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Another Science for Another World?: Science and Genomics at the London Social Forum¹

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Abstract

The 3rd meeting of the European Social Forum was held in London during October 2004 with a broad ranging formal agenda and a penumbra of affiliated workshops and cultural activities. This paper focuses upon a range of sessions dealing with science in general and the sciences of human genetics in particular. Through participant observation this paper details the representations of science by ESF actors, their use of the ESF as a ‘convergence space’ for global activist network interaction and the various ways in which participants sought to create a more socially responsible and accountable science.

Drawing on observations of, and participation in, these sessions we describe how scientific knowledge and practices were portrayed in the context of neo-liberal market relations by both ‘producers’ and ‘consumers’ of techno-science. The concluding section considers the implications of (re)negotiating scientific and social orders within such open network spaces. It is argued that ‘broad and shallow’ and ‘narrow and deep’ approaches towards public understanding of science need to be supplemented by the ‘broad and diverse’ processes typifying the forum milieu.

Key Words: Science, Genomics, Globalisation, World Social Forum, European Social Forum, Complexity.

Introduction

In October 2004 London hosted the third annual meeting of the European Social Forum (ESF), one of several geo-political regional assemblies constituted as part of the World Social Forum (WSF). Organised under the banner ‘Another World is Possible’, the meeting emphasised the need to promote peace, democracy, justice, human rights, and sustainability whilst resisting racism, discrimination, privatisation, deregulation, globalisation and neo-liberalism. Given these emphases it is not surprising that concerns around science, technology, innovation and their role in supporting Western lifestyles and institutions were strongly represented in the programme. The question these workshops and seminars raised reflected these

concerns by asking, if another world is possible, does this mean that another science is needed and, if so, what should it look like?

In this article we present one of the first attempts to track debates about science within a single ESF meeting. We concentrate on two sets of workshops and seminars: the first addressed 'science and citizens' in fairly general terms; the second focussed on developments within human genetics. Drawing on insights from Science and Technology Studies (STS) and Social Movement Studies, we examine how the social sciences can use ethnographic methods to engage with emergent forms of social action that remains invisible to research methods and projects that only collect data after the stakes and organisations have formalised. The analysis thus emphasises two interwoven themes.

The first is an examination of the stakes and stakeholders associated with science and genomics. Based on our observations we outline the anatomy of the emerging politics of science and genomics displayed at the London ESF. In doing so, we emphasise the relationship between the 'producers' and 'consumers' of scientific knowledge and the tensions over the 'ownership' and 'control' of knowledge and its application. These categories reflect both the primary frames of engagement used in many of the observed sessions and the key analytic terms used to address interest representation within pluralist approaches to democratic inclusion. Whilst these terms originated in relation to material products, their use in relation to biological process and associated 'immaterial' concerns enables us to address within a consistent framework those aspects of genomics that are likely to become central to public negotiations about developments in this field.

Secondly, the development of both material and immaterial stakes are situated within the growth of the social forum movement itself. Here, the importance of network forms reinforcing the 'strength of weak ties' (Granovetter 1973) operating within 'small world networks' (Chesters and Welsh 2005, 2005a, Urry 2003) are used to highlight the way social forum events such as the London ESF need to be understood as part of a global and nested network including Peoples' Global Action and the World Social Forum. This networked movement milieu links an increasing number of 'hubs' operating at city, national, and regional levels through regular 'protest' and

proactive capacity building events (Chesters & Welsh 2005a, Sen 2004). These processes, which have been operating since the late 1990s as a ‘shadow realm’ (Welsh 2002), are consistent with a ‘latency period’ (Melucci 1996) within which collective stakes, which pre-figure and partially constitute grievance frames, are declared. At the London ESF, the engagement of these actors with science issues sui generis and genomic issues in particular marks a significant ‘phase shift’ in terms of activist and citizen engagement with science. In effect, activists used the ESF as ‘convergence space’ (Routledge 2003) to develop horizontal networks, linking existing actors with new groups and individuals whilst also developing new strategies and organisations for lobbying and more direct forms of action.² Given the dominance of governance and civil society approaches to ‘inclusionary’ science policy, and the proliferation of techniques designed to orchestrate citizen involvement (see for example the EU ‘Science and Society’ forum held in Brussels in March 2005 www.europa.eu.int/comm/research/conferences/2005/forum2005), this focus on the periphery is a timely reminder that democracy happens outside as well as inside formal institutions and processes.

The ESF thus constituted a point of critical contrast between the orchestrated public surface of debates around science and genomics and the views present within a milieu with a relatively high density of ‘informed’ and / or engaged actors. Our anatomy of these interactions thus have implications for both the structure and content of ‘citizen science’ at the national and EU levels in the context of global civil society networks. We return to these global themes in our conclusions where we argue that the social forum movement represents an accumulating social force pursuing ‘public interest science’ as a response to neo-liberalism. In order for us to make this argument, however, it is important to start at the beginning and provide a brief summary of the origins and development of the social forum movement at global and regional levels.

The Social Forum Movement

The WSF was first conceived in 1996 during discussions between activists and academics at the Tricontinental Centre in Belgium (Chesters and Welsh 2005a)⁴.

² The founding of the ESSF (European Science Social Forum) network during the ESF is the most prominent example of this. The ESF web site can be found at www.fse-esf.org .

Convened for the first time at Porto Allegro in Brazil in 2001 the WSF is a self conscious focus for global civil society concerns raised by neo-liberal globalisation and promoted by institutions such as the World Economic Forum (WEF). The WSF's annual meetings in 'the South' coincide with those of WEF and Social Forums aligned with the declared Charter of Principles have been convened in Asia, Africa, the Americas and Europe promoting the formation of numerous urban social forums within specific nations³.

The network agency of Peoples' Global Action and other global civil society advocates within the 'Alternative Globalisation Movement' have made the Social Forum a dynamic and expanding 'bottom up' movement (Fischer & Panniah 2003). A sense of this vibrancy can be derived from the first European Social Forum held in Florence during 2002. At least 30,000 participants attended the event, which offered an extensive programme of seminars, workshops and plenaries addressing every imaginable policy domain relevant to an economic society. The event confounded fears of a repeat of the violence in Genoa in 2001 when the so called 'anti-globalisation movement' sought to disrupt the G8 summit The Paris ESF in 2003 attracted an estimated 20,000 paying delegates and an unknown number of 'casual' participants in over 1,000 dedicated sessions. The London ESF replicated both the form and content of previous events, with the official programme containing over a thousand sessions in many different venues and styles that offered the estimated 25,000 participants⁴ wide-ranging opportunities for education, capacity building and networking.

Distinctive Features of the London ESF

Like all expressions of global network actors (Welsh 2004) the local 'UK' context shaped the event, giving it a distinctive feel and organisation. These 'localised' socio-cultural dynamics were most clearly visible within the social geography (Routledge 2003) of the ESF meetings and the three tier structure that emerged. The main London

³ . In the UK standing urban social forums include Leeds, Manchester, Oxford, Bristol and Cardiff. All urban social forums are required to endorse the principles of the WSF and become part of a radiating hub and spoke structure predicated upon consensus decision making. The charter of principles can be accessed via www.forumsocialmundial.org .

⁴ Pre-registration figures by nation were Belgium 593, France 1003, Germany 834, Greece 363, Italy 1,362, Poland 499, Russia 190 and Spain 1,271 (Callanicos 2004).

venue at Alexandra Palace staged the major set piece debates and seminars, 'affiliated' events occupied a series 'autonomous venues' in central London whilst 'independent autonomous' events were convened at a variety of locations across London. Many of the autonomous events continued themes initiated in previous ESF events and were organised through e-mail lists and peer networks. Their location in 'autonomous space' thus reflects organisational dynamics we address below but also underlines the continued relevance of a 'shadow realm' open to scrutiny only through 'network immergence' and not available to those relying solely on the official programme.

This tripartite organisation was the product of an extended period of heated 'negotiation' between three key constituencies: the Mayor of London, Ken Livingston, and key Trade Unions mobilised significant funds and personnel; the Socialist Workers Party and its 'front' organisations, Globalise Resistance and Respect, represented a second significant constituency; whilst the third key constituency was the diverse grouping of NGOs, social movement actors and network movements (Callanicos 2004 for a 'vertical' account). The last grouping was certainly the most diverse, containing varying degrees of libertarian orientation ranging from consensus based direct action communities to formal NGOs such as Greenpeace with relatively strong ties to the processes of institutional change

In organising the UK forum the differences between these constituencies became polarised in a division between 'verticals' (i.e. official programme see Callanicos 2004) and 'horizontal' (i.e. autonomous programmes). Some sense of the protracted nature of the negotiating process can be gleaned from the fact that the 'affiliated autonomous' events were only included in the official programme at the last minute amidst denunciations of the ESF as a reformist initiative by some London based direct action groups. Some horizontal networks formed at previous ESF events booked alternative venues independently, having become frustrated by the difficulties of dealing with the formal organising structures. For participants, however, these distinctions were neither rigid nor impermeable and people moved more or less freely between official and affiliated events listed in the main programme, whilst those with pre-existing network links dipped into both the independent and official programmes.

Methodological Issues

Despite the permeability of the vertical-vs-horizontal split in practice, the distinction between ‘affiliated’ and ‘independent’ autonomous spheres remains important. For example, because the independently convened autonomous events were absent from the main programme they were invisible to academic studies based on published information. In this sense, and despite their increasing public visibility, key parts of social forums are still best understood as a ‘shadow realm’ (Welsh 2002) despite increasing social scientific engagement⁵.

Based on previous experiences at ESF meetings, we ‘sampled’ the ESF programme by following a single issue through different kinds of meeting. The selection of science and human genetics as our focus reflected ongoing research into public engagement with genomic science.⁶ Sessions within the published programme relating to public engagement with science sui generis were identified, as were all sessions explicitly related to human genomics. In addition, the researchers’ network contacts created a presence at specific independently organised sessions.

The majority of sessions were attended by one or two team members and data was gathered through participant observation. Whilst the convenors of all the genetics sessions were aware of the presence of researchers, for other participants and the convenors of the generic science sessions the work was effectively covert as, even when the researchers contributed to discussions, something consistent with the overriding participatory ethos of the forum, they did not declare the specific nature of their research interests. In the longer term this will enable the tracking of specific interventions through subsequent network iterations, a practice analogous to the introduction of information in reconvened focus group work. This provides a practical means of engaging in subsequent network mapping through continued participation in email lists originating in ESF meetings. Sustained engagement within such lists thus

⁵ A range of research instruments were being used within the ESF including self administered questionnaires left in meeting rooms from Alan Touraine’s centre in Paris as well as a number of other ‘teams’ immersed within the sprawling forum process without any clear ‘sampling strategy’.

⁶ CESAGen flagship project ‘The Emerging Politics of Human Genetic Technologies’
<http://www.cesagen.lancs.ac.uk/research/projects/newgentechs.htm>

becomes one means of tracking the network extensions constituting the forum milieu as a shadow realm.

Following the ESF meeting, field notes and reflections on official, affiliated and independent events were typed up and triangulated with documentary, web based and previously garnered interview data. It is important to emphasise that the data gathered and discussed here reflect the views of critically informed constituencies such as disability rights and social justice activists. As such the constituency sampled might be usefully conceived of as a ‘critical sub-group’ in a manner analogous to the designation of ‘critical groups’ within risk assessments. Groups and organisations that might be more supportive of the technology, such as patient groups or research charities, were not prominently represented at the ESF.⁸

In this context, our aims are two-fold. First, to explore the ideas about and the contextualisation of ‘science’ in the sessions we attended and, in particular, to examine the views of the ‘producers’ and ‘consumers’ of science present. These categories arise from the *dominant* identifications made by the participants but it is important to emphasise that they are not mutually exclusive. Both ‘scientists’ and ‘citizens’ were present within the opposite majorities marking the presence of *both* ‘citizen science’ and the ‘scientific citizen’. In what follows, we outline debates as they occurred within the ‘Citizens and Science’ sessions and then the ‘Human Genetics’ workshops. In each case, we summarise the main arguments put forward and provide some critical commentary on the ideas and stakes embedded in them. Secondly, we elaborate the network implications of the declared stakes observed identifying similarities and differences and outlining some of the main challenges that lie ahead for activists in both streams.

⁸ Initial research reinforces Welsh’s (2000) point that ‘pro’ and ‘anti’ formalisations oversimplify portrayals of issues within science controversies; a process intensified by the complexity of interactions and techniques associated with human genetic technologies. Ethnographic mapping of public engagement on the ‘emerging politics’ project is not confined to critical actors and interviews have been conducted with several ‘prime movers’ in ‘pro’ genetics networks. See Plows (2004)

Producers of Science and Scientific Citizenship

The official programme contained an ambitious programme of workshops and seminars addressing the need for both citizens and scientists to have more opportunity to shape research agendas and, by implication, guide them in a more socially responsible direction. As shown below, the discussions ranged from the viability of citizen assemblies on science to the contractual conditions under which many scientists work. These meetings were scheduled throughout the three days of the ESF and culminated in a well resourced final session replete with multilingual translation. Each of the sessions we attended is described below.

What Research Policies Are Appropriate in Another Europe?

Despite a notice postponing this session about a dozen people, including the researchers, turned up anyway and the meeting eventually ‘self convened’. The ensuing discussion of ‘Research Policies for Another Europe’ thus operated in an autonomous manner, with the problems and potential solutions it identified arising independently of any framing work by the convening organisations. As such the issues raised represent an interesting counter-point to the ‘convened’ sessions held later, which were all led, and thus to some extent framed, by formal presentations from invited speakers.

The discussion framed EU science as directed towards securing economic competitiveness and hence as a strategic part of political and economic policy within a global neo-liberal system. The impact of these overarching themes within both Higher Education and the wider scientific research community formed an important element of the discussions, which emphasised the increasing role of private funding in Universities; the imposition of flexible labour market conditions, notably short-term contracts for the scientific workforce; the need to integrate social science and humanities disciplines within the policy process; the need for clear science communication and public dissemination; and the need to link university based science with ‘local knowledge generation’.

In many cases, the resolution of these problems was seen as providing greater public control over science, with discussion revolving around issues of public representation

within science policy formulation; the accountability of the policy process itself; the priorities expressed in existing EU science policy commitments, most notably the ‘science and society’ programme established during the EU funding of Framework 6, and developing prominence within the research priorities of Framework 7 (the Lisbon agenda). In general, the discussion was characterised by a determined attempt to work within the WSF leitmotif ‘Another World is Possible’ and identify some specific policies that would be compatible with this aim. The outcome was a clear emphasis on locating EU science policy within a global context, addressing the ‘needs’ of both the industrialised ‘north ’and the ‘emergent’ south. In particular, key ideas that emerged were:

- Promoting sustainable development to address immediate social needs by prioritising locally defined stakes;
- Reform of labour market conditions within the EU science-base to reduce the influence of private funding coupled with an increase in citizen influence on policy agendas;
- The need for permanently constituted local feedback mechanisms to secure public input as an iterative phenomenon.

Science and Citizenship

Although initially scheduled as two separate sessions, Science and Citizenship was actually organised as a single session and without the advertised speakers from Demos and Greenpeace. In contrast to the ‘Research Policies’ session, this panel was organised as a conventional ‘speeches and questions’ session in which speakers from unions, critical science associations and professional bodies addressed an audience that rose from about 50 to about 100 as the session progressed.

The opening address emphasised the centrality of scientific and technological innovation to social and economic change, the emancipatory role of science since the 17th century, and the traditional association between ‘neutral’ scientific knowledge and progress. These themes were then juxtaposed with recent controversies (Chernobyl, BSE, GMOs and infected blood supplies), the short termism associated

with private capital's need to secure prompt returns on investment, and the 'penetration' of both public and private domains by techno-scientific agendas. A progressive response required the 'social control of science via scientific citizenship' and the plethora of 'experiments' in this area (particularly those modelled on the Danish Consensus Conference) were noted but it was also emphasised that there was still work to be done in developing both the 'concepts' and the 'tools' needed to advance this agenda.

The second speaker was Werner Braun, speaking as a previous Director of *The International Network of Engineers and Scientists for Global Responsibility* (INES www.inesglobal.com) and member of the Max Plank Institute. Starting from the view that 'neo-liberalism destroys society, cultures and nature', he argued that the 'nucleus' of critical scientists from the 1968 generation must be transformed into the 'critical mass' needed for a globally responsible science. Interestingly, the main issues formalised corresponded quite closely to those raised in the self-organising session described above: the corporate appropriation of University research agendas; insecure labour markets for the two million EU science work force; dominant military R & D agendas and profit orientation were all identified as key areas to be addressed.

The discussion was not limited to abstractions and generalities, however, and several specific policies were proposed. These included an end to military R & D; the expansion in Peace and Ecological Research, the introduction of Institutes of Technical Assessment, the democratisation of R & D structures, the need for more social research and the transfer of skills into new sectors via labour migration. It was also emphasised that this agenda applied only to the 'developed' world and that 80 – 90% of the worlds' population – including Russia and much of Eastern Europe - lay outside this sphere.

The extension of critical science engagement to these wider constituencies was portrayed as a goal of future ESF events, which should seek to expand 'critical science content' through a 'coalition of engaged scientists and citizens'. Key here would be a programme of action relating to the patenting of genetic material, the ending of military research and alternative models for financing scientific work. An immediate measure to be pursued would be the institution of a ten percent working

time allocation for ethical reflection, public engagement and inter-disciplinary orientation for working scientists. Increasing the normative standing of University sector scientists working with NGOs such as Greenpeace¹⁰ as a redress to prevailing norms of collaborating with the corporate sector was also advocated.

The second main speaker highlighted many of the same themes whilst also reflecting on the development of critical science issues within the ESF, beginning with the launch of 'Science for the People' during the Florence ESF (see *Science For The People* , 1, 2002 13-14). Rather than highlighting abstract principles, she used her own biography to exemplify the issues raised in other sessions. Despite holding a PhD in Medical Science, she had decided to become a school teacher as she knew that, because of the labour market conditions, her 'family prospects would otherwise be zero'. The presentation emphasised the 'double economic burden' arising from simultaneous public and private expenditure on projects such as the mapping of the human genome and the consequent effects on basic research, which was effectively marginalised by the search for short-term profit. Social control over science was needed and could be achieved by combining the skills of the scientific labour force with the social programmes of the trade unions. The existence of a 'public will' in this area was illustrated by a demonstration of 300,000 people over public policy and science in the Netherlands on October 2nd 2004.

Subsequent discussions generally confirmed the speakers' analysis although some concerns about the practical possibilities of ring-fenced time for ethical science within the private sector were raised. Comparisons were drawn between previous sessions in Florence and Paris with the increased attendance in London being noted. INES called for the coordination of initiative by scientists across Europe to create a 'network that can mobilise in physical space'. The ESF session thus also facilitated an important moment of capacity building and network consolidation as participants from all the major contributors to the European science base became party to subsequent e-mail lists, wiki and web sites that emerged from the initiative. In addition, there were numerous bilateral exchanges of web site and e-mail details as the meeting adjourned

¹⁰ Greenpeace UK maintains a research capacity at Exeter University.

and the 'informal' work familiar to academic conference circles began in earnest. The involvement in these networks of academic and scientific unions from the UK, France, Spain, Italy and Germany suggests an active phase of network extension.

A European Science Social Forum

The final session addressing 'science in general' was held on the Sunday morning at 9 a.m.⁶ It was clearly conceived as the grand finale, with a sizeable platform of speakers representing the key constituencies. Interestingly, and perhaps because of this, the tone adopted by some of the speakers was very different, particularly in their characterisation of science, from the other two sessions.

The opening address was given by the Vice President of the AUT. Starting from the view that 'science is about facts not values', he argued that European academic research was prioritising 'quantity over quality', something exemplified by the UK's Research Assessment Exercise. These views were reinforced by the first speaker, Janine Guespin, who portrayed the EU's 6th Framework Programme as an 'unaccountable' project 'conceived by experts' which intensified the commodification of science by harnessing it to the economic and political goals of neo-liberalism. She described how an insecure and fragmented French scientific workforce had lobbied for 'legal rights' within the EU, a struggle in which stronger links to citizens through attention to wider issues were urgently needed.

The realist view of science implicit in the opening remarks re-emerged starkly in the second presentation by Claus Monton, which was introduced as being about 'hard science' not 'social science'. The hard sciences were a 'success story' based on professional hierarchies rather than 'democracy' with experimental replication providing 'the best means of conclusive proof generation' revealing universal laws and cutting across 'inter-subjectivity'. Whilst it was acknowledged that science could squander societal resources (via Jonas 1985, Habermas, 2003) and in cases like climate change, trigger potentially irreversible processes, the overall message was clear. In science 'another world is not possible' and it was therefore important to reassert its autonomy.

Given this view, the role and place of citizens in the scientific enterprise required careful consideration. The EU's abstract commitment to citizen participation had to be supported but any citizen control must be in a 'velvet glove'. In practice this meant open peer reviewing, avoiding 'standpoint' science and protecting scientists prepared to act ethically and speak out in public. In other words, the goal should be to restore and maintain the autonomy enjoyed by science and considered central to innovation and progress. Whilst there was support for 'citizens advisory boards' to 'harness support for decisions taken elsewhere' the place of 'citizens assemblies within the R & D process' raised the questions of 'how much power' they should hold.

Claudia Neubauer, speaking on behalf of the Paris based Citizen Science Foundation and a later active in the ESSF network that emerged from the London meeting, used her address to introduce the themes of inter-generational equity and justice.. Significantly these were addressed not as 'technical choices [but] choices of life' and thus about the kind of use to which science and technology should be put. Rather than permitting scientific and technical agendas to drive social change, it was important to reverse the causality and ask 'What kind of society do we want to build and what science and technology takes us there?' All choices come with an opportunity cost and the decision to pursue one research programme is invariably a decision not to fund several others. Given this, the argument made was that the priorities that shape such choices need to be more closely tied to citizen values and preferences. Examples of the new practices that might promote these new interactions between scientists and citizens included the Canadian Community University Research Societies funded to the equivalent of 3m euros p.a., science shops, consensus conferences and citizens juries. There was a need for the 'tools and money to make counter expertise' available and, perhaps most importantly, to explicitly question the assumption of scientific autonomy advanced by the earlier speakers. Thus there were calls for increased public debate on research budgets and science missions before strategic R & D budgets are set, public funding for NGO science, 'career breaks' for scientists via secondment to NGOs (in part to support the creation of counter expertise) and for corporate science based innovation to be exposed to 'harsh evaluation' prior to market entry. In making

⁶ Given the extensive social programme available to delegates on Saturday attendance was healthy

these arguments, the public were characterised as neither ignorant nor anti-science but, instead, as wanting ‘another research – another science’.

David Margolies was introduced as the sole speaker without a background in the natural sciences and spoke in his capacity as an AUT representative. The relationship between neo-liberalism and deregulation was portrayed as contaminating the scientific endeavour and workplace in two inter-related ways. In terms of scientific endeavour, regulatory standards, particularly those around patenting and intellectual property rights, had been determined in global fora such as the WTO to the benefit of corporate players on dubious scientific grounds. Secondly, and in many ways reinforcing this, the short term contracts and mobility that characterise the upper end of the science career structure serve to create a ‘revolving door syndrome’ in which government and regulatory scientists routinely move between senior development and negotiating posts within the corporate sector. The effect is a relatively a closed circle within which a common focus tends to prevail and difficult questions are not asked⁷. Issues of public trust and confidence in science could not be addressed let alone resolved whilst these relationships continued and there was an urgent need for an adequately resourced independent science base.

‘Producer’ Views and the Call for Scientific Assemblies

Although all the sessions observed stressed the need for changes in the way science is organised and managed, the final session illustrates the work that will be required if scientists themselves are to recognise their own role in creating and sustaining social order. The accounts of science by the majority of platform speakers were Mertonian in character lacking familiarity with recent work in the sociology of science, philosophy of science or the complexity sciences which increasingly regard the natural and social sciences as confronting different variants of the same problem set (Chesters 2004, Eve, et. al. 1997, Urry, 2003). In particular the presentation of science as about ‘fact’ and ‘truth’ demonstrated no engagement with the notion of science as social or cultural knowledge (Barnes, Bloor and Henry 1996, Collins 1992, Latour 2004) or contemporary debates about ‘post-positivist science’ (Fischer 2000). Indeed, by the autonomy of science the speakers missed the crucial point of such work, which

suggesting a degree of dedication to the network aims.

is not that standpoint science is bad, but that *all science* (irrespective of the perceived consequences) *is* standpoint science. Whilst the political left has traditionally seen the rationality and progress associated with science as a means to the end of increasing social justice, recognising the links between science and the wider society makes these assumptions more problematic (Turner 2003).

The presentation of science as about ‘facts’ and not ‘values’ denies that ‘Another World is Possible’ and enables its adherents to skirt around the uncomfortable social fact that the meanings attached to observable phenomena vary profoundly from culture to culture. One particularly clear example of this provides an appropriate bridge to the next section of the paper: whilst healthy embryonic cell divisions occur in a universally predictable pattern, different cultures attribute ‘life’ to the cell bundle at widely varying times (Romeo-Casabona 2002). This makes stem-cell work profoundly challenging in ethical terms for Christian societies, but unproblematic in the Muslim world. Given the extension of such differences down to much more mundane technical and scientific levels the pursuit of ‘global regulatory reach’ (Welsh & Evans 1999, Welsh 2000) will remain profoundly problematic.

Thus, whilst the ESF meeting successfully brought together a range of concerned scientists and citizens, the problems and challenges of engaging with the differences between even such mutually sympathetic groups of scientific ‘producers’ and ‘consumers’ remain substantial. Indeed, one of the key challenges facing the ESSF network that was formed during the London meeting will be to manage these differences in order to lobby the EU to act to limit the power of market mechanisms within science and to increase citizen control and scrutiny of its agendas. Whilst these activities represent only one outcome of the ESF, they do show how such events facilitate the development and co-ordination of actions within and between civil society groups. We will return to these themes in the conclusions, but will first consider how science and its applications were discussed within the more ‘consumer led’ genomics sessions.

⁷ These points are redolent of Bateson’s (1973) preoccupation with the dangers of ‘habits of mind’

Genomics at the London ESF

In addition to the sessions addressing the relationships between science, the state and citizens, there was also a series of workshops examining the same issues but in the context of human genomics. Studying the debates as they occurred in these sessions is important as it is the application of specific sciences that most citizens ultimately deal with. This is why, for example, that support for science in general can be high, whilst opposition to specific applications – nuclear power, ‘green genetics’ and so on – can be extremely vociferous. In sampling the sessions on medical genetics we were, therefore, looking to explore how the abstract notions of choice-vs-control, autonomy-vs-regulation, good-vs-bad were played on the context of specific applications.

The sessions we attended were all held on the second day of the ESF and were organised by a range of NGOs, including Genewatch, The Cornerhouse and Human Genetics Alert, established groups campaigning for greater control and regulation of genetic research. The established NGOs and key individuals within recent arrivals, such as Human Genetics Alert and GeneWatch had considerable campaigning experience in the area of genetically modified crops.¹² None of the groups hosting workshops had attended earlier ESF events, though genomics had been the subject of several sessions in Paris in 2001. Sessions attended were:

- Developments in Human Genetics
- Bar coding people - Individualised health care or money making scam?
- Prenatal screening: eugenics or women's rights?
- Human cloning and genetic engineering: what's at stake?

NGOs had identified biobanks and screening as key issues, reflecting their experience of regulatory and consultative processes and the pragmatic need to define realistic campaign objectives. The topics chosen for the ESF workshops demonstrate classic NGO functions: to research issues, respond to policy/regulatory calls, and perform a

¹² As well as the anti GM groups, a variety of other “early risers” have engaged in the genomic domain as previously constituted networks such as animal rights groups, pro lifers, patient groups and advocacy charities, disability rights groups recognise emergent associated stakes. Pre existing networks are predisposed to mobilise most rapidly in response to new risks/ hopes (Nelkin 1995) making national network density a critical factor in emergence.

‘public education service’ by disseminating information and highlighting areas of controversy⁸.

It is important point to note that part of this process involves the application of familiar grievance claims to emergent phenomena by established actors. Such formalised social movement organisations or NGOs pre-date the negotiation and declaration of stakes by grass roots actors, underlining the importance attached to engaging with social movements from the bottom up by Alan Touraine (Touraine 1995). Whilst the extension of previous grievance frames is understandable in terms of the cross-over between ‘green ’ (agricultural) and ‘red’ (medical) applications of genetics the articulation of emergent ‘social movement’ stakes is a process in train, constituting a proto-politics in part through the social forum movement.

Compared with the previous sessions the genomics meetings were smaller (15-50 participants) with some overlap between constituencies, particularly in terms of union and INES members. In general, however, the majority of the participants in the genomics sessions were interested and concerned citizens and/or activists, some with self-declared personal stakes in the issue, rather than the lab workers and scientists prominent in earlier sessions. Participants were thus ‘consumers’ of genetic science in ways ranging from receiving information within the public sphere to being potential recipients of techniques and/or ‘victims’ of genetic testing and discrimination. Most of the workshop convenors and speakers were already in network contact with each other before the ESF and the appearance of human genetics workshops at the ESF provides an important ‘benchmark’ of the level of NGO activity around genetics in the UK and EU in the Autumn of 2004.

In contrast to the generally political overtones of the science policy sessions, the genetics sessions tended to adopt an introductory and ‘educational’ approach in which key issues within genomics were explained and linked to established campaigning stances on science and corporate dominance, particularly the role of big

⁸ These classic goals are shared with the WSF which extends them by declaring its implacable opposition to neo-liberalism.

pharmaceutical companies⁹. Given the biographical backgrounds of key contributors it is reasonable to argue that the sessions embodied the ‘critical expertise’ called for in the producer-led citizen science sessions. Perhaps as a result of this, the general tendency in the workshop presentations was to emphasise the indeterminacy of scientific knowledge and hence regulatory risks, and the unintended consequences associated with it – Beck’s (1992) ‘side effects’. In subsequent discussions participants were clearly struggling with ‘boundary issues’, such as what should count as an illness that needed to be cured, the appropriate criteria for embryo (de)selection and the distinction between medical therapy and genetic enhancement.

As with citizen science sessions, most of the workshops used the standard format of a series of speakers, each taking questions at the end of their presentation. Only one session departed significantly by asking participants to work through a series of structured exercises based on pre-prepared prompts and cue cards. Compared to the Paris ESF, where sessions adopted more generic approaches, the London workshops effectively marked the ‘arrival’ of human genomics within the social forum process – representing a ‘founding moment’ in terms of formulating interest representation within the forum milieu.

Developments in Human Genetics

The opening session involved four presentations outlining developments in specific applications of genetic research, namely genetic testing, pre-natal screening, bio-banks and forensic uses of ‘genetic fingerprinting’. Speakers located themes relating to political, economic, commercial and scientific issues, although in comparison to the producer-led session the focus was less on the employment conditions of the scientific workers and more on the vulnerability of citizens to ‘near market’ techniques and products. The impact of genomic science was thus presented as a node of innovation around which a wide variety of interests were clustering with nuclear, pharmaceutical and food industries all ‘piling into genetics’ in pursuit of perceived benefits. As many of the themes of subsequent sessions were addressed in this opening session our account of the interactions it is more detailed and a more summary approach is applied in later sections.

⁹ This marks a distinct cross-over from previous experience in relation to ‘green’ genomics.

Presentation 1: Genetic Testing

The ability produce individual genetic profiles revealing predispositions' to specific conditions was presented as having implications for lifestyle choices, workplace relations and bespoke medical therapies promised by pharmacogenetics. The ways in which these developments will be applied was, however, crucial in determining who would benefit. For example, in industrial sectors like nuclear and chemical, genetic testing could be used to facilitate the selection of 'hardened' workers rather than improve in environmental standards in the workplace¹⁴.

Such promissory futures were however, set in the context of the unreliability of genetic testing as a scientific technique. The limitations of current knowledge were highlighted using a study showing that only 6 of 600 published links between genes and common diseases had proved to be robust (see *GeneWatch* 2004 citing Hirschorn 2002). In the remaining 99% of cases there was no 'clear causality' arising from a genetic component, with environmental interactions being identified as a prime complicating factor. Given this 'weak' predictive base, the rapid introduction of genetic testing was presented as premature and far less certain than statements the public domain implied. Instead, the relationship between gene:cell; gene:organ; gene:body and gene:environment involved multi-layered causality rather than the 'linear causality' of genetic determination. This was critiqued as a form of biological reductionism, a theme developed in the Genetic Profiling workshop described below. From this standpoint it was important to prevent the generalised use of pharmacogenetics before the relationship between genetic, environmental and somatic components had been accurately determined and the potential for other approaches debated within the wider society. The potential for militaristic applications such as, 'hostile control over "ethnic" groups', was presented as an area of concern despite limited prospects for accurate targeting due to the limited genetic variation between ethnic groups.

Presentation 2: Pre-natal Diagnostics

¹⁴ The potential of such testing is not limited to overtly hazardous workplaces. Identifying the 20% of the population with the potential to readily adapt to night time work patterns associated with the 24/7 society would be another potential application.

Sangeeta Fager, from the German group ReproKult¹⁵, addressed the topic of pre-natal diagnostic testing from a ‘feminist’ rather than ‘pro-life’ stance, a crucial distinction in terms of legitimacy within the ESF. The issue choices enabled by testing was approached as a social issue shaping the opportunities available to women (and to a lesser extent, their partners) during pregnancy. Pregnancy was a ‘social event’ which constrained a woman’s agency through the authority of medical experts, who remove ‘decisional power’ from the woman, and the social and societal inequalities which define normative views on reasonable or realistic options.

Although data on pre-natal testing was described as ‘rather limited’, the implications of its use were clear and unambiguous. Because the majority of available tests are for ‘incurable’ conditions a positive result almost inevitably results in termination rendering screening as a form of ‘selective eugenics’ (Habermas 2003). The long term use of such tests would thus seem to be a decline in ‘disabled’ human beings as part of the human gene pool and culture. The normative acceptance of such practices is reinforced by the targeting of ‘benefit levels and availability’ on the ‘healthy’, creating the expectation that ‘expensive neo-nates’ will be subject to ‘prompt abortion’ in order to maximise the availability of welfare’ provision.

This dystopian vision was juxtaposed with the alternative – electing to continue a pregnancy despite the diagnosis of a genetic predisposition. Technically, the weak understanding of multi-causality means that a genetic predisposition may never be expressed in an adult. But, beyond this, even in conditions such as cystic fibrosis, the decision to pursue a pregnancy to term and enter into parenting in order to maximise the quality of even a limited life was asserted as a legitimate choice and preference.

In the ensuing discussion, views amongst participants in the session diverged widely. One commentator suggested that ‘certain conditions such as cystic fibrosis and male haemophilia’ made the idea of ‘test and abort’ unproblematic, whereas others found it much harder to define a life as not worth living. More generally, the issue was seen as ‘human diversity v Barbie’ and it was the ‘social context of capitalism’ that needed to be changed as this directed individual choice towards desirable body forms portrayed

15 www.reprokult.de/

within film and media. In the face of this it was important to preserve peoples' right and freedom to exercise negative choice and remain untested.

Presentation 3: Biobanks

This presentation described profiling a population through the collection, coding and management of genetic data, something which has previously only been attempted within relatively isolated gene pools such as Iceland. The compilation of such data raises important questions about access, confidentiality, control of information as well as potential benefits. In the UK context, these issues were particularly salient given the imminent introduction of two Biobank initiatives. The first, UK Biobank, aims to assemble data on half a million adults between the ages of 45 and 65 commencing in autumn 2005.¹⁰ Participants will have a genetic sample taken, give consent for their medical records to be accessed and answer a number of life style questions. The other, a forensic database, was being created by the police to collate and store genetic evidence from crime scenes and suspects.

In describing the UK Biobank, the presentation emphasised the indeterminacy of the science behind the project, focussing upon: the room for human error in mundane activities such as data inputting; the variability of medical records in terms of content and accuracy and that responses to life style questions tend to exaggerate positive elements and under report negative aspects. These are, of course, generic issues relevant to data aggregation in general here, which some commentators have suggested play a central role in masking complexity effects (Urry 2003). In addition, the collection of genetic data also raises more specific problems, with the concept of informed consent being particularly problematic in a contexts where the 'end use was not clear'. For example, if data from UK Biobank were made available to pharmaceutical companies the question of who owns the data and who profits from their exploitation become central issues. This, in turn, raised questions about licensing and the appropriate amount of public control over such data should it lead to patented products.

¹⁰ <http://www.ukbiobank.ac.uk/>

Genetic profiling for inclusion in police data bases was also addressed. Although genetic profiling has been used to assist in criminal investigations since 1995 the concern now was a proposed change to the law that would expand the range of circumstances under which compulsory samples can be taken and then kept on file irrespective of conviction. The prospect of ‘population level surveys’ by police and the possibility of using ‘family traits’ in tracking suspects were also raised. The retention of genetic data from unconvicted people in police databases was seen as transgressing ‘rights to privacy’ by dissolving traditional public/private boundaries¹¹.

Presentation 4: Cloning and Genetic Engineering

In the final presentation, David King of Human Genetics Alert (HGA) introduced himself as someone with fifteen years experience in anti-GMO campaigning. Bio-genetics was presented as driven by neo-liberalism and the ‘push for profit’. Reproductive cloning was presented as ‘largely reviled’ and as an area where it was important to achieve a ‘global ban’ given the wide ranging opposition to it. In contrast, therapeutic cloning was seen as much more problematic from a campaign standpoint, with the potential of stem cells to provide cures for currently incurable diseases discounted as ‘hyped by scientists and the media’. In his view genetic techniques would ‘probably only deliver a small percentage of the promise’ and the opportunity cost of continuing this research – as opposed to, for example, increasing development aid to in the Third World – was described as ‘obscene’.

As in the second presentation, it was emphasised that concerns about the use of embryonic stem cells were not derived from a pro-life stance. Partly this was because the standard argument that cloning is ‘unnatural’ is too easy to refute, but also because the pro-life stance cannot locate genetic science in its broader political and historical context. The key argument was thus that genetics, and in particular therapeutic cloning, is part of a much longer trend in the control and domination of nature by industrialised capital. As such, the outcome of genetic research is the further commodification of natural types and their enhancement to fit the regimes of modern industry. By analogy with the development and intensification of agriculture and livestock farming, the consequences of the new genetic sciences, should they ever

¹¹ Whether similar concerns should be applied to fingerprints and photographs taken at the time of arrest was not addressed.

work, will be gradual denial of individual autonomy and freedom and, if we are lucky, something akin to Huxley's *Brave New World*. More likely, however, was the emergence of new forms of stratification and inequality through access to genetic enhancements resulting in eugenic forms of social control through individual choices. He thus regarded the remit of bioethics as simply too restricted, arguing for a fully politicised ethics.

Follow up actions

At the end of the session, the e-mail addresses of participants were collected. Unlike the previous sessions, where the collection of the list was seen as the start of a dialogue, the organisers made it clear that signing up to this list would entail receiving 'one e-mail'. The content of this e-mail would provide details of the NGOs and their contact information. In this way the potential for network extension which arises within many social forum sessions was effectively foreclosed.

Genetic Profiling session

This session used a different format by enrolling participants in an exercise based on a series of prompts and scenarios that began with a sealed envelope containing 'their' genetic profile. The first issue raised was whether to open the test result or not. The aim here was to highlight the ambiguous status of confidentiality and the potential obligation to disclose genetic test results to insurers or other agencies. A minority chose not to open the envelope, but those who did found themselves in one of three generic profiles 'A', 'B' and 'C'. Following this various hypothetical scientific breakthroughs and other events were introduced and used to elicit comments and stimulate discussion.

The first was a press release from 'Active Genetics Ltd', dated October 30th 2004, that informed genotype 'A' carriers of their vulnerability to heart disease and of a new drug, 'Zapitor', which 'has been shown to dramatically reduce the incidence of heart disease in later life'. Given knowledge of genotype 'A' status the drug 'Zapitor' promised 'peace of mind to thousands', with the obvious implication being that all genotype 'A' carriers should take Zapitor, with major consequences for both private and NHS drug markets. Further genotype specific developments were quick to follow. One handbill invited the 'Tired, Stressed Genotype A' individual to come to a

specialist health farm with ‘10 years experience of preventative treatment’ and enjoy the ‘five star menu’ of the resident ‘genotype A qualified chef’. Another detailed the use of Zapitor to combat heart disease within genotype ‘B’ when combined with dietary and exercise regimes, with the availability of Zapitor as ‘an over-the-counter medicine’ portrayed as offering ‘peace of mind for life’, a claim significantly qualified in footnotes specifying the size and location of trials, the discounting of environmental interactions, notional dose rates based on average body weight (gender not specified), and list of known side effects.

Next came a press release from the ‘Genetics Advisory Council’. Headlined ‘Gene Testing to be Widely Available’ emphasising the importance of individual ‘choice’ to determine ‘their genetic code’ in order to ‘take action to improve their health’. A self-regulating ‘industry code of practice’, agreed with ‘stakeholders’ and legitimated by a ‘parliamentary debate’ would ensure that consumers could be confident ‘that tests have been properly conducted’. This promotion of self-text was, however, followed by a newspaper article, dated March 2005 reporting that the insurance company ‘Safe Hands Ltd.’ had raised premiums for ‘A’ types given their susceptibility to heart disease on the grounds that ‘premiums ... have always reflected individual risk scenarios’. Genotype ‘A’ support groups and individuals expressed concerns about the continuing ‘availability of health insurance’ and called for ‘government intervention’ to ‘stop genetic discrimination’.

There was no response on this issue from the government, but a Press Release from the ‘Department of Homeland Security’ dated August 2005 did announce ‘Genotype ‘C’ to be electronically tagged’. This followed the discovery by ‘Government scientists’ of a ‘strong link’ with ‘higher levels of criminality’. Legislation would be introduced for compulsory tagging so that ‘the people of Britain can feel safer on the streets and in their homes.’ The labour market implications of this were emphasised in an advertisement for an accountant by ‘Blue Sky Thinking’, which ended with the simple message ‘Type C Genotype Need not Apply’.

Two more handbills took the scenarios further into the future. An article from ‘The Daily Moon’ dated January 2006 revealed ‘Dementia danger for Type As’: Millions warned of ticking time bomb in their genes’. The discovery of an ‘increased risk of

Alzheimer's Disease' meant that 'Millions . . . face an uncertain future'. Doctors' surgeries were 'swamped with worried patients' seeking advice confronted by the results of a 'preliminary study' revealing an 'increased risk' that 'may not be significant'. Guidance offered from the 'Genes R Us Health Clinic' advised 'type As' to take 'fish oil supplements' and 'genetically modified breakfast cereals with enhanced omega-3s'. BigPharma Inc called for volunteers for a 'clinical trial' of a new 'experimental risk-reducing treatment'.

By 2020 'The World Today' reported 'growing doubts' about 'gene tests and health' after a five year assessment conducted by the Royal Society. The report 'found that only a tiny minority of studies were robust with most treatments making a negligible difference to personal risk. Lifestyle, environment, economic and social factors were all 'more important' with poverty remaining the 'world's biggest killer'. Calls for stricter regulation by critical scientists dating from 2004 were noted in the concluding section, which closed with a quote from Dr Sue Mayer 'We told you so'.

Workshop Dynamics

As each prompt was introduced, the convenors elicited responses from participants whilst introducing their own concerns about the introduction of genomics within a neo-liberal context. These concerns included the emphasis on 'commercial exploitation' and the need to achieve 'profit streams' by building demand and markets for products rather than engage with scientific attempts to isolate the 'genetic components in causal chains' which also included 'environmental elements, toxic loads and diet'. As an observer, the session was interesting. The interactions within the room were accompanied by much laughter about the stereotypic genetic characteristics the session and participants themselves were criticising¹². This extended to social as well as genetic categories raised in the session with scepticism about 'Big Pharma' and cynicism of 'Government' clearly displayed. Beneath the patina of humour the session was unremittingly critical. When this point was raised, and the convenor asked directly if the critique of reductionism masked any potential benefits that might arise from genetic research, the reply emphasised the adoption of a 'product line commitment' stance rather than addressing 'more science and

¹² Laughter and humour are common social responses to issues with uncomfortable and unpredictable implications which evoke ambivalence such as those formalised in this session.

complexity'. The tensions between genetic determination and more open ended complexity confronting the scientific development of genomics (Wynne 2005) were not unpacked despite Genewatch's considerable expertise. The need to adopt a campaigning stance always has implications for the declaratory posture of NGO actors leaving the issue of where more open ended issues can and should be addressed a challenge for all parties to such contested knowledge domains.

Genewatch's campaigning stance, centred on the need for independent regulation, in the face of rapid marketisation of genetic product streams was the primary organising frame structuring the dialogue. As such it was a 'successful' exercise conducted with a 'receptive' audience. The emphasis upon premature commercial exploitation did however, preclude addressing the potential for beneficial even critical applications of genomic science. The tension between negative critique and constructive critical engagement is a well established feature of scientific controversies in which counter or critical expertise occupy positions which replicate elements 'expert / lay' social relations. These are issues we return to in our conclusions.

Prenatal screening: eugenics or women's rights?

This, the third session returned to the opening theme, the increased use of pre-natal screening and its consequences. Two speakers from the first session, Sangeeta Faber and David King, were joined by Ruth Bashall, a disability activist and living testament to the viability of disabled life. The session was organised in the standard talk and questions format, with the audience of about 20-30. In discussion, however, disability activists assumed a prominent role.

Ruth Bashall opened, identifying herself as a woman, a feminist, a lesbian, a person with a disability and a campaigner and a grandmother. This emphasis on multiple selves and identities is consistent with approaches to citizenship as multi-layered consciousness and practice (Turner 2001) constituting a critical civil society (Dryzek 2000). The underlying notion of 'life in fragments' (Bauman 1995, 2000) requiring multiple forms of identity work underlines the problematic nature of collective identity approaches to new social movements (Stallings 1978, Welsh 1988, McDonald 2002). Beneath such issues lay several primary foci: the principle that every human has equal value; that the birth of every child is valued; and that it is every woman's

right to choose. These points added the difference between medical and social models of disability to the obligatory distinction from pro-life positions. Screening was addressed in terms of weak prediction with 'pre-disposition' not necessarily giving rise to full expression. Post-screening power relations were addressed, emphasising the illusion of choice in a highly structured and asymmetrical setting where the normative expectation is the termination of any 'risky' foetus. Sangeeta Faber, of the German feminist ReproKult network spoke next, covering much of the same ground but also expressing her sense, that by speaking as a 'healthy' person she lacked authenticity.

The ensuing discussion suggested that at the level of abstraction within the presentations did not reflect the sense of a need for action experienced by some participants. A speaker from the 'People First' advocacy group pointed out that eugenics is happening now and, if screening becomes universal, then the possibility of a human mono-culture is increasingly likely. There was therefore a need to move beyond defining positions and into organising actions. These might include changing the context of screening decisions by requiring more non-medical inputs; (re)training the medical profession so that disabilities are no longer seen as 'diseases' to be 'cured'; encouraging disabled people to educate the able bodied about the reality of their lives; active participation in policy consultations and targeted campaigns and protests aimed at proponents of screening and the research that makes it possible.

The final speaker, David King, developed this theme of actions against eugenics. He argued that the idea of eugenics had to be used with care. Simple comparisons with Nazi-style eugenics and ethnic cleansing invoke images of racism and genocide that are both too easy to dismiss and, in any case, miss-represent the 'real' story of eugenics. Returning to his earlier theme he argued that eugenics is better understood as part of the modernist programme of trying to control nature and reduce its 'messiness'. Improving the population was seen as a sensible policy in many democratic countries and in the early 20th Century, was even supported by proto-feminist organisations, including what is now the Marie Stopes Institute. Contemporary discourses of screening emphasising the reduction or removal of suffering (the medical model of disease) could be seen as a continuation of more

subtle ‘benign’ forms of eugenics. The ‘take home message’ being that eugenics exists but it will take smart strategies to prevent its gradual spread.

The ensuing discussion was broadly sympathetic but did raise some interesting questions about the kinds of parental choices which should be available. For some, the option of termination following testing was the best option irrespective of eugenic implications. Given the pro-choice orientation of the panel they largely agreed but defended the individual right to reject termination and the potential for support, education and more open approaches towards the implications of positive test results to impact upon such choices. This discussion did move on from the formal presentations and the agendas set within them with speakers being questioned and mildly challenged about their views. Activist participants’ calls for practical forms of intervention challenged the level of abstraction adopted by some speakers revealing a sense of underlying urgency amongst those experientially closest to the associated stakes.

Human Cloning and Genetic Engineering: What’s at Stake?

This session centred on presentations from Michael Antonio (Guys Hospital), Sarah Sexton (Cornerhouse), and David King (HGA). The inclusion of a practicing research scientist working on the nature of therapeutic and reproductive cloning marked a significant departure from other sessions. In these, any technical information was provided by the critical activist community so the ‘producer’ views characterising the ‘Science and Citizenship’ sessions were, until this point, absent in a formal sense¹⁸.

Michael Antoniou’s opening presentation as ‘sympathetic medical expert’ working as a gene therapist at London’s Guy’s Hospital, gave an overview of the science. He focussed on the differences between reproductive and therapeutic cloning, how the science worked, what stem cells did and how they were created, collected, grown, and potentially used. This introduced a steep learning curve for some of the 15 or so participants with a minority demonstrating detailed knowledge through detailed questions.

The presentation was thus quite effective in fulfilling its main purpose of ‘fast tracking’ participants in terms of the key scientific ideas and issues, enabling the

subsequent debate to begin from shared understandings. Other speakers were more critical of genetic science, emphasising its dystopian aspects and potential 'brave new world' scenarios. Some participants challenged this rhetoric, however, arguing that the underlying medical and scientific complexity made it an unrealisable future. Sarah Sexton engaged more directly with the points raised by Michael Antoniou. In particular, she picked up on the implicit dualisms embedded within his talk, despite its' broadly 'spot on' remarks about the limitations of genetic research. Examples of these vestiges of medical culture included the ring-fencing of his own research within the standard 'therapeutic good/reproductive bad' repertoire and a largely unreflexive take on the question of when therapy becomes enhancement and normal variation becomes a medical condition. Here, both speakers sought to draw attention to the wider processes through which scientific research agendas are set and problems identified (Wynne 2005).

Conclusions

The European Social Forum is clearly engaged with science agendas in terms of overarching concerns, such as: public accountability; scrutiny of science policy; the effect of neo-liberalism upon research priorities and potential for proactive citizen science initiatives. Specific applications such as: genetics; nano-technology; GM crops; nuclear issues and space exploration also feature prominently. Across the sessions attended the same themes tended to emerge, with participants emphasising the problematic consequences of the relationships between neo-liberal capitalism and science. The prioritisation of the market context of techno-science is important because it suggests that science/market and market/politics boundaries are at least as important as sites for social science investigation as the science/politics boundary that tends to dominate the STS literature (Collins & Evans 2002).

The foregrounding of market relations by actors such as Genewatch is interesting as it encapsulates some of the key challenges confronting all parties to the debates rehearsed in London. These can be formalised as: How can the benefits of scientific developments funded initially through the public purse deliver collective goods when developed in market contexts emphasising individual choice? A further question becomes *if* market approaches are to dominate implementation phases how are issues of democratic accountability to be best addressed? Beyond these immediate concerns

of both producers and consumers lies the issue of: If the other world that is possible is to be realised what forms of science have to be enabled?

In terms of genomic science the NGO sector is clearly articulating declaratory stances prioritising constraints on aspects of the neo-liberal trajectory which are of immediate concern – even in the context of techniques with acknowledged potential benefits. The associated critiques of genomic science on grounds of the genetic reductionism of complexity overlay deeper issues of determining the actual genetic component(s) and generative processes in the widely accepted gene / environment / life-style matrix. According to Professor Johnjoe McFadden there are remarkably few causal genetic disorders rather, particular traits ‘represent a network perturbation generated by small, almost imperceptible changes in lots of genes’ (McFadden 2005). As such systems biology approaches progress the claims of early market entry gene therapies could become subject to legal challenges of misrepresentation. This is an inescapable element of market approaches embodying consumer sovereignty where going to market with a product no one wants carries high costs (Welsh 2005).

At the crux of these debates lies the question: What kind of genomic sciences do societies want? Here, the prospect of genomic techniques capable of monitoring the molecular impacts of particular chemical compounds within living organisms holds out the prospect of rendering Beck’s (1992) synergistic side effects tangible knowns. Such techniques would radically reform regulatory environments removing uncertainty from chains of causality associated with innumerable environmental pollutants for example.

In part, this strategy reflects the knowledge that, when viewed historically, decisions about initial applications have a record that is, at best, mixed and often poor. For each such success story that becomes an established expressions of material culture there are numerous forgotten casualties and missed opportunities (see BJHS, Vol. 26, 1993). In this sense the insistence of Genewatch and HGA that the initial promise associated with genomics needs to be subject to cold appraisal is redolent of other Big

Science break throughs where the associated triumphalism of scientifically ‘desired futures’ (Welsh 2000: 5-8) renders critics ‘isolated voices crying in the wilderness’¹⁹.

In this context the London ESF fulfilled an important role in bringing scientific citizens (producers) and citizen science actors (consumers) together within a networked movement milieu. Interaction between these analytically imposed ‘camps’ was not particularly pronounced and the formal ‘outputs’ – email lists, websites and so on -- *appear* relatively modest. However this understates the importance of process (as opposed to product) conducive to the creation of ‘weak ties’ (Granovetter 1973) within networked movement. More specifically, the three European Social Forums held to date have cumulatively engaged with the society / science / market / politics problematic, and these concerns will be further refined in Greece in 2005. The process of network consolidation, extension and cross-over is thus on-going and the creation of a forum within which envisaged and unenvisaged interactions committed to dialogical exchange can take place is the ‘product’.

Just as the emphasis on the market within the ESF raised new challenges for the existing STS literature, so the nascent process and dialogue within the ESF raises challenges for established movement approaches that seek to align movement interests with prevailing political opportunity structures (POS). In particular, prevailing POS are structured to produce dualistic ‘yes’ / ‘no’ decisions, creating the appearance of certainty around clearly defined interests. The account offered here demonstrates that clear grounds for genomic certainty are absent. Instead, the issues of enhancement, eugenics and the associated social risks, although formalised within documents receive comparatively little attention in the science/policy debates, lying as they do in the future. As such, the efforts to formalise the key issues relating to this domain within the London ESF are features of an ‘antagonistic social movement’ refusing to reduce their claims through specific grievance frames in order to ‘declare the stakes’ to wider society (Melucci 1996).

¹⁹ This paraphrases the words of the late Lord Hinton describing his position after publicly voicing reservations about the future of nuclear power in the UK whilst holding office as the head of the country’s electricity generating utility in the late 1960s as a long anticipated reactor choice decision promised to give the UK dominance of world markets (see Welsh 2000).

Contemporary debates on the public understanding and acceptability of science tend to juxtapose ‘broad and shallow’ and ‘narrow and deep’ approaches to public inclusion. The account offered here suggests that the increasingly permeable boundaries between scientific citizens and citizen scientists require another vocabulary of inclusion. Despite the seemingly disparate, contradictory and chaotic *appearance* of the broad picture this is the *only* path to embrace the diversity that constitutes both the social and the genetic. Rather than broad and shallow, there is a need for ‘broad and diverse¹³’ approaches.

In this sense the fears articulated around disability are material expressions of broader immaterial issues facing societies confronted by genomic choices that may incrementally reduce or eliminate the presence of ‘different others’ with unknown and unknowable consequences. Confronted by this, principles of social equity and justice represent comparatively durable means of engagement (Bauman 1993, Habermas 2003). The principles underpinning the process orientation of the social forum movement are entirely consistent with such a stance and, as we have shown, the ESF constitutes a milieu within which such engagement is in train. Quite how these formalisations will progress and develop cannot be predicted.

What is certain, however, is that the dialogue between scientists and citizens they promote provide an important and possibly unique place in which radically different institutional structures, principles and lives can come together. There is the potential here to constitute a model for another science that melds the WSF’s recognition of ‘unity in diversity’ (Notes from Nowhere 2003), the claim that ‘Another World is Possible’ and ambitions within the EU to create science and technology that show ‘more active generosity than nature or tradition’ (EGE 2000:3).

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¹³ This term comes from Dr Paul Dorfman’s work at UWE, Bristol on the representation of local concerns over air quality.

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