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ST 20 Vers une sociologie politique des sciences ?

Thème 2 : Étudier les inégalités d'influence et la distribution sociale des savoirs dans la définition des expertises légitimes

« Social construction of knowledge use in public and private regulation: Whose knowledge and why? »

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1. Introduction: Why political sociology of knowledge use?

A primary focus of political science is on the role of actors and power in policymaking and the form and content of politics legitimising any changes in these. Over the last five years or so, it is possible to detect two broad narratives detailing current political trends which matter for any reflection on relations between usages of knowledge and questions of inequality. On the one hand, scholars point to a crisis of politics in which public policymaking has been increasingly de-politicized (Hay, 2007). This has included the making of less and less demands on the state and the transfer of issues from the public to the private realm. This in turn has increased the power of a 'depoliticising professionalism' institutionalising the sense for ordinary citizens that politics is 'beyond our influence' (Hay, 2007). Concerning those issues which are currently the object of a growing private, rather than public, government, scholars identify a range of areas currently outwith the purview of state control and instead regulated upon by large companies evoking arguments of corporate social responsibility. These include, *inter alia*, the setting of product standards on sustainability for markets in forestry, retail, agriculture, fisheries and aquaculture, amongst others (Bartley, 2007). Moreover, standard-setting requires expertise and knowledge use. Yet, often this process takes place either within companies or in private business-to-business partnerships. The role for the citizen in this process is one of 'active consumer' (Hay, 2007), yet in a situation where the number and variety of product labels and certificates is such that, even here, inequalities over expertise are paramount.

This account stands by contrast to that generated from research into changes in environmental, health and educational governing practices which identifies a trend towards a public politics of participation, citizen science, and deliberation, referred to by some as a 'qualitative turn in political practice' (Demszky & Nassehi, 2012: 173). Here, research has demonstrated in a variety of policy areas and territorial contexts the increased participation and engagement of 'lay people' and non-experts in public decision-making. Scholars point to the failure of past policies premised upon mythical understandings of a science separated from a politics and make arguments that more reflexive knowledge use 'and use of more forms of knowledge (e.g. everyday, experience, lay) ' will lead to more effective policy. In these accounts, rather than operating in a 'realm of fate' politics has been moved to a realm of public deliberation. Increasingly, a wider group of actors can have control over the contents of decision-making through the mobilisation of new forms of knowledge. Rather, than making less demands on the state, here more demands are made.

Following from these observations, the paper argues that a political sociological analysis of knowledge-use is one important means of grasping the potential paradoxes posed by these two narratives. First, whereas research on private government has examined contents of product standards and knowledges mobilised to develop them (Fouilleux, 2010), in general it has not tended to focus on political usages of knowledge as causal in shaping these transformations in the first place. Yet, if we want to grasp change in political structure and shifting equalities between actors, one way to do this is to study knowledge as a political resource (Richardson 2006) and techno-political mechanisms as inherent to change (Hecht, 2012).

Second, work on participatory governance and interdependent knowledge use is also often less concerned with the initial social construction of interests leading to requests for new types of knowledge than with evaluations of new decisional structures once in place. Indeed, many texts appear to assume that change in demand for new types of knowledge stems from a change in political structure which has already taken place (Connelly et al, 2006; Edwards and Smith, 2011). There, use of non-traditional versus traditional knowledge indicates change *against* the political order:

“Involving experience based knowledge in the course of policy is in many aspects a kind of revolution against the usual political order... not only relativizers, but questions the authoritative knowledge of experts and policy makers” (Demszky & Nassehi, 2012: 172)

In short, whereas scholars advocating the first narrative rarely control for political usages of knowledge to explain the initial choice to set private standards, equally it is rare that evaluations of participatory governance argue that shifts in knowledge use can be carried out *to protect* dominant ways of knowing and doing and, hence, to *preserve* the status quo, rather than to transform it. In both cases, we contend, a focus on the social construction of knowledge use is vital.

To demonstrate this here, we examine two cases of change in knowledge use in the name of sustainability: the first in Scottish salmon feeds and the second in EU wild capture fisheries. The first case concerns knowledge use in private collective action; the second, in public action. In each case, traditionally weak actors in regulation successfully represented as ‘holders of knowledge’ to cause ‘dilemmas’ and ‘contingency’ in pre-existent ways of governing industry to bring about change in standard and instrument setting in the name of sustainability. First, e-NGOs self-represented as ‘experts’ on assessments of sustainable fisheries to claim that supermarkets’ seafood sourcing policies were unsustainable and to make the case for new standards. Second, fishers’ representatives mobilised traditions of sustainable development to represent as ‘holders of everyday knowledge’ to contest the content of instruments setting catch limitations, hitherto based on scientific modelling of stocks. Both groups were initially successful, thus giving the impression that dominant actors, too, valued their knowledge.

However, once members of decisional arenas, the influence of e-NGOs and fishers over standard/instrument setting has been inconsistent. Rather, the acceptance of their arguments for change appears out of sync with the way in which their knowledge has subsequently been used. To explain this incongruence, this paper re-examines the social construction of interests leading to the acceptance of alternate knowledge forms by applying concepts developed within an interpretivist institutionalism. This reveals that accepting the ‘idea’ of alternate knowledge use does not automatically mean accepting recursive understandings of science’s relation to politics. In other words, both cases seem to present evidence of change in knowledge use to protect, rather than dismantle, dominant ways of governing and hence to

protect dominant actors - even if these have had to adjust their former beliefs and practices in the process. Rather than seeing the trends identified in the two narratives as in opposition therefore, ultimately these cases reveal them as two sides of the same coin.

2. *What can interpretivist institutionalism offer?*

In studies of knowledge use in instrument setting, theories of public action have to be the starting point, including assumptions about causal relations (Hall, 2003). In this paper we draw upon theories and concepts developed within (British) interpretivism (Bevir and Rhodes, 2003, 2008; Bevir, 2011) and constructivist institutionalism (Jullien and Smith, 2011; Mangenot and Rowell, 2010; Lascoumes and Le Galès, 2007; Bartley, 2007; Cleaver and Franks, 2005). Central hypotheses stemming from these approaches are that actor practices are *contingent, shifting and contested* (Bevir, 2011: 192) and that

*Governing practices can only be understood through the **beliefs and actions** of individuals **located in traditions** in response to **dilemmas** (Bevir and Rhodes, 2003: 198) and around **institutions** (Carter, 2013).*

Consequently, both sets of theory aim to uncover understandings and social meanings which actors give to their practices *and their beliefs which guide action* (Hay, 2011: 169) *and how these come about and their social construction* (Jullien and Smith, 2011: 364-369).

Actors' narratives about their beliefs and their social construction of interests can be identified from a range of materials. For this paper these included actors' written materials; i.e., public statements in the press, papers presented at conferences, scientific reports, academic articles, trade journals, interview transcripts and notes taken from situated observation of meetings. As well as conducting this documentary analysis, and *in situ* observation of meetings, semi-structured elite interviews were conducted with a range of public and private collective actors across both industries: European Commission, European Parliament, UK Government, Scottish Government, Regional Advisory Councils, English/Welsh/Northern Irish, Scottish, and SW English collective professional bodies of fishers, Fisheries Producer Organisations, fish feed manufacturers, individual fish farming companies, collective organisations of salmon farmers; inter-professional bodies of processors, e-NGOs, scientists, academics. Analysis of these materials reveals narratives which actors tell about their action and the various strategies they have undertaken to persuade others of their beliefs.

Studying actors' narratives is an important first step for addressing the gaps identified in analyses of the two trends outlined above. First, concerning the rise in private government, a question often posed is whether setting of product standards, for example, by supermarkets on sustainability, is merely *greenwashing*, or whether there has been a shift in meaning given to the buying and selling of products. Second, regarding moves towards participatory practices, a latent assumption made is that policy makers develop new consultative tools or practices of deliberation, not only because they believe that using new forms of knowledge will render public action chosen legitimate, but because they also want to *disturb the hegemonic political order* (Vrancken et al, 2010). In both cases, examining whether there has been a change in belief systems and the form which this has taken is critical. Hence, the importance of controlling for social meaning behind practices:

What sets interpretivism apart as an ontological stance is its particular understanding of the inter-subjective character of meaning and hence the social origins of the beliefs and understandings that inform our actions and the practices to which they give rise (Hay, 2011: 170).

Beyond this, the second step is to analyse change in social meanings ó to õinterpret the interpretationsö (Hay, 2011: 168). Here too, interpretivist institutionalist theory provides us with analytical concepts which can permit the analyst *to situate* change in knowledge use. This is done through the application of concepts of tradition, dilemma and institution.

The concept of tradition is the structuring part of the theory (Hay, 2011). Beliefs are not viewed as existing in a vacuum but rather as within õlarger webs of belief that given them their contentö (Bevir, 2011: 189). Key to this approach is that the way a problem is being defined in a particular policy area is not studied as disconnected from broader õwebs of meaningö (Bevir) which give it its content. Traditions can be thought of as sets of understandings which are connected and consist of theories, stories, and narratives. They are systems of knowing and are premised upon calculations of knowing, on sciences and theories. Within them, social constructions of different realities are aligned in particular ways.

Traditions are not essentialist, but produced only when acted upon, for example, in problem definition or instrumentisation (Bevir and Rhodes, 2003: 33-35). It is up to the analyst to identify traditions in each case. For example, in our case studies we identify different traditions of ñcommand and controlñ ñsustainable developmentñ ñecosystem managementñ ñgeneric marketñand ñdifferentiated marketñ

Second, to explain pivotal moments of change I use the concept of ñdilemmañ This is a potentially important element of the theory, enabling the analyst to account for contingency. Contingency is created when actors respond to dilemmas (Bevir, 2007: 336-7). Dilemmas are inter-subjectively interpreted opportunities for change. They come in the form of alternate ideas and create contingency only when they are interpreted as dilemmas by the relevant actors: õto accept a new belief is to pose a dilemma that asks questions of existing traditionsö (Rhodes, 2010: 6). Actors resolve contingencies through evoking new traditions or adapting pre-existing ones. When understood in relation to dilemmas, traditions are not considered deterministic: rather, they are conceptualised as the starting point or first influence on peoplesø actions when confronted with dilemmas (Bevir and Rhodes, 2008: 730). This is assumed to be the case even when instruments stabilise particular traditions as the means of solving problems:

õwhether an institution í is sticky depends on the beliefs the relevant people hold about its natureö (Bevir, 2007: 337:): (Lagroye, 2002).

Throughout, the role for the analyst is not to assume dilemmas, but in examining the understandings and meanings actors give to their changing practices, to ascertain when dilemmas are constructed as such by actors and with what effects. Here, and as I shall show, it is the idea of new groups of actors as ñholders of knowledgeñ which cause dilemmas and create contingency.

The third concept which I use to capture change is the ñinstitutionñ This is important, because whereas dilemmas help us locate and analyse causes of contingency, institutions enable us to grasp their resolution. Bevir and Rhodesø interpretivism has little to say about institutions, which at times they conflate with organisations. Here, we will draw upon constructivist institutionalist conceptions and study institutions as norms, rules and instruments which both govern behaviour and give it its value (Jullien and Smith, 2010; Mangenot and Rowell, 2010). Importantly for this approach, institutions are not conceptualised as naturally pragmatic solutions to problems, but as õsettlements of conflictsö (Batley 2007). In setting instruments, for example, actors stabilize meanings for their practices and this across and between different organisations (Mangenot and Rowell, 2010: 17). These can be meanings both in terms of

what people do and how they do it (Wesselink et al., 2013; Yanow, 1996). Consequently, institutions are not [just] things, but are socially embedded processes (Cleaver and Franks, 2005: 3).

Settlements stabilising certain types of instruments will thus simultaneously privilege a particular knowledge and its provider. The analyst's role therefore is not only to explore knowledge's role in contingency, but additionally to examine which knowledge is subsequently used in instrument-setting. This matters because of the important distinction as spelled out by Gilbert and Henry between the process by which actors define problems in the first instance versus the process by which actors continue to give definition to problems through instrumentisation behind the scenes (2012: 49).

3. The growth of sustainable product standards for farmed salmon: new actors, new knowledge?

Our first case study concerns the role of knowledge in choices made by (some) supermarkets in the UK to set standards for sustainably and responsibly sourced farmed salmon. These decisions result from a long campaign led by social movements, here environmental NGOs (e-NGOs), to bring about change in firms' practices, including constructing new market devices (Callon et al, 2007: 2). These campaigns are reflective of a broader adaptation in social movements' strategies, whereby contemporary activism has shifted from making demands on the state to 'shaming the corporation' (Bartley & Child, 2010: 33). Scholars analysing these changes in strategy in the first half of the 1990s for the forestry and retail industries have argued that causes of change can be located in responses to globalisation and weaknesses of international trading organisations, such as the WTO (Bartley & Child, 2010; Bartley, 2007). On the one hand, firms' supply chains have got longer, spanning different territories and including an increasing number of companies (primary producers, primary processors, secondary producers, secondary processors etc.). On the other, attempted international cooperation to regulate a 'sustainable' trade in wood and clothing products failed, whereby national governments could not collectively agree to go against WTO rules banning restrictions on trade on grounds of sustainability (Bartley, 2007).

Whereas these processes have been analysed in rich detail, they do not say much about the role of knowledge and science therein. Nor do they go on from their analyses of causes of the growth in public-private standard setting (such as the Forestry Stewardship Certificate) to examining the science and knowledge mobilised to agree the contents of standards. This, then, is the challenge for our first case study. This examines the processes behind the choices made by supermarkets in the UK (e.g Sainsbury's, Marks and Spencers) to develop a company policy on sustainably and responsibly sourced farmed salmon. On the one hand, and as we shall show, e-NGO campaigns in the mid-2000s not only created contingency through the mobilisation of the idea of 'sustainably measurable salmon' but were persuasive because e-NGOs simultaneously self-represented as 'experts' and 'holders of knowledge' necessary to be able to give legitimate content to any standards set. On the other hand, once the process of standard-setting was underway, those companies originally targeted began themselves to invest in in-house expertise, so that they too became 'holders of knowledge'. The result has been that whereas e-NGOs' constructions of meanings of 'sustainability' as eco-system management were influential as origins of standards, they have ultimately not been taken up in subsequent instrumentisation, whereby alternate meanings of 'sustainability' as an adapted 'command and control' tradition have given content to sourcing practices. What has ultimately changed thus requires close inspection.

Initial Tradition

UK salmon production is located in Scotland and consists of freshwater hatcheries and the raising of fish in net cages in freshwater and seawater lochs. Salmon farming in Scotland started about the same time as it did in Norway (first salmon produced in 1971), initially undertaken as one element of other types of farming by crofters. Its potential as a separate business was soon realised and it began to expand in the 1980s. By the early 1990s, there were many different companies competing in Scotland and a first crash was experienced. Norwegian firms began to take over ownership of Scottish companies and for some time the Scottish industry followed a similar path to the Norwegian one where it was effectively producing a commodity ó salmon.

From its early days, dominant ways for buying and selling salmon were given content by what we have called the ògeneric marketö competitive tradition. This tradition initially brought together a family of beliefs and understandings which were mutually sustaining, and gave content to firms' business models (supermarkets, feed companies and salmon producers):

Webs of beliefs	Practices
<ul style="list-style-type: none"> ➤ Beliefs about the salmon industry within a tradition of neo-classical economics centred on supply and demand considerations only øhere is the contract, there is the price, this is the quality we wantø (salmon producer rep) ➤ Salmon as a commodity øcheapest price and in direct competition with Norwayø (feed company representative) ➤ Beliefs about potential growth of industry ➤ Beliefs in mandatory corporate social responsibility ➤ Beliefs about responsibility as meaning -safeø to eat and respecting legal environmental rules øare we asking our customers to operate legally, yesø (supermarket rep) 	<ul style="list-style-type: none"> ➤ Multiple contracts between producers and supermarkets ømultiple sourcing, multiple originsø (supermarket rep) ➤ Company social and environmental reporting, as required by public rules (Williams and Aguilera, 2008) ➤ Limited labelling: e.g. on quality ➤ Limited engagement in international certification ➤ One product range ➤ Fish feeds not problematized

Generic market competitive tradition

A consistent account told to us by supermarkets, feed companies and salmon producers is that beliefs in the generic market approach to competitiveness became increasingly fragile as growth of the industry worldwide (in Norway, Chile as well as in Scotland) saturated the market with salmon. Around, 2002-2003 the price of salmon dropped, there was a market collapse and many Scottish companies went out of business. As Bartley argues for the case of forestry, it could be tempting to argue that this market collapse created øa need for new institutions [and this] simply becomes their explanation (2007: 298). However (and again as Bartley shows for forestry), this functionalist account does not provide the full picture nor explain the form of the political settlement ultimately chosen (2007: 299). For this, we must consider causes of contingency.

Contingency

Around this time, e-NGOs increasingly began targeting salmon farming on grounds of sustainability. Whereas initially the growth of aquaculture was viewed as -naturallyø sustainable and represented as a farming solution to collapsing and unsustainable wild capture fisheries, as salmon production practices intensified, environmental problems were encountered. This resulted in a critique of this industry led primarily by e-NGOs who began to problematize salmon farmingø assumption of sustainability. Different aspects of production practices were questioned, including the environmental impacts of sites (from feeds, faeces, medicines and other chemicals). However, a key issue centred upon feeds.

Several arguments were advanced by them: that øvast quantities of wild fishø were being used øto produce one farmed fishø (puresalmon.org); that this could be expressed in a numerical form as 3:1 (3kgs: 1kg); that the fish meal (FM) and fish oil (FO) used in the recipes came from fisheries whose stocks were on the point of collapse in Peru, Chile and the NE Atlantic. The audience of these attacks was initially firmsø but also the wider public as potential -consumersø

argument going on about whether should be influencing through consumption or production í [we are] working on consumption through work with retailersø (interview, WWF).

Strategies developed by e-NGOs to make their case were fundamentally ones based upon self-defining as expertsø through the commissioning, conducting and publishing of research and analysis. In the first instance, this knowledge work sought to *demonstrate* that current feed companies and supermarkets policies (if they existed) on sustainability were õmeaninglessö (interview e-NGO). For example, in 2004, a joint e-NGO commissioned (WWF, RSPB, Scottish wildlife Trust) report was published which contested methods used by feed companies and producers to judge the sustainability of salmon feeds (Huntington 2004). The e-NGOsø argument was that it was common UK practice to base sourcing choices on assessments made by the Fishmeal Information Network (FIN) Sustainability Dossier, which did not evaluate feed fisheries according to eco-system management criteria. The FIN SD based its assessment on scientific stock reports (e.g. those provided by the International Council for the Exploration of the Seas) and the presence of regulatory frameworks. E-NGOs argued that this approach, rooted instead in a æcommand and controlø tradition, missed wider eco-system impacts that would be captured through applying ecosystem methods instead, e.g. biodiversity impacts, usage of local knowledge, compliance¹. A key problem was that no feed fishery at that time had Marine Stewardship Council (MSC) certification which e-NGOs were upholding as the certificate which recognised ecosystem management: therefore, according to this logic, industry practice was necessarily un-sustainable. Indeed, the mediatization of this report was articulated in these terms.

This was further continued by the Marine Conservation Society and Greenpeace, the latter who in 2005 launched its campaign against supermarketsøseafood sourcing policies. This was directly aimed at placing companiesø sourcing policies in the public domain. Ranking UK supermarketsø sourcing seafood policies *inter alia* against MSC criteria, Greenpeace ænamed and shamedø retailers (Greenpeace, 2005). A year later, it published a follow-up report on action taken to assert that all retailers had acted to improve their sourcing policies (Greenpeace, 2006).

Critically, in the process, whereas the strategy initially was to contest policies through claims that they were without meaning, it would be the second stage of the strategy which would give rise to a dilemma. This came in the form of the idea of a æsustainably measurable salmonø This idea was not evoked in isolation. E-NGO knowledge work sought to make explicit inter-connections between their definition of a æsustainable salmonø and broader rationalities and scientific assessments which supported these ó for them, ecosystem management traditions. Further research was commissioned in which e-NGOs emerged as experts. As Borraz has argued in a different context, an expert can be defined as someone who pronounces on uncertainty, for example, by reducing it to measurable properties, and on the basis of professionally recognised qualifications (Borraz, 2008: 166). Here, e-NGOs began to employ marine biologists and former salmon farmers to take up newly created aquaculture policy officer posts and propose measurable properties for labelling a sustainable salmon.

This important element of their strategy sought to legitimize their authority to enter into exchange with retailers over their buying and selling choices:

æNGOs are not hurdles to be overcomeø æwe are informedø æwe can contribute to discussionø; ætreat us seriouslyø (e-NGO interviews)

¹ We explain the differences between these two traditions in more detail below.

This approach was not entirely new. Indeed, in the past social movements have adopted similar strategies of product testing on safety and quality of products which in turn were mobilized to influence companies' own standards (Aldridge, 1994). What is different here is that this is applied to 'sustainability testing'

Sustainable Standards

The idea of a 'sustainably measurable salmon' thus created contingency in market traditions, whereby knowledge use by e-NGOs was not only for 'issue articulation' (Demszky & Nassehi, 2012: 174), but also for entryism into discussions on instrument-setting. This contingency was resolved through aligning this idea with other beliefs in a newly emerging tradition which we refer to as 'differentiated market' competitive tradition. Critically, these new sets of belief did not completely replace the generic ones in all cases. Rather, some firms adapted their business models to embrace both. However, by mid-2005, some supermarkets, all three feed companies in Scotland and the vast majority of salmon companies² had developed new sustainable practices given content through these newly emerging understandings:

² Currently 4 large listed companies (Marine Harvest Scotland, Scottish Sea Farms, Grieg Seafood Hjaltdland, Meridian) represent almost 90% of Scottish salmon production.

Webs of belief	Practices
<p>➤ Beliefs in interconnections of commercial and production practices: “things have evolved. It is not simply, “here is the contract, there is the price, this is the quality we want” (producer rep)</p> <p>➤ Beliefs about voluntary corporate social responsibility</p> <p>“we are living and breathing (sustainability) (it is) not just a bolt on... (but) embedded... (and) fundamental” (supermarket representative)</p> <p>➤ Beliefs about the distinctiveness of aquaculture’s biophysical processes, (Mansfield, 2003).</p> <p>Idea of a sustainably measurable salmon</p>	<p>➤ Route to market determined by demonstration of sustainability as defined in private standards “fundamental single Scottish responsibly sourced” origin (supermarket rep) “quite distinct from the Norwegian case”</p> <p>➤ Differentiation of product: named suppliers and specification of recipes</p> <p>➤ Additional reporting requested beyond that demanded by legal rules</p> <p>➤ Setting of private standards: new market devices to co-ordinate buying and selling (Dubuisson-Queller, 2013)</p> <p>➤ Stakeholder engagement</p> <p>➤ Investment in in-house expertise:</p>

Differentiated market competitive tradition

This appears therefore to suggest a case of knowledge use to challenge dominant practices which has been successful. However, if we go on to look further at which knowledge is being mobilised to set the contents of instruments, then we can see that when it comes to sourcing practices, what we have is evidence of adaptation of the generic tradition rather than its fundamental replacement.

First, whereas e-NGOs were critical in constructing a dilemma, they have not been able to retain control over problem definition. In recognition not only that this was a moment for change, but that change was possible, some supermarkets set up partnerships with e-NGOs and feed companies to begin initial discussions over standards. For some NGOs, retailers have been “proactive” and have sought them out as knowledge resources (e-NGOs interviews). Partnerships were described by these same actors as being “very effective” and “working very well”.

However, other practices underway lead us to question the extent to which these are *regulatory* partnerships. For both feed companies and supermarkets do not now rely on NGO expertise. This might have explained their initial position, “turning to the “experts” as “guarantors” to compensate for their shortfall of competence and legitimacy in this area in the eyes of public opinion” (Cibele et al, 2010: 63). But, since then, they too have embarked upon an extensive knowledge work in-house to re-assert their authority over their business practices. For example, some feed companies have developed traffic-light systems to grade feed fisheries “we have a means of *expressing* sustainability” (feed company; my emphasis). In some supermarkets new posts have been created for seafood sustainability policy officers, occupied by marine biologists and former salmon farmers, who bring their own expertise. These in turn have entered into partnerships with other organisations to develop their own

ratings of feed fisheries. This work has resulted today in a situation whereby feed companies, producers and supermarkets all assert an ownership of knowledge of sustainable development of feed fisheries. They claim knowledge of origins of raw materials as well as knowledge of their harvesting practices. From this perspective, the role of NGOs is presented in different terms:

“We are always aware of what environmental NGOs are saying. But we have got our policies and we don’t always agree. ... They have got their rating system: we have got ours. Sometimes they are different. Whilst clearly we are aware of them, it doesn’t drive our sourcing credentials or our sourcing policies. We will make our mind up about it. And we have dialogues with all these organizations. And productive dialogues – quite open dialogues. Much better just to speak openly about what your policies are – we are not claiming to be perfect.” (supermarket rep).

Second, we must then consider the contents of these new standards. Clearly, knowledge work has been undertaken to give meaning to sustainability in feeds. But, what is this meaning? In business to business standards, when it comes to feeds, at least, sustainability is still defined using the FIN SD FishSource scoring system, i.e. little change. This lack of fundamental change in ways of defining sustainability of feeds is further evidenced in recent efforts on a global scale amongst NGOs and companies along the supply chain to establish an Aquaculture Stewardship Certificate for salmon. In setting standards, these actors ultimately agreed to use FishSource Scoring to grade feed fisheries. This underpins the FIN SD dossier which was being used by feed companies in the early 2000s. It was this precise practice which e-NGOs initially claimed to be ‘unsustainable’. In accepting FishSource scores, they note that they “are not a firm guide to how a fishery will perform overall [but] [n]onetheless ... do capture the main outcome-based measures of sustainability.” however, “the SC is faced with the challenge that this FishSource score does not represent ecological sustainability” (ASC Steering Committee 2010: 72, 33).

Resolution of contingency has thus produced compromises which do not indicate radical change, even if it has given rise to new tensions between eco-system scoring versus command and control assessment scoring. Yet, even though important value conflicts remain, these have been buried in de-politicization and data-building strategies which camouflage choices made.

4. The creation of new Regional Advisory Councils in regulating sea fisheries: Towards participatory science?

Whereas the previous case speaks to the narrative on private government, the second case presented in the paper speaks to narratives on new modes of participatory science and knowledge use in public action. As scholars have argued, the last five years or so have witnessed the rise in interest in participatory governing practices, accompanied by a “profusion of terminology” (Salles, 2013). One interpretation of the meaning behind these practices is that of re-defining relations between science and politics or science and society (Salles, 2013; Madsen and Noe, 2012; Corburn, 2007). This idea has its roots in work undertaken in the early 2000s to demonstrate the myth of the “linear model of expertise” (Weingart, 1999). This model conceptualised the provision of science and expertise as independent of politics, including choices over values, and had sustained they way knowledge had been used in public policy making for decades. Accordingly actors assumed three discrete stages in policy processes: a) problematisation by policymakers; b) demand for and provision of expertise c) political decision, whereby value judgments were limited to the first and third stage of the process. Numerous studies were undertaken to reject this model and demonstrate in its place recursive relations between science and politics, namely, the scientification of

politics and the politicisation of science (Beck, 2011; Metze, 2011; Dodge, 2009; Wilson and Hegland, 2005; Jasanoff, 2004; Miller and Edwards, 2001).

Critically for the purposes of this case study, an important line of argumentation made in this literature is that this re-conceptualisation of relations between science and politics matters for giving effect to sustainable development practices. This is because critiques of the linear model argue that public policy premised upon its assumptions have a tendency to fail. These include the assumption of a certainty of science (‘science as speaking truth’, Jasanoff, 2004) and the assumption of predictability (Beck, 2011; Degnbol, 2003: 32). Many go further to argue that for sustainable policy solutions to be both effective and legitimate, alternate assumptions must be made by policy-makers: namely the assumption of a potential uncertainty of science (or at least an understanding that certainty is based on consensus), the potential for several predictions; and the value of other forms of knowledge use in decision-making. Scholars have therefore called for more reflexive approaches to knowledge use in policymaking (Madsen and Noe, 2012; Jasanoff, 2010; Corburn, 2007) and have demonstrated how reflexive governing practices can enable more legitimate solutions to be found to environmental problems (Metze, 2011).

A central focus of scholarly work in this vein has been on new structures put in place and their functioning. Rarely is it that the initial choice to set up participatory structures is explored in detail (but see, Gourgues, 2010). One might even go as far as saying that there is a tendency to assume that changes in practices towards participatory science stem from changes already made by dominant actors (often public actors) concerning their assumptions and beliefs on science’s relation to politics. In this second case, our aim is to demonstrate that an examination of the social construction of interests towards change in knowledge use is vital for global assessments of the impact of this choice on dominant political orders.

At first sight, the reform of the European Union’s (EU) Common Fisheries Policy (CFP) in 2001-2004 appears as an important case where actors transformed their approach, replacing an assumption of linearity with one of recursivity in the setting up of Regional Advisory Councils (RACs), potentially new organisations for participatory science practices. Since the 1990s, the CFP has been largely regarded as a failing policy. For example, of the 124 stocks evaluated in the NE Atlantic, 25 are at Maximum Sustainable Yield (MSY); 19 are managed towards MSY; 10 are collapsing and for 70, their status is unknown. Efforts made through the political work of actors appear to be confronting the ‘linear model of expertise’. On the one hand, European Commission officials, scientists, fishers and e-NFOs are conscious of the politicisation of scientific advice; accepting of uncertainty in the models; accepting of everyday knowledge use of fishers. Yet, on the other hand, our research demonstrates that these same actors have not entirely abandoned the myth of a science independent of a politics, resulting in contradictory behaviour and inconsistent use of non-traditional knowledge. To explain these tensions, we apply our analytical grid to look closely at what caused contingency in dominant ways of governing fisheries and how this was resolved.

Dominant tradition

How we measure fishing effort – the amount of fish which can be caught – is determined following an evaluation of fish stocks. How this evaluation is carried out is constructed socially and many choices require to be made:

Do you measure the impact on a stock by stock basis and/or on interactions of stocks?

Do you just measure impacts of fishing on stocks or also examine impacts on biodiversity and ecosystems?
How often? 2 x a year; once a year? Every 2 years?
In which parts of the sea?
At what scale?
Do you control for factors other than fishing, such as Climate Change?
Do you measure economic and social impacts?
Which science should be used?

Choices over evaluation of impacts

From 1983-2002, dominant ways for assessing impacts were given content by the 'command and control' tradition. This tradition initially brought together a family of beliefs and understandings which separated science from politics (Wilson and Hegland, 2005: 21), were mutually sustaining, and gave rise to a specific set of practices:

Web of beliefs	Practices
<ul style="list-style-type: none"> ➤ Scientific beliefs on stock by stock measurement (dominant in ICES³ community of marine biologists) (Schwach et al., 2007) ➤ stock futures could be predicted through modelling (Karagiannakos, 1996) <p><i>õIn the 1950s, stock assessment by the quantitative approach was a breakthrough and became well-establishedí .could calculate and make predictions and scientists could control the whole thing. This understanding was very strongõ (scientist).</i></p> <ul style="list-style-type: none"> ➤ Professional beliefs held by European Commission officials on their legitimacy ➤ Construction of quantitative science as objective and independent important for their construction of their legitimacy as regulators (EC officials Farnell and Ellis, 1984: 114-115, 167) ➤ Rationales about fishers' behaviour derived from neoclassical economics: fishers as exploiters of the seas, fishing without care for future generations ➤ Fishermen as 'units of fishing effort' (Fishers' representative Deas, 2006) <p><i>õTheir behaviour could be assumed and modelled by scientists in closed roomsõ (scientist)</i></p>	<ul style="list-style-type: none"> • Strategies of technicisation; governing by numbers • Marine biologists in ICES modelled stocks and provided scientific advice • The European Commission and Member States negotiated every December on the basis of this advice • Fishers had no role in decisional processes: rather, it was expected that they respect the quotas • Instruments of compliance were put in place of the 'stick' approach

Command and control tradition

A consensual narrative told by scientists, fishers and managers alike is that this command and control story began to unravel in the mid-1990s. For many scientists, initial beliefs in the linear model of expertise were undermined by their experience: 'this understanding is now breaking down in society and the biologists in ICES understand this perfectly' (scientist). By the mid-1990s, they had recognised a problem with the modelling, with an average underestimation of fishing mortality by some 30% (Schwach et al., 2007: 799) and error margins for stock assessments of up to 50% (Daw and Gray, 2005: 193). One explanation was the limited scope of the measurement of impact (Daw and Gray, 2005). Another was bias in the modelling. Bias was due to an absence of data on the ways in which fishers were adapting to quotas, including numbers of fish discarded or landed illegally and not reported, as well as

³ International Council for the Exploration of the Seas.

changes in the fleet (Daw and Gray, 2005: 195: interviews). Groups of scientists within ICES began to express frustration at regulation by numbers (Wilson and Hegland 2005). An important consideration was what to do when what scientists judged to be the 'correct' advice could not be provided. This began to happen in limited situations where a prediction was based on data provided by fishers, but which for reasons of confidentiality could not be modelled transparently without sources being exposed – e.g. when fishers have provided data on discards, but request that they not be revealed as the source of such information (interviews). In instances like this, scientists were simply unable to provide any advice.

Fishers' practices during this period were increasingly anarchic. Many (although not all) were fishing over-quota and were quite frank about this on interview. For some fisheries, black landings were on a corporate scale (Moody Marine Ltd., 2010: 5.3.1). Explanations given by fishers' representatives for these practices were complex: for example, they were finding more fish in the seas than the models were suggesting and so felt justified in ignoring the quota: 'the difficulty is that we don't agree with the assessment of the quotas in the first instance' (fisher). Or they had conflicted interests over dumping quality fish, whereby landing them was seen to be both 'necessary and legitimate' (Nuttall, 2000: 113).

Conflicted feelings over catching practices were coupled with feelings of isolation from governing ones:

'Scientists did the analysis, gave the results to the Commission, Commission discussed it with Member States and Norway and a decision was made. Industry was outside that' (fisher rep).

Interactions between fishers' reps, scientists and EC officials were described by all three groups alike as confrontational:

'Screaming and shouting from both parties' – Commission 'we are the managers' versus catchers 'you don't have a clue' (EC official)

From the European Commission perspective, as well as feeling animosity from the industry, officials were increasingly aware of the problems with the scientific advice which, they felt, seriously undermined it (EC officials). Yet, tensions were apparent between units and officials over the appropriate response. Within DG MARE, many still had a strong belief in quantitative predictions (EC officials). This was the impression also from national government: 'the Commission finds it difficult to move away from those numbers, even though they might know a lot of the assumptions aren't very good' (UK official).

Summarily, during this period, actors' beliefs in linear narratives of provision of expertise as held within the command and control tradition began to shift. Science could no longer be upheld as speaking 'truth' to power (Jasanoff, 2004). Fishers' representatives referred to this process as 'system implosion'.

Contingency

During 2000-2001, the European commission launched a reform of the CFP. Importantly for our analysis, this reform was not a response to any kind of actor mobilisation around 'system implosion', but was preordained by the instruments themselves. Nonetheless, during this reform, fishers and e-NGOs contested the dominant tradition. At the end of the reform, new RACs were created – arenas bringing together stakeholders (2/3 fishers: 1/3 NGOs). RACs could provide advice on stocks and setting of fishing effort in addition to that provided by ICES and are unique in the architecture of the EU.

At the end of the process, therefore, one could imagine that alternate traditions had replaced command and control, but in fact this was not at all clear. This was because the dilemma interpreted by actors during this period, and which created contingency, was caused by the mobilisation of a new idea which enabled reform to take place, yet without needing to confront value choices head-on. This new idea was one of fishers as holders of knowledge. This idea emerged from the new way in which fishers in Scotland and England began to represent themselves: as guardians, not rogues, of the seas. This included coming clean about illegal fishing practices, which they now stated were in the past. To begin with, general claims were made: 'we've more information about what's going on out there than anyone else' (fisher). This included a 'profound understanding of fish behaviour' localized ecologies, seabed topography; 'distribution of large and small fish'; 'commercial data'. Over time, they further categorized their everyday knowledge, 'rendered [it] explicit' and put it in a form where it could be 'passed on' (Demszky & Nassehi, 2012: 176, 171). Fishers' knowledge sources include; data from reference fleets; results from joint Industry/Science Partnerships; results of Fishers' Surveys; discard data; improved landings data; data from fishers' logs and diaries; spatial data (Minutes 20.02.08 Executive Committee NSRAC). An extensive political work was carried out to communicate this idea both across fishery organisations in different Member States, but also to national governments of key MSs, MEPs and officials within the European Commission (Carter, 2013).

Importantly, social constructions of fishers as holders of knowledge were not mobilized as stand-alone beliefs. Rather, the language of persuasion connected these new meanings of fishers with statements appealing to a new set of understandings associated with good governance and sustainable development (fishers reps and their officials). Yet, this belief could not only be aligned to others within the sustainable development tradition, but could also be rendered congruent with beliefs inherent to the ecosystem management traditions. Critically, and for our story developed here, it could be translated within an *adapted* version of command and control.

Sustainable development tradition (mobilised by fishers)	Ecosystem management tradition (mobilised by e-NGOs)
<p><i>Webs of belief</i></p> <ul style="list-style-type: none"> ➤ scientific beliefs on stock by stock assessment ➤ beliefs that fisheries should be harvested at sustainable rates whilst preserving the intergenerational equity of stocks; ➤ sustaining of resource production over the long term ➤ economic beliefs that markets could be re-programmed ➤ governance beliefs that inter-relations between natural, social and economic systems demands inclusion of wide range of actors in decision-making (Crean and Wisner, 2000) <p>Fishers as holders of pertinent knowledge required to make necessary trade-offs between environmental, economic and social goals</p>	<p><i>Webs of belief</i></p> <ul style="list-style-type: none"> ➤ scientific beliefs on measuring impacts on biodiversity and not limited to stocks ➤ measurement over the long term ➤ control for factors other than fishing ➤ measure of economic and social impacts ➤ governance beliefs in "multiple lines of evidence" and "cooperation among full range of stakeholders" (MSC standards) ➤ beliefs in uncertainties of science and interdependencies of knowledge ➤ beliefs in recursive science politics relations <p>Fishers as holders of everyday knowledge which can be put in relation with scientific knowledge based on modelling</p>
<p><i>Adapted command and control tradition (held by dominant groups of officials in the European Commission and scientists within ICES)</i></p>	<p><i>Ecosystem management tradition (held by marginal officials in DG MARE and scientists within ICES)</i></p>
<p><i>Webs of belief</i></p> <ul style="list-style-type: none"> ➤ Rationalist approach with little fundamental change: <p>“How much herring is caught in the West of Scotland? ” .scientists don’t know exactly industry can and should play a major role in trying to fill the gaps in our knowledge”</p> <ul style="list-style-type: none"> ➤ Belief that now need to simply “model the human element” <p>Fishers as holders of necessary knowledge required to reduce bias in the models</p>	<p>“How can you get this qualitative stuff into our models? ..typical question. The answer is you shouldn’t try. You should use the models to explore and provide whatever information you can get out of the models, but on top of that you should have dialogue and discussion” (scientist, DG MARE)</p> <p>These kinds of understandings are more in keeping with ecosystem management tradition and reveal latent tensions within DG MARE</p>

Summarily, throughout this reform process, a new idea of fishers as holders of knowledge caused contingency. This was resolved through the creation of RACs of stakeholders as new arenas in which this knowledge could be aggregated and articulated in instrument setting. Ultimately, however, this shared recognition of fishers as holders of knowledge *per se* was

not a 'natural' pragmatic solution to a problem defined and shared by all; rather, RACs must be seen as 'political settlements' (Bartley, 2007). Nor did their creation necessarily indicate radical change against the dominant political order. Indeed, the way in which the dilemma was mediated and change brought about meant that the reform of the CFP did not tackle value judgments head on. Rather 'fishers as holders of knowledge' could be given different content from within each command and control, sustainable development or ecosystem management traditions. It would be how this knowledge was used which would determine the way in which sustainability was being constructed.

RACs – towards participatory science?

Since 2004, RACs have been created for different regions of the seas, bringing together fishers, e-NGOs/NGOs, processors. Although not members, scientists are invited and have attended meetings and Working Groups (WGs). With the creation of RACs, what changes in meanings of knowledge practices have occurred and informed by which traditions? What evidence is there of abandonment of the linear model of expertise and instead a reflexive managing of uncertainty, usages of local and situated knowledge, long-term instruments and changes in production practices? I answer these questions in respect of two RACs, the North Sea RAC (NSRAC) and the Pelagic RAC (PRAC), and from the perspective of Scottish and English experiences.

There is evidence to suggest that at times beliefs about fish stocks and fishing practices are being given content through either the sustainable development or ecosystem management traditions. First, RACs appear to be reflexively managing uncertainty. All members of RACs interviewed talked about the change in the tone of discussions as being very significant: 'Years ago I used to go to the ICES briefing and say 'that's wrong' Never say that now. Say instead 'we can review that' (fisher).

Managing uncertainties has entailed frank exchange to resolve discrepancies of the stock size and explain unaccounted for mortality: 'get away from.. fishermen 'lots of fish in the sea' and scientists 'there are no fish' (fisher). Through sharing of data and assumptions, increased transparency of both fishing and modelling practices has occurred. Fishers have shared data with scientists to facilitate local interpretation of models. They have been open about misreporting landings and discards to make sense of the graphs. Scientists too have been more transparent, explaining assumptions behind their models and prepared to run different calculations of potential impact dependent on different cause-effect scenarios. Fishers felt that, whereas in the past disagreements amongst scientists over the science had been hidden, these were more transparent now. For example, different options have been given for rebuilding of fish stocks and this over medium to long term (Interviews; minutes ExCOM PRAC, 13.07.07).

Second, managing uncertainty has also been achieved in interactions within RACs between fishers and e-NGOs to agree the contents of their advice, as well as between RACs and the EC. RAC advice must be premised upon consensus in order to persuade the EC of its content (EC official). There are many examples of consensus being achieved over instruments, e.g. setting TACs for North Sea Herring, and industry has described these interactions as valuable (Minutes ExCom NSRAC, 26/7.06.07). RACs and the EC have also established good working relationships with officials taking on board RAC advice and using commercial fleet data for policy choices (minutes ExCom PRAC, 13.02.09).

Third, long-term instruments have been created. Described as a central policy change stabilising meanings of sustainability, new Long-Term Management Plans (LTMPs) explore

ways of rebuilding stocks over a number of years towards MSY (EC official). This enables targets for stock growth to be agreed in advance and provides stability both for the stock and for the fishing and processing communities, thus avoiding annual Council decisions "completely isolated from any long term perspective" (EC official). Advising on LTMPs has formed a large element of RAC work. (Minutes ExCom NSARC 16.06.06; Minutes ExCom NSRAC, 21/22.10.10).

Fourth, changes in production practices have come about. For example, a large number of stocks managed by both RACs have since received ecosystem MSC certification, including North Sea Herring, western mackerel, Stornoway Nephrops Atlanto-Scandian herring North Sea Haddock. WWF have further publicly claimed that North Sea cod is showing signs of recovery (Fishing News, 08-01-10: 24) and ICES have recorded a decline in North Sea cod discards from 45% in 2008 to 20% in 2010.

Viewed in this light, it would seem as though alternate approaches have triumphed over command and control. Yet, I can also cite as many examples where beliefs about fish stocks or fishing practices continue to be given content through the command and control tradition. First, although the hierarchy of practices has been adjusted, it has not been radically altered. Indeed, fishers' knowledge is not consistently being used to construct integrated assessments. On the one hand, fishers have not always been forthcoming with their data. On the other hand, the "TAC machine [still] grinds away" (Schwach et al., 2007: 799), scientists are overworked and resources are not available to have the kinds of exchange necessary to conduct integrated assessments for all stocks. Tensions remain over discrepancies, whether due to survey problems or illegal fishing.

Second, managing uncertainties between fishers and e-NGOs has also proved difficult. This resulted in 2008 with e-NGOs collectively refusing to engage over TACs thus undermining RACs' positions (Minutes ExCom NSRAC, 26/7.06.07; PRAC 14.07.08). RAC relations with the EC have also been inconsistent. Indeed, RACs have reported on many occasions their frustration at neither being heard nor understood by EC officials (Minutes ExCom NSRAC, 26/7.06.07, 21/22.10.10; PRAC, 02.02.11). This has not only occurred in the setting of TACs, but also over LTMPs:

"Difficult to digest that Commission was urging RACs to engage in development of LTMPs yet also difficult to obtain access to this process" (Minutes ExCom PRAC, 14.07.08).

Fourth, the change in production practices and the success of some stocks cannot be explained solely by RAC work. Whereas instruments are set by EU bodies, they are implemented by local organisations. In Scotland, fishers' arguments about sustainable fisheries and their role within its governing practices have been joined with Scottish Government interests to replace command and control practices at home. This has given rise to new policy instruments of Scottish Conservation Credits Scheme and Catch Quota System, as well as work to re-programme markets, all of which fishers claim as critical in explaining success in MSC certification (interviews; Carter, 2013 under review).

In summary, as with the first case of salmon feed standard setting, meanings which guide action in governing practices post-RACs are multiple, drawn from three traditions of command and control, sustainable development and ecosystem management. This creates new tensions, especially since command and control versus ecosystem management are competing traditions, both over values and hierarchy of actors. Yet, for both cases, which tradition ultimately wins out in the resolution of these daily conflicts is often obscured through actor

appeals to 'sustainability' a belief which all can claim to practice, yet which is given very different content depending on how it articulates with each tradition.

5. Conclusions

This paper has argued that a focus on knowledge use is vital for any assessment of the changing polity to be undertaken. For, whereas trends towards a private de-politicizing government can be seen to be in contradistinction with those towards participatory practices, in the cases presented here at least, they appear as two sides of the same coin or two dimensions of the same problem.

This is demonstrated here by making a shift on cleavages dividing politics. In many works, political conflict is often reduced to that between groups of actors or organisations viewed as singular entities (the European Commission versus the Member States; fishers versus scientists; supermarkets versus e-NGOs). Whereas of course these kinds of conflicts exist, seeing the world via traditions as organising ideational structures enables analysis to identify other cleavages at work and which cross-cut organisations and communities of actors. In this paper, this analysis enables us to demonstrate and explain the continued dominance of command and control beliefs in fisheries assessment, all be they adapted, and this across two industries of fisheries and aquaculture. Rather than going against dominant political order, usages of knowledge have been deployed politically to protect it. To put it another way, change in knowledge use has not necessarily brought about a re-ordering of actors and hierarchies and hence a re-shaping of inequalities or at least not systematically.

This of course is not to imply that nothing has changed. As is also clear from these cases, a new type of politics has been put in motion between different traditions, including over values. 'Sustainability' and its meaning is the primary struggle for both industries. However, the existence of sustainability and participatory practices does not imply that recursive relationships between science and politics have also been recognised.

Much more needs to be done to push these arguments further. In particular, the study would benefit from an analysis of the role of academics and their respective disciplinary contributions in these processes (as carried out for example by Roger, 2010 for wine or Bouleau, 2013, for water landscapes).

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