Understanding Lay Membership and Scientific Governance

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Executive Summary

This report documents the findings of a Defra-funded social scientific research investigation of the inclusion of so-called 'lay members' on scientific advisory committees (SACs). The inclusion of non-scientific members in these fora is a recent and much discussed initiative in government, paralleling wider moves towards more transparent and engaged forms of governance.

In addressing the development of lay membership, this research project involved a mixed qualitative methodology including interviews, focus groups, and empirical observation. The project addressed three primary aims:

1. To elucidate the potential roles of lay members within expert advisory processes;
2. To assess how lay membership, as it is being developed in UK policy making, stands against a wider backdrop of social scientific advice and research;
3. To provide useful outcomes in helping develop lay roles in meaningful and effective ways.

Through discussions with committee members (including lay members), secretariats and policy makers, the project uncovered a variety of potential roles for lay members. These can be divided into two primary areas. Firstly, lay members were perceived as a potential link between science, government and the public. For instance, lay members were seen as: i) public witnesses ensuring the integrity of committee work, ii) a means to help committees improve communication with the wider public, and iii) a means of socially grounding esoteric scientific discussions, thereby increasing their relevance to the public.

Secondly, lay members have the potential to play more active roles in improving the rigour and substantive quality of the advice produced by SACs. In some instances, lay members were seen as providing complementary forms of expert advice. Potential 'challenge roles' aimed at improving the rigour and scope of debate and dialogue within committees were also identified. Some participants described this in terms of asking awkward questions, for instance about the relative value of different scientific approaches.

The research has exposed both opportunities and barriers for lay membership in the social contexts and relations which make up committee work. Specifically, traditional models of science, based on notions of value neutrality, objectivity and the authority of experts serve to impede the integration of lay roles into committee work (and indeed raise significant questions about the purpose and value of lay membership). Similar uncertainties are created by the maintenance of rigid hierarchies between scientific and non-scientific advice, where scientists speak for evidence and lay members for the public.

Our findings suggest that there are opportunities for lay members to play significant and influential roles in the advisory process. Closely linked to this, there is also considerable scope for developing good practice on committees. This would include supporting committees to contend with the social judgments and political values we found inherent within committee work. Furthermore, assistance could be given to committees in opening up the way in which science is treated on SACs and, in particular, developing practices which acknowledge the plurality and conditionality of scientific advice. We note that these roles should not be limited to lay members alone, but should be the shared responsibility of all members.

In concluding this report we present Defra with five challenges. It is the responsibility of the Department to address these challenges if the full benefits of lay membership are to be achieved.

Challenge 1: Defra should continue to encourage SACs to reflect upon their practices and cultures. Experiments in non-scientific membership can be an important means of stimulating the development and improvement of advice. Taken seriously, widening committee membership beyond science not only brings new roles to committees. It also suggests to committees the need to change how they think and how they go about their business.

Challenge 2: The challenge of creating trust and legitimacy should be seen as a process. Lay members may have a part to play in this process, but it is naïve to consider lay members as conferring trust and legitimacy themselves. Lay members are better envisioned as part of a wider institutional process of encouraging trustworthiness. Defra through innovating practice on advisory committees, as well as creating the unique relationship between the ACHS and UKCSF, is taking steps in this direction and should be encouraged in doing so.

Challenge 3: If non-scientists are to be able to contribute to the advisory process, then Defra must work with SACs to overcome assumptions which privilege scientific voices within committees and silence others.

Challenge 4: The inclusion of non-scientific members on SACs should coincide with an open-minded development of the cultures, structures and working practices of committees themselves.

Challenge 5: Valuable lessons have emerged from the appointment of 'lay' members on advisory committees. However, the term 'lay' may have outlived its value and cause problems for the operation of SACs. This report recommends that the term 'lay' should be put to rest. At the same time, the potential contribution of non-scientific advisory committee members should be recognised and enhanced.

Acknowledgements

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Acronyms

ACRE   Advisory Committee on Release to the Environment
ACHS   Advisory Committee on Hazardous Substances
COP   Code of Practice
Defra   Department for Environment, Food and Rural Affairs
HS   Horizon-Scanning
PBT   Persistence, Bioaccumulation and Toxicity
PEP   Political and Economic Planning
SAC   Scientific Advisory Committee
STS   Science and Technology Studies
UKCSF   United Kingdom Chemical Stakeholder Forum

1.0 Introduction

1   In recent years a move towards more open, inclusive and collaborative forms of governance has been observed across a range of policy areas. Engagement, transparency, openness and public legitimacy have all become important themes for public policy reform. Expert advisory committees, once one of the least visible parts of the policy process, now often meet in public, publish their minutes on websites and engage with stakeholders. Additionally, the last decade has seen committees attempt a greater degree of inclusiveness through the appointment of public members, termed "lay", from outside formally recognised areas of expertise.

2   This emerging policy system contrasts sharply with a traditional conception of the policy process emphasising rationality, objectivity, and the application of 'sound science'. In this model, policy making is supported by a group of elite scientific and technical experts with professional civil servants regarded as the custodians of the public interest. In the name of objectivity and rationality, and to ensure the integrity and efficiency of the process, the wider publics are kept out of day-to-day governance. Politics is allowed into the system, but only through official relationships between policy makers and the elected officials of the Government. The often-implicit rationale has been that the actions of Westminster, while maintaining authority over the direction of governance, should be separated from the day-to-day actions of the bureaucracy. Through this separation and the veneration of objectivity, science and expertise have become central to policy making (Ezrahi, 1990, Jasanoff, 1990), and the system has been characterised by a deeply ingrained culture of confidentiality (Wright, 1994).

3   Recent years have witnessed a questioning of this closed and isolated model, and the emergence of something potentially more open. A closed policy culture, once seen as ensuring effective policy, is now considered to undermine it through the creation of closed thinking, public distrust and consequent challenges to governmental legitimacy. Policy failures such as the government's handling of BSE have highlighted the inadequacies of such systems in responding to the uncertain and ambiguous policy contexts characterising today's society (Jones, 2004). Lord Phillips's 1996 Inquiry into the BSE case (Phillips et al., 2000) presented some hard lessons to policy makers, particularly on the role of scientific advice in governing risk. Lord Phillips told the government that it needed to open up the policy and advisory processes, to recognise uncertainty and be open about it, and to trust the public. Since 2000, these lessons have been underlined by a host of further reports and guidelines for government (Cabinet Office, 2002, Chief Scientific Adviser Office of Science and Technology, 2005, Commission of The European Communities, 2001, Council for Science and Technology, 2005, Department of Trade and Industry, 2000, House of Lords Select Committee on Science and Technology, 2000, Royal Commission on Environmental Pollution, 1998).

4   Today, good governance is generally taken to include openness, transparency, engagement and flexibility in contending with uncertainty.

Policy experimentation with public engagement and open governance is becoming increasingly commonplace. This may perhaps be read as a sign of a transition in British policy making to a new form of governance. However, these changes are by no means fully embedded within the institutions and cultures of government (Walls et al., 2005). Public engagement initiatives have often suffered from restricted ambition and impact (Milewa, 2006, Newman et al., 2004). Moreover, these experiments are limited by a failure to address deeper assumptions about the nature of scientific knowledge and institutional perceptions of the public as irrational, uninterested or uneducated about policy concerns (Hagendijk, 2004, Irwin, 2006, Jones, 2005, Wynne, 2006)[1].

5   A lack of clarity about the role and purpose of public deliberation in policy means that policy innovations are set in an uncertain and often contested context. It is unclear whether such initiatives will meaningfully contribute to the policy process or be effective in encouraging public trust in governance. Will they be supported within government and encouraged to evolve and develop, or simply be positioned as high profile addenda to more traditional policy frameworks? Equally, will failure to reflect upon the issues raised by greater responsiveness and openness lead to an eventual turn away from engagement if it is not seen to 'deliver' the policy solution that is currently being sought?

6   This report seeks to address some of these uncertainties by examining the changing nature of scientific advice in government, and specifically within the Department for Environment, Food and Rural Affairs (Defra). It focuses on the actions of Scientific Advisory Committees (SACs), the functions of which are defined by government as helping "collect scientific information and make judgements about it" (Office of Science and Technology, 2001: p.1)[2]. SACs play an important role in Defra, contributing to the evidence base from which the Department derives its policy options and identifies areas of policy concern. They also lend the weight of expert authority to the policy process. However, these expert bodies have been at the centre of criticisms of closed models of government. Concerns have been raised about the ubiquitous and growing influence of scientific advisers in government (Ezrahi, 1990, Fuller, 2000, Jasanoff, 1990). SACs have been seen as part of a technocratic

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[1]   These arguments about the changing nature of policy making, and of the role of expert advice in particular, are covered at length in "The Received Wisdom: Opening Up Expert Advice". (Stilgoe et al., 2006) Derived from the same research project the two reports complement each other, with the "Received Wisdom" setting the political and analytic tone of the research presented here.

[2] SACs are guided by a Code of Practice (COP) produced by the Government Office of Science. The SAC Code of Practice was updated in December 2007 (Government Office of Science, 2007). An earlier version of this report informed its drafting, and the research team presented the findings of this report to the then Office of Science and Innovation as part of the consultation. The current COP makes no reference to lay members explicitly, however it acknowledges key lay roles as aspects of committee work in general. Unless otherwise indicated references to the SAC COP refer to the 2001 publication (Office of Science and Technology, 2001).

illusion whereby scientific advice has been treated as overly certain, uncontested and standing above social politics.

Box 1: An Overview of Lay Membership and SACs

<u>Scientific Advisory Committees (SACs)</u>

SACs function to "help Government collect scientific information and make judgements about it". They operate across a wide variety of policy areas. The Advisory Committee on Hazardous Substances, a focus in this research report, provides advice to Defra on chemical hazards. The operation of SACs is guided by a code of practice, produced by the Government Office for Science (Office of Science and Technology, 2001).

<u>Lay Membership</u>

Lay membership is very loosely defined in governmental advice. What, or who, qualifies as a lay member is not agreed. Lord Phillips' Report from the BSE Inquiry does state that a "lay member can play a valuable role on an expert committee", particularly in relation to issues of risk and uncertainty (Phillips et al., 2000). It is one of the aims of this research project to give greater depth of meaning to definitions of lay membership. For the purpose of this report lay members will be considered as members from outside of the core scientific expertise of a committee.

<u>Profile</u>

The Department for Innovation, Universities & Skills lists 81 SACs. 26 committees directly identify "lay members" as part of their membership. 11 SACs are linked with Defra, 4 of which are identified as having "lay members". A further 12 committees have non-scientific members that might be labeled as "lay" in other contexts.

http://www.berr.gov.uk/dius/science

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7   Responding to these criticisms, SACs and the policy secretariats which assist expert advisors with their mandates, have sought to improve practice. Some SACs have experimented with widening the membership of committees to include individuals without any specific scientific remit. This report presents the findings and recommendations of a social scientific study into the inclusion of so-called 'lay members' on SACs (refer to Box 1 above). It addresses the rationales and values of widening membership and offers an account of the evolving context in which lay membership is being developed.

8   Lay membership on SACs is a recent innovation. As subsequent discussions will elaborate, its definition and understanding remain inconsistent. Similarly, the way in which individuals and committees enact lay roles varies across committees. Lay membership is thus too novel and heterogeneous to

allow for an exhaustive evaluation of its impact. The research discussed in this report more modestly provides an account of the ongoing development of lay membership in expert governance. In doing so, it seeks to elucidate the types of contributions expanded membership are envisioned to bring to SACs and their influence on the development of the advisory process more widely. Our conclusions point towards early lessons from practice, as they might inform further development.

2.0 The Research Project

2.1   Aims and Objectives

9   The research project has been developed around three primary aims. Firstly, the project seeks to elucidate the potential roles of lay members within expert advisory processes. Secondly, the project has attempted to assess how lay membership, as it is being developed in UK policy making, stands against a wider backdrop of social scientific advice and research. Finally, by working in collaboration with policy makers, and communicating our results to them, we hope that this project will provide useful outcomes in helping develop lay roles in meaningful and effective ways.

10   The project had two parts:

11   Part One of the research project sought to identify the values and rationales behind the inclusion of lay members on scientific advisory committees.

12   Part Two of the research shifted the focus so as to address the types of lay roles identified in Part One against the backdrop of committee practice. In particular, it sought to understand how lay roles are enabled, or impeded, within social relations of expertise in committee work.

2.2   Methodology

13   Over the course of the project a range of qualitative methodologies was employed to address the above aims and objectives. These included semi-structured interviews, focus groups and observations of practice.

14   A series of seventeen semi-structured interviews was conducted. These involved in-depth discussions (lasting an hour on average) with a range of participants, including policy officials, committee secretariats and both 'lay' and 'expert' committee members. All participants had direct involvement with the development or practice of lay membership. Semi-structured interviews provided a flexible tool with which to address the values and rationales behind lay membership. These are distinct from structured interview methods which employ a consistent and fixed series of questions. Where structured interviews allow for the detailed comparison of individual responses (often statistically) across groups, semi-structured interviews enable greater interaction between the researcher and participant. The benefit of this more conversational approach was that it allowed participants to raise issues independent of the researchers' frame of questions (always recognising that

the structure of discussion will inevitably 'lead' it in certain ways). Furthermore, key issues and topics were explored fully and thus brought considerable depth to participant responses.

15   Common themes explored by the researchers in these interviews included:

- the roles of SACs in government;
- the roles, functions and contributions of different types of committee members to SACs;
- how members practically fulfilled these roles;
- sources of support and ways in which member contributions could be enhanced;
- barriers to effective committee practice, and barriers to the fulfilment of member roles.

16   Focus Groups, also sometimes referred to as group interviews, were conducted with the members of five scientific advisory committees. Committees were invited to participate in the project in discussion with Defra around a series of agreed rationales. Each committee:

- had either recruited a lay member, or had experience with lay membership in the past;
- met routinely and regularly throughout the year;
- addressed an area of substantial scientific interest;
- addressed an area which was the focus of public interest and concern;
- was perceived as of specific interest to policy making within Defra.

These groups were organised to coincide with committee meetings and took place directly following their completion. Not all members of a committee were able to participate in each case, but groups involved between 5-8 participants, including both members and committee secretariats.

17   Supplementing the interview data with focus groups offered several benefits. Firstly, from a practical point of view, it allowed us the opportunity to access participants who, with busy schedules and being geographically spread out, were sometimes difficult to meet and interview. In other words, group interviews increased the number of participants, and therefore potential perspectives, involved in the project. Secondly, focus groups provided an opportunity to explore project themes within a wider social dynamic, involving multiple interactions, and away from the direct relationship between researcher and participant (Kitzinger, 1994). For instance, focus groups enabled us to observe interactions which revealed tensions, contradictions and uncertainties in participant responses. Finally, the coupling of groups to meetings provided an opportunity to ground often abstract discussions about lay membership within practice. Thus, instead of speaking solely about the potential roles of lay members, participants were able to discuss the

possibilities, as well as the constraints, of these roles in relation to the operation of committees.

18   In addition to interviews and group discussions, the operation of six committees was <u>observed in practice</u>. Where possible, committees were observed on more than one occasion. These empirical observations were often supported by discussions with committee members and secretariats both in the lead-up period to a meeting, and following through on the outcomes of those meetings.

19   Committee observations offered two main benefits to the research project. Firstly, by viewing a variety of committees operating in different policy contexts we were able to gain some insight into the wider salient features of committee work. This included observations of the organisation and structure of committees, but also of the social relationships between members in providing expert assessments. Secondly, observing committee practice gave us the opportunity to see how the lay roles described to us in interviews and focus groups took place in practice. By engaging committee work it was possible to further contextualise abstract arguments in relation to specific case studies. For instance, in Chapter Five we will discuss the role of the Advisory Committee on Hazardous Substances (ACHS) in assessing the risks associated with perfluorooctanoic acid, a chemical surfactant. The operation of key research themes, such as the ability of committee discussion to scrutinise expertise and to contend with uncertainty and differences of expert opinion, are explored in reference to this case.

20   Responding to the original Defra research brief, an analytical focus is taken on the work of the ACHS in particular. At the commencement of this project, the ACHS had recently appointed a lay member. Defra were interested to follow this process, as well as the development of lay membership more widely, through this research project. Thus, along with interviews and focus groups with ACHS members, the committee was observed on three separate occasions. The research team has also had routine contact with committee members and members of the Defra secretariat in particular. The committee has received routine updates on the project and reviewed the findings of this report prior to publication.

2.3   Analysis

21   The analysis of the data collected through interviews and focus groups involved a form of discourse analysis focussing on what people told us about lay membership, and the social resources they drew upon in doing so. This contrasts with more representative types of analysis which seek to link what people say and do with their characteristics as individuals (Potter, 1996). An

emphasis was placed on allowing the participants to speak for themselves without the researcher playing ventriloquist. Although some degree of interpretation is inevitable within any research process, we have tried to treat the data in a way which balances description with analysis (Silverman, 2001).

22   Each interview or focus group was recorded or, when this was not possible, detailed notes were taken by members of the research team. From this material a series of transcripts was compiled. Analysis of this material focussed on identifying recurring themes, ideas and representations across the data set as a whole. In some cases this involved actively pursuing key themes in the literature on lay membership and scientific governance. These included, for example, ideas of risk, trust, openness and engagement. However, a further emphasis was placed on allowing themes to emerge from the data itself. Indeed this process began earlier in the data collection process. The conversations we had with participants allowed for the development of more nuanced questions, and pointed us towards topics to pursue in subsequent interviews. For example, the identification of lay members as playing important challenge roles on committees arose out of an initial series of interviews and then became more prominent through subsequent observations and discussions.

23   The analysis of the data was further developed with the aid of NVivo, a qualitative analysis software package. The software enabled us to identify and follow core themes through the data set as a whole. This included the ability to view and compare responses to a question, or contrasting viewpoints on a core issue, between participants. Moreover, NVivo allowed us to explore relationships in the data, for instance, between the identification of lay roles and the expert characterisations ascribed to committee members and committee work.

24   In analysing and presenting qualitative data, there can be a tendency to present findings in ways which tidy up complex social processes and obscure the contingency of research findings. In other words, by sorting through the complexity, social scientists can make things seem much more uniform and certain than they might otherwise be (Law, 2004). With this in mind, our analysis, as well as the presentation of this report, has consciously adopted an open and exploratory ethos. We have tried to disentangle and make sense of lay membership within a variety of contexts. And while some degree of interpretation is inevitable, and indeed beneficial, we have sought to let an understanding of lay membership emerge from the data, as opposed to trying to fit what we observed within rigid models.

25   It is worth noting that the authors share a social scientific perspective which has been broadly supportive of attempts to make policy making more inclusive and less technocratic (Irwin, 1995, Irwin et al., 1999, Jones, 2005, Stilgoe, 2007, Stilgoe et al., 2006). To this end, our assessments are directed

toward learning what is being achieved by lay membership, and what might be achieved in the future. This includes trying to find ways in which lay membership may productively contribute to good governance.

2.4   Research Ethics

26   This research project has been developed in line with the ethical guidelines proposed by the British Sociological Association (British Sociological Association, 2002). Principles of informed consent, anonymity and confidentiality have been closely adhered to. As a consequence, in this report we will not link any statement with any individual, or specific group, or committee. Instead, we will refer to participants and will always make reference to gender in the feminine (i.e. "She said…", "She asked…").

27   As an exception, we will refer to the work of the ACHS specifically as a core subject of this project. We have sought to ameliorate against any negative impacts of removing anonymity by maintaining an active dialogue with the committee. This should not be taken to suggest that what follows represents the views of the ACHS – or implicates ACHS members in any way. As authors of this report, we are responsible for the analysis that follows and all errors or misunderstandings should be attributed to us.

3.0 Science, Governance and Lay Membership

28   Before proceeding to the analysis of the data collected in this project, we will first review some of the arguments behind the inclusion of lay members on scientific advisory committees. As a starting point we will consider lay membership in relationship to a wider range of issues about science and governance and the challenges such extended membership poses for traditional models of policy making. We will also discuss how, since BSE and the Phillips Report, government has sought to augment policy approaches, particularly as they relate to issues of risk management.

3.1 Towards a New Scientific Governance

3.1.1 An Evolving Relationship

29   For the most part, the twentieth century has been characterised by optimism about the ability of scientific and technological advancement to contribute to the development and prosperity of society. In terms of policy making, by the 1960s the British civil service was tightly interwoven with scientific expertise. In 1964, Sir Solly Zuckerman was appointed as the first chief scientific advisor to government, standing at the top of a pyramid of experts and expert advisory bodies within Whitehall. According to the American policy scientist Harvey Brooks, the challenge for government in administering science was to find ways of translating progress – the accumulation of knowledge – in the sciences to wider forms of social progress. Government he saw as having a key role to play in this regard (Brooks, 1973).

30   Recent scholarship in Science and Technology Studies (STS) has adopted a more questioning tone when considering the role of science in society. While offering tremendous benefits in some areas, scientific and technological development has simultaneously generated a series of challenges for society. This is perhaps most clearly seen in relation to the environment. Issues such as climate change and chemical pollution, which have been at the top of Defra's agenda in recent years, starkly link techno-scientific development with the creation of significant risks. Moreover, an acknowledgement of environmental risk underlines the limitations and uncertainties of scientific knowledge. This contrasts sharply with assumptions of prediction and control characteristic of the progressive promises of science in the past (Beck, 1992, Giddens, 1991, Perrow, 1999). Indeed, much of the scientific work we observe in Defra involves the messy and contentious business of reconciling the consequences of past development with future regulatory needs.

3.1.2   A Challenge to Technocracy

31   Questions about the relationship between science, society and governance have led to academic scrutiny of the role of scientific experts and advisors in the policy process.   Putting this very broadly, two overlapping themes are developed in this literature.   First, studies of scientific governance raise questions about the privileged position of science in policy making, particularly as derived from perceptions of its impartial authority (Ezrahi, 1990, Fuller, 2000, Jasanoff, 1990).   Secondly, following what David Edge (Edge, 1995) termed a 'democratic impulse' in post-1960s social science (and Western society more broadly), problematic questions have been raised about the relationship between scientific advice and democratic forms of governance. (Nelkin, 1977, Nelkin, 1992)

32   At the heart of the social scientific critique of science's privileged role in policy making is the argument that what counts as good science should not be judged independently of the social contexts in which it is applied and developed. As Thomas Gieryn puts it, the epistemic authority of science is not an 'always-already-there feature of social life, like Mount Everest . . . but rather is enacted as people debate (and ultimately decide) where to locate the legitimate jurisdiction over natural facts' (Gieryn, 1999).   Thus, while it represents an often-cited rationale for policy making, authors such as Gieryn challenge the ability of scientific advice to stand outside and above politics, cultures and society.   Instead attempts to establish what should count as 'scientific advice' are conceived of as social processes – 'boundary work' – through which science maintains its authority, and governments draw upon it. Scientific advisory bodies, as Stephen Hilgartner reminds us, not only provide information to government, but in doing so perform this role in ways which give this advice credibility, legitimacy and authority (Hilgartner, 2000).   Civil servants and politicians often make a receptive audience, as by appealing to the impartial authority of science they are able to tidy up the policy process, sweeping difficult and messy social and political issues to the periphery. Policy making, can thus often be incorrectly conceived as the relatively straightforward task of translating the best scientific advice into regulation, or to put it another way, 'speaking truth to power'.

33   Research on science and decision-making has sought to open up the nature of technocracy – policy making by the experts – and reveal the complexities and contingencies of policy making.   The focus has been on examining the social processes of governance and exploring the strategies involved in 'ring-fencing' science from politics (Gieryn, 1983, Gieryn, 1999, Hilgartner, 2000, Jasanoff, 2004).   Whether concerning the future of nuclear energy, debates over stem cell research, or controversy over climate change, science and technology are entangled in a social context of political uncertainty, public debate and societal decision-making.   Post-BSE criticisms

of science in the policy process have further served to draw attention to this problematic context.

3.1.3   Science and Democracy

34   Accompanying the social scientific challenge to technocracy has been a move towards 'democratising' the policy making process. One objection to the dictum of 'speaking truth to power' is that by sweeping aside all that is not scientific, governments exclude both the wider publics and public concerns from the policy process. On that basis, a great deal of this work has sought to reopen science and policy making to public scrutiny and participation. In 'reopening' science and policy we are inevitably also raising questions of how best to interpret the relationship between democracy and expertise. As Collins and Evans (2007: p.8) have bluntly put this: "Democracy cannot dominate every domain – that would destroy expertise – and expertise cannot dominate every domain – that would destroy democracy". One area of dispute in the literature, however, precisely concerns the possibility of making a clean demarcation between these two domains.

35   One consequence of democratising expertise is that it requires expanding the terms of reference for policy makers. At a recent workshop on scientific governance hosted at the University of Liverpool, Professor Brian Wynne argued that limits of science in the policy process necessitate exposing policy issues to a wider range of social and political perspectives. Questions about new nuclear power stations, for instance, can't be reduced to risk assessments alone, but involve important social questions about the relationships we have with one another in an ever more global world, and the relationships we have with the natural world. The recurrent argument in the literature is that a fully informed policy process needs to involve these discussions, and scientific risk assessments placed within these contexts (Jasanoff, 2003, Wynne, 2002). Governments, as Helga Nowotny puts it, need to move from policy systems based on the "reliability" of scientific knowledge, to those based on the "social robustness" of knowledge (Nowotny, 2003, Nowotny et al., 2001).

36   Governments, it is advised, need to stretch and re-consider definitions of what is accepted as legitimate knowledge in the policy process. In regard to science this has meant calls for the full breadth and depth of scientific insight, including positions which appear contested and unorthodox, to be heard in the policy process. Such a position would imply, for instance, allowing uncertain and conflicting scientific accounts to become legitimate parts of the policy process.   However, calls to democratise expertise have also involved suggestions to widen the range of experts involved in government.   Social scientists, ethicists and practitioners are seen as potential means of further securing the knowledge base on which policy is created (Irwin, 1995).   Funtowicz and Ravetz refer to this as exposing

scientific governance to "extended peer review". (Funtowicz and Ravetz, 1991, Funtowicz and Ravetz, 1992)

37   Widening the notion of expertise even further, it is also suggested that other types of publics can have a role to play in governance. Part of what protects science's position in the policy process – its cognitive authority, as Stephen Turner describes it – is the perception that outsiders are not able to challenge this advice without recourse to science themselves (Turner, 2001). Social studies of scientific governance have overcome this logic by arguing that, despite not being scientific specialists themselves, members of the public can contribute to the understanding of difficult environmental risk issues (Brown, 1992, Irwin, 1995, Irwin et al., 1999, Irwin and Wynne, 1996). Thus, previous research has considered the knowledges that those applying dangerous pesticides and herbicides to the environment might offer to the understanding of the risks posed in their application, and to bystander exposure in particular (Wynne, 1989) Likewise, medical patients and their families might be able to inform governments about the measures needed to manage or treat their conditions (Layton, 1993).

38   In a recent attempt to bring greater clarity to notions of expertise, Collins and Evans have proposed what they term a 'periodic table of expertises' (Collins and Evans, 2007). In the domain of 'specialist expertises', they offer a range of expert categories from the self-explanatory 'beer-mat knowledge' to the more developed forms of 'interactional' and, finally, 'contributory expertise' (where experts can contribute to the knowledge in question). On this basis the authors argue that the term 'lay expertise' should be abandoned since any such knowledge should find its place in the periodic table rather than be treated as a separate form. Similarly, Collins and Evans are critical of what they see as a tendency for social scientists to adopt a 'folk wisdom' view that 'ordinary people are wiser than experts in some technical areas' (ibid: 5). Irwin and Michael (2003) likewise note a tendency for social scientists to 'romanticise' public groups in terms of their knowledgeability and everyday wisdom.   However, in this report we sometimes refer to 'lay expertise' as a means of drawing attention to the knowledges and expertises brought to advisory committees by those generally labelled as 'lay'.

3.1.4   A Way Forward

39   Defra certainly requires scientific advice to help address the myriad of complex and difficult issues facing government and society. But science alone is not always sufficient for complete understanding, nor can it determine policy action. Our brief summary of the literature is suggestive of a way forward.

40   Firstly, instead of viewing scientific advice as absolute and immutable, the STS perspective suggests its partial, uncertain and contested nature. To

envision scientific advice in this way implies it needs to be presented and treated as such within government. Put simply, a less hubristic and more humble approach to science is required.

41   Secondly, the literature suggests a need to situate and understand scientific advice in relation to the social and political contexts framing the policy issue. This opposes traditional technocratic models of practice based on the artificial separation of science from society. In practice, this means exposing scientific advice and the policy process to greater scrutiny and in particular 'opening up' the policy process to a broader range of expertises and understandings. While the traditional focus has been on improving access to the best available scientific advice, these processes need to be coupled with a move to widen what is considered as the evidence base.

42   Thirdly, the focus should not simply be on how to apply a broader range of knowledges and expertises to fixed problem definitions. Instead, an STS perspective draws attention to the very framing of the issues for discussion. Thus, the phrasing of policy questions and the manner in which agenda become set represents a crucial area for critical analysis and discussion.

43   A new model of scientific governance is emerging in the literature. It opposes technocratic models, which are seen to close down complex policy issues through recourse to science, by seeking to open them up. Government is encouraged to find value in the plurality of advice and expertise brought to the policy table, including value achieved through open deliberation and the recognition of the conditional and limited nature of advice (Felt and Wynne, 2007, Stilgoe et al., 2006, Stirling, 2005). Policy makers, in other words, are asked not just to translate expertise into good policy, but to play an essential role in ensuring the scrutiny and mediation of a variety of knowledges (Jones, 2005).

44   On the one hand, this alternative model of scientific governance offers potential democratic benefits in drawing a wider range of actors into the policy process, and in ensuring expertise is assessed transparently. On the other hand, the potential benefits are not only normative, but include improving the quality of expertise and advice. As a recent EC report on the European Knowledge Society concludes, a focus on plurality and deliberation encourages greater "attention to (and rigour over) the uncertainties, ambiguities, ignorance and indeterminacies" involved in the governance of risk and the environment (Felt and Wynne, 2007: p.85). However, and as we will discuss, bringing such ideas into practice within existing policy processes – characteristically defined according to very different principles – is by no means a straightforward task. In this way, our report represents an attempt to move beyond the broad lessons and general implications of the literature and towards the actual governance contexts and institutional processes within which newer approaches to scientific governance are enacted and performed.

3.2   Science and Governance post - BSE

3.2.1   Taking up the Challenge

45   Recently, we have seen the lessons of certain influential trends within social science filter (at least partially) into the practice of scientific governance. Changes over the last 10-15 years have been led by the events of the Bovine Spongiform Encephalopathy (BSE) crisis. Put somewhat over-dramatically, BSE was the moment when government realised the systemic factors that had contributed to the flawed creation and use of expert advice. Subsequent policy documents have tried to move policy forward by emphasising the need, first, to rebuild trust between science and the public and, second, to find ways of ensuring that expert advice is used in such a way that government and the public can be confident of the quality of decision-making. The latter, *substantive* motivation is often overshadowed by the former, *instrumental* one (Fiorino, 1990). But, there is consensus that the relationship between experts, policy and the public needs, to some extent, to be renegotiated.

46   In 1997 the guidelines from the Chief Scientific Advisor called for government to make use of the best available independent science.   The guidelines also challenged government to:

- generate greater openness and transparency in scientific governance as a means of building trust in expert advice;
- be able to admit to and contend with uncertainty in the evidence base;
- admit a range of scientific opinion into the advisory process;
- adopt new understandings of risk and move away from simplistic linear models of risk assessment;
- engage in greater horizon-scanning in order to reduce the potential for surprises from new technologies or new areas of public concern. (Chief Scientific Adviser Office of Science and Technology, 1997)

47   Subsequent versions of the guidelines have continued to build upon this new discourse of scientific governance (Chief Scientific Adviser Office of Science and Technology, 2000, Chief Scientific Adviser Office of Science and Technology, 2005). In the 2005 guidelines, for instance, a much more explicit reference to the importance of public dialogue is made. The 2005 guidelines also expand the definition of evidence and 'evidence-based' policymaking. Alongside independent science, room is created for drawing on the insights offered by the social sciences, arts and humanities.

48   In addition to these guidelines, Government has responded to the institutional failings identified regarding BSE with the creation of new advisory bodies at arm's length from departments. 2000 saw the creation of the Food Standards Agency, acting in the public and consumer interest away from the agricultural responsibility of the old Ministry for Agriculture, Fisheries and Food. In its short history, the FSA has been viewed positively for its approach, which has included an awareness of uncertainty, a willingness to engage in

dialogue and openness in its dealings with the public. Organisations such as the Health Protection Agency, formed in 2003 from a number of smaller bodies, have looked to follow the FSA's lead in the new approach to scientific governance.

49   In broad terms, 'new' approaches to governance emphasize the need to rebuild trust in regulatory institutions (DTI, 2000; Council for Science and Technology, 2005; RCEP, 1998), to operate in a more open and transparent manner (Phillips et al., 2000; CEC, 2002), to engage with the public (Royal Society/Royal Academy of Engineering, 2004), and — as the House of Lords Select Committee put it — to create a situation in which direct dialogue becomes a 'normal and integral part' of the policy process (House of Lords Select Committee on Science and Technology, 2000: 43). Some countries have a well-established history of engagement activities—notably, Denmark and The Netherlands (Hagendijk & Irwin, 2006). For the UK it is worth remembering that this is relatively new territory.

3.2.2 Moving Beyond Instrumental Change

50   The changes that have taken place within scientific governance have prompted social scientists to point to tensions and inconsistencies within calls for openness and engagement. To offer one significant example of 'new governance' in action, the United Kingdom's 'GM Nation?' debate over the commercial growing of genetically modified crops took place during Summer 2003 and involved a large series of events at regional, county, and local levels. The debate's Web site received 2.9 million hits and around 37,000 feedback forms were returned (Understanding Risk Team, 2004). On that basis alone, this counts as the largest exercise in public engagement in the UK (GM Nation?, 2003).

51   Despite this impressive scale, the debate was not in general judged to be a success. In a highly critical report, a House of Commons committee concluded that 'it is profoundly regrettable that the open part of the process, far from being a 'public debate,' instead became a dialogue mainly restricted to people of a particular social and academic background. The greatest failure of the debate is that it did not engage with a wider array of people' (House of Commons, 2003). Lack of time and money were blamed by the cross-party group of MPs for this alleged failure. In a series of criticisms that are more widely symptomatic of initiatives aimed at engaging the public, the GM debate has been presented as failing to dispel the suspicion that it was primarily a legitimating exercise in support of the Government's decision to proceed. It was seen as lacking clarity of objectives, suffering from a difficult relationship between the debate steering board and government, and taking place far too late in the technology-development process (Council for Science and Technology, 2005).

52   This example suggests that the practice of public engagement is at least as important as the underlying principles (Irwin, 2006). There is also a suggestion in many official statements that — despite the increased attention that has been recently paid — the messages from social science have so far only partly been assimilated by policy makers (Hagendijk, 2004, Marris et al., 2001). Although institutions have often sought to distance themselves from the old deficit model of science-public relations (where efforts designed to increase public understanding were assumed to build support for science), there is still a tendency for the new climate of dialogue to be seen as a means of persuading the publics that further science and technological innovation is necessary and, indeed, the only rational way forward (Blair, 2002). Given this apparent reluctance to acknowledge public questioning of institutional priorities (or to acknowledge that "rationality" can be a contested territory), the possibilities for science-public dialogue can appear quite restricted.

53   We are therefore confronted with a situation in which talk of public engagement has become increasingly common in Europe (Hagendijk et al., 2005). Meanwhile, initiatives that have taken place have often led to further debate and disagreement (Horst, 2003, Irwin, 2001) and to raised awareness of their limitations. On the one hand, this has encouraged some discussion of the best form and timing of future exercises (Council for Science and Technology, 2005, Wilsdon and Willis, 2004, Wilsdon et al., 2005). On the other, it suggests the need for greater appreciation and understanding of what can and cannot be achieved by specific (often "stand-alone") initiatives, especially when such initiatives fail to challenge (or often even acknowledge) underlying institutional processes and the assumptions according to which they operate.

54   Limited experiments in public engagement suggest therefore that the 'instrumentalist' notion that engagement will engender widespread consensus and agreement is very much open to challenge; both in terms of democratic principles but also as a blunt matter of practice. Certainly, the pursuit of societal consensus through engagement appears a questionable goal which is likely to obstruct the expression of broader judgements and preferences (Felt and Wynne, 2007, Hagendijk and Irwin, 2006, Jasanoff, 2003).

3.3   Critical Issues for Lay Membership

55   The social science reviewed above opens up some spaces for lay membership of expert committees to develop, but it does not suggest any easy answers. Lay membership represents just one aspect of a larger set of discussions about the nature of scientific governance.   STS research suggests that issues likely to arise with regard to lay membership – What constitutes an expert? What types of evidence should be given greatest

weight? What is the role and responsibility of an advisory committee? – are not unique to this topic but are of much wider significance for scientific governance. In that way, questions of the status of 'lay' members within advisory bodies become inseparable from wider questions of the operation, remit and standing of advisory bodies.

56   This discussion raises some fundamental questions about what 'lay' membership is designed to achieve. Is this a fundamental attempt to 'open up' expertise to external scrutiny or else to 'democratise' processes of scientific governance? Is it primarily concerned with legitimating existing processes or a more innovative attempt to change the definition of 'sound science'? Are lay members to focus only on certain aspects of the discussions (perhaps ethical or dissemination concerns) or to assume equal and equivalent status to other members?   As we have suggested with regard to the 'new' scientific governance, attempts to engage with the wider publics are likely to be scrutinised externally in a critical, and sometimes sceptical, fashion.

57   Social research points to difficulties that are likely to arise when 'lay' members are incorporated onto advisory bodies. Once we move beyond the 'deficit' assumption that only technical experts have a legitimate understanding of the issues, the precise contribution to be made by 'lay' members becomes open to a number of interpretations. Furthermore, if 'boundary work' operates in such a way as to construct demarcations between what is 'science' and 'non-science' lay members are likely to find themselves marginalized from the discussion.

58   An STS approach suggests that these questions are not simply debating points but should be open to careful, empirical observation and analysis. That is what we have set out to do in this project. The study of lay membership on SACs therefore takes us deep into the rationale and operation of scientific governance in Britain.

4.0 Rationales and Representations

59   The previous chapter considered some of the characteristics of contemporary scientific governance and situated the inclusion of lay members on SACs within this context. The aim of this chapter is to detail the ways in which lay membership is valued and understood by policy makers and the committees themselves[3]. Emerging from interviews and discussions with these groups and individuals, five roles are identified for lay members: i) witnessing, ii) communication, iii) social grounding, iv) providing complementary expertise, and v) challenging expertise. The first three roles relate to perceived links between lay members and the public and will be clustered in this chapter under the general heading of 'public representation'. The fourth and fifth roles describe lay members as being able to influence and potentially improve the quality of scientific guidance to government: these roles will be considered here as forms of 'lay advice'.

4.1   A Contested, Uncertain and Evolving Context

60   As described in Chapter One, lay membership within scientific advisory processes is a fairly recent phenomenon, situated alongside other initiatives aimed at improving scientific governance. Indeed this piece of research was commissioned to coincide with Defra's attempts to innovate, understand and develop the use of lay members on committees such as the ACHS. Yet, the inclusion of non-scientists on expert scientific bodies is not without contention. For instance, a recent report from the House of Commons Science and Technology Select Committee argued that committees should not routinely appoint lay members, particularly in areas with a clear technical remit (House of Commons Science and Technology Select Committee, 2006). As lay members are being appointed to SACs, questions are simultaneously being asked of the benefits, limitations and future possibilities of their membership.

61   Moreover, committee composition, mandates, working practices, the types of expertise represented and a committee's position in the policy process all vary. Each of the committees we spoke to and observed in action provided a different picture of lay membership and the role of advice in policy making. Indeed, the kinds of people that some committees were calling 'lay' members were simply 'members' in other committees.

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[3] Quotations are used within the text to exemplify the kinds of repeating descriptions of lay membership which we heard in our interviews and focus groups from participants. In each case, a specific quote might have been substituted by the statements of others, but has been chosen for its clarity of presentation and ability to communicate the attitudes and experiences of the participant to the reader. When quotations are drawn from group discussions, individual participants will be identified by using labels, such as P1 and P2 (participant one and two), and IV (the interviewer).

62   The context in which lay membership is developing is thus uncertain, contested and evolving.   There is no agreed model of what a lay role (or indeed a 'lay' member) should be. Instead, government, lay members and the committees they belong to are giving meaning to, and developing practice around, these novel roles as they proceed.   Lay roles are emerging in different ways depending on the individuals who are playing them, and the context of the SACs in which they are a part.   It is in the attitudes and actions of committees that we must look to find out how lay membership is being defined and enacted in practice.

4.2   Lay Members and Public Representation

63   Consistently, in all the discussions we had with policy makers and government advisers, membership was spoken of in connection with the public. *"Lay members", as* one participant put it, *"can add an important voice to a process that is not just seen as a bunch of scientists sitting behind closed doors reaching decisions"*.   Lay members were given the responsibility of standing in for, or representing, wider public interests on SACs.   However, participants struggled to pin down precisely what it was that lay members should do in practice, or what kind of people they should be. With this in mind, we have assembled participants' responses around three functions which give shape to the idea of lay members as public representatives.   Firstly, lay members were perceived as a means of ensuring transparency in the scientific advisory process, often referred to as witnessing.   Secondly, they were seen to have a role to play in improving communication between SACs and the public. And, thirdly they were described as having a responsibility for grounding scientific advice within social contexts.

4.2.1   Witnessing Scientific Advice

64   Having a publicly-responsible lay member join an SAC was seen as an opportunity to build transparency, and thereby integrity, into the advisory system.   Where scientific governance had been criticised in the past for applying scientific advice behind closed doors, lay members were advocated as a means of opening the advisory process to the public gaze.

65   In interviews and group discussions, participants spoke of lay members playing monitoring roles.   Some referred to this role as bearing *"public witness"* of the actions of scientific advisory committees and government.   Others described lay members as a type of committee *"watchdog"*.   Importantly, the benefits of lay members were seen beyond their perceived ability to create a window through which publics could observe and access the work of committees. Rather, in fostering this transparency, lay members were seen as a crucial means of ensuring that committees were operating honestly and rigorously.   One committee member likened this witnessing role to *"waving a red flag"* in instances where committees were perceived to operate

in their own, or in government's, interests and not in those of the public. In this sense, the value of lay members as witnesses is rooted in their position as non-scientists standing apart from the interests of the committee and government more generally. Speaking of the value of lay membership, one policy maker described a lay member's legitimating role in the following terms:

> *"There are rationales that I can see value in. One of them is around issues of transparency and legitimacy. People are always going to think there's something going on that they don't know about; that there's some deal being done or some conversation being had that the public doesn't know about. I think there is potential value in having a, for want of a better word, representative of the people in that group, who can actually say, 'well I'm nothing', 'I'm separate from the decisions that this group makes, but I confirm that this group operates in a legitimate way and they're not having conversations that are not being reflected in the minutes. Or, if they are, they're having conversations that are, that are not being reflected in the minutes for sensible reasons'. I can see a value in that."*

4.2.2 Communication

66   A second common role identified for lay members was as communicators with the public. These discussions often reflected widely-held perceptions about the difficulty of relating esoteric and expert knowledge to non-expert publics. Concerns were raised about the ability of citizens to understand and contend with the complex technical material and scientific language of SACs. In the following exchange between a committee member (P1) and the interviewer (IV) the need to make language accessible is clearly articulated as central to the duty of committee membership:

> *P1   "Absolutely! Yes! Actually, I'm shocked. I'm absolutely shocked. I think it's a real abdication of responsibility. I think these days everyone publishing something on the website should either have an editor in-house, or ask somebody out of house to help them put it into plain English."*
>
> *IV   "Yes, there is one committee that uses the Plain English Society to go through its writing."*
>
> *P1   "We're starting this now. We're going to have training and it's going to get much, much better."*

67   Lay membership was sometimes perceived as a solution to these language, and therefore public engagement, problems. Non-scientific members were put forward as translators from expert to non-expert languages, or as committee spokespersons. Indeed, we found lay members writing

committee reports for the public, and being involved in communicating scientific advice to non-experts within the policy system. On other occasions lay members were perceived as test cases in accessibility. Through interaction with the committee, the presence of lay members was seen to encourage the committee to pay more attention to communication and language in its routine practice. Recalling one such event, a committee member put it like this:

> *"I think it's important that the advice can be understood, that the Committee gives. I have memories of one of the lay members saying, look, I need us to explain what you mean, and it's good then because they make sure that everyone understands."*

68 Participants also spoke about communication in somewhat broader terms, i.e. beyond concerns of language and translation alone. Communication was promoted as a means of developing wider public awareness of committee work, and having citizens take a greater interest in the topics and affairs being considered. Concerns were expressed that, without clear and effective communication, issues of substantial public concern – for instance, food safety or chemical hazards – would remain unknown. In the statement below, a participant describes communication as a means of making the work of the committee "*significant*" to the public. On the one hand, her statement reiterates the need to make esoteric scientific language comprehensible. On the other hand, her comments also suggest that lay members can make science and scientific advice more meaningful to members of the public as well:

> *"Lay members can make sure anything we do is accessible to the wider public. . . . Unless people understand what we're doing, and why it's relevant and significant, it follows that the information is not accessible to people. By flagging up issues such as, 'what is this chemical used for?' people would see the relevance. Without that you just have a chemical with this very long name. . . . I think that's very important."*

4.2.3 Social Grounding

69 The notion of lay members as being able to ground scientific advice within a social context was a third common theme to arise out of the research data linking lay members with public representation. This role reiterates concerns about the need to engage publics in scientific governance. However, it extends engagement from being focussed on generating public awareness of committee work, to generating committee awareness of a public context. Lay members, it was suggested to us, might embody some type of public expertise which could contribute to SACs. One committee chairperson, thus, described her committee's layperson as "*a real expert and interpreter of the public domain."*

70   In this way, lay members were seldom linked to discrete political communities, such as an industry or NGO.   Rather, lay members were described as offering a public counterpoint to scientific members based on their status as non-experts or, more accurately, as non-scientists. Where scientists were valued for their ability to apply technical expertise to the advisory process, lay members were valued as a means of grounding abstract and esoteric scientific discussions in real world social contexts.   As one member stated, while a lay member may not have *"any relevant expert knowledge"*, they are important in that they can be there to *"provide a social reference"*.   Another described the role of the lay member as being *"an extra kind of social test."*   For instance, it was described to us that lay members could ensure that, when considering risk assessments, the impact of those decisions on quality of life for members of the public was not forgotten among the discussion of technical details.   In the statement below, the value of these roles is described as reinforcing *"common sense"* in the advisory process:

> *"To a certain extent, I suppose, I see myself as the man on the Clapham Omnibus – an ordinary person – and therefore to perhaps bring to this committee a certain amount of common sense; not to stress that it's lacking. But, where we get into really esoteric things that are frightfully interesting, but maybe have no real relevance to the great majority of people in so far as they may be affected, then there is a role to play there."*

71   Other participants described these grounding roles as making committee work relevant and responsible to publics.   In some instances committees were seen to be very good at answering technical questions linked to the evidence, but were failing to acknowledge questions perceived to be important by members of the public.   Such comments imposed a duty on committees which extended beyond the empirical appraisal of science, to the questions, concerns and criticisms of public citizens.   The following exchange between a policy maker and researcher describes lay membership as one means, amongst others, to achieve this:

> *P   "I think that the questions the public ask either need to be seen as relevant or, even if they're not relevant, be answered and explained why they're not relevant… Committees fail to respond because they think the answers are either obvious or they think they're irrelevant. But they're not irrelevant to people who've asked them. So, I think that lay members are part of a wider constituency of tools for making your science advice, or your science policy advice, relevant. I suppose relevant is probably about the right word."*
>
> *IV   "Right, okay… I just want to see if I can make sure that I understand what you are saying…As experts they know particular questions that need to be answered, but not*

necessarily everything that needs to be answered, only everything that's relevant from their particular expertise?"

    P   "Yes. I think that's right."

72   Each of the functions discussed above links the benefits of widening committee membership with the ability of lay members to engage citizens in scientific governance. However, these functions vary in the degree to which lay members are seen to participate in the processes and activities of committees. Public witness roles, for instance, are valued precisely because of the perceived detachment of lay members from science and government. Communication roles imply some integration of lay members into committee activities – by assisting committees relate their work to a wider public. Finally, social grounding roles extend integration further by suggesting that SACs have a responsibility to respond to and contend with public concerns in their work.

73   However, despite the varying degrees to which lay members, and through them public interest, are drawn into the advisory process each of the above roles sits largely outside of the expert deliberations at the heart of the advisory process. We will now switch attention towards circumstances where lay members are seen not as public representatives, but fully integrated members contributing to the advice of a committee.

4.3   Lay Members as Advisers

74   Instead of 'lay' members conferring public representation, some participants also used the term to describe types of expertise which could complement science in advising government. Lay members were, in other terms, valued as a means of improving the quality of the advice produced by SACs.

4.3.1 Complementary Experts

75   Many of the conversations we had about lay membership suggested that the idea of 'lay' – understood to mean 'inexpert' – was an inaccurate reflection of the qualities possessed by lay members. Participants often pointed out that the lay members they worked with, while not holding scientific expertise, could be classed as experts in their own right. For instance, this included experts that were formally recognized as such, but from disciplines outside of science, technology, engineering and medicine. Social scientists were put forward as a means of assisting committees understand and relate to public concerns and social contexts. Economists were presented as a means of shedding light on any financial matters overlapping the committee's work. The inclusion of ethicists was perceived as necessary to help scientists come to terms with the moral and normative dilemmas involved in a policy

area. Indeed, when we looked around the committee tables of the SACs being studied we found many instances in which lay members were providing complementary expertise. On the ACHS the current lay person has a background in environmental law and works as a private consultant and as a visiting university lecturer. On Defra's Advisory Committee on Releases to the Environment (ACRE) sitting alongside the plant biotechnologists and microbiologists are two members with expertise in agronomy and farming practice.

76   Discussions about lay membership thus gave rise to a related conversation about the expansion (and most appropriate definition) of expertise on advisory bodies. Interestingly, ACRE does not refer to its non-scientific members as 'lay', but simply as members in their own right. Expanding membership beyond expert scientists was described in one instance as adding the right *"kinds of tools"* that *"a committee wants to use"* in responding to their mandate. In another group this position was stated by distinguishing between scientific and non-scientific experts:

> *P1 "You should have experts, scientific experts and non-scientific experts. The lay members may well fall into the non-scientific experts group."*
>
> *P2   "I think there are many other types of understanding that you need in certain areas. You need to be aware of the psychology and the ethics and so on. In the past you would have some people say 'oh, we all, we all have got ethics, you know, we've talked about values', but now it seems in certain contexts, very useful to have somebody who's an expert in that kind of thinking and questioning."*

4.3.2 Challenge Roles

77   In addition to arguments for the inclusion of "*non-scientific experts*", some of our research participants strongly felt that active advisory roles existed for lay members outside of this category. In other words, value was also seen in having *"a real lay member who isn't an expert in anything that the committee needs expertise in",* as one participant described it to us. A second participant expressed this as making use of somebody from a *"different walk of life"*:

> *"You need to have the economists, and you need to have political scientists. But, actually that's a different dimension. You can bring different professional skills to the table which may also be beneficial but I think there's real value in having people who are not experts, whether it's a consumer representative or just somebody from a different walk of life… And that's what I mean by lay people."*

78   Participants thus spoke of less tangible contributions to the advisory process based not on holding a form of complementary advice but on a broader set of personal and intellectual qualities. A good lay member was seen as having the capacity to understand and cope with detailed technical discussions, to be proactive in engaging the topic, and above all confident enough to interact with the various experts around the table. As one participant put it, "*to have the confidence not to just sit there and feel overawed by all the eminent scientists, but also the humility to accept the advice of those experts*".

79   With these qualities in mind, one lay member described her own contribution as simply asking *"awkward questions":*

> *"A lay member should bring a different perspective and be able to articulate that perspective. My job is to ask awkward questions, questions that experts can't. I can ask the 'why' questions. Experts are often afraid to reveal their lack of knowledge. I'm allowed to be ignorant".*

80   The ability to question expertise as enacted in the advisory process from a position outside of scientific discourse was commonly referred to as a "*challenge*" function. Some participants saw the important questions they asked as those which kept key social and policy relevant questions on the table: to stop expert members from "*short cutting*" by focussing on technical details, as she put it. Others saw challenge roles as helping committees to avoid looking at issues from overly rigid or static perspectives, but to "*brainstorm*" other ways of approaching a topic. Similarly, a lay member described asking questions which interrogated the significance of aspects of the advice, for instance when compared against each other. Sir John Krebs, former chair of the Food Standards Agency, lucidly describes his ideal lay member in the following terms:

> *"A good lay member challenges the implicit assumptions that scientists make; to ask the questions that scientists never ask, because they're part of their normal code of behaviour… I'm setting pretty high standards for lay members, and I wouldn't expect all of them to press all of those buttons all the time, but my dream member would have those sorts of things in their minds."[4]*

4.4   Discussion

81   Lay membership was discussed and debated both enthusiastically and extensively by our participants. It was clearly a subject that, while relatively novel for most, interested and mattered to them. Participants offered a wide range of ideas about lay membership, exploring a number of ways for their

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[4] From an interview with Sir John Krebs, 6 June 2006.

inclusion to contribute to scientific governance. Specifically, participants generated five potential roles for lay members. Lay members were described variously as (at least potentially) being able to:

1. witness the activities of SACs and thereby ensure their integrity;
2. help committees make their advice accessible and communicate its significance to members of the public;
3. keep scientific and technical discussions grounded in a social context so as to ensure that SACs were responsive to public concerns;
4. provide forms of complementary expertise to committees;
5. play challenge roles which could help improve the focus and rigour of committee deliberations.

The first three roles are linked in that they pertain to the assumed relationship between lay members and the wider social community. Each role casts lay members as some form of public representative. The final two roles shift the focus away from the public to the nature and quality of the advice being produced by SACs.

82   This discussion goes some way to giving shape to lay membership on SACs. However, the five roles are best seen as abstract possibilities and matters for active debate rather than well-established functions within committee work. There are few examples in the data where participants were able to link these roles to concrete examples of practice within their respective committees. Moreover, participants occasionally raised further questions about the practicality or suitability of roles. For instance, questions were raised about whether there was scope in the advisory process to develop communication roles. Could lay members really be expected to speak accurately and authoritatively on issues of scientific complexity? Wasn't communication the responsibility of committee secretariats, and already being accounted for in terms of the publication of minutes and reports on committee web sites? Were individual members permitted to speak on behalf of committees in the first instance? *"So,"* as one committee member stated, *"I don't really think communication is an issue".* Similarly, in describing witness roles, participants raised questions about whether it was in fact possible to have a "member" who could be seen as separate from the rest of the committee. By being part of an SAC, wouldn't lay members become experts themselves, *"internalising all the tacit assumptions"* associated with the expert viewpoint? Lay roles, in other words, were often not as clear cut as we have presented.

83   Moreover, a closer look at the rationales behind the lay roles described above reveal some problematic assumptions. Thus, the basic notion that lay members can 'represent' the wider public is very much open to question (a point discussed in Collins and Evans 2007). Equally, the attribution of a communication role to lay advisors both places an enormous responsibility on the individuals in question (who may not be at all qualified or experienced in such matters) but also raises fundamental questions about what should be communicated and how. At a more basic level, some of the roles being defined for lay members assume a homogeneous model of the public (so that 'it' can be represented in a relatively straightforward fashion as if it were a

single and defined constituency) and a very crude notion that 'science' and 'society' can be brought together in this fashion. It is also possible to discern within some of these discussions an assumption that public trust in science would be regained by greater openness and transparency (rather than requiring a more fundamental discussion of socio-scientific priorities and preferences). As was suggested to us by participants on more than one occasion, including a lay member alone was only a partial response to the problems of legitimacy. *"It helps, but I don't think it ticks the legitimacy box. It sort of puts a little mark in it, rather than ticking it."*

84 Each of the five functions described above implies a different approach to legitimation-building: from better communication to the inclusion of wider interests, from bringing complementary expertise to serving as an independent challenger to current institutions and practices. Lurking beneath these specific roles can also be identified a deeper question: is the purpose of lay membership to communicate and facilitate the existing operation of SACs or to augment and (if necessary) *change* their operation in some way? On the basis of our project, we would argue that there is ambiguity around this point, with both practice and principle varying across the advisory system. This is particularly visible in the different levels of integration of lay members within committee practice. Is the label "member" taken at face value, inferring that lay members play meaningful and active roles in assessing science and formulating advice? Or, does the notion of "lay" predominate – inferring lay members play secondary roles around public representation and legitimacy, while scientists get on with the business of generating advice? It is fair to say that the dominant assumption is currently that lay members should play a communication/facilitation role rather than shifting advisory processes more fundamentally.

85 In the next chapter, we will consider these wider issues in the context of the broader operation of SACs and the principles according to which they operate.

5.0 Lay Roles in Context and Practice

86   Attend any advisory committee meeting and you will probably find yourself sitting in a government boardroom or conference suite, most likely in London. The committee will be placed around a large board table with the chair and secretariat at the head. The committee will be composed of individuals from across the UK, from various professions, and who may, or may not, know each other outside of the SAC. Invited speakers (usually from other government departments, academia, or from industry), policy makers, or interested members of the public may occupy seats off-set to the side to allow observance of the proceedings. While a great deal of work goes on behind this formal setting – committee members and secretariats are involved in a continuous process of reviewing material, following up on the outcomes of previous meetings, and preparing for those on the horizon – it is around the committee table that the main business of drafting advice takes place.

87   In the previous chapter, we considered the rationales for lay membership as envisioned and understood by committee members and policy makers. Building on this discussion, we now turn our attention to lay roles within the social contexts and practices of SACs. Importantly, in so doing we are led beyond the actions of lay members alone to focus instead on the operation of SACs as a whole. Specifically, we will look at the development of lay membership in relation to three key features of committee life: i) the interaction between science and politics; ii) relations of expertise and, iii) committees as social sites of dialogue and debate.

5.1   Science and Politics

88   A recurrent theme throughout this report has been the perceived need for scientific governance, including the work of SACs, to be exposed to a wider range of social experience. In Chapter Three we spoke of this as opening up scientific governance, and the need to resist the tendency to apply science as a means of closing down policy issues. Some of the functions of lay members described to us by committee members and policy makers would appear to share this aim. These lay roles were perceived as an opportunity to place considerations about science alongside discussions around wider social and political factors. How committees understand and contend with the relationship between science and politics is a central factor in determining the possible contributions of lay members.

5.1.1   Value Neutrality and Lay Membership

89   Within discussions of the potential value of lay membership, a debate often emerged about the value of impartiality in scientific advice giving, and

also how this neutrality is to be defined in such contexts. Participants discussed whether the value of scientific advice was derived from its separation from politics – its ability to speak about natural facts – or from being grounded within a social and political context. In asking these questions, participants widened discussions from lay membership alone to address fundamental issues about the nature of knowledge and its application in committee work.

90   For some groups the inclusion of lay roles, particularly as involving lay representation and public grounding, was seen to threaten the integrity of the advisory process. Engaging lay members in discussions of a scientific nature was seen to inappropriately blur the lines between science and politics. This is a division on which the objectivity and authority of the committee's advice was assumed to be based. The following exchanges, between the members of one SAC, express these concerns about the impact of opening scientific discussions to a social context and public representation. They voice strong reservations about having lay membership foisted upon committees by policy makers, and worry about its implications on fundamental principles of impartiality. In this exchange, lay members are seen partly as distractions from rigorously pursuing scientific evidence, but also as disabling scientific decision making by miring discussion in inappropriate political debate:

> *P1   "I think that if there are suggestions about the breadth of skills and aptitudes scientific advisory committees need, then that's something we would listen to very carefully indeed. Where I think we would have concerns is if, by the very act of broadening representation in whatever modality is ultimately decided to be appropriate, you emasculate the committee's decision making powers."*
>
> *P2   "And you don't want to be the guinea pig."*
>
> *P1   "No, no, no, it's just the story of my life is never volunteer first [laughter]."*
>
> *P3   "I do think that there might be a, a kind of fundamental problem here which is if the political establishment is interested in having lay people on scientific committees, then their interest in doing that is presumably grounded upon the idea that, that they should be representative. This actually goes against the fundamental principles of any SAC – that people are not representative apart from representing their disciplines as it were; that they're bringing their expertise."*

91   Yet, not all committees agreed with this perspective. Although not so commonly-voiced, others saw lay membership and public representation as *contributing to* the production of advice. Instead of seeking to maintain a separation between science and politics, lay members were presented as a way of exposing the fallacy of this separation. We were told they could be a means of drawing out the social and political assumptions of scientific

members, and exploring how these attitudes are reflected in the advice being generated. Lay roles were, in these instances, not viewed as a means of adding social context to the scientific advisory processes, but rather as a way of identifying and contending with that which was already inherent in the process. Here the benefits of lay membership and challenge roles are described by a committee member as a means of making the consideration of scientific advice more robust:

> *"There will be people who say lay membership is the way of the future and that it makes a better process. And, there will be people who say this is contaminating the assessment of scientific evidence. I think that's where we're talking about a sort of evolution of attitudes. I think there's been a rapid evolution of attitudes, and the more advanced committee members and chairs would welcome it, saying this is increasing the rigour of the process. It may be a bit irritating to have Mary Smith every five minutes saying, 'can you justify that assumption?'. But, actually it helps to improve the rigour."*

5.1.2 Observing Science and Politics in Practice

92   While debates, such as those above, were salient features of the conversations we had with our research participants, in observing committee practice we found little evidence to support an absolute separation between what is talked about as science and what is seen as politics. The relationship between the two was much more complex than this and in practice committees seamlessly wove advice drawing together both aspects.

93   For instance in composing a risk assessment on the relationship of a substance to cancer a committee will be asked to evaluate and draw upon a wide range of technical data. In doing so the committee might be asked to compare the potential hazards of a substance against a predetermined criterion or threshold. But, as committees told us, coming up with absolute risk assessments was difficult to achieve.

94   When considering a chemical of concern, the Advisory Committee on Hazardous Substances (ACHS) members consider a wide range of data involving a variety of different impacts on the environment and human health. However, in evaluating this evidence they make an assessment of risk in relation to institutionally-agreed criteria, treaty obligations and social and political judgements. Much of the ACHS's work revolves around identifying a chemical's hazardous properties against what are commonly referred to as PBT criteria. These refer to a series of pre-established measures addressing the persistence of a chemical in the environment, its toxicity and its ability to accumulate within an organism. Established by the European Union, PBT criteria are based on scientific evidence and experience, but also involve judgements about what constitutes an acceptable risk.   They are based partly on science, but also on political choices about the acceptability of risk.

Moreover, in drafting its advice the ACHS must make further decisions about how it wants to interpret these criteria, and how rigorously it wants to follow the PBT criteria.

95   Another committee we spoke with was concerned about how to deal with these issues, and the personal judgements associated with issues of risk acceptability:

> *"So it is difficult, and of course everyone is always tempted to put a value on something because it's a natural human trait. We all want to do it. But I'm sure if you asked different people, around a table like this, what their individual values were on a particular level of protection or not, they may give you a range of different answers. These would depend on whether they've got a disabled mother or cystic fibrosis child or whether they've lost a person in a road traffic accident, all sorts of things come into bearing."*

In continuing this discussion some members of the committee felt that it was in areas such as risk acceptability and cancer rates that lay members might be particularly well placed to stand up for public interests. *"Representing the public in terms of what they would want to see us do."* Others felt committees were better left sticking to the numbers alone, leaving the different political and social considerations made around thresholds to politicians. *"That's where the politics comes in. That's why ministers have their job."*

96   A second instance where the blurring of lines between science and society can be observed is in relation to committees' responsibilities in pursuing horizon-scanning (HS) activities. Most of the committees we observed were actively seeking to identify future hazard issues, and determine how these should be taken up in the policy arena. Such roles clearly involve maintaining an awareness of scientific developments. However, HS also requires committees to make a series of social judgements. These include determining which hazard issues should be given priority in policy making, as well as how government should proceed in responding to potential hazards.

97   Concerned about the impact of pharmaceuticals making their way into the environment the ACHS, for example, undertook an exploration of this issue as part of its horizon-scanning activity. The choice of topic involved scientific judgements about the nature of the threat to the environment and reflected concerns which had already been raised in the scientific community. However, choosing the topic for discussion as part of the committee's HS mandate also involved members' personal judgements about the importance of the topic for Defra and for society more widely. What made the risks associated with pharmaceuticals stand out above the risks of other chemicals? Likewise, through the committee's initial investigation it was uncovered that the issue was already being considered by the UK Environment Agency as well as elsewhere within the EU. A second judgment, thus involved determining whether these bodies were adequately contending with the issue,

and whether the ACHS could add value to this process. Finally, a third judgement was made as to whether the committee felt that government was doing enough in the areas of risk communication, and whether this could be grounds for the committee to be involved. In the end, the committee determined, on a combined social and scientific basis, that the issue of pharmaceuticals was being adequately taken up elsewhere.

98   Different committees approached HS in different ways. However, as the comments below suggest, these activities are not guided by an objective rationale, but are often informal and highly subjective:

> *"There are lots of groups that say 'we do horizon-scanning'. When you find out what it actually is they do… They have just had a brainstorm for few minutes around a subject rather than trying to apply something fairly through a methodology aimed at [the Department's] priorities. Because you can't horizon-scan everything. However we want to know what they think are our priorities? What are the areas that are going to cause us problems, or might cause us problems?"*

99   The issues of scientific thresholds and HS are suggestive of some of the complexities involved in sorting out the science from the social in advisory processes. It is also clear from the discussions we have had with policy makers that there exists considerable uncertainty in responding to these difficult issues. Some committees found themselves unable, or in some cases unwilling, to reflect upon the social and political nature of scientific advice, or to interrogate their own roles as social actors in the process of generating advice. With so much value placed on the independent evidence-based nature of advice, committees may feel hesitant to steer dialogue in this direction.

Box 2: Lay Membership, the ACHS and the UKCSF

Lay membership is one of the ways in which Defra and the ACHS are experimenting with bringing together scientific advice and publics. A further innovation in this regard involves the relationship between the ACHS and the UK Chemical Stakeholder Forum (UKCSF). Like the ACHS, the UKCSF addresses issues of chemical risk regulation. Yet, while its membership includes scientists, it is not defined as a scientific committee. Instead, the Forum has a mandate of liaising with industry so as to "*stimulate action*", as one participant put it, on chemicals perceived to be of significant concern. The Forum's membership emanates from a wide range of backgrounds, including industry associations, consumer and environmental NGOs and independent academic bodies. There is also some overlap in the membership of both committees. The UKCSF furthermore acts as the principal client for the scientific expertise held by the ACHS. It routinely asks for expert risk evaluations of specific chemicals, drawn from its list of chemicals of concern. Where most SACs

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submit advice directly to government, the majority of the ACHS's advice is mediated by the UKCSF.

The relationship between the two advisory bodies is interesting in light of the discussions in this chapter. While it is nowhere stated as an explicit aim, the overtly social and political nature of the UKCSF suggests that the relationship between the two committees creates opportunities to socially contextualise science within the advisory process. In its mode of operation, the UKCSF brings together opposing and conflicting perspectives, and actively works through difference within a consensus building process. The UKCSF forces political discussions to the fore in its discussions, exposing the science to a level of social contextualisation not attained within the ACHS.

Put in this way, UKCSF can be seen as fulfilling many of the social grounding and challenge roles affixed to lay members by participants in this research project. However, some caution is needed in making this judgement. For instance, it was suggested to us by some participants that through this relationship the ACHS has taken on a less explicit policy role. The Committee was seen to simply offer technical evaluations, which could then be fully investigated in relation to social and political factors by the UKCSF. *"We're the technical advisory committee to the Chemical Stakeholder forum. They're the policy people"*, as one member put it.

Should this be interpreted as implying that lay membership would thus be redundant given the position and contribution of the UKCSF? Certainly the work of the UKCSF can greatly contribute to the social robustness of the advice produced to government. However, caution should be taking in inferring that the UKCSF is a justification for tidying the political out of scientific risk assessments. The findings presented throughout this chapter imply that drawing clear boundaries between science and society in the policy process should be approached with some scepticism. Thus, instead of seeing the UKCSF as occupying the place of a lay member, it might also be seen as a resource for such members.

5.2 Relations of Expertise

100   A second key feature of committee work involves values about the nature of knowledge and the relative worth of different types of expertise. Specifically, in this instance, we refer to the relationship between scientific and non-scientific expertise.

101   We have previously defined the work of scientific advisory committees as collecting and assessing scientific information in relation to an area of

policy relevance. To achieve this role, SACs rely on a membership which brings a diverse range of scientific expertise to the table. On the Advisory Committee on Hazardous Substances, for instance, sit a geochemist, a toxicologist, an environmental biologist and an environmental chemist, amongst others. We heard in the last chapter that lay members may bring a yet wider array of knowledges and expertise to the table. Indeed the ACHS has an environmental lawyer acting in this capacity.

102   Yet, through conversations with committee members and policy makers, and in observing committees in practice, it is readily apparent that relationships between various types of expertise are not as straightforward as they may initially seem. Speaking with one committee which was expecting to appoint a lay member, participants expressed doubt about what the appointee might substantively contribute. Comments reiterated a commonly-voiced suggestion that lay members might be more appropriate on committees which are less technical and where wider social perceptions are more pertinent. Here the separation between science and politics is reproduced in raising doubts about the contributions of non-scientists beyond public representation. The participants thus asked whether it would be more appropriate for other scientists to be appointed to fulfil lay roles. In making this suggestion, lay contributions are distanced from the processes of generating advice. There is little space imagined for the more active challenge roles described by our research participants in Chapter Four. Instead lay members are pushed towards less integrated roles focused on science communication alone:

> P1   *"Some of the other committees we are involved with… I think we gained very little from having a lay member".*
>
> P2   *"We're going to get one now [laughs]".*
>
> P1   *"They'd be completely out of the discussion because it is totally…"*
>
> P2   *"Yeah, but we're going to do it a bit different. I want someone with a scientific knowledge but not on our specific subject. Someone who has enough scientific knowledge to follow scientific debates… It's very much just pure science and it would be very easy to get lost. So, you need someone with that kind of scientific background. It's harder to actually represent the public in that way because there isn't really a public interest. However we do have an interest in communicating that work. So that's what we're actually hoping for."*

103   Within these contexts of uncertainty about the benefit of non-scientific contributions to expert discussions, some lay members expressed reservations about the ways in which their roles were evolving. This was often described to us in terms of isolation from the rest of the committee and the work they are involved with. As one policy official noted, lay members make up only one or two members of a committee compared to the majority of

members with scientific training and expertise. As she states: *"Unless that person is incredibly strong-willed… I think they are always going to be dominated by an overarching scientific paradigm"*. Lay members sometimes felt discomforted with their roles, and unsure of their contribution. These uncertainties further reinforce the potential for lay members to be ostracized from the discussions and debates at the heart of the advisory process. In the following conversation, a lay member reveals some of her anxieties in response to a comment that some committees had more than one lay member:

> P1   *"Oh, I'd feel much happier with that. I'd feel I could actually put in my two cents more if I had more colleagues working together as part of a bigger team in a committee. I think I'd feel happier with that."*
>
> IV   *"Yes, that's interesting. Another…"*
>
> P1   *"[Interrupts] Because, we're not experts by definition. Therefore, just being me". [Laughs]*
>
> IV   *[Laughs]. "Yeah. Isolated".*
>
> P1   *"Because of the nature of the role, by definition as a lay member you're not an expert. So, there's something impenetrable. Something that's impossible to get over. I mean, I don't know. But no, I've not found it an easy role. I think there should be a wider group of lay members. I would be happier to be more of an expert. I struggle with it. Is it me that's not really taking this role on? But, I'm not really clear about the role, apart from raising a few things, being a bit of a witness".*

104   The above statements imply some of the personal qualities necessary for lay members in developing active roles on SACs. An ability to cope with technical material, the confidence to challenge experts and the ability to innovate lay roles are all key attributes for lay members to possess. However, alongside these attributes, others argued that, if lay members were to be fully integrated into committee work, more space needed to be created so as to encourage greater participation. Working practices, we heard, can reinforce divisions in membership, and limit the opportunity for lay members to bring their personal attributes and expertise to bear. In the following statement, one lay member describes her frustration at the lack of opportunity to address the committee's mandate outside of rigid technical approaches to risk assessment. She describes her inability to participate as being at odds with her character and ability. The participant's comments suggest that the hierarchies of knowledge which can limit lay participation not only exist in the relationships between members, but are deeply rooted within structure and process as well:

> *"I'm used to working with committees. I do committees week in, week out… I know how to say what I think and express my*

view. Now, as a lay member on this committee, I have not always found that easy. I find myself sort of tongue tied, unable to say what I think. It has actually been quite a difficult experience for me. Normally I'm somebody you can't shut up. So, why did I feel intimidated? Was it the expertise of other people? Not really. Is it the structure of the committee? Sometimes… It's a bit frustrating…. They simply haven't got room and space to take on these broader issues because they've got enough on their plate, just to decide whether a regulatory package, whether the risk assessment is being done properly or not."

105   In each of the above accounts of the relationship between scientific and non-scientific contributions to advice there is an inference which potentially segregates lay committee membership. A division can be identified where: i) expert members are seen to provide the evidence upon which government decision making should be based, and ii) lay members are seen to fulfil some public representational or communication roles, but outside the core scientific business of the committee. Sarah Dyer in a study of lay membership of research ethics committees thus notes that lay members have little authority with which to challenge expert evaluations (Dyer, 2004). *"Ultimately"*, as a committee member we spoke with put it, *"advice has to be based on evidence".*

5.3   Dialogue and Deliberation

106   A third feature of committee work concerns the extent to which scientific advice is discussed and debated amongst committee members. For those unfamiliar with committee practice it may seem surprising that the committee format is chosen as a means of drawing expert advice into government. We might ask whether government would not be better served by directly drawing on esteemed and expert individuals. Perhaps policy makers could draw on formal relationships with some of the nation's highly-regarded scientific institutions to provide the best expert advice? These are just the types of question a public policy think tank – Political and Economic Planning (PEP) – asked in a study of advisory bodies in government back in 1960 (Political and Economic Planning, 1960). The think tank's conclusions suggested that the virtues of committee work are derived precisely from its social nature; because a committee draws together expertise and encourages science to be dealt with in a forum of dialogue and deliberation.

107   All SACs have an obligation to interrogate and debate scientific evidence thoroughly. The code of practice governing SACs thus states that committee members should be prepared "to examine and challenge the assumptions on which scientific advice is formulated," and to "ensure that the committee has the opportunity to consider contrary scientific views…" (Office of Science and Technology, 2001: par, 30)

108   We have heard above how difficult it could be for non-scientific experts to challenge the scientific view of a committee. It is also worth noting that such is the highly specialised nature of scientific expertise that scientists themselves can at times feel discomfort in raising questions about another individual's expert area. Given the breadth of issues a committee is expected to deal with, it is unlikely that any one member will have a full specialist grasp of every topic. Just as lay members can feel unable to participate in expert discussions, expert scientists can find themselves feeling unsure of their contribution to issues outside of their own academic domains. One committee member described this as at times feeling profoundly 'lay':

> *"You should actually look round the table; there are many subjects on which I would be very wise to keep my mouth shut. So, I'm an expert on some things and a non-expert on many things. I hesitate to use the word 'lay' because I'm also a lay person. The minute I walk onto the street I'm a lay person. If I attach myself onto a committee as a lay member, I happen to have the expertise although I'm still called a lay member. So I don't think that should be the distinction. [She] may just happen to have a non-scientific background, but she might have had a chemistry, biology or engineering background."*

While codes of practice ask SACs to ensure that scientific issues are fully discussed and debated, this statement suggests that relations of expertise may at times hinder this process. Above we discussed how delineations between science and non-science created boundaries to participation. In this instance we raise the question as to whether similar tensions can be seen between different scientific specialisations.

109   Consider the role of rapporteurs on committees. It is common practice when a committee is asked to address a particular scientific issue for the chairperson to assign a member to take the lead on the investigation corresponding to their specific area of expertise. Or, as is more often the case, the chair may divide the issue up to be addressed by experts from several different fields. On the ACHS, for example, the investigation of a chemical of concern could involve several rapporteurs each covering a specific aspect of the chemical hazard and its PBT characteristics. With the assistance of the committee secretariats, these rapporteurs take responsibility for exploring, reviewing and evaluating the data presented to the committee, and communicating their expert understanding and assessment to the other members. Rapporteurs are an essential part of committee work. They allow committees to divide and manage heavy workloads. Furthermore, their use ensures that appropriate expertise is applied in addressing the technical data. As one participant put it, *"you all can't get to all of the issues with that level of detail".*

110   Yet, the use of rapporteurs can create an awkward social dynamic amongst committee members. It can be difficult to raise questions about the science without calling into question the rapporteur's own personal

contribution to the process. Other committee members may not feel technically competent to challenge the rapporteur's report. Moreover, where rapporteurs spend a considerable amount of time and effort addressing the topic, other members may have simply reviewed the appropriate papers and therefore feel uncertain in raising questions. This may be particularly true when individuals feel isolated in the face of quiet consent, or when working relations on committees are not well established. Of course not all individuals will respond to these pressures in the same way. Some will be tentative. Other members will be more confident in challenging advice. However, the potential exists for rapporteurs to become authoritative spokespersons for a set of scientific conclusions, as opposed to communicating scientific advice to the committee for debate and discussion.

111   A key advisory task addressed by the ACHS during the duration of this project involved the risk assessment and regulation of the chemical perfluorooctanoic acid. PFOA is a chemical surfactant used in a variety of manufacturing and industrial processes. Working in coordination with the UK Chemical Stakeholder Forum the ACHS was asked to determine whether PFOA qualified as a chemical of concern against European PBT criteria. While consensus was easily achieved in determining that the chemical was persistent in the environment, considerable debate took place over whether it should be considered as bioaccumulative. In that case, according to the PBT criteria, PFOA would not be considered hazardous as the chemical is not lipposoluble – therefore it will not accumulate in fat tissue – the principal test upon which bioaccumulation is determined. However, questions were raised about whether these tests were sufficient in determining bioaccumulativity. Scientific papers were presented and discussed which suggested the need to look at other means of measuring bioaccumulation, specifically through the binding of PFOA to proteins in mammalian species. The member of the committee who provoked this line of questioning is minuted as asking *"that this mechanism be given equivalent concern."* (ACHS, 2006a)

112   Here was an issue which when first discussed appeared to be heading toward a relatively straightforward conclusion about bioaccumulativity. However, a question raised about how bioaccumulation is measured and understood led to a much broader discussion of not only the issue at hand, but of the science framing the policy standards. This included debates over the relative value of different scientific approaches, and, closely linked with these discussions, a debate over the value of orthodox and critical science. As one participant described it to us, debating and discussing advice can lead to greater attention being paid to the *"subtleties"* and *"methods"* of science, not just the conclusions presented.

113   This case study reveals the importance of opening up scientific advice to debate and deliberation. It provides one example where we can begin to imagine the types of challenge roles identified in Chapter Three which were seen to challenge "implicit assumptions" within the advisory process – in this case standards of risk assessment. Worth noting in this instance, is that the challenge to measures of bioaccumulativity was made by a scientist and not a lay member. In this sense we are reminded that, when discussing challenge

roles, opening science to wider deliberation is the responsibility of committees as a whole rather than any one category of member.

5.4   Discussion

114   In this chapter we undertook to look at the contexts which are shaping the development of lay membership in practice. Specifically we addressed lay membership in relation to what we have identified as three key aspects of the advisory process: i) the relationship between science and politics, ii) relations between scientific and non-scientific contributions to advice and iii) the need to encourage dialogue and deliberation. In doing so, we have identified both opportunities and potential barriers to the development of lay roles on SACs.

115   Much of the criticism levelled against lay membership has come from a perspective which sees lay roles as compromising the scientific integrity of the advisory process. However, there is little in our observations or conversations with members to see advice as a purely scientific endeavour. Conversely, there is considerable scope to imagine the evaluation of science as both scientific and social. In advisory committees 'science' is recontextualised through its application in a social and policy relevant process. Experts are being asked questions, and indeed raising issues themselves, for situations that cannot be closely controlled. We observed this, for instance, in the way in which scientific risk assessments overlap questions about the acceptability, or suitability, of measures of risk. In Chapter Four lay members were described as reinserting the public into the advisory process. We referred to this as a social grounding role. However, in our above discussions there is much to suggest that these roles might be better understood as helping SACs contend with the social and political aspects of scientific advice already inherent in the process. In this sense, challenge roles are both appropriate and indeed beneficial to the development of robust advice.

116   However, our observations also identified tensions and possible barriers in committee work. For instance, rigid interpretations of value neutrality in the advisory process can make it difficult for SACs to acknowledge the ways in which social judgments and politics are involved in drafting advice. Moreover, we observed how the authority bestowed on science, and individual experts, can inhibit effective committee work. We saw challenge roles taking place, but we also observed times when these were being inhibited.

117   Each of the case studies discussed above makes clear that good scientific advice is not based on issues of membership alone. This isn't to say that the expertise brought to the table by individual scientists, or indeed lay members, is not crucial. Rather, we point to those instances where we have observed good advisory practice in the processes through which science is deliberated over. Committees and policy makers should be encouraged to overcome those barriers to good practice which impose unnecessary restrictions on dialogue and debate. Stated differently, effective challenge

roles, whether played by lay members or expert scientists, require committees to overcome rigid hierarchies of knowledge and attempts to deny the politics of advice giving. It may be appropriate to see lay members as part of a process of encouraging change and good practice. There are certainly ways in which lay members can be effective and make discrete meaningful contributions to SACs, but it could be that their potential also lies in helping committees reflect upon, and develop, their own practices.

6.0 Conclusions

118   This concluding chapter identifies a series of challenges for Defra in developing processes of scientific governance. Rather than claiming to offer easy answers, the presentation of our conclusions as challenges is a conscious effort to encourage reflection among policymakers and to stimulate constructive discussion.

119   Concepts and practices of lay membership are still in their infancy within government. But we can learn a lot from the study of this novelty. Through this research project we have sought to elucidate some of the potential benefits from experimenting with committee membership. In so doing, we have documented a range of roles and rationales guiding the development of lay membership in the advisory process. By encouraging greater transparency, improving communication and grounding scientific advice in social contexts, lay members were perceived to play positive roles. Others told us that lay members might help committees improve their practice, providing substantive improvements to the advice produced. Lay members could, we were told, bring complementary forms of expertise to the committee table, or perform challenge roles by rigorously interrogating scientific advice from non-scientific perspectives.

120   However, alongside the benefits of lay membership, our data also pointed to some of the problematic assumptions framing these roles. Thus we heard doubts about the ability of lay members to speak on behalf of publics, or to confer legitimacy in the advisory process. Similarly, tensions arising in relationship to hierarchies of knowledge, notions of scientific objectivity and the practices of debate and dialogue exposed further barriers to having non-scientists become part of the advisory mainstream.

121   Given the early stage of this governance experiment, it is not surprising that such uncertainty exists. Indeed, many of the barriers facing the development of lay membership are the same barriers to good practice that lay membership is intended to remedy. It is unrealistic to think of lay membership as an easy answer to the criticisms levelled against scientific governance – although lay membership of course sits alongside a host of other initiatives in Defra aimed at improving the use of evidence in decision making. Assumptions about governance and scientific advice are deeply rooted within Defra. It is inevitable that innovations within the scientific advisory process will come up against barriers and resistances.

122   The uncertainties we have identified as surrounding lay membership should not necessarily be read as indications of its failure. Instead, lay participation has provided an opportunity not only to innovate with membership on SACs but to stimulate reflection about the cultures and processes of scientific governance. Early lessons from experiments with lay membership suggest broader lessons about the practice of scientific advice. Discussion and debate, in other words, about what lay members might

accomplish should be seen not as a distraction from the business of scientific governance, but as an essential resource. Our research project reveals that the inclusion of lay members has prompted a healthy dialogue about the nature of advisory committee work. This dialogue should be welcomed as part of reflexive scientific governance.

Challenge 1: Defra should continue to encourage SACs to reflect upon their practices and cultures. Experiments in non-scientific membership can be an important means of stimulating the development and improvement of advice. Taken seriously, widening committee membership beyond science not only brings new roles to committees. It also suggests to committees the need to change how they think and how they go about their business.

6.1   Lay Membership, Legitimacy and Public Trust

123   Many of the discussions we had with both committee members and policy makers about lay membership linked their inclusion with aspirations of reinvigorating public confidence and thereby public legitimacy in scientific governance. Learning the lessons from BSE, lay membership has clearly come onto Defra's agenda with these aims in mind.

124   Yet, while lay membership and the public are linked within these discussions, the relationship between the two is not as straightforward as is sometimes presented. Relations between science and citizens are complex and multifaceted. For example, it was commonly asserted by participants in this project that lay members could represent public interests on committees, begging the questions 'which publics?' and 'which interests?' Certainly, it is impossible to imagine any lay member representing the diversity of public perspectives and concerns within wider society. Conversely, casting lay members as public representatives creates the false impression that scientists are necessarily divorced from society, and speak only for science. Committees are themselves social settings, containing a range of political perspectives and discussions. Scientists too are members of the public, and are active social participants in the advisory process.

125   Instead of relating trust to individual lay members alone, the focus should be on committees, or more specifically the actions of committees, as a whole. Trust and legitimacy are multi-faceted. Transparency is important, and lay members have a role to play in this regard. But the overall quality of advice is also important. Good scientific governance is about recognising and acknowledging uncertainty and conflict, being open about the limited and conditional nature of advice, and making advice responsive to social concerns. Indeed, while we have focussed on the processes of generating advice, these aspects of good governance should extend to the way in which policy and decision-makers use and enact this advice.

Challenge 2: The challenge of creating trust and legitimacy should be seen as a process. Lay members may have a part to play in this process, but it is naïve to consider lay members as conferring trust and legitimacy themselves. Lay members are better envisioned as part of a wider institutional process of encouraging trustworthiness. Defra through innovating practice on advisory committees, as well as creating the unique relationship between the ACHS and UKCSF, is taking steps in this direction and should be encouraged in doing so.

6.2   Beyond Lay – Expert Divisions

126   The term 'lay' has historically been used and defined in opposition to the term 'expertise' (Williams, 1976). Where expertise is understood as the knowledge and authority with which to speak on issues of science in policy making, the implication is that a lay member is someone without this capacity. This conception of the lay - expert division thus exposes some problematic tensions in the inclusion and participation of lay members on scientific advisory committees.

127   As many of our participants were keen to tell us, the term 'lay' poorly represents the intellectual skills and expertise of many lay members. Whether facilitating societal awareness, providing complementary expertise, or in playing engaged and demanding challenge roles, lay members were seen to make valuable contributions to their committees. Likewise, by overlaying simplistic divisions between 'lay' and 'expert members', the diversity of expertise brought to the committee table is obscured. Not everyone at the committee table is an expert all the time when considering the varied and complex work of SACs. Instead, as some participants told us, when speaking outside of their own specific areas of expertise there are times when experts themselves can feel profoundly 'lay'.

128   By describing some members as 'lay' and others as 'expert', government risks imposing boundaries delineating and indeed limiting participation and dialogue in the advisory process. Would it be appropriate for lay members to speak about technical issues and challenge scientific conclusions? Or, should lay roles be limited to more general policy subjects, or external evaluations of public concern? Would the inclusion of non-scientific input into the advisory process damage the integrity of the committee's conclusions? Questions such as these put up barriers to the integration of non-scientific contributions, and therefore to any potential benefits. They identify lay members as a potential threat to the advisory process.

129   In making these points, we should also be very aware of wider arguments to the effect that lay membership can undermine – and potentially threaten – the status of expert knowledge within the policy process. As Collins and Evans have put this: "Our loss of confidence in experts and expertise

seems poised to usher in an age of technological populism" (Collins and Evans 2007: p.2) The possibility of societal scepticism around specific issues leading to the rejection of expert understanding should certainly be taken seriously – and there are a signs of a populist (or anti-elitist) political tendency in countries as otherwise-divergent as Denmark and the USA (although admittedly for deeper-rooted cultural reasons). However, the evidence in this report suggests that, far from undermining the fundamental status of expert knowledge, moves to the greater accountability and critical appraisal of science in the policy process may be its very best defence.

130   The lay – expert divide risks reproducing unhelpful and outdated models of technocratic governance. To recall from Chapter Three, this approach has been characterised by attempts to translate objectivity in the methods of science into objectivity in the generation of advice. While science is perceived as a unified way of generating evidence to provide a firm policy foundation, non-scientific contributions are seen as inherently politicised and fractious. According to the technocratic model, good governance means keeping the social and the political out of scientific advice. This stands in opposition to the characteristics of good governance we have identified above.

Challenge 3: If non-scientists are to be able to contribute to the advisory process, then Defra must work with SACs to overcome assumptions which privilege scientific voices within committees and silence others.

6.3   Beyond Talk About Membership

131   During this project we had the pleasure of attending a one-day workshop at the Office of Science and Innovation (OSI), now the Government Office of Science. The event brought together committee secretariats from across government to clarify the role of SACs and improve practice. A discussion of lay membership generated many of the questions we have tried to address in this report.   'What are lay members?' 'What are their roles?' 'Are they really lay?'   'How do we recruit them?'   In response to this final question, one participant suggested that it might be a good idea simply to have a pool of lay members on which committees could draw when their work was seen to be of public interest.

132   While this solution to the recruitment issue was put forward in jest, such comments express a shared frustration about the difficulty in identifying characteristics of ideal lay members. Scientists are appointed to SACs based principally on their area of specialisation and on their esteem in the field. When lay members are appointed, the criteria appear far less clear. Lay members are described as needing to be able to cope with a range of technical subjects, be good communicators, and be sufficiently confident to challenge expert scientific advice. But these qualities could also be seen as the qualities of all good scientific committee members.

133   None of the roles we have identified in this project need be limited to lay members exclusively.   Integrating and exploring social context in the advisory process is the obligation of all members of a committee. Scientists and non-scientists can all play the challenge roles essential to making committee work robust. The effective communication of scientific advice, in a plural and conditional way, is likewise a shared responsibility.   Indeed, legitimacy, a key rationale underlying lay membership, is best seen as the responsibility of committees as a whole, not just individual members.

134   Thus, along with the uncertain and uneven relationship between 'lay' and 'expert' contributions implied in the term, tying lay roles to individual committee members is also potentially problematic.   Focusing on finding purpose in 'lay membership' can easily lead us away from looking at the bigger picture – how committees can provide government with the advice it needs.

135   Defra therefore needs to avoid developing lay membership as a bolt-on to SACs. Instead, lay membership might more appropriately be seen as part of a process of developing good advisory practice in general.   If Defra is to achieve the aims and expectations intended for lay membership, it is imperative to move beyond discussions of membership in isolation from the advisory systems in which they play a part.

Challenge 4: The inclusion of non-scientific members on SACs should coincide with an open-minded development of the cultures, structures and working practices of committees themselves.

6.4   Lay to Rest

136   There are a number of problems with the ways in which lay membership is currently imagined and used. First, the term 'lay' does not adequately account for the range of skills these new members are being asked to apply and the myriad roles that are imagined for them. Secondly, what are described as lay roles need not relate solely to lay members, but describe attributes of good advisory practice more generally. And, thirdly, the delineation of lay members as separate from core scientific membership would seem to undermine the integration of these roles and the need for a commitment to wider processes of change in the advisory process.

137   We encourage Defra to move beyond a narrow focus on lay membership to consider the wider qualities of good advisory committee practice. The participation of non-scientific members can serve a valuable function but the designation of these as 'lay' appears unhelpful, potentially misleading and possibly derogatory. In recommending deletion of the 'lay' word, we are not recommending removal of some of the potentially-valuable roles and functions discussed in this report. Instead, we suggest that Defra should build and augment such roles whilst recognising that members may have different skills to offer.

Challenge 5: Valuable lessons have emerged from the appointment of 'lay' members on advisory committees. However, the term 'lay' may have outlived its value and cause problems for the operation of SACs. This report recommends that the term 'lay' should be put to rest. At the same time, the potential contribution of non-scientific advisory committee members should be recognised and enhanced.

Afterword

138   As will be clear to any reader of this report, a research project of this type presents considerable challenges. Time has passed since the project commenced so that experience is accumulating and new issues arising. Unexplored questions include matters of the social origin and background of advisory committee members: who are these people and where in society do they come from? There is also the very interesting matter of how policy advice is put into subsequent practice: does the inclusion of non-scientific advisers enhance the 'practicality' or robustness of SAC recommendations? Sadly, there was not the opportunity to consider such fascinating issues within a confined project.

139   At the same time, and as the writing of this report made us very much aware, there is something challenging about our position as social scientists within such a project, finding ourselves on occasion caught between the need to satisfy our academic peers and the requirement that this document should make sense within the world of policy and practice. One consequence is of course that we will at times succeed in pleasing neither group. Linked to this point also, it has often been difficult for us to bring out all the subtleties, diversities and nuances of SAC practice whilst also keeping structure and analytical focus within a short report.

140   Despite these limitations, we would hope that our project has had a number of benefits additional to the challenges outlined above. First of all, we have demonstrated – or at least moved one step further towards demonstrating – that social science is capable of adding to the understanding of technical advisory processes and of bringing new empirical and conceptual insights to bear. Secondly, we hope that we have helped present such processes as important and intellectually challenging areas of governance practice. Too few social scientists have engaged with this area and we will be pleased if our efforts encourage others to go further and better. Thirdly, we have tried to suggest that social science is at its most relevant when it retains its critical faculties and does not simply attempt easy solutions and quick fixes. Certainly, our objective here has not been to over-simplify or offer pre-determined categories. These are important and challenging issues which deserve to be reflected upon fully and openly. We will be pleased if we have contributed in some way to that process.

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