accounting issue see Blok (2011).

Depoliticization and Bureaucratic Power in Lesotho (1994). Not all Foucault-inspired studies of state power and bureaucracy have pursued the same depoliticising road, however. For instance, one of the important contributions from the same period opened up the opportunity for making counterpower or resistance integral to the study of the state (Barry et al, 1995).

But in contrast to the governmentality approach, the material–semiotic or actor-network theory version of STS has offered a more open-ended approach. Rather than focusing upon political rationalities and governmental technologies (Rose and Miller, 1992), this tradition has been far more attuned to seeing technologies as something that *enables* action rather than something that disciplines and governs. Moreover, the problematics of government in Nikolas Rose and Peter Miller's (1992) account have been taken quite literally, as authors within this tradition have come to be more interested in exploring political power beyond—that is, outside—government and ordinary political institutions. This again fits nicely with recent trends in social and political theory that have increasingly focused on extraparliamentary political activities. This pertains both to the understanding of a new political reality—that is, that political power is not assembled in the same places as it used to be (Beck, 1997; Hajer and Wagenaar, 2003; Honig, 1993; Marres, 2005) —and to a pragmatist approach to politics that sees politics *in principle* and potentially everywhere (eg, Dewey, 1927; Latour, 2007). The point then becomes rather how things and settings are potentially *made* political (see also Barry, 2001).

Whereas the Foucauldian governmentality tradition has conventionally been more oriented towards the emergence of the population and individual subjects, actor-network theory is renowned for a more object-oriented approach (see, eg, Callon et al, 2007). Moreover, agency here becomes a highly distributed affair, and the materiality of the device in itself is brought to the forefront.

The notion of device is a translation of Foucault's notion of the *dispositif* and is linked to a French pragmatist tradition where the subject and the device are closely intertwined: subjectivity is enacted in a device (Deleuze, 1989, cited in Callon et al, 2007). Still, it might be precisely this notion that has afforded or enabled authors who have used this approach to more or less completely delink it from the machinery of the state: a device becomes an object in its own right, rather than a technology linked to any wider machinery or apparatus, such as the state. Device-oriented studies have to a much larger extent been linked with studies of the market and with everyday life and everyday devices in a decentred way (for the latter see, eg, Marres, 2012).

It is not least in their differences expressed in the employment of the notion of 'the device' versus 'governmental rationalities' or 'technologies of government' that we can start to tease out the kind of recombination that I think is needed. Producing the political takes an effort (Barry, 2001) and, following this argument, I argue that the empirical and analytical challenge is to study how issues emerge in the first place, and then to explore exactly what *kind* of issues. In pursuing this task, the open-ended and everyday practices approach that has accompanied the studies of 'devices' is useful. Moreover, the device approach is important because it opens for taking the concrete device as a material object seriously into account. But in doing this, we ought not let ordinary political institutions, ordinary offices of public administration, slip from our attention.

What I would suggest is that we have brought some of the everyday perspective from STS and actor-network theory into ordinary offices of public administration. Perhaps it is precisely this ordinariness that ought to interest us, the ordinary technologies of politics and administration, such as planning documents, budget procedures, and modelling practices. Importantly, the everyday practices and ordinariness in politics and administration can be said to be defined precisely by their links to versions of machineries, machineries in the

sense of procedures, practices, and technologies that are more or less repeated year after year (or other time frames) and are linked to the various discussions and decisions that together constitute politics and administration. Hence, this is a kind of machinery, a kind of clockwork that comprises established procedures and practices as well as former decisions on how to perform government.

The office: the Ministry of Finance as a setting for enacting climate change

But how, then, do we relate to the office? In approaching this issue we already learned a great deal from the laboratory studies of the early 1980s: knowledge production, as Karen Knorr-Cetina (1995) formulated it, is wrapped up in 'bounded locales'—that is, particular physical as well as epistemic spaces. Lab studies established the laboratory setting as a theoretical and analytical construct and saw the lab itself as an important agent in knowledge production (see, eg, Latour and Woolgar, 1986). In his analysis of the emergence and workings of the modern bureaucracy, the German sociologist Max Weber (1968) was also concerned with the setting in which bureaucratic procedures took place. These material settings took part in shaping the very office as a particular physical as well as epistemic space (to use Knorr-Cetina's words). Weber was concerned with how the bureaucratic office comes to be established as a particular setting, detached from private space and private affairs as well as from its clients. Hence, contrary to the intimate, concrete, and private, the office worked through distance and general rules and procedures. In this way, Weber may also alert us to the fact that the sociomaterial setting matters (Becker and Clark, 2001).

Exploring such settings from a more open-ended approach might help us better understand that offices do not always perform one solid version of state power or one huge, bounded machinery; just as it takes effort to perform authority, performing *non*-authority is also a particular form of practice that takes much effort. As I have demonstrated for another office (one dealing with pollution control), Weber's office may even be turned upside down: offices do not necessarily develop into real authorities, but sometimes also into *non*-authoritative offices (Asdal, 2011a).

Interestingly, inspired by pragmatist conceptions of politics (see, eg, Dewey, 1927), recent contributions to the study of politics in STS have increasingly turned to the concept of issues. The argument has been that we need to be issue specific (Marres, 2007).[(2)] This is interesting when it comes to understanding the specificities of the Ministry of Finance as an office. Whereas a pollution control office can be said to be issue specific in the sense that its task is to manage a quite particular and specific issue, the Ministry of Finance can better be described as issue *non*-specific: the Ministry of Finance (at least within the Norwegian government) acts, and enacts itself, as a coordinating machinery—literally a centre of calculation (Latour, 1987)—a site through which all governmental proposals that involve budget expenses or have consequences for 'the economy' must pass. Rather than being issue specific, this is a form of machinery in which *all* issues are fed in; it is hence issue non-specific. Furthermore, since the early postwar era the Ministry of Finance has taken on the position as a kind of supraministry that, in its capacity as coordinating machinery, stands above the other ministries (see Asdal, 1998; Lie, 1995). The Ministry of Finance has been enacted, and continuously enacts itself, as the ministry that draws things (ie, the economy) together. Hence, as I will elaborate below, the Ministry of Finance is in the position to secure what is assumed to be a form of economic coherence or, to put it differently, the common interest. This position is related to a particular competence (first and foremost the expertise of

[(2)] This is related to an argument that every issue assembles a particular public around itself. See Dewey (1927), Marres (2008), and Latour (2005).

economists). But it is also intimately related to a set of procedures, methods, or what I choose to name technologies of politics and administration.

The particular technologies—or what we in a more science-studies tradition could call inscription devices (Latour, 1987)—that stand out as crucial for the administering of issues which enter the calculating machinery of the Ministry of Finance are documents and texts in the form of budgeting and planning documents: that is, quite specific versions of accounting technologies. Since the early postwar era the long-term programme, together with the other budget procedures of the Ministry of Finance (the national budget and the fiscal budget), have been crucial technologies for enacting the economy as a coherent whole or entity. Integral to this is the enactment of the *future* economy.

This is not to say that the long-term plans are binding, do not change, or are always followed. However, such plans do seek to enact the present as well as the future economy as a coherent entity and prescribe the means through which this may come to be the reality. In pursuing this goal, the documents may also be said to be devices for producing what we with Luc Boltanski and Laurent Thévenot (2006) could call certain regimes of worth. More concretely, such documents are sites for the enactment of value: that is, they are documents for valuing (Asdal, 2014)**.** In the planning documents this has much to do with establishing a price on goods as well as predicting the effects of prices on the economy as a whole: that is, the macroeconomy. But it also has to do with valuing some versions of a future economy higher or lower than others. Hence, there is a series of valuation practices involved.

These practices take place as part of what we might call 'politics and administration as usual', by means of the slow and steady rhythms of virtual repetitions in the ways of doing politics and administration. In these practices, issues are being administered, but as such they may also be transformed.

It was the Ministry of Finance where I started archive studies of environmental offices as part of public administration (Asdal, 1998). At the time, the ambition was not to attend to the ongoing negotiations over the climate issue that the Ministry of Finance was involved in. Instead, I analysed a series of earlier cases in which the ministry had been involved, including its relations to the Ministry of the Environment and the various and often conflicting situations that emerged, as not only the Ministry of the Environment but also the Ministry of Finance saw itself as a coordinating office when it came to resources. More recently, we have been able to reenter the office and trace the ways in which it managed the climate issue as this concern entered the public and political agenda in the late 1980s and early 1990s. This period is particularly interesting and important in relation to the climate issue as the ways in which the climate issue at that time entered politics and administration have become formative for how the issue is still being dealt with today.

These years are also interesting because the situation regarding how to deal with the climate issue has been portrayed and described as radically open (Nilsen, 2001), where a number of relatively radical suggestions for how to manage and reduce emissions that caused climate change were proposed by the general public as well as by Parliament. Such proposals also came from well-established economic actors and offices, such as Statistics Norway, a directorate with a relatively autonomous position but nevertheless 'belonging' to government.

One measure that was envisioned was a transformation or a modification of the economy through so-called green taxes. In public the Director of Research of Statistics Norway (SSB), Lorents Lorentsen, warmly applauded this way of approaching the problem (*Dagens Næringsliv* 1988a).

Statistics Norway's concern with the environment was not a coincidence, as they headed a group with the specific task of improving the economic models used in planning procedures so that these would more accurately reflect environmental costs. The work was part of the

follow-up to the United Nations report *Our Common Future* (1987) on the national level. In Norway the report was informally dubbed "the Brundtland Report" after Gro Harlem Brundtland, the sitting Norwegian prime minister who also headed the UN committee responsible for the report. Hence, the Brundtland government was charged with a particular responsibility of acting upon the report. This responsibility, and the possible failure to deal with it, was explicitly put on the public agenda by Statistics Norway.

In an interview in the business newspaper *Dagens Næringsliv* (1988a), Lorents Lorentsen pointed out that there was indeed a vast distance between what the Brundtland Report preached and what the Brundtland government delivered or planned to deliver. While the report argued that the consumption of fossil fuels had to be reduced by 50% in thirty to forty years, the government planned a major increase in carbon emissions. This was due to increased emissions from transport as well as the use of gas. In contrast with this scenario, Lorentsen argued that it had to be profitable to reduce emissions: economic incentives had to be introduced and politicians had to be presented with alternatives—they had to be presented with a menu to choose from.

Lorentsen, himself an economist, was convinced that such a redirection of economic policy would be possible. According to the scenarios presented by the office, carbon emissions could be stabilised at the present 1987 level during the 1990s without significantly hampering economic growth (Nilsen, 2001; SIMEN, 1989). This was fully in line with the approach to environmental problems that economists had taken, in principle, since the late 1960s (Asdal, 1998). The position outlined by Statistics Norway was also very much in line with economists' conventional view on the relation between the environment and economic growth. Ever since the environmental issue had begun to engage economists in the late 1960s, they had agreed that there was no such thing as a conflict between economic growth and the environment (see, eg, Erichsen, 1971). Now, Statistics Norway was seeking to translate the environment into macroeconomic models in ways that contributed to potentially realising such a non-conflict situation. An important premise for such a conclusion was that future growth of the Norwegian economy would be realised in those parts of the industry that were not part of the oil sector. As reasoned in the report by Statistics Norway, "In a longer term perspective, the balance of the external economy must be based on growth in other competing industries, not on a rapid depletion of a limited natural resource" (SIMEN, 1989, page 44; see also Nilsen, 2001).

The only thing that was needed, according to both Lorentsen and the report his office published, was to make environmental costs integral to the price. An editorial in *Dagens Næringsliv* (1988b) followed along the same lines, concluding that when it came to both environmental regulations *and* green taxes, significant changes were now to be expected in the years to come.

It is quite possible that the director of Statistics Norway was already well informed about what was going on inside both the government and the offices of Ministry of Finance, and this was quite possibly the reason why he took such a clear, critical and engaged position in public. Statistics Norway presented its report in the spring of 1989. Already the year before, Parliament had asked the government to start exploring how green taxes could be made part of environmental policy (Reitan, 1998). This was the first quite concrete and direct way in which the climate issue emerged within the Ministry of Finance. In 1989 a special green-tax committee was established (Miljøavgiftsutvalget, 1992), but already a working group had been set up within the ministry, tasked with the job of exploring whether green taxes could be more extensively applied. The results were to be coordinated with the ongoing work on the coming long-term programme for 1990–93.

The ways in which the Ministry of Finance dealt with the issue, as well as the continued handling of the government's long-term programme for 1990–93, demonstrate the friction

that arose when dealing with the challenge of trying to make climate change comply with, or cohere with, a particular form of 'whole'—that is, the macroeconomy—and an already established economic policy.

The office: the Ministry of Finance and the enactment of the macroeconomy

First, the Ministry of Finance did not signal the same positive attitude to green taxes as Statistics Norway did. Quite the contrary, the challenge from Parliament was met with a number of warnings from within this office.[3] For example, the ministry argued that introducing green taxes could lead to reduced economic activity, increased prices, and reduced competitiveness, and hence curtail economic growth. Hence, whereas Statistics Norway established a possible harmony between the future economy and environmental change, the same issue was enacted as a conflict inside the Ministry of Finance.

Statistics Norway had pinpointed the transport sector as a particularly important tax object from an environmental point of view. The Ministry of Finance enacted the situation differently, arguing that the taxes would have to be set unacceptably high before they would affect people's transport behaviour. All in all, this office took a radically different position from that of Statistics Norway: only private households were singled out as possible green-tax objects, and all other possible tax objects, including industry, were excluded from a potential green-tax scheme.

The ministry argued, for example, that higher taxes would almost inevitably increase diesel prices. This would in turn be detrimental to the transport sector and transport-intensive industry outside the central area of the country (for example, aquaculture and the furniture industry) and hence stymie Norway's ability to compete with other countries. The ministry's conclusion was that any changes to the tax system would have to be implemented gradually, otherwise they could have "unpredictable consequences". The same warnings were raised in the final version of the long-term programme for 1990–93, only in a somewhat more cautious version: "A too quick introduction of environmental requirements will make it more difficult to achieve economic growth and an acceptable development on the employment front" (Finansdepartementet, 1988–89, page 25).

Moreover, the ministry predicted that the price of energy could be impacted by not only domestic green taxes but also a possible international convention on reducing CO_2 emissions. Such a convention would affect more than the transport sector and other parts of industry: it would also have consequences for the oil sector. The Ministry of Finance assumed that an international convention would lead to reduced oil prices. As mentioned above, the Ministry of Finance is the office responsible for the ongoing process of coordinating the long-term programmes, but in the draft version of the programme for 1990–93 no such changes in oil prices were estimated. Norges Bank, the central bank of Norway, alerted the Ministry of Finance about this omission. The bank reasoned that with the decreased production of oil, which would follow from an international convention, "we will hardly be able to increase our oil production as planned".

The bank contended furthermore that a successful global allocation of resources would radically change the preconditions regarding the oil sector that was already laid down in the draft version of the long-term programme for 1990–93. This represented, according to the bank, "a serious inconsistency in the programme".

[3] The internal documents that are cited in the following (if not otherwise stated) are based on archive materials from within the Ministry of Finance up until 1992. Detailed references to each single document can be found in Asdal (2011b) and Strickert (2009). The translations of the quotes in the archive materials are mine, and the concrete and specific wordings are not always exactly the same as the wordings in Strickert (2009).

Other agencies pointed out the same problem: for instance, the Ministry of Transport and Communication, which also argued there was a serious inconsistency between the macroeconomic calculations and the stated environmental goals, the magnitude of which would depend on the environmental goals that were ultimately targeted. In another comment on the proposed long-term programme for 1990–93, the Norwegian ambassador to the OECD, who was himself an economist and former senior bureaucrat in the Ministry of Finance, highlighted the need to discuss the conflicting goals that could emerge from the situation as presented in the draft.

Hence, the Norwegian economy—such that this economy as a macroeconomic whole was to be outlined, assessed, and predicted in the proposed long-term programme—was increasingly being enacted in direct opposition to another assumed goal: namely, that of a successful international convention on climate change, which, as noted above, would reduce oil prices, production, and income and hence curtail economic growth in Norway. As it was formulated in the final version of the long-term programme for 1990–93, the possibility was that "many consumer countries would increase taxes on oil consumption", which would eventually lead to "lower growth in the demand for oil and reduce the potential for an increase in the oil prices for the producers" (Finansdepartementet, 1988–89, page 69).

The macroeconomy as an endangered object

What this implied was that the environmental challenge and climate issue as envisioned in the *Our Common Future* report, and in part in Parliament as well, did not result in efforts to change or redirect the economy. Within government, as exemplified by the Ministry of Finance and its response to green taxes, the situation was encountered rather in the opposite way: increasingly, the concern was with the possible detrimental effects on the economy—not with the possible detrimental effects on the environment or the climate.

It is sometimes argued that problems related to taking the environment into account can be related to a lack of capacity to perform long-term planning. Hence, the environmental issue is perceived as something that ought to be dealt with from a long-term perspective, whereas politics and administration are considered too short sighted to deal with problems that are not deemed urgent. Given the situation within the Ministry of Finance, there is every reason to argue the opposite: it was precisely the ordinary, future-oriented technologies of politics—that is, the long-term planning procedures and the long-term programme—that enacted the economy in ways which hampered the environment and the climate issue from being taken into account.

Taken together, the climate issue emerged not so much as an issue of necessary, urgent change. On the contrary, the Ministry of Finance enacted an office for slowing things down, an office that repeated the policies already established as well as the economy-as-usual, out of concern for both the present and the *future* economy. That is, within the offices of public administration, and with the Ministry of Finance as the coordinating office, it was not so much the environment that seemed endangered as the macroeconomy.

Intervening in relation to a future climate change regime

However, the above way of keeping the climate issue external to the economy neither held nor proved to be a viable strategy. Actors outside government (such as the aforementioned Statistics Norway) as well as other governmental offices (such as the Ministry of the Environment) put pressure on finding ways of making the climate integral to the economy. Moreover, the government was expected to follow up the UN report, and a number of actors (among them the Ministry of the Environment) were already involved in trying to establish an international climate convention.

But what to do in order to ensure that the climate issue complies with and is made to cohere with the particular form of 'whole' (that is, the macroeconomy as this was constituted within the Ministry of Finance and that the office was also repeatedly being alerted to by other core actors)? How could the 'coherence' that major actors were explicitly missing in the long-term programme be established? It is towards these efforts that I will now turn.

Already in 1988, the year after the UN report had been published, an international climate convention was being actively discussed in international fora. The Ministry of Finance was worried: regardless of what type of agreement was reached, the convention would adversely affect Norwegian competitiveness: that is to say the economy. From the end of 1988 onwards and up to the United Nations Conference on Environment and Development in Rio de Janeiro in 1992, a number of initiatives were launched from within public administration. These all went in the same direction away from the national framework of green taxes that had framed the discussion so far. Within the Ministry of Finance the demand to take part in the ongoing discussions was being expressed quite clearly: since the measures to combat greenhouse gas emissions might significantly affect the macroeconomy, the ministry ought to have a say in drawing up the national position in the international negotiations.

One of the first and early positions outlined from within the Ministry of Finance was that the Norwegian delegation should *not* lobby for quantifiable emission reductions. Moreover, when in conversations with other actors, the Norwegian delegation should not propose that specific time limits be set. Finally, the Ministry of the Environment was encouraged to step back from an earlier standpoint in favour of supporting a 20% reduction in emissions within 2005 or 2010. The Ministry of Finance argued that all suggestions had to be cost-effective and that Norway in this early round should limit itself to suggesting that the first step should be a study of *possible* emission reductions.

To back up its arguments, the Ministry of Finance pointed out that no assessments had been made on the possible effects on national economic growth as a consequence of possible emission reductions. Before doing anything else, the costs of reducing emissions had to be calculated, as these costs could be substantial and have a huge impact on economic growth and societal development. These principles were firmly laid down in an ensuing report from an interministerial group on the climate issue: climate policy had to be outlined so that it was cost-efficient, something which implied cost-efficiency for all greenhouse gases across societal sectors and, most importantly, across countries. The latter meant that emission reductions had to take place where the costs were the lowest and thus not tied to national borders.

The realisation and valuation of Norway's oil assets

As the accounting literature has demonstrated (largely inspired by Foucault's governmentality lectures), spaces such as the economy are not brought into existence by theory alone. For instance, the strategies of national economic management as they appeared in the postwar era were made possible not only by the installation of new sets of concepts for thinking about the economy, but also in the construction of a vast statistical apparatus through which this domain could be inscribed, visualised, calculated, and compared (Désrosières, 1998; Rose, 1999). Such national accounting systems made it possible to measure and compare the performances of national economies, year by year and country by country. This served as one of the conditions for postwar growth-driven economies (see Asdal, 2007; Lie and Roll-Hansen, 2001).

But not only is the macroeconomy as such enabled and realised by accounting practices—so too are specific objects of the economy. A vast body of literature has demonstrated how numbers are a key condition for governing in that they help to produce the very objects that in the next round are available for political intervention (Miller, 1994; Rose, 1999).

Hence, technologies of numbers not only describe already existing realities, they also help to constitute these realities in the first place (eg, Hopwood, 1987).

In his intriguing and important analysis, Timothy Mitchell (2011) argues for the intimate linkage between democracy and oil. Not only is oil an important part of our contemporary economies, it has according to Mitchell also become a precondition for our democracies, in the sense that oil enables our growth economy. The Norwegian economy could serve as an eminent example. However, Mitchell's admirably material approach to oil as an object also has the (unintended) effect of erasing the relation between this object and concrete, everyday budget practices. Oil itself becomes so to speak relatively 'fixed' rather than an entity that is constantly changing; dependent upon constant valuations and revaluations. We saw this already above, in the concerns raised by offices and bureaucrats in relation to the potential shifting values of oil as part of a new climate regime. Such valuation practices were to have interesting and significant effects on the object of oil as part of the macroeconomy.

Hence, the values that are ascribed to the specific objects that constitute the economy as a whole are important—they take part in determining the reality and the size, so to speak, of the object as an economic entity. But, as we know, values, in the form of prices, are not a given, and certainly not the prices of oil. In the autumn of 1985 and the spring of 1986 the price of oil on the international market had been dropping (Nilsen, 2001). It was in this situation of falling oil prices that Statistics Norway enacted the Norwegian dependency on oil as a problem (SIMEN, 1989).

In the long-term programme for 1990–93 the situation was outlined quite differently. First, the programme expected the oil prices to rise. But the oil was also being increasingly valued and appraised; increasingly invested with interest and concern while at the same time emerging as increasingly significant and real. Consequently, enabled by the ongoing planning procedures and modelling practices, oil stood out as a distinctively different object than before—and quite different than in the modelling practices of Statistics Norway.

The process unfolded in a number of moves. Methods and events that turned out to be quite important were that a new group of consultants was commissioned to help predict, on the basis of calculations and models, both the future price of oil and developments in the international oil and gas markets.

A particularly noteworthy and in our context important aspect of these new modelling experiments was that they coupled the discussion on carbon emissions with the so-called asset-management perspective (Nilsen, 2001): that is, how to manage a (national) asset. A particular version of time—the issue of how to manage the asset in the long term—was introduced in relation to the emerging oil asset. That is, how should this object (oil) be managed well in the long term? What the new models quite effectively added to the calculations (and hence the larger macroeconomy) was how much Norway, as an exporter of oil and gas, would lose from a future international climate policy regime. The loss was estimated in future revenues from oil.

Quite concretely, the outcome of these assessments was that the value of the Norwegian oil production would decrease by as much as 11% if all countries were to agree to stabilise their emissions (at the 1990 level within the year 2000) helped by an international standardised tax on CO_2 emissions. Consequently, an international climate policy was defined as a risk to the national oil wealth. The national economy was faced with a double risk: first, the risk associated with potential national measures (eg, green taxes) that would interfere with the Norwegian macroeconomy and future economic growth, and, second, the risk of potential international measures that would interfere with and diminish the oil wealth.

The relational space of climate change: interacting versions of economics

Unsurprisingly, the issue of climate change and arguments regarding the performativity of economic theory in the construction of carbon markets has become a hot topic. As noted above, STS scholars have for a long time argued that the issue is not so much that the theories of economists are wrong but rather that economists are performative: that is, that they shape, format, and transform the world so that it becomes more equal to the theories of economics (Barry and Slater, 2002; Callon, 1998). The emergence of carbon markets can be studied as a salient example: economic theory on the efficiency of carbon markets (versus, for example, national measures in the form of taxes or direct regulations) has become the real-life tool for enacting environmental change: that is, in the form of managing the climate issue. In line with this approach, it has been argued (MacKenzie, 2009) that we should be just as much interested in the technicalities and carbon economics in the making as the motivations and 'grand designs' that may seem to drive carbon markets.

However, the turn to markets and economics within STS should not restrict us to studying *single* disciplines. Rather, we need to study the meeting points: the clashes, confrontations, and exchanges between knowledge traditions within the offices of public administration (Asdal, 2008). Moreover, in order to grasp the performativity of economics, we ought to include the settings through which economics is made to perform. I would argue this is also important because, if we look closely, we might find that this setting is indeed a relational space of different and sometimes *interacting* versions of economics. In the present analysis these versions of economics are the macroeconomy and then carbon economics.

In narratives on how joint implementation and carbon markets arrived centre stage on the international arena, the United States is sometimes ascribed the key role. However, as I have pointed out throughout this paper, the Norwegian government had already taken part in the same move from a very early stage. Paying for emission reductions to take place in *other* countries rather than paying dearly to reduce emissions 'at home' was increasingly to be posited as the most efficient method of reducing emissions: that is, the most cost-efficient way. This was the principle of cost-efficiency across regions that the Ministry of Finance and others managed to establish as an integral part of the government's approach to the climate problem. However, and this is key to my argument, this version of efficiency emerged in intimate relation to the macroeconomy and to oil as an integral and increasingly highly priced and appraised part of the macroeconomy—that is, as an 'asset' realised as part of the ordinary technologies of politics, such as modelling and long-term planning.

In other words, international carbon markets emerged in (partial) relation to the stipulated and expected prices of oil within a national (macro)economy: that is, in exchange and interaction with another version of economics—the macroeconomy. Hence, if we are to grasp the specificities of the emerging carbon markets, we need to focus on the specificities of the political–administrative processes: the offices and the technologies of politics, through which carbon markets become a relevant, appropriate, and assumingly efficient solution to the challenge of climate change.

The economics of climate change and oil as an interested object

In pursuing this analysis, this paper supports earlier work arguing that carbon economics cannot in itself explain the emergence of carbon markets (Lave et al, 2010). But this is not to say that this paper supports the opposite conclusion: that instead of economics, the emergence of carbon markets can be reduced simply to politics or given, clear-cut interests. It is too easy to simply shift the analysis from (one version of) economics to (one version of) politics and interests.

First, I have demonstrated that there is more than one version of economics and argued that this needs to be included in our analysis. That is, we ought to keep an eye on the relational

space through which methods are employed and 'solutions' to issues emerge. Second, I have argued that we need to approach offices of public administration with an eye to how ordinary technologies of politics and administration take part in enacting the economy as well as the relevant and integral objects of that economy. Science, including the science of economics, is an integral part of politics and administration, and we need to find ways of handling this in our empirical analyses. The objective of the present paper is to encourage such an approach. Third, I suggest that we do not treat interests as something predefined and always already given, and so easily employed as an explanatory tool (Asdal and Moser 2012). Rather, I suggest that we approach this problem as interest work (Woolgar, 1981) and, as put forward by Cori Hayden (2003) approach 'interests' more as an ethnographic object. To take this further, I suggest that we study how interests and objects evolve simultaneously and in intimate, codependent exchange. Part of the dynamics in the events analysed in this paper was that oil and oil asset increasingly emerged as what I suggest we call an 'interested object' (Asdal 2011a): that is, an object that is made increasingly real while being, simultaneously and as a condition of possibility to its realisation, invested with interest and concern.

Unfortunately, it is outside the scope of this paper to go into detail as to how the steps were later taken to achieve the specific designs of carbon markets and the principle of joint implementation as an integral part of the ensuing climate convention. Here it must suffice to conclude that the active policy making from within the heart of Norwegian public administration (with the Ministry of Finance as the coordinating instance) implied a departure from the national green-tax framework. Instead, the strategy that was developed was to help establish an international level or framework that was coherent with the national 'common interest', the macroeconomy, and interested object, namely oil. As the Ministry of Petroleum and Energy wrote so explicitly to the Ministry of Finance (17 October 1991), concerning the principles for the possible international climate convention, "an international agreement that builds upon a principle of harmonisation [ie, joint implementation] … will enable Norway to increase our emissions to a considerable extent in line with our comparative national production advantages."

Drawing the climate and oil issues together

This paper has suggested that we see offices as settings for taking objects and issues into account, and it has pointed out how this often happens by means of accounting practices. But offices like a pollution control agency (which may struggle to even become an authority) and a ministry of finance, which may sometimes act as a coordinating machinery, do this very differently. Offices may be radically different physical as well as epistemic spaces. In order to analyse the workings of such offices more closely, I have suggested a number of concepts or analytical approaches, such as interested objects, relational spaces, valuation practices, and issue-non-specific offices.

However, as this paper has argued and sought to demonstrate, it does not suffice to attend to the materialities and specificities of the relevant technologies involved in office work; we also need to attend to the materialities and specificities of the very objects and the emerging issues in politics and administration. Hence, we need to explore the ways in which issues enter, emerge, and get transformed within particular settings: in our case in distinct offices of public administration.

As I hope to have demonstrated, this may alert us to the fact that 'the climate' in discourses we take for granted to be about 'the environment' or 'environmental change' ought not be taken for granted. Sometimes 'climate' is not the most relevant notion or category. In other words, it is not only the methods, the devices, and technologies that matter, but also which objects and issues that are made to emerge and perform by means of ordinary technologies of politics and administration.

Acknowledgements. Earlier versions of this paper have been presented to a range of different audiences at a range of different universities and has profited from a series of helpful comments. For this I am very grateful. In particular, I would like to thank Claes-Fredrik Helgesson, Noortje Marres, and Jan-Peter Voss. I would also like to thank the three anonymous referees for their investments in the paper and for helping to clarify important points, as well as Bård Hobæk and Stig Oppedal for assistance.

References

Asdal K, 1998 *Knappe ressurser? Økonomenes grep om miljøfeltet* (Universitetsforlaget, Oslo)

Asdal K, 2007, "Re-inventing politics of the state: science and the politics of contestation", in *Technoscience: The Politics of Interventions* Eds K Asdal, B Brenna, I Moser (Unipub, Oslo) pp 309–326

Asdal K, 2008, "Enacting things through numbers: taking nature into account/ing" *Geoforum* **39** 123–132

Asdal K, 2011a, "The office: the weakness of numbers and the production of non-authority" *Accounting, Organizations and Society* **36** 1–9

Asdal K, 2011b *Politikkens natur—naturens politikk* (Universitetsforlaget, Oslo)

Asdal K, 2012, "Contexts in action—and the future of the past in STS" *Science, Technology and Human Values* **37** 379–403

Asdal K, 2014, "From commodification to co-modification: on innovation devices, value-practices and the modification of markets and bodies in aquaculture", in *Value Practices in the Life Sciences* Eds I Dussauge, C-F Helgesson, F Lee (Oxford University Press) forthcoming

Asdal K, Moser I, 2012, "Experiments in context and contexting" *Science, Technology and Human Values* **37** 291–306

Barry A, 2001 *Political Machines: Governing a Technological Society* (Athlone Press, London)

Barry A, Slater D, 2002, "Introduction: the technological economy" *Economy and Society* **31** 175–193

Barry A, Bell V, Rose N, 1995, "Introduction" *Economy and Society* **24** 485–488

Beck U, 1997 *The Reinvention of Politics : Rethinking Modernity in the Global Social Order* (Polity Press, Cambridge)

Becker P, Clark W, 2001, "Introduction", in *Little Tools of Knowledge: Historical Essays on Academic and Bureaucratic Practices* Eds P Becker, W Clark (University of Michigan Press, Ann Arbor MI) pp 1–34

Blok, A, 2011, "Clash of the eco-sciences: carbon marketization, environmental NGOs and performativity as politics" *Economy and Society* **40** 451–476

Boltanski L, Thévenot L, 2006 *On Justification: Economies of Worth* (Princeton University Press, Princeton, NJ)

Boyd E, 2009, "Governing the clean development mechanism: global rhetoric versus local realities in carbon sequestration projects" *Environment and Planning A* **41** 2380–2395

Boykoff M T, Bumpus A, Liverman D, Randalls S, 2009, "Theorizing the carbon economy: introduction to the special issue" *Environment and Planning A* **41** 2299–2304

Callon M, 1998 *The Laws of the Markets* (Blackwell, Oxford)

Callon M, 2009, "Civilizing markets: carbon trading between in vitro and in vivo experiments" *Accounting, Organizations and Society* **34**(3–4) 535–548

Callon M, Law J, 1982, "On interests and their transformation: enrolment and counter-enrolment" *Social Studies of Science* **12** 615–625

Callon M, Millo Y, Muniesa F, 2007, "An introduction to market devices", in *Market Devices* Eds M Callon, Y Millo, F Muniesa (Blackwell, Malden, MA) pp 1–39

Cook A, 2009, "Emission rights: from costless activity to market operations" *Accounting, Organizations and Society* **34**(3–4) 456–468

Dagens Næringsliv 1988a, "Miljøet har måttet vike", 9 July

Dagens Næringsliv 1988b, "Miljømøte i Oslo", 11 July

Damro C, Méndez P L, 2003, "Emissions trading at Kyoto: from EU resistance to Union innovation" *Environmental Politics* **12**(2) 71–94

Deleuze G, 1989, "Qu'est-ce qu'un dispositif?", in *Michel Foucault philosophe: rencontre internationale Paris 9, 10, 11, janvier 1988* (Seuil, Paris) pp 185–195
Désrosières A, 1998 *The Politics of Large Numbers: A History of Statistical Reasoning* (Harvard University Press, Cambridge, MA)
Dewey J, 1927 *The Public and its Problems* (Henry Holt, New York)
Erichsen E, 1971, "Må vi velge mellom økonomisk vekst og naturvern?", in *Økonomi og politikk: 15 artikler* Eds P J Bjerve, O Myrvoll (Aschehoug, Oslo) pp 51–66
Ferguson J, 1994 *The Anti-politics Machine: "Development," Depoliticization, and Bureaucratic Power in Lesotho* (University of Minnesota Press, Minneapolis, MN)
Finansdepartementet, 1988–89, "Stortingsmelding nr 4 1988-89: Langtidsprogrammet 1990–1993" *Stortingsforhandlinger 1988–89*
Foucault M, 2007 *Security, Territory, Population. Lectures at the Collège de France, 1977–78* (Palgrave Macmillan, Basingstoke, Hants)
Hajer M A, Wagenaar H, 2003, "Introduction", in *Deliberative Policy Analysis: Understanding Governance in the Network Society* Eds M A Hajer, H Wagenaar (Cambridge University Press, Cambridge)
Hayden C P, 2003 *When Nature Goes Public: The Making and Unmaking of Bioprospecting in Mexico* (Princeton University Press, Princeton, NJ)
Honig B, 1993 *Political Theory and the Displacement of Politics* (Cornell University Press, Ithaca, NY)
Hopwood A G, 1987, "The archaeology of accounting systems" *Accounting, Organizations and Society* **12**(3) 207–234
Hopwood A G, 2009, "Accounting and the environment" *Accounting, Organizations and Society* **34**(3–4) 433–439
Knorr-Cetina K, 1995, "Laboratory studies: the cultural approach to the study of science", in *Handbook of Science and Technology Studies* Eds S Jasanoff, G E Markle, J C Petersen, T Pinch (Sage, London) pp 140–166
Latour B, 1987 *Science in Action: How to Follow Scientists and Engineers through Society* (Harvard University Press, Cambridge, MA)
Latour B, 2005, "From realpolitik to dingpolitik, or how to make things public", in *Making Things Public: Atmospheres of Democracy* Eds B Latour, P Weibel (MIT Press, Cambridge, MA) pp 4–31
Latour B, 2007, "Turning around politics: a note on Gerard de Vries' paper" *Social Studies of Science* **37** 811–820
Latour B, Woolgar S, 1986, "An anthropologist visits the laboratory", in *Laboratory Life: The Construction of Scientific Facts* (Princeton University Press, Princeton, NJ) pp 43–104
Lave R, Mirowski P, Randalls S, 2010, "Introduction: STS and neoliberal science" *Social Studies of Science* **40** 659–675
Law J, 1986, "Editor's introduction: Power/knowledge and the dissolution of the sociology of knowledge", in *Power, Action and Belief: A New Sociology of Knowledge?* Ed. J Law (Routledge, London) pp 1–19
Lie E, 1995 *Ambisjon og tradisjon : Finansdepartementet 1945-1965* (Universitetsforlaget, Oslo)
Lie E, Roll-Hansen H, 2001 *Faktisk talt. Statistikkens historie i Norge* [The history of statistics in Norway] (Scandinavian University Press, Oslo)
Lohmann L, 2006, "Carbon trading: a critical conversation on climate change, privatisation and power" *Development Dialogue* **48** 4–359
Lohmann L, 2009, "Toward a different debate in environmental accounting: the cases of carbon and cost-benefit" *Accounting, Organizations and Society* **34**(3–4) 499–534
Lovell H, Liverman D, 2010, "Understanding carbon offset technologies" *New Political Economy* **15** 255–273
MacKenzie D, 2007, "The political economy of carbon trading" *London Review of Books* **29**(7) 29–31
MacKenzie D, 2009, "Making things the same: gases, emission rights and the politics of carbon markets" *Accounting, Organizations and Society* **34**(3–4) 440–455

Marres N, 2005 *No Issue, No Public: Democratic Deficits after the Displacement of Politics* PhD thesis, Faculty of Humanities, University of Amsterdam
Marres N, 2007, "The issues deserve more credit: pragmatist contributions to the study of public involvement in controversy" *Social Studies of Science* **37** 759–780
Marres N, 2008, "The making of climate publics: eco-homes as material devices of publicity" *Distinktion: Scandinavian Journal of Social Theory* **9**(1) 27–46
Marres N, 2012 *Material Participation: Technology, the Environment and Everyday Publics* (Palgrave Macmillan, Basingstoke, Hants)
Miljøavgiftsutvalget, 1992 *NOU 1992:3 Mot en mer kostnadseffektiv miljøpolitikk i 1990-årene: prinsipper og forslag til bedre prising av miljøet : endelig innstilling fra Miljøavgiftsutvalget* Norges Offentlige Utredninger, Oslo
Miller P, 1994, "Accounting and objectivity: the invention of calculating selves and calculable spaces", in *Rethinking Objectivity* Ed. A Megill (Duke University Press, Durham, NC) pp 239–264
Mitchell T, 2011 *Carbon Democracy: Political Power in the Age of Oil* (Verso, London)
Nelson J A, 2008, "Economists, value judgments, and climate change: a view from feminist economics" *Ecological Economics* **65** 441–447
Nilsen Y, 2001 *En felles plattform? Norsk oljeindustri og klimadebatten i Norge fram til 1998* PhD thesis, Det humanistiske fakultet, Universitetet i Oslo
O'Riordan T, Jäger J, 1996 *Politics of Climate Change: A European Perspective* (Routledge, London)
Randalls S, 2011a, "Broadening debates on climate change ethics: beyond carbon calculation" *The Geographical Journal* **177**(2) 127–137
Randalls S, 2011b, "Optimal climate change: economics and climate science policy histories (from heuristic to normative)" *Osiris* **26**(1) 224–242
Reitan M, 1998 *Interesser og institusjoner i miljøpolitikken* PhD thesis, Institutt for statsvitenskap, Universitetet i Oslo
Rose N, 1999 *Powers of Freedom: Reframing Political Thought* (Cambridge University Press, Cambridge)
Rose N, Miller P, 1992, "Political power beyond the state: problematics of government" *The British Journal of Sociology* **43** 173–205
SIMEN, 1989 *SIMEN: Studier av industri, miljø og energi fram mot år 2000* Statistisk Sentralbyrå, Oslo
Stern N H, 2007 *The Economics of Climate Change: the Stern Review* (Cambridge University Press, Cambridge)
Strickert S, 2009, "Politics in the making: from national green taxes to a global clearing-house", master's thesis, Senter for teknologi, innovasjon og kultur, University of Oslo
United Nations, 1987 *Our Common Future* (World Commision on Environment and Development) (Oxford University Press, Oxford)
Weber M, 1968, "Bureaucracy", in *Economy and Society, Volume 3* Eds G Roth, C Wittich (Bedminster Press, New York) pp 956–1005
Woolgar S, 1981, "Interests and explanation in the social study of science" *Social Studies of Science* **11** 365–394