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The 2003 UK GM Crops Debate

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... People come into this with widely varying assumptions but one of our key findings, as you see from our report, is some mistrust of government. People are seeking some surrogate form of decision-making which is independent from government which has expertise in which people feel they can repose trust and confidence. To go back to one thing, by the end of this process you have got these three reports, you have got the FSE results, you will (I hope) have soon from the AEBC the report on co-existence and the government will be better equipped than any other government in the world has been around GM. They will have more strands of information and intelligence to analyse and on which to make some intelligent decisions and that is not to be under-estimated...

...when people come to look back on this exercise they might share my rather hesitant feeling that it has been a success. If the Government were to ignore the outcome they could not hope to engage public opinion in a comparable exercise on any other front in future. This has been, I think, a highly symbolic exercise in public trust and government. The public have put their faith in participating in this exercise on the basis of a pledge by ministers that they would be listened to. If that pledge proves worthless how will you persuade your constituents in the future to participate in other exercises? I think there is a fundamental issue of public trust involved in this...

Professor Malcolm Grant, chair of the AEBC and of the GM Debate Steering Board, in evidence to the House of Commons Select Committee on Environment, Food and Rural Affairs, 22 October 2003

Acknowledgement and Preface

As is inevitably the case with EU thematic networks, this case study is based on secondary analysis of existing material, bolstered by very few original interviews which I have undertaken. The existing material is of course referenced in the conventional way. Nevertheless and in addition, I am deeply indebted to Kevin Edson Jones of Brunel University for letting me have access to the rich interview transcripts which were part of his PhD research. The study as it stands could not have been completed without his input or without that of our shared mentor Alan Irwin, both of whom have generously given of their time. In addition I am very grateful to Gary Kass who made many corrections and helpful suggestions. The text is much better for his insider perspective. Errors and omissions are mine.

This case study, on GM crops, was selected as the paradigm, anchoring, case of an issue of technology governance in the UK in which public participation played a part, at least rhetorically, at the time of the STAGE network, and which reflected many of the issues raised by the catastrophes of scientific and technological governance that had arisen in the UK over the previous 15 years. It is bolstered by two short ancillary cases: one of challenges to, and changes in, UK scientific governance in the wake of BSE, and one of guidelines for the framing and use of scientific advice in government, which tried to encapsulate and diffuse some of the lessons drawn from the earlier failures.

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1. Introduction

This case study is of a national UK review and dialogue on GM crops. The dialogue had three strands: a study of the costs and benefits of GM crops being undertaken by the Prime Minister's Strategy Unit in the Cabinet Office ('the economics strand'), a review of the scientific issues raised by GM ('the science strand'), both of which were designed to inform the public debate itself on the issues surrounding GM.¹

The case study focuses on this public debate, which eventually ran under the title *GM Nation?* The debate, in the sense of actual engagement with the public, took place over the summer of 2003, reporting by the end of September, more or less in line with, and was planned to possibly take account of, the results of farm-scale evaluations (FSEs) of the effects of commercial-scale growing of GM crops on biodiversity. These were seen to be the last crucial inputs to a decision on licences for commercial GM production. An announcement by the USA on 13 May 2003 that it intended to invoke WTO procedures against the EU on delays in GM commercialisation threatened to overshadow this process.

The debate was organised under the auspices of a UK Government Commission, the Agricultural and Environmental Biotechnology Commission, (AEBC) but carried out by a Steering Board which is a quasi-independent executive body which reports direct to Ministers. This direct relationship with the parent government department for the exercise, the Department for Food, Environment and Rural Affairs (DEFRA) is emphasised by the representation on the Steering Board of Lucian Hudson, DEFRA's head of communications. Both the AEBC and the Steering Board are chaired by Professor Malcolm Grant, Professor of Land Economy and Pro-Vice Chancellor (deputy chief executive) at Cambridge University. The Commissioners of the AEBC are at annex A, and that of the Steering Board, together with the Steering Board members' declarations of interest, are at annex B. These declarations of interest are in line with the open and transparent way that the AEBC and its parallel organisations are intended to do their business. The intention is that the whole process, including relevant exchanges with government ministers, is open to public scrutiny.

Significance is also added by the timing of the GM debate, which had its origins in a report published in autumn 2001, led to the founding of the Steering Board in summer 2002, was rolled out to the public early summer 2003, and reported to the UK government by end September 2003. It thus coincided with the key period for the preparation and analysis of the STAGE case studies which again enhances the accessibility of the case. Indeed we were able to include within the compass of this study not only the formal evaluation of the *GM Nation?* debate, but also the UK government's initial decision on commercialisation, and the government's response to the debate, in March 2004.

The case study is organised in terms of the main headings set out as the 'Checklist for Case Studies' set out in appendix B of STAGE Discussion Paper 2².

2. Setting the agenda

(a) Stakeholder views

(all from interviews by Kevin Edson Jones unless otherwise indicated)

The context of the last fifteen years is very much shaping where we are on this issue. BSE was a classic example of where, quite rightly, our faith in those who should have been looking after our interests was absolutely shaken. This does have broader implications, witness the debate over the safety of the MMR vaccine. People are questioning scientists, medical people, and they are no longer willing to accept reassurances of experts...That is a healthy thing for democracy, but it is also challenging...to institutions... to scientists...to the Government.

The format you thought was going to happen would just be one big life-sciences industry...All of them...Aventis, Novartis, Astra Zeneca – that is the path they were going on. They used to talk about it and [their] takeover patterns and stuff like that bore it out...It has been separated...thrown off from the pharmaceutical side. So the pharmaceutical side has washed its hands of the poor image of agricultural biotechnology.

For the UK, GM has been a catalyst for the debate about what kind of agriculture do we want, because it has bought into people's minds issues of environmental impact and co-existence of GM (intensive agriculture) vs. organic agriculture. These debates have made people more aware of food production and choices...the CAP [Common Agricultural Policy] cannot survive enlargement of the Community. We are going to have to make some very hard decisions about how near to world markets to get and if there is support for farmers, what form does it take. Is it environmental support, rather than production support?

Ever since 1997 there has been no further approval of GM foods in Europe, including six European countries which have made an unofficial block on any more GM foods coming through. There are not a range of GM products on the marketplace... The problem comes with things like processing aids and yeasts and ingredients like citric acids that might have been derived from maize starch two or three processes further back. They don't require labelling, so they wouldn't be labelled. It would probably be against the trade [descriptions] act to describe them as being GM free. But they are out there on the market.

The key bit of campaign work which brought it to the broader public attention and the broader NGO attention was the work that Greenpeace International did on the importation of soya in 1997 [the mixing before sale of GM and non-GM soya - PH]. This alerted a lot of people that it was there and that they didn't have any choice...

(b) Analysis

BSE left a rich soil of public distrust in the governance of science and technology in the UK in which a public debate about GM crops could root. The specific anxieties which BSE prompted were of threats to food safety caused by novel farming processes (feeding vegetarian animals with animal products) which could be labelled in some sense 'unnatural', causing a novel 'prion' based pathology to jump the species barrier and cause unquantifiable risks to human health. All levels of governance, in its broadest sense, concerned with the supply and safety of the food chain were seen to be implicated – the farmer, the agricultural industry and politician, with the government in particular under criticism for the way it

appeared to put economic benefits ahead of public health. The same cast of actors came under suspicion again in the later handling of a much more familiar threat to animal husbandry in the form of the 2001 outbreak of foot and mouth disease, although arguably this poses no human health risks at all.

One aspect in the construction of the 'natural' in the UK, and a second special circumstances of the country, was a sense of the cultural legacy of a man-made environment – the lack in the UK (other than arguably, parts of Scotland), geographically a relatively small country by world standards, of a wilderness which could, in a sense, offset that part of the natural world which was seen to be subject to human domination through new agro-industrial processes. The farmed landscape employed only 3% of the population, but *faute de mieux*, was identified with by large proportions of the urban populationⁱ. This was in sharp contrast to, for example, North America, the point of origin of most agro-GM technology. As a repertoire for the debate about GM, this argument about the nature of the British landscape could be mobilised in two directions. GM could either be represented as continuity, as evolution of farming practice which had shaped the man-made environment over thousands of years, or as discontinuity, in being presented as an uncontrollable and irreversible step-change to this physically constrained and socially contingent British nature.

A third special circumstance of UK governance was its science policy. The 1993 White Paper on Science and Technology³, a product of the then Conservative government, had, with remarkable intellectual consistency (and drawing to an unprecedented extent on social science analysis), set an instrumental policy for UK science policy in pursuit of the competitive supply of public and private goods. This essentially 'knowledge economy' policy was buttressed and in a sense made real by the incoming Labour government in 1997 with increases in science budgets of a magnitude not seen since the early 1970s. These budget increases were positive in all areas (except particle physics and astronomy) but also redistributive in favour of the biosciences. This was a policy to reinforce relative success – medical areas of the biosciences in particular already had strong budgets from the medical charities, success in biomedical sciences in gaining international scientific honours such as Nobels was high, and the UK in 1997 had one-third of the biotechnology companies in Europe (although success was arguably past its peak on all three indicators).

The fourth special circumstance was one that has been evident in other areas of policy – the attempt to balance a place in Europe with particular openness to political and economic influences from the United States. One aspect of this is a similarity in the structure and rules of the economic game between the US and UK, and a similar scepticism about the 'social wage' which dates back to the Thatcher-Reagan years. But although the Blair government declared at its election that it wanted to put Britain 'at the heart of Europe', in practice it – and Blair himself in particular – seems to have been politically permeable to/sought to increase UK political influence over – both US administrations in this period. In 1998 Blair is reported to have had a telephone conversation with Bill Clinton over GM crops which changed his mind in favour of the technology.^{4 ii} In an earlier account, I cited reports of subsequent UK government subsidies to US firms to establish GM crops technologies in the UK.⁵ The knowledge economy policy and the strong support for neo-liberal (some would say neo-conservative) policies suggest a degree of continuity in UK S&T policy in favour of marketisation. Of course, open market assumptions also lie behind the European policy which

ⁱ there is a long tradition of dispute over public access by walkers over agricultural land in the UK, particularly near the boundaries of what is defined as urban and rural. This has been a salient issue since the mass trespass on Kinder Scout, a prominent hill in the Peak District near Manchester, in 1932, which led to imprisonment of the leaders of the demonstration for the rights to roam the countryside; more recently there has been legislation over this issue in the current Parliament. The 70th anniversary of this action was attended by Michael Meacher, UK Environment Minister (reportedly in the forefront of the battle within government to delay commercialisation of GM crops until their environmental impact had been fully evaluated).

ⁱⁱ And of course globalisation/economic liberalism was a founding principle of 'New Labour' and of course of their favourite sociologist, Anthony Giddens, who took this theme for the BBC Reith Lectures in 1999.

framed the issue of GM crop commercialisation in the UK: the EU Directive EC/2001/18, which laid down that member states can only reject GM crops on the basis of scientific evidence of adverse health or environmental impacts, irrespective of public preferences.

A decade earlier, an American connection was also important in the way that the debate was originally seeded in the UK - a lecture tour of Jeremy Rifkin in the UK in 1987⁶, at a point when this debate was more salient in the United States, although the Royal Commission on Environmental Pollution was looking at possible UK legislation and the European directives, which prevented any further introduction of GM foods in Europe, were under formulation.

Through the 1990s NGO positions developed but it was only at the end of the decade that interest in GM food and crops rapidly escalated and the agenda became focused. Friends of the Earth (FOE), for example, issued no press releases on GM up to 1997, when they issued three, then 19 in 1998, and 67 in 1999. The issues in 1998 were labelling, growing consumer resistance culminating in the decision of the supermarket chain Iceland to remove all GM ingredients from own-label foods, the resistance of organic farms to 'genetic pollution'. The two most significant events, in terms of their subsequent influence on the agenda, are Prince Charles first speech against GM, in which he was speaking in favour of a Soil Association campaign urging major store groups to withdraw GM productsⁱ from their shelves by 2000⁷, but more significantly calling for a national debate, and what was to become another significant rallying point, the calling for a five year moratorium over commercial GM crops from English Nature.ⁱⁱ

English Nature, it is important to note, are the statutory body – government agency created by legislation – responsible for maintaining biodiversity in England. Their taking up of the moratorium issue is important on two counts. Substantively, as we will see, the moratorium, the farm scale evaluations and the public debate all come to reinforce each other as complementary precautionary/public confidence measures. Procedurally, and interestingly for this analysis, it is government agencies to which broad areas of concern have been delegated which have more than once acted as the effective aggregators of wider social interests in pushing the government itself on the limits of what is possible in scientific governance.

*Crops on Trial*⁸ was published in September 2001, the same month that saw the publication of the Government's final response to the BSE Inquiry, and Professor Ferguson Smith, one of the three members of the BSE Inquiry team, attacking the Government for not having applied the lessons of the Inquiry in its handling of the foot and mouth disease outbreak.

In introducing the report and its context AEBC is quite self-conscious about its nature as a 'new and distinctive kind of independent body' whose membership 'reflects the spread of public attitudes towards GM in the country at large'.⁹ Its choice of topic for the report is the Government's Farm Scale Evaluations (FSE's) of genetically modified herbicide tolerant crops because

'they had caused considerable controversy since they were first announced in late 1998...[and] looking closely at these trials seemed likely to be a good way of getting to grips with some of the issues.'¹⁰

(a very similar justification that a social scientist might use in selecting a case study). They continue:

'the intensity of public interest and concern which [the trials] aroused seemed to have surprised and puzzled the Government, industry and the scientists most directly

ⁱ All major store chains had fallen in line with a GM ban within a year, well within the deadline

ⁱⁱ On two lighter notes in 1998 also FOE introduced photoshoots featuring their Monsanto Monster 'Frankenstein', the name suggested by the adoption of the at the prompting of the Daily Mail, who famously introduced the usage 'Frankenstein foods' for GM; and GM food was banned from outlets in the House of Commons, as in 1999 from the Monsanto canteen.

involved...they had become the focus both of local resentments and of wider national concerns about possible GM crops and foods. We decided to evaluate the role of the trials in the regulatory process, looking at the reasons for setting them up, their objectives (and the extent of consultation in agreeing those objectives) the data they were expected to produce and the gaps which might still remain – and in particular, to try and understand the evident public concern.’¹¹

The report was produced by a 7-person subcommittee of the AEBC board: David Carmichael, Phillip Dale, Robin Grove-White, Rosemary Hales, Jeff Maxwell, Sue Mayer and Justine Thornton – covering farming, NGO, and academic interests from the environmental, social, genetic and agricultural sciences, but with no direct industry representation.¹ The group was convened by a barrister specialising in environmental law. The group worked by taking evidence from local people affected by the trials and a range of local and national organisations. They effectively negotiated each controversial report element, in a process described by one participant as ‘painful’,

‘[learning] a lot about how to air and examine varying beliefs, assumptions and attitudes...The fact that there some... issues on which we disagree has not prevented us from reaching a number of shared conclusions on how these matters might be handled better by Government in the future.’¹²

As the report is seen, through its membership and process, in ‘mapping in’ wider social concerns about the regulatory issues, so the report’s ambitions include ‘mapping out’ its conclusions onto the public debate, and not just informing government, which comes in second-best:

‘We trust that this report, benefiting from the diversity of opinions and values which the Commission’s membership embraces, can help illuminate public discussion of what is now at stake for society. And we trust that Government too will benefit from our recommendations.’¹³

The report sets out the core of the regulatory issue prompting the FSEs:

‘The Deliberate Release Directive...requires Member States, in accordance with the precautionary principle, to ensure that all appropriate measures are taken to avoid adverse effects on human health and the environment from the deliberate release and marketing of GMOs...There is no burden of proof on the applicant to demonstrate an absence of adverse effects, but the applicant is required to assess the impacts and risks and draw a conclusion. This is then reviewed by the regulatory authorities before making a decision.’¹⁴

and comments, with a strong clue as to the main burden of the report:

‘Hence there is a case by case environmental risk assessment which is scientifically constructed, though *the decision to be made by Ministers and Governments on whether to allow deliberate release is not, and cannot be, a wholly scientific judgement. It must include a decision, on behalf of the public, as to the acceptability of any risk.*’¹⁵ [my emphasis]

adding, on the European governance dimensions of the issue:

‘Once consent is given under these procedures for a GMO to be placed on the market in the EU, it extends to all Member States. The legislation does not allow the European Commission or any Member State to turn down an application on grounds other than those specified in the Directive. Consent could not, for example, be turned down on the grounds of public concern about the technology in principle. Public concerns which go beyond the criteria prescribed for the regulatory arrangements have no expression in this process...this has caused some tension between and within the Members States, and has contributed to the seizing up of the EU regulatory

ⁱ annex A gives details of the AEBC membership

system: no decisions have been taken on part C applications [for commercial release] under these procedures for the last three years.’¹⁶

The recommendations of the report are given in *Figure 1*. The issue of public debate, around which the report’s conclusions have come to revolve, is in recommendation 8. The report’s text conveys rather more clearly than recommendation 8 the strength of the message in favour of public debate as a key input to the regulatory choices over GM crop commercialisation:

‘The majority of the public may or may not be opposed to GM technology *per se* – but it is reasonable to assume that they do wish to be sure of the integrity and comprehensive nature of the decision-making processes governing how these crops may be used. We suspect that, far from offering reassurance, experience of the FSEs has tended to fuel further concerns. Local citizens’ reaction to the rationales for, and processes surrounding, particular FSEs at local level may now itself be contributing actively to growing disrespect for the Government’s policy. This dynamic is an important one, but under-appreciated by both politicians and officials.

We believe that robust public policies and regulatory frameworks for GM crops need to expose, respect and embrace the differences of view which exist, rather than bury them. The appropriate development of GM technology has suffered as a result of the lack of opportunity for serious debate about the full range of potential implications of GM agriculture, on the basis of clear understandings of what is involved, away from concern that has been promoted by campaigning elements of the media. There have been public protests around the FSEs. At some sites hostility – either local or more widely orchestrated – has led to farmers and their families being threatened and crops and farm equipment being damaged.

We believe that the Government must now encourage comprehensive public discussion of the ecological and ethical – including socio-economic – issues which have arisen. Time is needed for people to overcome differences of language and explore the extent of their shared understandings, and above all there is a need to include those who have felt themselves to be excluded and hence to have no control over events. We have initiated such a discussion, and we look forward to continuing it.’¹⁷

Figure 1. Recommendations of 'Crops on Trial'. September 2001.

Completion of the trials.

Recommendation 1: The programme of FSEs should be completed subject to:

- the Government confirming its commitment to no commercial cultivation of GM crops in the UK at least until the trials are complete and the results have been evaluated alongside other factors and other evidence identified below;
- the Government working with SCIMAC and representatives of the organic farming industry to set adequate separation distances for the remaining trials to ensure that the interests of all parties are accommodated. By "adequate" we mean separation distances that allow current organic standards to continue to be maintained, but recognising that some flexibility will be required to ensure that the trials can be completed;
- the objectives and limitations of the trials being clearly stated and communicated to the public;
- effective local consultation taking place on the selection of plots, which, whilst maintaining the scientific basis of site selection, takes into account within the SCIMAC agreement other factors beyond the current regulatory regime, and in particular the interests of local stakeholders.

Recommendation 2: Take particular care to ensure that Government press releases and publications are expressed in clear and precise language, so that messages are not distorted and cannot easily be misinterpreted.

Criteria and processes relevant to decisions as to whether the crops in the trials should be cleared for commercial cultivation.

Recommendation 3: Start developing policy now on how to use the results of the FSEs in future decision-making.

Recommendation 4: Commission an independent review of all information that will complement the results from the FSEs including:

- information collated by the Advisory Committee on Pesticides (ACP) on the herbicides in question;
- information collated by ACRE on any direct and indirect effects of these crops compared to conventional varieties;
- information from other studies such as BRIGHT and the Brooms Barn trials which have investigated a range of management regimes under which these crops could operate;
- any relevant information from other countries in which these crops are grown commercially.

Recommendation 5: Ensure that the level of publicly funded research is such as to secure an objective independent assessment of the potential impacts of both current practices and new technologies on agriculture and the wider environment.

Recommendation 6: Commit to an open and inclusive process of decision-making around whether the GM crops being grown in the FSEs should be commercialised, within a framework which extends to broader questions.

Recommendation 7: Give early attention to the framework for post-commercialisation monitoring. Without prejudging the issue of whether GM crops will be approved for commercialisation in the UK, the Government should be prepared to publish and consult widely on its proposals for the post-commercialisation monitoring which would be needed, and for the action to be taken if adverse effects were discovered.

Recommendation 8: Improve understanding of the basis of public views by drawing on the work of social scientists in this field.

Recommendation 9: Improve methods of dealing with risk and uncertainty in relation to the use of biotechnology in agriculture:

- by ensuring that all the relevant regulatory processes incorporate the principles developed by Phillips and by May, and that the regulators are publicly explicit about where areas of uncertainty occur in their deliberations and how they have tried to take them into account; and
- by developing and disseminating examples of best practice.

The implications of GM crops for the development of agricultural policy.

Recommendation 10: Include specific consideration of the future of GM crops in the discussions about the future of agriculture in the UK. The various strategic reviews of farming and food being undertaken by the UK administrations should explicitly address how to promote the co-existence of different forms of farming in the UK. There should then be a wider public debate involving a series of regional discussion meetings to consider what role GM crops might have in UK agriculture in the future. The AEBC is willing to contribute to this process.

Implicit in the *Crops on Trial* recommendations was a further one: that no decisions on the licences for commercialisation should be issued until the FSEs were completed and assessed within the broader framework AEBC was advocating. A voluntary agreement between the government and SCIMAC – an industry association representing the supply chain of GM crops – already provided for this and the wider issue of a 5 year moratorium on commercialisation, proposed originally by English Nature in 1998, had been taken up by February 1999 by an umbrella campaigning organisation, Five Year Freeze. By the time *Crops on Trial* was published, in late summer 2001, Five year Freeze had become an alliance of over 120 organisations, claiming to represent 4 million people.

The Five Year Freeze umbrella sheltered a number of organisations: mainly NGOs, but also some 15 companies or trade associations largely supplying organic foods, a number of trades unions, and one political party, the Greens. Its organisers believe that the existence of single issue campaigns such as theirs, working with NGOs, allows for political flexibility in two directions. First, it allows those organisations whose objectives are closely aligned to the cause a front organisation through which to work and experiment on higher risk projects, such as close involvement with implementation of the AEBC GM crops debate, without compromising their freedom to take particular stands on issues. Second, it allowed organisations, like trades unions, whose main agenda is elsewhere, but whose membership was broadly sympathetic to the campaign's objectives, to have a more symbolic participation - for their Five Year Freeze membership to show that they were 'doing their bit' on the GM issue¹⁸. The campaign, according to its staff, therefore became the 'natural choice' as a representative of the NGOs on the GM debate Steering Board.¹⁹ In person, that task fell to Clare Devereux.

In parallel, Paul Rylott, represented industry on the Steering Board through his role as acting chair of the Agricultural Biotechnology Council, an industry consortium representing six agrochemical multinational companies: BASF, Bayer CropScience, Dow Agro Sciences LLC, DuPont, Monsanto UK, and Synerga. Dr Rylott's own parent company, Bayer CropScience, was responsible for the GM maize grown in the Farm Scale Evaluations.

3. Framing issues

(a) Stakeholder views

(all from interviews by Kevin Edson Jones unless otherwise indicated)

...who is framing the questions on which [regulatory] judgements are made. There is scope indeed for involvement and consultation on the kind of questions. If you look at the different criteria in which there are different regulatory regimes, for example, comparing the US, the UK to Austria, the basis on which a GM product is deemed to be environmentally safe – environmentally health wise – they have very different criteria... The other thing we have to seriously consider [is] ...judgements cannot be about science alone. Being a politician you can't hide behind science. You have to look at all the other factors that come to bear - ethical, moral, economic.

NGOs treated us pretty well: have engaged, been willing to assist with the preparation of the material ... because I've always been concerned that at some stage the NGOs would walk, as they've tended to do in other countries that have tried to do something like this.

(b) Analysis

As already noted, the Steering Board responsible for the delivery of the AEBC debate inherited the hard won consensus produced by its parent body in the course of the construction of *Crops on Trial*. The Steering Board – effectively an independent body although there was an overlap of a chairman and some membership with the AEBC itself - agreed a diverse and open debate on issues coming from the public themselves, that public being as socially inclusive as could be contrived.²⁰

At its first meeting in September 2002 the Steering Board found that it had virtually no discretion over the appointment of the lead contractor in delivering the debate, the Central Office of Information (CoI). The CoI's appointment was framed by shortage of two resources that would haunt the debate – time and money. Although the CoI, as the government agency responsible for disseminating information, was considered unsuitable for the task by a number of Steering Board members on technical grounds and conflict of interest, it had two advantages. One was that having costed the exercise, it was constrained by its own financial disciplines. The second was that having standing subcontracting arrangements with a number of suppliers it did not have to go through the lengthy process of European tender which would have thrown the timetable out.

The board agreed to appoint CoI as prime contractor subject to a clear set of working arrangements being agreed. These were published by the Steering Board and CoI in October 2002. CoI promise to respect the independence of the debate and of the debate Steering Board and continue:

‘There is no conflict of interest with our being a Government department and this debate being independent because Government policy states the debate should be independent. That is why Government has asked the independent Steering Board to run the debate. CoI has no role in setting policy; it is not a policy-making organisation.’

The Steering Board agreed to work openly and transparently with CoI.

The objectives of the Steering Board for the debate were adopted in October 2002 (see *figure 4*). It can be seen that the Board's first objective was to ‘allow the **public to frame the issues** for debate so that the programme of debate focuses on what the public sees as the relevant issues.’ In the light of this requirement CoI recommended two preparatory stages before the public debate proper – desk research on and workshops to elicit issues for the

debate proper. The desk research comprised work on the current state of public attitudes in the UK to GM issues, by John Kelly, an independent social research CoI had brought in, and a parallel strategic consultancy which would explore developing deliberative methodology in the UK, Europe and further afield. Neither of these reports is available at the time of writing so can only be assessed through the response of the Steering Board to them. They seem to have made rather little impact on the board collectively; nor do they seem to have framed the second preparatory stage. However, in this period there was a CoI internal learning process about public engagement, drawing in particular on experience in the Netherlands and New Zealand.

The second stage, to determine those issues, was a series of ‘foundation workshops’ held in November 2002 by consultants, Corr Willbourn Research and Development, who were subcontracted to undertake this by the lead contractors, CoI, after competitive tendering, agreed by the Steering Board.

Corr Willbourn analysed the workshop material and produced the principal frames for the debate, shown in *Figure 2*.²¹ These were seen as overlapping, rather than exclusive. Again, the response of the board was to require the consultants to produce rather more precise questions which the various stakeholders could respond to in individual ways to produce the stimulus material for the debate itself (see section 5). This was then standardised by another set of consultants, working with the Science Museum. However, even by the late date of the Steering Board meeting of 20 March 2003 a number of criticisms were coming from the Steering Board about the state of preparedness of the stimulus material:

‘Some members were concerned that it was not clear how the document would be utilised and how it would inform the general public. Members agreed that the information contained in the documentation was disembodied and had become a collection of fragmented sound bites and sub-points without any discernible context.’²²

The development of the framework and stimulus materials for the debate seem not have represented an intellectually coherent, progressive process. The extensive interaction between a relatively consensual Steering Board and what have proved to be willing contractors, seems not to have been sufficient to bridge fundamental differences between expectations and experience of how a deliberative public debate should be framed and delivered – certainly not within the somewhat artificial time constraints governing this debate.

The foundation workshop frames were guiding objectives in developing the materials, but in practical terms the materials didn’t work, at least as expected from the Science Museum’s claims. This seems to be because the Science Museum procedure, in an attempt to produce an architecture which would manage the debate information, neutralised the passions reflected in the original stakeholder statements. At the very least, this leaves the exercise vulnerable to later technical challenge. However, the nice methodological points disguise a deeper conflict about the nature of the exercise, which surface from time to time, as when the facilitator at the Harrogate level one meeting upbraided a participant for introducing values into the discussion. The exercise seemed to become tool-based rather than objective-based, as if the right deliberative mechanisms could of themselves resolve social conflict and produce consensus.

Figure 2. (Overlapping) Frames for the Debate. Source: Corr Willbourn Report. January 2003.

Frame	Core Topics (aggregated)
Food	<p>Health issues</p> <p>Aesthetics</p> <p>Product values; taste, nutrition</p> <p>Economics; micro and macro</p> <p>Political issues</p> <p>Production consequences; land use, agricultural employment, impacts on integrity of organic production.</p>
Choice	<p>Do we, the public, actually have any choice?</p> <p>Is there a zero option?</p> <p>Why are we having the debate now and not 5 years ago?</p> <p>Can choice be executed through clear labeling?</p> <p>How will this affect organic farming?</p>
Information needs	<p>'I don't know what I don't but probably should know - who will tell me . . . and can I trust these actors/their information?</p> <p>Who will ensure that information is unbiased and freely available or at the very least can I hear all sides of the argument?</p>
Uncertainty/trust	<p>Who is responsible now, and who will be responsible if things go wrong in the future?</p> <p>What are the motives of corporate actors?</p> <p>What is the government's real position?</p> <p>What is the worst case scenario?</p>
Targets and intended trajectory	<p>Which organisms will be genetically modified?</p> <p>What different implications arise from genetically modifying plants, animals, humans?</p> <p>What are the medical implications/possibilities?</p>
Ethics	<p>Why is it being done at all?</p> <p>Who decides and polices the boundaries?</p> <p>What are the motives of corporate actors?</p> <p>Why has this technology been allowed to progress this far without public consultation - is this to close off real debate?</p> <p>Are we capable & willing of addressing the deeper moral issues this technology throws up?</p> <p>Is GM an example of science for science sake - let's hear honestly and personally from those involved.</p> <p>How will this impact the world economy and the control of the developing world by the developed world?</p>

4. Framing expertise and publics

(a) Stakeholder views

(all from interviews by Kevin Edson Jones unless otherwise indicated)

...there is a priority in being open to this idea [that] it's legitimate to hear and act on and digest the views of all the diversity of stakeholders...not to feel threatened by that, but to see it as a strength, to be more open...about uncertainties. ...Governments don't have to know everything. They don't have to get up and say it is all perfectly safe – the world will not fall apart if we're treated like adults and it's explained to us that we don't know everything. This is what we do know, this is what we don't know and this is how we think – we'd like to talk to you about... how as a society we deal with it.

Consultations are something they [the FSA] do on most legislation or areas if it's coming up for review. [They] have about 65,000 groups or individuals on the mailing list for various consultations on areas they are interested in with the aim of getting different views into the agency...

...the ACNFP's remit is to be more open in how they operate and how they proceed...they publish much of the dossier and have wider consultation and consider public view. They have an openness policy as far as possible...out of the committee of 12-14 members they have an ethicist and consumer representative to try and provide some balance to the committee...[actually said to be three lay members, two consumer representatives and an ethicist, although the list of members and their interests is not published - PH]

(b) Analysis

The Steering Board's aim and objectives for the debate are given in a statement issued on 20 October (*figure 4*). This was almost immediately challenged by a number of independent academics²³ who were involved in preparation for the UK GM debate and who issued observations and proposals on the public dialogue in a submission for the Steering Board meeting on 7 November 2002. The academic intervention is notable for raising a number of important issues about the framing of the debate, cogently stated, but also for its occasionally frustrated, almost hostile tone. Although framed as advice oriented towards improvement of the exercise, the submission has a rhetorical gloss that sometimes reads as if the group were direct stakeholders in the process challenging the credibility of its Steering Group in conducting the debate, although it is important to note that the academics were commenting about all three strands and about how they would interact:

We make some constructive practical proposals in the attempt *to help rescue the process from self-inflicted damage to its own credibility, and to that of the AEBC itself, policy and scientific institutions.*²⁴ [my emphasis]

The signatories made it clear that they were using the legitimacy of their academic expertise to make this position. The document starts with a reference to their expertise, contains an annex which further details expertise and experience, and uses expertise to support the key claim in their text:

Our *expert judgement* is that elements of the 'public dialogue' programme will have a negative effect on learning, and upon public confidence in the decision-making process and the institutions responsible.²⁵ [my emphasis]

Both the style and the emphasis of the social science contribution may have been because the report reflected accumulated tensions within the Steering Board that could not fully be explored within the board itself.

The main points of the executive summary from the social science submission are in *figure 5*. The document's main thrusts, amongst a number of closely argued points, include the failure of the process as envisaged to meet the required objective of a dynamic and iterative processⁱ, the specific framing of the issues and articulation of the three strands, the handling of unknowns and uncertainties, and the limitations of the evaluation processⁱⁱ. Given that the debate is now completed, it is possible to give a preliminary post hoc assessment of the extent to which the concerns of the social science submission were borne out in practice and that is also to be found noted against each of their figure 5 points.

The framing is criticised as 'highly asymmetric between the scope, scale and nature of the contending "pros and cons" of GM crops'; and the sensitivities as to the evaluation process – now given as a non-competitive contract to the University of East Anglia - are heightened by the apparent rejection of a more comprehensive evaluation approach from a range of social scientists under the auspices of the ESRC Science and Society programme.

The report was formally received at the Steering Board meeting of 7 November 2002, the chairman noting that it had been written 'in a spirit of seeking to give assistance and it was in that spirit that the board received it.'²⁶ He proposed to give the report consideration at the end of that meeting or at a later meeting but hoped that it would guide members in the meantime. It has not formally come onto the agenda since, but it may well have informed discussions since as an external source of support for lines of argument that some members of the steering might have wanted to pursue more directly. It may also have helped the chairman in his subsequent negotiations with DEFRA.

In terms of the submissions nine points there may since have been some progress with the links with decision-making, to the relationship with the FSEs, and the relationship between the three strands. The AEBC also fed the questions that came from the foundation discussion workshops through into the science and economics strands, so there is some cross fertilisation; the science strand is taking it on board, despite having rather sharply demarcated the issues originally:

[These were] interesting debates, since David's [King - the government chief scientist] initial position was he was the independent Science Advisor, he gave independent science advice to the government, and we said "hang on Dave, one of the issues around all this has been what is independence, what is the government, who trusts the independent government scientists, and how much richer your data would be if it were based upon answers to these broader questions." He's benefited a lot from this, the science panel's meetings are in public and the process is a lot more transparent than it would have been in a traditional science review. PMSU [the Prime Minister's Strategy Unit – responsible for the economics strand of the GM debate] didn't need as much prompting.'..PMSU held very open discussion [with us] about how they might do it, and how it would interweave with the other strand.²⁷

Given its significance for the outcome of the debate, and for the degrees of freedom which government would enjoy in interpreting its results, it is interesting that the relationship between the strands of the dialogue were determined during the process rather than ahead of

ⁱ This is defined in paragraph 8 of the submission:

'It should be *deliberative* in terms of arriving at conclusions through weighting of evidence in argument; include *dialogue* between citizens and specialists/stakeholders; and have the capacity to be *reflexive*. A good deliberative process is one which has the potential to inform, but also to transform **all** the participants. The fundamental point is the need to make this a **relational and mutual learning** process of informed dialogue, engaging citizens, stakeholders who represent particular interests and responsibilities, and specialists with relevant expert knowledge and responsibility'. [original emphases].

ⁱⁱ Given that the debate is now completed, it is possible to give a preliminary post hoc assessment of the extent to which the concerns of the social scientists' memorandum were borne out in practice, and this is done point by point in *figure 5*.

it. The relationship was then set out in a formal memorandum in early May 2003, although the main terms of the relationships were understood and indeed were the basis of collaboration between the parties over the previous six months. The main terms of the memorandum are set out in *figure 3* below.

Figure 3 - Terms of relationship between the three strands of the GM Dialogue and related issues of context, framing, participation, reporting and planned uses.

Source: Excerpts from the explanatory secretariat note for websites (early May 2003)

[Interaction] ...The Public Debate Steering Group, Science Review Panel and Strategy Unit (SU) have undertaken to:

- address the public's framings of the issues;
- draw on each other's key outputs as appropriate;
- operate with transparent and open processes, including publishing key outputs as they go along;
- inform each other about their activities.

The SU project team provides regular reports to the Public Debate Steering Board, and the board in turn has been providing views on the SU team's work. The SU has also invited the Public Debate's Steering Board's comments on drafts of key papers. The SU is also drawing on the emerging work of the science review on the scientific evidence on potential impacts of GM as part of its assessment of overall costs and benefits. Two members of the Science Review Panel are on the SU Expert Advisory Group and others have contributed to the SU's work on an ad hoc basis...Those responsible for each strand meet as required in addition to interactions between the strands at Public Debate Steering Board and Science Review Panel meetings...

[Context] ...The context for promoting public discussions about GM is very challenging: low levels of public trust and confidence across Europe in national public authorities in relation to GM. It is difficult for Government and those steering the three strands to demonstrate to the public and stakeholders that each of the strands is a genuine attempt to provide people with a real opportunity to explore the issues and concerns raised by this technology and to help inform future decision-making...Those responsible for each strand are acutely aware of this challenging context...are taking positive steps to address the issue [acknowledging] that this is an experimental process and are learning as they go along [sic].

Framing the issues The general public have framed the issues for the public debate through a series of foundation discussion workshops...the Science Review Panel is committed to addressing questions raised by the public about the science. It set up an informal working group to look at how to ensure that the review took account of public interests and concerns. The Panel agreed procedures that have included its three drafting groups checking their work against the questions raised by the public in the Corr Willbourn questions. The Strategy Unit has similarly drawn on the foundation discussion results.

Involving the public, stakeholders and experts The programme of public debate is focussed on engaging the general public...the Public Debate Steering Board has drawn on advice from expert stakeholders in developing the debate process...

The external activities in support of the work of the SU and Science Review Panel have primarily involved expert stakeholders rather than the general public...

The SU is consulting regularly on work-in-progress through publication of material on the website and workshops with expert stakeholders. These include meetings and consultation with expert groups, drawn from outside Government, brought together to inform individual elements of the economics study.

Scientists and other interested parties have been contributing to the science review via its website. These contributions, alongside the public's questions from the foundation discussion workshops, have helped the Panel to deepen and refine the questions to be addressed in the review and to develop its work. Contributions do not have to be peer-reviewed but do need to be evidence-based, either directly or by reference to published peer-reviewed papers.

Reports. Each strand will report separately. The Public Debate Steering Board will provide in September 2003 intelligent qualitative information about public views emerging from the debate in a report...[which] will be addressed equally to Government and the interested wider public...

The science review panel will produce a report in the summer and revisit that report in the autumn. [It] will be for Government, the scientific community, and for the interested public. *The review will be a key resource in putting science advice to government on particular GM policy questions* [PH emphasis]...Sir David King in addition will publish a forward to the final report, addressed to the Prime Minister.

The report from the study into overall costs and benefits is intended to shed light on the economics of GM crops, in a wider GM context...it will not contain recommendations to Government, but will rather be a resource for the public debate and for Government.

Figure 4. Aim and objectives of the GM Debate. Source: Steering Board, 20 October 2002.

Aim

Promote an innovative, effective and deliberative programme of debate on GM issues, framed by the public, against the background of the possible commercial production of GM crops in the UK and the options for possibly proceeding with this. Through the debate, provide meaningful information to Government about the nature and spectrum of the public's views, particularly at grass roots level, to inform decision-making.

Objectives

To meet the overall aim, the public debate will seek to:

1. allow the **public to frame the issues** for debate so that the programme of debate focuses on what the public sees as the relevant issues
2. **focus on getting people at the grass roots** level whose voice has not yet been heard **to participate** in the programme [1]
3. create **new and effective opportunities** for deliberative debate about the issues
4. enable (through dialogue with experts and other activities) **access to the evidence** and other balanced and substantiated information the public may want and need to debate the issues [2]
5. create widespread **awareness** among the UK population of the programme of debate [3], even if people do not wish to participate directly in events; and give widespread **opportunities to register views** [4]
6. provide occasions within the programme of debate for **interactions** between members of the public in debate, and **mutual learning** between the public and experts
7. seek to **complement** and inform the **economic and science strands** and in turn, as appropriate, utilise their outputs
8. **calibrate the views of organisations** who have already made their views known [5] by contrasting their views with other participants in the debate
9. provide intelligent qualitative information about public views emerging from the debate in a **report to Government** by end June 2003

How will we know that the programme of debate has been successful?

Inevitably the overall assessment of the programme of debate will be largely subjective. The board believes that the assessment should draw on four main indicators [6] of success:

- the extent of **public awareness** of the programme, the science and related issues. This will be gauged by media coverage, hits on the website, and direct communications that the debate is going on [7]. The involvement of the public in an exercise like this has its limits and the steering board does not have a significant publicity budget. Even so, the board will seek within these constraints to maximise awareness of the debate. We also would want to know the extent to which people had felt that they were able to participate if they had wanted to do so and whether they believed that participation would have been worthwhile.
- the **views of participants** in the debate about what they felt should be the criteria for success - both of particular events in which they participate and the programme as a whole. Did it feel easy to participate? Did people who took part get a chance to explore the issues fully? Did they have access to the information they wanted to intelligently debate the issues? Were they able to have a dialogue with experts? Did they recognise the issues for debate? (On the latter, this will indicate if the initial framing of the issues by the public has been successful.)

- the **views of informed commentators** - the extent to which they feel that the exercise has been credible and innovative, balanced, and has moved the debate beyond the polarisation that has so far characterised much of the discussion about GM crops. Also, their views on whether the report from the debate is sensitively drawn and provides an improvement on present understandings and characterisations of public views.
 - the extent to which the report from the debate could reasonably be said to have had an **impact on Government**. Was information about public views emerging from the debate taken into account in decision-making? Also, the extent to which Government views the debate as a model for future public engagement. The independent evaluation underway by the Understanding Risk team should assist Government to do so.
-
- [1] People who have expressed their views will not be excluded from participating, but neither will they be specifically targeted and will not be allowed to steer events in the programme of debate
 - [2] This will include providing as wide an opportunity as possible for people to learn more about the science, including the levels of confidence on what is known and what is not known; and the wider economic, social, ethical and other issues
 - [3] Above the age of 11
 - [4] In at least the most basic way (e.g. by letter or internet)
 - [5] This will involve capturing the dynamic of the debate between these two groups, noting areas of shared understanding and agreement (where this is apparent) and areas of remaining contention
 - [6] Rather than quantifiable measures against numerical targets
 - [7] It may be that the Understanding Risk team also secures funding for a public survey to provide data on public awareness. As part of this, it may be possible to compare the results with existing surveys of how many people say they want more information about GM. If this can reasonably be held to have reduced significantly, that could be one measure of success in relation to this objective. Low awareness figures on all of the above may indicate that the programme of debate has failed in this respect. Or - crudely - it may indicate the limits to the general public's interest in GM crop issues

A number of issues relating to the status of the debate in relation to the position of third parties arose in the early months of 2003 and threatened to derail the enterprise. One key issue was the terms of government use of the output of the debate. The Steering Board was concerned that without some clear commitment from government on this it would be difficult to persuade a distrustful public of the benefits of engaging in the debate. Traffic to and fro on this issue resulted in a letter from the Secretary of State at DEFRA, Margaret Beckett, to Malcolm Grant as chair of the Steering Board on 20 January 2003, with two commitments: to respond to the Steering Board's report on the debate, and to indicate what the UK Government had learned from the debate when making future policy announcements on GM issues.

In the run-up to the detailed preparation of the debate itself there were also issues of budget and timing to resolve. On 18 February 2003 DEFRA confirmed a doubled budget – to £500k – and a revised timetable by which the Board would now report by the end of September.

A final political perturbation concerned the timetable for the approvals process. Some NGOs branded the debate 'meaningless' unless commercialisation decisions awaited the results of the debate. Their suspicion that decisions were about to be made had been fed by media stories. Again Malcolm Grant wrote to the Secretary of State, and again Margaret Beckett replied on 26 March to clarify 'in the light of recent misreporting in the media' that no decisions had yet been taken and that 'the public debate will help to inform the Government's policy-making on GM, including its policy on the cultivation of GM crops.'

These issues show how sensitive such exercises are to political micro-management. The construction of deliberative space, let alone its outputs and uses, seemed to take place at the limits of stakeholder positions.

Figure 5. Executive Summary of Social Scientists' Submission to the AEBC Public Debate Steering Group, 1 November 2002 (my numbering) and my view of how the issues worked out with the benefit of hindsight (in italics)

1. The purposes of the whole public dialogue and its links with institutional responsibilities and decision-making are confused or obscure;
This still obtains.
2. Despite superficial appearances to the contrary, the process is still evidently a top-down public steering process, one betraying deeply embedded but flawed institutional beliefs about the public and science;
Arguable, but probably only true of the initial stages of the exercise.
3. There has been an arbitrary shift from an earlier AEBC proposal to facilitate public debate after the current farm-scale GM crop trials are completed, to a commitment to completing this 'public debate' before those results are in, and decisions about commercialisation taken. Imposed without public discussion this inevitably looks like and attempt to curtail the influence of this 'public debate' on the government's freedom to do what it has always appeared to want to do, namely to accept commercialisation;
It is true that whilst the responses to the results of the farm-scale evaluations could have been fed in to the debate, they were never programmed to do so. The Steering Board might have regarded this as one of the exigencies of the overall timetable. However, it is true that there might have been benefit from exploring public response to the FSEs, if only in the 'narrower but deeper' element of the debate, given their likely importance to commercialisation decisions, the way in which they were framed, and emphasis in the analysis of the FSEs not on GM as such but the farming practices which surround its introduction (particularly pesticide use).
4. The government's real position in respect of a genuinely open debate and decision process is ambiguous and the object of suspicion. It should be made clear, otherwise suspicion will most likely increase as the 'public debate' moves into gear;
Whilst the Steering Board did work to clarify this, considerable ambiguity and suspicion remained both in the Steering Board and amongst many debate participants.
5. If as claimed the debate and two reviews will be based on public concerns, then it should be explicitly accepted that prevailing institutional behaviour and culture are a central focus of public concerns. Yet this issue and how it will be addressed appears absolutely nowhere in the official documents and discussions;
The worry that this would be excluded was not borne out in practice.
6. Likewise the predicament of unanticipated effects and unknowns is acknowledged in the abstract but then neglected instead of showing how it will be operationalised;
Unanticipated effects and unknowns were discussed in all three strands of the process.
7. There are several specific and serious failings of each strand design, and of the envisaged interactions between these. Some issues which straddle all three strands appear nowhere;
This criticism still has validity. What went on between the publication of 'Crops on Trial' and the immediate adoption of the debate itself seems somewhat opaque. In any case, there does not seem to have been an overall thought-through design and many issues were in negotiation between the parties managing the three strands (and with others, such as the FSA, which came to take a part) throughout. However, there were genuine opportunities for social learning in this process – for example in the discussions between the Steering Board and the Economics Strand – which may not have been possible had everything been cut and dried ab initio.
8. Timetable and budget limitations will exacerbate these deeply problematic framing commitments and render the whole 'public debate' and its subsequent policies a matter of public alienation and indifference, or worse, outright hostility and rejection;
The whole debate does not seem to have been prejudiced in the minds of the public; indeed, many of those who recognised its limitations still seem to have welcomed the opportunity to take part and seen some value in it.
9. The planned Evaluation is inadequate, though it could include the key issue of how much the institutions involved have learned about their own role in encouraging public disaffection.
The evaluation will go into government and look at the overall impact of the exercise on governance.

5. Forms and formats of participation

(a) Stakeholder views

(all from interviews by Kevin Edson Jones unless otherwise indicated)

Traditional market research is one way of gathering information about people's attitudes and opinions. There are more involving and participative and in many ways empowering ways in which you can involve individuals too...All these different techniques with which you can involve people. What you tend to get in depth, you lose in numbers of people...

(b) Analysis

The method in creating the reference material to be used in the debate, over the two months following the appearance of the Corr Willbourn report, was to allow a number of stakeholders/interests to 'answer' the questions so that debate participants would be presented with a variety of views/inputs. It came clearly out of the foundation workshops that the public is very aware that there are a diversity of views on GM, and didn't want to have an artificial consensus presented to them – 'they want to have different views, and they want to see where each of them is coming from'.²⁸ Other members of the Debate Steering Board emphasised the importance of the views at the workshops in persuading the Board to proceed in this more plural, open-ended way, with a variety of stakeholder positions being represented in the 'stimulus material', instead of the originally planned single video.

Each of the main stakeholders worked on their own version of answers to the main themes emerging from the Corr Willbourn report on the foundation workshops. The results were then passed to Creative Research Ltd, a consultancy company working with the Science Museum, to work them up into a standardised version to be used in the debate. Both stages of this process attracted criticism: the Corr Willbourn work from the NGO direction, with the comment that they engaged in market research, whereas it was hoped that the foundation workshops themselves could represent more engagement with the public over the issues, or at a minimum indicate to the participants the uses and significance of their work.²⁹ On the production of the standardised text by Creative Research, a senior AEBC executive commented:

'what comes in as really feisty stuff comes out at the other end as totally anodyne, and really quite uninteresting'.³⁰

Once these diverse contributions were captured, there was debate in the Steering Board in March 2003 as to whether the differing views were to be attributed but it was thought that the argument that this was an essential element of public evaluation of them won through. It was, however reported to the 15 April meeting of the Steering Board that this could not be done because there was not time to contact all the sources of material to gain their consent. This whole process was under the overall steering of the CoI, to whom it represented new ground, who had to learn that occasionally material was better for being 'unspun'; views on CoI varied from it having been 'a very difficult relationship' (the AEBC leadership) to a more generous view that it would have been new for anybody; they were in new methodological territory (a NGO executive). However, the processes were not new, even within the UK: there was a good deal of learning available on public consultation on radioactive waste, in which Creative Research had been involved.

The Steering Board exercise was predicated on there being no 'yes/no', 'right/wrong' answers. This is not the case with a parallel consultation exercise being undertaken, rather unexpectedly to the Steering Board, by FSA (the Food Standards Agency). [FSA had announced that it would be focused on issues of food safety, which it saw as their remit rather than that of the AEBC, and on young people and the disadvantaged, which, by implication, it saw as excluded from the Steering Board exercise]. In May 2003, before the main Steering Board debate had got under way, FSA conducted a citizens jury with young people which was reported gave a majority verdict in favour of GM crops: 'real nature of people's attitudes not

like that at all, it's more like, "yes, but...no, but..." and they subsequently organised their own consensus conference³¹.

The separate FSA debate was thought to have happened because of the nature of the leadership of the FSA, which the NGOs believe reflect food industry interests; the FSA debate was thought by them methodologically weak as a deliberative exercise because the stakeholders and the respondents were not required to work through the issues and evidence, and indeed the FSA's own consumer group later blew the whistle on what they saw as the unbalanced reporting of this exercise. As a result it was feared that the output may not reflect the complexity of opinion; there was also concern that the FSA results may be another source of evidence of public opinion for the government to choose from – increasing their scope to operate in a discretionary manner. The AEBC leadership also believed that the FSA exercise might have deflected attention from the outcomes of their own debate and sought clarification from the chair of the FSA, Sir John Krebs.³²

Within the Steering Board's exercise there were several debate processes. Mode one was focus groups, reconvened so that they will be deliberative: people were introduced to the issues and information in week one, told to go away and deal with the material in their own way, given diaries to fill in – an empowerment model. There was no opportunity for the groups to reconvene for a more substantive discussion, as had been intended originally. Again, originally it was thought that these groups may be reconvened again after the farm scale evaluations are published to see whether positions had changed, but this too did not take place. These focus groups became known as the 'narrow but deep' element of the debate, complementary to the broader process of public engagement through meetings.

The introductory material was a video made by Roger Graef (the doyen of independent UK documentary film makers) whose first idea was to do a fly-on-the-wall documentary of the Cabinet discussing GM. A further idea was for a CD-ROM to be built, based on the anodyne information coming out of the Creative Research work, which would allow debate participants to drill down into it so as to be able to get reference material etc bearing on 'the highly contested statements of the NGOs and others' – hence developing an electronic resource pack. In the end the Steering Group discovered that the CD-ROM couldn't be used for this purpose - there were no multiple layers of information through which the participants could drill down - and given that the creation of the CD-ROM had taken up disproportionate time and money to be used only by 10% of the participants the Board reportedly felt acute disappointment.

Finally the resource pack took printed form. The AEBC replicated this also on the web, so that people had the same data, and could file their responses on the web. It was made clear that there were no yes/no answers – people had to work through material and come to a considered response which they record in an individual questionnaire.

These materials were fed out into the meetings six big regional meetings in June 2003 which will launch the process - one in each of Scotland, Wales and Northern Ireland and three in England. Budget constraints meant that meetings were organised in three 'tiers' – tier 1, supported, facilitated and reported by the Steering Board, tier 2 mainly provided and supported by local authorities and tier 3, voluntary and self supported by a range of organisations.

The Steering Board seems to have only partially secured its objectives in terms of these forms of participation. Throughout their deliberations there have been tensions between methods 'deep' enough to be seen as fully deliberative and 'broad' enough to be seen as a broadly representative national debate. Up to February, when DEFRA announced a doubling of the debate budget to £500k, it was money that seemed to shape that choice. When in November CoI originally warned the Steering Board that its (then) budget did not allow it to achieve all its objectives, it also suggested that the priority should be a 'narrow and deep' programme of deliberative activities 'that would provide sensitively drawn information about the nature and spectrum of public views.'³³ However, the board refused to accept that choice. The AEBC chair was able to point to the agreement of most of his board in support of that when pursuing the matter with DEFRA (an open and transparent exercise requires a visible 'audit trail' of

exchanges on major issues to exist, but does not require that all exchanges be seen). Although the budget increase allowed the board to restore some of its major objectives and run both broad and deep elements of the debate, the three tiered structure of the debate, with many groups acting as the steering group's agents in broadening the scope of the participation, lays the process open to questions about quality control and representativeness. There was also considerable uncertainty as to whether or in what sense the whole participation process can be considered interactive and deliberative.

The relationship with CoI did prove to be crucial to the success of the exercise, and may be seen in the last analysis to have compromised it. However, this seems to be not because of the initial concerns about conflict of interest (against which the Steering Board sought to protect itself by the memorandum of agreement with CoI), but because the CoI, although able and willing to respond to heavy and direct management, simply did not share enough of the assumptions of the customer about how the debate should be framed and implemented to have made all the right calls at the right time in what was what may have seemed to be a very protracted planning process to the weary participants, but which may have been simply too rushed.

6. Outcomes – decisions and effects

(a) Stakeholder views

(all from interviews by Kevin Edson Jones unless otherwise indicated)

You would hope you would get a scope of risk assessment that would be more broadly agreed upon. You would bring in a broader range of knowledges, you may then as a consequence [of] combinations of those things and hopefully get a decision that commands better respect and confidence. It would be more robust and not so flaky. It may not necessarily always be right ...in the long run...but at least there might be a feeling of having bought into that and understanding why you decided to take a particular risk...

...we have a voluntary agreement with the UK agri-biotech industry that no GM crops will be grown commercially in the UK until we have assessed the crop trial results. I understand that it has never been likely that the first set of results would be published before September.

In the meantime we look forward to an effective and hopefully high-profile public debate and dialogue in the UK on GM issues. We have recently increased the funding for the debate to £500,000 - double the original budget. The debate is being managed at arm's length from Government by an independent Steering Board. The main debate activities are likely to take place between May and July, and the Steering Board is due to report in September. The Government has already given a commitment that we will make a written response to the Steering Board's report and that we will indicate what we have learned from the debate when making future policy announcements.

The public debate is intended to provide people with the opportunity to raise the questions that concern them on the issues surrounding GM, and receive the fullest answers the debate process can provide so that they can make their own judgments. I believe that the issues for debate should be framed by the public themselves, and indeed the Steering Board has gone to great lengths to ensure that that is the case.

On any assessment, final decisions at EU level on any of the 19 applications are unlikely to be taken before the end of the year at the very earliest. By that time we will have the first set of results from our crop trials, the report of the public debate, and the information provided by the other parts of the work programme on GM that the Government has put in place. We will decide our policy on the commercial cultivation of GM crops in the UK, in consultation with the Devolved Administrations, based on an objective assessment of all the available information.

Margaret Beckett, Secretary of State, DEFRA, in a public statement on the relationship of the GM public debate to the Farm Scale Evaluations and Government decisions on commercialisation.

26 March 2003

(b) Analysis – possible outcomes - a perspective written at May 2003

The AEBC is a governmental body, sufficiently far from the core of government for its views and procedures to be sidelined if that is convenient, but sufficiently close to it to be able to mobilise other political resources, or to add a governmental 'legitimacy' to things that it does. For example, because its remit is UK wide it has to deal with the devolved administrations in

Scotland, Wales, and occasionally Northern Ireland; and in rolling out the debate materials and methodology it has been able to mobilise those local government administrations that have a strong history of public participation, along of course with NGOs. These tasks would undoubtedly have been more difficult had it started life as a more 'independent' body.

The experience in working in this way, in what we have already noted is a corporatist style, may be an important one for all the stakeholders involved, and may, if all parties can characterise some success from it, lead to further experiments in scientific governance along these lines in the preparation of new regulatory regimes for novel technologies. Of course, all parties will also use the outcome of the debate rhetorically in their own interests, and the extent to which, in the process of doing so, they open up space between themselves and other partners by undermining compromises struck within the process, they risk undermining a working trust between to parties to an extent that prejudices further exercises along these lines. The dynamics of this period, or any earlier stage in proceedings when particular stakeholders 'break ranks', will be particularly interesting.

This period of more open debate of the results of the exercise may also test the legitimacy of different routes of representing the popular will. Focus groups and surveys used within government or by political parties are used rhetorically within Parliament debate, but are not generally thought to undermine the authority of Parliamentary representative democracy as such. There was a 'wobble' during the Jenkin House of Lords Select Committee inquiry when members began to develop this anxiety as to whether deliberative democracy was some kind of competitor for themⁱ, but members were reassured by their visit to Denmark when both members of the Parliament and of the Technology Board reassured them that the process was one of fuller articulation of issues and attitudes which were then resolved through the conventional Parliamentary process.

There are three main reasons to be less sanguine about the conventionality of the outcome with the AEBC exercise, if it goes well. The first is that, for AEBC, the focus of the exercise is elsewhere. The AEBC's leadership seems to characterise their relationship with Parliament largely as a matter of pay and rations, of formal accountability for achievements against budgets.ⁱⁱ The political use of the results of the exercise in a Parliamentary debate is not ruled out, but it not seen as central, compared with the main line of influence, on government. The relationship with government, after all, is actively negotiated between AEBC and DEFRA, its effective parent department of state. It may be more than a symbolic borrowing from parliamentary practice that DEFRA has promised to respond to the outcome of the AEBC as it would to the report of a Parliamentary Select Committee.

DEFRA has also promised something rather more fundamental to AEBC – to reference its subsequent policy to the outcomes of the debate, to the extent of saying what they have learned from the debate relevant to the decisions taken.³⁴ At first sight this is puzzling. One of the dividing lines between AEBC and the FSA in the conduct of the debate is that the former is insisting on presenting a diversity of stakeholder position statements to the participants to stimulate a debate that has, in the AEBC view, no right answers: as a DEFRA spokesperson put it, 'it is a debate, not a referendum'. It is hard to believe that the immediate output of the debate will not be a wide variety of positions from which all parties can select to boost their arguments; clearly the government will be superficially be the strongest winner in being able to find some support for the licensing decisions it then has to take.

ⁱ more strictly speaking, a competitor for their elected colleagues in the House of Commons. Some in the House of Lords also saw systematic public consultation as a necessary legitimisation step given their status as appointed rather than elected members reduced their own political legitimacy.

ⁱⁱ On the issue of legitimacy it is also interesting that some Select Committee MPs, characterised by an interviewee as those being in opposition to the government either because they were members of a non-governing party, or members of a sceptical, anti-government wing within the governing party, argued against the GM debate on the grounds that they already knew the mind of their constituents on the matter.

However, the immediate output of the debate may not be all. Of all the bodies that will try to interpret and use the results, by far the most interesting users may be the AEBC themselves. It is notable that in the construction of the GM debate the most intense struggles between stakeholders were at the stage of putting together the initial analysis and debate prescription, *Crops on Trial*. The debate Steering Board who were responsible for implementation and analysis, despite in composition being a microcosm of the range of stakeholder interests, inherited this hard-won consensus, and reflected the wish for an open and full debate. As a result, the steering group's problems were largely external: with the Central Office of Information (CoI), their 'imposed' agents for carrying out the debate, with whom they were on unfamiliar philosophical and methodological ground, and with DEFRA in terms of the significance within government of its results.

The responsibility of the Steering Board formally came to an end with its chairman's evidence to the House of Commons Select Committee on DEFRA on 22 October 2003.

Having won attention, the AEBC might try to use it (see *Figure 6*). Their remit, after all, is –

‘to provide the UK Government and Devolved Administrations with independent, strategic advice on developments in biotechnology and their implications for agriculture and the environment’

and it might be that there would be a temptation within AEBC, to go another round of the painful *Crops on Trial* corporatist bargaining process in search of more specific strategic advice to offer.³⁵ It may also be attractive to the government. Although they have been relatively consistently pro-GM, the government has shown signs of bewilderment and impatience on occasion at the twists and turns of the debate, and more generally in scientific government have been accused of hiding behind experts rather than facing difficult political decisions. However, the marketisation of UK science has not wavered as a main motive in UK science policy in more than a decade, and in this context, regardless of additional possible WTO process pressures, it is hard to see the government regarding any outcome other than commercialisation as satisfactory.ⁱ

Of course at this point another round of AEBC advice must be largely speculative. It might seem too difficult even to attempt. The AEBC chairman, who has been praised for his personal skill in bridging parties with conflicting views, may tire of a job which brings ‘a row every day.’³⁶ There have been – or have been seen to be – a number of near to resignation pressures on the NGO member and the social scientists' intervention illustrates not only the potential criticisms from without, but arguably is a closer indicator of strains within the Steering Board itself. If fractures do not occur openly beforehand, they may on the publication of the debate report.

However, the report on the GM debate, like *Crops on Trial*, is likely to be presented not only as a document of the subgroup which produced it, but of the AEBC as a whole. Suppose AEBC did use the outcome of the debate to frame some more specific advice to government, we would then have exemplified one complete cycle - of framing, public debate and policy input - of an innovative form of scientific governance for the UK. This poses some interesting questions about how things would develop from there:

- How would the cooption of stakeholders into governance be seen by their constituents? Does this pose particularly sharp issues for membership-based NGOs?
- As NGOs became more and more embedded in the corporatist style, would the deliberative element of the process be scaled back or abandoned? In other words, would the argument evolve towards a belief that the corporatist process *per se*, that is, the negotiation of outcomes between interested parties, mean that the views of NGO

ⁱ In line with the marketisation model, David King, the government chief scientific adviser who is in charge of the science strand of the debate, said at a ten year anniversary meeting for the House of Lords Science and Society Report on 13 May 2003 that the public would remain sovereign whatever the result of the commercial licensing decision in that they could make their own decision as to whether to buy the product.

members could legitimately substitute for wider public participation, provided that the NGO interest was seen to be sufficiently reflected in the eventual outcome? Would such a move be a way of 'buying off' NGO membership concerns about cooption?

- What would the relationship be between the framing of policy or regulatory requirements by this route, and Parliament? More particularly, would the process undercut the perceived legitimacy and/or efficiency of two elements in the scrutiny of policy, legislation or regulatory instruments: the interaction with lobbying interests, and the MPs relationship with his/her constituents, as 'the public'?

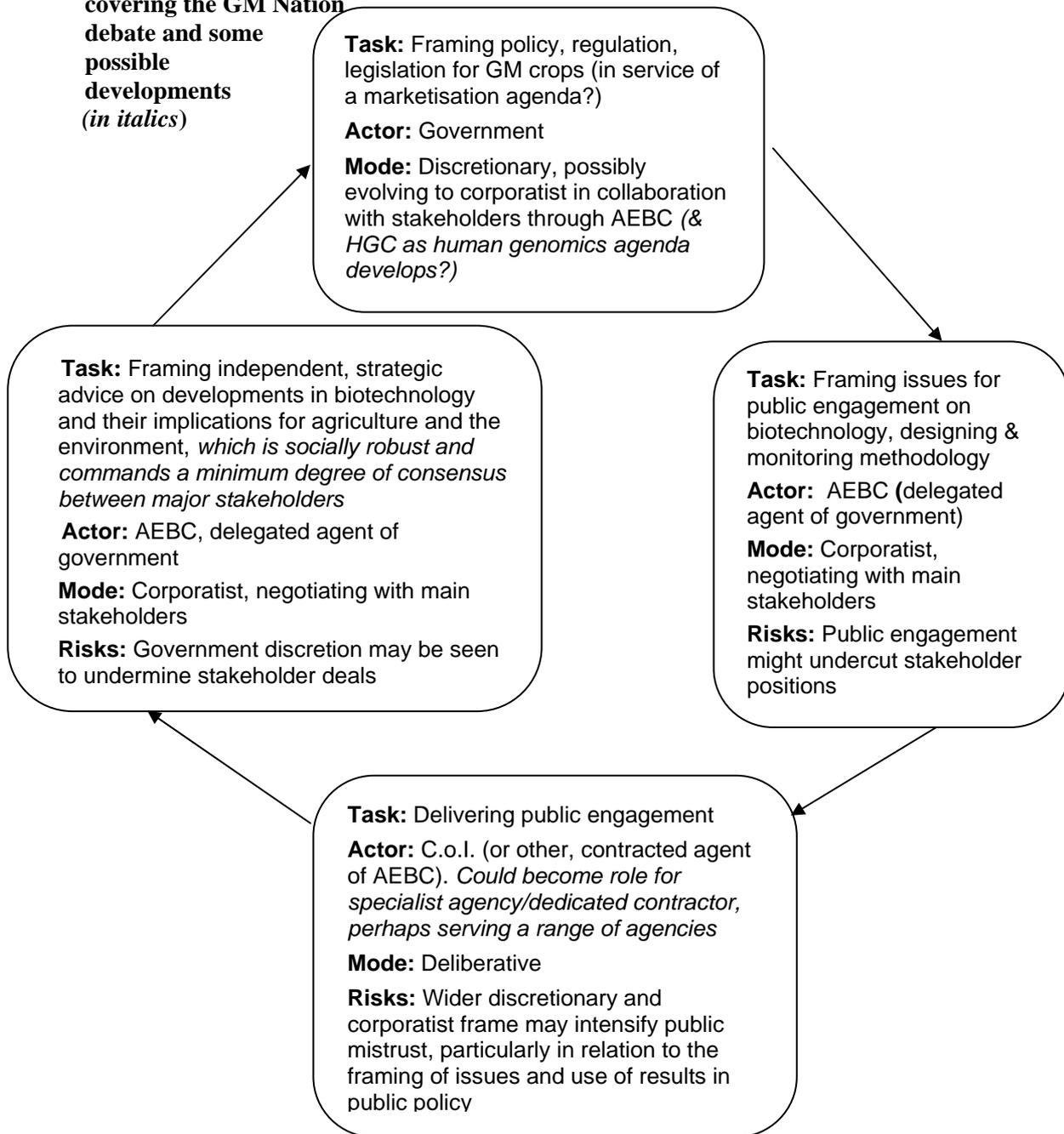
In summary, in many ways the AEBC GM debate can be seen as a deliberative process of public participation, designed by a corporatist process, and whose results will be assimilated by a corporatist process again, but whose impact on policy, if any, will be initially as input to a process which will be almost entirely discretionary.

The highest probability at the time of writing is that this will turn out to be a one-cycle experiment. However, as suggested in *Figure 6*, it could, were the government and stakeholders relatively content with this first pass, develop into a continuing process. This development would effectively extend the AEBC formal remit to deliver advice, to one in which that advice was also required to be socially robust in two dimensions – by commanding some degree of legitimation with wider publics as a result of deliberative engagement, and by having some degree of minimum support by the main stakeholders in industry and NGOs. In that sense it is a dual track model of public engagement. Such a model could in principle be extended to other agencies in a parallel role to AEBC, such as the Human Genetics Commission (HGC); over time it could also draw government into increased commitments to act on advice, or renegotiate the outcome with the stakeholders. In that case, the UK would have created a novel deliberative-corporatist hybrid in scientific governance.

Speculation on the outcomes of this can be taken one step further. The real significance of the AEBC dual track process of public and stakeholder engagement - assuming it survives its first test of implementation over the next few months - would be if it could be incorporated into the regulatory process itself. As we have seen, the regulation of GM in Europe is currently in a mess. European Directives currently offer enough of an acknowledgement of the need for public acceptance of the risks of novelty to paralyse the regulatory process, but that process itself requires any member state seeking to avoid licensing of GM crop varieties to show environmental harm. Hence the Farm Scale Evaluations. As a result a commercial licensing procedure which, if anything, was biased in favour of commercial innovation, isn't working at all, threatening European economic competitiveness and its adherence to international trade regimes in a field of great economic potential. In principle, there would clearly be some attractions to governments in new procedures that had a chance of showing themselves to be discriminating in assessing risks and opportunities, which handed down regulatory judgements and refined regulatory requirements, and yet which delivered at the end of the day a stream of socially relatively robust technological innovation, unlikely to face subsequent agonistic challenges.

However there is an important question as to how all this would play in practice across Europe. This was chosen as an anchoring case study for the UK because of particular local sensitivities which are grounded in a unique set of historic failures in scientific governance. Other European countries, by fortune and good management, do not face the same problems, or the same configuration of issues around public trust. At the moment European legislation allows companies to decide into which national regulatory regime they will place their request for release, with approval for one member state equalling approval for all, unless a special case can be made as noted above. It will be interesting to see how industry assesses the costs and benefits associated with different national regulatory regimes, what price is put on attempts to secure public consent, and how the procedures which may evolve in the UK as a result of the GM debate are regarded. After the GM debate the UK is bound to continue to be seen as something of an exception, but will it be seen as lagging or leading the pack?

Figure 6. A view of UK GM governance covering the GM Nation debate and some possible developments (in italics)



c) *Actual outcomes of the GM Debate & the Farm Scale Evaluations – October 2003*

The summer and autumn of 2003 saw a rapid succession of outputs from the related studies that made up the GM debate. On 11 July the economics review³⁷, which in retrospect set the tone for the whole ensuing series, reported that there was little short term economic benefit to the UK from GM, but potential long-term benefits. Ten days later the science review³⁸ concluded that whilst risks from the consumption of current GM crops were low, they needed to be monitored and labelled on a case-by-case basis; future crops may present greater risks, and the main concern for the UK was to the environment and biodiversity (preparation of the science review was not without controversy – see figure 7, *An Issue of Due Process*). On 24 September ‘GM Nation’³⁹ – the deliberative engagement with the public which has been our main focus in this case study – reported that the results of more than 600 meetings held around the country in June and July reflected a public mood on GM which ‘ranged from caution and doubt, through suspicion and scepticism, to hostility and rejection.’ GM Nation encouraged completion of a questionnaire, and 36,557 were submitted. 54% said that they should never be introduced under any circumstances, and a further 18% said that they would find GM crops acceptable only if there was no risk of cross-contamination, and 13% wanted more research before any commercialisation decision was made. Only 2% said they would be happy to eat GM foods.

The ‘seven main messages’ of the *GM Nation* report are given in figure 8. They are not very surprising in themselves to observers of UK science governance; and, in particular, the findings that

- those who become more engaged with the GM debate and try to learn more in consequence harden their attitudes against the technology (although the ‘narrow but deep’ sample were more persuaded of the benefits of GM crops for developing countries, the more they learned) (messages 2 and 6);
- the results ‘reflects a weakening of faith in the ability or even the will of any government to defend the interest of the general public’ (message 4)
- ‘people are suspicious about any information or science which emanates from GM companies, or which is funded by them’ (message 4)

are consistent with a whole range of earlier studies (although the position on the lack of faith in government is particularly sharply put in the GM debate report).

These three reports set the context for the publication of the Farm Scale Evaluations (FSEs), which, it will be recalled, were designed to throw light on one of the remaining uncertainties, the effects of commercial scale cultivation of GM crops on biodiversity: on the growth of other plants, and on the insect, bird and animal life which depends on it. The FSEs were the formal basis for the moratorium on the commercialisation of GM in Britain, and their evidence, if negative on GM, would constitute virtually the only legitimate grounds, under

Figure 7 – an Issue of Due Process.

Dr Andy Stirling was one of two scientists nominated by environmental and GM campaigners to sit on the science review panel. When the minutes of the panel meeting held on 24 June 2003 were published in July, they revealed that Dr Stirling had expressed a concern that an individual associated with the science review, although not a panel member, might be making clandestine attempts to undermine his professional standing. The chairman of the panel, Professor Sir David King (the government chief scientific adviser) deplored any such action and the panel itself endorsed the view that *‘the cumulative effect of such fears might easily serve to suppress open discussion, reasoned argument and substantive criticism of the kind whose importance the Chairman had many times emphasised. Ultimately such behaviour by individuals in privileged academic or regulatory positions threatened seriously to compromise the proper functioning of the science advice system.’*

Figure 8 - Key Messages from the Report on the GM Nation Debate

Source: the Debate Final Report

1) People are generally uneasy about GM

Across the different elements of the debate, participants expressed unease about GM. They were uneasy not only about issues directly related to GM technology (is GM food safe to eat? What will GM crops do to the environment?) but about a range of broader social and political issues. The mood ranged from caution and doubt, through suspicion and scepticism, to hostility and rejection. Despite the range of expression, among people who chose to take an active part in the debate these attitudes far outweighed any degree of support or enthusiasm for GM. These people expressed strongly the belief that GM technology and GM food carried potential risks and a majority rejected any suggested benefits from GM, except to the companies which promoted it. Such attitudes varied in intensity but they did represent the majority in all sections of the active participants in the debate.

Our analysis of the Narrow-But-Deep element suggests that among this sample of the general population people are less emphatic and less definite in their first response to GM issues. When asked to review their responses to the questions, people readily confirmed that they did not feel that they knew much about GM. Although they have strong anxieties about some risks from GM, particularly towards the environment and human health, they are more willing to accept that GM may offer some benefits. However, their predominant mood is one of uncertainty towards GM. People said that they felt uninformed about GM and in the Narrow-But-Deep discussion groups they often felt unable to express an opinion on particular GM issues. Partly for this reason, they expressed little confidence in their own power to influence decisions about GM.

2) The more people engage in GM issues, the harder their attitudes and more intense their concerns

The Narrow-But-Deep sample also suggested that when people in the general population become more engaged in GM issues, and choose to discover more about them, they harden their attitudes to GM. Although they are more willing to accept some potential benefits from GM (especially medical benefits and other advantages for developing countries) they become more doubtful about the others and they express more concern/greater unease about all of the risks most frequently associated with GM. In particular, the more they choose to discover about GM the more convinced they are that no one knows enough about the long-term effects of GM on human health.

3) There is little support for early commercialisation

There is little support for the early commercialisation of GM crops. Among active participants in the debate just over half never want to see GM crops grown in the United Kingdom under any circumstances. Almost all the remainder want at least one new condition to be satisfied before this happens. They seek varying periods of delay so that new information, tests or research can identify and eliminate, or at least reduce to an acceptable level, the potential risks to the environment and human health.

The Narrow-But-Deep sample suggests that the general population does not share the unconditional opposition to GM of many active debate participants. However, it does suggest that the general population would prefer caution: GM crop technology should not go ahead without further trials and tests, firm regulation, demonstrated benefits to society (not just for producers) and, above all, clear and trusted answers to unresolved questions about health and the environment.

4) There is widespread mistrust of government and multi-national companies

Alongside arguments over the potential risks and benefits of GM itself, both the open debate and the Narrow-But-Deep element also highlighted a series of political issues, manifested in a strong and wide degree of suspicion about the motives, intentions and behaviour of those taking decisions about GM - especially government and multi-national companies. Such suspicion is commonly expressed as a lack of trust. Here, mistrust of government applies both to government in general and in particular and expresses itself through several avenues. One is the suspicion that the government has already taken a decision about GM: the debate was only a camouflage and its results would be ignored. In this way, GM links to a general mistrust of the motives and behaviour

of modern governments, a general concern that they have secret agendas, and ignore the public's views. The GM debate also reflects a weakening of faith in the ability or even the will of any government to defend the interest of the general public. This was supported by the way in which people cited past disasters, especially BSE. They carried a double lesson, first, that government may not have adequate knowledge and advice to help them take the right decisions, and second, that government can be too close to producer interests.

The debate also highlighted unease over the perceived power of the multi-national companies which promote GM technology, and of such companies in general. People believe that these companies are motivated overwhelmingly by profit rather than meeting society's needs, and that they have the power to make their interests prevail over the wider public interest, both at home and throughout global society. Even when people acknowledge potential benefits of GM technology, they are doubtful that GM companies will actually deliver them. People are suspicious about any information or science which emanates from GM companies, or which is funded by them.

When given the opportunity to engage in GM issues, people do not rely exclusively on official sources or everyday media. They choose sources which they trust and which mean something in their personal life.

5) There is a broad desire to know more and for further research to be done

In all parts of the debate, both from active participants and the Narrow-But-Deep sample, people expressed a very strong wish - almost a longing - to be better informed about GM from sources they could trust. They wish to be able to resolve for themselves the contradictions and disputes, claims and counter-claims, in the existing body of information, science and research on GM issues. They want a corpus of agreed "facts", accepted by all organisations and interests. They also want confidence in the independence and integrity of information about GM - the assurance that it does not reflect the influence of any group with a special interest for or against GM (including government and business). There was a general feeling that no one knows enough at the moment and that much more research is necessary.

6) Developing countries have special interests

There was a "debate-within-the-debate" on the potential role of GM for developing countries. This was acknowledged as a subject of special interest, to be judged on distinct arguments and values. In all parts of the debate, there was at least an initial assumption that GM technology might help developing countries produce more food and offer them medical, social and economic benefits. There was then a clear divergence between the views of active participants in the debate and those expressed in the Narrow-But-Deep sample. The former rejected, by a majority, the idea that GM technology would benefit developing countries: the latter supported it, and their support slightly increased after people got more engaged in GM issues.

However, in the context of the developing world opposition to GM was based less on negative feelings towards GM than on the view that there were better and more important ways to promote development, including fairer trade, better distribution of food, income and power, and better government.

On the issue of benefits to the developing world, people were particularly sceptical about the will of multinational companies to deliver them.

7) The debate was welcomed and valued

Although there was a widespread suspicion that the debate's results would be ignored by government, people in all parts of the debate were glad that it had happened. People expressed their appreciation for the opportunity not only to express their own views, but to hear those of other people, including experts, to ask questions and acquire new information, and to take part in stimulating discussions. The debate generated a great deal of voluntary activity, which deepened and multiplied as it got under way. The number of local meetings increased with each week of the debate, involving thousands of people across the country by the end of the process and an estimated total of over 600 meetings. People were inspired not only to organise meetings and debates of their own but to take other personal steps to get engaged in GM issues - first-hand research, getting in touch with their council or their MP, writing a letter or e-mail. In spite of their suspicions of government, people expressed a real hope that their efforts in the debate would influence future policy.

EU regulation, by which that temporary ban on commercial GM could become permanent. Somewhat ironically, the FSEs had also been the locus for much of the agonistic response to GM – the trashing of fields of trial crops – in the previous five years. Given the less than enthusiastic position of the other three reports on GM, the room for the government to construct a decision to commercialise GM crops depended on GM being given a clear bill of health in the FSEs.

The FSE trials – billed as the largest field trials of GM crops in the world - covered three crops: forage maize – for animal consumption (made by Bayer CropScience), beet (partly sugar beet, partly fodder beet - Monsanto) and spring-sown oilseed rape ('canola' in U.S. usage - Bayer CropScience). The GM crops had all been modified to be herbicide tolerant (GMHT) - that is, to tolerate specific broad spectrum herbicides which were then used in cultivation of the crop to control other, unintended, plants growing in the fields - 'weeds'. In each case there was a direct comparison between GM crop cultivation and non-GM, through sowing one half of a field with each seed and then proceeding to use the prescribed herbicides for each. The issue was whether there would be a greater loss of other plants - 'weeds' - under GM, and what wider biodiversity effects this would have, given that weeds provide the food for insects and thus a whole range of wildlife.

The FSE results were published on 16 October 2003⁴⁰. They show the GM oilseed rape and beet to be more harmful to biodiversity than their non-GM equivalent. The maize showed the reverse results: the GM was less harmful than the non-GM. However, the maize results attracted immediate criticism from NGOs, which pointed out that the herbicide used for the non-GM maize was in most cases atrazine, a powerful and persistent weedkiller which was due to be banned by the EU. Comparisons with other herbicides likely to be used with non-GM maize in future, it was claimed, were more likely to have produced similar results similar to those for the other two crops, with more reduction of biodiversity with the GM crop.

The maize result, and the controversy that has raged round it, are quite valuable in getting us to think about what exactly the FSEs tell us. They are about the net effects of the whole range of farming practice involved in producing crops. 'Agricultural practice' I was told early in this case study 'always has consequences for biodiversity, rarely benign.'⁴¹ After all, the headlong decline in the numbers of British farmland birds over the past 40 years took place before the application of recombinant DNA technology. The effects on biodiversity found in this study are less about GM per se than the farming practice which is involved in its use. It is not about gene transfer to herbicide-resistant weeds or about birds being poisoned by GM seeds. It is about the effects of the precise herbicides used and the timing in the growing season of their application. It was the late application of the Monsanto herbicide which gave the GM maize its biodiversity advantage over the more conventional usage of atrazine.

There is nothing new here – some NGOs had already begun to frame the GM issue in these wider terms of the food production system. The argument about the separation of organic crops from GM, or about the separation of organic soya from GM, may use the language of contamination, but are effectively about a symbolic separation, a purity from (less actual, more potential) taint to the commercially viable organic status (both sides of the organic/GM debate are about profit). Broadening the GM issue to one of farming practice has advantages and disadvantages for NGOs. The advantage is that issues like organic or sustainable production, and wider environmental concerns, sit more easily within the wider frame. These are often more aligned to the NGOs fundamental objectives – the reasons for them getting involved in the GM issue in the first place. The disadvantage is the loss of the rhetorical 'nuclear option' – the Pandora's box of genetic modification – something around which fundamental, ethical discourse can be spun, as well as uncertainty as to long-term effects. From this perspective, message 5 from the *GM Nation?* debate is a bit trite: publics may want more discussion underpinned by more 'facts', but the sense of uncertainty and risk itself is a significant weapon to those who oppose the technology. By contrast, dealing with the future of farming is by nature a debate conducted in relative terms, those of trade-offs.

So, having ‘stayed in’ through to the end of the GM crops debate (in contrast to the NGOs in a similar exercise in the Netherlands), how did the NGOs position themselves in terms of its outcomes and the expected government decision on commercialisation? Are there signs from the NGOs that a shift in the focus of the issue to one of farming practice could take us to the territory we speculated on in 7 (b) – corporatist political space in which compromises between interests could be struck. Indeed, how important is the GM debate as part of their general strategy? Does Five Year Freeze maintain its legitimacy as an umbrella organisation when the debate is over and if so does it help to define substantive and procedural next steps?

The interest declaration for members of the AEBC GM Debate Steering Board (see annex B) lists four NGOs: Greenpeace, Green Alliance, Waste Watch, and of course Five Year Freeze, the specific umbrella campaign which kept the options of individual NGOs open to pursue their own positions. Friends of the Earth UK has been added to this list as a significant membership organisation operating on these issues. *Figure 12* (page 43) lays out what can be learned on these questions from publicly available sources (chiefly websites, press releases and publications) after the publication of *GM Nation?* but before the commercialisation decision.

It would be easy to oversimplify the line-up of interests competing in the commercialisation decision. The government in particular, seems to be a target of both sides. On 31 October 2003, more than a hundred scientists, including one Nobel Laureate and 30 Fellows of the Royal Society, are reported to have sent a letter to the Prime Minister complaining that the GM debate was rigged against their interests, effectively having been taken over by anti-GM organisations. This follows a trickle of press stories in the immediately preceding days about bio-scientists threatening to take their skills to countries more sympathetic to novel science and technology. Ministers are blamed in the letter for setting up the debate on these terms, and for not having corrected ‘misleading’ stories about GM in the media. Scientists who had conscientiously taken part in the debate, it was said, were being ‘hung out to dry’ and indeed Professor Phil Dale, of the John Innes Institute, a member of both the AEBC and the Steering Board, is one of the signatories. Significantly, in terms of trying to set the bounds of legitimate debate, Derek Burkeⁱ, the scientist who organised the signatories, added in an interview on the BBC radio Today programme, said that scientists were winning the scientific argument, but losing the media, lobbying and policy battles because

‘opinions have become more important than the evidence. We saw that in the MMR [measles, mumps and rubella triple vaccine] debate and we’re seeing it now with GM.’ⁱⁱ

This was another, late, attempt to frame the debate to exclude values, or rather, to characterize opposing values as at odds with a narrow technically based debate.

The Ministry concerned, DEFRA, said in response that it could not comment since the commercialisation decision awaited input from the appropriate scientific advisory committee, ACRE (Advisory Committee on Releases into the Environment). ACRE, in turn, on 13 January 2004, followed the conclusions of the FSEs in making its recommendations to government: that, assuming commercial practice were to follow that in the trials (including, centrally, the use of herbicides) GM maize would be acceptable, whilst GM beet and spring-sown oilseed rape would not.

On 5 March 2004 the House of Commons Select Committee on Environmental Audit, reviewing the farm-scale trials, concluded that the ACRE advice ‘was clear but not decisive.’⁴² This judgment was grounded in the comparator herbicide used in the GM maize trials, atrazine (see *figure 9*.)

ⁱ Professor Burke was operating under the organisational name ‘Sense in Science’, in itself a claim for legitimacy in the debate (or an attempt to frame the contribution of opponents).

ⁱⁱ The BBC News story is given in full in *figure 13*.

Figure 9 – excerpt from the Report of the House of Commons Select Committee on Environmental Audit - Evaluating the Farm-Scale trials - issued on 5 March 2004

48. The use of atrazine on the non-GM forage maize crop was the focus of the most widespread criticism of the FSEs that we came across. Even bodies happy with every other element of the trials were unhappy about the fact that the conventional benchmark for GMHT maize was largely an atrazine-dosed crop. Since atrazine was such a devastatingly efficient herbicide, almost any other herbicide used, however potent, might still appear beneficial when in comparison. As Dr Brian Johnson of English Nature put it to us: "atrazine turns a maize field from what was once a diverse grass field... into a wildlife desert. It is really ground zero as far as wildlife is concerned. It is not surprising that a herbicide-tolerant system is better for biodiversity." [87] Effectively, it could be argued that given the predominant use of atrazine in the conventional forage maize crop, GMHT forage maize had too easy a time of it in the FSEs.

49. The phasing out and replacement of atrazine casts serious doubt on the value of the forage maize trial results. Since any predominant successor herbicide to atrazine may be less potent than atrazine and consequently may have reduced harm on biodiversity, indeed less harm than "Liberty" has on biodiversity in the GMHT crop, the level of biodiversity that will in future be found in conventional forage maize crops may be higher than it is at present. In other words, while the atrazine benchmark is valid for an agronomy in which atrazine is used, it is not valid for the agronomy in which GMHT forage maize, if commercially licensed, will be grown. The Rt Hon Michael Meacher MP claimed in evidence to us that the use of atrazine invalidated the whole maize component of the trials. Dr Mark Avery said that as a result of the banning of atrazine, "the relevance of the study... is much reduced by the fact that the comparison... is now outdated" [88] In other words, the maize results may be scientifically valid but are completely irrelevant as a benchmark because atrazine has been banned.

50. We are concerned that the GMHT forage maize trials were based on an unsatisfactory, indeed invalid, comparison. It is vital that the Government permit no commercial planting of GMHT forage maize until that crop is thoroughly re-trialled against a non-GM equivalent grown without the use of atrazine.

d) Impacts on policy

The UK government announced on 9 March 2004 that it was giving conditional approval to the commercial growing of Chardon LL genetically modified herbicide-tolerant maize in the UK, subject to two conditions:

- first, that restrictions should be imposed on the existing EU marketing consent, which expires in October 2006, so that this maize can only be grown and managed as in the trials, or under such conditions as will not result in adverse effect on the environment.
- and second, in response to concerns which have been raised about the phase-out of atrazine in the European Union, that the consent holders should be required to carry out further scientific analysis to monitor changes in herbicide use on conventional maize and to submit new evidence if they seek to renew the existing EU marketing consent when it expires in 2006.

In addition the Government announced its intention to

- continue to assess GM crops on a case-by-case basis, taking a precautionary and evidence-based approach, and making the protection of human health and the environment the top priority
- provide choice for consumers through mandatory labelling of GM food products

- consult on measures to facilitate the co-existence of GM and non-GM crops, and on options to provide compensation to non-GM farmers who suffer a financial loss through no fault of their own

On the other specific crops which were tested in the Farm Scale Evaluations, the government announced that the UK will oppose EU approval for the commercial cultivation of the GM beet and oilseed rape as grown in the trials.

The Secretary of State, in announcing the government decision, specifically acknowledged

‘The public dialogue reported general unease about GM crops and food and little support for early commercialisation of GM crops. People already engaged with the issues were generally much more hostile. Those not so engaged were more open-minded, anxious to know more, but still very cautious and it was suggested that as they learned more their hostility deepened.’

There was little that the Secretary of State could do in linking the direct commercialisation decision with this outcome of *GM Nation*? However, she went on to claim that the debates had wider impacts on government thinking:

‘I know of no one who argues, for instance, that the GM tool alone can solve the problems of the developing world. But it is less than honest to pretend, especially against a background of climate change, that GM has not the potential to contribute to some solutions.’

This too was part of the outcome of the public dialogue. I think those who ran it and those who took part. From that process and many other attempts to assess public opinion, it is clear that most people believe that the use of genetic modification should be approached with caution. They want strong regulation and monitoring and in addition farmers want a framework of rules for coexistence of GM and non-GM crops, and customers want a clear regime for traceability and labelling so that they can make their own choices. I believe the rules we now have and those which we shall put in place in the months ahead meet these criteria as well as being soundly based on the scientific evidence before us.’

Simultaneously with their commercialisation decision the government published, as promised, their separate detailed response to the GM debate, as they had promised the Steering Board they would. From the point of view of this case study, the framing of this response has at least equal significance to the framing of the decision itself.

The summary of the Government response is to be found at annex D. The approach that the government takes is indicated by the first paragraph:

‘The Government and the Devolved Administrations have carefully considered the findings of the GM public debate, science review and costs and benefits study. We take public concern very seriously, and we have weighed public opinion alongside the scientific evidence. We will:

- protect human health and the environment through robust regulation of GM crops on a case-by-case basis, consistent with the precautionary principle
- ensure consumers can choose between GM and non-GM products through tough new labelling rules
- safeguard farmers’ interests by putting in place effective and proportionate measures to facilitate the coexistence of GM and non-GM crops
- provide guidance to farmers wishing to establish voluntary GM-free zones

- consider the best ways of providing the information which the public wants and in an open and transparent way.’

There have been no properly sampled tests of public opinion since the decision was announced but a unsystematic straw poll by the BBC website just after the decision showed that 80% of the self-selected group responding thought that the decision to commercialise GM maize was wrong. What the government has offered is what it would claim established the widest market choice – coexistence for producers, and informed choice for consumers. The GM crisis was politically accelerated by consumer boycotts and political use made of the *GM Nation?* debate was entirely in line with the market model of scientific governance.

(e) the independent evaluation of the GM debate by the *Understanding Risk* team

This was published on 19 February 2004 as *A Deliberative Future?*⁴³ The summary is given at annex D. The team employed three frames in evaluating the exercise – the aims and objectives of the Steering Board, their own, derived from the research literature on participation, and that of the debate participants.

The evaluation is a significant and detailed exercise which deserves to be studied closely in its own right. It was published accompanied by an independent survey for the UEA Centre for Environmental Risk by MORI of attitudes to GM (replicating many items from a similar survey in 1992, before the debate), and of wider public attitudes to the debate itself⁴⁴.

At the heart of a complex analysis lies a different and - the evaluation team would claim - more nuanced **interpretation of the series of datasets yielded by the open GM Nation questionnaires, those used in the Narrow but Deep sessions, and the two MORI surveys.** They criticize the *GM Nation?* Report itself as showing under-resourced and hurried analysis of the meaning of its own findings. The key section of this analysis is on page 84-6 of the evaluation which is worth quoting in full (unfortunately the figures could not be reproduced):

‘The composite perceived risk and benefit measures can be used to explore overall attitudes towards GM food and crops. In many cases, beliefs about risks and benefits will be consistent with one another. That is, someone who believes that GM crops and food have high benefits and low risks holds a *positive* attitude towards the technology, while one who sees few benefits and high risks predominantly holds *negative* beliefs. However, some might believe that GM crops pose unknown long-term environmental risks while simultaneously taking the view that there may be potential benefits to farmers, the economy, or consumers from such crops. Such an individual can be said to be *ambivalent*.

Figure 4.1 illustrates the frequency distribution for our nationally representative survey sample of individual responses in terms of their joint risk and benefits scores. In line with previous research (Gaskell et al., 1997; Marris et al., 2001), our present results suggest that, rather than simply for or against, many individuals hold essentially *ambivalent* attitudes towards the risks and benefits of GM food and crops. Taking the scale mid-point as the cut-off for each axis it is immediately apparent that there are very few indifferent individuals, and only a small number who are positive. The main distribution is essentially bimodal, with a major proportion (about 50%) clustering in the top right hand ambivalence quadrant. A further 30% hold a clear negative patterns of attitudes.

By contrast Figure 4.2 illustrates an equivalent reanalysis of the open *GM Nation?* questionnaires 6, where similar risk and benefits measures can be constructed. In contrast to the findings of our own survey, Figure 4.2 shows that the responses almost completely cluster in the lower right-hand quadrant. That is, respondents to the open *GM Nation?* questionnaires were overwhelmingly *negative* towards GM with very little endorsement of potential benefits.

While accepting that our survey data should be seen as complementary evidence, rather than in any sense ‘better’ than that derived from *GM Nation?* itself, the above analysis generates some interesting conclusions. First, that concern about the risks of GM is largely *shared* across all groups of respondents in Table 4.3. The addition of our 2003 survey findings therefore corroborates one of the overall conclusion of the Debate Steering Board. However, what clearly marks out the open *GM Nation?* questionnaire responses from all others is the lack of endorsement of any potential benefits. Given the underlying distribution of attitudes revealed in our own survey this latter finding is less surprising, if indeed engaged individuals with existing strong views disproportionately self-selected to take part in the open events. Of course, engaged people with clear views on an issue also have a legitimate contribution to make in any significant public policy debate, and as we note at points above *GM Nation?* was not designed merely as an opinion poll or psychometric survey.

Overall, our survey findings suggest that current UK ‘public opinion’ is not a unitary whole, but fragmented with considerable ambivalence co-existing alongside outright opposition. Ambivalence means that many people are prepared to endorse potential future benefits of GM food and crops, simultaneously alongside very widespread concerns about the technology.⁴⁵

They go on to conclude:

‘...taking the evidence as a whole it appears that of all groups taking part in *GM Nation?* the ‘closed’ Foundation Discussion workshop and Narrow but Deep meetings are the most representative samples. Conversely the ‘open’ participants are least representative. While we fully accept that *GM Nation?* was not an exercise in opinion polling, and that the open events were not intended to attract a cross-section of opinion, important lessons for the balance of ‘open’ and ‘closed’ activities, and the analysis and reporting of such activities in any such future deliberative events appear to lie here.’

En route to this conclusion they speculate:

‘...one can ask whether the quantitative findings from the ‘open’ activities are entirely without merit, as some imply (Campbell and Townsend, 2003)⁴⁶. We believe not, as engaged people with clear views on an issue do have a part to play in any important public debate.’

Many other aspects of the evaluation report deserve attention, but four will be highlighted here. The first bears on the **relationship between the three strands of the GM dialogue** – the debate itself, and the science and economic reviews. The evaluation report concludes that

‘despite the upbeat account to be found in the Steering Board’s final report we can find little evidence of effective cross-fertilisation between the three ‘strands’.’

The economics review was seen to have drawn on framing information from the Foundation Discussion Workshops, (which generally the evaluators see as one of the most successful parts of the whole process), but the science review simply used questions from the workshops in order to structure its coverage of scientific material – which they characterise as a ‘deficit’ view of framing. Given that the evaluators saw the preparation of the stimulus materials as one of the less successful stages of the GM debate’s preparation, they would have been happy with more input from the science panel in that exercise, ‘in particular on the quality and uncertainty of scientific knowledge.’⁴⁷

Second, the evaluators comment unfavourably comment on the **government’s role in the debate** – not only that it was ultimately responsible for the under-resourced and hurried nature of the debate, but that the timing of the debate in relation to the FSEs and the ambiguity in government statements about the purpose of the debate were ‘examples of a possible insensitivity to public perceptions.’

Third, they use their post-debate survey to assess the **extent to which the debate was visible to the UK public as a whole**. 71% of the general public had never heard of the *GM Nation?* Debate, and a further 13% had heard about the debate but knew nothing about it. The evaluation team point out that given the relative lack of publicity and total lack of television coverage, this result may be comparable with that of knowledge of other public issues in science and technology.

Lastly, one of the evaluation report's most interesting sections, both directly and because of the extent to which it indicates the authors' own framing, is speculation on **the appropriateness of the deliberative form chosen for *GM Nation?*** and **the future of deliberation** at the end of their report. On the form of deliberation used, the team conclude:

'The scientific and political controversy over the commercial application of GM crop technology, set in a contentious world trade and European Union policy framework, made this decision a particularly difficult test case for the implementation of a public debate...In this case, values are so contested, core beliefs so fundamentally established for a sizeable minority, and the political climate so turbulent, that this topic was never going to be easy theme for innovative deliberation treatment....

The wider and deeper the scope for public involvement, the more problematic is any framing mechanism for successful deliberation. No matter how sincere and responsive the deliberative journey, the depth of value conflict, and the intensity of advocacy and polarity of view make for troublesome turbulence...

...Arguably the GM theme might have been appropriately handled by switching from the framing workshops to citizens' juries (with training for participants and much preparation) and then to an extended set of deeper dialogues amongst citizens and engaged special interests. This may have resulted in maximum attention being devolved to scientific safeguards, regulating openness and precautionary choice, and regular, open, monitoring of field evidence.'⁴⁸

Their approach to the selection of deliberative approaches is summarized in *figure 10*. They conclude:

'...topics that are *deeply contentious but relatively familiar* (eg radioactive waste disposal) might gain from an approach called 'deliberative mapping' (Stirling and Meyer, 1999).⁴⁹ This method involves participation in a sequence of events by suitably selected groups. The group-based process...[is]...a variant on multi-criteria methods. The objective is to reach for solutions based on agreed visions, concerns, trust-building, information exchange and continuous receptive presence of key decision-makers and regulators. The danger here is to select only those with sufficient experience and debating capacities to respond to such opportunities and dialogue. Thus such exercises may involve the need for training and other forms of capacity building.

Topics that are *novel and still "raw" in evidence* (e.g. nanotechnology) may require a process more like a deliberative 'jury', where participants can question a range of experts, enabling them to become more familiar with the issue and better informed. This process might take quite a long time, but would provide mutual learning for all concerned.

Topics that involve *societal adjustment* (e.g. viral outbreaks with possible catastrophic consequences for public health) may require deliberative regional forums to be convened throughout the UK. These meetings would hear evidence that would allow groups of community epidemiologists to incorporate into their work the views of health care professionals and local communities. This could facilitate the creation of a network of familiarity and confidence amongst responsible professionals and active lay people from local communities.

Figure 10.

Possible pathways of innovative deliberative procedures

Source: *A Deliberative Future?*⁵⁰

<i>Topic quality</i>	<i>Deliberative format</i>
Deeply contentious Politically turbulent (eg GM crops)	framing workshop citizens' juries politician-linked deep dialogue
Deeply contentious technically sophisticated (eg radioactive waste)	deliberative mapping regional forums politician-linked dialogue
Unknown and unseen (eg nanotechnology)	deliberative mapping citizens' juries connected public debate
Threat (eg viral outbreak)	deliberative regional fora civic-regulatory dialogue responsive public interest procedures

Postscript March 2004 and concluding remarks

Stakeholder commitment to the deliberative process

1. Stakeholders stayed on board throughout the GM Debate process but some broke ranks on or soon after the publication of the GM Nation Report. Unlike exercises in the Netherlands and New Zealand it was not the NGOs. Ironically, their diversityⁱ may have been one characteristic that kept the NGOs in the GM debate: during the exercise, despite strong reservations from time to time, they lacked common ground on which to leave and given that they were represented by a widely based campaigning group, leaving away singly may not have seemed like an effective option. By the end of the debate the conclusions suited them. By the same token the conclusions did not suit the Industry representative on the Steering Board, Paul Rylott. Rylott similarly represented an organisation, the Agricultural Biotechnology Council (ABC), and at an ABC Press Conference 15 minutes before main Press Conference to present the results of *GM Nation?* was to be held, claimed that 32,500 of the 37,000 feedback forms received during the debate had been 'orchestrated' by campaigning groups and that consequentially the results were compromised.
2. Subsequently a scientist member, Professor Phil Dale, was one of the signatories of a letter sent to the Prime Minister complaining that the GM debate was rigged against scientific interests, effectively having been taken over by anti-GM organisations. The significance of the overall outcomes for each stakeholder's interests seem to have proved more significant than any identification with the process as such.
3. Their own earlier reservations about methodology have not inhibited NGOs being positive about the results. Those who have sought to draw strong policy implications have continued to focus on the symbolic target of the non-commercialisation of GM.

Funding, timing and method

4. Methodology more generally continues to be a matter of concern. The Innogen conference itself somewhat optimistically concludes 'the methods used in each strand of the debate were important factors in overcoming the public distrust of key decision-makers in GM, particularly government and multinational businesses', but there is little evidence that this has been achieved or that the paradox between public self-selection in deliberative engagement and the need for results to be more broadly socially representative has been carried further towards resolution in this study.
5. It is clear that on this issue the GM Nation debate has not commanded approval even from those who might have been expected to be sympathetic to its arguments. In an article entitled *Why GM-free UK is popular but unfeasible* Ian Sample, the Guardian newspaper's science correspondent concludes

'The government also attempted to involve the public in its decision-making, but last summer's launch of the national GM debate in Birmingham met with a whimper. The debate, which was supposed to draw out the opinions of ordinary members of the public, was dominated by those already fervently opposed to or supportive of GM.'⁵¹
6. The line taken by the independent evaluation also questioned the representativeness of the findings of public opinion which it referenced to its own survey findings which showed more public support for GM. It attributed difficulties in *GM Nation?* to a shortage of time and budget. It also doubted whether the meetings during the debate showed enough true deliberation, as distinct from elaboration of 'engaged positions', and implied the selective recruitment of those opposed to GM into the debate

ⁱ See figure 12.

prejudiced the method. Behind this criticism from the *Evaluating Risk* team lies the implication that the opinions of those who come into debates from a committed and fixed position somehow have less democratic legitimacy, although that is not the position they claim to take. Their own discourse may be framed by educational or deliberative model assumptions.

Public discourse, and that of science and economics

7. The independent evaluation noted that there had been some influence of the debate's framing on that of the economics strand, and somewhat less on the science strand. However, the converse did not apply, with no reciprocal influence of the science and economics strand work on the way the issues were defined, or the evidence presented, for the public debate. Limiting the interaction between the strands, and in particular ensuring that all the evidence, including the results of the FSEs, was not weighed in the public debate, of course served to limit the scope and force of the public debate and thus reserve discretion for the government.

The debate's impact on the framing of issues and decisions

8. The debate – and more particularly the results of the FSEs – does not seem to have yet moved the ground of what is to be discussed *substantively* towards broader issues of agricultural practice or land use management, or the wider social objectives for the countryside and for food production that these might serve. GM seems to continue to be the main (at least symbolic) issue amongst the interested parties (although see point 2 of the results of the Innogen conference in *figure 13* below¹). This is interesting since in some quarters the anticipated outcome of the debate is being linked to wider issues of governance style in the Blair administration, so broader *procedural* implications are being drawn.
9. During the GM Debate? the government committed to high levels of transparency in justifying its ultimate decisions, and in particular for stating how it took the findings of the debate itself into account. The government's eventual decision in favour of conditional and selective approval of commercialisation can be said to have met these requirements procedurally, but not substantively, given the weight of public opposition shown both in the debate itself and in the evaluation teams survey's against GM. The government was itself strongly constrained in these choices by the restricted scope for action under EU regulation, but it could have made much more of the flawed comparison with atrazine in the GM maize trial. The bargaining of the AEBC and the Steering Board undoubtedly led directly to the transparency of the government decision but section 2 of this report documents the barrages of influences in the same direction in the preceding two years.

The debate and the future approach to scientific governance in the UK

9. In the light of 1. and 2. above, it seems clear that the GM Debate Steering Board acted only as the most fragile short-term coalition of interests. Given the speed with which this coalition fragmented along interest-lines once the results of the debate were published, it is clear that there seems to be little prospect of the AEBC

¹ Innogen (an ESRC centre at Edinburgh on social aspects of genomics) and AEBC held a joint conference on 13 November 2003 in Edinburgh to:

- (i) identify the main messages emerging from the GM dialogue;
- (ii) identify the key considerations for future decision-making on GM crops based on balancing stakeholders' interests and values;
- (iii) consider what lessons can be learned for future decision-making on the possible introduction of new technologies.

Its conclusions are summarised in figure 13.

developing its role as a locus for quasi-corporatist deals to be struck, as speculated on in section 7 (b) of this paper and summarised in figure 10. That said, individual AEBC studies may have more legitimacy because of the wide range of stakeholders involved in the organisation (provided this survives the fallout of *GM Nation?*) and in particular one would expect the AEBC work on the scope for coexistence of GM and non-GM crops to be influential on the government's decisions.

10. Likewise, the GM debate does not seem likely to lead to similar deliberative exercises in other areas of UK S&T governance. It is interesting to see how the GM crops deliberative experiment relates to the governance of other current biomedical issues of UK science policy. One example would be the AEBC's sister body, the Human Genetics Commission, which advises over similarly publicly controversial issues as the AEBC and thus might seem to present an analogous case for deliberative politics. However, its key recent issue, the relatively permissive regulatory framework for research on the therapeutic uses of human nuclear cell transfer ('therapeutic cloning') was resolved in 2000 by a Parliamentary debate - widely praised for being 'informed' by the scientists which was not informed by any process of wider public engagement. Commentators have suggested that public debate on this topic is unlikely given its even greater significance to the UK economy⁵². A second is the decision by Cambridge University in January 2004 to abandon its plans for an animal experiment centre because of the cost of security, to the sound of much hand-wringing from government. The importance of the security issue and its consequential anticipated costs had been racked up by demonstrations against both the new centre and an existing one, Huntingdon Life Sciences.
11. However, it is clear from his evidence to the House of Commons that the chair of the AEBC and of the Steering Board, Professor Malcolm Grant, still believes 'People are seeking some surrogate form of decision-making which is independent from government which has expertise in which people feel they can repose trust and confidence...' The independent evaluation team have done useful work in opening up the debate as to modes of deliberation, although their canvas may be viewed as limited.
12. In terms of issues of science and technology serving to broaden politics, there are two interesting uses of the report's conclusions. First, Professor Grant, in evidence to the DEFRA Select Committee, sees the report as a symbolic test-case for deliberative democracy which the government cannot afford to ignore:

If the Government were to ignore the outcome they could not hope to engage public opinion in a comparable exercise on any other front in future. This has been, I think, a highly symbolic exercise in public trust and government. The public have put their faith in participating in this exercise on the basis of a pledge by ministers that they would be listened to. If that pledge proves worthless how will you persuade your constituents in the future to participate in other exercises? I think there is a fundamental issue of public trust involved in this...

In contradiction of this hope, *The Independent on Sunday*, a British broadsheet newspaper, ran a story on 26 October 2003 saying that despite the results of the debate and crop trials the government was to decide in favour of commercialisation of GM on the basis that the Prime Minister believed that this was best for the country. Pete Riley, the Friends of the Earth GM campaigner, linked this at once to the apparent basis of the decision - on the basis of conviction and against the evidence and the national opinion - to go to war in Iraq. It remains to be seen to what extent the GM maize decision has undermined trust in deliberative processes from public and NGOs.

In terms of scientific governance, the UK seems likely to continue to live in interesting times.

Figure 11

Innogen Conference (Edinburgh, 13 November 2003):

***Precaution and Progress
Lessons from the UK GM Crops Dialogue***

Common themes

- 1) There is a big gap between the regulatory framework for GM, both present and prospective, and the concerns expressed by many members of the public. In particular, there is no scope in the regulatory framework for a general ban on GM on ethical grounds or to meet anxieties over unknown risks.
- 2) Choices over GM need to be considered as part of wider choices over the future of food and agriculture, both in this country and the EU and for developing countries. One unanticipated effect of the GM debate is that it has highlighted the wider question of what we want from UK agriculture in the future. Where should the balance lie between productivity and biodiversity?
- 3) The distinction between GM and non-GM is less important than distinctions between crop varieties and general agricultural practices. GM therefore needs to be considered on a case-by-case basis, judging its effects for good or ill against broad objectives for food, agriculture and the environment, and comparing them with other possible forms of agriculture or food technology. In particular, reform of the CAP had opened up new choices in agriculture, in which GM could play a part.
- 4) Many strands of the debate shared an agenda of uncertainty over the long-term effects of GM although they reached different conclusions over the degree of risk from present GM products to health and the environment.
- 5) All the strands of the debate had benefited from being independent of government, from transparency and openness in their methods, and from taking a comprehensive approach to GM issues, which recognized the range of public concerns. Many of these went wider than the purely scientific or technical aspects of GM, and raised general political and social issues. The methods used in each strand of the debate were important factors in overcoming the public distrust of key decision-makers in GM, particularly government and multinational businesses.
- 6) Debate, research and policy decisions on GM in the UK could have important consequences on the outside world, especially developing countries, which participants should take into account.

Figure 12 – Selected NGO responses to the GM Debate and the FSEs (after the GM Nation? report but before the government commercialisation decision).

NGO	Stated role/mission	General ex-ante position on value and methodology of GM debate & FSEs	Specific ex-post conclusions and expectations
Greenpeace UK	‘Using non-violent, creative confrontation to expose global environmental problems and their causes’	Sees GM debate as severely flawed and inadequately funded. Pattern of debates ‘pointless’ without being backed by citizens juries and consensus conferences (social scientists’ report to AEBC cited). Government not committed to using results in policy. FSE’s ‘compare one highly damaging form of agriculture with one that’s worse’ - comparison should have been between GM and organic. Member of ‘critical consortium’ (see FOE, below)	‘Results of GM Nation show essential rejection of GM’. Economic review found ‘no compelling economic benefits’, and science review revealed ‘significant gaps in knowledge about GM crops and their impact on the environment and human health’. Greenpeace rhetoric shows increasing impatience with government: ‘What part of ‘no to GM’ don’t you understand, Mr Blair?’
Green Alliance	‘To put the environment at the heart of decision-making’. Reflexive, research- and analysis-based approach, recognising complexity of issues – ‘reversing trends is a task of unprecedented social and political complexity’. Based on risk management: ‘whether GM, mobile communications or the emerging field of Nanotechnology, you can’t ignore the potential for social, economic and environmental benefits of innovation’ - issues are the associated risks. Works through linking academics, government and business. Parliamentarians feature. A link	GA produces broad set of analytic or prescriptive reports – eg ‘Ten pinches of salt: a reply to Björn Lomborg’; ‘Precaution in practice: how the precautionary principle is used by government, business and NGOs’; ‘Negotiated agreements – best practice checklist’ - none focused on GM or the debate as such. Report on transgenic crops published early in debate – 1998. Has a particular view of changes in governance needed. One Green Alliance report takes issue with the ‘stakeholder dialogue’ model and affirms a role for government: ‘[it] works on the assumption that if you put all the parties concerned with a	Held a seminar, with the participation of Margaret Beckett (Secretary of State, DEFRA), Lord May (President Royal Society) and Malcolm Grant (AEBC) in June 2003 entitled ‘Precaution in practice: The GM dialogue process’ No apparent action subsequent to the publication of the GM debate results

	between more radical NGOs and public policy-making – ‘speaking to the Treasury in their own language’.	particular issue in a room for long enough, with a team of facilitators and a lifetime’s supply of Post-Its, a consensus will emerge. This ignores the entrenched interests and radically different worldviews that participants will bring to the table...the task of government is to arbitrate between different, and conflicting, interests. There will always be winners and losers. ⁵³	
Waste Watch	Environmental organisation promoting sustainable resource management in the UK, organised around resource use reduction, reuse and recycling.	Works partly through a trading company providing consultancy to business. Only reference to GM on their website is to General Motors.	None.
Five Year Freeze	Campaign bridging individuals and ‘120 organisations, 500 councils and over 1,000 shops and food companies’ ‘sharing public concerns about genetic engineering in food and farming’.	Representative on the GM debate Steering Board ; reportedly close to resignation at several points although this is not reflected in public documentation – possible part of balancing act in influencing the process, whilst keeping constituents on board	The ‘Freeze Update’ newsletter dated July/August 2003, was issued before the results of the debate were out. Despite reservations about organisation, funding ‘and widespread cynicism’ (reported in a participant’s account of the Harrogate debate), the scale of participation led them to describe it as a ‘great success’ and as jumping-off point for a wider public debate.
Friends of the Earth (FOE) UK	‘Largest international network of environmental groups in the world, represented in 68 countries’. ‘ In England, Wales and Northern Ireland a leading pressure group; also working through 250 local groups; largely funded by supporters.’ Separate Trust funds research & education.	Part of a consortium of eight NGO critics of the GM debate methodology in June 2003: - no clarity about use of results in policy; - few local meetings; - background materials basic and untested; - little guidance on conduct of local meetings and recording of their results. FOE own line strongest on gvt. accountability to the public.	Theme of accountability carried through in relation to results of <i>GM Nation?</i> debate: ‘FOE ...challenges the Government to listen to the findings and rule out Commercialization in the UK.’ (24/09/03) and on the results of the FSEs: ‘Blair who do you represent, the British people or Bush and the Multi-Nationals?’ (16/10/03)

Figure 13

Source: BBC News, 31 October 2003

Scientists attack Blair over GM

More than a hundred scientists have written to Tony Blair, complaining about the handling of the public debate on genetically modified crops.

The group criticised ministers for not correcting "misleading" reports about GM technology in the media.

They say they have been "demoralised" by the hostility to their work, and said public meetings had been hijacked.

Downing Street said it was awaiting a report from its scientific advisers on GM before it could comment on studies.

False claims

The scientists said their letter is an indication of the frustration felt by many in the research community.

The signatories said they had hoped that participating in the GM debate would help inform the public.

But they feel "undermined" by the government's failure to correct false claims, the letter added.

They felt the process of consultation had been hijacked by anti-GM groups, with scientists, in the words of one of the signatories, "hung out to dry".

If the same method of public consultation continues to be used other technologies could lose out to "prejudice and procrastination", they added.

Downing Street added that it recognised the vital contribution of the biotechnology industry, but said that its approach to GM was a precautionary one.

'Rallying groups'

A three-year trial of GM crops recently concluded that two out of three of the varieties tested were worse for wildlife than ordinary crops.

Professor Derek Burke, one of those involved in the letter to Mr Blair, said scientists had not had the chance to put their case properly.

He said: "The fault lies with the politicians who have not set up a level playing field for the debate."

Professor Burke told BBC Radio 4's Today programme: "They set up meetings which were rallying groups for the anti-GM people, and they were hijacked.

"We want arguments based on evidence and what we are getting is arguments based on opinion.

"We are saying to Tony Blair loud and clear that the science community is disaffected."

'Case by case'

A Department for Environment Food and Rural Affairs spokesman said the government had not commented on the results of the farm-scale evaluation because they were being considered by the expert committee Acre (Advisory Committee on Releases to the Environment).

"Acre's advice will inform the decision the government has to make on whether GM crops should be grown commercially in the UK," the spokesman said.

"We recognise that the bio-technology industry is a vital part of the country's economy. However our approach to GM is based on the precautionary principle.

"Each GM crop application is considered on a case by case basis."

Story from BBC NEWS:

<http://news.bbc.co.uk/go/pr/fr/-/1/hi/sci/tech/3229685.stm>

Published: 2003/10/31 11:10:29 GMT

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Annex A - Members of the AEBC

(Source – AEBC)

CHAIR

Professor Malcolm Grant CBE
Pro-Vice-Chancellor at the University of Cambridge

DEPUTY CHAIR

Ms Julie Hill MBE
Programme Adviser and former Director of Green Alliance

MEMBERS

Ms Anna Bradley
Consumer Affairs Director for the Financial Services Authority

Ms Helen Browning OBE
Tenant Farmer, Eastbrook Farm; Founder and Director of Eastbrook Farm Organic Meats Ltd

Dr David Carmichael
Arable farmer with an interest in non food crops

Professor Philip Dale
Leader of the Genetic Modification and Biosafety Research Group at the John Innes Centre, Norwich

Dr Ed Dart CBE
Chairman of Plant Bioscience Ltd

Dr Matthew Freeman
Senior Researcher at the Medical Research Council Laboratory of Molecular Biology

Mr John Gilliland
President of the Ulster Farmers Union and arable farmer with a particular interest in sustainable production systems and the pioneering of non food crops.

Professor Robin Grove-White
Professor of Environment & Society, and Director of the Centre for the Study of Environmental Change, Lancaster University

Dr Rosemary Hails MBE
Ecologist, and Principal Scientific Officer, Centre for Ecology and Hydrology Oxford and lecturer at St Annes College Oxford

Ms Judith Hann
A Freelance broadcaster and writer who presented Tomorrow's World for 20 years

Ms ChiChi Iweajunwa
Member of executive evaluation group for NHS Direct, and member of Partners Council for NICE (National Institute for Clinical Excellence)

Dr Derek Langslow CBE
Scientist specialising in nature conservation/biodiversity and former Chief Executive of English Nature

Professor Jeff Maxwell OBE
Former Director, Macaulay Land Use Research Institute

Dr Sue Mayer
Executive Director of Genewatch UK

Ms Justine Thornton
Barrister specialising in environmental law at Allen and Overy Solicitors

Dr Roger Turner
Chief Executive Officer, British Society of Plant Breeders

Annex B – Members of the Steering Board of the AEBC GM debate and their interests (illustrative of the degree of transparency over this issue).

(source – AEBC website)

Members have declared personal and non-personal interests, that are current or within the last 5 years as follows:

	Personal Interests (i.e. those involving payment to the member personally)		Non-Personal Interests	
MEMBER	Name of Organisation	Nature of Interest	Name of Organisation	Nature of Interest
Professor Malcolm Grant (Chair)	Cambridge University	Pro-Vice-Chancellor and Professor of Land Economy	UK Environment Law Association	Member
	Local Government Commission	Chairman	RICS	Hon Member (and elected member of Governing Council)
	Clare College, Cambridge	Professorial Fellow	Environmental Law Foundation	Advisory board member
	Encyclopaedia of Planning Law	Editor	Centre for Property Law University of Reading	Member Board of Advisors
	Encyclopaedia of Environmental Law	Consulting Editor	Ditchley Foundation London Programme Committee	Member and Governor
	Barrister, 4-5 Grays Inn Square, London		Academy of Learned Societies for the Social Sciences	Academician
	Independent Panel on the Remuneration of Councillors in London, Association of London Government	Chair		
	Independent Panel on Members' Allowances Manchester City Council	Chair		

MEMBER	Name of Organisation	Nature of Interest	Name of Organisation	Nature of Interest
Ms Anna Bradley	National Consumer Council	Director	Various retailers, consumer product and service companies, Government Departments, Regulators	Variety of interests from general support to sponsorship of events or project funding
			Advisory Group for Camelot's Social and Ethical Audit projects	Member
			Advisory Panel for DEFRA's Horizon Scanning Procurement	Chairman
			ESRC commissioning panel for 'Cultures of consumption' research programme	Member
Dr David Carmichael	Battle and Pears Ltd	Managing Director	British Beet Research Organisation	Board Member
	Government Industry Forum on non-food uses of crops	Member	Administrative Council of the International Institute for Beet Research	Member
	Farm	Arable Farmer	NFU Biotechnology Working Group	Member
			NFU Sugar Beet Committee	Member
			The Supply Chain Initiative for Modified Arable Crops	NFU representative
			St Barnabas Hospice	Trustee
			Connexions (Lincs)	Non-executive Director
			RSPB	Member
			US Department of State	Attendance on Voluntary Visitors Programme

MEMBER	Name of Organisation	Nature of Interest	Name of Organisation	Nature of Interest
Professor Philip Dale	John Innes Centre	Leader of Genetic Modification and Biosafety Research Group	University of East Anglia	Honorary Professor of Biological Sciences
	Advisory Committee on Novel Foods and Processes	Deputy Chairman	Society for Experimental Biology	Member
	Advisory Committee on Releases to the Environment	Former Member	Institute of Biology	Fellow
	EU	Occasional adviser	Institute of Biology Agricultural Sciences Committee	Member
	DEFRA (DETR)	Consultant Adviser	Genetical Society	Member
	UNIDO	Occasional adviser	International Association for Plant Tissue Culture and Biotechnology	Member
	UNEP	Occasional adviser	European Association of Plant Breeders	Member
	OECD	Occasional adviser	BBSRC/NERC Steering Committee for the Initiative on Gene flow in plants and microorganisms	Member
			Defra Horizon-scanning research programme advisory panel	Member
			Steering Committee for a pan-European research programme supported by the European Science Foundation entitled "Assessment of the Impacts of Genetically Modified Plants"	Member
			BBSRC DEFRA EU	Funding for research

			Property Purchaser	Advisor on GM Biosafety
			US Department of State	Attendance on Voluntary Visitors Programme
			Rockefeller maize biotechnology research programme	Advisory Committee
Professor Robin Grove-White	Lancaster University	Professor of Environment and Society	Greenpeace	Board Chair
	Lancaster University	Director of the Centre for the Study of Environmental Change	Green Alliance	Executive Committee Member
Professor Jeff Maxwell OBE	Macaulay Land Use Research Institute	Director (Retired October 2000)	Macaulay Development Trust	Trustee (Resigned October 2000)
	Macaulay Research and Consultancy Services Ltd	Chief Executive (Retired October 2000)	National Trust for Scotland	Council Member serving on three committees
	Macaulay Land Use Research Institute	Consultant on Agriculture and the Environment	Scottish Executive - Environment and Rural Affairs Department Agriculture and Environment Working Group	Chairman
Ms Judith Hann	Farm	Co-owner	Waste Watch	Vice President
	The Media Advantage	Runs her own media training company		
	BBC	Presenter of BBC1 "Tomorrow's World" for 20 years - until mid 90s		
		Freelance writer - author of 7 books		
Ms Clare Devereux			Five Year Freeze	Director

MEMBER	Name of Organisation	Nature of Interest	Name of Organisation	Nature of Interest
Mr Gary Kass	Parliamentary Office of Science and Technology	Adviser on public engagement in science and technology	Leverhulme Programme on Understanding Risk	Member of project advisory group
			Copus grants panel	Member
			Royal Society of Arts	Fellow and member of advisory group for programme on science, citizens and the market
			SPRU, University of Sussex & ESRU, University College London	Member of project advisory committee for deliberative mapping project
			University of Lancaster/Natural History Museum	Member of advisory group for research project 'amateurs as experts'
Mr Lucian Hudson	Department for the Environment, Food and Rural Affairs (DEFRA)	Director of Communications and sits on the Steering Board for reasons of proper accountability for expenditure of public funds		
Doctor Paul Rylott	Bayer CropScience	Head of BioScience UK	Agricultural Biotechnology Council	Acting Chairman
	Dalgety	Pension Fund Member	Supply Chain Initiative on Modified Agricultural Crops	Industry representative
	Syngen International plc	Shareholder	National Institute of Agricultural Botany	Former Recommended List Panel Member
			British Society of Plant Breeders	Bayer representative

Annex C – Chronology of the GM debate, *GM Nation?*

(sources – AEBC, GeneWatch UK and BBC News websites, plus a range of other sources)

10 March 2004: The government announces conditional approval for the commercial growing of Chardon LL variety of GM maize, and sets out how it took the results of the GM Nation? debate into account in reaching its decisions.

19 February 2004: The Guardian newspaper runs a story on the basis of 'leaked documents' from government saying that a decision has been made to approve commercial growing of a variety of GM maize already approved by the EU.

19 February 2004: The evaluators of *GM Nation?* from the universities of East Anglia and Cardiff, publish their report *A Deliberative Future?*

13 January 2004: The Advisory Committee on Releases to the Environment (ACRE) follows the results of the FSEs in advising that given the same regimes of use (including herbicides) GM maize is environmentally acceptable but GM beet and spring-sown oilseed rape are not.

31 October 2003: More than a hundred scientists write to the Prime Minister, complaining that the GM debate was hijacked by those opposed to GM, who substituted opinions for evidence. Ministers should have ensured a 'level playing field in the debate, and should have corrected misleading reports about GM in the media. DEFRA said that it was awaiting a response from ACRE (Advisory Committee on Releases to the Environment) before it could comment on the studies or make a decision on GM commercialisation. All such decisions, it said, are made on a case by case basis. The signatories include Professor Phil Dale of The John Innes Institute, a member of AEBC and of the Steering Board for the GM Debate.

23 October 2003: Professor Malcolm Grant gives evidence to the House of Commons Select Committee on DEFRA on *GM Nation?*

16 October 2003: Results of the Farm Scale Evaluations (FSEs) of GM Crops published by the Department for the Environment, Food and Rural Affairs (DEFRA). It concludes that GM maize is environmentally acceptable but GM beet and spring-sown oilseed rape are not.

12 October 2003: Ex-Environment Minister Michael Meacher, who commissioned the FSEs when in government, says that the results for GM maize are invalid because of the use of atrazine (subsequently banned by the EU) as the control herbicide, and that the experiment should be re-run.

24 September 2003: The Steering Board publishes results of the GM debate *GM Nation?* Fifteen minutes before it does so, Paul Rylott, the industry representative on the Steering Board, dissociates himself from the exercise, saying that it had been captured by groups opposed to GM.

21 July 2003: Science review published.

11 July 2003: Economics ('costs and benefits') of GM review published by the Prime Minister's Strategy Unit.

22 June 2003: Ex-Environment Minister Michael Meacher, in article in *Independent on Sunday* newspaper, says that the UK debate on GM has been deliberately stifled and negative research findings on food safety downplayed.

13 June 2003: Environment Minister Michael Meacher sacked by Blair in government reshuffle.

June 2003: Regional Conferences, the first tier of the GM debate proper, take place in Birmingham on 3/6, Taunton 7/6, Glasgow 11/6, Swansea 5/6, Belfast 9/6, Harrogate 13/6

27 May 2003: The Royal Society's evidence to the GM Science Review is also reported to contain a request that the government put in place arrangements for the long-term monitoring of the environmental effects of the commercialisation of GM crops, saying that it is now time to take action on this given that implementation will take several months. It also asks that the Review have the opportunity to take account of the results of the Farm Scale trials. The BBC

website, in reporting this, notes that recent polls suggest that only 14% of the UK public approve of GM food, with many fearing long-term harm to human health and the environment.

22 May 2003: President George Bush accuses European nations of impeding US efforts to reduce hunger in Africa by opposing the use of GM crops.

19 May 2003: The Environment Minister Michael Meacher says that public opposition alone would not influence the government's decision over GM crops. *'We have to act in accordance with the law...the law at the present moment is set down in an EU directive and the sole criteria for taking action with regard to GM crops is: are they a harm or a risk to the environment?'*

18 May 2003: Police say that protestors in Fife, Scotland, have cut down a field of GM crops.

13 May 2003: US announces WTO action against the EU for blocking the import of GM crops.

8 May 2003: The Royal Society makes its submission to the GM science review saying that although 'unpredicted harmful changes in the nutritional status of crops' could result from GM crops the same is true of conventional crop breeding. At the same time Professor Patrick Bateson, the Royal Society's Vice-President and Biological Secretary attacked Greenpeace, saying that *'..important questions need to be answered about the potential impact, good or bad, of GM crops upon the environment...but these need to be answered without a smokescreen of unfounded claims about their threat to human health.'*

24 April 2003: Dorset County Council decided by 21 votes to 16 against making the county a GM crop-free zone. Devon and Cornwall had already passed legislation making their counties GM free.

26 March 2003: Margaret Beckett responds to criticism about the Government's position regarding EU approvals - *"In light of recent misreporting in the media, this statement is intended to clarify the Government's role in EU decision-making on applications for marketing consents for GM crops, including during the period of the public debate on GM issues... No decisions have yet been taken in the UK on the commercial cultivation of genetically modified (GM) crops, including those being grown in the crop trials. Nor are final decisions, whether about cultivation or import of GM crops, likely to be taken at EU level until the end of the year, by which time we will have the report of the public debate on GM issues and the first set of results from our crop trials. The public debate will help to inform the Government's policy-making on GM, including its policy on the cultivation of GM crops. "*

18 March 2003: Malcolm Grant, chair of the public debate Steering Board, writes to Margaret Beckett, Secretary of State for DEFRA, to raise concerns about the UK Government continuing with EU assessments for the commercialisation of GM crops and foods. *"The research commissioned by the Steering Board has shown that people need to know that Government will take the findings from the debate seriously if they are to judge it worthwhile to take part.....They [the public] may think that if the approvals process seems to be carrying on regardless, it undermines the credibility of calling for a debate."*

5 March 2003: Malcolm Grant, chair of the public debate Steering Board writes to Sir John Krebs, chair of the Food Standards Agency, conveying concerns that *'the FSA were not perceived by some stakeholders to have a sufficiently independent stance on GM issues to conduct a balanced debate. Steering Board members asked whether the FSA work was intended to be complementary to or quite separate from parallel to the wider debate; wanted to understand better the reasons why the FSA had decided to embark on this work; who had framed the issues for the citizens jury; and how would the outputs from the FSA activities be fed into Government and a wider arena?'*

3 March 2003: GM public debate 'meaningless' unless Government halts GM commercialisation decisions - says GeneWatch UK in its latest press release. *"It has been revealed that the UK Government intends to proceed with its assessment of 18 GM crop applications awaiting a decision on commercialisation in Europe. DEFRA has admitted that some of these may get the go ahead for use in food, feed or for growing before the GM public debate is scheduled to end in September."*

27 February 2003: The Royal Society, which has been asked to publish the results of the farm-scale trials in one of its journals, wrote to the public debate Steering Board to point out that the publication date for the results could not be known in advance. They added that it was unlikely to be before September 2003. This means there will be no opportunity for the public debate to take account of the results.

18 February 2003: Environment Minister Michael Meacher denied that he was about to leave the government after he attacks GM crops, saying that biotechnology is not necessary to feed the world and highlighting possible health risks.

18 February 2003: Margaret Beckett responds to the Steering Board's request for more time. She states *"I recognise that, in light of the delays that have already occurred and taking into account the concerns expressed by Ross Finnie and Mike German about the timing of the debate, it would now be impracticable for the Steering Board to deliver its report to Government by the end of June. I am therefore prepared to agree to your request to extend the debate timetable, on the understanding that the Steering Board will submit its final report by the end of September at the latest."* The debate budget is also doubled, to £500k.

14 February 2003: The Food Standards Agency announces its own programme to *"assess people's views of genetically modified food"*. This includes a citizens Jury and international schools debating competition.

11 February 2003: Gene Futures conference, organised by GeneWatch UK and the Five Year Freeze campaign and supported by Elm Farm Research Association and Unilever and in association with The Guardian, is opened by Environment Minister Michael Meacher.

11 February 2003: The Royal Society holds a one day conference called *"GM crops, modern agriculture and the environment"*.

30 January 2003: The public debate Steering Board write to Margaret Beckett and the devolved administrations to request that the 'publicly visible' part of the debate is delayed until after Scottish and Welsh elections on May 1st and runs through to July when the first report on the farm-scale trials becomes available.

22 January 2003: *"Stung into Action"*, an article in The Guardian by Dr Sue Mayer of GeneWatch UK, looks at the issues facing the public debate and the commercialisation of GM crops in the UK.

22 January 2003: *"GM Debate Fiasco"* - press release by Friends of the Earth. *"The proposed public debate into GM crops and food is becoming a fiasco say Friends of the Earth after Welsh Rural Affairs Minister Mike German called for the debate to be delayed until summer 2003."*

20 January 2003: Letter from Margaret Beckett (Secretary of State, DEFRA) confirming that the government will respond to the report of the debate and indicate what it has learned from it when making future policy announcements on GM.

17 December 2002: GeneWatch UK makes comments to the science review panel consultation.

6 December 2002: Science Review Panel has its first public meeting. Later meetings are on **Food safety** - 23rd January 2003 - Science Museum, London and **Gene flow** - 27th January 2003 - Royal Society of Edinburgh.

29 November 2002: UK Government launches the 'Science Review' strand of the public debate. They invite the public to *"take part in a full and open independent scientific review to examine the extent of current scientific knowledge behind GM, with particular focus on crops"*. However, Sue Mayer, Director of GeneWatch UK said *"the Government's GM Science Review Panel must convince the public that it will evaluate impartially the evidence and existing practice. The presence on the Panel of the chairs and several members of the very committees which have given the commercial and experimental approvals for GM food and crops in the UK does not inspire confidence at this stage"*.

14 November 2002: The initial stage of the national GM debate gets under way with the first of a series of foundation discussion workshops designed to find out what questions the public want to ask.

10 November 2002: "Advisers brand Blair's GM debate a sham." By Mark Townsend and Antony Barnett, *The Observer*. - "*Documents reveal the government body charged with promoting the project, the Central Office of Information, has warned that Ministers have failed to stump up sufficient funds for the debate.*"

7 November 2002: A group of independent academics made a formal submission to the Steering Board of the public debate. They make a range of criticisms on how the debate is being organised and run.

25 October 2002: The British Overseas Aid Group (Action Aid, Oxfam GB, Save the Children, Christian Aid and CAFOD), send a submission to the Prime Ministers Strategy Unit in response to the scoping note for the economic strand of the public debate. They outline their concerns about GM crops and the principles that should underpin an analysis of their impact.

19 August 2002: Ross Finnie, Minister for Environment and Rural Development of the Scottish Executive sends a letter to the AEBC to clarify issues about the devolved administrations and the way the debate is to be run.

26 July 2002: AEBC responds to Margaret Beckett's announcement of a public debate.

26 July 2002: Margaret Beckett, Secretary of State for DEFRA (Department of Food and Rural Affairs) formally announces the public debate.

9 July 2002: Friends of the Earth renewed its attack on the Government stance on GM crops after a Minister admitted that the decision to allow GM crops to be commercially grown in the UK had already been taken. The unnamed Minister also described the forthcoming public debate on GM crops as a "*PR offensive*".

26 June 2002: 'National debate' on GM crops - BBC Online, Margaret Beckett in interview about the public debate.

31 May 2002: UK Government sends an interim response to the AEBC on its proposals for a public debate.

26 April 2002: AEBC (Agriculture and Environment Biotechnology Commission) makes formal recommendation to DEFRA (Department of Food and Rural Affairs) for a public debate.

17 January 2002: The Government responds to the AEBC's report 'Crops on Trial' and requests a recommendation on how the public debate should be conducted.

10 September 2001: AEBC publishes its report 'Crops on Trial'. This argues that the Farm Scale Trials cannot form the basis of the decision whether to grow GM crops commercially in the UK. Among other things, the AEBC recommends that a public debate be held to inform the decision on commercialisation.

September 2001: The Government publishes its full response to the BSE Inquiry

March 2001: Peak of cases under the latest UK outbreak of foot and mouth disease

February 2001: Government interim response to the BSE Inquiry

November 2000: Passing into law (although not into force) of the Freedom of Information Act

October 2000: Government response to the House of Lords *Science and Society* Report

October 2000: Report of the Inquiry into BSE

July 2000: Publication by the Government of the White Paper *Excellence and opportunity: a science and innovation policy for the 21st century*

July 2000: Publication by the Government of *Guidelines 2000: Scientific Advice and Policymaking*

July 2000: Government response to the Royal Commission Report *Setting Environmental Standards*

February 2000: House of Lords Select Committee on S&T Report *Science and Society*

November 1999: Passing into law of the Food Standards Act

February 1999: an umbrella NGO, the Genetic Engineering Alliance, launches the Five Year Freeze campaign as a platform for organisations opposed to the rapid introduction of GM. In the next two and half years this grows to embrace 120 organisations – mostly NGOs but including some companies, trade associations and trades unions, claiming to represent 4 million people

November 1998: English Nature, a UK government biodiversity agency, argues for a five year moratorium on commercial GM until the FSEs can be assessed.

October 1998: Government announces Farm Scale Evaluations (FSEs) of genetically modified herbicide tolerant crops

February 1998: Prince Charles calls for a 'thorough ethical debate about how and where [GM] should be applied.'

Annex D - Executive summary of DEFRA response to the three strands of the GM Public Debate, published on 9 March 2004

1. The Government and the Devolved Administrations have carefully considered the findings of the GM public debate, science review and costs and benefits study. We take public concern very seriously, and we have weighed public opinion alongside the scientific evidence. We will:

- protect human health and the environment through robust regulation of GM crops on a case-by-case basis, consistent with the precautionary principle
- ensure consumers can choose between GM and non-GM products through tough new labelling rules
- safeguard farmers' interests by putting in place effective and proportionate measures to facilitate the coexistence of GM and non-GM crops
- provide guidance to farmers wishing to establish voluntary GM-free zones
- consider the best ways of providing the information which the public wants and in an open and transparent way.

2. Very few GM crops are currently commercially available worldwide, and even fewer have been approved for commercial cultivation in the EU - to date only three types of GM maize. And no GM crop currently has all the approvals needed for commercial cultivation in the UK. A number of other GM crops, including soya and maize, have been approved for import, processing and use in food or animal feed. GM tomato puree was approved and sold well until increased public concern about GM food led to it being withdrawn from supermarket shelves.

3. Decisions on genetically modified organisms are taken collectively by EU member states, and the Government's approach must reflect that. The EU's regulatory framework is firmly based on the precautionary principle. Each GMO is subject to a comprehensive assessment of the potential risks to human health and the environment, on the basis of the scientific evidence.

4. GM crops are only one application of GM technology. GM can also be used to produce veterinary medicines and, potentially, human medicines. All of these applications are strictly regulated in the EU on the same case-by-case basis.

5. The GM public debate arose from a recommendation in the Agriculture and Environment Biotechnology Commission's report 'Crops on Trial', published in September 2001. In May 2002 the Secretary of State announced that the UK Government and the devolved administrations would sponsor a national GM dialogue on GM issues. The aim was to create a dialogue between all strands of opinion on GM, to deepen public understanding of the issues surrounding GM technology, and to improve the evidence base to enable Government to make informed decisions. It comprised three main components:

- a public debate, managed by an independent steering board;
 - a review of the scientific issues relating to GM crops and food, conducted by a panel of independent scientists chaired by the Government's Chief Scientific Advisor working with Defra's Chief Scientist; and
- a study into the overall costs and benefits of GM crops, by the Government's Strategy Unit.

6. All three strands have now submitted their final reports and these have been carefully considered by the UK Government and the Devolved Administrations. This is our **joint response**.

7. We accept that the findings of the **public debate** broadly reflect the current state of public opinion on GM crops. We acknowledge that people are generally uneasy about GM crops and food, and that there is little support for early commercialisation of GM crops in this country. However the results suggest that the general public may have a lower degree of outright opposition to GM than the participants in the debate, while still being very cautious. The debate has also confirmed that people's attitudes towards GM crops are shaped by a complex

range of issues and concerns, and that to some extent GM crops have become a focus for much wider concerns.

8. The **Science Review** addressed the key science-related concerns which are frequently raised about GM crops and food. Its overall conclusion was that GM is not a homogeneous technology, and that each application must therefore be considered on a case-by-case basis. It found that worldwide there have been no verifiable ill effects reported from the consumption of products from GM crops over seven years, and there is no evidence to suggest that current GM foods pose a greater risk to human health than their conventional counterparts. It found that the main environmental risk with current GM crops is their potential impact on farmland biodiversity. The impact of these herbicide tolerant crops has been thoroughly investigated by our Farm-Scale Evaluations. The science review also acknowledged that there are some gaps in current scientific knowledge and identified areas for further research.

9. The **Strategy Unit's study** on the costs and benefits of GM crops concluded that any economic benefit from the crops presently available is likely to be limited in the short-term but that future developments in GM crops could potentially offer more significant benefits. The balance of costs and benefits will depend on a range of factors, and there will inevitably be trade-offs. Much will depend on consumer attitudes towards GM food and crops, and on the ability of the regulatory system to continue to manage any risks effectively.

10. In deciding our policy on GM crops we have given due consideration to the findings of all three strands of the GM Dialogue. We have also considered all the other evidence available to us, the results of our Farm-Scale Evaluations of GM crops and the AEBC's report on coexistence and liability. Taken all together, this represents a uniquely diverse body of evidence on which to base our decisions.

11. We have concluded that case-by-case regulation of GM crops remains the right approach. We are committed to evidence-based policy-making, and the scientific evidence supports neither an outright ban nor a blanket acceptance of all GM crops (nor does the European regulatory regime allow for an outright ban). The results of the Farm-Scale Evaluations demonstrate very clearly that each crop is different, and each must be considered on its own merits.

12. GM crops will of course continue to be strictly regulated. Our top priority is to protect human health and the environment. No GM crop can be grown in the EU unless it has been carefully tested and specifically approved. Each crop is first subject to a comprehensive assessment of the possible risks to human health and the environment, on the basis of the scientific evidence, and decisions to approve or reject individual crops are taken collectively by EU member states.

13. This precautionary and evidence-based approach strikes the right balance between managing the risks and harnessing the potential benefits of GM crops. While the current generation of GM crops may offer limited benefits, some farmers may still want to grow them, particularly for animal feed. More importantly, we should not turn our backs on the potentially more significant benefits which future generations of GM crops could offer.

14. We take public concern very seriously, and we recognise the need to address the people's legitimate anxieties about GM crops. We have therefore carefully considered each of the concerns raised in the public debate. The main concerns, and our response, can be summarised as follows:

Caution and precaution

15. The UK Government and the Devolved Administrations take a precautionary approach to GM crops, and the EU's regulatory regime is also firmly based on the precautionary principle. No GMO can be released into the environment unless it has been tested and specifically approved. We will only give our approval if we are satisfied that a particular GMO is safe for human health and the environment. We will also require GM crops to be closely monitored, particularly during the introductory period.

Protecting human health

16. The science review concluded that there is no evidence to suggest that current GM foods pose a greater risk to human health than their conventional counterparts. All GM food and

animal feed is strictly regulated in the EU and is subject to a comprehensive safety assessment. The EU approval process has recently been further strengthened and we believe that it is sufficiently rigorous to ensure that approved GM foods are as safe as their non-GM counterparts.

Protecting the environment

17. The risk of adverse effects on the environment is specifically addressed as part of the approvals process for GM crops. EU legislation also allows conditions to be imposed on marketing consents for GM crops requiring the consent holders to undertake effective post-market monitoring. This is designed to ensure that any unforeseen adverse effects are picked up quickly.

Providing choice for consumers and farmers

18. We are committed to providing choice for both consumers and farmers. Mandatory labelling enables consumers to choose between GM and non-GM products. From April new EU rules will require any food and animal feed with 'adventitious' or technically unavoidable GM content above 0.9% - and with any deliberate GM content - to be labelled, and will extend labelling rules to cover products derived from GMOs.

19. Now that advice has been received from the AEBC on the issue of coexistence of GM and non-GM crops, we will take steps to put in place suitable measures to facilitate such coexistence. We fully accept that the introduction of GM crops needs to be carefully managed, even though in any event the take-up of GM crops by UK farmers is likely to be limited in the short-term. We believe that as the AEBC advised, GM farmers should bear the main responsibility for implementing coexistence measures, and that these should be designed to deliver the EU's 0.9% labelling threshold. We envisage that these measures should have statutory backing. We will consult stakeholders on the feasibility of applying a lower threshold to organic production. We will consult on options for a compensation scheme for non-GM farmers who suffer an economic loss through no fault of their own. We will also provide guidance to farmers wishing to establish GM-free zones.

Providing information

20. The public debate revealed a strong demand for more and better information on GM crops and food. We will consider the best way of doing this, and seek to ensure that any information provided by Government is useful and accessible, in particular by making information available on our websites.

Openness and transparency

21. We will be as open and transparent as possible about the way we make decisions on GM crops, and about the degree of scientific uncertainty and risk involved. The EU regulatory framework has been improved to provide for mandatory public consultation on each GM crop application, and we will do everything practicable to facilitate this. We will continue to seek independent advice on all applications from our independent advisory committees composed of scientific experts, and we will improve public access to the work of these committees.

Gaps in scientific knowledge

22. We fully acknowledge that there are gaps in scientific knowledge about GM crops, but this is true of any developing technology. From the perspective of regulation the key issue is to assess the importance of gaps in knowledge and uncertainty in the framework of the risk assessment process, and to ensure that further research is undertaken as appropriate.

Developing countries

23. We believe that GM crop technology has the potential to provide benefits to developing countries, but that it is for developing countries themselves to make their own informed decisions on whether or not to import or adopt GM crops, taking account of the views of their citizens. The UK supports and has ratified the Cartagena Protocol on Biosafety, which provides a common framework for risk assessment, decision-making and information exchange on GM crops and other products.

No need for GM crops?

24. We fully accept the Strategy Unit's conclusion that the current generation of herbicide-tolerant and insect-resistant GM crops may be of limited economic value to the UK, but it

also concluded that future developments in GM crops have the potential to offer more wide-ranging benefits to farmers and to consumers. We believe that the regulatory framework strikes the right balance between managing the risks and keeping the door open to the potential benefits.

Ethical issues

25. We recognise that people have legitimate ethical concerns about GM crops. Nevertheless we believe that the responsible development of GM crop technology could offer significant potential benefits both in the UK and globally, including to developing countries. The Nuffield Council on Bioethics recently concluded that ‘there is an ethical obligation to explore these potential benefits responsibly, in order to contribute to the reduction of poverty, and to improve food security and profitable agriculture in developing countries.’

Annex E - Executive summary of the Independent Evaluation of the *GM Nation?* debate, published by the Understanding Riskⁱ team as *A Deliberative Future?* 19 February 2004ⁱⁱ

Introduction

The *GM Nation?* public debate which took place during the summer of 2003 was, for the UK, an unprecedented experiment in public participation. It comprised an extended process of stakeholder engagement, underwritten by a government commitment to take the outcome into account when making the decision about the possible commercialisation of this controversial technology. Here was an attempt to generate widespread interest and considered discussion about complex matters of science and policy amongst relatively large numbers of the lay public. Such a development would have been unthinkable in policy circles a decade ago.

At the time the GM debate was proposed we were already engaged in research into the changing patterns of risk governance in the UK. In August 2002 we wrote to the Agriculture and Environment Biotechnology Commission, the body which proposed the debate, setting out our intention to follow the debate closely, and expressing interest in having a close involvement in the process of evaluation. Unfortunately the debate budget was insufficient to allow the debate's Steering Board to fund a systematic evaluation. In our letter we observed that we were confident about having the necessary skills to carry out an evaluation which would be robust and methodologically sound, and independent of any of the bodies involved in the debate. In September 2002, we were invited to present a detailed evaluation proposal to the Steering Board, and on the basis of our proposed methodology we were appointed as the official evaluators of the debate.

Our approach to evaluating the debate

There are two main elements when evaluating deliberative processes such as *GM Nation?* First, how well did the process match up to set criteria and objectives, and second, whether identifiable and desired outcomes were achieved. As independent evaluators, the focus of our work has been on the debate *process* rather than the merits or dangers of the technology. In carrying out this work, we have utilised a range of qualitative and quantitative research methods. Specifically, we utilised participant questionnaires, structured observation, ethnographic techniques, in-depth interviews, media analysis and a major survey of public opinion. In order to evaluate the debate process we worked with three distinct sets of criteria:

- First, the aims and objectives as set by the Steering Board itself. We carefully analysed these criteria, and concluded that most were conceptually unclear, or measurable in any sensible manner. Nevertheless, our report discusses the debate's performance against these criteria as best as we are able.
- Second, a set of generic evaluation criteria derived from the academic literature on participatory processes. These focus on whether the debate process was: *transparent* to both those involved and interested parties; specified *well-defined tasks*; was run in an *independent and unbiased* way; was *inclusive* of all relevant views; had *sufficient resources* with which to achieve its objectives; and encouraged *effective and fair* dialogue.
- Third, from an analysis of questionnaire responses of participants taking part in the debate we can develop a view of how *they* judged the success or otherwise of various aspects of the process.

ⁱ The Understanding Risk Programme is a research initiative based at the university of East Anglia and also involving researchers from Cardiff University, Brunel University and the Institute of Food Research at Norwich. The programme is core funded by the Leverhulme Trust. Work on the evaluation was additionally funded by two grants from the ESRC, one under the Science in Society Programme.

ⁱⁱ The full text of *A Deliberative Future?* is available online at http://www.uea.ac.uk/env/pur/gm_future_top_copy_12_feb_04.pdf

The implementation of the debate process

Our evaluation of the implementation of the debate included an examination of issues concerned with design and management. We concluded that the involvement of members of the Steering Board in the day-to-day implementation of policy was unsatisfactory. While we feel that the Board worked assiduously, we conclude that there is a need for a fully independent executive to manage the detailed putting into practice of such a complex and evolutionary process. There was also some slippage between objectives and deliverables, in particular concerning the production of stimulus materials, and in the organisation of the public events.

We also considered the influence of government as the ‘paymaster’ and ultimate sponsor of the debate. We note that, whilst a difficult matter to judge, many actions and statements by government around the time of the debate had then potential to undermine the credibility of the debate process. This effect may go some way towards explaining widespread cynicism among both participants and the wider public about the likely impact of the debate on government policy.

The debate comprised a number of component parts:

- Three ‘Tiers’ of public meetings
- A series of closed Foundation Discussion workshops which sought to elicit how lay publics conceptualised GM-related issues
- A series of closed Narrow but Deep meetings which exposed hitherto disengaged people to a range of information and opinion about GM issues
- A website and various stimulus materials
- A questionnaire

In organisational terms, the implementation of the debate process contained good and bad examples of practice, and was flawed in a number of important respects. We draw particular attention to the fact that participants in events generally found them very well run, enjoyable and allowing people to have their say, although nearly half felt that insufficient time was allocated at the Tier 1 meetings to complete discussions. Participants in the public meetings were negative about resource availability and the lack of notice about the events. Local meetings appear to have been more popular than regional events, with participants on average not thinking that these meetings were influenced by a ‘hidden agenda’ to nearly the same extent as those attending the Tier 1 events. Despite being a central objective of the debate, we express doubts about the extent to which most debate meetings could be described as truly ‘deliberative’.

The representativeness of the debate

One of the Steering Board’s objectives for the debate was to involve ‘people at the grass-roots level whose voice has not been heard to participate in the programme’. The experience of the *GM Nation?* has shown how difficult that objective was to achieve. It has also raised important questions about how to design deliberative processes to take account of the plural character of ‘the public’.

We found that the participants in the public aspects of the debate were not completely representative of the general public as a whole, in terms of demographic and attitudinal characteristics. For example, the educational level of participants in the public meetings (based on our sampling) was considerably higher than the UK average. Participants in the open activities were considerably more negative about GM food and crops than respondents in our 2003 survey.

We also observed that these events were often dominated by discussions characteristic of a knowledgeable and experienced engagement in the GM issue. However, in our view, this does not mean that the open meetings were without merit. Of course, engaged people with clear views on GM issues had a legitimate contribution to make in the debate. Moreover the exploration of their views was important, in view of their prominence within the political dynamics of wider debates about GM.

Our survey work also identified a substantial minority subgroup of the general public that was not prepared to endorse potential future benefits of GM crops and food. The extent to which this subgroup might be described as 'politically engaged' in the GM issue is not clear. The results of our survey provide important complementary evidence suggesting that current UK 'public opinion' is not a unitary whole, but fragmented with considerable ambivalence co-existing alongside outright opposition. We regard this degree of ambivalence as a significant matter in the interpretation of the outcome of the *GM Nation?* debate.

Management and translation of knowledge

During the course of our evaluation work it became increasingly clear to us that a central aspect of the debate process was not being addressed by any of our normative criteria, nor indeed by criteria determined by the sponsors or those inferred from the participants. This was the question of how effective were the processes by which the conclusions drawn from one stage of the debate became a source for its subsequent stages; informing and shaping them. Such knowledge is not, of course, necessarily unequivocal. Much of it is judgemental, either on the part of participants or organisers, or both, and arises from processes of collation, analysis and interpretation.

The other criteria had allowed us to evaluate the performance of various components of the debate according to how effectively they were implemented as *organisational processes*. We now turned to an examination of the effectiveness of the debate as an *information system*. Examining the entire debate process against this criterion of *translation quality*, we found its performance to be variable. Parts, like the elicitation of the ways lay publics frame the GM-related issues we judged as very good, whilst other processes, like the production of stimulus materials and, importantly, the production of the final report, to be a cause for some concern. Specifically, the stimulus material drew upon both relatively well-established scientific knowledge and wider contextual and value-based judgements. We suggest that the fact that these forms of knowledge were stripped of any reference to their source and then treated in a symmetrical fashion was problematic. In our view the production of the final report was over-hasty and under-resourced, and featured a methodologically worrying analysis of the debate's findings.

Other representations of the debate

The debate achieved reasonable visibility in the media, but the degree of attention varied considerably across different media outlets. There was considerable coverage in the national broadsheet dailies and in the mid-market *Daily Mail*, which returned to its earlier 'Frankenstein food' campaign theme. The two main tabloid dailies carried practically no coverage. The amount of coverage in the local and regional press also varied, being generally greater in areas with agricultural economies or where GM had become a political issue. The debate failed to attract significant coverage on the main terrestrial television national news bulletins, however it attracted more attention on Radio news. A range of radio programmes, from *The Moral Maze* to *The Archers*, also provided spaces where the issues could be debated. The internet played an important role as both an additional source of information and a forum for participatory debate, with the BBC website dedicating part of its science message board to GM for most of the debate period.

One of the objectives of *GM Nation?* was to create widespread awareness of the debate among the general public. Although our survey suggests that a great majority had never heard of the debate, these results may be interpreted in a number of ways. On the one hand, this finding suggests that only a minority of the British adult population had been made aware of the existence of the debate. However, given the relative lack of advertising, tabloid and television coverage of the debate, this low level of awareness might be regarded as representing a modest success.

Our interviews with representatives of engaged stakeholder groups, like biotechnology companies and environmental pressure groups, revealed that most were in broad agreement about the idea of a public debate. However, all had rather different reasons for this support. They expressed a number of concerns about the process and the wider context, with some of

these corresponding to concerns expressed by participants: eg lack of time, poor advertising, lack of allocated resources and criticisms of the stimulus material.

Conclusions

In the light of all of our evaluation findings, we suggest that the debate could reasonably be described in the following terms:

- It was methodologically innovative
- It was meaningful and enjoyable for most participants
- Meetings forming part of the debate were professionally facilitated, but, for the public events, participants received too little notice and stimulus materials were not available in advance.
- Much of the debate process was not, strictly speaking, ‘deliberative’ in nature
- The debate was insufficiently resourced in terms of money, time and expertise
- The management of the debate suffered from slippage between objectives and deliverables
- The involvement of individual members of the Steering Board in detailed day-to-day implementation of the debate was perhaps not wholly satisfactory
- Doubt might be cast on whether the budget was spent most effectively, in view of the lack of representativeness of participation in the public meetings. Here we highlight the relatively large expenditure on the public meetings in comparison with that on the closed, focus-group-based ‘Narrow but Deep’ process
- There was a failure to engage with the broad mass of hitherto disengaged members of the lay public
- Stimulus materials produced specially for the debate were bland and unsatisfactory
- It proved not possible to arrange for the development of ‘joined up’ media coverage, linking TV, radio and print journalism with internet and live events

The preparation of the Steering Board’s final report on the debate was over-hasty and under-resourced, and featured a methodologically worrying analysis of the findings. Our survey findings broadly mirror a number of the key conclusions of the debate, particularly regarding the widespread levels of concern about the risks of this technology and the need for independent regulation. However, our analysis also shows that the extent of outright opposition to GM food and crops amongst the UK population is probably lower than indicated in the *GM Nation?* findings.

It is important to recognise that the organisation and form of the debate were shaped by a number of external constraints. Of prime importance here were practical challenges posed by three inter-related factors: the novelty and scale of the enterprise, the availability of resources, and severe time constraints. Without a clear template about how best to organise such a process, implementing the debate became itself a learning exercise resulting, inevitably, in inefficiencies and tensions. In addition, a difficulty in appreciating what would be required in order to deliver the debate effectively led to a serious initial under-estimate by government of the debate budget. The resulting shortage of funds led to the Steering Board having to seek additional funding from Government: a process which created additional tensions and additional time and management pressures.

The picture that emerges from our systematic evaluation is of a debate process that was flawed in a number of important ways. This is hardly surprising, given its experimental nature, and difficult financial and time constraints. Despite this uneven performance, there were a number of positive aspects to emerge from the debate. The experience of the GM debate now offers a wealth of potential lessons for implementing such initiatives more effectively. There is now a need for a concerted effort to develop a ‘tool-kit’ of processes and techniques, and the means to characterise problematic decision situations so as to target suitable forms of deliberative engagement to support their resolution.

NOTES AND REFERENCES

¹ The main AEBC website for the debate is www.gmpublicdebate.org. The science review is available from the same site. The economics review is at www.strategy.gov.uk/2002/GM/summ.shtml

² Rob Hagendijk and Egil Kallerud (2003): *Changing Conceptions and Practices of Governance in Europe: a Framework for Analysis*. STAGE Discussion Paper 2.

³ Cabinet Office, 1993. *Realising our potential: a strategy for science, technology and engineering*.

⁴ BBC News Online, February 17 1999. Downing Street denied that any such conversation took place but the BBC claims two separate sources for the fact of the call and its influence in changing the Prime Minister's mind.

⁵ Peter Healey (1999), 'Popularising science for the sake of the economy: the UK experience' in Reijo Miettinen (ed.) *Biotechnology and Public Understanding of Science*. Helsinki: Publications of the Academy of Finland 3/99. ISBN 951-37-2857-9

⁶ 'Achievements 1987' section of the Green Alliance website: www.green-alliance.org.uk

⁷ Prince Charles' challenge was centred in ethical considerations: 'I believe that this technology is so powerful and so far-reaching that we should seek ways of engaging a wide range of people and interests in a thorough and ethical debate about how and where it should be applied.' Quoted by BBC news online, 25 February 1998.

⁸ *Crops on Trial: a report by the AEBC*. London: Agriculture and Environment Biotechnology Commission, September 2001.

⁹ Ibid, paras 2 & 3, p.6

¹⁰ Ibid, para 5, p.6

¹¹ Ibid, para 7, p.7

¹² Ibid, para 7, p.7

¹³ Ibid, para 14, p.7

¹⁴ Ibid, para 14, p.9

¹⁵ Ibid, para 14, p.9

¹⁶ Ibid, para 16, p.9

¹⁷ Ibid, paras 20-22, p.12

¹⁸ PH interview with NGO executive.

¹⁹ Ibid

²⁰ PH interview with Parliamentary advisor

²¹ The Corr Willbourn report is to be found at www.gmpublicdebate.org/minutes/docs/corrwillbourn.doc

²² GM Public Debate Steering Board Minutes, tenth meeting, 20 March 2003, para 13

²³ Professor Jacquie Burgess, Dr Theresa Anderson, Professor Alan Irwin, Dr Simon Joss, Dr Claire Marris, Professor Judith Petts, Dr Andrew Stirling, Dr Tom Wakeford, and Professor Brian Wynne. Professor Steve Rayner, the Director of the ESRC Science in Society Programme, is understood to have withdrawn his signature at the last minute.

²⁴ *Some observations and proposals on the 2002-2003 Public Dialogue on possible commercialization of GM crops in the UK*. Submission for the Public Debate Steering Board, meeting November 7 2002. Earlier available on the AEBC website, although a later search could not find it.

²⁵ Ibid, para 5

²⁶ GM Public Debate Steering Board Minutes, third meeting, 7 November 2002, para 6

²⁷ AEBC executive in PH interview.

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- ²⁸ Ibid.
- ²⁹ PH interview with NGO executive.
- ³⁰ In interview with PH.
- ³¹ Ibid. The FSA website states: 'This independent assessment of consumer opinion on the acceptability of GM food and how this relates to consumer choice is the Agency's contribution to the Government's public debate on GM. At the 8 May open meeting of the FSA Board, members will review and evaluate the range of information and views on GM food collated by the Agency. Following this discussion, the Agency will submit its views to Government.' For more detail on the framing, practice and results of the FSA exercises see www.foodstandards.gov.uk/gmdebate
- ³² PH interview with AEBC executive.
- ³³ Steering Board third meeting minutes, 7 November 2002, para 11
- ³⁴ Letter from the DEFRA Secretary of State, Margaret Beckett, to the chair of AEBC, 20 January 2003
- ³⁵ Further work of this kind was one of three options for the post-debate periods which AEBC put to government in April 2002, along with simple delivery of the report and the report feeding into one or more national consensus conferences.
- ³⁶ He accepted the job of President and provost of University College London, another of the UK's emerging super-universities, as from autumn 2003. This is not of course incompatible with continuing the AEBC job and is more geographically convenient.
- ³⁷ www.pm.gov.uk/output/Page3673.asp
- ³⁸ www.gmsciencedebate.org.uk
- ³⁹ www.gmpublicdebate.org
- ⁴⁰ www.defra.gov.uk/environment/gm/fse/index.htm
- ⁴¹ AEBC source
- ⁴² House of Commons Select Committee on Environmental Audit, Session 2003-04, Second Report *Evaluating the Farm Scale Trials*, HC 90-I, 5 March 2004, para 11
- ⁴³ Understanding Risk Team (2004). *A Deliberative Future? An Independent Evaluation of the GM Nation? Public debate about the Possible Commercialisation of Transgenic Crops in Britain, 2003*. Centre for Environmental Risk, University of East Anglia. Understanding Risk Working Paper 04-02. Available online at www.uea.ac.uk/env/pur/gm_future_top_copy_12_Feb_04.pdf
- ⁴⁴ Wouter Poortinga and Nick F. Pidgeon (2004) *Public Perceptions of Genetically Modified Food and Crops, and the GM Nation Public debate on the Commercialisation of Agricultural Biotechnology in the UK*. Centre for Environmental Risk, University of East Anglia. Understanding Risk Working Paper 04-01
- ⁴⁵ *A Deliberative Future?*, pp 84-6
- ⁴⁶ Campbell, S and Townsend, E (2003) 'Flaws undermine results of UK biotech debate.' *Nature*, 425, 559, 9 October 2003.
- ⁴⁷ *A Deliberative Future?* p. 101
- ⁴⁸ *ibid*, p.139
- ⁴⁹ Stirling, A and Meyer, S. (1999) *Rethinking Risk*. SPRU (Science and Technology Policy Research Unit), University of Sussex.
- ⁵⁰ *A Deliberative Future?* p. 141
- ⁵¹ The Guardian, 19 February 2004
- ⁵² For example, see Hilary Rose, the Guardian, 16 February 2004.
- ⁵³ Rebecca Willis and James Wilsdon *Technology, Risk and the Environment*. [Possibly a chapter of a wider report?] Available on the Green Alliance website www.green-alliance.org.uk