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ABSTRACT Public dialogue about science, technology and medicine is an established part of the activities of a range of charities, private corporations, governmental departments and scientific institutions. However, the extent to which these activities challenge or bridge the lay–expert divide is questionable. Expertise is contested, by the public and the community of scholars who study and/or facilitate public engagement. In this paper, we explore the dynamics of expertise and their implications for the lay–expert divide at a series of public events about the new genetics. We examine participants' claims to expertise and consider how this relates to their claims to credibility and legitimacy and the way in which these events unfolded. Using a combination of ethnographic and discursive analysis, we found that participants supplemented technical expertise with other expert and lay perspectives. We can also link participants' claims to expertise to their generally positive appraisal of genetic research and services. The colonization of lay positions by expert speakers and the hybrid positioning of lay–experts was characteristic of the consensus and conservatism that emerged. This leads us to conclude that public engagement activities will not challenge the dominance of technical expertise in decision-making about science, technology and medicine without more explicit and reflexive problematization of the dynamics of expertise therein.

Keywords Citizenship, expertise, genetics, public consultation

Shifting Subject Positions

Experts and Lay People in Public Dialogue

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Public dialogue about science, technology and medicine (STM) is now an established part of the activities of a range of charities, private corporations, governmental departments and scientific institutions. Widespread concerns about the legitimacy of experts and the risks they manage as well as create, alongside growing interest in active citizenship and public engagement, form an important backdrop to these developments. The sociological literature has an impressive range of case studies that favour greater lay involvement in STM, particularly in cases of scientific and medical controversy (Epstein, 1996; Wynne, 1996), understanding the epidemiology of disease (Brown, 1992; Popay & Williams, 1996) and bringing lay expertise about the politics and practices of science and medicine into decision-making about its development (Kerr et al., 1998a,b; Yearley, 2000). Various bodies and groups

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have organized citizens' juries, focus groups and extended peer review to try to involve the public in decision-making about the direction of scientific research and the application of new technologies. The rise of the so-called 'expert patient', particularly patient activist groups, such as those analysed by Steve Epstein in his book on AIDS activism (Epstein, 1996), have had positive impacts upon medical practice, particularly in the realm of treatment (see also Brown, 1992; Popay & Williams, 1996; Arksey, 1998). Public engagement activities are also becoming increasingly popular with social scientists in this area (see Irwin, 2001; Goven, 2003). Although they are far from being directly involved in determining research priorities or product development, the outcomes of these types of public engagement events shape STM indirectly, in the sense that their results often feed into a range of policy discussions and decision-making bodies such as the various government committees, commissions and authorities with an STM remit. They also shape professionals' sense of social responsibility and their corresponding scientific practice more broadly (for example there is now an entrenched, if rhetorical, concern within the scientific and medical professions with what the public think about their practices) (Kerr et al., 1997). Such events might also encourage lay people to campaign more actively to influence STM, thus acting as catalysts for further grass roots engagement.

However, the extent to which developments that seem to construct and even privilege lay expertise and public involvement actually challenge or bridge an entrenched lay–expert divide is questionable. Joanna Goven (2003), David Dunkerley and Peter Glasner (1998) and Alan Irwin (2001) have provided some important critical analyses of three such events – a consensus conference, a citizen's jury and mixed methods consultation – noting particular problems with the dominance of technocratic frames. These scholars have also pointed to the danger of institutional capture and 'reactive' as opposed to active citizenship limiting the potential for the democratization of science (Dunkerley & Glasner, 1998; Irwin, 2001; Goven, 2003). Even when the focus of debate is on social and ethical issues, technical expertise is an important arbitrator, the risk society notwithstanding (Kerr & Cunningham-Burley, 2000; Wynne, 2003). The aim of greater public involvement, which cuts across many of our social institutions, is also far from uncontested. Critics have long argued that the public have too much, not too little, say in the organization and application of science and may alter its direction for ill-founded reasons. Most recently, Harry Collins and Robert Evans (2002) expressed the concerns of many in their critique of the notion of 'lay expertise' when they wrote that the 'romantic and reckless extension of expertise has many well-known dangers – the public can be wrong' (2002: 271). Lindsay Prior (2003) makes a similar argument in relation to lay expertise about health and illness when he argues that public participation in decision-making about the future directions of medicine is acceptable, but it is not acceptable in matters of the production and application of medical knowledge.

Expertise, then, is contested, within both the public realm and the community of scholars who study and/or facilitate public engagement activities around STM. The relevance and influence of technical expertise, as well as a range of other kinds of expertise about the social, the personal and/or the political are far from clear. The ways in which different types of contexts facilitate and/or undermine the expression of particular types of expertise, and the corresponding impact of that expertise upon the outcomes and conclusions of policy discussions and debates is also unclear. We know relatively little about how participants' claims to knowledge, credentials and membership of relevant networks are mobilized as they negotiate the status and relevancy of expertise in influencing the terms of discussion and any decisions that might result from it. Other appeals to lay perspectives, especially explicit disavowals of knowledge or claims to participative rights based solely on citizenship not expertise, are also worthy of further analysis. These dynamics of expertise are even more interesting, given the role that many social scientists now play in public engagement events, contributing to and mediating interactions across expert domains. A nuanced understanding of how expertise is constructed and maintained at public engagement events would give us useful insights into whether and how the lay–expert divide is being bridged, blurred or reified therein. It would also allow us to reflect further on the corresponding impacts these processes have upon decision-making about the STM in question.

In this paper, we explore these issues through an analysis of a series of public events about genetic research and health-related applications. To begin, we offer a more detailed examination of the various treatments of expertise and lay perspectives that have informed our analysis and situate our argument in contemporary debates about the nature and purpose of expertise. We also give a brief account of the benefits of the ethnographic and discursive analysis of subject positioning that we have adopted in this paper. We then go on to present our interpretations of the data generated across a range of public events, focusing upon how participants made claims to expertise for themselves and others in order to establish credibility and legitimacy and how this related to the process and outcomes of these events. Interesting as these issues are in terms of debates about the meaning and construction of expertise, they are not merely a matter of academic curiosity. We therefore conclude by considering what our findings mean for future public engagement activities concerning STM.

Background

The social construction of expertise is well documented in the fields of medicine and environmental sciences in particular. Boundary disputes between professions and between patients and their doctors have also been thoroughly deconstructed to show how expertise is mediated, rather than purely as a matter of technical acumen (Epstein, 1996; Busby et al., 1997; Kroll-Smith & Floyd, 1997; Arksey, 1998; Whelan, 2003). 'Expert patients' or 'lay experts' are often invoked, especially in the medical sociology literature (Arksey, 1998; Busby et al., 1997; for a critique see Prior, 2003). Other new groups of experts, from health activists to 'experts of community' (Irwin,

2001) or experts in the facilitation of dialogue (Turner, 2001; Collins & Evans, 2002) have also emerged. In particular, the prevailing cultural emphasis upon risk has also been shown to destabilize accepted categories of expertise, as 'the nature of risk tends to undercut claims made about its authoritative understanding' (Horlick-Jones, 2004: 110).

This proliferation and destabilization of expertise has always had its critics, but it has not been very fashionable to erect new boundaries and categories to reassert traditional expert domains, among the STS community at least. Collins & Evans' (2002) recent contribution to the debate about expertise signals a significant departure from this trend. Arguing that the public as a whole cannot be experts, they set out a normative framework for expertise, based on distinctions between what they call contributory, interactional and referred expertise. Contributory expertise means 'enough expertise to contribute to the science of the field being analysed' (p. 254); interactional expertise means 'enough expertise to interact interestingly with participants and carry out a sociological analysis' (ibid.); and referred expertise means 'expertise in one field [that] can be applied in another' (p. 257). Collins and Evans note that these categories are ideal types, and as such are a product of the analyst as well as the actors they concern. They also acknowledge that the boundaries between them are disputed by a range of actors and that the categories are interactive. The translation of expertise across different fields is important, as is discrimination between different types of expertise. As Collins and Evans note, '[t]his kind of discriminatory ability comes with participatory expertise in the matter of living in society!' (p. 258).

As Sheila Jasanoff (2003) and Brian Wynne (2003) have commented, on first reading, Collins and Evans' notions of expertise have a reductionist quality that jars with the complexities of expertise in contemporary society. However, they do spur further reflection about how expertise is constituted and maintained. As Wynne also suggests, we must consider expertise in relation to the definitions and solutions of officialdom, and explore its relationship with the marginalization of ambivalence in the public arena. What kinds of expertise are mobilized in different contexts, and by whom? We know that, broadly, technical expertise is valued, but the details of what counts as *technical* in any given situation might vary. Similarly, Collins and Evans' other categories, *interactional* and *referred* expertise are products of dialogue and negotiation in particular contexts.

Collins and Evans' categories raise important questions about the nature of expertise and 'lay perspectives' in the public domain, particularly the ways in which expert and lay claims and counter-claims play out in public dialogue about science. They also are interesting from a practical as well as an academic standpoint, in the sense that they suggest a new way of thinking about how to manage the interactions between experts and lay people at public engagement events in order that expert and lay perspectives are mobilized appropriately and effectively in nuanced, purposeful and, above all, valuable ways. In particular, we ask:

- Does technical knowledge dominate public discussions about STM and if so, how?
- How do participants other than the core set of scientists influence proceedings, particularly those with interactional or referred expertise?
- How are lay perspectives claimed and mobilized and is this different from how expertise is claimed and mobilized?
- What is the potential of lay people or citizens to 'declare when the emperor has no clothes' (Jasanoff, 2003: 398)?

We do not mean for these questions to test Collins and Evans' categories, although they obviously challenge them. Such a test would only be worthwhile if we were intent upon refining or replacing those categories with ones of our own. Our interests are rather more diffuse. We are more concerned with mapping out some of the detailed and relational contours of expertise and lay perspectives in context. An exploration of these questions, through an analysis of discourse in a range of settings in which different people come together to discuss issues relating to STM, will give us valuable insights into the social dynamics of expertise in contemporary public involvement initiatives. This will also inform discussions of how best to involve the public in dialogue about STM.

Methodology and Analysis

Analysing the interactional dynamics of expertise requires both a detailed emphasis on talk and on the wider social context within which it is taking place. To this end, we have drawn on discourse analysis, in particular notions of subject positions and interpretative repertoires (Gilbert & Mulkay, 1984; Weatherell, 1998; Edley, 2001) to help us understand details of the talk, and on ethnography to understand the wider setting and embedded relationships of power (Hammersley & Atkinson, 1995; Irwin, 2001). Discourse analysis suits our concern with the dynamics of expertise, because it treats expert and lay categories as subject positions that are accomplished in the course of social action, and invites exploration of the purposive flexibility in people's accounts of themselves and others. As Margaret Wetherell (1998) argues, discursive exchanges variously trouble and un-trouble people's professed positions. A subject position can be the product of interaction with another person, or a feature of reflexive self-positioning, particularly evident in autobiographical accounts (Davies & Harré, 1990). People might achieve the category of expert or lay person by drawing contrasts with others, constructing a generic category of belonging, or even engaging in 'institutionally astute self-deprecation' (Dickerson, 2000). Their discourse may be of agency, thoughts or feelings (Dyer & Keller-Cohen, 2000); it also involves displays of certain kinds of knowledge.

As Helen Haste has argued, constructing the citizen is a matter of 'self and group identity, negotiated through narrative and dialogue as well as through trying to make sense of social structures and representations' (2004: 420). Others have noted that professionals are particularly concerned with distancing themselves from non-experts, through the use of specialist language but also institutional narrative framings, such as the balance between 'self aggrandizement' and 'self-mockery' in the speeches or lectures. Drawing on the notion of 'hunched shouldered authority' (Billig et al., 1988), Judy Dyer and Deborah Keller-Cohen note that 'offsetting self-aggrandizement with self-mockery … [is] an ideological dilemma typical of the expert … which involves see-sawing between expressions of expertise and equality' (Dyer & Keller-Cohen, 2000: 283; see also Edley, 2001). Our own analysis of subject positions requires careful attention to the context of the discussion: the interactional dynamics, the arguments and the conclusions. We also look for common statements about the practice of science or how it ought to be regulated, and consider the shifting positions of experts and lay people towards science. More broadly, however, we analyse the social context of a series of public events concerning STM, focusing on their organization and outcomes. This adds an ethnographic component to our analysis of discourse (Hammersley & Atkinson, 1995; Irwin, 2001). We were participant observers in the settings we analyse, so we reflect upon this through the course of the paper. We also have drawn on our insider knowledge of the field of public engagement in STM more generally.

The Events

In this paper, we present an analysis of three public events about genetics. The organization and analysis of these events were conducted as part of a larger ESRC-funded study entitled 'Transformations in Genetic Subjecthood',[1] which focused upon how people positioned themselves and others in accounts of the control, donation and ownership of genetic information, in clinical, commercial and policy contexts. We organized and analysed a series of small focus group discussions alongside the public events presented here. The first of the public events that we analyse was called 'Who Twists the Helix?' It was organized by the Policy Ethics and the Life Sciences Institute, University of Newcastle, and took place on 17–19 March 2003 at the University of Cambridge. We also analyse material from two other events that we organized in the course of our research: an evening Café Scientifique meeting entitled 'Fantasy or Reality? The Future of Human Genetics in Britain', which took place in York on 19 November 2003; and a one-day public meeting 'Generation Scotland: A Public Concern?', which took place in Edinburgh on 17 January 2004. The proceedings at these events were recorded by the organizers. We listened to the recordings and selected relevant material for transcription. This included the key introductory and closing speeches at each event and the open floor discussion which followed; and a selection of breakout group discussions where these were audible and concerned themes central to the project – expertise, commercialization, public involvement and patenting in particular. We coded the transcripts using Atlas.ti.[2] Following repeated readings of the transcripts, we coded particular subject positions, discourses and discursive style, using categories such as 'positioning self as carer', discourse of 'public good' and 'personal, anecdotal' discursive style. Then we grouped these codes under broader themes such as 'construction of expertise' and 'science and commerce'. We then linked the theme of construction of expertise to two key substantive concerns – public involvement and healthcare priorities – to tighten our analytical focus. We then selected specific quotes that illustrated the various permutations of expert and lay perspectives that we found, analysing them in more depth to get further analytical purchase on the questions outlined previously. A selection of these quotes is presented below.

'Who Twists the Helix?', subtitled 'A Transdisciplinary Exploration of the Powers that Could Decide our Genetic Futures', was designed to attract policy-makers, scientists, academics, journalists, science or ethics committee members, citizens and community members, to explore 'the democratic deficit in science and ways to address it' (<www.peals.ncl.ac.uk/Twisted_Helix/index.htm>). This conference also involved what the organizers described as 'experiments that aim to increase citizen involvement in the regulation of future scientific and technological innovations'. It included a Genetics Future Jury that produced a report on the issues discussed at the conference. A range of organizations, including the Alzheimer's Society, the National Consumer Council and the Intermediate Technology Development Group, sponsored the conference. There were 15 jurors. Either they had previous experience of being on a citizens' jury, which the organizers of the conference had facilitated in Newcastle, or they were associated with the national public involvement initiative of the Alzheimer's Society.

The conference mainly consisted of a series of plenary events organized around topics such as, 'DNA plc: What Should be the Role of Business in Making our Common Future?' Two members of our research team were involved in the preliminary planning of this event, and we also spoke in sessions at the conference. The audience, numbering about 60, consisted of academics from the fields of sociology, anthropology, philosophy, public health, environmental sciences and genetics, as well as activists from groups such as GeneWatch UK, and other people involved in a range of public involvement initiatives, from the Intermediate Technology Development Group to the Consumers Council. The jury were distinct from the other participants: they sat together, separately from the other participants, and sometimes met separately from the main sessions. This separation extended to meal times, although there were occasions when informal talk between jury members and the other participants took place. It seemed to us that they were the 'democratic arm' of the proceedings and that the organizers felt the need to protect them.

All of the sessions were video-recorded, with participants' permission, by the organizers. We took notes on the sessions and discussed our thoughts afterwards. This process of reflexive discussion and note-taking helped to focus our analysis of expertise on how lay people and experts interacted. Following the conference we concentrated our analysis on two sessions in which lay people made the biggest contribution: 'Citizens, Consumers and DNA' and 'The Genetics Future Jury: What Needs to be

Done and by Who?' In this paper we focus upon the jury's verdict, exploring how jurors established what counted as expertise and lay perspectives, and examining how the conference format and dynamics shaped their subject positioning as well as the actual conclusions that were drawn.

Café Scientifique, according to its website, is 'a forum for debating science issues, not a shop window for science'. The organizers are 'committed to promoting public engagement with science and to making science accountable' (<www.Café scientifique.org/>, accessed 3 May 2005). There are numerous Cafés across the UK. The national organization is sponsored by the Wellcome Trust. In York, the University of York and Science City York also provide sponsorship. The Café meets monthly at York City Screen and usually begins with a short talk by a speaker, followed by an hour of open, chaired discussion. The meeting is free and open to everyone. The format therefore is rather different from the larger conference outlined above, although both aimed to promote wider public debate and engagement with science. There were no breakout groups or citizen juries at the Café. The range of speakers and positions that emerged were narrower than those at the 'Who Twists?' event. However, being locally based and recurrent, this event provides a contrasting forum for our analysis.

Tom Shakespeare (Director of Outreach at the Policy Ethics and Life Sciences Research Institute, Newcastle) and Helen Wallace (Genewatch UK) were the key speakers at the event we organized. There were about 40 participants. Tom Shakespeare is a social scientist and disability activist who is a well-known commentator and critic of the new genetics. Helen Wallace has a science background but has worked with GeneWatch UK for several years, where she focuses upon human genetics. According to their website:

> GeneWatch UK is a not-for-profit group that monitors developments in genetic technologies from a public interest, environmental protection and animal welfare perspective. GeneWatch believes people should have a voice in whether or how these technologies are used and campaigns for safeguards for people, animals and the environment. (<www.genewatch.org/>)

We had two speakers, though usually there would only be one speaker. They shared similar perspectives on genetics, which skewed the event towards a more critical discussion than a traditional debate format might have. The discussion was tape-recorded (with the agreement of participants) but we will not name any of the participants, apart from the speakers. The meeting was about the social and ethical aspects of the UK government's recent White Paper on the future of human genetics. We asked the speakers to focus upon proposals to screen for genetic risk factors and to provide advice on lifestyle changes to reduce the chances of people developing diseases such as heart disease or cancer. They discussed the benefits and risks of these new technologies for individuals and the community as a whole, and raised questions about the rationales for investing in them.

Anne Kerr chaired the discussion, and began by stressing the equal status of audience members and speakers, asking the audience for contributions to the discussion rather than questions from the floor. This emphasis upon dialogue was deliberate, as our previous experience of the Café at York had been of professional scientists dominating the discussion, and of other audience members taking the role of interested questioners rather than equal partners in the discussion. As we discuss below, these dynamics were also clearly apparent in the event reported here, despite the chair's emphasis upon dialogue. The project secretary transcribed the event and we coded the transcripts using Atlas.ti, as above. In this paper, we focus on excerpts in which participants established their own or others' expertise, in relation to the two themes of public involvement and healthcare priorities that we have already highlighted, and we consider how the format of the event shaped the discussion and conclusions.

The third event that we consider here was a public engagement event for the Generation Scotland initiative. Generation Scotland is a multi-million-pound initiative to establish a large national database of blood samples and medical information from families in Scotland who are affected by common diseases: for example, cancer, heart disease, stroke and mental illness. In collaboration with the project coordinators, we organized a free one-day conference to bring together a wide range of people to discuss what the public can contribute to the development of this project, and to give a platform for a variety of views on this sort of research. The conference was widely advertised among professional, patient and community groups with an interest in health, and we placed an advertisement in the local *Metro* newspaper (a free paper available in public places such as on public transport). Approximately 70 delegates attended. We tape-recorded the discussions, with participants' agreement, but we will only name the speakers. The conference began with a series of introductory talks by Professor David Porteous, Head of Medical Genetics Section, University of Edinburgh, Richard Norris, Director of Policy, Scottish Association for Mental Health, and one of the authors, Sarah Cunningham-Burley. We chose David Porteous as the first speaker because he was the lead coordinator of Generation Scotland at the time and we thought it was important for him to explain the nature of the proposed project and the ethical questions that he thought it raised at the outset. We chose Richard Norris to represent a lay or user-perspective, and asked him to raise concerns and questions about Generation Scotland, which he did, providing a critical stance. Sarah Cunningham-Burley drew out some overarching questions for the participants to discuss in the afternoon breakout sessions, particularly the nature of public involvement in Generation Scotland. She also stressed that everyone had a right to talk and all views were important. This was followed by a series of breakout discussion groups (six in total). We suggested the following questions for discussion: What benefits and risks does Generation Scotland involve? How do we foster public confidence in Generation Scotland? Should donors have a say in the management of the database? Will early diagnosis of genetic risk for disease be a benefit or a burden? Should companies have access to the data in order to develop new treatments for diseases? After a session where the groups reported their discussions, the conference closed with presentations from David Porteous and Andrew Webster, Director of the ESRC Innovative Health Programme.

We asked Webster to take on this role because our project is funded under this research programme, and we thought that an overview from a sociologist of science would be an interesting way to conclude the conference. We asked him to give a 'bigger picture' on how to involve the public in this kind of initiative, developing some of the issues raised by participants in the feedback session and drawing on his knowledge of other similar initiatives and their broader social and political context. Rounding up in this way, however, left the last word with established experts, albeit with different perspectives.

The main plenaries and feedback sessions were transcribed, as were two of the breakout discussions. Then we coded the transcripts using Atlas.ti as described above. In this paper, we focus upon the 'report back' and closing plenary sessions, as this is where the lay contribution to the main discussion was greatest and the main conclusions of the conference were drawn. As above, we focus upon the construction of expertise in discussions of public involvement and healthcare priorities, describing the range of subject positions that this involved and considering how the format of the conference shaped the discourses and positions we found. The format of this meeting again contrasts with the two discussed earlier, as it combined plenary and small group sessions, and the plenary session brought together a scientist, a representative from a voluntary organization and two social scientists. However, despite differences in format and focus, there were remarkable similarities in how expertise and lay perspectives were constructed and negotiated during these events.

Lay and Expert Positioning

In this section, we provide a more detailed analysis of the discourse at the events. To preserve a sense of the context of the discussions, we take each event in turn before drawing out similarities and differences.

Who Twists the Helix?

The organizers of this conference had a long record of organizing public involvement initiatives, and were keen to do something different from the usual expert conference to mark the 50th anniversary of the discovery of the structure of DNA. But, as the conference unfolded, it became apparent that the jury were not as involved as they might have been. Jurors did not have very much time to question the experts, or to set the order of speakers or topics of discussion. Experts (including ourselves) dominated the discussion. The great majority of the speakers were academics with strong and mainly critical stances on the development of GM crops, genetic determinism and gene patenting. The lack of dialogue was not simply a matter of the format, but of the interactional dynamics more broadly. The jury sat together while other participants moved more freely. Many expert participants knew each other through professional networks, and spent time at the conference discussing their work. Jurors and non-jurors tended not to interact during meal and refreshment breaks, although exchanges did happen at social occasions outside of the conference venue. We only really heard the jury's collective views when they delivered their report in the final session and there was very little time for discussion afterwards.

The jury's report consisted of a series of bullet point responses to the main plenaries of the conference. This involved broad-ranging reflections on the nature of the jury process, the direction of scientific research and the regulation of science and commercialization. Their conclusions were not focused upon a particular goal or outcome. Although the organizers had intended for a representative of Pfizer to receive the verdict, she was unable to attend.

We now turn to consider the subject positioning and key discourses in the jury's report. The speaker began by making clear the jury's lack of expertise and their distance from the other experts present, through statements such as 'We are not here to criticise or blame scientists in any way, we think that you all do your jobs extremely well, but that science is part of the puzzle and … it's society's responsibility … science is part of the debate.' Such statements suggested an implicit deferral to scientific expertise, together with an explicit recognition of the role of society, and therefore non-scientists, in debate. Moreover, despite the ways in which experts at the conference differentiated themselves as sociologists or geneticists, the audience was referred to as a seemingly homogeneous group of 'scientists'. However, in other respects, the jury's spokeswoman emphasized her own, and by implication the jury's, professionalism – they were more than just 'lay people'. For example, she used PowerPoint slides to present results. This was in contrast to the other speakers who had been asked by the organizers not to use PowerPoint, as it might intimidate the jurors! The jury's representative also used business terminology in her report, such as '*short termism*', '*blue skies*', '*compliance*' and '*liability for consequential damage*'. And she implicitly referred to her own expertise in another domain (law) in the course of her speech, as the following excerpt about the dangers of medicalization illustrates:

> … Then personally I would say the underlying theme that you hear going through every criminal court of the country and every prison in the country, is: 'it's not my fault'. 'They forced me; they did this; they did that', and here we are … just reinforcing this by leading people to believe that there's always; there's always a gene or there's always a pill or there's always something other than me that controlled my behaviour.

Although this was an aside, it served as a signal of this juror's competence to judge the social implications of genetic knowledge and of the importance of recognizing this wider domain in considering the pros and cons of genetic research and its applications. This remark also emphasized this juror's, and by implication the other jurors', parity with the other expert participants, especially when the wider context of genetics was at issue. It also reinforced one of the predominant themes of the conference – the critique of genetic reductionism – further aligning the jurors with the experts present. This preamble set up the speaker's proposal of a role for the public in decision-making about scientific research priorities, service provision and commercial exploitation, in order to counteract vested interests: 'Science is a piece of the puzzle which we understood is managed by society. And society should define what the puzzle is. And science operates within that context.'

The jury's spokeswoman stressed lay people's roles in determining the research agenda and how scientific information is used. But this was not set up in competition with experts' claims about those matters. Indeed, the jurors' emphasis upon balanced assessment of the advantages and disadvantages of genetics, their professed faith in governance and regulation, and their appeals to participatory democracy based upon education chimed with the arguments of many in the scientific and medical communities. This discourse involved an interesting mixture of lay and expert positioning. For example:

> … we think that public confusion; there's not enough public education in these debates. … we were told that there's possibly higher priorities that clean water and a variety of other things would do more towards feeding the world than necessarily genetics. … it was not proven to us that genetics is necessarily the answer and the highest priority answer. … there's a whole debate of profit versus health and it comes back to … risk management at the end of the day.

The speaker referred to public confusion 'out there' and the need for better education about public health priorities and the role of genetics, and did not engage with the problem of expert disagreement about those issues. This implicitly positioned her as a lay person with faith in expert solutions, but also as someone separate from an amorphous public that needs to be better informed. Although her next statement about 'profit versus health' acknowledged disagreement and debate, when she presented the management of risk as a viable solution, she once again implied faith in technical expertise. Yet we can also read her statement to involve a kind of expert positioning. Her appeal to risk management implies an insider's viewpoint, as does her statement about '*lack of proof*' that genetics provides the '*highest priority answer*', and the need for educating the confused public. Throughout her speech, she ran together lay and expert positioning in the construction of regulatory solutions. She also invoked a broader set of professional claims to accountability, transparency, independence, public education and holism:

> We believe that the current Government is in favour of inclusive decision-making, at least at the lip service level. However, we do not believe that this strategy has been effectively embedded as yet. Public debate is still seen as an opportunity to tell or educate us in what that we should be thinking. Rather than listen to grass roots levels. … it is seen as giving legitimacy to what has already been decided policy. And as the consumer society, or the Consumers' Association said on this radio programme this morning, the public en masse are not particularly stupid, you know. We can get the message, so hence we would endorse this. Well you might think that we're stupid sitting here, but we don't think we are. We all have the responsibility for ensuring a participative democracy works, so this is not a criticism. This isn't, you know, a one-way statement here. We are included in this as much as anyone else. So we need to follow up our participation; be difficult to ignore, and promote the rationale behind participative democracy.

> And we need to look outside and beyond the information given to us. … So the recommendation is that there should be a public consultation at the earliest chance with all the facts and figures available … not when it's really too late to have any effect anyway.

The speaker in this passage emphasized shared responsibilities and equal rights in the notions of participative democracy, and recognized the danger that these types of regulatory mechanisms would only be 'for show'. However, she expressed ultimate optimism about the potential for such regulations to have an effect, so long as 'all the facts and figures' are available. She supported her discourse, once again, with a mixture of lay and expert positioning. She inferred a divide between the audience of experts and the jurors when she made the point, '*you may think we're stupid sitting here*', but she quickly went on to repair the divide by claiming '*we all have responsibility … This is not a criticism.*' She also used esoteric language, such as '*effectively embedded*', which invoked her own professional standing, as did her emphasis on inclusive decision-making and participative democracy.

The jury's report interwove lay and expert subject positioning in a complex and sophisticated manner. At times the spokesperson referred to her and her fellow jurors' lack of knowledge, but also their positive rights and responsibilities as citizens. Yet this went alongside her other claims to professionalism expressed through the use of esoteric language, and anecdotes about related professional experience, alongside a range of discourses emphasizing risk assessment, participatory democracy and public health priorities; themes that cross-cut domains of expertise. Although questioning notions of scientific progress and problems in the realization of inclusive decision-making, the jury ultimately expressed faith and optimism about the potential for genetics to improve health and the environment. The organizers did not ask the jury to focus upon a specific question, and the broad range of topics clearly meant that their conclusions were necessarily wide-ranging. This wide remit may have fostered a more public display of ambiguity about their status as lay people and/or experts than a more rigid jury process might have allowed. But the lack of structure could also have opened the way for a more critical set of conclusions than those that emerged, particularly given the fact that the majority of speakers took such a stance. Instead it seems that the jury recognized that there were other perspectives that were more supportive of genetics, and they tried to take this into account when formulating their verdict, emphasizing balance and partnership throughout. Such a balanced view was reflected in the shifting subject positions of lay and expert invoked at different points during the discussion.

Café Scientifique

The speakers at the Café Scientifique meeting also had particularly critical perspectives on genetics, so the overall tone of the meeting was similar to the 'Who Twists?' event. Tom Shakespeare focused upon prenatal screening and gene therapy, raising questions about the prioritization of medical versus social solutions to disability and illness, and criticizing the 'hype' around genetics. Helen Wallace also criticized 'hype' about the potential of genetics to solve the problems of disease and disability, arguing that genetics was too reductionist and stressing the importance of public health measures to tackle health inequalities. The discussion that followed further explored these perspectives. It involved a small number of participants (eight), two of whom identified themselves as experts in science and social science respectively. The other six participants identified themselves as lay people. Accordingly, they asked questions about the health improvement and screening possibilities, raised concerns about public education, and criticized commercialization and the arrogance of experts. These processes of self-identification are interesting in their own right. While it is common for speakers to say who they are, in this context, self-identification by a member of the audience was a very active construction, potentially claiming an identity as an expert on a par with the speakers, or, alternatively, a citizen's right to be present and participate as a 'lay person'. We did not ask the participants to draw conclusions like the jurors at the Who Twists the Helix? Conference. However, they did sometimes make prescriptive statements. A mixture of lay and expert positioning was also apparent throughout the event, as we shall show.

Tom Shakespeare established his expert credentials early on in his speech, albeit in a self-deprecating manner. He positioned himself as an academic when he made reference to a question one of his students had asked him. He emphasized his expert knowledge when he used technical language to describe the genetic defect that caused his impairment, other types of genetic disorders and their chromosomal characteristics, the process of gene therapy, and other clinical interventions. He also quoted statistics, such as rates of termination for particular genetic disorders. In addition, he presented himself as networked with other experts and 'people-who-matter', making frequent reference to colleagues and friends who are geneticists. He even mentioned meeting the Prime Minister. Yet he also used his experience of living with disability to provoke reflection. This is encapsulated in the following excerpts:

> … I'm quite interested in the perception that genetic screening, prenatal diagnosis, will solve the disability problem. Now … people like me are pretty rare. I have a G2A transposition at point 38 in my FGFR3 gene, and none of you do, as far as … unless you're hiding behind the pillar … and only about 1 in 20,000 births is affected by restricted growth. And the fact is that because it's so rare, it's not economic to test pregnancies for it. So it's just not going to happen. It's just one DNA spelling mistake. It's true that most births of people with achrondoplasia, 60% of all births of people with achrondoplasia, are to people like yourself; average height people. So any of you could have a child with achrondoplasia, particularly if you're slightly older than the average. And it's almost certain that that won't be detected in pregnancy. There are no genetic tests given for that, and indeed ultrasound can't really detect it until after the legal limit for abortion. There's a question mark, because as you probably know, the 24-week legal limit for abortion doesn't apply in cases of severe abnormality. The question is, is this a severe abnormality? We can come back to that.

> But there isn't … for the foreseeable future, no DNA testing in pregnancy for achrondoplasia; it's just not economic. And the same goes for most of the 5000 single gene disorders which you could potentially test for: you could do it technically, but economically and practically, it's not going to happen.

In this passage, the speaker used his personal case to frame a narrative with which to question the 'hype' around genetic screening, as well as the morality of termination on the grounds of fetal abnormality. He combined a display of technical expertise with situated knowledge, or experiential expertise about disability, to challenge the audience to question both screening and their own values about disabled lives not worth living.

Later he referred to his professional networks to introduce a narrative about another type of disability and the treatments available to people with the condition, to further question the benefits of genetics. Once more, he made use of both expert and lay subject positioning:

> … colleagues of mine in Newcastle are exploring gene therapy for one condition for … Duchenne muscular dystrophy. This is slightly less rare than … achrondoplasia. It's about 1 in every 3500 people. And it affects boys. Now the interesting thing, and it goes back to what I started with, is that the survival rate of boys with Duchenne muscular dystrophy who used to die by their eighteenth birthday – it's a very very sad disease – children who used to die by their eighteenth birthday is now 25 on average. Which is really fantastic; we can all agree that. And why is that that they've survived? Is it spinal surgery cos that is offered to these kids? No. Is it detection and treatment of cardiac complications arising from Duchenne muscular dystrophy? No. Is it gene therapy? No, because it doesn't work yet. Is it stem cell treatment? No, that doesn't work yet either. What it is is something called nocturnal ventilation. And this is a rather simple machine which gives a positive airflow into the lungs. You have a little mask over your mouth, and in the night, it whirrs away and it pumps air; ordinary air, not oxygen; sometimes oxygen; but air into your lungs. And that increases the oxygenation of your blood. And you live for another 7 or 8 years. Now that piece of kit is not high tech, it's not genetic, and it's very simple, and it's very cheap, and it's the single biggest improvement in the life experience of kids with Duchenne muscular dystrophy that there has ever been, as far as I can see.

Here the speaker mixed technical information such as mortality figures, and references to his professional networks with an appeal to the audience to think from the perspective of a child with muscular dystrophy when he adopted the second person ('you') when speaking about the use of nocturnal ventilation. Once more, he questioned the 'hype' around genetics, while retaining respect for the overall medical imperative of increasing life expectancy. He drew on technical knowledge, legitimated by his network contacts and experiential knowledge, actual or projected, to invoke lay and expert subject positions and to bring the audience into the debate.

This invitation to the audience to question, and to think from the perspective of disabled people, provoked a number of interesting contributions from the floor. For example:

> Yeah, hi, sorry, I'm another total lay person here, so please excuse my ignorance. But I've just been very interested by what I've heard tonight. I didn't know much about it before I came in here. I've just got a bit of a question really. I myself am colour blind, which I believe is genetics, but I don't know much about it, I think it's quite common. One of the things I was interested in what the lady back there said about … what kinds of choices people are going to have in terms of prenatal diagnosis and things like that …

This participant apologized for his lack of knowledge, as a 'total lay person' and asked for further enlightenment. He referred to his hidden and mild disability to frame his request, implicitly questioning the use of prenatal diagnosis for mild disorders. Tom Shakespeare's response echoed his earlier comments about the economic and moral constraints on genetic screening.

Other audience members, including social scientists, appealed to their expertise in science or other academic posts. They sometimes also appealed directly to their experience of disability, as in the above example, and in the following exchange:

> Yes, I want to change the emphasis a bit. I'm a disabled person with invisible impairments acquired as a child and then about 2 years ago. And I specialise in housing, so I was interested to hear Tom's comment about lifetime homes. … actually I'm a social scientist – I don't; I haven't studied science since I was … at school – and it seems to me there's an interesting paradox in what I've heard tonight about this White Paper, and the move towards using what might be called a social model approach, which is about patient centred health … and what I would say is that the most beautiful thing about the social model is that it actually works. And we've got evidence that it does work. So this is kind of counter to what you're talking about, which is very much a medical model and the pharmaceutical industry and their power and all that. So I wonder if you've got any comments on that please.
>
> Tom Shakespeare: Well I mean you know, that's what I started with really, wasn't it? I mean the difference between a 2003 which is about European Year of Disabled People and the 2003 which is about genetics and you know, of course I agree with you. My own view is that we need a variety of approaches … You know, I have a genetic condition which causes me back pain, and that's why I go to a physio or whatever. And the social model is not going to cure my back pain, but equally if I face discrimination or prejudice, the social model can explore that and understand that. …

Both speakers appealed to their lived experience of disability in these excerpts. They also demonstrated their expertise in disability studies and associated fields when they referred to the social and the medical models. However, the audience participant also made a claim to limited scientific knowledge and reinforced her lay status regarding technical expertise. Interestingly, although both adopted a questioning stance, and criticized genetic hype, Tom Shakespeare balanced the emphasis upon public health and other social solutions to disability and illness with genetic or other biomedical solutions. Both speakers used their own experience to provoke the audience to question the pros and cons of genetics.

More profound expressions of ambivalence about genetics and the experts associated with it were also apparent in some of the other data we analysed. In those instances, participants expressed anxiety and disillusionment with science and scientists. After a series of contributions in which speakers emphasized their expertise, and several other people cast themselves apologetically as lay people, one woman said the following:

> As somebody who you would consider ordinary, which means ignorant, in your eyes, I think, the whole thing about this, absolutely, I find overwhelming. I am certain it's going to end in tears. And what you've talked about tonight is desirable, you know, and I think about what's supposed to be the criminal gene, and I think of things like education. And educationalists always want people to go to university, otherwise you're crap. And I rather think that when it gets into the hands of the experts, the people who know, they all want to replicate themselves and their own personalities as desirable.

This participant took a broadside at experts for their arrogance and self-aggrandizement, but did not propose any kind of resolution to the problems that she identified. Instead, she emphasized the inevitability of inequality and the futility of protest. She seemed to express positions of profound alienation, concern and frustration, and invoked the classic alignment of lay person with ignorance, but attributed this view to experts. She implied that lay people are just ordinary, and that going to university does not necessarily mean that you are clever, suggesting that lay people are less dangerous than arrogant experts, but this can hardly be interpreted as a ringing endorsement of lay expertise.

In response, Tom Shakespeare commented:

> Well, I mean I hope I didn't sort of imply that ordinary people were inferior or in any way undesirable. I mean I certainly didn't intend to say that. I don't have … I did O levels in science and nothing since and I'm very committed to lay people, ordinary people, the general public, of whatever age, taking part in these debates …

Here he placed lay knowledge on a par with expert knowledge, signifying his commitment to democratic participation. He moved away from his earlier efforts to align himself with experts, and aligned himself with the ordinary public by drawing attention to his lack of formal scientific qualifications. Other participants went on to present themselves as lay people seeking information or experts making points of interest in order to facilitate further discussion. The earlier, more profound expression of ambivalence or alienation seemed to lose its force. The participants or organizers did not explicitly dismiss it, but participants went on to agree that genetic science was valuable in its own right.

Several participants in the Cafè Scientifique event, including one of the speakers, alternated between positioning themselves as experts with formal or related professional experience, and as experts by virtue of their lived experiences, for example of disability. They also invoked their lack of scientific credentials, and ordinariness as a means of provoking the audience to question the role of genetic technologies. Although much of the discussion was critical of the 'hype' around genetics, the general tenor of many remarks was of cautious support for, rather than outright rejection of, genetic research, albeit with a more critical take on commercial involvement in research and services. They stressed balance and partnership by emphasizing that genetics is but one strategy for dealing with disability and illness. This suggests, once again, that ambiguity around the lay–expert divide maps onto relatively conventional notions of the future of genetic research and services. Shifting expert and lay subject positions seemed to facilitate a friendly debate rather than entrenched confrontation. This, in turn, seemed to reinforce the status quo, perhaps lessening the very possibility of democratic participation while appearing to claim it.

Generation Scotland

Before the Generation Scotland conference, we knew from our list of delegates that numerous professionals would attend the conference. The registrants included health professionals as well as academics from the sciences, social sciences and humanities, people involved in healthcare policymaking, and people already involved in public consultation initiatives organized by, among others, the Scottish Executive. Members of patient and community groups and people without particular affiliations were in a minority. We therefore tried to stress at the beginning of the conference that all contributions and perspectives were important, and we tried to make space for contributions from the floor, particularly in the afternoon sessions where breakout groups reported back their discussion. Professionals, especially two of the plenary speakers, nevertheless tended to dominate the discussion, partly because of our arrangements for the plenary sessions, but also because they tended to take the role of rapporteur in the further open discussion that then took place. The evaluation of the conference by participants was overwhelmingly positive, but a small number of people raised concerns about the dominance of experts and the lack of lay contributions, for example from disabled people. Some participants also expressed concern, in the feedback forms, about consultation for consultation's sake and the difficulty of making a difference. The more critical questions posed by the plenary speaker who was asked to represent the lay perspective did not resurface in the feedback sessions or in the final plenary speeches. The final plenary speakers did not address many of the more detailed suggestions about the project design, marketing and public participation, and the best utilization of its results because their speeches were at a more general level. However, Generation Scotland is developing slowly and iteratively, and further public engagement work is planned within its social, legal and ethical research programme.

Looking more closely at the conclusions in the feedback session, we also find an interesting mix of lay and expert positioning, much as was found in the other two conferences. For example, one group's rapporteur noted:

> … We were very keen on involving the public now. And we don't just mean by consultation. But we felt it was really important that every steering group, every committee meeting, every whatever you're having, to set up this infrastructure for the project, which we see as being extraordinarily important for various reasons. We didn't talk about a Board of Trustees, but public confidence will only be there if you do have people who are, if you like, independent of the project and probably come from the general public.
>
> … don't imagine [members of the public] can't understand what's going on. Because they can perfectly well do that, and you ought to be recruiting the right sort of people. And that this should in the time of the project, be a changing group of people, so that they don't get captured into the kind of academic feeling or the way that, 'this is the most wonderful thing since sliced bread and we've got to be part of it'. So you want questioning, cynical if you like, critical members of the public to be sitting there while you're making your decisions, before anything goes much further.

This contribution emphasized the public's ability to understand science and make meaningful contributions to decision-making about the infrastructure for the project. Although she raised concerns about consultation after the event and the institutional capture of participants, this speaker signalled the importance of public consultation, and gave concrete suggestions about how it might be incorporated into the research planning process. Although she referred to the public as 'they' rather than 'we', she went on to adopt a lay position in her response to a query from another member of the audience about the perspective of her group:

> Three of us at this table come from [a government department's public involvement initiative], and that was set up by public advertisement and we have a very broad spectrum of people. And all these people are now sitting on … various committees and various portfolio groups and … making a reasonable contribution. … we're on a steep learning curve, but there's a there's a very good relationship [with the government department] … there are people out there who would be fascinated to sit there and listen to some of the discussions. Not only about this science, but … about public confidence; about how information is given and issues of consent. … ordinary people are perfectly capable of being involved like that. …

Here the speaker emphasizes the public's role in challenging but also learning about science through a consultative process, and she also stresses the need to build public confidence. This variously involved the claim to the public's disinterestedness in the positive sense, and lack of education, in the negative sense. But the speaker also gave an account of her and her fellow participants' experience of consultative work, which constitutes a kind of expertise, like the interactional expertise noted by Collins and Evans. The emphasis upon increasing recruitment and public confidence are familiar expert discourses as goals for public involvement exercises. This lay and expert positioning can be related to the different members of the group on whose behalf this participant seemed to speak. Two were members of a government department's public involvement initiative (already mentioned), one was an ex-geneticist turned healthcare administrator, another was a representative of a patient's group, one a 'self-confessed' member of the public, one a lecturer in public health medicine, and another was one of the authors. Although the rapporteur constructed their shared voice as a public voice, her expertise in the area was apparent in her discourses of recruitment, informed consent and public confidence.

Contributors who had identified their professional roles or expert knowledge also emphasized the importance of public involvement in decision-making and the value of lay knowledge and/or experience of illness. For example, following the above exchanges, another speaker in the final plenary session stated:

> I would just like to say from the [government department], where we set up the [lay involvement project], I think trust is an issue. And even if the members on committees don't influence decisions, which I think they will do, ultimately, they can see that due process is done.

This contributor argued that public involvement in decision-making is essential to the legitimacy of public bodies, because of the apparent disinterestedness of members of the public as opposed to scientists and other experts who are widely perceived as having vested interests. She valued others' 'layness' while maintaining her own expert status by casting herself as a coordinator rather than a participant.

The main speakers at the conference, who had academic backgrounds, also conveyed their expertise through a combination of esoteric language and identification as a particular type of expert, often in contrast to another type of expert (e.g. 'I am a sociologist, not a scientist'). They also appealed, on many occasions, to dialogue and partnership. For example, at the beginning of David Porteous's final speech he commented:

> … the first thing I will say is how useful I think this meeting has been and how fortunate, I think, I have been to be able to sit here and listen to all of the comments. I hope this doesn't sound anything other than a measure of that, but I haven't heard anything fundamentally different from what I've heard from other such meetings that we've had in the past, and from things that we've thought about. So, I'm relieved in the sense that all of the complexities are there, and they all need to be worked through, but I haven't found one yet that really throws a major spanner in the works …

Here, the boundary between his technical and ethical knowledge became blurred, but he nevertheless maintained his expert position through his oversight role; a role based on what he presented as a detached appraisal of the discussions in which the other participants engaged. When he implied that the core set of scientists involved had already anticipated the ethical issues raised at the conference and were on the way to working them out, he presented the conference itself as secondary to the research. This seemed to imply that ethical understanding follows from a more privileged form of technical understanding, further underlining David Porteous' and his Generation Scotland colleagues' expertise while maintaining their commitment to public involvement and dialogue more generally. Indeed, such distinctions are already somewhat blurred in the multi-disciplinary context of the Generation Scotland endeavour.

At other times, public or lay knowledge or involvement was more explicitly valued, because of the special insights that they might bring to ethical discussion or policy-making. Speakers with prepared rather than spontaneous statements often stressed this. It reflected a general discursive emphasis upon partnership and shared perspectives. Andrew Webster, one of the plenary speakers who had earlier identified himself as a sociologist, made the following argument in his final, prepared speech:

> A common language – that was the theme that I thought was so important today. … We talked about lay and expert; we talked about trying to avoid an impositional approach in the way we use our knowledge or knowledges, because there is no single knowledge. … lay notions of knowledge are to be respected [but we should not] over-romanticise knowledge in different sorts of settings when it's non-expert.

Here, Webster emphasized the importance of shared understanding, but flags the limits of different kinds of knowledge and stressed a need for balanced appraisal. However, he did not frame this as an alternative to sociological expertise. Instead, he emphasized the sociologist's role in helping to decipher different forms of expertise and to make recommendations about how they could work together.

Not surprisingly, given the theme, public engagement was a key interpretive repertoire at the Generation Scotland conference. There were some instances of detailed formulations of lay involvement, but the plenary format tended to downplay critical commentary and clear strategies or frameworks for lay involvement in favour of vague statements about the importance of listening to lay people. As in the previous two conferences, this lack of focus was matched by considerable ambiguity about the lay–expert divide in participants' subject positioning, with shifting of positions and claims to different forms of expertise during the dialogue. Yet lay positions seemed to be less stable and influential than expert positions. While non-core set participants made claims to expertise as a means of demonstrating status and legitimacy, experts in this conference did not lay claim to lay perspectives directly; rather they stressed the importance of lay involvement and their corresponding role as facilitators or interpreters. This event also seemed to differ from the Café Scientifique event in that speakers were less inclined to invoke personal experience or experiential expertise as ways of justifying their positions or legitimizing their right to talk. The larger number of participants and more structured arrangements seemed to subdue this more informal, personal talk; but the alignment of shifting lay and expert positions and discourses of participation, balance and progress were common to all three events.

Discussion and Conclusion

We have outlined some common subject positions that we found in the events we have analysed for this paper. Claims to expertise and the importance of lay perspectives are dynamic and context-dependent. They can be linked to a range of discourses about balancing public and professional input into decision-making, as well as the importance of genetic and other medical and social solutions to health concerns. Participants constructed a range of solidarities and differences with other participants and outside individuals and communities in the course of these events. They established their authority to speak by variously claiming unique insight, specialist knowledge and/or good networks with others. Sometimes, participants based this upon claims to particular kinds of expertise, or the need for a mixture of expertise. This included appeals to grounded understanding and experience of caring and illness – a kind of experiential expertise. However, lay perspectives were also invoked, in the form of disavowals of technical knowledge and vested interests and claims to insight based on citizenship rather than expertise. In some cases, participants adopted hybrid positions with almost simultaneous claims to expertise and lay perspectives.

Participants at these events nevertheless privileged technical knowledge. The formulations or solutions for the management of genetics research and services that were promulgated were based on fairly standard notions of decision-making where technical expertise was supplemented by other forms of expertise and lay perspective in order to underpin, as opposed to challenge, the design and oversight of genetic research and services. It is interesting that social scientists also engaged in these appeals to the technicalities of genetics, while also stressing their own ‘interactional expertise’ in its translation. Appeals to risk assessment, transparency and professional accountability also implicitly emphasized the privileged position of the core set of professionals involved with genetics, as opposed to other experts or interested lay people. This is not to say that the complexities and controversies around the production and interpretation of technical knowledge went unacknowledged, but that they tended to be bracketed as the main conclusions of the events emerged. There were very few examples of confrontation between experts, or between scientists and lay people. Obviously the events we have analysed were addressed to broad questions about the nature of genetic research and service provision, so technical discussions were likely to be minimized, but it was striking how even speakers from non-technical/scientific backgrounds, including social scientists, implicitly privileged technical knowledge.

Participants who demonstrated their technical knowledge took on more prominent roles in the discussions, but they did not do this without also demonstrating other interactional skills and appealing to certain kinds of lay perspective, for example professing a lack of scientific expertise or involvement in public consultations. This was especially true of social scientists, public administrators and healthcare managers who played an interesting role in these proceedings, by virtue of both their ‘referred expertise’ and ‘interactional expertise’ to use Collins and Evans’ terminology. They expressed their expertise by appealing to technical acumen or ethical and social insight, and by establishing connections to or distancing themselves from other kinds of experts. They also sought to establish the importance of ethical or political understanding, and to demonstrate the complexities and esoteric knowledge of their own field. At other times, they disassociated themselves from formal expertise or stressed experiential expertise, focusing upon disability, in particular, to make connection to the public. They also carved out a role for themselves as facilitators or interpreters of public engagement activities. But it seemed that the centrality of social science to the understanding of genetics was far from established for the audience as a whole, as technical development, subject to lay scrutiny, was paramount. So we might conclude that, although it is fundamental, interactional expertise is far from stable, or, indeed, recognized as influential, at these kinds of events. Perhaps its very slipperiness makes it ripe for strategic discourse and action.

As we might expect, references to lay people's lack of knowledge, and to their modesty, desire for information and education were common throughout the three events. Lay positioning was not, however, simply a matter of deferral to expertise. It was also a way of establishing commonality with other participants, and sometimes underlining citizenship credentials in contrast to technical expertise. However, these lay positions did not tend to challenge expert positions, because participants often presented them as an adjunct, rather than an alternative, to expert dominance of discussion and decision-making. The right to speak was sometimes founded upon the claim to experience and grounded understandings, but such a claim invariably mixed with other claims to technical expertise based upon technical acumen or professionalism across a range of disciplines. Like Epstein's (1996) AIDS activists, it seemed that lay people who established hybrid lay–expert positions were successful at influencing the discussion, particularly when they also stressed partnership and dialogue, in a way similar to the expert participants who assumed the mantle of lay involvement. However, unlike Epstein's activists, the scope for that partnership to engender specific change in scientific or medical practice through these kinds of events remained muted.

In Jasanoff's and Wynne's rejoinders to Collins and Evans' paper, they argue that one must pay attention to the institutional contexts of decision-making, but also suggest that in the right environment the ordinary public should have the capacity to make meaningful challenges to science because of their citizenship and not because of any particular form of expertise. We concur with this need to emphasize the institutional contexts in which expertise is claimed and mobilized. Our own readings of the wider contexts in which the discussions we examined here took place is that they were important for privileging expert subject positions and the associated discourses of balance, progress and choice. The selection of speakers and the format of speaker–audience interactions are obvious ways in which expert positions were privileged, even when space was made for lay contributions from the podium or the floor. The format of these events also implicitly privileged consensus and optimism, and marginalized criticisms that radically challenged the purpose of the event, or of the STM it concerned. The colonization of layness by expert speakers and the hybrid position of lay–experts were characteristic of this shift towards the middle ground.

We recognize that the events we have analysed are far from the ideal type of participative democracy that commentators such as Jasanoff and Wynne may have in mind. Nor can we claim that they resulted in any significant contribution to decision-making about genetic research or service provision. But our findings nevertheless lead us to query Jasanoff's and Wynne's apparent optimism about the public's potential impact on decision-making. This is largely because in the events we analysed, lay positions appeared to be so deferential, and, even when strong, prone to disavowal in favour of other expert positions. This suggests that a form of deferential partnership tends to ensue in these kinds of events, where scientific expertise is supplemented by limited public input. When lay positions were forcefully expressed as a way to challenge STM, for example through the assertion of citizen rights or criticisms of the scientific enterprise, their contributions were all too often bracketed by other participants, and therefore weakened. As we have already suggested, these processes occurred in the three events whose organizers were quite explicit about their participatory agenda – they were far from the institutional window-dressing that is characteristic of many such events when they are run by prominent scientific institutions and charities. But, the conclusions of these events, to the extent that they can be called conclusions, were also far from challenging, despite the organizers' efforts to open a space for critical dialogue and enquiry. This makes us question the extent to which lay people can ever expose scientific error and hubris, given that the layness we found was so fragile, easily compromised and so readily aligned with expert positions by both scientific experts and others. This seems as true of events that are highly structured as those which are not.

It may be that some people may take comfort in the dominance of technical expertise and the apparent consensus in favour of genetic research and services that we found at the events analysed here. But the lack of diversity in how expert and lay claims were mobilized and the predictability of the conclusions gives us cause for concern. It seems that there is much work to be done to develop more open and stimulating forums for dialogue between professionals and public events in which participants can explore different subject positions and ambivalence more easily than has been our experience so far. As social scientists, we also need to think more carefully about our role in these proceedings as experts in our own right, with research outputs to produce and market. Building such reflexivity into the organization of public engagement events is far from simple, but without a more flexible and open format for public discussion and decision-making we are unlikely to be able to ever combine expertise in different ways for the benefit of STM and its publics.

Notes

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1. Anne Kerr and Sarah Cunningham-Burley (Principal Investigators) Richard Tutton (Research Fellow). Transformations in Genetic Subjecthood ESRC Innovative Health Technologies Programme 2002–4 L218252059.
2. Atlas.ti is a qualitative data package for the analysis of large bodies of text through coding and networking of codes, memos and quotations.

References

Arksey, Hilary (1998) *RSI and the Experts*: *The Construction of Medical Knowledge*. (London: UCL Press).

Billig, Michael, Susan Condor, Derek Edwards, Mike Gane, David Middleton & Alan Radley (1988) *Ideological Dilemmas: A Social Psychology of Everyday Thinking* (London: Sage Publications).

Brown, Phil (1992) ‘Popular Epidemiology and Toxic Waste Contamination: Lay and Professional Ways of Knowing’, *Journal of Health and Social Behavior* 33(3): 267–81.

Busby, Helen, Gareth Williams & Anne Rogers (1997) ‘Bodies of Knowledge: Lay and Biomedical Understandings of Muscoskeletal Disorders’, in M.A. Elston (ed.), *The Sociology of Medical Science and Technology* (Oxford, Blackwell): 79–99.

Collins, H.M. & Robert Evans (2002) ‘The Third Wave of Science Studies: Studies of Expertise and Experience’, *Social Studies of Science* 32(2): 235–96.

Davies, Bronwyn & Rom Harré (1990) ‘Positioning: The Discursive Production of Selves’, *Journal for the Theory of Social Behavior* 20(1): 43–63.

Dickerson, Peter (2000) ‘“But I’m Different to Them”: Constructing Contrasts between Self and Others in Talk-in-Interaction’, *British Journal of Social Psychology* 39: 381–98.

Dunkerley, David & Peter Glasner (1998) ‘Empowering the Public? Citizens’ Juries and the New Genetic Technologies’, *Critical Public Health* 8:181–92.

Dyer, Judy & Deborah Keller-Cohen (2000) ‘The Discursive Construction of Professional Self through Narratives of Personal Experience’, *Discourse and Society* 2(3): 283–304.

Edley, Nigel (2001) ‘Analysing Masculinity: Interpretative Repertoires, Ideological Dilemmas and Subject Positions’, in M. Wetherell, S. Taylor & S. Yates (eds), *Discourse as Data: A Guide for Analysis* (Milton Keynes, Bucks.: Open University Press): 189–228.

Epstein, Steven (1996) *Impure Science: AIDS, Activism and the Politics of Knowledge* (Berkeley, CA: University of California Press).

Gilbert, Nigel & Michael Mulkay (1984) *Opening Pandora’s Box: A Sociological Analysis of Scientists’ Discourse* (Cambridge: Cambridge University Press).

Goven, Joanna (2003) ‘Deploying the Consensus Conference in New Zealand: Democracy and Deproblematization’, *Public Understanding of Science* 12: 423–40.

Hammersley, Martyn & Paul Atkinson (1995) *Ethnography: Principles in Practice*, 2nd edn (London: Routledge).

Haste, Helen (2004) ‘Constructing the Citizen’, *Political Psychology* 25(3): 413–39.

Horlick-Jones, Tom (2004) ‘Experts in Risk? … Do they Exist’, *Health Risk and Society* 6(2): 107–14.

Irwin, Alan (2001) ‘Constructing the Scientific Citizen: Science and Democracy in the Biosciences’, *Public Understanding of Science* 10(1): 1–18.

Jasanoff, Sheila (2003) ‘Breaking the Waves in Science Studies: Comment on H.M. Collins and Robert Evans, “The Third Wave of Science Studies”’, *Social Studies of Science* 33(3): 389–400.

Kerr, Anne, Sarah Cunningham-Burley & Amanda Amos (1997) ‘The New Genetics: Professionals’ Discursive Boundaries’, *Sociological Review* 45(2): 279–303.

Kerr, Anne & Sarah Cunningham-Burley (2000) ‘On Ambivalence and Risk: Reflexive Modernity and the New Human Genetics’, *Sociology* 34(2): 283–304.

Kerr, Anne, Sarah Cunningham-Burley & Amanda Amos (1998a) ‘The New Genetics and Health: Mobilising Lay Expertise’, *Public Understanding of Science* 7: 41–60.

Kerr, Anne, Sarah Cunningham-Burley & Amanda Amos (1998b) 'Drawing the Line: An Analysis of Lay People's Discussions About the New Genetics', *Public Understanding of Science* 7: 113–33.

Kroll-Smith, Steve & Floyd, Hugh (1997) *Bodies in Protest: Environmental illness and the struggle over medical knowledge.* (New York: NYU Press).

Popay, Jenny & Gareth, Williams (1996) 'Public Health Research and Lay Knowledge', *Social Science and Medicine* 42(5):759–68.

Prior, Lyndsay (2003) 'Belief, Knowledge and Expertise: The Emergence of the Lay Expert in Medical Sociology', *Sociology of Health and Illness*, Silver Anniversary Issue 25: 41–57.

Turner, Stephen (2001) 'What is the Problem with Experts?', *Social Studies of Science* 31(1): 123–49.

Wetherell, Margaret (1998) 'Positioning and Interpretative Repertoires: Conversation Analysis and Post-structuralism in Dialogue', *Discourse and Society* 9(3): 387–412.

Whelan, Emma (2003) 'Putting Pain to Paper: Endometriosis and the Documentation of Suffering', *Health* 7(4): 463–82.

Wynne, Brian (1996) 'May the Sheep Safely Graze? A Reflexive View of the Expert–Lay Knowledge Divide', in S. Lash, B. Szerszynski & B. Wynne (eds), *Risk, Environment and Modernity: Towards a New Ecology* (London: Sage Publications): 44–83.

Wynne, Brian (2003) 'Seasick on the Third Wave? Subverting the Hegemony of Propositionalism: Response to Collins and Evans', *Social Studies of Science* 33(3): 401–17.

Yearley, Steven (2000) 'Making Systematic Sense of Public Discontents with Expert Knowledge: Two Analytical Approaches and a Case Study', *Public Understanding of Science* 9: 105–22.

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