

An Industry in Crisis: Risk, Reflexivity, Sub-politics and Accountability Processes in Salmon Farming.

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Abstract

This paper draws upon an arena study on the accounting and accountability processes used within a business sector, under intense public and regulatory scrutiny in terms of its social, economic and ecological risks. Georgakopoulos and Thomson (2004, 2005) report on an absence of environmental accounting within the salmon farming organizations for management planning and control processes. This paper extends this analysis by attempting to theorise the social and environmental accounting observed by these organizations discharging these accountability duties using insights from the risk society literature.

The interviews and documentary analysis revealed the existence of an active accountability network. However, Social and Environmental Accounting techniques did not feature in the engagement processes. We observed the existence of fragmented accountability networks, and evidence of a struggle for domination of a techno-scientific accountability process. Within these discourses, business and cost issues were evident, but they were not formally quantified or systematically integrated. We find that the accountability processes observed in our arena study, were consistent with Beck's (and others) analysis of reflexive modernity and the Risk Society Thesis

This paper by evaluating accounting and accountability processes within a specific context, demonstrates the importance of locating social and environmental accounting processes within wider accountability discourses. These societal accountability discourses extend beyond social and environmental as well as conventional accounting practices. It is suggested that all accounting practices should become more reflexive in nature if they are to remain relevant in these wider societal accountability discourses.

INTRODUCTION

This paper reports on an arena study into social, environmental accounting and accountability practices associated with Scottish Salmon Farming. We attempt to map out the governance structures (both political and sub-political), the accountability mechanisms, the perceived risks of salmon farming and those risks that are regarded as 'real' or 'legitimate' by the different actors in this arena. Georgakopoulos and Thomson (2004, 2005) report an absence of social and environmental accounting within the salmon farming sector, however this absence, we will argue, does not necessarily imply an absence of social, environmental and economic accountability.

Our empirical findings tend to support the emerging Risk Society thesis, initially developed by Beck (1992a). In this paper we present a model to help understand in a more systemic fashion the variety and diversity of accountability mechanisms found in practice. The model locates accountability processes within an interdependent, co-evolving set of relationships between risk perceptions (see for example Lupton, 1999, The Royal Society 1992, National Research Council 1989), risk legitimisation mechanisms (see for example Anshen, 1980; Held, 1996, Gray et al, 1996, Lindblom, 1994), governance structures and institutions (see for example Foucault 1984, 1988, 1991, Ewald 1991, Gordon 1991, Kendall and Wickham 1992, Castel 1991) . Underpinning this model is the importance of reflexivity (see for example Beck 1992a, b, 1994a, b, 1995, 1996, Beck et al, 1994, and Giddens 1990, 1991, 1994a, b, 2002) between the different elements. Without reflexivity, in which accountability mechanisms are critical, the hazards associated with industrial modernity to our eco-system, society and eventually economic well-being will be legitimated and allowed to proliferate. Our analysis of this specific sector indicates a lack of reflexivity with fragmented political and non-political 'single-issue' governance structures, fragmented 'single-issue' accountability processes, polarised positions on the 'legitimate' risks of salmon farming, lack of accountability between different governance institutions and a contested discourse between different coalitions of actors. The governance assemblage at the time of this study suggests that the political governance structures are being used to legitimate current practices from the 'irrational' criticisms of different protest groups. Sub-political protest groups in an attempt to 'rationalise' their campaigns are currently adopting the techno-scientific legitimisation mechanisms of the political institutions.

What we observe is not the absence of accountability, but rather a rich, diverse and comprehensive set of social, environmental and economic accounts. Whilst not all perceived risks are accounted for, the current information set has considerable potential for an emergent, holistic accounting of the social and environmental costs (and benefits) of salmon farming. The salmon farmers are providing numerous accounts of their actions, however these accounts are sent to largely unaccountable political institutions. These institutions, in theory anyway, are accountable in that they are governed by representative democratic bodies, yet in practice fall far short of providing full and transparent accounts of their actions.

Each institution (political and sub-political) has its own privileged definition of 'legitimate' risks. Their 'legitimate' risk perception is linked with their specific accountability demands of the salmon farmers. These restricted accounts reinforce their legitimated risk perceptions, rather than reflexively critique them. The absence of a holistic, sustainable, stakeholder, who is possibly a mythical creation, and the unreflexive relationship between governing institutions means that

salmon farming accountability processes are extremely problematic in governing the risks associated with this industry.

Crudely, the different institutions can be characterised as ‘single-issue’ demanding partial and specific ‘accounts’ of the salmon farmers practices whilst prescribing specific ‘solutions’ to minimise or eliminate specific ‘risks’. No meta-governance process (reflexivity) exists that could integrate or synthesise these specific ‘accounts’, ‘solutions’ or ‘risks’.

The lack of any significant ‘meta-accountability’ processes allows the political governance institutions, in coalition with some sub-political governance institutions and elements of the media to operate as legitimating structures protecting those they are charged with governing, rather than reducing the farmers’ potential harm to the eco-system and societal groupings.

This paper will consist of four sections. The next section will briefly describe the research methods used to gather and interpret the empirical evidence. This will be followed by an overview of the literature used in this paper and the presentation of the model that will be used to describe and evaluate the evidence gathered. The next section will then present our findings in terms of the risk perceptions associated with salmon farming, the political and sub-political governance institutions, the accountability practices observed and map out the alignments and relationships observed in this study. This last section will evaluate implications of these findings, and an assessment of the contribution and possible implications of this study.

RESEARCH METHODS.

The underlying structure of this project is that of an arena study (Renn 1992). An arena approach was chosen as it provides a frame to capture the key accountability relationships and present data gathered from a variety of different sources. The arena approach was an appropriate research device given our definition of risk. Our conceptualization of risk incorporates a variety of ways of understanding and managing risk¹, in particularly the recognition of risk as a real and cognitive phenomenon emerging from a complex set of social and institutional discourses. The arena model does not attempt to integrate these different discourses, but rather allows their representation, by focusing on the debates over risk issues and the behavior of different actors. Integrating these perspectives is a necessary and difficult part of this project but we feel it would be less useful to mix them together without first specifying each concept and creating a common network of linkages between them.

The concept of arena policies is not an integrative framework that combines scientific, individual, social and institutional responses to risks. It is a theoretical framework based on the political concept of arena policies and the basic structure of the resource mobilisation theory. Its strength is its focus on political debates about risk issues and the behaviour of each actor in such debates.

The concept underpinning an arena approach is that social groups in a political arena try to maximise their opportunity to influence the outcome of the collective decision process by

¹ (See for example Lash 1993, 1994a, b, 2000, Lash & Wynne 1992, Wynne 1989, 1992, 1996, Slovic 1992, Slovic et al 1980, Tversky and Kahneman 1973, Kahneman and Tversky 1971, 1972, 1979)

mobilising social resources. The outcome however, is determined not only by individual or group actions but also by the structural arena rules and the interaction effects among the competing groups. This theory is based on the assumption that individuals and organisations can influence the policy process only if they have sufficient resources available to pursue their goals. The political organisation of an arena and the external effects of each group's actions on another group's actions constitute structural constraints that make the outcome of an arena struggle often incompatible with the evidence and /or values of any participating group.

An arena is a metaphor to describe the symbolic location² of political actions that influence collective decisions or policies. The arena model incorporates only those actions of individual or social groups that are intended to influence collective decisions or policies. Intentional behaviour of individuals are conceptualised as inputs into the arena rather than as elements of the model.

Within a policy field several arenas may exist in which actors have to be present in order to influence the policy process. These arenas may be closely related and share actors. For this reason they are referred as stages within a single arena. That social groups in an arena intend to influence policies is the only assumption in terms of making inferences about intentions, motivations, goals, purposes, or hidden, or overt motives of social actors. Under this assumption success and failure of group activities can be measured by the amount of influence that the specific group has been able to exert on the resulting decision(s) or policies. (Renn 1992).

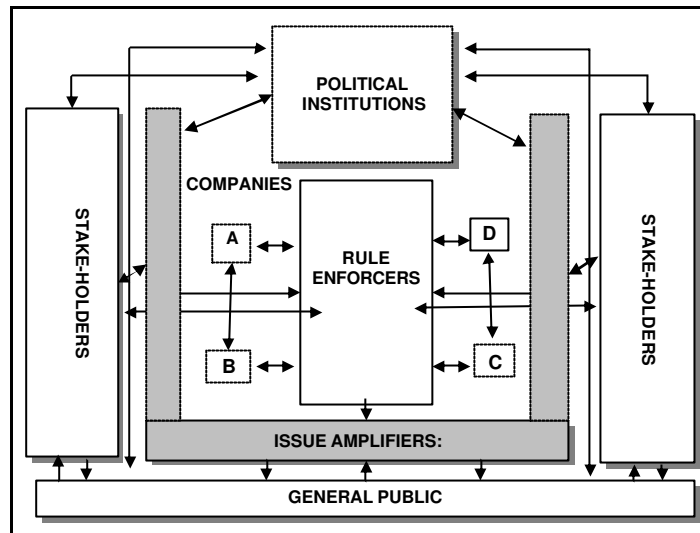
The central stage of the arena (see figure 1) is occupied by the groups in society that seek to influence policy. Some groups focus on several issues at once and are involved in multiple arenas, whilst others focus only on one issue in a single arena. Each arena is characterised by a set of rules: formal rules that are coded and monitored by a rule enforcement agency; and informal rules that are learned and developed in the process of interactions among the actors. In most cases the rules are external constraints for each single actor and several actors may join forces to change the rules³ even if they disagree on the substance of the issue.

The rule enforcement agency ensures that the actors abide by the formal rules and often coordinates the process of interaction and negotiation. In many arenas the rule enforcement agency is also the ultimate decision maker. In this case all actors try to make their claims known to the decision makers and to convince them by arguments or through public pressure to adopt their viewpoint.

Figure 1 – General Arena Model

² Symbolic location means that arenas are neither geographic entities nor organisational systems. They describe the political actions of all social actors involved in a specific issue. The arena concept attempts to explain the process of policy formulation and enforcement in a specific policy field. Its focus is on the meso-level of society rather than on the individual (micro-level) or on societal behaviour as a whole (macro-level). It reflects the segmentation of society into different policy systems that interact with each other but still preserve their autonomy (Renn, 1992, pp 181).

³ Formal rules require institutional actions to change whereas informal changes occur as a result of trial and error and may change according to whether or not rule bending is penalised (Renn, 1992, pp 182).



Issue amplifiers are the professional “theatre critics” who observe the actions on stage, communicate with the principal actors, interpret their findings, and report them to the audience. Through this communication process they influence the allocation of resources and the effectiveness of each resource to mobilise public support within the arena. The audience consists of other social groups who may be enticed to enter the arena and individuals who process the information and may feel motivated to show their support or displeasure with one or several actors or the arena as a whole. Part of the political process is to mobilise social support by other social actors and to influence public opinion.

The arena concept does not picture the actions as actors performing role assignments as the theatre stage metaphor does (Palmlund, 1992). Arenas provide actors with the opportunity to direct their claims to the decision makers and thus to influence the policy process. Actors may use innovative approaches to policy-making or use traditional channels of lobbying. Arenas are regulated by norms and rules, which limit the range of potential options. Actors may decide to ignore some of the rules if they feel that public support will not suffer and if the rule enforcement agency is not powerful enough to impose penalties on actors who violate the rules.

The outcome of the arena process is undetermined. Various actors may play out different strategies that interact with each other and produce synergistic effects. Strategic maneuvering may even result in an undesired outcome that does not reflect the stated goal of any actor and may be sub-optimal for all participants. On the other hand, interactions in the arena may change the arena rules. Novel forms of political actions may evolve as actors experience the boundaries of tolerance for limited rule violations. Those arena characteristics limit its use for predictions but do not compromise its value for explanation and policy analysis (Renn, 1992, pp 182 – 184).

In modern democratic societies actors need more than one resource to be successful in an arena. All actors, including the rule enforcement agency need a minimal reservoir of social resources in order to be successful in a given arena. These social resources include money, power, social influence, value commitment and evidence. These social resources can be used to gain the attention and support of the general public, to influence the arena rules, and to score in

competition with the other actors. Resources help actors to be more influential. Resources may be the ultimate goals of an actor, but more likely they are the means by which actors can accomplish their specific intentions.

This empirical dimension of this project was based on an arena model (Renn 1992). An arena approach was chosen as it provides a frame to capture the key accountability relationships and present data gathered from a variety of different sources from a complex set of social and institutional discourses. The arena model does not attempt to integrate these different discourses, but rather allows their representation, by focusing on the debates over key issues and the behavior of different actors. The concept of arena policies is not an integrative framework that combines scientific, individual, social and institutional responses. The theoretical framework of an arena is based around the notion of political policy debates and resource mobilisation theory.

Empirical data was gathered on each of the key elements of the arena model. The nature of each elements meant that different research methods were used to gather information to provide as rich as possible description of salmon farming. Where primary data was collected the strategy was to capture information on each actor's position and on their perception and opinions on the other actors. This allowed us to gather information and triangulate their 'self-description' and others external view of these actors. The preferred mode of data gathering was by semi-structured interviews with farmers, stakeholders, political institutions, stakeholder groups and rule-enforcers. Within these groups we sought to get a range of different opinions. For example, we included a number of salmon farmers who were involved (and had pioneered the development of) in organic salmon production methods. When selecting stakeholder groups we included groups who were known to oppose salmon farming as well as groups who were in favour or actively promoted salmon farming. Similarly with rule enforcers, we interviewed statutory rule enforcers, such as statutory environmental protection agencies as well as voluntary product certification bodies.

Where it was not possible to arrange interviews, due to access, confidentiality issues and unavailability of people to interview this was augmented by a postal survey of salmon farmers⁴, documentary evaluation of policy documents, government statistics, official government reports and reports by stakeholder groups or related institutions. These documents were analysed using the same coding structure as used in analysing the interview data, using O'Dwyer's (2004) framework of interview data analysis. In addition, data was gathered on the media representation of salmon farming of the main Scottish newspapers and a survey of salmon prices. We did not undertake any analysis of the perspective of the general public, which is a limitation of this study. One rationale for this was that as the study unfolded, the general public was largely absent from the debate, with many of the institutions claiming to represent the 'general public'. Unsurprisingly the 'general public' when referred to in interviews or reports were used to legitimate the position of the different institutions.

Figure 4 represents the participants in this project, in terms of their role in the arena model and the mode of gathering information. Two main methods were used to select the research participants. The first was a postal survey, which as well as capturing baseline data about the sector, included a request for volunteers to participate in interviews. The second method was a

⁴ 120 questionnaires were sent out, however the response rate was quite low (13.3%), despite several follow ups.

networking approach where in the interviews with these original volunteers, we requested information on who else to talk to. Pilot interviews were held with four fish farms and the Scottish Salmon Growers Association (SSGA). From these pilot interviews, leads were identified of other possible companies to would participate in the project. Several follow ups were made to secure those interviews, resulting in 10 companies (including SSGA) participating in the interview stage. Therefore, it is important to note that these companies were self-selecting and biased towards a specific geographic region and therefore not wholly representative of the whole sector. In a similar fashion key stakeholder organisations were identified from the interviews with the salmon farmers. These organisations were contacted and interviews were arranged. For a comprehensive list of the organisations involved in this study see appendix 1.

All the interviews were taken at the work place and for all of the salmon farming companies, site visits also took place. All the interviews, with the exception of two⁵, were recorded and lasted between forty five minutes to one and a half hours. Additional material was also gathered in the form of photographs. Summary notes were written up as soon as feasible after the end of each interview. The interviewees were friendly and supportive, even in the cases when the interviews were not pre-arranged. Given the geographical remoteness of the salmon farms and time taken to get there in a number of cases the researchers simply turned up, provided a brief summary of the research and asked if anyone would be available for interview.

Interview and documentary analysis

In analyzing the empirical evidence we adapted O' Dwyer (2004) practical, non-prescriptive process of analysis to transform data sets emanating from interviews and documents into a well – founded, coherent and illuminating narrative. Briefly our data analysis involved three linked sub-processes of data reduction, data display, and data interpretation (Huberman et al, 1994, pp 429). These processes occurred before data collection, during study design and planning; during data collection as interim and early analyses were carried out; and after data collection during the final project write-up.

Interviews were converted into transcripts and initially coded based on our initial research questions and three different conceptual lenses: a) what is the risk construction of each of the interviewed parties. What is risk for the salmon farmers, what it means for the rest of the involved parties – stakeholders, what it means/meant for the organic producers; b) how decisions are made in the salmon farming industry and how risk communication affects/has affected that decision making process of the specific fish farmers to move into organic salmon production⁶; and c) what is the communication route/relationship between the industry and the rest of the stakeholders and what are the messages conveyed forth and back.

⁵ There were only two exceptions. In the department of law of the Regional Council, one interviewee refused to be recorded and notes had to be taken. A number of questions were avoided as unwanted disclosure information and the interview only lasted for 15 minutes. Later it was found that the salmon producers did not enjoy good relationships with the department. The second case involved SEERAD's Analytical Services Division. The interview there was rather opportunistic and took place while waiting for an interview from the Fisheries Group. The interviewee was responsible for the Scottish Sea farming industry and provided valuable information on the policies of SEERAD regarding aquaculture. The Interview was not recorded and was more of an informal friendly discussion. It lasted for about twenty minutes and notes were taken.

⁶ As addressed in Georgakopoulos and Thomson (2004, 2005).

The text analysis was made through a *code- and- retrieve process* (Richards and Richards, 1994). In the first level of analysis variables were identified for each of the respective themes and the interview transcripts were initially coded according to their dominant meaning. These coded extracts were input into data tables and re-grouped according to these initial codes. This allowed the researcher to store and retrieve key statements of each interview and relevant quotes from documents.

The next step involved the collapsing of the previously identified and grouped variables for the categories of a) risk construction; and b) communication route/relationship process, and messages conveyed, into more general themes. This set of thematic codes was used as framework for analysis of the relevant documents, including: the Strategic Framework for Scottish Aquaculture (Scottish Executive 2003); the one that got away: marine salmon farming in Scotland (Friends of the Earth Scotland, 2001); and SNH's vision of sustainable marine aquaculture in Scotland (SNH 2002). These reports were therefore reviewed via the same conceptual lens and codes as the interviews.

The third level of analysis, involved the preparation of cognitive maps (Kitchin and Friendschub, 2000), presenting the risks issues and communication patterns allowing a systemic or arena model of the salmon sector. It is this level of analysis which we report upon in this paper. These cognitive maps allowed a systemic representation of the risk construction, risk communication, and relationships between the actors to be constructed. This perspective allows us to examine and evaluate the different accountability mechanisms operating within this arena. Of particular interest was the possibility of diversity in legitimate risks of different actors, communication routes, communication methods, and communication messages.

LITERATURE REVIEW.

The theoretical model used in this paper draws upon the emerging research literature on risk. Risk has been subject to a sustained and interdisciplinary investigation as to its underlying nature (see for example The Royal Society 1992), defining and measuring risk (Krimsky 1992, Slovic 1992, Slovic et al 1980) appropriate modes of governance (Foucault 1984, 1988, 1991, Ewald 1991, Gordon 1991, Kendall and Wickham 1992, Castel 1991, Giddens 1990, 1991, 1994a, b, 2002) impact of institutional structures (Beck 1992a, b, 1994a, b, 1995, 1996, Beck et al, 1994) and its sociological, psychological and cultural significance (Lash 1993, 1994a, b, 2000, Lash & Wynne 1992, Wynne 1989, 1992, 1996, Douglas and Wildavsky 1982, Thompson 1980, Thompson and Wildavsky 1982, Thompson et al 1990, Wildavsky 1994, Wildavsky and Dake 1990). It is beyond the scope of this paper to provide a comprehensive review of this risk literature. In the context of this paper, the key aspects of this literature relate to the social construction of risk perceptions (Adam and Van Loon 2000, Adams 1995), risk legitimization processes (Beck 1992a), risk governance institutions and practices, risk communication mechanisms (Royal Society 1992, Renn 1992, Palmlund 1992, Kasperson 1992, Kasperson et al, 1988, Kates and Kasperson, 1983), political and sub-political risk governance processes.

Drawing upon the *risk society* thesis (as developed by Beck 1992a, b, 1994a, b, 1995, 1996, Beck et al 1994) risks can be seen to be both real and epistemological, emerging from interactions between political and sub-political discourses. The same 'things' are regarded as legitimate and irrational by different groups and individuals in society. The *risk society* is characterized by disputes over the true nature of risks and hazards and appropriate methods of their governance. Broadly speaking in the *risk society*, political institutions (governments, local authorities, civil service, public sector organizations and agencies) have been captured by scientism, whereby risks have to be proved to be true by modern scientific methodologies. Unless risks can be confirmed by scientific investigations, they, *de facto*, do not exist. If they do not exist, then no action need be taken to reduce, eliminate or govern them.

It is only if a risk is classified as legitimate that regulations are established or amended, political institutions set up and tasked with managing the risk. Managing these risks involves, the isolation of facts, normalization and surveillance. This process tends to reify certain risks, granting those risks power in discourses and empowering those that govern them (Habermas 1985 in Beck 1992a page 189).

Risk society theorists regard contemporary western society as an industrial modernity, a state which has been subject to a major redistribution of political power. The traditional model of modernity, with its strong political centre regulating the non-political domains of economics, science and technology and citizens private lives has broken down. The political centre has become de-politicised, due to the epistemological dominance of techno-scientific rationality. Political decisions now require to be legitimated and justified by 'high quality' scientific evidence. Political decisions are pre-fabricated by expert influence groups who provide their own scientific evidence (Beck 1992a, p188). However, industrial scientism is flawed in its ability to prove risks, hazards and harm actually exist. This inability allows these risks, hazards and harm not only to continue but actually to legitimize the status quo and its development trajectory further promulgating future risk, hazards and harm.

Political risk governance is therefore restricted to a small subset of risks that are capable of reliable scientific measurement with proven causal connections to harm, which, in turn, are restricted to harm that only exist if they too can be measured according to scientific principles. The impact of these risks, in terms of their actual impact on human and ecological systems, is not the determining factor of political risk governance. For example, the current debate over the rebirth of nuclear power station building program in the UK is justified by the measurable benefits in the reduction of CO² emissions allegedly reducing global warming and the as yet 'unproven' catastrophic hazards of nuclear power production are downplayed. In the *risk society* risks are causally denied by the application of inappropriate scientific rationality.

Another consequence of basing political risk governance on scientific methods is that those legitimated risks are governed in a fragmented and incoherent fashion, analogous to the fragmented specialization trajectory of modern science. Beck sums this process as providing a blank cheque to economic and technological developments to poison and damage our environment and society (Beck 1992a, p65).

However, the risk society is also characterized by the politicization of the previously non-political, what is referred to as sub-political movements. Sub-politics is the application of the

basic principles of modernity that empower the citizen to participate in societal governance, freedom of thought and expression, a free press and an independent judiciary. As the impact of class inequity and industrial and agricultural pollution become more visible to citizens⁷, combined with the political denial of their existence, trust and respect for the political centre breaks down. In this space, groups of citizens emerged challenging the supremacy and legitimacy of the existing political governance structures, creating what Habermas (1985, in Beck 1992a p.190) describes as the *new obscurity*.

Within this *new obscurity*, there is a weakening of social structures, unpredictability in voter behaviour, the mobilization of citizens, single issue protests and wider social movements attempting to affect change. Industrial modernity creates the conditions that permit its own demystification, in particular the growing recognition that representative democracy operates as a democratic dictatorship. This growing recognition has led to a challenging of the powers of previously trusted political institutions by citizens simply exercising their civil rights. The political centre (which has been largely de-politicised) has lost power to these civil groups, particularly on issues of politically and scientifically denied risks, that these citizens have been subjected too and have experienced real harm from. These sub-political movements, which tend to be single-issue (as fragmented as political risk governance institutions), gained success in legitimating, previously dismissed, risks and getting them subject to regulation, or banned altogether. This visible success led to a snowballing of sub-political movements. Perhaps the most visible sub-political campaign to date was the legitimating of the risks of global climate change and the establishment of global mechanisms to govern and reduce these risks. In accordance with the *risk society* thesis, various countries are refusing to comply with the Kyoto protocol, based on a denial of the legitimacy of the science underpinning the global climate change hypothesis.

The subpolitical movement has had and continues to play a critical role in societal governance, but it has certain characteristics that are worthy of note. The rise of the number and power of these protest groups is not matched by their democratic accountability. Sub-political institutions tend to be structured on the private corporate model with their restricted duties of accountability. Sub-political groups are extremely heterogeneous, motivated by diverse aims and value sets. Sub-political does not mean political subversion against those in power. Sub-politics is the expression of basic human rights of the citizen for freedom of thought, expression and speech. Sub-politics does not imply a coherent or shared ideology. It is wrong to think of sub-political movements as automatically opposed to economic-technological developments, the exploitation of natural and/or human resources. It is the case that many of the most visible sub-political groups have been opposed to the notion that techno-scientific developments necessarily equate to social benefit, and have made considerable impacts in obstructing and inhibiting this development trajectory, but not all.

There are a number of sub-political groups that act in the interests of economic growth, technological development and scientifically determined progress, and these groups use the same mechanisms (freedom of the press and the judicial system) to further their chosen aims and objectives. Many of these groups have also been highly successful in lobbying political institutions, working in collaboration of these institutions providing evidence and support for

⁷Beck (1992a, p 53) refers to this as the 'the spell of the invisibility of risk can be broken by personal experiences'.

oppressive and societally damaging activities or creating scientific ambiguity to oppose or neutralize other sub-political groups.

In general the sub-political movement has created a number of important changes to governance in industrial modernity. It has largely debunked the notion of the ‘best and only solution’ to problems in the increasing complexity of late modernity. They have challenged the ‘wise and trusted’ image of political institutions and created the notion that solutions should be a process of collective actions that observe citizens democratic rights. Sub-political movements have created systems of extra-parliamentary monitoring and surveillance of potentially everything and everyone. Sub-politics creates sub-accountability processes to challenge the dominance of the political and corporate accounts. It is argued that these sub-accounting processes create the possibility of a reflexive governance structure by enabling a creative and productive dialogic engagement between the political and sub-political movements. Reflexivity, it is argued, is the process that should bring about a rebalancing of power along the basic principles of modernity.

Figure 2 – Overview of Emergent Risk Process



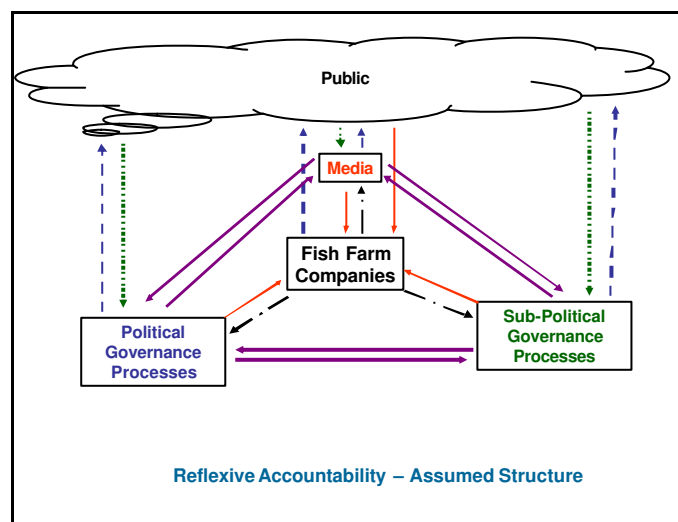
Risks can therefore be seen as locally and temporally emergent from these dialogic engagements (see Figure 2). At any point in time there will be differences in what are ‘real’ risks, methods of dealing with these risks and methods of adequately accounting for and communicating these risks to others. Risks at any point in time will be shaped by reflexively related factors such as political risk legitimisation processes, political governance institutions and processes, political accountability mechanisms, sub-political risk legitimisation processes, sub-political governance institutions and processes, and sub-political accountability mechanisms. According to reflexive modernists (and some reflexive post modernists) the effective governance of risks depends on the inter-relationships between these different elements and the ability to transcend these fragmented legitimate risks and to synthesise new transdisciplinary legitimate risks. These transdisciplinary risks will then form the basis for constructing appropriate governance structures and

accountability mechanisms. Accountability mechanisms are crucial in maintaining and evolving these reflexively determined risks as they are key to the re/de/construction of risk perceptions and critical to the pedagogic process Beck (1992a p. 181) stresses as essential for reflexive modernity.

Drawing upon this short review of this literature, we suggest that examining accountability mechanisms offers a valuable insight into the legitimate risks of any (sub)political institution, and their modes of governance. Understanding accountability processes will allow the evaluation of the extent to which any system is reflexive. Who accounts to whom, what they account, how the account for it, how their accounts are received by others and how they perceive others accounts of the same phenomena, are important variables in an empirical study of accountability and risk governance.

Figure 3 illustrates the nature of accountability links that would be evidence of a reflexive process. The absence of any of these links would be detrimental and indicate a potentially ineffective risk governance assemblage. Ineffective, or unreflexive, risk governance could legitimate the perpetuation of ecological or social harm and create conditions for social conflict and disharmony. It should be noted that Figure 3 is over simplistic as it presents political institutions, sub-political institutions, corporations, the media and the general public as coherent, homogeneous groups. Similar nested communication links within the nodes of the political institutions, sub-political institutions, corporations, the media and the general public would also be required.

Figure 3 – Reflexive Accountability Communication Links



The risk society inspired literature would predict a number of observable empirical occurrences. These would include variations in the perceptions of risks within and between political, sub-political and business organizations, the denial of certain risk perspectives, fragmented, single issue approaches to risk governance in both the political and sub-political domains, the absence

of accountability processes or partial fragmented accounts of specific activities and the dominant assemblage to be a coalition of sub-political, political institutions legitimating the economic-technological development of business. It may also be possible to observe limited consensus and the emergence of proto-reflexivity of certain less controversial risks.

In the next section we will present some of our findings from our arena based investigation into salmon farming, an industry in crisis. These findings will include the risk perceptions of different groups, risk legitimisation debates, key sub-political and political actors and their assemblage and observed accountability mechanisms and the overall configuration of these relationships.

EMPIRICAL EVIDENCE.

Given the quantity and complexity of the evidence gathered in this study, this paper will not be able to discuss all of our data. The perspective adopted in this paper is a systemic overview, rather than detailed micro-analysis. This micro level will hopefully be the subject of subsequent papers on this topic. The high level of resolution adopted in this paper necessarily simplifies some of the detailed empirics collected. However, in a few instances we will present some of these micro-details to illustrate some of the issues arising from our systemic cut of the data.

Figure 4 – Arena Based Map of Participants

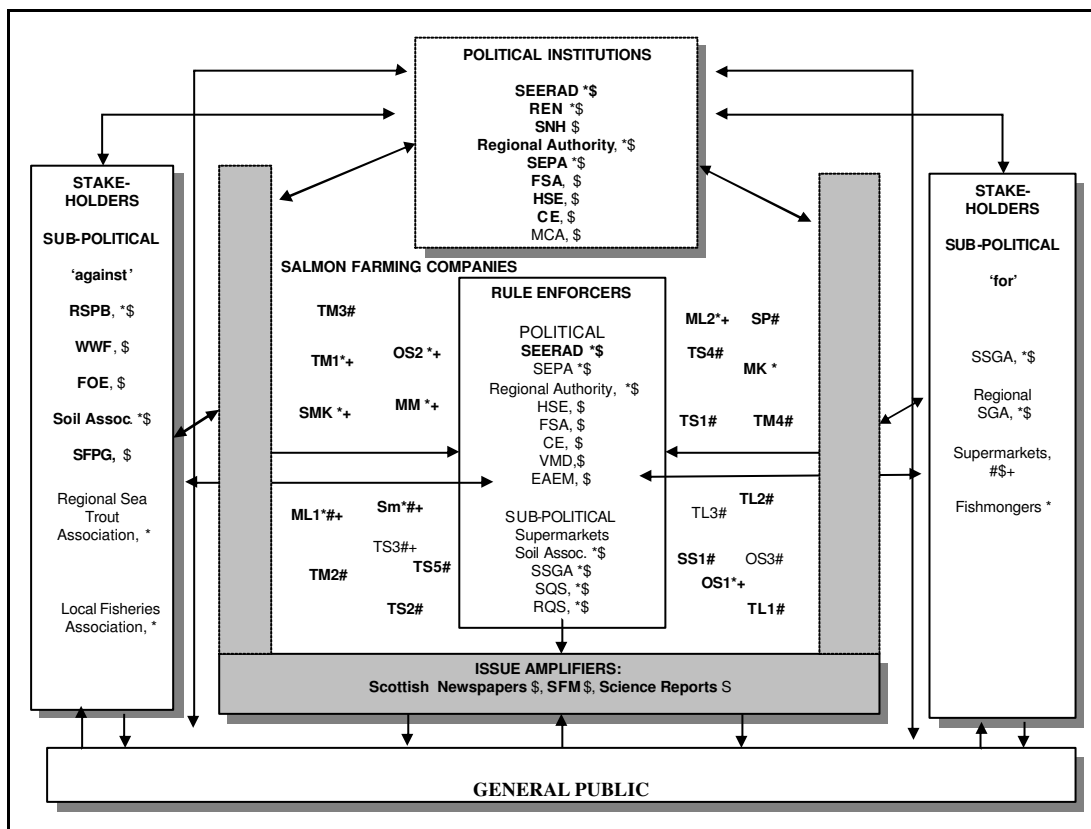


Figure 4 represents the participants of the study classified by their arena-roles. Figure 4 also indicates the type of information gathered. The symbols on the diagram represent the main mode of gathering empirical data. Table 1 provides defines each of the symbols. Note that some of the participants played multiple roles in the arena and in some cases multiple methods were used with some participants.

Table 1 – Key to Symbols used in Figure 4

*	Interview
\$	Documentary Analysis
#	Postal Survey
+	External Site Visits

Brief details of each of the actors involved in this study listed in appendix 1.

As mentioned earlier Figure 4 represents the main actors and their respective roles in our modified⁸ arena model of salmon farming. All of the stakeholders can be classified as sub-political movements and vary in terms of their stance on the desirability of the salmon farming. From figure 4 a number of issues are worthy of note. Firstly, the large number of different political institutions involved in governing salmon farming. Responsibility for specific aspects of salmon farming is spread over a range of different political and sub-political institutions. There does not seem to be a single institution or mechanism that integrates or views salmon farming holistically. Secondly, the large number of different rule enforcers and in particular the number of sub-political groups operating in what is traditionally a function of political institutions. The Soil Association, SSGA, SQS, RQS and supermarkets are sub-political, but they are accepted as legitimate enforcers and standard setters for the industry.

However, these sub-political groups are involved with voluntary rule enforcement, i.e. regimes which the salmon farmers choose to submit to. The main stated justification for submitting to these controls is the marketing and price advantages associated with compliance and consequent product certification. These regimes are much more stringent and prescriptive than political regimes, but they do confer a visible differentiation of their fish and attracts a premium price tag. The possible exceptions in this assumption of voluntariness in sub-political rules are the supermarkets. Compliance with supermarket quality requirements is essential for supermarkets purchasing farmers' salmon. Supermarkets tend to forward purchase whole harvests for an agreed price, however contracts contain clauses that allow supermarkets to withdraw from the purchase based on any deviation from prescribed practises. Given that supermarkets control over 85% of salmon sold in the UK (SSGA interview) and the subsequent collapse of the wholesale market for salmon, it is difficult to regard the supermarkets as voluntary sub-political rule enforcers.

As suggested by Beck and others (see for example Foucault 1984, 1988, 1991, Ewald 1991, Gordon 1991, Kendall and Wickham 1992, Castel 1991, Giddens 1990, 1991, 1994a, b, 2002) the risk governance systems is fragmented, with different institutions involved but with extremely restrictive remits, either by legislation or by sub-political ideologies. Each institution has its own

⁸ The main modification is the separation of stakeholding groups into 'pro' and 'anti' camps and the distinction between political and sub-political rule enforcers.

specific agenda as to hazard prioritisation and engagement strategies. What is interesting is to note the approach of the sub-political groups to effect change and gain political legitimisation for their risk perceptions. Sub-political groups are engaging via scientific arguments, either by producing and promoting their independent scientific studies to add to or challenge the current notion of best scientific knowledge on the topic, or by scientifically critiquing the basis of the 'legitimate' risk position or the effectiveness of political governance methods. For example, WWF describe themselves as a challenging, constructive, science-based organisation (www.wwf.org.uk, 18/5/2004). Even the most radical sub-political group, SFPG make extensive use of scientific evidence and scientific critique amplified via mass media channels. Generally the sub-political approach is to improve the scientific evidence upon which regulations and political governance structures are based. Our observations on the sub-political movements involved in salmon farming, fit the description of the beginning of a reflexive process by Beck and others (Beck 1992a, b, 1994a, b, 1995, 1996, Beck et al, 1994, Giddens 1990, 1991, 1994a, b, 2002, Lash 1993, 1994a, b, 2000, Lash & Wynne 1992, Wynne 1989, 1992, 1996). Reflexivity does also require the political institutions to engage constructively with these sub-political movements, and as will be seen later, our observations suggest a lack of willingness of political institutions to accept this new scientific evidence.

Figure 5 – Holistic Map of Thematic Risks

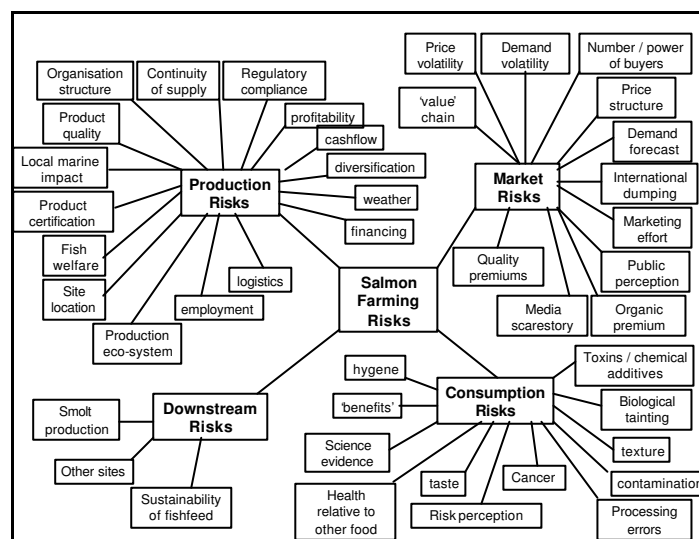


Figure 5 provides a map of the main risk themes⁹ that emerged from our investigations. This map is an attempt to provide a holistic presentation of the multiple dimensions of risk in salmon farming. The range of different dimensions of risk is perhaps larger than would be assumed from a common-sense perspective. It should be recognized that this is a composite representation of all the different risks from all of the actors identified in Figure 4. No single institution¹⁰ described all of these risks and even when they were aware of risk claims, they actually denied the existence of certain risks. The shaded boxes represent the most contested risk claims. Those contested risks are largely contests between sub-political 'anti' groups and a coalition between political

⁹ A more detailed breakdown of the risk sub-themes is available from the authors on request.

¹⁰ We can provide details of each actors individual risk perceptions on request, unfortunately space restrictions make this impractical.

institutions, sub-political 'pro' groups and the farmers. This coalition presented a consistent position of the irrationality and misguidedness of these campaign groups risk claims. For example, this is a quote from SSGA interview;

"The industry has had a terrible press from a few people who are anti-fish farming campaigners. These are absolute nut cases" (SSGA).

"The divergence of views makes constructive dialogue impossible because they throw rocks at each other" (SEPA).

Examples of risk denial include;

"The wild stocks (of salmon) have been declining for the last 50 years, long before the industry" (SSGA)

"The industry asserts that its environmental footprint is minimal while the environmentalists say no-one knows until more hard data is available" (SEERAD).

"The government until recently was refusing to accept that linkage between the industry and sealice" (RSTA).

There was an absent of significant dispute over legitimate risks between the farmers and the political institutions charged with governing their risks. The farmers view compliance with the regulatory regime as eliminating all significant environmental and social risks (Georgakopoulos and Thomson 2005). The political institutions generally express confidence in their methods of governing all the significant risks of salmon farming. What was noticeable from the interviews and documentary analysis is the co-operation and co-reliance of the fish farmers and those tasked with their governance. Two examples of this are;

"SEPA acts as an intermediary between the salmon farming industry and the local sea trout association" (SEPA).

"There is a potential risk for public health coming from the pigmentation of the salmon flesh. However, SSGA estimated that the amount of salmon one needs to eat in order to develop a problem is not humanly possible to eat" (SEERAD Fisheries Research Group)

In the first quote it can be seen that SEPA has adopted a mediatory role between the industry and one of the protest groups seeking reform in salmon farming practices. In relation to the second quote, it is worth remembering that the SSGA is a sub-political lobby group whose main objective is to promote and develop salmon farming. Yet the most powerful political regulatory institution is using their 'facts' to discount the claims of other sub-political groups. Conversely, anti-sub-political stakeholders described their relationship with the political institutions and rule enforcers as difficult with lots of friction and described a lack of willingness to listen to their concerns, particularly in relation to the effectiveness of the regulatory regimes.

“The industry claims it is clean because it follows SEPA’s regulations, but sea lice is not regulated by anyone and SEPA’s models used for the monitoring of the discharges are too simplistic based on fjord type systems, unable to grasp the complexity of the issues at least in our region...so there is a lot of prescriptive inflexible regulation which does not relate a lot to what is happening” (RSTA).

“The consequences of the whole genetic mixing between farmed and wild salmon are unknown. At the bottom line, we do not know what is actually happening. There is not good monitoring of the escapees, we do not know where they go or the impacts they have” (WWF).

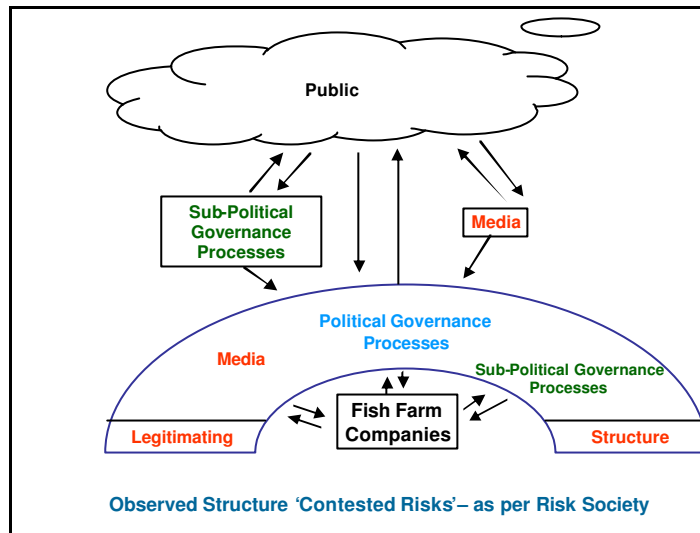
“Lack of knowledge and information about the cumulative impacts of the fish farms. There is a lot of ignorance out there and there is not the necessary information that will convince a public inquiry that some developments are dangerous” (RSPB).

Concerns were expressed about the lack of accountability of political institutions over their operations and ways in which individuals would use sub-political institutions to drive change. One story recounted in an interview was of scientists working in the Fishery Research Services who were forbidden by SEERAD from publishing negative findings leaking facts to pressure groups. Other examples included politicians tipping off sub-political organizations about issues they felt they could not publicly talk about themselves, in order that these issues could be part of the public discourse about salmon farming. Certain sub-political groups admitted to the usefulness of extreme activists in dealing with issues which they felt their ‘formal’ interests did not apply.

Our representation of the communication in the governance assemblage (see Figure 6) does not satisfy the requirement of the reflexive model represented in Figure 3. The configuration of communication routes appears to substantiate Beck’s description of industrial modernity, where political institutions effectively operating as structures to legitimate business practice. The Soil Association is perhaps slightly unusual in that it can be seen to be part of this legitimisation structure by creating the possibility of salmon farming being organic. In fact they were criticised by other sub-political groups for this stance and their motives questioned, the most common comment was that the SA were more concerned with empire building than promoting sustainability and that organic production is not necessarily sustainable.

“The so-called organic fish will affect in some way the pristine environment and it will have some kind of interaction with the wild fish. In that way organic salmon farming would be something similar to cutting down rain forests to grow organic coffee trees” (RSTA).

Figure 6 – Observed Salmon Arena Configuration.



The accounting demands by the political and sub-political risk governance process on the salmon farmers are extensive and farmers are producing a considerable volume of mandatory and voluntary disclosures to a wide range of different external bodies in a variety of different modes. However, each of these accounts tend to be very specific and delivered to a range of different accountees based on their powers, rules, ideological position and contextual definition of what counts as legitimate information. However, the same comment could not be made about the accountability of these political institutions and sub-political groups.

Mapping the significant communication links observed in this study identified an absence of a number of key links. In terms of the nested communications in the political and sub-political nodes, there appeared to be a major deficit in the intra-political communications. The sub-political ‘anti’ group did appear to have a far greater degree of intra-sub-political communications. The sub-political anti groups did also appear to be more transparent and provide fuller accounts of their activities available for access by the general public. Whilst a number of sub-political groups accepted that there now was better communication with the industry (RFA, RSPB, RSTA, WWF, FOE) they also strongly supported the need for better communication and more accountability.

The lack of intra-political institutional communication can be represented by a sample of typical quotes from interviews;

“a lack of co-ordination between the RA and SEPA” (SEPA, REN)

“Risk for a clash between a local and a national policy on development/sustainability grounds. Co-ordination is needed with SEERAD” (RA, SEPA, REN)

“Risks from the lack of clear planning remit between the Crown Estate and the local authorities” (SEPA, REN)

“Regulatory risk for the sustainability of the fishmeal fisheries from the inability of the latter to meet the strict standards of international accreditation bodies” (SEPA).

“Health risk for the public might exist from the presence of things in the fishfeed. However, the official position is that the public should eat fish because it is healthy” (RA, REN).

“The elected members of the council will make their decisions based on economy and employment, not on conservation issues” (RSPB)

Our observation of the accountability of this particular arena is that it is an unreflexive risk governance assemblage. However, in relation to certain risks where there is a degree of consensus there is evidence of a proto-reflexive relationship between a number of the sub-political and political institutions, as evidenced by the emergence of less antagonistic engagement processes. For example the ministerial and tri-partite working groups when preparing the Strategic Framework for Scottish Aquaculture. The potential for an on-going dialogue is present and some of the antagonism between certain actors has begun to diminish as groups constructively engage and undertake mutually agreed actions. For example voluntary agreements on the use of anti-predatory nets, allowing sub-political groups to visit fish farms and co-operation in the preparation of EIAs. However, this process is new and relatively fragile and it is not possible to predict its future development with any degree of confidence, but it is the beginning of a reflexive process with representatives from all three sides reporting successful changes in the praxis of others, which past observers would have regarded as near impossible.

CONCLUDING COMMENTS.

In this paper, we have mapped at an arena level the governance structures (both political and sub-political), the accountability mechanisms, the legitimate risks of the different actors in this salmon farming arena. Our system level analysis of the empirical data is consistent with the model derived from the emergent Risk Society literature. Within this model accountability is integral to an interdependent, co-evolving set of relationships between risk perceptions, risk legitimisation mechanisms, governance structures and institutions. Accountability processes are viewed as key elements of the reflexivity necessary to more effectively govern the risks, hazards and actual linked with industrial modernity. The lack of effective reflexivity is seen to be connected with a legitimisation and proliferation of the hazards of industrial modernity rather than managing and mitigating its harm.

Our analysis of the salmon farming arena provides empirical evidence to support a lack of reflexivity, fragmented ‘single-issue’ political and non-political governance structures, polarised ‘legitimate’ risks positions, lack of accountability between governance institutions and contested discourse between the different participants in this arena study. Our evaluation is that the political governance structures legitimise fish-farming practices and dismiss the sub-political groups as irrational, nutcases throwing rocks at fish farmers and regulators. Political institutions are adopting an ‘objective’ techno-scientific rational to justify their position and to reject the criticisms of the others. However, somewhat paradoxically they rely on scientific data provided to them by sub-political supporters of salmon-farming. Within the salmon farming arena the political institutions, fish farmers and certain sub-political groups are acting in coalition to protect the industry, rather than to protect the eco-systems and wider society from potential harm. The ‘anti’ sub-political movement are adopting a techno-scientific discourse to engage with the political institutions to legitimate their risk positions and therefore change the mode of risk governance.

The evidence gathered supports the contested nature of risks and the view that risk perceptions are locally, temporally and epistemologically defined. Considerable diversity in risk perceptions were revealed to be at the core of the discourses between the different parties. Evidence was also available to support the de-politicising of the political institution on two key dimensions. Firstly, the reliance on techno-scientific evidence and thinking to underpin risk governance institutions and processes and secondly, the number and nature of sub-political groups involved in rule-enforcing. Rule enforcement, normally assumed to be the function of political institutions, was partially enacted by 'pro' sub-political groups. The exception to this assemblage was the Soil Association, which entered into the rule-enforcing role in order to legitimise and promote the notion of organic aquaculture. In many cases the most stringent conditions on farmers activities came from these sub-political rule-enforcers.

The main accountability mechanisms used by the salmon farmers were to satisfy the rule-enforcers of their compliance with their specific rules. There was an absence of what we normally would term social and environmental accounting/reporting in this arena, we would argue because of the scientific nature of the engagement activities, rather than an economic discourse.

There is not an absence of social and environmental accountability in this salmon farming arena. The salmon farmers provide a rich, diverse and comprehensive set of social, environmental and economic accounts to a range of political and sub-political institutions, dependent upon the perceived powers of these institutions. The salmon farmers provide far more information to these stakeholders than these organisations provide to others. The chain of accountability processes is incomplete, opaque and fragmented or in other words unreflexive. We do not argue that all relevant risks are accounted for or that they are adequately measured and governed, however, the existing accounts have considerable potential for an emergent, holistic accounting of the social and environmental costs (and benefits) of salmon farming. This existing information, if made available, could be integrated into a useful re-presentation of the salmon sector that could be used as part of the dialogic engagement that is critical to the reflexive process. We do not claim that these emergent accounts would be a 'true and fair' view, but rather could act as a heuristic learning device creating the space for a more meaningful mutual critique of the different positions held within the arena.

Salmon farmers are providing numerous accounts of their actions, yet these institutions are largely unaccountable. Each institution (political and sub-political) has its own definition of its 'legitimate' risks. Their 'legitimate' risk perception is intrinsically linked with their specific accountability demands on the salmon farmers. These fragmented accounts reinforce their legitimated risk perceptions, rather than reflexively critique them. The absence of a holistic, sustainable, stakeholder (who is possibly a mythical creature) and the relationship between the difference institutions means that the salmon farming accountability processes are extremely problematic.

Crudely, the different institutions can be characterised as 'single-issue' demanding partial and specific 'accounts' of the salmon farmers practices whilst prescribing specific 'solutions' to minimise or eliminate specific 'risks'. No meta-governance process (reflexivity) exists that could integrate or synthesise these specific 'accounts', 'solutions' or 'risks'.

We would argue that this study raises a number of important issues for the development of thinking on social and environmental accounting¹¹. The absence of formal social and environmental accounts does not necessarily imply an absence of social and environmental accountability. The demands for social and environmental accounts of organisations is likely to be reflexively linked to political and sub-political discourses on risks, the diversity of risk legitimisation practices in the relevant arena, the relative powers of the political and sub-political groups, the alignment and/or coalition of these different groups, the existing 'accounts' in the public domain and the rule-enforcing bodies. Mapping the accountability routes and content can provide a valuable insight into the risk governance processes, the legitimate risk perceptions of different parties and powers of different rule enforcers.

In examining social and environmental accounting an awareness of both the political and sub-political dynamic is important, particularly given that change is normally driven by the sub-political dynamic. Political institutions tend to be non-politicised, working to defend the status quo, hampered by their epistemological dependence on scientism. If social and environmental accounting is to form part of a change process it must both be sensitive to the sub-political movement, as the driver of change, yet also be expressed in a way that would be regarded as legitimate by the relevant political institutions. This is not an impossible task as can be observed from the growing success of sub-political movements using this strategy. On a more mundane level, recognising the existence of this accountability to rule enforcers would be an extremely fruitful resource for the emerging shadow accounting project, particularly given the introduction of the Freedom of Information Act in the UK.

The sub-political dynamic problematises the appropriate entity of social and environmental accounting. The majority of the efforts of sub-political groups is not aimed at individual companies, but rather targeted at the rule-enforcers. Concentrating engagement activities to reform rules allows these efforts to have an industry-wide impact. Rule enforcers, especially the political institutions, are potentially easier to change than individual companies who use compliance with rules as evidence of acceptable behaviour. Political institutions are, in theory anyway, subject to democratic accountability, control and reform. Our study suggests that there is some merit in creating an additional 'accounting entity' demanding social and environmental accountability of the rule-enforcers as to the effectiveness of their operations. Accountability of industry level governance structures would appear to be a critical part of the social and environmental accounting project.

What was perhaps an important insight from this study was the absence of the 'sustainability' stakeholder. Despite the media scrutiny, scientific studies, sub-political campaigns and extensive political regulatory regimes, there was no holistic overview. Each party involved in the arena limited themselves to a narrow definition of sustainability, wild sea trout, birds, visual impact, chemical additives, linked to their specific interests and demanding accounts in relation to these interests. Little evidence of a concern for a full, interdisciplinary accounts and the lack of reflexivity meant that the holistic account was not 'demanded'. We would tentatively suggest that Social and Environmental Accounting, rather than producing accounts for that mythical

¹¹ More information on issues of sustainability, and its links with accounting and accountability in can be found in Duncan (1997), Bebbington (1999), Bebbington et al (2001, 2004), Bebbington and Thomson (2005, 2004, 1996), Gray (1990, 1997), Gray and Bebbington (2001), Gray et al (1993, 1996), Cooper (1992), Cooper and Thomson (2000).

stakeholder actually, becomes that mythical stakeholder, constructing them in the production of these accounts that form such a critical part of the dialogical process of establishing an effective reflexive system, particularly in the risk legitimisation debates.

Appendix 1 – List and brief description of participants

Salmon Farmers

- OS1, OS2 are small family run organic fishfarms.
- OS3 is a small organic business that produce salmon, fry and smolts.
- ML1, ML2 are both parts of multinational fishfarming groups producing conventional and organic salmon.
- TL1 is a large salmon farming business producing non-organic salmon and smolts.
- TL2 is a large salmon farming business, that is a subsidiary of a larger national company producing non-organic salmon, fry and smolts.
- TS1, SS1 are small firms that are subsidiaries of larger national companies, producing non-organic fry and smolt.
- TS2, TS3, TS4, TS5 are small family run businesses producing non-organic salmon. TS5 also produce mussels.
- TM1 is part of a larger family run group of companies producing non-organic salmon.
- TM2, TM4 are medium sized companies producing non-organic salmon.
- SS1 is a small company that is a subsidiary of a larger firm and produces non-organic smolts.
- MK is the marketing company of TM1.
- MM is a large salmon producing company producing conventional and organic salmon.
- Sm a large smolt producing company.
- SP is a small independent firm producing non-organic smolts and is also involved in salmon processing.
- SMK is a small salmon smoking company.

RULE ENFORCERS

- SEPA - Scottish Environment Protection Agency. SEPA is the regulatory and enforcement authority for environmental protection and pollution control in Scotland, covering discharges to air, land and water.
- Regional Authority - The Regional Authority (RA) is a democratically elected single, all-purpose local authority. It makes political decisions on policy statements and strategies, including local strategic plan and delivering services and enforcing statutes and regulations.
- Soil Association (SA) - an independent charity and its mission is to create an informed body of public opinion about the link between farming practice and plant, animal, human and environmental health and to promote organic agriculture and is the UK main organic certification mark
- SSGA - Scottish Salmon Growers Association is the official representative body of the salmon farming industry. SSGA plans the production of the industry on a collective basis, provides funding for various projects, plays a public relations role for the industry.
- SQS - Scottish Quality Salmon operates a quality product labeling scheme.
- RQS – Regional Quality Salmon operating locally based labeling schemes.

- HSE – Health and Safety Executive are responsible for the regulation of health and safety issues.
- MCA - Maritime and Coastguard Agency aims to develop, promote and enforce high standards of maritime safety and pollution prevention, to minimise loss of life amongst seafarers and coastal users, and to minimise pollution from ships to sea and the coastline.
- FSA - Food Standard Agency is an independent food safety watchdog set up by an Act of Parliament to protect the public's health and consumer interests in relation to food.
- CE The Crown Estate: is a political agency responsible for the management of the territorial seabed and most of the foreshore between high and low water mark.
- VMD - Veterinary Medicines Directorate is an Executive Agency of the Department for Environment, Food and Rural Affairs protecting public health, animal health and the environment, and promoting animal welfare by assuring the safety quality and efficacy of Veterinary medicines.
- EMEA - European Agency for the Evaluation of Medicinal Products co-ordinates the existing scientific resources for the Member States in order to evaluate and supervise medicinal products for both human and veterinary use throughout the whole of the EU.

POLITICAL INSTITUTIONS

- SEERAD - Scottish Executive Environment & Rural Affairs Department is responsible for advising Ministers on policy relating to agriculture, rural development, food, the environment and fisheries, and for ensuring the implementation of those policies.
- REN - Regional Enterprise Network is responsible for economic and community development across a diverse geographical area which covers more than half of Scotland. The network reports to the Enterprise & Lifelong Learning Department of the Scottish Executive and its services are delivered through local enterprise companies.
- SNH - Scottish Natural Heritage is the Scottish Executive's statutory adviser on natural heritage (wildlife, habitats, and landscapes) and nature conservation matters, including promotion of nature's sustainable use, and for fostering its understanding and enjoyment by the public.

STAKEHOLDERS – OPPOSING SALMON FARMING

- RSPB - The Royal Society for the Protection of Birds. RSPB is a wildlife conservation charity with more than a million members. It promotes an extensive range of political campaigns on a range of issues that affect wildlife and habitats.
- WWF - World Wide Fund Scotland: WWF is an environmental non governmental network operating in more than 90 countries. They see themselves as a challenging, constructive, science-based organisation that addresses issues from the survival of species and habitats to climate change, sustainable business and environmental education (www.wwf.org.uk, 18/5/2004).
- FOE - Friends of the Earth Scotland FOE is a non-governmental network of environmental groups with representation in 68 countries and one of the leading environmental pressure groups in the UK.
- SFPG – Salmon Farm Protest Group The Salmon Farm Protest Group (SFPG) exists to protect the marine and freshwater environment from fish farm disease and pollution. The SFPG does not oppose fish farming, but rather wish to ensure that it is undertaken in a

way that preserves the wild species, unpolluted coastal and inland waters, and people who rely upon that environment for their livelihoods.

- RFA – Regional Fisheries Association represents politically the local sea fishermen's interests.
- RSTA – Regional Sea Trout Association RSTA is a NGO committed to maintain public access for anglers and promoting a healthy environment. They offer mooring areas in some lochs for members with boats and they also have a small scale restocking programme for brown trout and other local fish stocks.

STAKEHOLDERS – FOR SALMON FARMING

- SSGA and RSGA See ruler enforcers.
- Supermarkets dominate the retailing of salmon and organic salmon in particular and play a critical role in legitimating the production of farmed salmon and in driving product modifications. Supermarkets were seen to impose considerable quality requirements on the producers and prescribe what they regard as acceptable production regimes.
- Fishmongers perspective is very similar to that of the supermarkets and are supportive of Scottish salmon.

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