

GM ethical decision making in practice

Donald Bruce*

Society, Religion and Technology Project, Church of Scotland, John Knox House, 45 High Street, Edinburgh EH1 1SR, Scotland, UK

ABSTRACT: Celia Dean-Drummond's case for wisdom as an approach to ethical decision making and her doubts about case-oriented methodology are critiqued with reference to the SRT Project's Engineering Genesis study. Its approach is explored in practical decisions on various real life examples of genetic modification in crops and animals. It involved both intrinsic and consequential approaches, and identified key value positions behind different policies and stakeholders. The paper also clarifies the relationship between reactive (cost-benefit) and precautionary risk assessment, explaining their strengths and limitations, and the role of underlying values in both forms of risk decision making.

Resale or republication not permitted without written consent of the publisher

The Society, Religion and Technology Project (SRT) of the Church of Scotland has for a decade sought to offer more nuanced and in depth insights into the GM debate than much of the polarised and confrontational portrayals in the political and media arenas. Its Engineering Genesis study (Bruce & Bruce 1998) was a landmark in bringing together the differing perspectives from experts in a wide variety of disciplines in extended discussion over 5 years.

The plural nature of this an enquiry implied a bottom-up, case-oriented approach. It applied a set of standard ethical questions to eleven case studies. These were then examined in more depth in the light of the different professional insights and value perspectives of members of the group. The study was careful to take into account both intrinsic and consequential ethical issues, and value-based and instrumental rationalities. It was critical of an implicit orthodoxy of consequentialism in Government, academia and industry which was apt to dismiss principled ethical concerns, or even to regard them as irrational. For example, the ethical method taken by the Nuffield study evidently found it difficult to take intrinsic concerns seriously (Nuffield Council on Bioethics 1999).

The long timescale allowed a thorough exposure of different technologies to the varying perspectives and experiences represented by the group. It also helped build trust and mutual listening, which greatly added to the quality of the critical discourse. In so doing we encountered many of the difficulties of public decision-making on biotechnology in a context of considerable differences in knowledge, opinions, interests and underlying values.

In her paper Celia Deane-Drummond (2002, this ESEP Theme Section) addresses the role of wisdom in relation to ethical issues of genetic modification and risk. She offers many useful insights into the theological background of the nature of wisdom and especially its exposition in the natural law tradition of Thomas Aquinas. She suggests this as a more convincing grounding for virtue ethics than some contemporary approaches, and discusses some important and helpful criteria. Her focus on the agent before the issue is refreshing in its challenge to policy makers to examine their own attitudes. Perhaps the most telling critique of genetic modification has been not so much of the technology itself, as the unspoken values, tacit visions and vested interests of the principal actors in its development, which lost sight of the values of the wider public (Bruce & Bruce 1998: 178–186, ESRC Global Environmental Change Programme 1999).

*E-mail: srtp@srtp.org.uk

Deane-Drummond is critical of approaches based on particular cases, seeing these as tending to assume a consequentialist approach to ethics. She regards these as unhelpful, given the uncertainties involved in the issues. SRT's case-oriented study would, however, challenge this assertion by its use of intrinsic methods, and also questions whether wisdom as such comes close enough to practical decision making about particular GM issues.

EVALUATING GM CROP DECISIONS

Would such wisdom have made any difference if it had been applied in the mid-1990s when seminal decisions about GM crops and products were being made in the UK? Experience of the real world of policy making in both public and private sectors suggests that other factors usually frustrate and override ethical good intentions. In reality the virtuous agent may be constrained by a company's ethos, Government policy, or the mandate given to a particular regulatory or advisory body. Wisdom at a corporate level is framed according to the dominant values of the corporation. Thus in the view of the UK Government of the early 1990s, GM crops were good for growth and competitiveness and needed to be promoted. Regulations should be relaxed. Doubts and opposition were largely dismissed (House of Lords 1993). The brief given by the Ministry of Agriculture to the original advisory committee on GM food ethics explicitly excluded the examination of underlying issues of genetic modification of crop applications, which were presumed to raise no issues worthy of consideration. The regulatory bodies on GM releases and novel foods were obliged to evaluate risks primarily on an evidential basis which marginalised other ethical considerations. Scientific rationality elevated the notion of the 'substantial equivalence' of GM and non-GM products in chemical terms out of its proper scientific context into a philosophical dogma. If chemical equivalence was established, ethical concerns were of no consequence.

Decisions at a company level reveal strikingly different values applied to wisdom. Zeneca consulted about how to market their tomato paste in the mid-1990s, the first main GM food product in the United Kingdom. It was given what would now be seen as wise advice to label the tins as containing a GM component, in view of possible public sensitivities, even though the prevailing regulations did not oblige it to do so. The company took this advice and the labelled GM paste sold fairly well. Zeneca urged Monsanto to do the same when the US corporation planned to import GM soya into Britain. This did not fit Monsanto's approach,

which saw the market for the product as the farmer, not the consumer. Since the product had passed the regulatory requirements, people would buy whatever they were given. What was good enough for mid-western USA was good enough for Europe. It did not occur to their view of the world that the general public might object to having no choice over a product which carried perceived risks and no tangible consumer benefits.

DOES WISDOM BRING US CLOSE ENOUGH TO THE ISSUES?

Monsanto's action has now become a byword in corporate folly. The Government's neglect of warnings to take account of public values over genetic modification is similarly seen as an archetypal failure of wise governance of science (House of Lords 2000). Yet government ministers, regulators and corporate executives no doubt thought their actions wise. Wisdom can be conceived in many different terms depending on the societal context and ethical values of the particular actor. In complex public policy situations such as these, the question behind wisdom is 'Wise, in which (or whose) terms?' Of itself, it is doubtful whether wisdom would have been close enough to the issues for real environmental or biotechnological decision making. This suggests that to be useful in practical decision making over biotechnology, wisdom needs considerable unpacking. It needs to be considered in terms of various underlying values which inform what each stakeholder regards wisdom to be.

This leads to much the same set of questions faced by the *Engineering Genesis* study, in selecting among ethical and social values. A Christian understanding of the issues would require a full orbited consideration of all relevant criteria, above and beyond those of a dominant elite who makes the decisions. Wisdom is just one factor amongst others. It could be used to assess the decision of Monsanto to begin their promotion of GM products with agronomic traits which offered no tangible benefits to consumers, and to apply these to commodity crops used so widely in food processing that GM-derived ingredients would be present in a wide variety of foodstuffs. In a market known to be sensitive to the idea of GM food, wisdom would have held back on these applications, and focused on easily segregated products with nutritional or health advantages which consumers could choose or avoid. Wisdom would have been less useful in evaluating Zeneca's decision to develop a GM tomato paste. It did not serve any very useful purpose other than reducing cost and possibly improving flavour, but neither did it raise serious

problems. Wisdom may perhaps be better as a mode of critique than as a positive evaluation of innovation.

Faced with the sorts of mind sets, policies and power interests described above, one suspects the application of wisdom would not have made much difference, because one was not dealing with wise agents. SRT's case-oriented evaluation found that wider value perspectives were often marginalised by certain dominant modes of thinking, social contexts and vested interests. Its cross-disciplinary stakeholder approach also offers a potential model for enabling different groups to listen to viewpoints they had previously dismissed.

RISK, COST-BENEFIT AND PRECAUTION

Deane-Drummond (2002) makes a strong critique of risk-benefit approaches to decision making, on the grounds of the uncertainties involved, because the risks are usually unknown or unquantified and also because precaution needs disentangling from cost-benefit approaches. This critique goes too far. Certain aspects of genetic modification are indeed subject to unknowns, by the nature of a new technology. Other areas of biotechnology such as pesticide risk have, however, been the subject of extensive risk assessment over several decades, and have amassed a very large body of data. These represent, respectively, the difference between precautionary principle and reactive or calculative models of risk regulation, which are bound in a complex relationship (Bruce et al. 1996).

In the case of pesticide use, the risks are relatively well understood and quantified, so that meaningful assessments and comparisons can be made. One is still faced with a value judgement about what constitutes *acceptable* risk. Suppose a calculation shows a particular risk to be 1 in 10 000, what does this mean? The mere number does not tell us whether a risk of this magnitude is acceptable or not. To do so requires an ethical judgement, which must take into account much wider issues than the calculated magnitude and frequency of risk. In cases where the data are reliable enough, once such an ethical judgement has been made, a calculation of like risks is a valid way of assessment.

The precautionary principle comes into play where reliable data are insufficient or do not exist, and is thus a quite different mode of risk assessment. It is not quantitative, and draws upon a much wider set of ethical values, against which to assess the seriousness of the hazard, were it to be real (Bruce & Bruce 1998:198–201, Chevassus-au-Louis 2000). Confusion often arises in the circumstances in which one may switch from one approach to the other. Sometimes a

new risk emerges which requires precaution to be taken in a previously well established risk. Thus, in the area of organ transplantation a new hazard was identified of retro-virus transmission from pigs if animal organs were to be used. A moratorium was called by the Government. Unless and until data become available to clarify this risk, precaution is the appropriate course.

On the other hand, precaution was the initial regulatory approach to genetic modification research in the 1970s. Eventually, it was felt that sufficient data had been obtained to establish criteria for different levels of hazard and measures for appropriate containment or release. The mistake made in the 1990s UK evaluation of GM crops was to assume that substantial equivalence constituted closure for GM food risks, and that it was the *only* question which needed to be answered. As far as it goes, there is some logic in the notion that, if there is no scientifically detectable difference between a crop derived from genetic modification and one that is not, then their risks are equivalent. But in this case, wider value concerns surrounding the risk were sidelined by decision makers. They also presumed that all the necessary risks had been taken into account. A precautionary approach ought to have been maintained over emerging biodiversity concerns, for example.

Political pressures to defend its case on various agricultural trade issues from hostile US criticism led the European Commission to present the precautionary principle as a temporary expedient to be used in the course of a quantified cost-benefit risk assessment (European Commission 2000). It did not provide criteria against which to decide that grounds existed to apply precaution. It also presumed that the uncertainties would eventually be resolvable, which is not always the case. Where they cannot be, precaution is still needed.

The current evaluation of field scale GM crop trials in the UK provides a good example of this. Some are looking to these to supply a science-based closure on the risks. It seems likely that the trials will not provide closure, because, by the very nature of the question, it would take much longer to establish the basic ecological and soil characterisations to make long-term comparisons. They will probably provide some indications but much residual uncertainty. Ethical and value aspects will play a large part in assessing whether the results are acceptable to allow commercial crops to be sown, or to continue the *de facto* moratorium while further trials are conducted, or to abandon the idea of growing GM crops in the UK.

The first option would judge that the evidence obtained to date had not shown a likelihood of an obvious and serious risk to health or ecology, and

would point to the fact that large numbers of crops were being grown and consumed in some other parts of the world with no apparent serious ill-effects. The second would judge that the risks had not so far been clarified enough to warrant proceeding, but that the trials themselves did not pose an unacceptable risk. The third position would judge unusually that no prospect existed of ever resolving the uncertainties, or that the indications already showed risks that were deemed unacceptable. A crucial factor in such assessments is the constructions put and value judgements made concerning the notion of genetic 'contamination'. For some the mere fact of unintended gene flow constitutes grounds to stop the technology. For others, it would only represent a limit if it led to some significant ecological or social damage (Bruce & Eldridge 2000). A 4th conclusion is that the basic idea of genetic modification was flawed in the first place, or that the goals intended were not worth having, or that better ways existed to achieve them. This may be related to inherent objections or to risk or to social factors.

The above examples are given to illustrate the complexity of the relationships between evidence based and precautionary judgements of biotechnology risk. They both have their place, and both involve decisions based on ethical values. As with the case of the other GM crops decisions discussed earlier, wisdom is indeed a prerequisite for such decisions, but it is the beginning of the story, not the end.

Editorial responsibility: R. J. (Sam) Berry, London, United Kingdom

LITERATURE CITED

- Bruce D (2002). Finding a balance over precaution. *J Agric Environ Ethics* 15:7–16
- Bruce D, Bruce A (eds) (1998) *Engineering Genesis*. Earthscan, London
- Bruce D, Eldridge JT (2000) The role of values in risk perception in the GM debate. In: Cottam MP, Harvey DW, Pape RP, Tait JE (eds) *Foresight and precaution*. Balkema, Rotterdam
- Bruce D, Eldridge JT Tait EJ (1996) Genetic risk regulation, society and ethics. In: *Risk in a modern society: lessons from Europe*. Annual Meeting of the Society for Risk Analysis, 2–5 June 1996. University of Surrey, Centre for Environmental Strategy, Guildford, p 109
- Chevassus-au-Louis B (2000) Prevention, precaution, consumer involvement: which model for food safety in the future? Paper presented at OECD Conference, GM Food Safety: facts, uncertainties and assessments, Edinburgh, 28 February–1 March 2000
- Deane-Drummond C (2002). Wisdom with justice. *ESEP* 2002:65–74
- ESRC Global Environmental Change Programme (1999) *The politics of GM food, risk, science and public trust*. University of Sussex, Special Briefing No 5, Brighton
- European Commission (2000) *Communication from the Commission on the Precautionary Principle*. European Commission, Brussels
- House of Lords (1993) *Regulation of the United Kingdom Biotechnology Industry and Global Competitiveness*. HMSO, HL 80, London
- House of Lords ((2000) *Science and Society*. Report of the House of Lords Select Committee on Science and Technology. HMSO, HL, London
- Nuffield Council on Bioethics (1999) *Genetically modified crops: the ethical and social issues*. Nuffield Council on Bioethics, London

*Submitted: September 4, 2002; Accepted: September 7, 2002
Proofs received from author(s): September 30, 2002
Published on the web: September 30, 2002*