

Test of a systemic framework for incorporating ethics and values into biotechnology policy decisions

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Keywords: AEBC, ethics, biotechnology, policy, values

Introduction

In the European Union (EU), the first consents for the commercial use of genetically-modified (GM) arable crops were issued in 1996. Small areas of GM crops were grown for the first time in 1998 – 20,000 ha in Spain and 2,000 ha in France, in both cases insect-resistant maize. However, by mid-1998 the EU-wide regulatory procedure for issuing consents had ground to a halt because of concerns raised by several member states and resistance to GM technology by the public. By 2001, the issuing of consents for commercial use had still not resumed, despite revisions to the regulatory procedure having been agreed and an increasing number of precautionary measures having been introduced.

While some of the concerns being raised were of a scientific or technical nature (for example, might the antibiotic-resistance incorporated into some insect-resistant crops be transferred to human or animal gut bacteria), other concerns were much broader (for example, concerns about the control of the technology being in the hands of a small number of multi-national companies). The first type of concerns, the scientific and technical, could be handled by decision makers within the existing scientific risk assessment on which the regulatory procedure is based, by further research or by restrictive conditions on the consents. The second type of concerns, to do with the broader context and with the value-basis of biotechnology decisions, are more difficult for decision makers to address. They tend to be vaguer, more variable, to do with unease and uncertainty and lack of trust, so they can be difficult to pin-point and incorporate into decisions systematically. Nevertheless, it is critical that such concerns are addressed by decision makers if the impasse over crop biotechnology is to be overcome in Europe.

Several approaches have been used by governments to try to identify and understand public concerns. Consensus conferences have been held in Denmark and the UK and a citizen's conference in France. A 'people's panel' has been questioned in the UK. Some governments, for example the UK, have established committees with a broad range of expertise to examine and report back on the strategic issues that surround biotechnology and to act as intermediaries between government and the public. Although these have provided opportunities for people to air their concerns, and for governments to show that they are listening, the mechanisms whereby these concerns have been, or could be, incorporated into the decision process are unclear. This paper reports on a test of a framework that might be used to provide structure to people's concerns, so that they might be considered more systematically alongside the scientific risk assessment.

Method

The framework we have tested is called critical systems heuristics – the CSH framework for short. It was devised by Ulrich, originally for use in a planning context (Ulrich, 2000). Ulrich's starting point is that when people disagree fundamentally about an issue, often the crucial difference is that they have different frames of reference. They make different judgements about what is inside and outside the frame, or system boundary. These boundary judgements affect the facts and values they see as relevant. So the CSH framework consists of a set of 12 questions regarding the system's boundary. The questions focus on people and their roles, since it is people who determine what will happen in any contentious situation. The four roles examined are the client/beneficiary, the decision maker, the expert, and those affected but not involved. For each of these four roles, the first question is: who should be, and who is, in that role (or speaks on behalf of that role, in the case of the affected). The second question addresses a role-specific

concern. The third question refers to a key role-relevant problem. Each question asks first, what *ought* to be the case then, what actually *is* the case. The 'is' question concerns facts (as perceived by the respondent) and the 'ought' question concerns values and ethics. Differences between the answers to 'is' and 'ought', and between different respondents, highlight unresolved boundary issues, which be used as an agenda for discussion. Ulrich suggests that the framework can be used in three different ways in decision making. It can be used self-reflectively, allowing individuals to ask themselves 'What are my boundary judgements?'. It can be used consensually, allowing groups to ask 'Can we agree on our boundary judgements?'. Or it can be used conflictually, allowing critics to ask 'How can we challenge your boundary judgements?'.

To test the relevance of the CSH framework to biotechnology, we used it as the basis of interviews with the members of the UK's Agriculture and Environment Biotechnology Commission (AEBC). The AEBC was established in June 2000 by the UK government in response to the crisis in public confidence over GM issues (ENDS Report, 2000). Its 20 members include both opponents and proponents of GM technology, as well as some who have not previously engaged with the issues. Its remit includes offering strategic advice to the government on biotechnology issues, keeping under review developments in biotechnology, and advising government on their ethical and social implications and public acceptability (AEBC, 2001: 10). As part of this process, the AEBC seeks to involve and consult stakeholders and the public on a regular basis.

We chose the AEBC as a clearly defined group of people, with well-informed views, who had been selected by government to cover a wide spread of expertise and opinions on GM issues. We interviewed each member individually (and the government official who acts as the AEBC secretary), asking the checklist of 12 CSH questions. Whenever there was time, we asked for feedback on the questions and talked more generally about the AEBC. Interviews were tape-recorded and we took notes as a back-up. At the time of writing this report we have five members still to interview and our transcription of tapes is incomplete, so the analysis presented here is a preliminary and partial one, intended to give a flavour of our findings so far. As examples, we discuss the answers to two of the questions, including the methodological issues they raise.

Results

Question 1 asks '*Who is/ ought to be the client or beneficiary of the system (i.e. whose interests are/ ought to be served)?*' This is an example where the answers to the 'ought' and 'is' parts of the question were very different. Most people answered the 'ought' part of this question at the general level of biotechnology in a broad sense. Nearly everyone said that the benefits should be widely shared, by society as a whole. One or two argued, and others acknowledged, that part of that societal benefit is economic and that business has to be able to make money. Two mentioned that benefits would percolate down the food chain from the grower to the consumer. Another mentioned that societal benefits would accrue through benefits to the environment. Consumers were mentioned specifically by four respondents, the environment and nature by four, future people by two, people in economically underdeveloped countries by two, birds by one (for GM crops and farm trials) and animals by one (for animal biotechnology). One person, talking specifically about decision-making in relation to biotechnology, mentioned the importance of considering not just people affected by a single decision, but those who might be affected because one decision could lead to another. This answer, and the 'bird' answer, took the term 'client' to include groups that might be disadvantaged by the system. One person suggested (for GM crops and farm trials) that the government needs to have a clearer view on who it thinks should be the beneficiaries – it should be made more explicit. One reflected further on his view that society and consumers have a right to see some sort of improvement, saying that that might be too harsh on producers – provided the technology was not harmful and consumers could choose to accept or reject it that might be adequate. But then again, he reasoned, the market isn't very efficient.

The 'is' part of Question 1 led all except two people to reflect that the situation that currently exists does not match the situation they had said ought to exist. Two mentioned that it is a changing situation, the industry is young, farmers and consumers don't yet have the opportunity to buy the products, and certain things are already in place (to encourage environmental benefits). Many people referred to other people's views rather than express a critical view or a view they disagreed with, for example 'Some would argue that ...', 'Most commentators say that ...', 'The perception is that ...'. Most people said that industry (or companies, corporations, producers and their shareholders) is, or is perceived to be, the beneficiary. Two

people said, more specifically, that it is the applicant or developer who is the client of the regulatory system. Commercial users, farmers and the research community were mentioned as clients or beneficiaries by one person each. The general public was mentioned as not being served (by one person), occasionally being served (one person), or perhaps being served in future (one person). The frustration of the general public at not having a say was seen as part of the problem, as was the perception that multi-national companies were the main beneficiaries. Although the regulatory system was intended to serve the public interest and did to some extent, it was seen as too narrowly focussed (one person), giving little attention to ethical concerns (one person), and based on an assumption that biotechnology was the way forward (one person).

Question 8 asks *'What sort of expertise ought to be/is involved and how?'* Most people mentioned that scientific and technical expertise should be involved, but said that should be complemented by a broader range of expertise – people capable of understanding the context, able to reflect society's concerns and wishes, to act as a 'sounding board' for the technology. Two scientists gave more detail about the types of scientific expertise that should be involved, one emphasising that the experts should be legitimate scientists and the science unimpeachably good since not all science can be taken at face value. One person commented that at one stage the group had become embroiled in a debate about 'mainstream science' and 'off-the-wall' science, much to the horror of some members. Two social scientists gave more detail about the types of social science that should be involved, emphasising the need for a richer understanding of the human dynamics of contemporary society. Two scientists mentioned that their views had changed since joining the AEBC: 'I've learned through the AEBC that scientists can appear very arrogant' and 'sociologists have got to contribute – that's something I've learned since joining the AEBC'. However, two people (one a scientist, one not) were still wary of the role of sociologists and puzzled by how they conduct their research and analysis. Several people referred to the need to subject the scientific experts to 'common-sense' questioning but were vexed by the question of how to involve the public when the issues being discussed were often complex. They emphasised that the lay 'experts' would need to be well-educated and well-informed. Some felt the term 'expertise' was restrictive (people with ethical concerns and fears were not necessarily 'experts' but their concerns needed to be addressed). Economic expertise was mentioned by six people and ethics by four. Other forms of expertise mentioned (each by one person) were working experience (such as that of farmers), GreenPeace and Friends of the Earth (at the stage of making the technology acceptable), and broadly-based expertise (to think about sustainable development).

In comparing the existing situation with the desirable one for Question 8, most people said the expertise involved was more science- or technology-led than ideal, which meant it was too narrowly focussed. Four people said the situation was changing in the right direction, for example ACRE (the Advisory Committee on Releases to the Environment) now includes a broader expertise, with the ability to take account of cumulative and long-term effects. One person said that although a broad range of expertise is involved, it is not clear to what extent that leads to an integrated policy. Three people mentioned how science, and particularly the biosciences in university education, has become narrowly focussed and detached from other disciplines such as economics that provide a broader picture. The education system needs to be less polarised and more interdisciplinary. Three people said the existing situation was as they thought it ought to be, or nearly so, in terms of the expertise involved. One of those said that the changes to ACRE and the setting up of the AEBC are government's recognition of disenfranchised people. Another added that it could be argued that the balance of emphasis should be different, and ethicists and sociologists aren't involved, though he wasn't yet convinced that sociologists should be. Four people didn't clearly answer the 'is' part of the question. Because answers were often long and thoughtful, and sometimes convoluted and iterative, it wasn't always easy for us to notice or point out that part of the answer was missing.

Regarding the methodology, there were three main issues: the definition of the 'system', question wording and content, and the static nature of frameworks such as the CSH framework. Some people were uncomfortable with the lack of a prior definition of the 'system' and sought clarification. We tried to resist the temptation to provide prompts, because we wanted people to answer in terms of a system that was relevant to them. The disadvantage is that the answers of different people are then not strictly comparable. One solution would be to use the framework in a two-stage process: a preliminary stage when the range of systems seen by different people as relevant is established, and a further stage when each question is asked for all (or key) relevant systems. This would be time-consuming, although it would encourage people to be

very specific. It would encourage people to answer differently (if they wanted to) for different systems and systems levels (the concerns about different GM crops may differ, and may be different from concerns about biotechnology's place in a vision for agriculture). Even so, establishing what systems each person sees as relevant is an important first stage.

Most people appeared to have little difficulty with the way the questions were worded, although they were originally devised for a different context. Sometimes people asked for the question to be repeated, or asked for clarification. Scientists were less familiar than other people with some of the language. Answers showed that people sometimes read different meanings into the questions. Some questions addressed more than one issue, for example Question 8, which meant that the question wasn't always answered completely. Some people felt there was an overlap between some of the questions, for example Question 1 asking about the beneficiaries and Question 2 asking about the purpose, but this could be positive since it allowed them to develop and revise their answers. Being asked 'ought' before 'is', rather than the other way round, allowed people more scope to reflect on their personal view. The questions' content served as a valuable trigger for thought and self-reflection. People commented that they were raising questions that hadn't been raised or that they hadn't considered before or that needed clarification. The summaries don't adequately represent the richness of the answers and the thought that went into them. There were often long pauses as people tried to clarify and articulate their views. If time was short the questions could be answered quickly at a superficial level, but more time allowed more reflective and wide-ranging answers, sometimes covering issues that the questions didn't directly address. We think the questions will need small modifications to clarify their meaning and make them more accessible for a lay audience, but otherwise think they work well.

Two people expressed misgivings about the static nature of such frameworks. They provide a snapshot of views at a particular moment, whereas in reality people's views are often fluid and change in response to other people's views and changes in the situation. Several people mentioned how their views had changed as a result of their membership of the AEBC. At first we thought the scientists' views had probably changed more – as one jokingly remarked 'instead of being a simple scientist, I'm now polluted by all this kind of philosophy and stuff!'. Later, we realised that the non-scientists were changing their views too, by recognising the difficulties faced by politicians when forced to balance interests in practical decisions. There were several references to the emotional nature of some AEBC meetings as people were confronted by opposing views. There were also many references to the dynamic and evolving nature of the context. We think the static nature of the framework can be seen as an advantage, to allow people to learn by evaluating their own views critically in relation to those of other people, and to follow the learning process over time.

Conclusion

The results showed that the views of AEBC members are not as far apart from each other as might be expected from their diverse backgrounds. This may be because they have already moved towards an improved appreciation of other points of view. This is encouraging but raises a question of how well their views reflect those of wider society – important sectors are not well represented, for example lay people and industry, and the wider society has not shared their intense learning experience. A recurring theme in their answers was the difficulty of engaging the public and capturing the views of the 'silent majority'. Another question is how the outcomes of the AEBC process will link into policy – as yet it is too early to tell.

Our preliminary testing of the CSH framework suggest its questions are centrally relevant to the GM controversy. It addresses important issues that still need clarification. It prompts careful and critical self-reflection on people's own values and boundary judgements, which could be a first step towards opening them up for group and public discussion. This could eventually allow policy decisions about biotechnology to be taken in a more publicly accountable way. We intend to test and develop the framework further.

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