Devolution threat to decision-making

Sir — The issues underlying the symbiosis of the institutions of civil and scientific administration are crucial for the future of society, and are addressed in a masterly report on risk by the Royal Society[1], which has probably been read by less than 0.1 per cent of the UK population. In this ill-defined context, the new parliaments in Scotland and Wales have begun a process of devolving science policy and its administration.

Nature, the Royal Society and the pressure group Save British Science (SBS) have all considered the problem[2,3]. What is emerging seems to be a determination to equip the new parliaments with new ministers for science, new supporting bureaucracies, and what has been described optimistically as a "science champion". An "extra" £300 million (US$477 million) has been promised by the UK government to Scottish science over three years. The SBS implies that Wales is more conscious than Scotland of the fact that the United Kingdom can hardly be described as an unmanageably large base for scientific endeavour and its administration. This indicates the usual obeisance that political parties pay to pressure groups.

Nothing, however, could be more disastrous for UK science than a fragmentation of the decision-making system. The country certainly does not need a separate Welsh or Scottish Parliamentary Office of Science and Technology (POST). It does need to ensure that the services of POST are made available to both new parliaments. Any additional funding required should be contributed by the new parliaments.

New arrangements will not increase the resources of the institutions determining science policy in the United Kingdom as a whole. The £300 million allotted to Scotland will inevitably reduce the science budget elsewhere in the United Kingdom, unless the overall budget is increased.

Europe already has several 'national' POSTs, most of which were modelled on the UK POST or the US Office of Technology Assessment. The European Parliament has established its own assessment mechanism (STOA). All depend on a limited range of independent scientific advice which should not be influenced by the nationality or location of the scientists involved. If policy judgements are now to depend on scientific advice to governments, or to legislatures required to endorse their decisions, the only relevant criterion is the integrity of the analyses and those who contribute to them. There is never an abundance of independent expertise and the more novel the subject of the enquiry, the greater the difficulty of establishing a 'peer group' whose partiality is not seen to be suspect by interested parties

The controversy over genetically modified foods exemplifies the need for public confidence in scientific opinion. Disagreements should be resolved within the scientific community and not be presented as Scottish, Welsh, UK or any other 'national' opinion. Good science needs no national or sub-national prefix.

The UK parliament, for all its faults, was the first legislature to establish (in 1938) a Parliamentary and Scientific Committee. Its science and technology select committees have ranged over innumerable controversial issues. The political problems generated by the exponential advance of scientific knowledge are those that transcend national boundaries. They will not be solved by a fragmentation of the scientific advice provided to the community in an ill-conceived expansion designed to appease national egos inflamed by political ambition. The fundamental internationalism of science must not be damaged, within or outside the United Kingdom.

Sir Ian Lloyd

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1. *Risk: Analysis, Perception and Management* (Royal Society, London, 1993).
2. *Nature* **399,** 89 (1999).
3. Masood, E. *Nature* **399,** 97 (1999).

Farm-scale evaluation of GM crops explained

Sir — The first genetically modified (GM) crops being proposed for commercial planting in the United Kingdom have been altered to make them less sensitive to broad-spectrum herbicides. These crops are intended to allow more efficient weed management and herbicide regimes for the farmer, reduced frequency and quantity of herbicide applications, and increased market share for the suppliers. Work has now begun on farm-scale studies of maize and spring oil-seed rape, with winter oil-seed rape studies starting later this year. Many objections to GM crops have been raised, and there is pressure on farmers not to take part in this research programme (see *Nature* **398,** 651–656; 1999). Indeed, one farm, near Swindon in the west of England, has recently withdrawn from the study.

Because of the widespread public interest in GM crops, we, as representatives of the consortium commissioned to conduct this research, think it is worthwhile to outline the background and purpose of these farm-scale evaluations. The research addresses the concern that the changing management of the GM herbicide-tolerant (GMHT) crops could result in reductions of weed and invertebrate populations on which farmland birds and other wildlife depend. This concern has been voiced most cogently by the conservation groups English Nature and the Royal Society for the Protection of Birds (RSPB).

We are aiming to test the null hypothesis that there are no differences between the biodiversity associated with the growing of GMHT crops and comparable non-GM crops at the farm scale. The study will look for positive and negative effects. These are likely to be indirect, resulting from crop and rotation management, rather than from a direct effect of the use of GM plant breeding technology. Indeed, if herbicide resistance had been introduced by traditional breeding, the design of the study would have been the same. Farmers will grow and manage both GM and non-GM crops as they would do commercially.

The only constraints are that the varieties being compared are as similar as possible in other characteristics, and also that all other agronomic practices are kept the same, unless commercial reasons dictate otherwise. So we anticipate that the herbicide regimes will differ, but that any insecticide or fungicide should be applied to both treatments on each farm on the same day, unless there are clear agronomic reasons that may in themselves be the result of growing the different crops. We will also evaluate effects on biodiversity in following crops. These crops will be the same, and will be managed in the same way, following both GM and non-GM treatments, unless there are clear agronomic reasons for differences in rotations or management.

It is not practical to record population responses for all species in the arable system. We are using indicators of biodiversity that are likely to be sensitive to the treatments, and reflect processes that may lead to significant ecological shifts that cannot be detected directly given the time and spatial scales available for the study. Effort will be concentrated on species groups that do not forage over wide areas or occupy higher trophic levels. These include vegetation in and around the crop, the field seed bank, earthworms, snails and slugs, ground beetles, bugs (Heteroptera), foliage arthropods and invertebrate biomass (with

moth and sawfly larvae measured separately). Bees and butterflies will also be assessed. These are all being recorded using standard protocols that are being tested and refined during this year.

Birds are not included in the field study because they range too widely to show real effects when only single fields are being considered, although data on invertebrates and plants will provide measures of resources available to them.

Work in the first season is on a pilot scale to ensure that monitoring is matched to the details of crop management. There will then be three seasons of the summer crops and at least two of the winter crop, at the full scale of around 20 treatment pairs per crop per year. We will select from the pool of available farms using a stratified random procedure; the experimental treatments will be allocated at random within each farm. The GM and control crops will be grown in a split-field or a paired-field plan; work in this first year will confirm which is the more appropriate. There are valid arguments for and against both configurations. In a split field, the two halves of the field will have had similar histories, reducing the variation in biodiversity indicators before treatment. The paired-field design gives less chance of interference between the treatments and is more realistic in terms of the structure of the field boundaries. Both configurations are included in the first-year sites.

The work is being conducted by a UK consortium of the Institute of Terrestrial Ecology, the Institute of Arable Crops Research and the Scottish Crop Research Institute. It is funded by the Department of the Environment, Transport and the Regions, the Ministry of Agriculture, Fisheries and Food, and the Scottish Office.

A steering committee will oversee the progress of the work and ensure the scientific quality and integrity of results. The committee includes independent scientists, including experts from English Nature, RSPB and the Game Conservancy Trust. Many results will not be available until the end of the project in 2002.

The role of scientists is to provide the evidence on which to base a sound risk assessment of the effects of herbicide-tolerant GM crops on biodiversity.

Our evidence will, we trust, provide an important input into a rational debate about the adoption of GM crops.

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Bioethicists must come down to Earth

Sir — You report, without critique, the opinion of Canadian bioethicist Margaret Somerville that "science will need to wait and to help ethics to catch up" (*Nature* **399,** 12; 1999). Any regular reader of your journal is sure to wonder on what planet Somerville has grown up. It is certainly not one on which science or private industry exist, for if it was she would surely know the lunacy of her proposition.

We would be better served if bioethicists were willing and able to work within the realm of the modern, market-oriented world to come up with practical solutions to bioethical problems.

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Barking up the wrong pole

Sir — In a review of Freeman Dyson's book, *The Sun, the Genome and the Internet, Tools of Scientific Revolutions*, the reviewer writes of "such extravagances as bringing back lumps of rock from Mars, when nature has already left us generous supplies of the same material in the form of meteorites, mostly still reposing in the Arctic ice" (*Nature* **398,** 770; 1999). I assume he is in fact referring to the Antarctic blue ice meteorite recovery areas such as Lewis Cliff, Antarctica.

It could be possible to recover more than 100,000 meteorites in the Antarctic over the next couple of decades. In 1986–87, for example, we recovered several hundred meteorites.

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Let's all speak the same language

Sir — In your article on the fifth conference of the African Academy of Science, Ali Mazrui is reported as suggesting that African science is unlikely to develop while English remains the main medium of communication (*Nature* **399,** 12; 1999). I can understand the desire to discuss one's work in one's own language, but I must question how practical it would be in a continent such as Africa where there are many indigenous languages.

There have been several successful pan-African conferences on natural products chemistry, a subject which I think Mazrui would consider valuable, in view of the scope that it offers for examining traditional medical knowledge. I could not help picturing what such a conference would be like if conducted in African languages, with simultaneous translation into Arabic, Amharic, Swahili, Yoruba and Zulu.

Even deciding which to accept as official conference languages might provoke endless disagreement. Possibly, Mazrui's suggestion might be more appropriate in the romantic field of the literary world, rather than in the more practical scientific one. However nice as an idea, I think that the suggestion has little practical relevance.

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German researchers won't be put in the dock

Sir — Your article "Animal rights activists turn the screw" stated that the Deutsche Tierschutzbund [a German animal welfare organization] would "initiate court cases and injunctions against researchers" if animal protection were included in the German constitution (*Nature* **396,** 505; 1998). Contrary to this statement, the Deutsche Tierschutzbund has no intention of doing so.

The proposed change to the constitution aims to reinforce a 1986 amendment to the German animal welfare law that introduced a requirement for licensing procedures for experiments to include an ethical evaluation process. The need for this change arose after the Constitutional Court decided in 1994 that such ethical evaluation is unconstitutional, because freedom of research is embodied in the constitution, but animal welfare is not.

No animal welfare organization had brought a court case against researchers before 1994, so why should this change if the requirement for ethical evaluation is simply reinforced? Animal welfare organizations will find it hard to take scientists to court or to have licences revoked: the licensing procedures will remain confidential, and the decision of the authorities will rest on criteria that are not heard at court.

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